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APPENDIX TO

AFRICAN AMERICAN INTERGENERATIONAL MOBILITY SINCE 1880

APPENDIX I. DATA APPENDIX

a. CONSTRUCTION OF SAMPLES

i. Linked Sample Construction for 1900 and 1930 cohorts

We constructed the two samples of linked historical census records from "full count" files of the U.S. Census of Population. Data for 1880 were extracted from the North American Population Project (MPC 2017; Ruggles 2015). For the remaining years (1900, 1910, and 1930), data were provided through the IPUMS platform (Ruggles 2015) and housed at the National Bureau of Economic Research (NBER). We began with all males in 1880 and 1910 between the ages of 0 and 17 and living in the same household as their father or stepfather. Individuals who lived with their mother, but no father or stepfather, are not included in the historical samples.[1]

There are many different techniques available for historical record linkage. We refer readers to Abramitzky et al. (2019) and Bailey et al. (2019) for reviews of these methods. Two fundamental concerns with automated linkage methods pertain to the prevalence of "bad matches" (Type I errors) and unrepresentative samples. To build our linked datasets in a way that reduces the frequency of bad matches, we followed a recommendation from Bailey et al. (2019) by performing two independent census-to-census matches using different methods. We then defined our analysis sample as the intersection of the two linked samples from the different matching methods. The basic idea is that "to the extent that different methods make errors for different reasons, taking the set of common links helps avoid idiosyncratic reasons for errors" (Bailey et al. (2019), p.43). We chose to implement two well-known but different matching algorithms, based on Ferrie (1996) and Abramitzky, Boustan, and Eriksson (2014). Specifically, we used the following:

- A variant of Ferrie's (1996) linking method, using code provided by Bailey and Cole (2019). This approach links on name, place of birth, race, and age. We specified a +/- 5-year age window for potential matches. We used actual name strings rather than NYSIIS variants. This approach attempts to link only those men who have unique names within groups defined by birthplace, race, and the age window. To be considered a good match under this technique, the match must be exact on last name spelling, truncated first name (first four letters), and (if provided) middle initial. For a given individual in the base year, if more than 10 potential

[1] See Appendix IV for further discussion of this issue. In 1910, more than 40 percent of female-headed households with children present (under age 18) do not have an occupation reported (calculated with 1910 1-percent IPUMS sample).

matches exist in the later year (based on name, birthplace, and race), the case is dropped; otherwise, the closest match on age (within the age window) is chosen.[2]

- A variant of Abramitzky, Boustan, and Eriksson's (2014) linking method, hereafter "ABE", using code provided by the authors.[3] This approach also links on name, place of birth, race, and age. In this case, however, names are matched using NYSIIS codes.[4] We include the ABE robustness check, which restricts attention to men with names (as NYSIIS codes) that are unique within +/- 2 years of age. To be considered a good match under this technique, the match must be exact on NYSIIS codes for last, first, and (if provided) middle initial, and it must be unique within the +/- 2-year age window.

The intersection of these two matched datasets provides the analysis sample for this paper. This intersected sample is more conservative than using only Ferrie's method because taking the intersection with ABE drops cases when there are multiple potential matches who have similar *sounding* names (i.e., such cases would not enter into the ABE NYSIIS matched set). It is more conservative than using only the ABE method with NYSIIS phonetic names because taking the intersection drops cases when similarly-sounding names are spelled differently (i.e., such cases would not enter into the Ferrie matched set). By construction, the Jaro-Winkler distance of last names in the linked sample is 0, and no one in the sample had a potential match with a similar sounding name within +/- 2 years of age.

We provide match rates for the analysis sample in the table below, separately by race, matching method, and cohort. As expected, the intersection rule produces a substantially lower match rate than either single matching technology on its own.

[2] For tractability reasons, the sample in the later year (1900 and 1930) to which observations are linked has been limited to individuals in the relevant age window rather than the entire 100 percent sample. The implication is that the 10 potential match rule described here will drop fewer observations than it would have if the full sample had been available.

[3] Available at https://ranabr.people.stanford.edu/matching-codes.

[4] Bailey et al. (2019) recommend against using NYSIIS matching, at least when only using a single matching technique. In our case, we use both the Ferrie (1996) approach with actual name strings and the ABE (2014) approach with NYSIIS codes, with the idea that the intersection of the two different approaches may be more robust to false matches.

MATCH RATES

	1900 Cohort			1930 Cohort		
	Ferrie	ABE	Intersection	Ferrie	ABE	Intersection
Black	8.40%	7.60%	3.40%	9.30%	10.00%	5.30%
White	13.80%	15.30%	9.50%	17.80%	19.10%	12.90%
ALL	12.90%	14.10%	8.60%	16.80%	18.00%	11.90%

Under any linking procedure, matched census samples are subject to selection relative to the base population. We use propensity-based reweighting techniques to address the selection issue, again following Bailey et al.'s (2019) suggestion. In all analyses, observations carry a weight equal to the inverse probability of successful matching between the 1880 (or 1910) and 1900 (or 1930) based on a simple probit estimator. Key variables used in the probit estimation are contained in Tables A.1 and A.2.[5] These same tables report summary statistics for the matched sample without weights, the full IPUMS sample, and the ultimate analysis sample with inverse probability weighting. The analysis sample (without weights) differs from the matched sample due to missing occupation data or occupations that cannot be scored (e.g., labor market non-participants) among fathers, sons, or both. Inverse probability weighting adjusts the matched sample to reflect the underlying population in the IPUMS full count data, but the final weighted analysis sample is not, and should not be, representative of the IPUMS full count data as a result of missing occupation score observations.

ii. Imputing Missing Occupations for 1900 and 1930 cohorts

The IPUMS-provided 100 percent Census samples available through NBER have incomplete occupation coding. In the matched samples, 13.1 percent of the 1900 cohort and 15.3 percent of the 1930 cohort are missing an occupation code, despite the presence of an underlying occupation string in the transcribed data. In most cases, the occupation assignment is missing due to a missing industry code; IPUMS assigns occupation codes using both industry and occupation information. We assigned occupation codes to uncoded occupations using a plurality rule. After implementing the methodology below, the rate of missing occupations fell to 12.6 percent of the 1900 cohort and 8.8 percent of the 1930 cohort.[6] Additional coding would have required

[5] The variables used to estimate the probability are those reported in Tables A.1 and A.2, with the exception of father's income rank as it is both a key analysis variable and not universally measured.

[6] We were more successful at replacing missing occupation codes in the 1930 cohort in part because missing occupations for the 1900 cohort were fewer in number and more esoteric. IPUMS appears to have followed different methodologies for assigning occupation codes in the two samples.

judgment calls on our part; instead observations with remaining uncoded occupations were dropped from the sample.

Methodology:

First:

1. For all occupations not yet assigned an *occ1950* code (occ1950==979) in the 1910 (1930) matched sample, clean the *occstr* field by replacing common misspellings and abbreviations with a standardized string.
2. Convert each *occstr* string to its NYSIIS equivalent.

Separately:

3. Do the same for all occupation strings in the 1910 (1930) matched sample that had already been assigned an occ1950 code.
4. Tabulate the most common occ1950 code for each NYSIIS-standardized occupation string.
5. Impose a plurality rule that the mode must also be >= 50% of occupations with that NYSIIS code. Four exceptions were mechanics (changed to missing because the income distribution for that NYSIIS occupation equivalent was extremely dispersed), drivers, chauffeurs, and agents (where we invoked no plurality rule because the occupations that populate the distribution have very similar incomes).

Then:

6. Return to the files created in (2) above. Assign the modal *occ1950* code for each NYSIIS code, when that exists.
7. Replace that *occ1950* code with 595 if any military keyword appears in the occupation string.
8. Replace that *occ1950* code with 820 if any farm/farm keyword appears in the industry string and the occupation was assigned a laborer's code (970).
9. Change the assigned *occ1950* code for a handful of occupation strings where the NYSIIS code confuses two occupations – fireman/foreman, tailor/tiler, etc.
10. Set the value of *occ1950* for all strings with two consecutive "?" characters to missing.
11. Hand code some obvious misspellings, but make no judgment calls.

iii. Incorporating data from the 1880 Census of Agriculture

In making income assignments, it is useful to differentiate farmers of different tenure 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.[7] Unfortunately, ownership 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 to distinguish farm owner-operators from tenants.[8]

For some states and counties, indices of the 1880 Census of Agriculture are available on Ancestry.com. Our results are restricted to states and counties with indexed, searchable Census of Agriculture files on Ancestry.com under the assumption that these are a representative sample of all states and counties.

The "searchable" states include approximately 57.5 percent of all male farmers (58.2 percent of black farmers) in 1880, based on Census of Population reports of occupation. Farm ownership in the searchable states is similar to that in US as a whole (73.4 percent owner-operated versus 74.4 percent), suggesting that farms in the searchable states are fairly representative.[9] This is based on tabulations of returns in the Census of Agriculture, which do not distinguish by race in 1880. In addition, the ownership rate in our "found" set of farms is similar to that in published tables from the Census of Agriculture (approximately 73 percent).

For searchable states and counties, we first searched the index based on the name of the father in the 1880 population records and his exact geographic location, including enumeration district. When names and enumeration districts matched exactly, and matches were unique, we considered this a successful match. When names matched almost perfectly, but not exactly, a graduate research assistant reviewed the match manually. The initial matches were performed by undergraduate students.

For those farmers not matched to the agriculture census based on names and enumeration districts, we next searched for their nearest neighbors in the population census who also reported an occupation of "farmer" to the census enumerator. Census enumerators for both the agriculture and population census followed a similar canvassing sequence, such that consecutive farming household observations in the population census should also be consecutive in the agriculture census. In some

[7] 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.

[8] 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 nationwide linked sample of fathers and sons. Richard Sutch provided helpful input at an early stage of this project.

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

cases, these nearest neighbor searches allowed us to identify farmers whose name was slightly different in the agriculture census manuscript. For example, if Lyndon Bell Jones abbreviated his name to L.B. Jones in the agriculture census, searching for his nearest neighbor would allow us to find this match.

Individuals not located in the agriculture census after all of these steps are assumed to be missing at random from the data. We also perform robustness checks in which we assume all unfound farmers are non-owners. Results from that exercise are not remarkably different from those in Table 2.

Because the process of linking farmers from the population census to the 1880 agriculture census is a manual one, we searched for only a random subset of all farmers in the matched father-son sample, including 8,650 white farmers and 5,398 black farmers. We successfully matched 74.4 percent of white farmers and 74.1 percent of black farmers. Four potential explanations for missing matches are: 1) we did not find someone who was present in the ag census manuscript; 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 and only one farmer is listed per farm); 3) some men may have been recorded as "farmer" in the 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.

For farmers in the 1880 cohort, the final analysis weights in the paper are the product of the probability weights described in Section I.a.i. above multiplied by the number of farmers in the matched sample divided by the number of farmers successfully matched to the agriculture census, separately by race.

iv. Selection of samples for OCG 1962 and 1973 cohorts

For cohorts of sons after 1930, we must rely on survey data to generate analysis comparable to that for the earlier samples.[10] Occupational Changes in a Generation (OCG) is a nationally representative (after weighting) survey taken as a supplement to the Current Population Survey (CPS) in 1962 and again in 1973. We utilize the replicate sample available at the Interuniversity

[10] Our methods for generating intergenerational samples cannot be implemented after 1940 because there are no publicly available census products containing names.

Consortium for Political and Social Research (ICPSR), which contains harmonized responses across waves of the survey. After weighting, the OCG samples are nationally representative.

We limit the OCG survey respondents to men between the ages of 20 and 43. A key distinction for the OCG data relative to our hand-constructed historical samples is the retrospective nature of reported parents' labor market outcomes. The OCG enumerators asked individuals about the "kind of work" and "most important activities [at work]" for their father or mother when the respondent was 16 years old. These responses were then coded into 1950-based occupation codes by survey staff before the data were released.

Finally, because the prevalence of sons living apart from their fathers increases substantially between 1960 and the end of our study period, we accommodate sons in households where the mother was present at age 16, but not the father.[11] Individuals living with neither father nor mother are dropped from the sample. These individuals represent 4.1 percent of the 1962 cohort and 5.1 percent of the 1973 cohort. In robustness checks below (Appendix IVb), we test the sensitivity of our results to assigning the income score of a male (non-father) household adult instead of an individual's mother and find no significant difference in the paper's key results.

v. Selection of samples for NLSY cohorts (1990 and 2000)

The NLSY79 1990 and 2000 interview waves share many characteristics with the OCG surveys. Again, the occupation of fathers is ascertained retrospectively. In NLSY79, the original 1979 questionnaire asks respondents about "what kind of work" and "main activities or duties [at work]" of both their father and mother when they were age 14. Because respondents were aged 14 to 22 in the original 1979 sample, responses to parental occupation questions may be more accurate in this sample than in the OCG. Again, sons in households where the mother was present at age 14, but not the father are included in the sample. (We perform the same robustness check on non-father male adults as described above and in Appendix IVb.) In 1990, all but 4.2 percent of the NLSY sample were living with either a mother or father at age 14. Finally, the NLSY sample contains an oversample of poor whites and of black males. We include these individuals in our sample and weight according to survey instructions. After weighting, the NLSY sample is nationally representative.

