

## Up from Slavery? Intergenerational Mobility in the Shadow of Jim Crow

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**Abstract:** We have built new datasets of linked census records for the late nineteenth and early twentieth centuries to document black-white differences in intergenerational economic mobility. Whether viewed from an occupational or income-based perspective, southern whites were much more likely than blacks, conditional on fathers' status, to be upwardly mobile and less likely to be downwardly mobile. Children from poor white households often ascended into the American middle class, whereas children from poor black families rarely did. This work is preliminary and additional data collection is ongoing.

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This paper builds new datasets from historical census manuscripts to study the intergenerational economic mobility of men who originated in the U.S. South in the late nineteenth and early twentieth centuries. We are especially interested in the post-Emancipation economic status and progress of African Americans, viewed against the backdrop of poverty and discrimination at the height of “Jim Crow” institutions.<sup>1</sup> In this context, the experiences of post-Civil War southern whites are interesting in their own right, and those who started near the bottom of the economic spectrum provide a natural comparison group for African Americans.

The data shed new light on racial differences in the prospects for economic advance between the Civil War and the Great Depression. In addition, the data are sufficiently detailed that we can see whether certain personal, family, and local covariates – such as land ownership, parental literacy, school quality, and migration – were strongly associated with intergenerational gains and, especially, “escape” from the lowest tiers of economic status.<sup>2</sup>

The absence of representative longitudinal datasets prior to the National Longitudinal Surveys (starting in 1966) and Panel Study of Income Dynamics (starting in 1968) has made it difficult for scholars to document intergenerational mobility in earlier periods. In recent years, however, new technologies for matching people over time in historical census records and transcribing the hand-written manuscript data have facilitated studies of mobility by essentially turning the census cross-sections into smaller but representative panels of micro data. Such datasets are especially useful for studying intergenerational mobility and migration because seeing the same person at two or more points in time – typically in childhood and again in adulthood – is fundamental to charting how a person’s origins are connected to his or her outcomes later in life (e.g., Ferrie 2005, Abramitzky, Boustan, and Eriksson 2012 and 2014, Long and Ferrie 2013). To that end, we have created several datasets of linked census records that form the basis of this paper’s analyses.

The literature on the American South in the aftermath of the Civil War and the economic and social status of African Americans in that setting is broad and spans several disciplines. Our work in this paper connects to three branches of literature on long-run racial disparities in labor market outcomes. First, economists have long sought to measure and understand racial differences in average labor market outcomes (inter alia, Myrdal 1944, Smith and Welch 1989, Donohue and Heckman 1991, Johnson and Neal 1996, Chandra 2000, and Margo 2015). Historical research on

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<sup>1</sup> The paper’s title derives from Booker T. Washington’s famous autobiography, *Up from Slavery* (1901), which describes his remarkable rise from slavery to national prominence as the founder of Alabama’s Tuskegee Institute.

<sup>2</sup> In future work, we plan to extend comparisons to cohorts observed in the mid to late twentieth-century, before and after the sea change in policy associated with Civil Rights Movement.

this issue typically relies on cross-sectional data. With such data, it is inherently difficult to surmise whether and how economic status is transmitted within families or whether the transmission patterns vary by race. Yet one's interpretation of the origins and persistence of racial inequality may hinge on such inferences. Linked datasets of census records provide a way forward by uncovering the intergenerational transitions that underlie evolving black-white gaps in economic status. Second, the implications of racial discrimination in schooling in the South, where approximately 90 percent of the black population resided in 1900, are a salient manifestation of the long reach of history (inter alia, Margo 1990, Card and Kruger 1992, Sacerdote 2005, Aaronson and Mazumder 2011, Carruthers and Wanamaker 2015). Because we observe the childhood household and location of the men in our samples, we have a detailed picture of the resources that may have influenced their human capital formation and, perhaps, their economic mobility. Third, and closely related to our approach here, a relatively new series of papers directly investigates racial differences in intergenerational mobility in modern datasets (Hertz 2005, Bhattacharya and Mazumder 2011, Mazumder 2011, Clark 2014).<sup>3</sup> To our knowledge, however, no previous study examines black and white intergenerational mobility in the several decades after the Civil War, a critical period in the history of American growth, inequality, and discrimination.

We begin our work with a sample of black and white fathers and sons observed in the South in the 1880 Census of Population. Nearly all of the black fathers in this sample were born in the South before Emancipation. Although it is not possible to ascertain whether each individual had been a slave, the overwhelming majority of black fathers in our sample must have been born and raised in slavery.<sup>4</sup> Their sons constitute the first post-Emancipation generation. We link individuals from this sample to two other census datasets: first, we search for the sons in the 1900 Census of Population manuscripts, transcribing information about the adult labor market outcomes of those that we can match; second, we search the 1880 Census of Agriculture for the fathers (of sons in the matched sample) who were farmers and gather information on their tenure status (owner or tenant). We built a similar dataset for father-son pairs observed in 1910 and 1930, but without reference to the Census of Agriculture (the manuscripts no longer exist). Instead, we exploit homeownership information in the Census of Population to infer tenure status.

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<sup>3</sup> These papers, in turn, are part of a much larger literature on intergenerational mobility in economics and sociology (e.g., Erikson and Goldthorpe 1992, Solon 1999, Black and Devereux 2011, Long and Ferrie 2013, Clark 2014, Chetty et al. 2014).

<sup>4</sup> 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.

We review intergenerational transitions across several broad occupational categories to provide context for the study. Our main metrics of mobility, however, compare each son's (estimated) location in the national income distribution to his father's (estimated) position in the distribution two decades earlier. This rank-based approach follows Dahl and DeLeire (2008), Mazumder (2011), and Chetty et al. (2014a/b), and we argue that it conforms to notions of “moving up” or “falling behind” relative to one's peers from generation to generation and to the economics literature's longstanding emphasis on studying changes in blacks' relative income.<sup>5</sup> Because the Census of Population did not collect income data before 1940, our measures are based on what we know about the men's occupation, industry, race, and location, a process we describe in much more detail below. In addition, we pay particular attention to the probability that poor sons “escaped” from the bottom portion of the income distribution and examine correlates of this probability.

In 1880 and 1910, the vast majority of African American fathers were in the lowest decile of the national income distribution. (We have not yet adjusted for cost of living differences, but such adjustments are unlikely to change ranks at the bottom.) Tables describing father-son mobility from 1880 to 1900 and from 1910 to 1930 reveal stark racial differences in the likelihood of getting ahead and falling behind, with African Americans faring worse from both perspectives. Children from the poorest white families could expect, on average, to be better off as adults than children from the better off black families in our samples. We use the transition tables to offer a few simple counterfactuals that ask, “What if black children, given their fathers' occupational or income distribution, had transitioned upward and downward at the same rate as white children with similar fathers?” or “What do the transition tables imply about the steady state distributions of whites and blacks across occupations or income deciles?” The answers to these questions drive home the historical significance of the racial differences in mobility, and they clarify that it was not poverty per se that limited the pace of blacks' economic progress relative to whites—sons of poor southern whites moved into the middle class at impressive rates while sons of poor southern blacks languished in the lower deciles of the income distribution. If even one generation of black children had transitioned over income deciles in the way that white children with similar fathers did from 1910 to 1930, the median black worker would have placed near the 30<sup>th</sup> percentile of the national income

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<sup>5</sup> We recognize that absolute real income gains and the intergenerational elasticity (IGE) are also of interest, but to measure such gains would require consistent measures of income by detailed occupation, race, and place over time in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, as well as price data. In addition, our data are not well-suited to meet the requirement for unbiased estimation of the IGE. Like most studies of inequality and mobility, this paper is focused on relative incomes and where people fall in the income distribution.

distribution in 1930, comparable to the actual rank of the median black male in 2000. In preliminary work we explore the correlates of upward mobility from the bottom.

## **1. Data Construction and Measuring Intergenerational Mobility**

### *Motivation and Creation of the Linked Samples*

Linked census data have several advantages relative to the historical cross sections that form the basis for most research on the economic progress of African Americans prior to the 1960s. First, because we see each father's labor market outcome in the base year and each son's labor market outcome 20 years later, we can describe transition matrices, by race, across occupation and income categories, whereas cross-sectional data reveal only the net result of all transitions in the population and nothing about intergenerational mobility at the micro level.<sup>6</sup> Second, the base year's background information lets us select subsamples of relatively low-income southern white families for direct comparison with similarly situated black families. Third, and again because we have detailed background information, we can test whether intergenerational mobility patterns varied with observable characteristics such as parents' literacy, own school attendance, various local conditions, and migration choices.

We emphasize here that the paper does not posit strong causal arguments with respect to these covariates in the tradition of quasi-random natural experiments. Nonetheless, the richness of the data connecting childhood conditions with adult outcomes may point the way for future research into the mechanisms of economic advance (or suppression) that prevailed in this period. The results may also provide strongly suggestive evidence that distinguishes between the roles of poverty per se and poverty interacted with race (and racism) in shaping lives under the conditions that prevailed in the South prior to the Civil Rights Act of 1964 and related legislation. In future research, we may compare the patterns and rates of intergenerational transition for blacks and whites prior to 1930 with patterns in the mid-to-late twentieth century, as revealed in the National Longitudinal Survey (NLS) and Occupational Change in a Generation (OCG) datasets.

To build the 1880 to 1900 linked dataset, we began with the 1-percent public use sample of the 1880 Census of Population (Ruggles *et al.* 2010).<sup>7</sup> We limited the sample to black males, aged 0

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<sup>6</sup> We observe job status directly in the census data and describe our approach to assigning incomes later in this section.

<sup>7</sup> More detailed information is provided in the Data Appendix. 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 17, residing in one of thirteen southern states with their father present in the household.<sup>8</sup> For each son, the census provides information on farm residence, urban residence, school attendance, literacy (if age 10 or over), as well as information about the son's father and mother, such as occupation, employment, and literacy status. We then 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 (within two years), race, sex, and first and last name. We accepted unique matches for either the exact last name or a SOUNDEX version of the individual's last name and for exact matches on the first three letters of an individual's first name.<sup>9</sup> The final match rate was 25 percent, and after dropping sons without co-residing fathers in 1880, the institutionalized, and duplicates (different sons in 1880 matched to the same person in 1900), our analysis sample contains 2,314 black sons and 1,959 white sons. From the hand-written census manuscripts in 1900, we transcribed information on the son's occupation and industry, home ownership, and employment status. In addition, we are in the process of establishing links to the 1880 Census of Agriculture manuscripts to help distinguish fathers who were farm owners from those who were farm tenants. This process is largely, but not completely, finished.<sup>10</sup>

For the 1910 to 1930 period, we followed a similar process beginning with the one-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. The match rate was 24 percent, reflecting the successful match of 10,645 white sons and 2,289 black sons after imposing the same sample limitations as above. 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 from those who were not.<sup>11</sup> It is fortunate that the population census included this information because the 1910 agricultural census manuscripts were destroyed by congressional order. More details on the matching process are provided in the Data Appendix.

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<sup>8</sup> 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. Maryland, Delaware, and Washington D.C., although in the "Census South," are not included in our data.

<sup>9</sup> SOUNDEX is an algorithm used to generate alternative spellings of a surname. SOUNDEX matches include the exact last name and any reasonably close approximation to that name.

<sup>10</sup> This is time-consuming because in most cases it entails searching "by hand" the Census of Agriculture microfilm, which is organized by state, county, and enumeration district, for specific men and then transcribing information from the handwritten records.