[11] For sons of mothers residing with another male adult (stepfather, etc.), we measure intergenerational mobility relative to the mother's occupational status. Appendix Section IVb examines the sensitivity of our results to replacing mother's occupational status with that of a non-father adult male (including stepfathers) if one is present.

b. ASSIGNMENT OF INCOME SCORES AND INCOME SCORE RANKS

For each cohort of sons, as well as for their parents, we assign incomes based on the census year most proximate to the year of observation. The sole exception is NLSY sons, whom we observe in both 1990 and in 2000. We assign incomes based on 1990 wages for both waves of the survey in order to evaluate the sensitivity of our results to the age of sons at observation. A table of these base years for income assignments is below:

CENSUS BASE YEARS FOR INCOME SCORE ASSIGNMENTS IN ANALYSIS SAMPLE

Year of Observation	**Census Base Year for Income Score Assignments**
1880 (Fathers)	1940
1900 (Sons)	1940
1910 (Fathers)	1940
1930 (Sons)	1940
~1950 (OCG Fathers and Mothers)	Average of 1940 and 1960*
1962 (OCG Sons)	1960
~1960 (OCG Fathers and Mothers)	1960
~1973 (OCG Sons)	1970
~1975 (NLSY Fathers and Mothers)	1970
1990 (NLSY Sons)	1990
2000 (NLSY Sons)	1990

**Income measures in 1950 were collected for only a subsample of respondents, making cell sizes too small in the IPUMS sample for this year to generate occupation-based income scores.*

As described in the main text, we generally assign income scores based on the average earnings of individuals in the same detailed occupation, race, region of residence, and gender cell, drawn from the decennial census that is closest in timing and contains earnings information. This approach is similar in spirit to the oft-used *occscore* variable from IPUMS (Ruggles et al. 2015), but it has more flexibility to reflect differences by location, race, gender, and farm ownership. Research suggests that these additional covariates are important for properly measuring intergenerational mobility in a historic context (Inwood, Minns, and Summerfield 2019; Ward 2019). Income assignments that would be based on fewer than 50 underlying earnings observations are replaced with scores based on

a race- and occupation-specific national average (not region-specific) or, if necessary, based on a race-specific one-digit occupation (rather than the 3-digit code).

In the 1940 Census, only wage earnings are recorded, leaving all self-employed individuals, including farmers (discussed at length below), without recorded income. For all non-farmers, we simply calculate the ratio of mean earnings for self-employed (non-wage) workers in a particular occupation to mean earnings of wage workers in the same detailed occupation using the 1960 Census enumeration. We then use this ratio to scale wage earnings from the 1940 Census for assignment to non-wage workers.

Income assignments for farmers are more complex, and in this case we make an important set of adjustments to the basic income-by-occupation data from the census. First, we attempt to distinguish farmers who own their farms from those who do not. Second, we adjust census-based income measures upward to reflect the value of in-kind income. We describe each process in turn.

Farmers are a large and heterogeneous group in the early years covered by our data (63% of fathers in 1880), but they share a single occupation code. In the historical samples, 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 between types of farmers. In 1900, 1910, and 1930, we can use information on whether they lived in owner-occupied housing, which is as close as one can get to seeing whether they owned land.[12] For farmers in 1880, we cannot observe home ownership in the Census of Population, and so we rely on tenure status information (farm ownership, in particular) culled from the Census of Agriculture, as described in the main text and Appendix Ia. In this way, in the historical samples we can distinguish between farmers who own and farmers who do not, and we assign different income scores. For farmers in the OCG and NLSY sample, there is no information on ownership, and so we do not distinguish between the two. By this time, however, far fewer fathers and sons report farming as their occupation (17 and 3 percent, respectively).

In the historical samples, we assign income to farmers based on the average income of farmers of the same ownership status (owners vs. non-owners), race, and, in the South, Census division of residence. Outside of the South, where there are fewer farmers, particularly black farmers, we assign

[12] 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.

incomes based on Census region rather than Census division. We explain more about this process after discussing the second major adjustment.

The second adjustment corrects for unreported income for agricultural workers. Both farmers and farm laborers commonly received non-cash earnings in the form of room and board payments-in-kind. The value of such perquisites was not reported as labor income to Census enumerators, and Census-based income figures require adjustment.

For agricultural laborers, whose income is observable in the 1940 Census returns based on their 1939 earnings history, we scale up reported wages by the ratio of perquisites and cash wages to cash wages alone in 1939, as reported in the 1957 USDA report *Major Statistical Series of the U.S. Department of Agriculture: Volume 3, Gross and Net Farm Income* (Table 7).[13] This results in a "scale-up" factor of an additional 26% of reported wages for farm laborers when income scores are based on the 1940 Census. We do the same thing for agricultural laborers when occupation scores are based on the 1960 Census, but in this case the last available year of data in the USDA publication is 1956. We use the 1956 rate, but note that other sources show no change in the relative value of perquisite income between 1956 and 1959.[14] (Earnings reported in the 1960 Census are based on respondents' 1959 earnings history.) The implied value of perquisites is 19% of reported wages for farm laborers in 1959 (and 1956).

Farmers are a more challenging group for which to assign incomes, including perquisites, in each reference year because we do not observe their income in the 1940 Census returns. In order to estimate farmer wages for this reference year, we take advantage of the fact that farm laborer wages are reported in all years and assume that the ratio of total compensation (cash income plus perquisites) for land-owning farmers to total compensation for farm laborers is constant between 1940 and 1960 (the next reference Census year). We assume the same for non-land-owning farmers relative to farm laborers. We then use the observable values of farm laborer income (with perquisites) in the 1940 and 1960 reference years, and the observable values of land-owning and non-land-owning farmer income (with perquisites) in 1960, to infer farmer income, including perquisites, in 1940. For farmers in 1960, perquisite values are derived from the same USDA report described

[13] We divide "Value of Perquisites – TOTAL" by "Cash Wages + Value of Perquisites – TOTAL" to calculate the perquisite rate. See Volume 3, Table 7.

[14] USDA Economic Research Service, "Farm Income and Wealth Statistics", accessible at https://data.ers.usda.gov/reports.aspx?ID=39629, is an alternative source for calculating perquisite rates. (Here calculated as non-cash employee compensation divided by the sum of the same and cash labor expenses.) The variable definitions in this series are less clear than for the *Major Statistical Series* and may exclude the in-kind value of housing, and we therefore prefer the latter for calculations. Still, the ERS series shows essentially no change in the implied perquisite rate between 1956 and 1959. For farmers, we will average 1955 and 1956 perquisite rates as a baseline from which to calculate the 1959 rate. For farm laborers, 1955 and 1956 estimates are identical.

above. Unlike farm laborer rates, farmer perquisite rates have high variance, so we use the average value of perquisites from 1955 and 1956 to calculate a base rate, again scaling up by the growth in perquisites from other sources between 1959 and 1955/1956.[15] The net result is a perquisite rate of 35% for farmers in 1959, and the perquisite rate for farmers in 1939 is triangulated as 43%.

For farm managers in all years, we estimate a perquisite rate as the average of farmers and farm laborers: 34% in 1939 and 27% in 1959.

APPENDIX II. TRANSITION MATRICES

a. Decile to Decile Transition Matrices

Decile-to-decile transition matrices provide rich detail on mobility patterns, though they are unwieldy for presentation. Each row in a matrix displays the distribution of sons over all income deciles, conditional on having a father start in a particular decile. We provide the full set of tables in Tables A3A-A3F and highlight some salient features here.

As discussed in the main text, nearly all black fathers were in the lowest two deciles of the national income distribution in the historical samples. In the 1800-1900 cohort, white sons of fathers in the bottom two deciles of the national distribution of earnings scores were somewhat likely to stay there themselves (about 15 to 25 percent), but many moved higher. For instance, roughly 30 percent of whites from the bottom decile in 1880 made it to the American middle class or higher by 1900 (defined here as above the 30th percentile). The story for African Americans is much bleaker. Fewer than 3 percent of black sons from the lowest decile made it to the middle class or higher by 1900, and 82 percent persisted in the lowest income score decile. These results are robust to limiting the sample to older sons whose occupational status is, presumably, more reflective of lifetime economic status.[16] In sum, the decile-to-decile results reinforce the impressions from above—there were large racial differences in the adult fortunes of children in the first post-Civil War generation, even when conditioned on the fathers' economic status.

For the 1930 cohort, black sons fared somewhat better than previously, in that 19.3 percent of sons from the lowest decile made it to the third decile or higher compared to only 6.6 percent in the

[15] The 1960 Census data on farmer compensation is based on respondents'1959 earnings history. The 1957 *Major Statistical Series* publication reports a perquisite rate in 1956, and the next *Statistical Series* we could locate, published in 1969, begins with 1960 data. We average measures of "nonmoney income", "cash receipts" and "production expenses" from 1955 and 1956 from the 1957 report (See Table 15 for total cash receipts, Table 12 for production expenses, and Table 4 for cash receipts.) The perquisite rate is calculated as the ratio of nonmoney income to cash receipts less production expenses. Again, the ERS data provide a benchmark for growth between 1955/1956 and 1959, even though the underlying rate seems to exclude housing from the perquisite calculation.

[16] See Appendix Section IVc.

previous cohort. This reflects, in part, new opportunities for migration to the relatively high-paying North during the Great Migration. Even so, white sons continued to fare far better than black sons with similarly situated fathers. Only 19 percent of white sons persisted in the bottom decile (in 1930), whereas 64 percent of black sons did. And, again, few blacks escaped from the bottom deciles into the middle class; approximately 93 percent of all black sons remained in the third decile or below.

Another notable feature of the transition matrices for the historical samples is that while some white sons with fathers in the third and fourth deciles fell back into the lowest two deciles, such downward mobility was far more common for black sons with similar starting positions. For the 1930 cohort, for instance, 30 percent of black sons with fathers in the third decile fell into the bottom two deciles compared to only 7 percent of white sons of similarly situated fathers. Black fathers above the median in 1910 witnessed 87 percent of their children fall below the median by 1930 while the rate for white fathers was 33 percent.

As described above, for several reasons the OCG and NLSY datasets are not exactly comparable to the historical datasets. Nevertheless, a large black-white gap in mobility from the bottom is still clearly evident, even when we restrict the age ranges to exactly mimic those in the historical samples. (We examine sensitivity to age restrictions in Appendix Section IVc.) Indeed, the dominant cell in the OCG transition tables is the low-decile black parent to low-decile black son entry, which shows a 73 percent persistence rate in the 1962 sample and a 59 percent persistence rate in 1973. Fewer than 15 percent of white sons persist in the lowest decile in both cohorts. Similar conclusions can be derived from the mobility of sons of parents in the 2nd through 4th deciles, encompassing 45 percent of black parents by 1973. Sons of these black fathers and mothers had a 48 percent chance of falling to a lower income score decile than their parents while white sons fell at a rate of only 22 percent.

The patterns highlighted above continue to be evident for the cohort of sons observed in the NLSY79 covering the end of the 20th century. The persistence rate in the bottom decile for sons in 1990 is almost seven times as large for black sons as for white sons, and the rate of mobility into the middle class from the lowest income score decile is 65 percent for white sons compared to 25 percent for black sons. At the same time, black men continue to exhibit strong rates of downward mobility, including probabilities of being in the lowest income decile of 27.5, 19.2, and 25.0 percent for sons of parents in the 2nd, 3rd, and 4th deciles, respectively. The same downward mobility rates for white men are far smaller: 7.5, 5.7 and 5.6 percent, respectively. In the NLSY data, sons' income scores and rankings can be determined in both 1990 (when interviewed sons are ages 25 to 33) and again in 2000 (when they are ages 35 to 43). Observing sons at older ages, and closer to the age 40 "ideal" does little to affect these conclusions (Appendix Table A6).

b. Occupational Transition Matrices

To provide further context for the labor markets and workers under study, we provide father-son mobility patterns by broad occupational category in Appendix Tables A4A-A4F. For example, in Appendix Table A4a, 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 values sum to 100 within rows. Reading along the table's diagonals highlights father-son pairs who persisted in the same broad occupation category. Row totals are in percentages after weighting.

For the historical datasets, we created 7x7 transition matrices based on the following categories: 1) farmer owners, 2) farmer non-owners, 3) farm laborers, 4) white-collar workers (professionals, clerical, sales, etc.), 5) blue-collar skilled workers (typically craftsmen), 6) blue-collar semi-skilled workers (typically operatives), and 7) unskilled non-farm laborers. Father-son pairs with missing occupational information for either individual are omitted.

Not surprisingly, most of the fathers in our 1880-1900 samples were engaged in agriculture as farmers who owned farms, farmers who did not own farms, or farm laborers. But white and black fathers were distributed unevenly over these categories. Nearly 60 percent of white fathers working in agriculture owned farms, compared to only 21 percent of black fathers, a discrepancy that directly reflects the legacy of slavery and politics of post-Civil War land redistribution (or lack thereof). Focusing on the transition patterns, it is striking that white sons from almost *every* category of fathers were more likely to move into white-collar work than black sons of fathers in *any* category with the exception of white collar sons of white collar black fathers. Indeed, the sons of white blue collar laborers were more likely to become white collar workers than the sons of black white collar (professional) workers in both historical samples. Within any given category of fathers, white sons were also far more likely than black sons to move into farm ownership or skilled blue-collar work. The high intergenerational persistence rate of whites in white-collar occupations (49 percent) is also striking.

For the 1910 to 1930 period, the distributions of black and white fathers over occupation categories remain disparate. Whereas white fathers remained concentrated in the "farmer-owner" category, black fathers were concentrated in the "farmer, tenant" category. Relatively few black sons with fathers in the farmer-own category had achieved similar status by 1930 (7 percent compared to 11 percent for whites). But, the transition out of agriculture for both white and black sons was substantially more pronounced than in the previous table (for the 1900 cohort of sons). For whites, the sons increased their concentration in white collar and skilled and semi-skilled blue-collar work;

for blacks, the increases were concentrated in unskilled and semi-skilled blue-collar work with more modest increases in skilled blue-collar and white collar occupations. Racial differences in mobility conditional on father's status were again pronounced. Sons of white fathers in all blue collar occupation categories were more likely to obtain white-collar work than the sons of white collar black fathers. Also, sons from every category of black fathers were nearly twice as likely to hold unskilled non-farm laborer jobs as the sons from any category of white fathers. 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.

When we shift to the OCG datasets for 1962 and 1973, we lose the distinction between farmers who owned and did not own land, but by this period far fewer men were engaged in agricultural employment. Because more men are working in white collar occupations, we subdivide the white collar occupation category into "Professional and Managerial" and "Clerical and Sales" categories.

In broad terms, the intergenerational patterns in the 1962 OCG are reminiscent of those in the 1910-30 historical sample. Black sons sorted strongly out of agriculture and into unskilled and semi-skilled blue-collar work. There was also a notable rise in white-collar occupations for black men (18 percent), though still far less common than for whites (47 percent). Finally, there is evidence of more intergenerational persistence for blacks in the white-collar categories than previously, but the rate for professional and managerial white collar workers (38 percent) still lags behind the same for whites (53 percent).

Whereas the 1962 OCG captures a portrait of young men's outcomes just before the major policy changes of the Civil Rights era, the 1973 OCG provides perspective several years afterwards. By 1973, the transition patterns for black men are notably different than before. There was a much stronger shift into white-collar and skilled blue-collar work by sons from all categories of fathers, a shift out of unskilled blue-collar work, and a sharp increase in the persistence of white-collar status (to 50 percent among professional and managerial workers). The transitions observed for whites in the 1973 data are remarkably similar to those in the 1962 data, indicating that the improvements for blacks were not simply the result of macro-level structural changes. This is consistent with the economics literature's emphasis on the 1965-75 period as one of relatively rapid improvement for African American workers. Still, despite these advances for black workers, sons of white fathers continue to hold an occupational status advantage over black sons. For example, 71% of white sons of skilled blue collar fathers held skilled blue collar or white collar work themselves. For black sons, the comparable rate is 51%.

A final view of occupational transition comes from the NLSY79, where sons are observed in 1990 and again in 2000. This cohort of black sons appears to have retained many of the advances of the 1973 cohort, but black sons remain over-represented in lower skilled blue collar occupations, and particularly under-represented in professional and managerial occupations. Ten years later, when these sons are observed again in 2000, these conclusions are unchanged. Again, the occupations of sons conditional on father's occupation differ strikingly by race. Sixty four percent of white sons of white collar fathers, for example, are themselves in a white collar occupation, compared to 55 percent of their black peers. Similarly, white sons of skilled blue collar fathers have a 65 percent chance of reaching professional and managerial status or remaining at skilled blue collar status. For similarly-situated black sons, the probability is 51 percent.

Given the transition matrices, it is straightforward to ask, "What would the occupational distribution of black sons look like if they had moved across categories in the same way that white sons with similar fathers did?" Of course, this approach does not yield deep insight into *why* racial differences in transitions existed, nor does it consider general equilibrium issues, but it can isolate the proximate importance of such differences. These counterfactual exercises are contained in Figure 5 of the main text.

c. Upward Rank Mobility Tables

Table A5 provides upward rank mobility metrics for values of $\tau = 0, 5,$ and 10, where upward rank mobility($U_{\tau,r}$) is defined as

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

where $R_{son/father}$ represents rank of son or father; r_{lower} and r_{upper} represent the lower and upper bounds of some interval of percentiles, here deciles of the father's income score rank distribution.

With few exceptions, upward rank mobility is lower for black sons that whites at all levels of tau, at all deciles of the father's income score rank distribution, and in all cohorts. Because upward mobility declines with father's decile, and because black fathers are disproportionately concentrated in lower income score deciles, sample-wide upward rank mobility is sometimes higher for black sons than for white sons.

APPENDIX III. ADDITIONAL RESULTS FOR NLSY79 COHORT OBSERVED IN 2000

A unique feature of the 1990 cohort of sons is that the NLSY79 data allow for repeated observation, continuing through the present. We follow sons in the NLSY79 data an additional ten years, through 2000, to evaluate whether the racial differences in intergenerational mobility hold over

the longer-run. Because our results are based on occupation scores, and not income *per se*, changes in the longer term will come from movements across occupational categories, inter-regional migration, or changes in the relative ranks of occupation/region/gender/race cell average incomes between 1990 and 2000. Figure 3 in the main text includes results for this 2000 cohort of sons in panel F.

Here, we replicate Figures 2 and 4 for the 2000 cohort, as well as the regressions in Table 2. Appendix Figure A1 contains the results for upward rank mobility, where the probability of exceeding parental income score rankings (Panel A) falls somewhat for black sons compared to 1990 while upward rank mobility metrics for white sons are relatively unchanged.

Black sons in the counterfactual scenario contained in Panel B of Appendix Figure A1 exhibit less convergence relative to the distribution of white sons at lower ends of the income score distribution, although racial differences in intergenerational transitions continue to explain most of the racial difference in income score rankings in 2000.

Finally, regressions of sons' income scores on those of their fathers and a binary indicator for race using the same empirical method as the main paper's Table 2 are contained in Appendix Table A6. We replicate the regressions for the full sample in 1990 and 2000, but also for a balanced sample of the same sons and fathers observed in both years. (There is some attrition between years.) Results for the NLSY79 cohort observed in 2000 are little changed from the results for observations taken in 1990. Black men continue to experience a disadvantage relative to their white peers of between 19 and 22 percentiles of the national income distribution.

APPENDIX IV. SENSITIVITY TESTS

This section contains sensitivity tests for the paper's main results on upward rank mobility by race and expected outcomes, by race, conditional on parental occupation score rank.

a. SENSITIVITY OF RESULTS TO INCOME SCORE ASSIGNMENT METHODOLOGIES

The paper's main results are based on the income assignment methodology described in Section Ib above. We provide sensitivity analysis below.

i. Sensitivity of 1900 cohort of sons results

One obvious drawback of the baseline approach is that income scores for the historical samples are all derived from the 1940 Census manuscripts. For fathers observed in 1880, this is a full 60 years subsequent to their labor market participation.

In Table A7, we assess the key regression results using alternative methods for assigning income scores to the 1900 cohort of sons and their fathers observed in 1880. All three are based on a combination of the 1900 Census of Agriculture (to derive farmers' incomes) and income by occupation derived from Preston and Haines (1991), hereafter PH.

First, for non-farming occupations, PH provide estimates of annual income for occupations in 1900 by drawing on several sources, including Douglas (1930), U.S. Commissioner of Labor (1903), and Lebergott (1964). They do not attempt to estimate farmers' income, nor do they attempt separate estimates by race or region, which is required for our purposes.

We build on PH's work as follows. The PH (1991) occupation codes do not correspond directly to those in the current IPUMS files (occ1950). However, the "old" Preston-Haines public use microdata sample (https://usa.ipums.org/usa/samples.shtml) contains both the Preston-Haines occupation codes and the occ1950 census codes. We merged this file with the Preston-Haines (1991) income data, and then collapsed the dataset to calculate averages for occ1950 cells.[17]

Next, we use the 1940 census to provide estimates of how wages varied by race and region relative to the national average for each occupation. That is, we use the full count census data to calculate race-by-region-by-occupation average annual wages (for men who worked at least one week, were wage and salary workers, and had positive wages); we also calculated national averages for each occupation. The ratio of race/region/occupation cell-specific averages to national averages form an adjustment factor that is applied to the income estimates for 1900 derived from PH. Thus, the PH estimate is scaled up for groups that had relatively high earnings within an occupation (e.g., whites in the Northeast) and down for groups that had relatively low earnings within an occupation (e.g., blacks in the South Atlantic).

For farmers, our analysis relies on the 1900 Census of Agriculture, which reports information on the value of farm products not fed to animals and the value of inputs such as hired labor and fertilizer. Abramitzky, Boustan, and Eriksson (2012), following Goldenweiser (1916), computed an estimate of average farmer income in Minnesota using the 1900 Census of Agriculture information plus some assumptions about inputs and other expenses (e.g., taxes, maintenance) that are not directly addressed in the Census of Agriculture.[18] To implement a similar approach for our paper requires incorporating additional detail by race, region, and farm ownership status. The published volumes of the 1900 Census of Agriculture are helpful in this regard (volume 5, tables 13 and 14),

[17] We thank Laura Salisbury for insight on this issue.
[18] Note that Goldenweiser's estimates are based on data for 1909, and so ratios we derive from his work implicitly assume that they are applicable to the 1899 data described in the 1900 Census of Agriculture.

but additional assumptions and estimates are required, as described below.[19] Any such estimates of farmers' income are imprecise; therefore, we test the sensitivity of our results to alternative assumptions.

For *farm owners*, we calculated average income based on the value of farm products not fed to animals (reported directly in the census), plus the value of perquisites (estimated as described below), minus the value of expenditures on labor and fertilizer (reported directly in the census), minus the value of expenditures on feed, seed, threshing, and animals purchased (estimated), minus the value of taxes and maintenance on implements and buildings (estimated).

The value of perquisites (e.g., housing, food consumed by the household, fuel) is estimated as 0.2664 times the value of farm products. This fraction (0.2664) is calculated from Goldenweiser (1916); specifically, 260/976 (from the "per farm" column of his table on p. 42). The value of feed, seed, threshing, and animals purchased is estimated as 0.2303 times the value of farm products; again, the fraction is based on Goldenweiser (1916), specifically 1430/6208 (see p. 44 text for numerator inputs; see the table's "total" column on p. 42 for denominator). Finally, taxes are estimated at 0.006 times average farm value; maintenance of implements and machinery is estimated at 0.15 times their value; and maintenance of buildings is estimated at 0.05 times their value (Goldenweiser 1916, p. 44).

For *farmers who do not own their farm*, the 1900 Census of Agriculture provides information on "share tenants" and "cash tenants" by race and region.[20] We combine these categories as a weighted average (based on the number of farms) for non-owners in each race-by-region cell.[21] There is no information in the 1900 Census of Agriculture on the rent paid by renters (by race and region).

We assume that cash tenants received 75 percent of the value of farm products, plus the estimated value of perquisites, minus all expenses on labor and fertilizer (reported directly) and on seed, feed, threshing, and animals purchased (estimated as described above). The higher share of

[19] Note that the Census of Agriculture in 1900 reports tabulations by white and "colored", which is likely to be misleading for the West where there were very few black farmers but a substantial number of farmers of Chinese, Japanese, and Native American descent. Therefore, we do not assign an income score to black farmers in the West. Also, the regional aggregates that we input from the Census of Agriculture in 1900 are reported for the "North Atlantic," "South Atlantic," "North Central," "South Central," and "West." The "North Central" combines the East and West North Central, and the South Central combines the East and West South Central.

[20] The Census of Agriculture in 1900 does not differentiate between sharecroppers and other share tenants. See Alston and Kauffman (1997) for discussion of this issue.

[21] In 1880, where we have matched farmers to their individual Census of Agriculture manuscripts, we can distinguish share tenants from cash tenants. But in 1900, 1910, and 1930, for which individual manuscripts no longer exist, we can only observe whether the farmer owns his home (and presumably the farm on which it sits) based on the Census of Population records. Therefore, we distinguish farmers who own from farmers who rent in the historical analysis, but we cannot distinguish types of renters.

output for cash tenants than for share tenants (75 versus 50 percent) but the full expense for inputs reflects that cash tenants rented land but typically provided their own implements and inputs.[22]

We assume that share tenants received half the value of farm products, plus the full value of perquisites, minus half the value of hired labor and fertilizer (i.e., we assume that share tenants split the input expenses with the landlord). The choice of 50 percent for the share tenants has a basis in common sharecropping arrangements in the South (Boeger and Goldenweiser 1916; Ng and Virts 1989), though cropping contracts could be more complex in practice (Alston and Higgs 1982). Sharecropping was uncommon outside the South, and even in the South, sharecroppers comprised only a portion of the census "share tenant" category (Alston and Kauffman 1997). Because the census combines sharecroppers, who generally provided labor but not other inputs, and share tenants under the "share tenants" category, it is possible that the income assignment described above would tend to understate the non-owners' average income. However, when we recalculate the average income assignments for all non-owners treating all non-owners as if they are cash tenants (as described in the paragraph above), it makes little difference.[23]

A more severe robustness check comes from assigning an upper-bound income level to farmers, which could improve their ranking relative to nonfarm occupations. We do this by assigning farm owners the full value of farm output plus the estimated value of perquisites less deductions only for the costs of inputs that are reported directly in the census (separately by race and region). Thus, we subtract the value of expenditures on labor and fertilizer (reported directly in the census) from our income estimates, but we do not subtract the estimated value of expenditures on feed, seed, threshing, and animals purchased or the estimated value of taxes and maintenance on implements and buildings. Similarly, for non-owners we assign an upper bound by assigning 75 percent of total output value to cash tenants and share tenants, still adding perquisites, but subtracting only expenditures on labor and fertilizer reported directly in the Census.