<sup>11</sup> Later, we present evidence that among farmers, homeownership and farm ownership typically went hand in hand. That is, it would be unusual for farmer to own land but rent a house or vice versa.

### *Representativeness of the Linked Samples*

It is possible that the process of linking men over time in the census records could lead to biased samples and flawed historical interpretations. For instance, if sons with poor outcomes in 1930 were less likely to be matched and, therefore, omitted from the linked sample, then the linked sample would overstate the average status of sons and (likely) that of the fathers; moreover, the linked sample would likely overstate the amount of upward mobility and understate the amount of downward mobility in the population. Of course, other biases are possible, as well. It is, therefore, important to see how far the properties of the linked samples stray from those of the original base samples drawn from the IPUMS, which in turn are random 1-percent samples of the Census of Population household records.<sup>12</sup>

Tables 1A (1880 base year) and 1B (1910 base year) provide preliminary but strong evidence that the linked samples are fairly representative. The p-values on the differences between the original and linked samples for each variable—including states of origin and personal characteristics such as school attendance, literacy, farm residence, father's income rank, and age—are usually statistically insignificant ( $>0.10$ ). When a p-value does indicate a statistically significant difference between the samples, the magnitude of the difference is generally of minor economic significance. For example, the distributions of men over states-of-origin are similar across the linked and IPUMS samples in both base years for both races; when there is a statistically significant difference (e.g., blacks in Mississippi in 1910), it never amounts to more than two percentage points. One notable difference in the 1880 samples pertains to average city size (population) for black men residing in urban areas—this is substantially smaller for the linked sample than for the IPUMS sample (32,000 versus 44,500)—but since such a small share of the southern population resided in urban locations in 1880 (6 percent for blacks and 7 percent for whites), this is unlikely to bias our first-order conclusions.

### *Measuring Mobility*

There are several ways in which one might characterize a population's economic mobility. We begin by charting father-son transitions across broad occupational categories. This provides a simple and transparent way of observing the work done by blacks, whites, fathers, and sons in the period under study. This is helpful for fixing ideas about the historical context, and it provides a novel view of the transition of workers out of southern farming. But because we are especially

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<sup>12</sup> If we found substantial differences, we could always reweight our analysis sample to match the IPUMS sample on these metrics. In practice, we find few meaningful differences.

concerned with interpreting intergenerational mobility in the context of African American economic advance and southern poverty *relative to the rest of the U.S. population*, we are naturally led to emphasize metrics of mobility that reflect men's positions in the national income distribution. Thus, by "intergenerational economic mobility," we specifically 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) two decades earlier.

This rank-based approach is similar in spirit to recent work by Dahl and DeLeire (2008), Mazumder (2011), and Chetty et al. (2014a/b). It conforms naturally to the notion of "getting ahead" or "falling behind" relative to one's peers (nationally) from one generation to the next.<sup>13</sup> Because we are studying sub-groups of the U.S. population who reside in a relatively low-income region, this is not a zero-sum game among southerners.

Using the national distribution as a reference point is useful for several reasons. First, we are primarily interested in documenting economic status and intergenerational mobility relative to the entire population, not mobility or mean reversion *within* subgroups defined by race and region-of-origin.<sup>14</sup> Second, measuring southerners' relative income, especially southern African Americans' income, in the late nineteenth and early twentieth centuries relative to the national distribution conveys some striking facts about the depth of southern poverty and long road to income convergence. Southern blacks are remarkably crowded into the lowest decile of the national income distribution circa 1880 and 1910. Third, comparisons of position in the distribution rather than income level *per se* would characterize a father-son pair that maintains the same rank as "not mobile," which is a property we find attractive and appropriate given the paper's motivation.<sup>15</sup>

Our approach to measuring "rank mobility" blends aspects of the economics literature's long-standing focus on income with aspects of the sociology and historical literatures' focus on occupation

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<sup>13</sup> 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).

<sup>14</sup> Hertz (2005, 2008) and Mazumder (2011) point out that the regression of son's log income on father's log income for whites or blacks (separately) provides a measure of mobility and mean reversion within the group but conveys nothing about whether the groups are converging.

<sup>15</sup> Additionally, in very large samples of parent-child records from income tax records in recent decades, Chetty et al. (2014a) demonstrate that rank-rank relationships are near linear and therefore relatively simple to characterize, whereas log-log income relationships are not linear and tend to be sensitive to sample selection issues. Dahl and DeLeire (2008) also point out the relative instability of intergenerational mobility measured in terms of log-log income compared to mobility measured in terms of rank. Whether this is true historically is unknown, and the relatively small size of historical samples makes it difficult to investigate.



or class (e.g., Thernstrom 1973, Guest, Landale, and McCann 1989).<sup>16</sup> A major challenge for us is that the main ingredient for modern economic studies of intergenerational mobility—individual or household-level income—is simply not available in the census prior to 1940. Instead, as described in more detail below and in the Data Appendix, we must rely on information about each father and son’s occupation, industry, race, and location to assign an income “score” on the basis of wage information drawn from other sources.

### *Assigning Income Scores*

We have taken three different approaches to the income-score assignment problem. In each case, we start with a tabulation of average income that varies by job (occupation or industry), region, and race, but that is fixed in time such that the same assignment algorithm is applied to fathers and sons. Thus, a change in income score from father to son generally entails a change in job type or region of residence or both. There is also scope for changes in income score associated with changes in ownership status within farming (e.g., from tenancy into ownership). The approaches we emphasize are similar in spirit to the often-used “occscore” variable from IPUMS (Ruggles et al. 2010), which is based on occupation-specific earnings in 1950 (both men and women). But our scoring has more flexibility to reflect differences by local, race, and farm ownership status for men specifically.<sup>17</sup> Unfortunately, given historical data constraints, the scoring cannot capture income changes that occur within or between job/region/race cells during the period under study, including within-occupation changes in the racial wage gap. Rather, the scoring registers mobility that is associated with movement across cells from one generation to the next.

The first two approaches are based on income reported for men in specific (three-digit) occupations in the 1940 or 1960 census microdata, which we tabulate into hundreds of detailed occupation/state/race cells. As mentioned above, for farmers, we go a step further and additionally estimate income by homeownership status, which helps distinguish tenant farmers from owner-operators. We also make adjustments for in-kind income that accrued to farmers and farm laborers.<sup>18</sup>

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<sup>16</sup> Bjorklund and Jantti (2000) provide an insightful discussion of how these parallel literatures have evolved, how they relate to one another, and the strengths and vulnerabilities of different measurement strategies. An alternative approach, which we do not pursue in this draft, is to quantify occupational mobility per se using broad, unordered occupation categories and Altham statistics, as described in Long and Ferrie (2013).

<sup>17</sup> We could use the “occscore” variable for assigning income, but its values are likely to overstate the relative earnings of southerners in general and African Americans especially in comparison with workers located elsewhere in the United States.

<sup>18</sup> See the Data Appendix for more discussion of how the income scores are established, especially for farmers and farm laborers who have additional adjustments for income-in-kind.

The third approach is based on industry-specific annual earnings for full-time workers in 1928, as reported in Lebergott (1964), with location-by-race-specific relative adjustments that are based primarily on the 1940 census microdata. This industry-based approach is largely independent of the first two occupation-based methods, though it does require using some of the same census microdata for the state-by-race-specific adjustments within industry.

Once the tabulations have been made for each of the three approaches, it is straightforward to assign the scores to men observed with the matching sets of occupation (or industry), state, and race characteristics in the linked datasets. For cells with fewer than 50 observations in the reference data, we move to the division, region, or, infrequently, nationwide level to make income assignments. For this draft of the paper (and for brevity), we simply average the implied ranks from each of the three methods of income score assignment since it is not obvious that any one method is clearly preferable to the others.

To rank sons and fathers relative to their peers nationally, we apply the income score assignment methods described above to the nationally representative samples for 1880, 1900, 1910, and 1930 from IPUMS.<sup>19</sup> 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.

Table 2A contains the resulting income ranks for southern fathers in 1880 in our linked sample, expressed relative to the national distribution of fathers with sons of similar age in the 1880 IPUMS sample. We combined the detailed occupational categories into broad categories of farmers (separately based on home-ownership status), farm laborers, white-collar workers, and blue-collar workers in skilled, semi-skilled, and low-skilled jobs. We repeat the tabulation for fathers in 1910.

The relative rank of the 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 tenant farmers to owner operators; blacks earn less than whites within the broad occupational categories; and the black-white differences are larger at higher levels of

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<sup>19</sup> The IPUMS national sample includes all fathers of sons aged 0 to 18 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.

skill.<sup>20</sup> The average rank for black fathers in both datasets (1880-1900 and 1910-1930) is below the 10<sup>th</sup> percentile of the national distribution, reflecting blacks' status as a poor group within a poor region. If anything, southern black fathers seem to have fallen further behind the rest of the country between 1880 and 1910, though the difference is small. For southern white fathers, the thirty year interval brought a rise from the 34<sup>th</sup> to the 40<sup>th</sup> percentile of the national income distribution. From this perspective, there is evidence of some southern "catching up" on the rest of the country, but only for whites. In future work, we will provide alternative rankings that attempt to account for differences in the cost of living across regions; our expectation is that this may compress the income scores to some extent, but without much effect on rankings in the bottom part of the distribution.

The occupation category shares in Table 2A and 2B are revealing in their own right and help to illustrate the historical setting. A majority of black fathers in both the 1880 and 1910 sample were farmers who did not own their home, whereas white farmers were far more likely to be homeowners (by more than 20 percentage points in 1910 and more than 30 points in 1880). Black fathers in 1880 rarely held white-collar or skilled blue-collar occupations (less than 5 percent combined), and their status in this dimension was not much improved by 1910. Although the total share of black men in agricultural employment (farmers and farm laborers) was nearly the same in 1880 and 1910, there was a notable decline in black farm laborers, which likely corresponded to a rise in farm tenancy (Ransom and Sutch 1977).

#### *Measurement Concerns: Error in Father's Status and Life-Cycle Bias*

The discussion above has already highlighted a number of challenges associated with measuring income mobility in this setting. Two others that are prominent in the economics literature are measurement error in the father's permanent income (e.g., income observed in a given year may have a large transitory component) and life-cycle bias associated with the age at which the son's income is measured (e.g., young men are on a relatively steep portion of the age-earnings profile but the slopes may be different depending on skill).

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<sup>20</sup> The black-white income score gaps in Table 2A and 2B are not necessarily contrary to evidence circa 1900 from employers that black and white men sometimes earned similar pay for the same job when employed at the same time and place (e.g., Higgs 1977 on unskilled agricultural labor). Within the "white collar" category, for instance, blacks had a relatively large share of teachers and clergymen compared to white collar whites. Even for narrower categories, it is useful to note that income scores derived from census data represent average annual income (as opposed to hourly or daily wage rates). Blacks and whites self-reporting similar occupations may have been employed for different amounts of time during the year, at different firms or farms, in different places within the South, and with different alternatives for supplementary employment. It is possible that black-white gaps widened within occupation over time, but it is difficult to measure and test this without better race-specific wage and income data (see Wright 2013 for race-specific evidence from Virginia).