We also assess a lower-bound income level for farmers. In the lower bound estimate, for owning and non-owning farmers alike, we remove perquisites from the income assumptions.[24]

The results of implementing the 1900-based income scores for the cohort of fathers and sons observed in 1880 and 1900 are reported in Table A7. The racial gap in sons' income scores, conditional on fathers' scores is still quite large. In column 2, the gap is approximately 17

[22] The choice of 75 percent of output value for cash tenants is rough but appears comparable to that for share tenants who provide their own inputs (Ng and Virts 1989, p. 960; Boeger and Goldenweiser 1916, p. 7).
[23] The income assignments for non-owners change by 2 percent or less at the national level and never change by more than 6 percent at the regional level. In most cases the assignments would be slightly lower because the subtraction of the full value of inputs offsets the addition from a higher share of output.
[24] In the upper- and lower-bound robustness checks, for simplicity, share tenants are treated like cash tenants (e.g, receiving 75 percent of farm products but paying for inputs).

percentiles, a decline of about 6 percentiles in comparison with the baseline estimates (reported in column 1). If using the upper bound for farmers' income, the gap is about 1 percentile larger than in the baseline (23 percentiles), but if using the lower bound for farmers' income the gap is almost 9 percentiles smaller than the baseline (13 percentiles). We view the zero-perquisites lower bound to be an extreme robustness check and, therefore, conclude that the main results for this earliest historical cohort are fairly robust to income assignment methodology; that is, a large mobility gap was present. Adding controls to the regressions in Panel B reduces the differences in estimates between income score assignment methodologies. In Panels C and D, the 1900-based and 1940-based income assignment methodologies again differ little from those in Panel A.

ii. Results under a fixed income assignment scheme

To assess how changes in relative occupation score ranks over time are affecting the paper's main results, we "fix" the Census income assignment year across all samples and re-run the analysis. Because job categories become obsolete over time and because new job categories emerge in each Census year, it is challenging to choose a base year for income score assignments that allows us to make inference both about occupations that existed in 1880 and in 1990. For the purposes of this robustness check, we fix income scores at their 1960 values. The 1960 Census returns have the advantage of continuing to provide income data for the agricultural occupations so prevalent in the historical samples while also containing occupation data for emerging occupation categories found in the late 20th century samples.

With this fixed-in-time income assignment approach, we replicate the main regression results from Table 2. As shown in Appendix Table A8, moving all income scores to a 1960-based measure generates higher conditional racial gaps in occupational income score rankings for the late 20th century. In particular, the conditional gap rises from around 20 percentiles of the national income distribution under the baseline measure in 1990 to roughly 25 percentiles of the same. In all other years, the differences between conditional racial gaps in occupation score rankings are roughly two percentiles of the national income distribution.

b. SENSITIVITY OF RESULTS TO CHANGES IN FAMILY STRUCTURE

Changes in the structures of families and the income-generation roles of women between 1880 and 2000 make the interpretation of rank-rank relationships between fathers and sons presented in the main paper more challenging. Two important questions are whether the occupation scores of non-father adult males (including stepfathers) should be incorporated in the paper's analysis and,

related, whether the income of mothers should be incorporated into the intergenerational analysis when fathers are absent.

To simplify discussion, consider three situations for co-residence of sons with their parents. First, for sons living with their fathers, with or without their mother present, the baseline sample compares the occupation scores of these fathers with the occupation scores of their sons later in life.

Second, for sons living with their stepfather and mother, the baseline sample takes two different approaches. In the historical samples, the baseline sample compares the occupation scores of stepfathers with the occupation scores of their stepsons later in life. For the modern datasets, the analysis considers the relationship between the mother's income and that of her son later in life.

Third, for sons living with their mother and no apparent stepfather, the historical samples drop these individuals from the sample. Women's occupations and, consequently, income scores are poorly measured in the historical samples, making inference difficult. In addition, given the paper's main results indicating low mobility out of the bottom deciles of the income distribution, it is unlikely that including sons with female household heads (whose income scores are likely to be extraordinarily low, and whose sons would have faced additional roadblocks to mobility) would change the paper's main conclusions.

We examine the sensitivity of the paper's main results to adjusting the modern sample to account for co-resident non-father male adults. For sons living with mothers and a non-father male adult, we substitute the male adult's income score for the score of their mothers. New observations are added to the dataset in this exercise if occupation data was missing for the mother but is present for the non-father male adult. The results of this robustness check are contained in Appendix Table A9. We make no changes to the baseline calculations for the historical samples. For the OCG and NLSY cohorts, differences in estimates of the racial mobility gap are impervious to shifting definitions of "parent" for these same cohorts. In each case, the differences relative to the baseline results are consistently less than one percentile of the national income distribution.

c. SENSITIVITY OF RESULTS TO AGE AT SON'S OBSERVATION

In the baseline samples, sons' occupation outcomes are measured when the sons are between 20 and 37 years of age for the two historical samples, between 20 and 43 years old for the OCG samples, between 25 and 33 years old in the NLSY sample measured in 1990 and between 35 and 43 years old in the NLSY sample measured in 2000. To determine the sensitivity of our results to a consistent set of sons' ages across samples, we limit the samples in each year to sons aged 30 to 37.

This strategy both gives us sons at a consistent age across samples and addresses the possibility of lifecycle bias wherein sons early in their career may not yet reflect their lifetime earning potential. For the NLSY samples, this results in a sample of sons aged 30 to 33 in 1990 and 35 to 37 in 2000.

In the main paper, Table 2 contains this sensitivity analysis for the racial mobility gap in the right-hand columns.

d. HETEROGENEOUS FARMER RESULTS AND SENSITIVITY TO ASSUMPTIONS ABOUT FARMERS' INCOMES

Appendix Table A10 contains a series of sensitivity and heterogeneity analyses related to the assignment of farmers' incomes in the historical samples. In the first columns, we re-estimate results for the historical samples, restricting the sample to non-farmers. The next sets of results are for sons of farmer fathers who owned their farm (second set of columns) and for sons of farmer fathers who were renting (third set of columns). Finally, we maximize the use of our sample by ignoring the distinction between farm owners and renters, which drove the 1880 agriculture Census linkage process and substantially reduced the size of the 1880-1900 sample. In this last exercise, we assign all farming fathers in 1880 the income score of farm owners within their race and region, ignoring ownership status.

These results suggest that sons of black farmers, both owners and renters, experienced more equal patterns of intergenerational mobility relative to their peers than sons of black fathers in other occupations. For the sample excluding farmers, the racial mobility gap is greater than 30 percentiles of the national income distribution in both historical samples. Adding observable characteristics, however, reduces the mobility gap substantially and the results in Panel D differ from those in the full sample by between 2 and 5 percentiles of the national distribution.

For the farming-only samples, though, the black penalty in intergenerational mobility is substantially reduced. In the 1910-1930 sample, in particular, the mobility gap for children of farmers falls to 11 percentage points for sons of farm owners and 14 percentage points for sons of farm renters. Coefficients for the 1900 cohort of sons are also muted among farmers' sons relative to the full sample, particularly the sons of farm owners.

The final column of Table A10 indicates that the pattern of intergenerational mobility in 1880 does not strongly depend on the distinction between farm owners and renters. When all farming fathers are assigned the income of farm owners (allowing us to deploy the entirety of the 1880-1900

sample), the racial gap in mobility is similar to the baseline results from Table 2. This is true for all specifications spanning the four panels of Table A10 and Table 2.

e. OTHER RESULTS ON HETEROGENEOUS OUTCOMES

Appendix Tables A11 through A14 contain evidence on heterogeneous outcomes in the historical and modern samples.

In Table A11, we present results excluding white father-son pairs with immigrant fathers. This is a large share of fathers for the 1900 cohort, but much smaller for subsequent cohorts. Consistent with evidence from other work, white sons of immigrant fathers appear exceptionally mobile; comparing black father-son pairs with native born white father-son pairs reduces the racial mobility gap from -22.50 in Panel A of Table 2 to -20.19 in Panel A of Table A11. There are small reductions in the racial mobility gap in other years as well.

Table A12 contains results for southern-residing fathers only, comparing black and white father-son pairs where all fathers are living in the South in the year of observation.[25] For all cohorts of sons, the racial gap in intergenerational mobility is markedly smaller among sons of southern-born fathers. For the historical samples, the difference is the racial mobility gap for southern father-son pairs relative to the full sample is a five full percentage points of the national income distribution. Because black fathers are predominantly southern at this point, the difference in results in Table A12 relative to Table 2 in the main text reflects the relatively low mobility of white sons of southern-residing fathers compared to white sons nationwide.

Tables A13 and A14 provide results for the sample separated by urban/rural status of fathers. Again, these urban/rural metrics reflect the status of fathers during the sons' childhoods. The racial mobility gap is pronounced in urban areas (except for the 1973 OCG cohort), especially in the historical samples where the urban racial mobility gap is a full ten percentage points higher than the rural gap. For the historical samples in particular, the gap persists through successive specifications and is sizable still in Panel D results.

APPENDIX V. COUNTERFACTUAL DISTRIBUTIONS OF BLACK INCOME RANKS

[25] Fathers' southern residence is implied by the 1880 and 1900 Census enumeration for the historical samples. In the OCG and NLSY samples, father's residence is inferred from the reported location of sons when they were teenagers. This same series of questions generates fathers' occupation as well.

A key finding of the analysis is that racial differences in the distribution of black sons' income score ranks in each cohort are largely explained by differences in the transitions from fathers' to sons' ranks. Given the transition rates of white sons, black sons' income score distributions would closely mimic those of their white peers. This finding is supported visually in Figure 4, which plots the distributions of black and white sons' income score ranks as well as the counterfactual distribution of black sons under white sons' transition patterns.

To quantify the difference in the counterfactual black distribution and the white distribution in each cohort, we take two different approaches. First, we calculate a dissimilarity index based on ventiles of the national income score distribution.[26] A dissimilarity index calculated in this way indicates what share (between 0 and 1) of black (or white) sons would need to occupy different ventiles of the national income score distribution in order for the two distributions to be equal. Appendix Table A15 summarizes the findings for each cohort of sons.

Second, we use Hellinger distance estimates, again ranging from 0 to 1, to quantify the difference in smoothed kernel distributions of the black and white income score distributions. The kernel chosen for these estimates is STATA's adaptive kernel which uses a different bandwidth across the support of the distribution in recognition of varying mass at different points. Kernel estimates are generated at each of 100 percentiles of the national income distribution, and the distance index between these distributions, ranging from 0 to 1, is calculated according to Hellinger's formula.[27] There is no ready interpretation of the Hellinger distance corresponding to that for the dissimilarity index. Again, these results are contained in Appendix Table A15.

Our results indicate that mobility rates of black sons, conditional on their fathers' income scores, comprise the majority of the differences in black and white sons' relative positions in each cohort. These differences account for 66 to 80 percent of differences for the 1973 and 1990 cohorts and between 56 and 67 percent of the same in the historical samples through 1930.[28]

APPENDIX VI. INCORPORATING AGCT/AFQT SCORES

To evaluate the role of acquired human capital for determining racial gaps in intergenerational mobility, we incorporate test score data into the descriptive regression results from Table 2 in the main text. Test score data are available for the NLSY79 cohort observed in 1990 and

[26] DI = $\frac{1}{2}\sum_{i=1}^{20}\left|\frac{b_i}{B}-\frac{w_i}{W}\right|$.

[27] HD = $\frac{1}{\sqrt{2}}\sqrt{\sum_{i=1}^{100}\left(\sqrt{\frac{b_i}{B}}-\sqrt{\frac{w_i}{W}}\right)^2}$

[28] The NLSY79 cohort observed in 2000 exhibits a similar pattern.

for the 1930 historical cohort. For the NLSY cohort, Armed Forces Qualifying Test (AFQT) scores are recorded for nearly all individuals and were measured in 1980 when the respondents were ages 15 to 23 (Neal and Johnson 1996, p. 873). For the 1930 cohort, these scores must be imputed using scores observed in the WWII enlistment records in the National Archives. For several months in 1943, enlistees' scores on an AFQT predecessor, Army General Classification Test (AGCT), were recorded at enlistment (Ferrie *et al* 2012). For this sample of individuals, enlistment data also include occupation, race, place of enlistment, educational attainment, etc. Most men in the sample are young (aged 20 or less), and so inference is based on the AGCT scores of young men. Using this information, we calculate mean values of AGCT by occupation, race, and region of residence, imposing the same minimum sample size restrictions as for income scores describes earlier in this appendix. We then use these average AGCT scores by cell to impute scores to similar men in our 1930 sample.