Because we impute fathers' incomes based on occupation and industry, our measures may have some advantages over income measured in any single year in that the scores may hew closer to an individual's long-term labor market status.<sup>21</sup> The transitory income issue is further reduced because census enumerators collected occupation and industry information even for those who were temporarily unemployed. While there must be unobservable differences in permanent productivity between fathers in the same occupation and region, it is unlikely that the relatively poor whites we draw for comparison with poor blacks were merely having a temporary negative income shock or a misreported income figure in the year we observe the fathers.

Regarding the life-cycle bias in measuring sons' incomes, again, the occupation and industry-based assignments may offer some advantages over observed income. Life-cycle bias is a type of measurement error resulting from income measurement at different points in the life cycle for different individuals. In our case, because we are using decennial census data, the age at which income is measured for both fathers and sons varies widely. Assigning occupation and industry-based wages may help circumvent this issue. An occupation- or industry-based assignment, by assigning average wages over all working ages for each occupation or industry category, may reflect labor market outcomes for workers over their entire career. Bias will re-emerge to the extent that workers change occupations over the course of their career, and industry-based metrics are perhaps more robust to this critique if workers are more likely to change occupation than industry over their working lives. We will work to quantify the amount of occupation and industry mobility over the life-cycle in future drafts of this paper. We can also check the sensitivity of the baseline results to the life-cycle bias by simply restricting our samples to sons and/or fathers observed closest to age 40.<sup>22</sup> (Not contained in this draft.)

## **2. Descriptive Statistics of Intergenerational Mobility, 1880-1900 and 1910-1930**

### *Occupation Transitions*

To provide some context for the labor market and workers under study, we start by documenting father-son mobility patterns by occupational category. Table 3A presents a 7x7 transition matrix based on broad occupation categories: 1) farmer owners, 2) farmer tenants, 3) farm laborers, 4) white-collar workers (professionals, clerical, sales, etc.), 5) blue-collar skilled workers

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<sup>21</sup> Indeed, occupational status has been used in other work as an instrumental variable for father's income. See Zimmerman (1992) for discussion. Solon (1992) points out that an earlier literature in sociology specifically sought to measure intergenerational correlations in occupational prestige (e.g., Duncan et al. 1972, Corcoran and Jencks 1979), though that is not what we are trying to accomplish here.

<sup>22</sup> See Mazumder (2015) for further discussion.

(typically craftsmen), 6) blue-collar semi-skilled workers (typically operatives), and 7) unskilled non-farm laborers.<sup>23</sup> Fathers' occupations in 1880 are listed in the first column (i.e., down the rows), and sons' occupations in 1900 are reported across the columns. Each number in the table represents the share of sons with occupation X conditional on having a father with occupation Y; the figures sum to 100 within rows. Reading along the table's diagonals highlights father-son pairs who persisted in the same broad occupation category. Father-son pairs for whom either occupation cannot be determined from the census manuscripts are dropped from this sample and the remainder of the analysis.

The largest occupational group among southern white fathers in 1880 was "farmer owner" (43 percent). We find that 22 percent of farm owners' sons became farm owners themselves by 1900, with an additional 23 percent becoming farming tenants and 21 percent recorded as farm laborers (some of whom may have been on the family farm). 20 percent of white farmers' sons moved into white collar or skilled blue-collar work outside of agriculture. Less than 10 percent became non-farm laborers. The cell showing the strongest father-son persistence for whites is "white collar," where 48 percent of the sons were employed in 1900, though at this time the category was still a relatively small one compared to farmers.

"Farmer" was also the largest occupational category among black fathers in 1880, but these men were modal non-owners. A sizable number of black fathers were farm laborers or non-farm laborers (23 and 22 percent). Following the transition rates highlighted in the Panel B of Table 3A, only 11 percent of the sons of black farm owners were farmers themselves by 1900, whereas 31 percent were farming non-owners and 25 percent worked as farm laborers. For farmer tenant fathers, their sons were roughly equally distributed across the same occupation category, farm laborers, and non-farm laborers (approximately 27-29% in each category).

Four interesting facts stand out from Table 3A. First, the transition matrices for both whites and blacks show a remarkable amount of fluidity between agricultural and non-agricultural work. The net flow was clearly into non-agricultural work, and yet there were many sons of blue-collar workers and even white-collar workers who found themselves working as farmers or farm laborers in 1900. Second, although the sample sizes are not very large, sons of white non-agricultural fathers, with the exception of unskilled laborers, had higher within-occupation-group persistence rates than blacks (e.g., 48 percent persistence among white-collar whites compared to 8 percent for blacks).

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<sup>23</sup> 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 (IPUMS) and the rates of farm ownership reported by Goldenweiser and Truesdell (GT): 49.6 percent of farmers are "tenants" in GT; 50.3 are "not home owners" in IPUMS.

This result might imply that valuable occupational-specific capital (human or physical) was more successfully transferred over generations of skilled whites. Third, a simple counterfactual is reported at the bottom of Table 3A in Panel C. It passes the black sons, given their fathers' occupational distribution, through the transition matrix of white sons and, in comparison with the actual distribution of black sons, shows that far more would have been farm owners, white-collar workers, and skilled blue-collar works if they had attained the same intergenerational mobility as whites; substantially fewer would have been agricultural or non-agricultural laborers. Fourth, imagining the black and white populations cycling through the race-specific transition matrices repeatedly over time yields steady-state distributions in which southern blacks never converge on whites. From this perspective, less than 6 percent of blacks would attain white-collar or skilled blue-collar status compared to 28 percent of whites.

Table 3B reports occupational transitions for the 1910 to 1930 sample. For white men, “farmer-owner” was the single largest occupational group for fathers observed in 1910 (38 percent), but only about 37 percent of their sons remained in farming in any capacity (owner, tenant, or farm laborer) in 1930. This is true whether or not the sample is limited to men age 30+ in 1930 (results not shown). Sizable shares had moved into white-collar work (21 percent) or skilled blue-collar work (13 percent). This contrasts sharply with the 1880 to 1900 transition pattern for the sons of white farmers, 66 percent of whom stayed in agriculture. Again, sons of white professional, clerical, and sales (white-collar) workers were highly likely to attain such work themselves by 1930—48 percent is the highest rate of father-son persistence in the table. White sons whose fathers were farm laborers or unskilled non-farm laborers, generally regarded as the bottom of the occupational or skill distribution, show notable evidence of upward mobility with 15 to 18 percent making it into white-collar occupations.

For black men in 1910, as noted earlier, the initial distribution of fathers across categories differs starkly from that of whites. Whereas white fathers were concentrated in the “farmer-owner” category, the black fathers were concentrated in the “farmer-tenant” category. Relatively few black sons with fathers in the farmer-owner category in 1910 had achieved similar status by 1930 (only 4 percent, compared to 10 percent for whites). There is some evidence of life-cycle progress up the agricultural ladder, as 8 percent of black farmer-owners' sons observed in their 30s had made it to farmer-owner status in 1930 compared to 15 percent for whites (not shown), but most black farmer-owners' sons had simply left agriculture by 1930. Within the large group of tenant-farmer fathers, the rate of sons' persistence was high (32 percent) but an even larger number of sons shifted to unskilled non-agricultural labor (34 percent). Remarkably few black sons whose fathers were in

white-collar work in 1910 managed to attain that occupational status themselves (12 percent), in sharp contrast to the white sons but similar to the pattern observed for blacks in the 1880 to 1900 sample. Few black sons found work in white-collar (3 percent) or skilled blue-collar (5 percent) occupations in 1930 compared to whites (24 and 15 percent respectively).

Overall, one can see relatively large shares of black sons, regardless of where their father started, working in the non-farm unskilled laborer category in 1930. We emphasize that the implications of this pattern for income levels are not straightforward because many of these sons had migrated to the North in the first wave of the Great Migration and likely earned significantly higher incomes than they would have in the South in just about any (attainable) occupational category (Collins and Wanamaker 2014).

Again, it is straightforward to ask, “what would the distribution of black sons look like if they had moved across categories in the same way that white sons with similar fathers did?” The results are in Panel C of Table 3B. Approximately 6 percent of the black sons would be in the farm-owner category (rather than 2), and 19 percent would have been in the white-collar category (rather than 3). Only 15 percent would be non-farm laborers (rather than 37 percent), 9 percent would be farm laborers (rather than 11 percent), and 21 percent would be tenant farmers (rather than 26). It is notable that there is comparatively little difference in the actual and counterfactual farm/non-farm split, but within the non-farm group, there is a very strong divergence in white-collar and skilled work (high in the counterfactual) versus unskilled laborers (high in the actual distribution).

Panel D’s steady state calculations with the 1910-1930 matrix reflect a turn in the course of southern economic development relative to 1880-1900. For whites, the steady state implied by Table 3B entails many fewer workers in agriculture and many more in white-collar, skilled and semi-skilled blue-collar work than the steady state implied by Table 3A (1880-1900 patterns). For blacks, there is also a sharp reduction in steady-state agricultural work according to the 1910-1930 transition matrix relative to the 1880-1900 matrix, but black workers shift primarily into unskilled non-farm work and semi-skilled blue-collar occupations (e.g., operatives, truck drivers). Thus, while there is evidence of structural change underway in comparing the two time periods—especially in the implied long-run movement out of agriculture—it is clear that more than just time (cycling through the 1910-30 matrix) would be necessary for southern blacks to ascend the occupational ladder.

### *Income Decile Transitions*

We can learn more about the implications of intergenerational mobility in this period by shifting to a perspective that emphasizes income, as described earlier and with all the associated caveats. In Tables 4A and 4B we report 10x10 mobility matrices where the cells are defined by deciles within the national income distribution. For southern whites, the bulk of the fathers' sample falls in the fifth decile or below (nationally), which is not surprising given regional differences in wages and occupational structure. For blacks, most fathers were in the first or second decile, and very few were in the fourth decile or above. Again, reading along the table's diagonals shows the rate of persistence from fathers to sons within income deciles; the entries sum to 100 within rows.

Table 4A reports the decile transitions for the 1880 to 1900 pairs of fathers and sons. White sons with fathers in the bottom three deciles of the national income distribution were likely to stay there themselves, and yet a substantial share of sons moved higher in the income distribution. More than one-third of white sons from the bottom decile made it to the American middle class (30<sup>th</sup> to 70<sup>th</sup> percentiles) or higher by 1900.

The story for African Americans is much bleaker. Less than 5 percent of the sons from the lowest decile made it to the middle class or higher. A full 61 percent of black sons whose fathers were in the lowest income decile in 1880 were in the same decile 20 years hence, compared to only 23 percent of white sons from the poorest fathers. Not a single African American in our sample is ranked above the 70<sup>th</sup> percentile nationally. In sum, the table illustrates a remarkable black-white divergence in the adult fortunes of children, even when conditioned on the fathers' economic status.

Table 4B reports results for the 1910 to 1930 sample. Only 22 percent of white sons whose fathers were in the first decile in 1910 remained in that decile themselves in 1930, compared to 62 percent of black sons who started in a similar position. In a sense, poor white sons fared somewhat better between 1910 and 1930 than did the earlier cohort (in Table 4A), where father-son persistence in the bottom decile was stronger. For blacks there was no equivalent change of fortune. Although half of the white sons from the lowest decile of fathers remained below the fourth decile of national distribution in 1930, it again appears that a sizable fraction had moved well into the American "middle class" and beyond. In contrast, very few blacks escaped from the bottom deciles into the middle class—97 percent remained below the third decile, a finding that barely changes when the sample is restricted to black men in their 30s (not shown).<sup>24</sup>

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<sup>24</sup> It is important to note that black fathers *within* the first decile were on average closer to the decile's bottom threshold than white fathers, and in this sense black sons had to move farther than white sons (on average) to



Another notable feature of the transition matrices is that while some white sons with fathers in the third and fourth deciles fell back into the lowest two deciles, such falling back was far more common for black sons with similar starting positions: 23 percent of black sons with fathers in the third decile fell into the first decile compared to only 6 percent of white sons.