A simple way of evaluating the role of test scores would be to add those scores to the regression specifications from Table 2 in the main text and evaluate how the racial mobility gap changes. The challenge is that the overlap between scores for black and white students in these samples is limited, and we hesitate to assume linearity in the return to test scores under those conditions. Similarly, a fixed effects strategy would give a biased view of the conditional racial mobility gap.

Instead, for both the NLSY79 and 1930 cohort of sons, we use an estimating equation for sons' income score ranks using the specification from Panel D of Table 2 and a sample of black father-son pairs only. Our regressions contain all variables from Panel D (excluding the race variable) as well as test scores, which enter linearly. We then estimate the average rank of black sons under a counterfactual where each son is assigned a test score equal to the p^{th} percentile of the black distribution of scores. This exercise assumes linearity in the return to test scores *among blacks* but makes no out-of-sample predictions. (Again, AGCT scores are assigned as occupation-race-region means, resulting in a compressed distribution relative to the AFQT sample.) See additional discussion in the main text.[29]

Adding these controls and counterfactual imputations to both the 1930 and 1990 (NLSY79) samples suggests that differences in test scores are quantitatively important for understanding the racial mobility gap. The table below shows the change in average sons' income score ranks when invoking each of the counterfactual values of p. For the 1930 cohort, the average income rank of

[29] Practically, the 90th percentile of the black distribution of AFQT scores in the NLSY equates to the median score for white sons in the same cohort. In the 1930 sample, the 90th percentile of the black distribution of AGCT scores is equivalent to the average AGCT score of southern-born black white-collar workers in the sample.

black sons more than doubles once test scores reach the 90th percentile of the distribution, and scores for black sons in the 1990 cohort increase by 10.5 percentiles of the national distribution under the same counterfactual.

	1930 Cohort of Sons		
Counterfactual value of AGCT Scores	75th pctle of black distribution	90th pctle of black distribution	95th pctle of black distribution
Old mean of son's income score rank	14.67	14.67	14.67
New mean of son's income score rank, given counterfactual value of AGCT scores	24.05	30.65	31.43
	1990 Cohort of Sons		
Counterfactual value of AFQT Scores	75th pctle of black distribution	90th pctle of black distribution	95th pctle of black distribution
Old mean of son's income score rank	27.72	27.72	27.72
New mean of son's income score rank, given counterfactual value of AFQT scores	30.41	38.25	44.61

APPENDIX VII. REFERENCES

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APPENDIX VIII. TABLES AND FIGURES

TABLE A.1. REPRESENTATIVENESS OF THE 1900 COHORT LINKED SAMPLE

	Black Males			White Males		
	Matched Sample	Full IPUMS Sample	Weighted Analysis Sample	Matched Sample	Full IPUMS Sample	Weighted Analysis Sample
Panel A: Distribution of region of residence						
Region 1 (Northeast)	9.1	5.9	5.3	32.5	32.0	28.4
Region 2 (Midwest)	5.5	4.5	4.0	39.4	40.1	42.8
Region 3 (South)	85.4	89.5	90.6	24.6	25.3	26.1
Region 4 (West)	0.04	0.10	0.10	3.4	2.6	2.6
Panel B: Personal characteristics						
Father's Income Rank	9.3	7.5	7.1	61.3	54.9	57.1
Urban residence	9.1	9.1	8.0	20.0	24.3	21.8
1880 city population (00's)†	125	105	97	403	616	542
Panel C: Age Distribution						
Mean Age (in 1880)	6.7	7.6	7.4	7.4	8.1	7.6

Notes and sources: †City population is conditional on urban residence. The text contains more details on sample construction.

TABLE A.2. REPRESENTATIVENESS OF THE 1930 COHORT LINKED SAMPLE

	Black Males			White Males		
	Matched Sample	Full IPUMS Sample	Weighted Analysis Sample	Matched Sample	Full IPUMS Sample	Weighted Analysis Sample
Panel A: Distribution of region of residence						
Region 1 (Northeast)	10.3	5.8	5.8	28.5	29.8	28.6
Region 2 (Midwest)	7.7	3.4	3.7	40.2	37.4	36.7
Region 3 (South)	81.7	90.6	90.2	24.9	27.9	28.4
Region 4 (West)	0.3	0.2	0.2	6.4	4.9	6.3
Panel B: Personal characteristics						
Father's Income Rank	9.9	7.9	8.0	57.6	54.8	56.4
Attending school (age 6-15)	71.4	65.4	66.5	91.6	89.7	90.1
In owner-occupied residence	30.2	25.5	26.2	54.0	48.6	50.0
Literate (age 10-20)	72.7	63.8	64.7	97.8	96.4	96.6
Urban residence	23.3	18.5	15.8	38.3	40.9	38.1
1910 city population (00's)	871	510	450	2369	3459	3138
Panel C: Age Distribution						
Mean Age (in 1910)	7.6	8.4	7.8	8.1	8.6	8.0

Notes and sources: The text contains more details on sample construction.

TABLE A.3: DECILE TO DECILE TRANSITION MATRICES

TABLE A3A: DECILE-TO-DECILE TRANSITION MATRICES, BY RACE, 1880-1900 COHORT

FATHERS' DECILE IN 1880	SONS' DECILE IN 1900: 1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	ALL
1st	White: 33 **Black: 82.3**	23.4 **11.1**	11.6 **4.0**	7.2 **1.5**	7.5 **0.5**	6.6 **0.2**	2.8 **0.1**	3.7 **0.3**	2.1 **0.1**	2.2 **0.0**	1.1 **81.2**
2nd	17.0 **35.2**	18.1 **29.2**	16.2 **23.6**	9.2 **4.2**	9.0 **5.7**	7.0 **1.0**	4.8 **0.2**	7.8 **0.5**	5.9 **0.3**	5.2 **0.1**	7.6 **16.0**
3rd	12.7 **14.4**	6.3 **12.5**	20.8 **27.6**	20.3 **21.6**	3.0 **17.5**	8.4 **3.3**	7.4 **0.6**	7.3 **1.2**	7.3 **1.0**	6.4 **0.4**	10.0 **0.7**
4th	13.8 **5.9**	22.2 **9.8**	6.1 **39.3**	4.0 **16.2**	26.3 **21.1**	4.4 **2.7**	3.4 **1.2**	7.1 **2.4**	4.9 **0.9**	7.8 **0.5**	11.0 **1.1**
5th	0.8 **4.1**	15.7 **25.9**	6.9 **39.4**	2.5 **3.6**	38.8 **6.8**	7.4 **18.3**	3.3 **0.5**	8.2 **0.7**	8.5 **0.8**	7.9 **0.0**	12.2 **0.7**
6th	3.1 **4.7**	12.7 **7.2**	8.7 **43.8**	4.4 **16.6**	5.7 **11.9**	17.8 **0.0**	15.2 **5.5**	9.3 **6.6**	13.5 **1.4**	9.7 **2.2**	10.6 **0.1**
7th	0.3 **0.0**	22.5 **0.0**	8.1 **15.6**	1.3 **14.5**	4.8 **14.2**	5.5 **0.0**	37.8 **0.0**	4.4 **19.2**	8.8 **36.4**	6.5 **0.0**	14.2 **0.0**
8th	10.5 **5.2**	4.7 **22.0**	7.2 **43.6**	4.0 **4.8**	3.5 **16.1**	17.0 **6.2**	17.0 **2.2**	15.6 **0.0**	11.0 **0.0**	9.7 **0.0**	9.6 **0.1**
9th	0.5 **17.3**	1.7 **17.0**	10.9 **33.0**	10.2 **6.0**	4.2 **6.8**	8.3 **0.0**	4.8 **3.4**	20.5 **1.7**	23.4 **9.7**	15.4 **5.0**	11.7 **0.1**
10th	1.0 **0.0**	3.1 **0.0**	6.0 **52.8**	4.0 **0.0**	4.4 **47.2**	6.5 **0.0**	6.0 **0.0**	15.0 **0.0**	24.1 **0.0**	29.9 **0.0**	12.1 0.0
ALL	6.08 **72.62**	12.18 **14.05**	9.71 **8.04**	6.24 **2.31**	11.32 **1.79**	8.88 **0.53**	11.81 **0.14**	10.46 **0.33**	12.15 **0.14**	11.17 **0.06**	100.0 **100.0**

TABLE A3B: DECILE-TO-DECILE TRANSITION MATRICES, BY RACE, 1910-1930 COHORT

FATHERS' DECILE IN 1910	SONS' DECILE IN 1930: 1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	ALL
1st	White: 18.7 **Black: 64**	21.9 **16.7**	7.0 **12.0**	11.4 **5.0**	10.9 **1.3**	4.9 **0.2**	9.4 **0.4**	5.9 **0.2**	5.2 **0.1**	4.8 **0.1**	2.0 **79.2**
2nd	12.5 **18.5**	24.7 **30.3**	9.3 **28.8**	13.5 **15.2**	6.1 **3.0**	6.1 **0.9**	9.6 **1.1**	6.8 **1.2**	6.2 **0.6**	5.2 **0.4**	9.1 **14.6**
3rd	1.5 **12.5**	5.3 **17.8**	12.1 **34.2**	14.2 **22.6**	8.5 **3.6**	13.1 **1.7**	11.6 **2.7**	12.5 **2.8**	11.8 **1.2**	9.4 **1.0**	7.5 **2.6**
4th	14.8 **8.9**	19.5 **15.2**	5.9 **29.4**	16.5 **33.8**	9.7 **4.4**	4.5 **1.7**	10.3 **1.9**	6.3 **2.9**	6.3 **1.2**	6.2 **0.6**	14.0 **1.9**
5th	12.7 **4.9**	5.5 **15.3**	4.5 **37.1**	4.7 **22.0**	30.0 **10.2**	6.1 **1.5**	10.0 **2.3**	8.6 **3.6**	8.4 **1.8**	9.6 **1.3**	10.2 **0.1**
6th	5.8 **2.9**	7.8 **7.0**	6.3 **37.4**	6.5 **35.2**	13.2 **4.0**	14.8 **4.1**	10.1 **1.3**	12.2 **4.1**	12.0 **3.5**	11.1 **0.6**	10.0 **0.4**
7th	5.8 **26.7**	9.2 **15.7**	7.0 **29.3**	4.6 **16.3**	10.7 **9.0**	24.3 **3.1**	9.1 **0.0**	10.0 **0.0**	9.4 **0.0**	10.0 **0.0**	11.2 **0.0**
8th	0.9 **18.3**	3.8 **16.9**	7.2 **29.1**	8.9 **15.9**	6.5 **6.1**	9.5 **1.2**	18.6 **5.4**	15.2 **4.6**	14.2 **2.0**	15.4 **0.5**	11.9 **0.3**
9th	1.0 **14.1**	4.2 **15.6**	7.7 **28.2**	6.1 **16.4**	5.6 **4.4**	7.6 **2.6**	12.5 **4.5**	17.4 **8.0**	19.8 **5.3**	18.2 **1.0**	12.3 **0.1**
10th	1.1 **7.3**	3.2 **12.1**	3.1 **25.3**	4.6 **30.4**	4.8 **6.4**	5.9 **0.0**	13.8 **3.5**	16.2 **8.1**	17.1 **3.7**	30.2 **3.2**	11.8 0.0
ALL	6.58 **54.01**	9.51 **18.65**	6.75 **15.76**	8.81 **7.78**	10.37 **1.78**	9.85 **0.41**	11.81 **0.61**	11.65 **0.52**	11.67 **0.27**	13 **0.20**	100.0 **100.0**

TABLE A3C: DECILE-TO-DECILE TRANSITION MATRICES, BY RACE, OCG 1962 COHORT

SONS' DECILE IN 1962

FATHERS' DECILE IN ~1950	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	**ALL**
1st	White: 14.8 **Black: 73.1**	17.7 **11.7**	11.6 **12.3**	8.2 **0.5**	10.1 **1.1**	11.7 **0.6**	10.7 **0.5**	6.7 **0.0**	5.3 **0.2**	3.3 **0.0**	5.1 **70.0**
2nd	6.7 **25.0**	12.8 **22.9**	6.6 **35.0**	11.0 **3.4**	14.9 **4.1**	13.5 **2.7**	12.0 **5.9**	9.1 **0.0**	7.5 **0.0**	6.1 **1.1**	10.2 **17.6**
3rd	9.9 **0.0**	23.8 **44.7**	18.3 **47.1**	5.4 **8.2**	7.6 **0.0**	11.0 **0.0**	8.0 **0.0**	4.9 **0.0**	8.0 **0.0**	3.3 **0.0**	12.0 **1.6**
4th	5.7 **14.1**	10.6 **18.9**	9.5 **38.0**	15.0 **0.0**	11.5 **19.8**	11.1 **3.9**	8.7 **5.4**	10.9 **0.0**	8.5 **0.0**	8.5 **0.0**	8.6 **7.5**
5th	6.7 59.7	7.5 0.0	4.4 40.3	23.3 0.0	13.4 **0.0**	12.0 0.0	8.6 0.0	8.9 0.0	6.0 0.0	9.2 0.0	10.7 **0.3**
6th	6.0 **14.8**	8.7 **9.3**	7.5 **16.0**	13.3 **0.0**	13.7 **27.8**	11.5 **25.5**	12.2 **6.6**	11.5 **0.0**	5.5 **0.0**	10.2 **0.0**	7.9 **1.8**
7th	5.4 **0.0**	7.4 **58.3**	3.7 **41.7**	10.9 **0.0**	13.5 **0.0**	13.7 **0.0**	15.0 **0.0**	12.3 **0.0**	8.9 **0.0**	9.3 **0.0**	11.4 **0.6**
8th	2.5 **72.6**	6.1 **0.0**	4.5 **0.0**	8.7 **0.0**	11.2 **0.0**	9.8 **0.0**	19.4 **0.0**	13.1 **27.4**	12.4 **0.0**	12.2 **0.0**	12.4 0.4
9th	3.8 **0.0**	6.0 **100.0**	4.5 **0.0**	6.0 **0.0**	9.0 **0.0**	11.1 **0.0**	11.8 **0.0**	18.2 **0.0**	15.6 **0.0**	14.0 **0.0**	11.2 **0.1**
10th	2.5 ---	3.5 ---	3.1 ---	6.0 ---	10.0 ---	5.6 ---	10.0 ---	16.8 ---	14.5 ---	28.1 ---	10.5 **0.0**
ALL	5.91 **57.35**	10.1 **15.04**	7.12 **19.05**	10.66 **1.08**	11.42 **3.48**	11.03 **1.64**	11.85 **1.92**	11.5 **0.10**	9.61 **0.14**	10.8 **0.20**	100.0 **100.0**

TABLE A3D: DECILE-TO-DECILE TRANSITION MATRICES, BY RACE, OCG 1973 COHORT

SONS' DECILE IN 1973

FATHERS' DECILE IN ~1960	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	**ALL**
1st	White: 13.6 **Black: 58.9**	13.5 **17.5**	14.3 **10.2**	10.3 **4.3**	10.8 **5.4**	11.5 **1.7**	7.0 **1.1**	6.7 **0.7**	8.0 **0.0**	4.4 **0.2**	4.4 **49.0**
2nd	9.3 **40.5**	13.6 **24.0**	13.0 **12.2**	10.1 **5.8**	11.8 **6.4**	9.7 **6.6**	8.2 **2.7**	7.3 **0.7**	11.8 **0.0**	5.3 **1.2**	8.7 **30.3**
3rd	5.5 **26.9**	12.7 **36.8**	14.7 **4.4**	12.7 **12.7**	10.9 **6.1**	10.5 **6.7**	9.7 **3.6**	8.1 **1.3**	9.3 **0.0**	5.9 **1.6**	8.6 **4.8**
4th	8.4 **13.6**	14.3 **26.0**	12.6 **23.6**	13.8 **7.9**	11.3 **8.6**	9.1 **13.4**	8.9 **3.0**	7.4 **1.7**	9.3 **0.0**	4.9 **2.2**	10.2 **9.6**
5th	6.2 **44.9**	6.5 **24.4**	8.4 **4.1**	10.8 **3.4**	12.4 **5.2**	13.0 **12.5**	15.8 **5.6**	11.6 **0.0**	6.4 **0.0**	8.9 **0.0**	11.2 **1.7**
6th	6.3 **25.0**	9.2 **24.0**	10.1 **20.5**	13.4 **0.0**	13.2 **5.9**	11.3 **15.6**	9.7 **9.1**	10.0 **0.0**	8.4 **0.0**	8.5 **0.0**	8.9 **1.1**
7th	6.4 **0.0**	7.6 **23.5**	9.9 **33.4**	11.0 **3.7**	11.7 **15.8**	14.5 **17.2**	11.6 **0.0**	10.0 **0.0**	9.8 **0.0**	7.4 **6.4**	12.1 **1.4**
8th	5.1 **10.5**	5.6 **22.5**	7.8 **7.9**	11.9 **6.5**	9.6 **8.9**	9.9 **21.1**	14.4 **6.6**	13.2 **3.0**	11.6 **0.0**	11.1 **12.9**	11.9 **1.7**
9th	7.1 ---	5.9 ---	8.4 ---	9.0 ---	8.7 ---	8.9 ---	10.4 ---	14.7 ---	17.8 ---	9.2 ---	12.2 **0.0**
10th	4.6 **0.0**	4.0 **0.0**	6.3 **21.8**	6.5 **14.6**	6.7 **20.9**	7.4 **42.7**	13.0 **0.0**	15.1 **0.0**	16.3 **0.0**	20.1 **0.0**	11.8 **0.4**
ALL	6.79 **44.99**	8.67 **21.50**	10.04 **12.13**	10.83 **5.49**	10.55 **6.29**	10.52 **5.57**	11.31 **2.15**	10.93 **0.83**	11.24 **0.00**	9.11 **1.06**	100.0 **100.0**

TABLE A3E: DECILE-TO-DECILE TRANSITION MATRICES, BY RACE, NLSY79 COHORT (IN 1990)

SONS' DECILE IN 1990

FATHERS' DECILE IN ~1970	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	ALL
1st	White: 6.1	17.9	10.7	15.1	12.4	9.7	9.6	5.0	6.7	6.9	4.8
	Black: 41.0	**18.4**	**16.1**	**10.1**	**1.7**	**4.0**	**4.4**	**2.0**	**2.3**	**0.0**	**37.5**
2nd	7.5	10.5	6.7	13.4	15.0	12.4	7.3	12.1	7.3	7.9	6.6
	27.5	**21.1**	**19.2**	**12.8**	**2.8**	**2.9**	**7.6**	**2.4**	**3.7**	**0.0**	**28.6**
3rd	5.7	10.9	13.2	14.1	13.0	11.7	6.1	7.9	8.4	9.0	8.9
	19.2	**17.7**	**14.6**	**17.2**	**5.0**	**6.8**	**11.7**	**1.9**	**5.9**	**0.0**	**13.3**
4th	5.6	9.2	12.9	10.1	13.2	9.1	12.3	8.2	7.0	12.5	9.7
	25.0	**13.5**	**5.5**	**16.6**	**8.7**	**9.2**	**11.3**	**4.3**	**6.0**	**0.0**	**11.8**
5th	6.3	9.4	11.2	8.5	13.1	10.0	11.4	11.1	10.4	8.7	10.1
	9.0	**13.4**	**7.9**	**16.1**	**5.0**	**24.2**	**13.6**	**7.1**	**3.9**	**0.0**	**3.7**
6th	6.0	3.8	7.8	7.7	19.8	11.1	12.3	13.6	7.6	10.5	12.0
	10.2	**30.1**	**10.7**	**13.6**	**0.0**	**2.8**	**15.3**	**3.0**	**11.0**	**3.3**	**4.0**
7th	3.4	6.7	11.7	6.9	14.3	15.1	11.2	8.5	10.8	11.6	11.6
	0.0	**100.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**
8th	4.5	3.9	8.2	10.0	7.8	10.5	14.7	14.0	13.9	12.5	11.7
	0.0	**0.0**	**0.0**	**0.0**	**25.0**	**12.0**	**23.0**	**0.0**	**29.0**	**11.0**	**0.7**
9th	2.9	4.1	5.7	3.7	5.8	11.6	11.4	14.6	20.7	19.6	12.2
	---	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**0.0**
10th	2.6	3.4	7.0	5.3	6.9	6.0	10.3	18.7	14.7	25.2	12.4
	0.0	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**47.2**	**0.0**	**52.8**	**0.2**
ALL	4.8	6.96	9.32	8.68	11.86	10.69	10.97	12	11.41	13.31	100.0
	29.52	**18.76**	**14.85**	**12.85**	**3.47**	**5.38**	**7.96**	**2.70**	**4.17**	**0.34**	**100.0**

TABLE A3F: DECILE-TO-DECILE TRANSITION MATRICES, BY RACE, NLSY79 COHORT (IN 2000)

SONS' DECILE IN 2000

FATHERS' DECILE IN ~1970	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	ALL
1st	White: 8.8	7.7	21.1	12.4	7.8	7.5	6.4	7.2	10.5	10.6	4.8
	Black: 36.0	**20.8**	**16.1**	**2.4**	**8.6**	**7.6**	**3.9**	**4.5**	**0.0**	**0.0**	**37.9**
2nd	3.4	11.1	10.4	14.6	12.5	9.0	14.6	5.4	6.5	12.5	7.0
	31.0	**22.8**	**16.0**	**4.1**	**7.7**	**12.1**	**2.5**	**3.9**	**0.0**	**0.0**	**28.5**
3rd	5.5	7.4	14.7	12.6	12.0	12.7	8.3	7.6	7.4	11.9	9.3
	26.8	**20.7**	**15.2**	**5.0**	**5.6**	**11.4**	**6.5**	**8.8**	**0.0**	**0.0**	**13.2**
4th	8.5	8.0	13.8	8.6	9.9	15.6	6.6	12.4	4.4	12.3	9.7
	16.9	**10.1**	**26.3**	**7.0**	**13.7**	**6.9**	**6.1**	**13.2**	**0.0**	**0.0**	**11.6**
5th	4.8	7.9	5.1	16.1	11.2	12.5	16.0	10.0	4.3	12.1	9.4
	25.3	**4.7**	**22.5**	**15.3**	**14.5**	**7.6**	**8.8**	**1.4**	**0.0**	**0.0**	**4.3**
6th	6.2	7.7	5.8	15.1	7.9	15.7	15.5	6.3	6.8	13.0	12.3
	12.2	**10.0**	**12.9**	**8.0**	**8.5**	**23.3**	**9.8**	**11.3**	**4.1**	**0.0**	**3.5**
7th	3.1	8.9	7.0	10.0	12.6	14.4	8.8	11.1	6.7	17.4	11.2
	0.0	**0.0**	**100.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**
8th	2.4	5.0	4.2	13.4	4.7	11.2	16.5	10.1	13.0	19.6	11.8
	0.0	**0.0**	**23.9**	**10.6**	**12.4**	**23.9**	**0.0**	**29.2**	**0.0**	**0.0**	**0.7**
9th	2.5	6.6	3.0	4.4	6.2	7.1	9.7	13.0	21.8	25.9	12.0
	---	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**0.0**
10th	3.4	5.2	2.6	9.8	4.5	7.6	15.7	15.1	8.2	27.9	12.6
	0.0	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100.0**	**0.0**	**0.0**	**0.0**	**0.1**
ALL	4.56	7.32	7.6	11.44	8.61	11.51	12.22	10.23	9.23	17.29	100.0
	29.49	**18.83**	**17.48**	**4.56**	**8.78**	**9.93**	**4.61**	**6.18**	**0.14**	**0.00**	**100.0**

Notes and sources: Transition probabilities for white and black (bolded) sons of fathers in each income decile. See text for sources.

TABLE A.4 OCCUPATION TO OCCUPATION TRANSITION MATRICES

TABLE A4A: OCCUPATION-TO-OCCUPATION TRANSITION MATRICES, BY RACE, 1880-1900 COHORT

SONS' OCCUPATION CATEGORY IN 1900

FATHERS' OCCUPATION CATEGORY IN 1880

	Farmer, owner	Farmer, tenant	Farm laborer	White collar	Blue collar, skilled	Blue collar, semi-skill	Blue collar, laborer	*Share of Total*
Farmer, owner	White:19.15 **Black:11.75**	24.19 **33.20**	23.55 **21.88**	13.06 **2.26**	6.21 **1.64**	6.46 **7.34**	7.37 **21.93**	*43.6* ***12.5***
Farmer, tenant	11.31 **4.54**	23.84 **39.67**	28.54 **29.31**	9.88 **1.30**	7.83 **1.42**	7.33 **5.54**	11.29 **18.22**	*11.0* ***37.5***
Farm laborer	6.49 **3.37**	16.18 **28.10**	30.71 **33.10**	8.32 **1.44**	9.11 **1.45**	11.21 **6.92**	17.98 **25.62**	*2.6* ***20.5***
White collar	2.67 **3.76**	4.30 **10.85**	4.21 **12.78**	59.84 **13.84**	13.28 **6.18**	10.10 **18.00**	5.61 **34.58**	*13.9* ***1.1***
Blue collar, skilled	2.77 **2.37**	4.71 **12.50**	6.24 **16.28**	27.34 **4.63**	34.06 **15.77**	15.16 **16.23**	9.74 **32.21**	*12.5* ***2.5***
Blue collar, semi-sk	1.98 **0.46**	3.50 **4.55**	5.79 **8.81**	25.77 **5.81**	21.37 **6.13**	28.57 **30.12**	13.02 **44.12**	*9.4* ***3.9***
Blue collar, laborer	3.53 **2.61**	6.73 **16.93**	14.06 **25.86**	14.26 **2.52**	17.90 **2.77**	18.93 **12.85**	24.58 **36.45**	*7.0* ***22.1***
Share of Total	10.9 **4.6**	15.6 **29.1**	17.1 **27.1**	22.1 **2.1**	13.2 **2.3**	11.2 **9.0**	9.9 **25.8**	*100.0* ***100.0***