Panel C presents a counterfactual similar to that described above, in which the black children are given the same transition rates as white children with fathers in the same income decile. The results lead to dramatically lower counterfactual shares of black sons in the bottom two deciles than actually occurred (approximately 37 percent instead of 95 percent). 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 1930, half of African Americans men had achieved “middle class” status (above 30<sup>th</sup> percentile). For perspective, in the year 2000 census data, ranking white and black men who were not in school, age 25-59, indicates that the median black male ranked at the 30<sup>th</sup> percentile of the national distribution of earned income (calculated with IPUMS sample). Thus, it took 70 additional years for the middle of the black male earnings distribution to reach the point that it would have reached in 1930 had the black sons in our sample transitioned across income categories like the white sons with similar fathers.

Tables 4A and 4B give the shares of men transitioning over particular thresholds of the (constructed) income distribution, but because black and white fathers may have different average ranks even within decile bins, the transition rates across decile thresholds can be somewhat misleading (Mazumder 2011). Tables 5A and 5B present the data differently. They report the share of sons who moved up in the distribution relative to their fathers by a certain amount ( $\tau$ ), corresponding to Mazumder’s (2011) measures of “upward rank mobility.” For instance, the tables report the share of black sons whose rank exceeded their father’s rank by 0, 5, or 10 percentiles, both overall and, separately, conditional on father’s decile.

Between 1880 and 1900 (Table 5A), 52 percent of black sons exceeded their father’s income rank, 38 percent did so by at least 5 percentiles ( $\tau=0.05$ ) and 31 percent by at least 10 percentiles. These figures are smaller than the same for the 1910 to 1930 period, when 70 percent of black sons exceeded their father’s rank, including 52 percent and 21 percent by 5 and 10 percentiles, respectively. In both periods, the overall rates of upward rank mobility for blacks were comparable to those of whites, if not higher, but of course most whites started much higher on the income distribution than blacks, and upward mobility rates are naturally lower as the fathers’ percentile rises.

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cross any given upper threshold. Alternative views that are less dependent on decile or quintile thresholds are offered in Tables 5A and 5B.

*Within* fathers' deciles, there is evidence of stark black-white differences in upward rank mobility. For those from the lowest earning fathers (bottom decile), nearly 90 percent of whites exceeded their father's status in both samples compared to 52 percent (1880-1900) or 70 percent (1910-1930) of blacks. The table reports sizable white advantages within every decile of fathers' income and for every level of  $\tau$ .

Figures 1A and 1B provide additional information on the *range* of the sons' outcomes—specifically showing the interquartile (25-75) range—conditional on race and the father's quintile in 1880 and in 1910, respectively. Clearly, the distribution of outcomes for black sons is both far below the comparable distribution for whites (i.e., comparing sons with fathers in same quintile), as one would expect from the large differences in outcomes discussed in previous tables. For instance, the 75<sup>th</sup> percentile of scores for black sons with fathers in the first quintile just barely meets the 25<sup>th</sup> percentile of scores for white men with first-quintile fathers. Moreover, the 75-25 range of outcomes for blacks is relatively compressed compared to whites reflecting the comparatively narrow scope for their advancement.

The information presented above is novel in the sense that scholars have not previously examined such detailed, representative, intergenerational microdata for this time and place in American 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 opportunity in the early twentieth century (Myrdal 1944). And yet the disjuncture in outcomes for white and black sons from low-status families is striking because it powerfully demonstrates that the slow pace of black 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. In the next section we use information on the social and economic context of the individuals in our sample to examine how these may have affected the opportunity for advancement.

### **3. Correlates of Mobility**

In moving beyond basic tabulations of fathers' and sons' income ranks, a conceptual framework is useful for guiding the discussion and analysis. We rely on the Becker and Tomes (1986) model of intergenerational mobility. In their model, the simplest setting is one in which parents, regardless of their own wealth, can easily borrow to finance optimal expenditures on their children's education or other productivity enhancing investments, passing on debt to the children if necessary. The child's subsequent earnings are a function of his market luck and human capital, where human capital reflects both innate endowments and subsequent investments by parents and

governments. The partial heritability of productive endowments then provides an intergenerational link. Of course, this departs from the reality of capital and labor markets in the early twentieth century South in many ways, but it is a useful starting point because it highlights several potential determinants of children's earnings, including the endogenous response of human capital investment to variation in children's innate talent, market returns to human capital, costs of borrowing, and public expenditures on children's development.

Racial discrimination and capital market imperfections complicate the model but make it more useful for understanding the historical setting. Discrimination may lower market returns to human capital, raise costs of borrowing (if it is possible to borrow at all), and lower public expenditures on children's development, all of which may reduce human capital accumulation. In addition, an assumption that parents must finance investments in children out of their own earnings means that the parents' level of earnings (and generosity toward the child) may affect the level of investment in the child (e.g., because marginal utility of consumption is relatively high among poor parents, the utility from investing a marginal dollar in the child would also have to be relatively high). More concretely, because child labor was useful on southern farms, even the opportunity cost of regularly sending a poor child to school may have been prohibitive (Baker 2014). Thus, in the model, poor children are dealt a doubly bad hand in that their inherited endowment is likely to be lower on average than others, and their parents, however well-meaning, are likely to find it extremely difficult to allocate as many resources to their children's development as better off parents with a similarly talented child. Black children would be further burdened by low-quality school inputs and relatively low market returns to human capital investment.<sup>25</sup>

One prediction of the model is that children of high-earning parents will tend to fare better in labor markets as adults than children of low-earning parents. It is straightforward to see that this is the case in our dataset for 1910-1930, as shown in Figure 1 and Tables 3A/B and 4A/B. In addition, for southern whites in this period, a simple rank-rank regression (son's status regressed on father's) has a large constant term and a positive slope. Following the terminology of Chetty et al. (2014), there is strong evidence of "absolute mobility" for southern white children in the sense that a child with a father at 1<sup>st</sup> percentile of national income distribution in 1910 could expect to rank at the 27th

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<sup>25</sup> Collins and Margo (2006) find positive returns to literacy for southern black men, but the returns are lower than for southern whites. Moreover, while there is ample historical evidence that black families eagerly sought to advance the education of their children through public schools (e.g., Anderson 1988), there is also overwhelming evidence that the quality of blacks schools was low compared to schools for whites (Margo 1990) and that public high schools for blacks were extremely rare. This, in turn, implies limited opportunities for white-collar employment even if serving black clientele in a segregated society.

percentile among his peers 20 years later. The slope is positive and statistically significant (0.29), and the regression clearly indicates that sons of white fathers who ranked higher in the income distribution could expect to fare better than sons from lower ranked fathers. For blacks, there is similar evidence that sons of better-off fathers fared better than others (a slope of 0.20), though the range over which fathers are observed is narrow compared to whites. The constant term, however, is much smaller for blacks than for their white peers (8 versus 27). The constant terms for black fathers and sons between 1880 and 1900 are nearly identical to those for the later period although the slopes were slightly larger (0.33 for whites and 0.37 for blacks). Absolute mobility for whites, then, far exceeded that for blacks in both periods in this study.

A second prediction from the Becker and Tomes framework is that even when parents have similar income levels, children who are exposed to school systems of different quality, face different returns to human capital investments, cannot borrow to finance investment in education or land, or who in essence draw their “market luck” from a severely truncated distribution due to their race will fare relatively poorly on average. This is clearly borne out in comparisons of white and black children whose fathers had similar occupations and income scores as indicated in Tables 3A/3B, 4A/B and 5A/B and in Figure 1.

A third implication of the Becker and Tomes framework is that when factor markets have not equilibrated wages across regions, as seems to have been the case between the South and the rest of the US in the period under study (Wright 1986, Margo 2004), investment in migration may lead to windfall gains for oneself and/or one’s children. We can examine this in the tables of correlates described below.<sup>26</sup>

While it is difficult, and beyond the scope of this draft, to parse out the causal contributions of various factors to the black-white differences in sons’ rank conditional on starting position, Tables 6A and 6B report simple correlates of the probability of escaping the bottom decile. The first column of Table 6A contains the probability that a son will be observed in 1900 with an income above the bottom decile, conditional on having a father in 1880 whose income was within that decile. Sample sizes are in parentheses. For black sons, the probability of escape is 38 percent and for white sons it is 79 percent. Corresponding information in Table 6B for the 1910-1930 sample indicates an “escape” probability of 39 percent for black sons and 78 percent for white. In the earlier time period,

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<sup>26</sup> Collins and Wanamaker (2014) estimate the income gains for African American migrants to the North during the Great Migration. This paper includes within-state, within-South, and inter-regional migration for whites and blacks both before and after the start of the Great Migration. This paper also focuses on intergenerational gains, which is not studied in Collins and Wanamaker (2014).

relatively few fathers (71) rank in the bottom income decile; we are working to expand our sample to generate more robust predictions.

The remaining columns in both tables contain coefficients from simple regressions where the dependent variable is a binary indicator for escaping the bottom decile and each of several observable characteristics enters as the independent variable along with fixed effects for sons' ages. The coefficient for each independent variable is measured in isolation, with the exception of the migration variables, which are estimated jointly due to the differing availabilities of these variables by age and the high collinearity among them. Future versions of the paper will investigate options for joint estimation.

Beginning with Column 1 of Table 6A, for black sons observed in 1900 we find that farm residence in 1880 is associated with a 5 percent reduction in the probability of escape, conditional on age. Because the sample of poor whites is small and a large fraction is upwardly mobile, estimates with the current sample are imprecise, and we emphasize the results for blacks. In column 2, literacy is positively associated with black children's upward mobility. Parental literacy (Columns 3 and 4) is also positively associated with upward mobility for blacks (and whites, too). For black sons, residence in an urban location in 1880 (Column 5) corresponds to a 24 percent higher probability of upward mobility. Of course, like each variable in Table 6A, urban residence itself is likely to be a function of other unobserved factors which may have influenced sons' upward mobility. In Column 6, with the sample restricted to those age 6 to 15 in 1880, we find that school attendance corresponds to a substantially higher probability of upward mobility for black sons (7 percent).

For the 1910 to 1930 period (Table 6B), the overall probability of exiting the bottom decile is higher for both whites and blacks, but many of the correlates from the earlier period are still relevant. Farm residence is again associated with less upward mobility for black sons, and in these decades also appears to have impeded upward mobility for white sons. Parental literacy continues to predict upward mobility for white sons in this later period, but interestingly we find no correlation for black sons. Urban residence, although rare among children born to bottom-decile fathers, is again highly predictive of eventual escape from the bottom decile, especially for black sons.