TABLE A4B: OCCUPATION-TO-OCCUPATION TRANSITION MATRICES, BY RACE, 1910-1930 COHORT

SONS' OCCUPATION CATEGORY IN 1930

FATHERS' OCCUPATION CATEGORY IN 1910

	Farmer, owner	Farmer, tenant	Farm laborer	White collar	Blue collar, skilled	Blue collar, semi-skill	Blue collar, laborer	*Share of Total*
Farmer, owner	11.24 **7.24**	18.81 **23.81**	18.04 **17.63**	18.44 **2.59**	11.97 **4.16**	11.80 **11.73**	9.70 **32.84**	*26.6* ***15.3***
Farmer, tenant	4.19 **1.72**	19.77 **31.82**	20.70 **20.06**	14.57 **1.52**	13.13 **3.61**	15.17 **10.38**	12.47 **30.89**	*14.3* ***45.6***
Farm laborer	2.71 **1.25**	8.80 **16.69**	17.91 **23.35**	18.16 **2.29**	16.84 **4.39**	18.15 **13.69**	17.42 **38.35**	*4.0* ***11.3***
White collar	0.94 **1.26**	1.70 **3.79**	2.30 **5.64**	63.24 **22.04**	15.60 **8.41**	11.37 **23.91**	4.85 **34.95**	*18.7* ***2.3***
Blue collar, skilled	0.70 **0.54**	1.43 **3.65**	2.79 **5.84**	38.86 **8.95**	29.42 **17.39**	18.11 **24.91**	8.69 **38.73**	*17.2* ***3.2***
Blue collar, semi-sk	0.53 **0.35**	1.24 **2.34**	2.89 **4.11**	34.73 **10.30**	21.59 **7.20**	28.25 **34.27**	10.76 **41.42**	*10.2* ***5.2***
Blue collar, laborer	1.01 **0.64**	2.68 **5.42**	6.41 **8.68**	26.00 **6.79**	22.15 **6.80**	23.17 **23.23**	18.59 **48.44**	*9.1* ***17.0***
Share of Total	4.1 **2.2**	9.1 **21.3**	10.3 **16.5**	32.1 **3.8**	17.9 **5.1**	16.3 **15.2**	10.2 **35.9**	*100.0* ***100.0***

TABLE A4C: OCCUPATION-TO-OCCUPATION TRANSITION MATRICES, BY RACE, 1962 COHORT

SONS' OCCUPATION CATEGORY IN 1962

FATHERS' OCCUPATION CATEGORY IN ~1950	Farmer	Farm laborer	Profess & Managerial	Clerical & Sales	Blue collar, skilled	Blue collar, semi-skill	Blue collar, laborer	*Share of Total*
Farmer, owner	16.12	6.15	18.05	8.02	21.48	24.07	6.12	*20.7*
	9.22	**15.72**	**3.28**	**3.16**	**6.57**	**36.16**	**25.89**	***36.5***
Farm laborer	4.17	12.25	7.25	10.73	25.13	30.28	10.20	*2.3*
	0.00	**23.55**	**0.00**	**6.69**	**9.99**	**28.28**	**31.49**	***7.8***
Professional & Managerial	0.52	0.13	53.17	19.84	13.54	9.86	2.95	*18.0*
	0.00	**2.04**	**37.64**	**11.40**	**14.35**	**18.65**	**15.92**	***5.3***
Clerical and Sales	1.06	0.00	44.91	20.94	16.33	14.29	2.47	*9.0*
	0.00	**0.00**	**33.18**	**23.47**	**9.06**	**24.20**	**10.09**	***2.5***
Blue collar, skilled	0.57	0.61	28.12	13.40	29.21	21.82	6.27	*22.2*
	0.00	**2.43**	**18.53**	**17.27**	**10.28**	**34.13**	**17.37**	***11.8***
Blue collar, semi-sk	0.62	0.97	21.62	13.73	23.95	31.31	7.79	*21.3*
	0.00	**6.00**	**10.80**	**9.65**	**10.16**	**31.24**	**32.14**	***16.2***
Blue collar, laborer	0.90	1.13	17.68	13.14	24.69	32.38	10.09	*6.5*
	1.23	**2.29**	**7.70**	**10.51**	**10.01**	**33.37**	**34.88**	***19.9***
Share of Total	3.9	2.0	29.5	14.1	22.1	22.4	6.0	*100.0*
	3.6	**9.4**	**9.5**	**8.6**	**9.0**	**32.7**	**27.2**	***100.0***

TABLE A4D: OCCUPATION-TO-OCCUPATION TRANSITION MATRICES, BY RACE, 1973 COHORT

SONS' OCCUPATION CATEGORY IN 1973

FATHERS' OCCUPATION CATEGORY IN ~1960	Farmer	Farm laborer	Profess & Managerial	Clerical & Sales	Blue collar, skilled	Blue collar, semi-skill	Blue collar, laborer	*Share of Total*
Farmer	11.32	4.87	20.33	8.55	24.23	23.35	7.34	*12.4*
	2.80	**5.77**	**10.94**	**7.13**	**17.96**	**34.48**	**20.92**	***16.0***
Farm laborer	1.84	8.18	13.38	8.18	26.52	32.29	9.62	*3.4*
	2.10	**5.02**	**9.01**	**6.51**	**21.37**	**35.98**	**20.01**	***9.3***
Professional & Managerial	0.40	0.54	50.24	15.75	15.82	13.10	4.16	*21.8*
	0.00	**0.00**	**49.28**	**18.79**	**6.00**	**22.02**	**3.91**	***9.2***
Clerical and Sales	0.08	0.46	40.96	19.34	17.59	16.48	5.08	*10.3*
	0.00	**2.62**	**28.30**	**8.73**	**14.31**	**37.63**	**8.41**	***5.5***
Blue collar, skilled	0.41	0.55	28.97	12.46	29.69	21.84	6.08	*24.2*
	0.00	**0.00**	**17.77**	**15.23**	**17.86**	**31.82**	**17.32**	***12.9***
Blue collar, semi-sk	0.16	0.50	23.55	12.59	26.37	29.58	7.25	*21.2*
	0.00	**0.56**	**18.77**	**12.59**	**12.54**	**39.07**	**16.47**	***23.1***
Blue collar, laborer	0.42	0.99	20.92	9.73	27.99	29.08	10.87	*6.7*
	0.00	**1.05**	**13.61**	**11.15**	**14.36**	**37.06**	**22.77**	***24.0***
Share of Total	1.7	1.4	31.5	13.1	23.8	22.1	6.4	*100.0*
	0.6	**1.9**	**18.6**	**11.5**	**14.9**	**35.0**	**17.5**	***100.0***

TABLE A4E: OCCUPATION-TO-OCCUPATION TRANSITION MATRICES, BY RACE, 1990 COHORT OBSERVED IN 1990

SONS' OCCUPATION CATEGORY IN 1990

FATHERS' OCCUPATION CATEGORY IN ~1974	Farmer	Farm laborer	Profess & Managerial	Clerical & Sales	Blue collar, skilled	Blue collar, semi-skill	Blue collar, laborer	*Share of Total*
Farmer	14.87	8.44	19.95	10.47	17.82	19.35	9.10	*2.9*
	0.00	**0.00**	**0.00**	**14.29**	**36.84**	**29.32**	**19.55**	***36.5***
Farm laborer	0.00	10.73	0.00	3.07	50.26	21.12	14.82	*0.5*
	3.93	**0.00**	**9.69**	**0.00**	**28.27**	**31.94**	**26.18**	***7.8***
Professional & Managerial	0.18	0.53	50.96	17.43	16.49	9.68	4.74	*33.1*
	0.00	**0.00**	**35.51**	**25.91**	**15.60**	**12.27**	**10.70**	***5.3***
Clerical and Sales	0.00	0.45	36.86	16.68	20.52	17.75	7.74	*13.4*
	0.00	**0.00**	**25.72**	**17.00**	**18.95**	**19.24**	**19.09**	***2.5***
Blue collar, skilled	0.24	0.82	25.17	9.78	30.20	20.37	13.42	*25.6*
	0.28	**0.40**	**18.30**	**15.54**	**17.68**	**27.63**	**20.17**	***11.8***
Blue collar, semi-sk	0.31	0.70	21.44	9.15	26.29	29.70	12.42	*19.6*
	0.16	**0.35**	**13.63**	**12.72**	**17.69**	**33.62**	**21.83**	***16.2***
Blue collar, laborer	0.00	3.28	12.36	10.60	36.41	20.82	16.53	*4.9*
	0.00	**1.08**	**12.41**	**10.90**	**16.15**	**33.42**	**26.04**	***19.9***
Share of Total	0.6	1.0	33.6	13.1	23.7	18.3	9.6	*100.0*
	3.6	**9.4**	**9.5**	**8.6**	**9.0**	**32.7**	**27.2**	***100.0***

TABLE A4F: OCCUPATION-TO-OCCUPATION TRANSITION MATRICES, BY RACE, 1990 COHORT OBSERVED IN 2000

SONS' OCCUPATION CATEGORY IN 2000

FATHERS' OCCUPATION CATEGORY IN ~1974	Farmer	Farm laborer	Profess & Managerial	Clerical & Sales	Blue collar, skilled	Blue collar, semi-skill	Blue collar, laborer	*Share of Total*
Farmer	21.65	2.45	25.77	11.56	23.67	13.17	1.73	*0.7*
	0.00	**0.00**	**0.00**	**58.95**	**21.05**	**20.00**	**100.00**	***0.6***
Farm laborer	0.00	0.00	11.42	0.00	45.86	34.27	8.44	*0.6*
	0.00	**7.22**	**0.00**	**20.56**	**33.33**	**38.89**	**100.00**	***2.3***
Professional & Managerial	0.15	0.40	61.49	9.84	14.51	8.71	4.90	*21.3*
	0.00	**42.41**	**17.74**	**12.52**	**23.45**	**3.89**	**100.00**	***10.8***
Clerical and Sales	0.46	0.00	51.57	9.98	21.93	13.60	2.46	*4.4*
	0.00	**24.53**	**18.33**	**15.87**	**25.18**	**16.09**	**100.00**	***8.9***
Blue collar, skilled	0.37	0.76	36.20	9.65	28.79	15.13	9.09	*31.4*
	0.33	**26.53**	**8.81**	**13.82**	**32.63**	**17.87**	**100.00**	***21.4***
Blue collar, semi-sk	1.44	0.00	28.89	6.15	31.03	18.77	13.72	*34.8*
	0.30	**23.43**	**8.78**	**20.76**	**30.34**	**16.39**	**100.00**	***37.2***
Blue collar, laborer	1.30	0.00	19.87	13.48	24.21	30.56	10.58	*6.8*
	0.00	**16.49**	**1.41**	**21.44**	**32.10**	**28.56**	**100.00**	***18.8***
Share of Total	1.2	0.4	43.9	9.3	23.3	14.3	7.6	*100.0*
	0.2	**24.4**	**9.0**	**18.3**	**30.0**	**18.2**	**100.0**	***100.0***

Notes and sources: Transition probabilities for white and black (bolded) sons of fathers in each broad occupation category. See text for sources.

TABLE A.5 UPWARD RANK MOBILITY BY FATHERS' INCOME SCORE DECILE, BY COHORT AND RACE

PANEL A: Share of Sons Experiencing Any Upward Mobility

Sons' Cohort Year		1900		1930		1962		1973		1990	
		White	Black	White	Black	White	Black	White	Black	White	Black
Father's Income Score Decile	1	0.68	0.41	0.85	0.59	0.91	0.65	0.91	0.67	0.97	0.80
	2	0.80	0.59	0.81	0.72	0.88	0.61	0.85	0.51	0.88	0.60
	3	0.65	0.64	0.91	0.56	0.52	0.49	0.75	0.36	0.76	0.54
	4	0.56	0.41	0.56	0.39	0.62	0.29	0.60	0.32	0.66	0.50
	5	0.71	0.21	0.47	0.12	0.48	0.00	0.61	0.23	0.58	0.51
	6	0.61	0.16	0.50	0.10	0.45	0.13	0.42	0.15	0.48	0.33
	7	0.23	0.56	0.33	0.00	0.39	0.00	0.34	0.06	0.36	0.00
	8	0.27	0.00	0.36	0.03	0.30	0.27	0.28	0.16	0.35	0.40
	9	0.21	0.10	0.25	0.02	0.19	0.00	0.16	---	0.31	---
	10	0.17	0.00	0.14	0.00	0.08	---	0.07	0.00	0.10	0.00
	All	0.45	0.43	0.46	0.60	0.45	0.60	0.45	0.54	0.49	0.64