Two additional variables are available in the latter sample. The 1910 census inquires about home ownership (Column 2), a factor we find to be associated with a 9 percent increase in black upward mobility rates and a 10 percent increase in the same for white sons. We also merged in data from Carruthers and Wanamaker (2015) on metrics of school resources availability in each county. These data are available by race for each year between 1910 and 1920, and we assumed that school

quality at age 10 was representative of an individual's schooling career.<sup>27</sup> To facilitate comparability, we utilized a Z-score index of school resources, and coefficients in Column 8 can be interpreted as the increase in upward mobility corresponding to a one standard deviation increase in school resources at age 10. For black sons, the increase in upward mobility is 5 percent, although statistically insignificant, while white mobility is negatively associated (9 percent) with the level of school resources. This result is consistent with other work showing a higher return to investments in black schools than white.<sup>28</sup>

The men in our sample exhibited a wide variety of migration choices, and we do not attempt to model those choices here. Instead, for the sake of description, we simply classify the sons as exhibiting no migration at all, intra-state (out-of-county) migration, intra-region (out-of-state) migration, and inter-regional (out-of-south) migration. The last three columns of Tables 6A and 6B contain the coefficients on the latter three of these categories (no migration is the missing category) in a regression for the probability of upward mobility of sons of bottom-decile fathers (Columns 7-9 in Table 6A and 9-11 in Table 6B). In both periods, short-distance, within-state migration is associated with only small gains in upward mobility probabilities for white sons but more substantial gains for black sons relative to non-migrants. Longer-distance migration, on the other hand, although more rare, is highly predictive of escape from the bottom income decile. Black out-of-state and out-of-region migrants by 1900 had a 33 and 74 percent higher probability of escaping the bottom decile than non-migrants. For whites, the increases were more modest at 29 and 31 percent, respectively. For black sons in 1930, long-distance migration is still fruitful for escaping the bottom of the distribution, bringing an increase in upward mobility probabilities of either 20 percent (for within-State migrants), 30 percent (for within-South migrants) or 50 percent (for interregional migrants) relative to individuals who did not move. Whites, on the other hand, received less benefit from migration, and the increases in upward mobility range between 16 and 33 percent for each of the migration categories. We note that our income assignment methods are partially based on state, division and region of residence, which implies that the gains to long-distance migrants may come from both changes in job type and regional differences in wages, but estimated returns for within-state migrants are driven solely by changes in occupation, industry, or tenure status (for farmers).

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<sup>27</sup> For sons older than age 10 in 1910, we assumed the quality in 1910 was representative. The inherent assumption is of no migration during schooling years.

<sup>28</sup> Carruthers and Wanamaker (2013)

#### 4. Conclusion

The preliminary analyses in this paper can be extended and refined in many ways, several of which were highlighted in the course of discussion. Nonetheless, some first-order facts emerge from the new datasets, and these are unlikely to change. First and foremost, whether looking at occupational transitions directly or at income-decile transitions, southern white children were not just less poor than southern black children on average and thereby more likely to achieve higher economic status in adulthood, but also the poorest white children enjoyed significantly better occupational and income transitions than any group of black children. The magnitude of the differences in black and white sons' status is striking even after conditioning on their fathers' status. We caution that this does not imply that southern blacks made no gains in average income, wealth, or material well-being over the 50 years we study here. In fact, the record of progress is in some ways remarkable, such as the dramatic rise in black literacy and impressive rise in property ownership (Higgs 1982, Margo 1984). Rather, the intergenerational evidence simply illustrates that relative to southern whites and relative to the rest of the U.S. population, African Americans struggled mightily to escape the bottom of the American income distribution; those who did escape struggled to pass on their relative success to their children let alone to build upon it.

The relative success of poor southern white children in climbing into the middle class or higher strongly suggests that it was not only poverty per se, or even something particular to poverty in the South in this period, that hindered blacks' relative progress. Indeed, simple regressions that control for virtually all things that can be observed about poor families and their localities in 1880 or 1910 cannot erase the large racial differences in children's probability of upward mobility even when they do point to variables (e.g., school quality or the prevalence of cotton agriculture) that probably intermediated the black-white differences in mobility. It is hardly news that race mattered in this setting, at the height of de facto and de jure discrimination against African Americans (post slavery). Yet the historical implications of counterfactuals in which just one generation of early twentieth-century black children is allowed to experience the mobility patterns of white children—leading to relative income circa 1930 that is comparable to relative income in 2000—are difficult but important to grasp. Such a counterfactual is qualified by the fact that even if one generation of black children had enjoyed such (relative) success, switching back to the black-specific transition matrix would quickly un-do the relative gains. Sustained gains in black relative status in the twentieth century would require a permanent improvement in prospects for upward mobility (and for avoiding downward mobility), not just a one-generation windfall.

A natural extension of this work would use modern datasets to bridge the mid to late twentieth century and to see whether and when black-white mobility patterns become more similar. Datasets such as the NLS and OCG are not exactly comparable to those built here from census data, but they could help complete the portrait of racial differences in economic mobility by uncovering and comparing mobility patterns before and after the Civil Rights Revolution.



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## Data Appendix

### A. *Linked Sample Construction*

The two linked samples in this paper were constructed from the IPUMS microsample in 1880 or 1900 of southern-residing males between the ages of 0 and 17 living in the same household as their father. We then searched for each individual in the 100% count of the census returns twenty years hence as provided by Ancestry.com.<sup>29</sup> Matches were made based on age (within two years), first and last name (including exact matches of the first three letters of last names and exact and SOUNDEX matches of last name), exact state of birth and race.

In the matching year (1900 or 1930), the Ancestry.com data contain only a portion of the variables available on the enumeration form. We returned to the original enumeration schedules to transcribe additional information. For 1900, we transcribed occupation, unemployment months, home ownership status, and mortgage status for home owners. For 1930, we transcribed home ownership status, monthly rent or home value, farm residence, marital status, age at first marriage, school attendance, literacy, occupation, and industry. We also transcribed the four-digit occupation code from the 1930 census which is unique to that census year. We use only a subset of these variables in the current draft of the paper.

For each individual in the linked sample, we made occupation and industry assignments in the matching year (1900 or 1930) to approximate the same assignment made by IPUMS in the public use samples to which we compare each cohort of sons. 1950-based occupation and industry codes are the consistent standard across IPUMS samples. Still, there is no one-to-one correspondence between occupation, industry, and/or occupation codes and the 1950-based codes.

For 1930, we used all three variables (occupation, industry and 4-digit occupation codes), to assign standardized 1950-based occupation codes. For most individuals in our data, we tabulated the 1950-based codes in the 1930 IPUMS sample by occupation and industry and assigned the mode value. We then repeated that exercise by assigning most individuals in our data the modal 1950-based industry code for the industry reported in the 1930 manuscripts. We then checked these 1930 assignments by hand, and for those where the initial assignment was ambiguous, we checked the 4-digit occupation code using a website constructed by Morse, Weintraub, and Kehs (<http://stevemorse.org/census/ocodes.htm>; accessed 2012) which provides details of the 4-digit code assignment. We then checked these details against the description of the 1950-based occupation and industry codes to refine assignments. Finally, we made assignments based simply on the occupation or industry reported in the manuscript and a reading of the 1950-based occupation or industry codes to resolve remaining ambiguities.

For 1900, the process was somewhat different as individuals reported occupations but no industry. In many cases, census enumerators recorded extended occupation titles which allowed for the identification of an industry. We mapped occupation titles from the 1900 matched sample to the same titles in the 1900 IPUMS sample and assigned each individual the modal 1950-based

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<sup>29</sup> There are no known limitations to the Ancestry data outside of omissions in the original enumeration process.

occupation or industry for the same occupation title in the 1900 public use sample. Again, we checked these assignments by hand and corrected assignments that were incorrect based on our reading of the 1950-based descriptions. For industry assignments in 1900, there were several occupation titles with ambiguous industry implications, for example “laborer” or “clerk”. In those cases, we could not assign an industry and, instead, assigned an industry-based wage (see the next section) equal to the average industry-based wage for the IPUMS 1900 reference sample in the same state who reported the same occupation in 1900.

### *B. Incorporating data from the 1880 Census of Agriculture*

It is useful to differentiate farmers of different status. From the 1900, 1910, and 1930 *Census of Population* records, it is straightforward to use home ownership as a proxy for land ownership among farmers, and this is our primary means for distinguishing owner-operators from tenants.<sup>30</sup> Unfortunately, similar information is not available in the 1880 *Census of Population*. Therefore, we have taken an extra step to link farmers to the 1880 *Census of Agriculture*.<sup>31</sup>

For some states and counties, indices of the 1880 Ag Census are available on Ancestry.com. For records that were indexed/searchable, we first searched the index based on the name of the father in the 1880 population records and his exact geographic location, including township. When this was not fruitful, we searched in a broader geographic region (still within the same county). For those who still were not located, we returned to the population schedules, took note of closest farming neighbors, and attempted to find those neighbors in the Ag Census. In many cases, finding the neighbors then led us to the individual of interest. Neighbors also allowed us to identify specific individuals when there were multiple possible matches within a county.

For the remaining states and counties, we repeated this process by hand using microfilmed images of the Ag Census manuscripts. To do so, we searched for individuals within counties of residence in the population census by sifting through the full records in each county. Again, the location of neighbors in the population census allowed us to identify specific individuals when multiple matches were found.

We located 80.5 percent of the white farmers from the *Census of Population* in the *Census of Agriculture* manuscripts and 76.0 percent of the black farmers. Four potential explanations for missing matches are: 1) we simply missed in our search but the person is there somewhere; 2) the census enumerator did not collect information for the farmer either because his farm was so marginal or because the self-reported “farmer” did not work his own farm (e.g., he may have worked with a relative; only one farmer is listed per farm); 3) some men may have been recorded as “farmer” in the

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<sup>30</sup> Further distinctions among types of farmers by tenure type or farm production would be desirable but are not possible for 1900 or 1910 data because the manuscripts from the *Census of Agriculture* were not saved or microfilmed.

<sup>31</sup> To many readers, linking the 1880 population records to the agricultural records will be reminiscent of Ransom and Sutch’s pioneering work (1977). Two key distinctions are that we start with population records and then search for self-reported farmers in the agricultural records, whereas Ransom and Sutch worked in the other direction; second, Ransom and Sutch focused on a set of specific southern counties whereas we started with our linked sample of fathers and sons who are drawn from all over the South. Richard Sutch provided helpful input at an early stage of this project.

population records when in fact they floated between occupations and did not currently operate a farm (e.g., between sharecropping and wage labor); 4) some of the original manuscripts might be missing from the microfilmed records. We dropped individuals from our sample if we were reasonably certain that they were located on a missing page, but there is no way of knowing for sure.

Farmers for whom we did not find a manuscript in the 1880 *Census of Agriculture* tended to have less literate sons, to have younger sons, and to have sons who were less likely to be home owners in 1900. In other words, these farmers are not missing at random from our data, and we do not treat them as such. Instead, we assume that missing farmers were non owner-operators.

### *C. Assignment of Income Scores*

The simplest and most commonly referenced occupational-status variable, which is readily provided in the IPUMS data, is *occscore*, which is the median level of income received in each detailed (three-digit) occupation of the 1950 census. The variable does *not* vary by race or region (or gender), and so it generally overstates the earnings of the southern men in the linked samples relative to non-southern men, especially the earnings of southern black men. Moreover, because the underlying data are from 1950, they reflect the mid-twentieth century occupational income distribution, which could be a misleading characterization of the distribution in the late-nineteenth and early-twentieth centuries (e.g., see Goldin and Margo 1992). Our focus on ranks rather than levels of earnings may mitigate this concern to some extent (e.g., compression across occupations will not affect rank ordering), but still there is much room for improvement.

Our first approach to income assignment is similar in spirit to *occscore*, but it draws on the relatively large public use microdata sample (5%) that is available for 1960 to calculate men's average earnings by occupation/state/race cells.<sup>32</sup> This provides much more flexibility than *occscore* by reflecting region-by-race income variation within detailed occupations. But, like *occscore*, it relies on post-World War II income data to characterize earlier periods. We make an important set of adjustments to the basic income-by-occupation data from 1960, which foreshadows a challenge for any such study of mobility: Farmers are a large and heterogeneous group in the years covered by our data, but they share a single occupation code. Many would be sharecroppers or tenants as opposed to owner-operators, and there is reason to expect their average income to differ (e.g., Blalock 1937 cited in Alston and Ferrie 2005, p. 1067). Unfortunately, the Census of Population provides only limited additional information to help discern among types of farmers, but we can use information on whether the man lived in owner-occupied housing (as close as we can get to knowing whether they

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<sup>32</sup> The 1950 census ascertained income only for the sample-line persons, which makes it difficult to calculate average incomes within detailed occupation/race/region/gender cells. The 1940 census asked only about wage earnings, leaving the earnings of the self-employed (including most farmers) undocumented. We assign income by occupation, state and race if there are 50 or more observations in the 1960 data with which to calculate averages (92% of sons and 94% of fathers in the 1910/1930 sample and 93% of sons and 96% of fathers in the 1880/1900 sample). In the absence of 50 observations, we assign income by occupation and race across a division, again provided there are 50 or more observations in the 1960 data and then by occupation, race and region with the same restriction. In the absence of that, we assign wages by occupation and race across all regions. We do not use this sample size restriction for farmers and farm laborers, where small sample sizes outside of the South are partially a reflection of low value-added in agriculture in particular regions (e.g., New England).

owned land) to further specify the income assignment.<sup>33</sup> In addition, we have separately estimated average income for farmers and farm laborers according to states within the South and, of course, race. In essence, this approach builds in extra flexibility for the large groups of farmers and laborers. For farm laborers, we add 20 percent to the census-based estimates to reflect the value of unmeasured perquisites; for farmers, we add 40 percent.<sup>34</sup>

For farming fathers in the 1880, we assign incomes according to tenure status in the *Census of Agriculture* as described in the previous section.

The second approach draws on the 1940 census microdata. This is preferable to 1960 in terms of its timing (albeit not ideal) and size (100% sample), but the 1940 income data require special care because they pertain solely to wage and salary income. To account for this omission, we assigned self-employed men *who were not farmers* in 1940 an income score equal to the product of the occupation/region/race cell's average income for wage-and-salary workers and the within-occupation ratio of average income of self-employed men relative to others in the 1960 micro data.<sup>35</sup> In other words, we use information from the 1960 sample (which includes both self-employed and wage-and-salary workers) to scale the income information available in the 1940 sample, where we observe income only for wage-and-salary workers. For farmers, an adjustment like this cannot be based on within-occupation data from 1940 and 1960 because nearly all farmers were self-employed (i.e., we cannot compare self-employed and other farmers). Instead, we assigned farmers in 1940 the product of farm laborer earnings in 1940 (by race and state) and the ratio of farmers' earnings to farm laborers' earnings in 1960, separately by division and home ownership status. Again, we add 20 percent to farm laborer and 40 percent to farmer incomes.

The third approach combines industry-level earnings estimates for 1928 from Leberbott (1964) with within-industry earnings ratios, separately by race and region, from the 1940 census microdata (Ruggles et al. 2010). Leberbott provides annual earnings estimates for full-time workers by industry at the national level.<sup>36</sup> We use 1928 income estimates to avoid the Great Depression's industry-specific wage impact. For each race-region-industry group, we scale Leberbott's national industry-level earnings by the ratio of earnings for male workers in that group relative to all full-time workers in that industry in the 1940 census microdata. Leberbott's earnings figures for agriculture pertain to farm laborers, not farmers, and so we returned to his original data source (USDA 1957) for

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<sup>33</sup> This helps distinguish farm owners from non-owners, but it cannot distinguish between sharecroppers and cash rent tenants (or other varieties). 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. In 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" in GT; 50.3 are "not home owners" in IPUMS.

<sup>34</sup> The 1960 Census of Population does not attempt to value in-kind income for farm laborers or farmers. Currently, our ad hoc adjustment reflects the ratio of the value of total income (including perquisites) relative to cash wages for farm laborers in 1956 according to USDA (1957, volume 3). For farmers, we calculated the ratio of realized net income (including non-money income) to net revenue (receipts minus expenses) is higher.

<sup>35</sup> For occupation cells with fewer than 20 observations of either wage or self-employed workers, we assigned the global average ratio from 1960 across all observations.

<sup>36</sup> An industry average for forestry and fishing is unavailable in the Leberbott data. We use a product of the agriculture industry average and the ratio of agriculture industry earnings to forestry and fishing earnings (for all full time workers) in the 1940 Census as the industry average for forestry and fishing.



separate estimates of net earnings for farm laborers and farmers, including the value of non-money income.<sup>37</sup> We then scale the national averages, again, by earnings ratios for male farm laborers (farmers) from the 1940 (1960) census microdata, by race and census division, relative to all full-time workers in the industry. For farmers, the ratio is additionally adjusted according to home ownership status.

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<sup>37</sup> The “agriculture, forest, and fishing” category is broader than farming per se, though farm work is by far the dominant activity within the category. We assign all skilled workers in these industries the same income score as farmers (by race and region) and all unskilled workers the same score as farm laborers.

**Table 1A: Comparison of Linked and Full Sample Characteristics, Southern Males 1880**

	Black Males			White Males		
	Matched Sample	Full IPUMS Sample	<i>P-value of difference</i>	Matched Sample	Full IPUMS Sample	<i>P-value of difference</i>
<i>Panel A: Distribution of state of residence</i>						
Alabama	0.10	0.10	0.54	0.07	0.07	0.29
Arkansas	0.03	0.04	0.22	0.05	0.06	0.07
Florida	0.02	0.02	0.31	0.02	0.01	0.16
Georgia	0.14	0.13	0.86	0.08	0.09	0.40
Kentucky	0.04	0.04	0.45	0.14	0.14	0.60
Louisiana	0.08	0.08	0.69	0.05	0.04	0.32
Mississippi	0.11	0.11	0.60	0.05	0.05	0.57
North Carolina	0.12	0.11	0.08	0.09	0.09	0.90
South Carolina	0.11	0.11	0.57	0.05	0.04	0.14
Tennessee	0.06	0.06	0.72	0.11	0.12	0.63
Texas	0.08	0.07	0.37	0.12	0.13	0.09
Virginia	0.10	0.11	0.05	0.09	0.09	0.61
West Virginia	0.01	0.00	0.70	0.08	0.07	0.00
<i>Panel B: Personal characteristics</i>						
Attending school	0.24	0.24	0.77	0.49	0.47	0.20
Literate (age 10-20)	0.27	0.29	0.51	0.65	0.67	0.44
Father is farmer	0.50	0.49	0.49	0.71	0.70	0.31
Father's income rank	6.90	7.39	0.00	34.2	37.3	0.00
Urban residence	0.05	0.06	0.03	0.08	0.07	0.40
1880 city population (00's)†	320.3	445.2	0.05	690.2	609.3	0.20
<i>Panel C: Age Distribution</i>						
Mean Age	6.9	7.1	0.21	7.1	7.1	0.73
Std. Dev.	0.10	0.04	0.14	0.11	0.03	0.62

**Notes and sources:** †City population is conditional on urban residence. The linked sample is created by taking the 1880 IPUMS sample of black men, age 0-20, who reside in the South in the same household as their father and searching for these men in the 1900 census manuscripts. The text contains more details on sample construction. The IPUMS data are from Ruggles et al. (2010). A variance-ratio test is used to compare sample standard deviations. All others comparison of means are done with standard t-tests. Sample size for white men is 1,959. Sample size for black men is 2,314.

**Table 1B: Comparison of Linked and Full Sample Characteristics, Southern Males 1910**

	White Males			Black Males		
	Matched Sample	Full IPUMS Sample	<i>P-value of difference</i>	Matched Sample	Full IPUMS Sample	<i>P-value of difference</i>
<i>Panel A: Distribution of state of residence</i>						
Alabama	0.07	0.07	0.93	0.10	0.10	0.31
Arkansas	0.07	0.06	0.21	0.05	0.04	0.75
Florida	0.21	0.22	0.67	0.03	0.03	0.85
Georgia	0.08	0.08	0.81	0.14	0.15	0.38
Kentucky	0.10	0.10	0.81	0.03	0.02	0.18
Louisiana	0.05	0.05	0.01	0.08	0.08	0.97
Mississippi	0.04	0.04	0.75	0.14	0.12	0.07
North Carolina	0.08	0.08	0.66	0.10	0.09	0.06
Oklahoma	0.08	0.08	0.26	0.01	0.02	0.08
South Carolina	0.03	0.04	0.07	0.12	0.11	0.35
Tennessee	0.09	0.09	0.32	0.05	0.05	0.70
Texas	0.16	0.17	0.21	0.08	0.09	0.56
Virginia	0.07	0.07	0.54	0.07	0.08	0.07
West Virginia	0.07	0.06	0.02	0.00	0.01	0.19
<i>Panel B: Personal characteristics</i>						
Attending school (6-15)	0.83	0.82	0.08	0.63	0.63	1.00
In owner-occupied housing	0.54	0.51	0.00	0.23	0.25	0.01
Literate (age 10-20)	0.92	0.90	0.00	0.60	0.62	0.29
Father is farmer	0.61	0.58	0.00	0.63	0.62	0.69
Father's income rank	6.40	8.25	0.00	40.0	38.7	0.00
Urban residence	0.15	0.16	0.18	0.12	0.13	0.38
1910 city population (00's)†	603.6	602.3	0.96	633.4	568.0	0.23
<i>Panel C: Age Distribution</i>						
Mean Age	8.2	7.7	0.00	8.0	7.8	0.04
Std. Dev.	0.05	0.03	0.01	0.10	0.04	0.44

Notes and sources: †City population is conditional on urban residence. The linked sample is created by taking the 1910 IPUMS sample of white and black men, age 0-17, who reside in the South in the same household as their father and searching for these men in the 1930 census manuscripts. The text contains more details on sample construction. The IPUMS data are from Ruggles et al. (2010) with the same restrictions. A variance-ratio test is used to compare sample standard deviations. All others comparison of means are done with standard t-tests. Sample size for white men is 10,645. Sample size for black men is 2,289.

**Table 2A: Earnings Rank Relative to National Distribution of Southern Fathers by Occupation Category (1880)**

	White		Black	
	Average rank	Share in 1880	Average rank	Share in 1880
Farmer, owns	33.20	43.30	6.11	9.72
Farmer, does not own	20.12	26.36	3.90	39.07
Farm laborer	7.03	4.36	2.67	23.25
White collar	82.09	8.44	25.71	1.08
Blue collar, skilled	47.66	8.93	16.54	3.00
Blue collar, semi skilled	46.74	3.10	17.80	2.20
Blue collar, laborer	29.55	5.50	13.83	21.68
All	34.25	100.00	6.90	100.00
N	1,836		2,232	

**Table 2B: Earnings Rank Relative to National Distribution of Southern Fathers by Occupation Category (1910)**

	White		Black	
	Average rank	Share in 1910	Average rank	Share in 1910
Farmer, owns	36.59	37.53	4.29	13.13
Farmer, does not own	28.63	23.01	2.50	49.43
Farm laborer	6.02	4.19	1.49	12.33
White collar	76.30	13.68	27.04	1.81
Blue collar, skilled	51.92	9.77	22.47	2.38
Blue collar, semi skilled	41.00	5.83	22.75	5.15
Blue collar, laborer	25.79	5.98	14.87	15.77
All	40.01	100.00	6.39	100.00
N	10,451		2,239	

Notes and sources: See text for sources and methodology. Seven fathers' occupation categories are generated by authors from groups of 3-digit occupation codes corresponding to IPUMS *occ1950* category.

**Table 3A: Father-Son Transition Matrix, by Occupation and Race, 1880-1900**

	Farmer, owner	Farmer, tenant	Farm laborer	White collar	Blue collar, skilled	Blue collar, semi sk	Blue collar, laborer	<i>N</i>	
Panel A: White Sons in 1900									
White Fathers in 1880	Farmer, owner	21.57	23.00	20.79	13.90	6.55	5.53	8.64	747
	Farmer, tenant	15.56	27.45	24.74	9.24	7.57	4.77	10.68	447
	Farm laborer	11.32	27.60	28.02	2.28	6.71	6.53	17.54	70
	White collar	10.46	7.37	8.38	48.36	7.52	9.01	8.91	139
	Blue collar, skilled	10.96	8.19	14.70	18.11	21.19	14.43	12.42	152
	Blue collar, semi skilled	6.61	9.70	6.96	22.70	16.61	18.62	18.81	53
	Blue collar, laborer	9.82	14.28	18.93	12.44	8.45	7.92	28.16	94
	<b>Combined</b>	<b>16.61</b>	<b>20.88</b>	<b>20.05</b>	<b>15.56</b>	<b>8.61</b>	<b>6.98</b>	<b>11.30</b>	<b>1,702</b>
Panel B: Black Sons in 1900									
Black Fathers in 1880	Farmer, owner	11.33	30.78	24.86	3.89	0.49	8.03	20.61	205
	Farmer, tenant	3.22	29.33	29.78	2.12	2.44	6.49	26.63	829
	Farm laborer	1.83	26.21	29.53	2.76	2.30	6.39	30.97	497
	White collar	0.00	32.83	20.25	8.49	0.00	17.03	21.40	22
	Blue collar, skilled	6.28	17.23	23.41	1.70	10.00	4.77	36.62	63
	Blue collar, semi skilled	2.14	8.88	24.13	2.29	4.03	14.30	44.23	47
	Blue collar, laborer	3.57	17.04	27.46	3.61	2.72	11.92	33.68	465
	<b>Combined</b>	<b>3.77</b>	<b>25.26</b>	<b>28.33</b>	<b>2.83</b>	<b>2.51</b>	<b>8.05</b>	<b>29.25</b>	<b>2,128</b>
Panel C: Counterfactual Distribution of Black Sons under White Transition Probabilities									
Combined	13.49	22.99	22.99	9.72	8.06	6.58	16.17		
Panel D: Implied Steady State from Race-Specific Transition Probabilities									
White Sons	12.58	18.05	18.57	18.04	9.47	8.48	14.79		
Black Sons	3.07	22.53	27.85	3.03	2.69	9.22	31.62		

Notes: Fathers' occupations are listed in rows; sons' are listed in columns. Each entry is the share of sons in a given occupation in 1900 conditional on their fathers being a given occupation in 1880; percentages sum to 100 within rows. Distributions incorporate IPUMS analytic weights.

**Table 3B: Father-Son Transition Matrix, by Occupation and Race, 1910-1930**

	Farmer, owner	Farmer, tenant	Farm laborer	White collar	Blue collar, skilled	Blue collar, semi-sk	Blue collar, laborer	<i>N</i>	
Panel A: White Sons in 1930									
White Fathers in 1910	Farmer, owner	10.35	20.30	6.43	21.02	13.02	15.75	13.12	3,874
	Farmer, tenant	5.45	24.96	9.72	17.62	12.76	15.79	13.69	2,367
	Farm laborer	7.19	20.89	10.21	17.86	12.75	16.24	14.85	431
	White collar	3.26	8.25	4.27	48.15	16.44	11.59	8.04	1,386
	Blue collar, skilled	3.69	7.97	4.78	28.81	23.33	19.25	12.16	1,004
	Blue collar, semi-sk	2.01	8.90	5.87	23.31	16.78	27.19	15.94	597
	Blue collar, laborer	3.10	13.51	8.64	14.98	15.95	23.77	20.05	614
	<b>Combined</b>	<b>6.57</b>	<b>17.51</b>	<b>7.00</b>	<b>24.29</b>	<b>14.81</b>	<b>15.71</b>	<b>13.12</b>	<b>10,273</b>
Panel B: Black Sons in 1930									
Black Fathers in 1910	Farmer, owner	4.29	23.84	8.32	4.41	5.28	15.11	38.75	290
	Farmer, tenant	1.49	32.16	11.13	2.72	4.66	13.46	34.38	1,082
	Farm laborer	1.71	20.50	14.31	4.12	4.24	16.49	38.63	268
	White collar	0.00	4.83	5.70	12.26	15.72	33.21	28.28	39
	Blue collar, skilled	0.00	17.09	9.26	9.73	7.83	18.62	37.47	52
	Blue collar, semi-sk	1.09	12.00	11.66	1.43	5.94	26.39	41.49	110
	Blue collar, laborer	1.69	17.82	9.90	2.98	5.44	17.06	45.11	341
	<b>Combined</b>	<b>1.84</b>	<b>25.73</b>	<b>10.86</b>	<b>3.41</b>	<b>5.12</b>	<b>15.65</b>	<b>37.39</b>	<b>2,182</b>
Panel C: Counterfactual Distribution of Black Sons under White Transition Probabilities									
Combined	5.71	20.69	8.80	18.73	13.77	17.60	14.69		
Panel D: Implied Steady State from Race-Specific Transition Probabilities									
White Sons	3.75	12.34	6.38	29.29	16.99	18.26	12.99		
Black Sons	1.67	19.53	10.77	3.48	5.63	18.61	40.32		

Notes: See notes to Table 3A.

**Table 4A: Father-Son Transition Matrix (deciles), 1880-1900**

Panel A: White Sons in 1900

	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	<i>N</i>
White Fathers in 1880											
0-10	23.42	16.38	17.64	13.69	10.78	9.15	4.08	2.48	2.38	0.00	71
10-20	20.18	15.82	23.70	13.52	6.85	6.52	4.61	3.12	5.02	0.66	439
20-30	21.33	13.40	18.52	19.17	5.60	5.39	4.43	4.48	6.40	1.27	509
30-40	18.97	7.30	12.57	23.11	13.06	7.98	4.54	5.82	5.58	1.07	167
40-50	9.21	5.19	10.31	23.54	20.06	10.18	10.22	4.34	6.94	0.00	97
50-60	19.69	9.40	2.57	15.65	5.79	24.16	9.72	5.66	5.56	1.80	147
60-70	10.67	0.00	6.48	6.21	0.00	33.75	30.90	3.85	8.15	0.00	27
70-80	14.96	1.95	1.31	10.92	7.55	19.41	24.50	10.68	8.73	0.00	142
80-90	9.60	4.85	5.40	12.88	5.19	7.62	14.26	12.66	26.44	1.11	95
90-100	0.00	0.00	11.24	23.09	0.00	40.91	0.00	24.76	0.00	0.00	8
<b>All</b>	<b>18.62</b>	<b>11.03</b>	<b>15.00</b>	<b>16.58</b>	<b>7.73</b>	<b>9.92</b>	<b>7.89</b>	<b>5.33</b>	<b>7.03</b>	<b>0.87</b>	<b>1,702</b>

Panel B: Black Sons in 1900

Black Fathers in 1880											
0-10	61.68	26.80	8.34	2.48	0.34	0.28	0.08	0.00	0.00	0.00	1,601
10-20	43.88	35.82	12.82	5.31	1.45	0.51	0.22	0.00	0.00	0.00	482
20-30	16.78	59.84	19.57	3.81	0.00	0.00	0.00	0.00	0.00	0.00	38
30-40	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5
40-50	---	---	---	---	---	---	---	---	---	---	0
50-60	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2
<b>All</b>	<b>57.91</b>	<b>27.17</b>	<b>7.25</b>	<b>6.40</b>	<b>0.84</b>	<b>0.24</b>	<b>0.18</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>2,128</b>

Panel C: Counterfactual Distribution of Black Sons Under White Transition Probabilities

All	22.63	16.18	19.01	13.74	9.81	8.48	4.22	2.67	3.07	0.18
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Panel D: Implied Steady State from Race-Specific Transition Probabilities

White	17.57	9.28	11.93	16.06	8.57	13.51	9.99	5.35	7.03	0.71
Black	50.96	30.88	6.91	9.61	1.11	0.23	0.30	0.00	0.00	0.00

Notes: Fathers' decile ranks are listed in rows; sons' are listed in columns. Each entry is the share of sons in a given decile in 1900 conditional on their fathers being a given occupation in 1880; percentages sum to 100 within rows. Distributions incorporate IPUMS analytic weights. Steady state calculations assume black father-son transition probabilities for deciles 5 and 7 are the same as those for deciles 4 and 6, respectively.

**Table 4B: Father-Son Transition Matrix (deciles) by Race, 1910-1930**

Panel A: White Sons in 1930

	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	<i>N</i>	
White Fathers in 1910	0-10	21.98	14.98	15.12	16.55	9.40	8.13	5.73	6.05	1.91	0.16	628
	10-20	15.04	26.36	19.36	10.45	8.29	8.50	4.58	5.46	1.41	0.54	1,483
	20-30	6.91	22.79	23.80	12.71	9.48	8.79	5.94	7.50	1.66	0.41	2,173
	30-40	9.17	13.66	22.35	15.27	12.93	9.16	6.67	6.68	3.14	0.97	1,244
	40-50	8.29	8.95	12.10	34.86	11.90	7.14	7.72	6.19	2.38	0.48	1,050
	50-60	7.15	3.53	12.81	10.68	30.35	13.56	10.86	8.64	2.04	0.37	1,079
	60-70	4.81	3.42	12.55	10.03	26.49	17.19	10.92	10.35	3.59	0.65	1,229
	70-80	5.23	8.79	10.63	10.79	18.18	13.40	11.10	16.17	4.63	1.08	651
	80-90	4.13	6.37	11.45	12.57	13.52	10.69	14.44	17.64	7.70	1.50	534
	90-100	4.38	7.01	6.14	8.78	17.56	15.77	13.16	14.92	6.14	6.13	115
<b>All</b>	<b>8.93</b>	<b>13.98</b>	<b>17.03</b>	<b>14.51</b>	<b>15.09</b>	<b>10.57</b>	<b>7.98</b>	<b>8.51</b>	<b>2.72</b>	<b>0.68</b>	<b>10,186</b>	

Panel B: Black Sons in 1930

Black Fathers in 1910	0-10	61.88	32.74	4.02	0.97	0.11	0.23	0.05	0.00	0.00	0.00	1,719
	10-20	54.73	41.12	2.54	0.80	0.00	0.46	0.34	0.00	0.00	0.00	254
	20-30	23.46	61.39	11.09	2.86	1.21	0.00	0.00	0.00	0.00	0.00	153
	30-40	35.87	50.00	14.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12
	40-50	28.10	20.54	20.54	30.81	0.00	0.00	0.00	0.00	0.00	0.00	10
	50-60	33.33	66.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3
	60-70	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1
	70-80	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1
	<b>All</b>	<b>58.18</b>	<b>35.67</b>	<b>4.44</b>	<b>1.22</b>	<b>0.17</b>	<b>0.24</b>	<b>0.08</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>2,153</b>

Panel C: Counterfactual Distribution of Sons Under White Transition Probabilities

All	20.03	16.74	16.19	15.67	9.34	8.23	5.63	6.08	1.85	0.23
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Panel D: Implied Steady State from Race-Specific Transition Probabilities

White	9.71	14.00	16.94	15.78	14.47	10.10	7.67	8.10	2.60	0.64
Black	57.26	37.34	3.84	1.00	0.11	0.30	0.16	0.00	0.00	0.00

Notes: See Notes to Table 4A.



**Table 5A: Summary Statistics Upward Rank Mobility, 1880-1900**

		$\tau=0$			$\tau=0.05$			$\tau=0.10$			N -	N -
		White	Black	Diff	White	Black	Diff	White	Black	Diff	White	Black
Fathers' Status in 1880	0-10	0.86	0.52	0.34	0.79	0.38	0.41	0.69	0.31	0.38	71	1,601
	10-20	0.77	0.45	0.32	0.66	0.21	0.46	0.50	0.14	0.37	439	482
	20-30	0.53	0.29	0.25	0.51	0.18	0.33	0.31	0.08	0.23	509	38
	30-40	0.47	0.20	0.27	0.37	0.00	0.37	0.31	0.00	0.31	167	5
	40-50	0.40	---	---	0.32	---	---	0.29	---	---	97	0
	50-60	0.37	0.00	0.37	0.25	0.00	0.25	0.22	0.00	0.22	147	2
	60-70	0.30	---	---	0.11	---	---	0.11	---	---	27	0
	70-80	0.14	---	---	0.08	---	---	0.05	---	---	142	0
	80-90	0.05	---	---	0.02	---	---	0.01	---	---	95	0
	90-100	0.00	---	---	0.00	---	---	0.00	---	---	8	0
	All	0.52	0.50	0.02	0.44	0.34	0.11	0.32	0.26	0.09	1,702	2,128

**Table 5B: Summary Statistics Upward Rank Mobility, 1910-1930**

		$\tau=0$			$\tau=0.05$			$\tau=0.10$			N -	N -
		White	Black	Diff	White	Black	Diff	White	Black	Diff	White	Black
Fathers' Status in 1910	0-10	0.94	0.70	0.24	0.78	0.52	0.27	0.69	0.21	0.48	628	1,719
	10-20	0.76	0.11	0.64	0.61	0.03	0.58	0.52	0.02	0.50	1,483	254
	20-30	0.53	0.08	0.46	0.47	0.05	0.42	0.42	0.03	0.38	2,173	153
	30-40	0.50	0.00	0.50	0.42	0.00	0.42	0.35	0.00	0.35	1,244	12
	40-50	0.32	0.00	0.32	0.25	0.00	0.25	0.21	0.00	0.21	1,050	10
	50-60	0.29	0.00	0.29	0.22	0.00	0.22	0.18	0.00	0.18	1,079	3
	60-70	0.21	0.00	0.21	0.15	0.00	0.15	0.11	0.00	0.11	1,229	1
	70-80	0.10	0.00	0.10	0.05	0.00	0.05	0.03	0.00	0.03	651	1
	80-90	0.05	---	---	0.02	---	---	0.01	---	---	534	0
	90-100	0.03	---	---	0.00	---	---	0.00	---	---	115	0
	All	0.44	0.58	-0.15	0.36	0.42	-0.06	0.26	0.12	0.13	10,186	2,153

Notes: Entries report share of sons whose rank exceeds their father's rank by  $\tau$ . Father's income decile is listed vertically.

**Table 6A: Escaping the Bottom, Correlates of Upward Mobility, 1880-1900**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
All Sons	Farm (1880)	Literate (1880)	Mother Literate	Father Literate	Urban Residence (1880)	Attended School	Within- State Migrant	Within- South Migrant	Regional Migrant	
Black (N=1,601)	0.38 (0.03)	-0.05* (0.05)	0.09* (0.04)	0.11*** (0.04)	0.06* (0.03)	0.24* (0.14)	0.07* (0.04)	0.19*** (0.03)	0.33*** (0.04)	0.76*** (0.05)
White (N=71)	0.79 (0.25)	0.07 (0.17)	-0.33* (0.17)	0.27** (0.10)	0.17 (0.12)	---	-0.08 (0.15)	-0.03 (0.11)	0.29* (0.15)	0.31* (0.17)

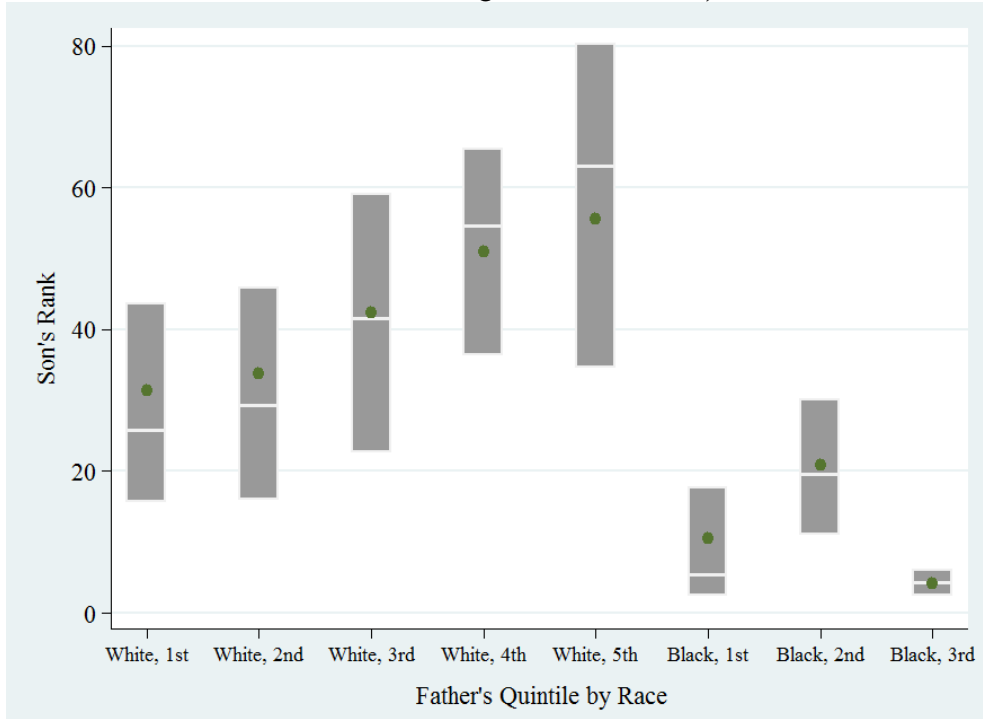
Notes: Coefficient estimates from bivariate regressions, with age fixed effects, for the probability of sons' income rank being greater than 10 conditional on father's rank in the bottom decile. Columns 7-9 contain migration indicators and are estimated simultaneously. Standard errors are in parentheses. \*\*\* indicates significance at  $p < 0.025$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . School attendance is observed for all individuals in the sample; we restrict the sample to those aged 6-15 for estimation.

**Table 6B: Escaping the Bottom, Correlates of Upward Mobility, 1910-1930**

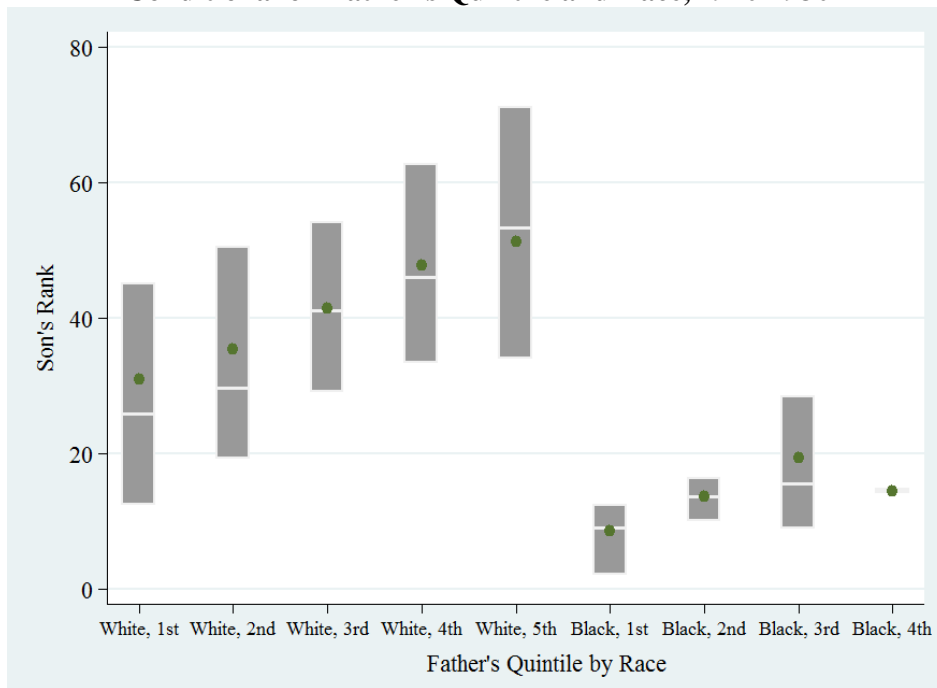
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
All Sons	Farm (1910)	Own home (1910)	Literate (1910)	Mother Literate	Father Literate	Urban Residence	Attended School	School Quality	Within-State Migrant	Within-South Migrant	Regional Migrant
Black (N=1,719)	0.39 (0.03)	0.09*** (0.03)	0.04 (0.03)	-0.02 (0.02)	-0.01 (0.02)	0.46*** (0.02)	0.01 (0.03)	0.05 (0.03)	0.20*** (0.03)	0.30*** (0.04)	0.50*** (0.04)
White (N=628)	0.78 (0.03)	0.10*** (0.04)	0.05 (0.08)	0.13*** (0.05)	0.09** (0.04)	0.22*** (0.08)	-0.02 (0.06)	-0.09** (0.04)	0.18*** (0.04)	0.16*** (0.05)	0.33*** (0.05)

Notes: Coefficient estimates from bivariate regressions, with age fixed effects, for the probability of sons' income rank being greater than 10 conditional on father's rank in the bottom decile. Columns 7-9 contain migration indicators and are estimated simultaneously. Standard errors are in parentheses. \*\*\* indicates significance at  $p < 0.025$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . School attendance is observed for all individuals in the sample; we restrict the sample to those aged 6-15 for estimation.

**Figure 1A: Summary Statistics of Intergenerational Mobility Conditional on Father's Quintile and Race, 1880-1900**



**Figure 1B: Summary Statistics of Intergenerational Mobility Conditional on Father's Quintile and Race, 1910-1930**



Notes: The graph shows mean (dot), median (line) and interquartile range (spanning 25-75) of son's outcomes conditional on their race and father's place in the distribution.