PANEL B: Share of Sons Experiencing Upward Mobility by at Least 5 Percentiles

Sons' Cohort Year		1900		1930		1962		1973		1990	
		White	Black	White	Black	White	Black	White	Black	White	Black
Father's Income Score Decile	1	0.66	0.21	0.74	0.35	0.85	0.30	0.85	0.46	0.88	0.62
	2	0.73	0.40	0.62	0.43	0.82	0.53	0.77	0.37	0.84	0.54
	3	0.64	0.49	0.76	0.36	0.49	0.17	0.68	0.32	0.72	0.42
	4	0.53	0.33	0.39	0.15	0.56	0.29	0.54	0.27	0.61	0.46
	5	0.36	0.03	0.41	0.10	0.42	0.00	0.54	0.18	0.53	0.49
	6	0.44	0.12	0.45	0.09	0.37	0.07	0.36	0.09	0.44	0.28
	7	0.20	0.56	0.29	0.00	0.30	0.00	0.28	0.06	0.30	0.00
	8	0.21	0.00	0.29	0.02	0.25	0.27	0.24	0.13	0.27	0.11
	9	0.13	0.03	0.18	0.01	0.13	0.00	0.11	---	0.18	---
	10	0.03	0.00	0.02	0.00	0.04	---	0.03	0.00	0.02	0.00
	All	0.34	0.24	0.36	0.36	0.39	0.33	0.39	0.39	0.42	0.53

PANEL C: Share of Sons Experiencing Upward Mobility by at Least 10 Percentiles

Sons' Cohort Year		1900		1930		1962		1973		1990	
		White	Black	White	Black	White	Black	White	Black	White	Black
Father's Income Score Decile	1	0.53	0.14	0.66	0.25	0.76	0.19	0.81	0.34	0.82	0.47
	2	0.53	0.20	0.58	0.34	0.78	0.39	0.71	0.26	0.79	0.46
	3	0.43	0.31	0.70	0.28	0.45	0.08	0.62	0.29	0.63	0.35
	4	0.29	0.13	0.36	0.11	0.52	0.22	0.46	0.25	0.56	0.34
	5	0.30	0.03	0.39	0.09	0.37	0.00	0.46	0.18	0.47	0.32
	6	0.37	0.12	0.40	0.08	0.31	0.00	0.32	0.05	0.38	0.28
	7	0.17	0.56	0.24	0.00	0.25	0.00	0.22	0.06	0.26	0.00
	8	0.15	0.00	0.22	0.01	0.18	0.00	0.18	0.13	0.19	0.11
	9	0.06	0.03	0.09	0.00	0.08	0.00	0.06	---	0.10	---
	10	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	All	0.24	0.15	0.31	0.26	0.34	0.22	0.33	0.29	0.36	0.42

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

TABLE A.6 SONS' INCOME SCORE RANK REGRESSIONS --- NLSY79 COHORT OBSERVED IN 1990 AND 2000

	(1)	(2)	(3)	(4)
Sons' Cohort Year	**1990**	**2000**	**1990 - balanced sample**	**2000 - balanced sample**
PANEL A: WITH FATHERS' INCOME RANK CONTROLS				
BLACK	-18.94***	-19.64***	-19.40***	-19.84***
	(1.554)	(1.638)	(1.740)	(1.708)
Parent's Income Rank	0.254***	0.244***	0.240***	0.241***
	(0.0239)	(0.0260)	(0.0274)	(0.0268)
N	2,595	2,039	1,868	1,868
R-Squared	0.146	0.150	0.141	0.146
PANEL B: ADD FATHERS' HUMAN CAPITAL CONTROLS				
BLACK	-19.81***	-19.85***	-19.99***	-20.24***
	(1.571)	(1.636)	(1.759)	(1.700)
Parent's Income Rank	0.182***	0.137***	0.165***	0.133***
	(0.0270)	(0.0285)	(0.0303)	(0.0296)
R-Squared	0.188	0.222	0.193	0.219
PANEL C: ADD AGE REGION OF ORIGIN FIXED EFFECTS				
BLACK	-19.02***	-19.29***	-19.48***	-19.74***
	(1.576)	(1.652)	(1.771)	(1.716)
Parent's Income Rank	0.163***	0.118***	0.148***	0.114***
	(0.0273)	(0.0290)	(0.0309)	(0.0301)
R-Squared	0.202	0.233	0.207	0.231
PANEL D: ADD SONS' EDUCATION OR LITERACY CONTROLS + PARENTAL PRESENCE				
BLACK	-20.27***	-21.45***	-21.16***	-22.15***
	(1.508)	(1.550)	(1.691)	(1.617)
Parent's Income Rank	0.124***	0.085***	0.113***	0.088***
	(0.0283)	(0.0298)	(0.0319)	(0.0311)
R-Squared	0.306	0.346	0.309	0.341

Notes and sources: See notes to Table 2 in the main text. Column (1) repeats column (5) from Table 2 in the main text and contains regressions based on the 1990 observations for the NLSY79 cohorts. Column (2) contains estimates from year 2000 observations. Because samples are not balanced across those years, we provide a balanced estimate of 1990 observations (column 3) and 2000 observations (column 4).

TABLE A.7 SONS' INCOME SCORE RANK REGRESSIONS --- SENSITIVITY OF 1900 SONS' COHORT TO INCOME ASSIGNMENT METHOD

	(1)	(2)	(3)	(4)
Sons' Cohort Year		**1900**		
	Baseline (1940-Based)	1900-based Income Assignments	1900-based Income Assignments, High Case	1900-based Income Assignments, Low Case
PANEL A: WITH FATHERS' INCOME RANK CONTROLS				
BLACK	-22.50***	-16.71***	-23.33***	-13.44***
	(0.429)	(0.449)	(0.420)	(0.477)
Parent's Income Rank	0.432***	0.516***	0.358***	0.584***
	(0.007)	(0.007)	(0.008)	(0.007)
N	308,099	308,099	308,099	308099
R-Squared	0.354	0.386	0.285	0.415
PANEL B: ADD FATHERS' HUMAN CAPITAL CONTROLS				
BLACK	-25.17***	-21.84***	-21.59***	-18.77***
	(0.392)	(0.408)	(0.406)	(0.488)
Parent's Income Rank	0.361***	0.385***	0.379***	0.421***
	(0.007)	(0.007)	(0.008)	(0.009)
R-Squared	0.409	0.432	0.349	0.438
PANEL C: ADD AGE AND STATE/REGION OF ORIGIN FIXED EFFECTS				
BLACK	-23.49***	-19.36***	-19.65***	-15.14***
	(0.453)	(0.438)	(0.434)	(0.509)
Parent's Income Rank	0.269***	0.277***	0.243***	0.321***
	(0.004)	(0.004)	(0.005)	(0.007)
R-Squared	0.462	0.489	0.430	0.486
PANEL D: ADD SONS' EDUCATION OR LITERACY CONTROLS + PARENTAL				
BLACK	-21.82***	-17.84***	-18.25***	-13.71***
	(0.435)	(0.418)	(0.424)	(0.489)
Parent's Income Rank	0.266***	0.274***	0.240***	0.315***
	(0.004)	(0.004)	(0.005)	(0.007)
R-Squared	0.465	0.491	0.430	0.489

Notes and sources: See notes to Table 2 in the main text and discussion above on 1900-based income assignments. Baseline, high case, and low case assignment assumptions are discussed in Appendix Section IV.

TABLE A.8 SONS' INCOME SCORE RANK REGRESSIONS --- SENSITIVITY TO INCOME ASSIGNMENT METHOD --- 1960-BASED ASSIGNMENTS

	(1)	(2)	(3)	(4)	(5)
Sons' Cohort Year	1900	1930	1963	1972	1990
	1960-Based Income Assignments				
PANEL A: WITH FATHERS' INCOME RANK CONTROLS					
BLACK	-24.68***	-25.04***	-27.82***	-27.10***	-25.58***
	(0.431)	(0.0674)	(0.796)	(0.675)	(1.433)
Parent's Income Rank	0.394***	0.356***	0.301***	0.240***	0.264***
	(0.007)	(0.001)	(0.011)	(0.009)	(0.024)
N	308,099	1,497,539	9,025	13,848	2,597
R-Squared	0.338	0.290	0.223	0.188	0.204
PANEL B: ADD FATHERS' HUMAN CAPITAL CONTROLS					
BLACK	-26.25***	-23.54***	-28.34***	-27.75***	-26.53***
	(0.398)	(0.068)	(0.777)	(0.670)	(1.465)
Parent's Income Rank	0.347***	0.278***	0.219***	0.167***	0.192***
	(0.007)	(0.001)	(0.012)	(0.010)	(0.027)
R-Squared	0.382	0.350	0.258	0.209	0.252
PANEL C: ADD AGE AND STATE/REGION OF ORIGIN FIXED EFFECTS					
BLACK	-24.86***	-22.72***	-26.99***	-25.24***	-25.20***
	(0.437)	(0.0727)	(0.772)	(0.654)	(1.443)
Parent's Income Rank	0.245***	0.192***	0.163***	0.123***	0.152***
	(0.0039)	(0.001)	(0.012)	(0.010)	(0.028)
R-Squared	0.435	0.406	0.328	0.299	0.275
PANEL D: ADD SONS' EDUCATION OR LITERACY CONTROLS + PARENTAL PRESENCE					
BLACK	-23.32***	-22.00***	-26.91***	-25.64***	-26.55***
	(0.421)	(0.073)	(0.775)	(0.601)	(1.443)
Parent's Income Rank	0.243***	0.189***	0.168***	0.077***	0.116***
	(0.004)	(0.001)	(0.012)	(0.010)	(0.028)
R-Squared	0.437	0.409	0.328	0.387	0.369

Notes and sources: Results in this table based on consistent, 1960-based scoring across all five cohorts of sons. See notes to Table 2 in the main text and discussion on 1960-based income assignments contained in Appendix Section IV.

TABLE A.9 SONS' INCOME SCORE RANK REGRESSIONS --- SENSITIVITY TO CHANGES IN FAMILY STRUCTURE --- USING MALE HH HEADS

	Full Sample				
Sons' Cohort Year	1900	1930	1962	1973	1990
PANEL A: WITH FATHERS' INCOME RANK CONTROLS					
BLACK	-22.50***	-22.82***	-27.05***	-25.16***	-19.15***
	(0.429)	(0.0711)	(0.784)	(0.680)	(1.457)
Parent's Income Rank	0.432***	0.398***	0.310***	0.225***	0.250***
	(0.00663)	(0.000890)	(0.011)	(0.009)	(0.023)
N	308,099	1,497,535	9,293	14,280	2,843
R-Squared	0.354	0.307	0.226	0.166	0.147
PANEL B: ADD FATHERS' HUMAN CAPITAL CONTROLS					
BLACK	-25.17***	-22.42***	-27.83***	-25.55***	-19.87***
	(0.392)	(0.0714)	(0.766)	(0.676)	(1.474)
Parent's Income Rank	0.361***	0.285***	0.226***	0.159***	0.177***
	(0.00678)	(0.000903)	(0.119)	(0.010)	(0.026)
R-Squared	0.409	0.381	0.259	0.184	0.188
PANEL C: ADD AGE AND STATE/REGION OF ORIGIN FIXED EFFECTS					
BLACK	-23.49***	-21.70***	-26.50***	-22.96***	-19.10***
	(0.453)	(0.0751)	(0.763)	(0.656)	(1.480)
Parent's Income Rank	0.269***	0.214***	0.169***	0.123***	0.155***
	(0.00393)	(0.000939)	(0.012)	(0.010)	(0.026)
R-Squared	0.462	0.430	0.330	0.278	0.201
PANEL D: ADD SONS' EDUCATION OR LITERACY CONTROLS + PARENTAL PRESENCE					
BLACK	-21.82***	-20.90***	-26.51***	-23.43***	-20.59***
	(0.435)	(0.0753)	(0.779)	(0.605)	(1.435)
Parent's Income Rank	0.266***	0.210***	0.168***	0.069***	0.097***
	(0.00393)	(0.000938)	(0.012)	(0.010)	(0.026)
R-Squared	0.465	0.433	0.330	0.371	0.299

Notes and sources: Columns 1 and 2 are unchanged relative to Table 2 in the main text. Results for 1962, 1973, and 1990 cohorts based on male adults in lieu of mothers when a son's father is not apparent in the household. See notes to Table 2 in the main text and further discussion of male adult identification contained in Appendix Section IV.

TABLE A.10 SENSITIVITY TO ASSUMPTIONS ABOUT FARMERS' INCOMES

	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)	(4)
	EXCLUDE ALL FARMING FATHERS		FARM OWNING FATHERS ONLY		FARM RENTING FATHERS ONLY		FARM OWNERS AND RENTERS SHARE FARM OWNER INCOME SCORE
Sons' Cohort Year	**1900**	**1930**	**1900**	**1930**	**1900**	**1930**	**1900**
PANEL A: WITH FATHERS' INCOME RANK CONTROLS							
BLACK	-32.26***	-30.71***	-16.11***	-13.34***	-20.75***	-15.18***	-21.86***
	(0.134)	(0.102)	(1.170)	(0.168)	(1.627)	(0.145)	(0.098)
Parent's Income Rank	0.363***	0.302***	0.466***	0.445***	0.345***	0.407***	0.438***
	(0.002)	(0.001)	(0.022)	(0.002)	(0.036)	(0.003)	(0.001)
N	299,847	850,192	4,800	427,952	3,452	219,391	681,320
R-Squared	0.449	0.285	0.175	0.167	0.397	0.327	0.344
PANEL B: ADD FATHERS' EDUCATION OR LITERACY, FARM, AND URBAN CONTROLS							
BLACK	-31.62***	-29.21***	-16.25***	-12.81***	-20.78***	-14.62***	-24.15***
	(0.130)	(0.103)	(1.172)	(0.170)	(1.627)	(0.144)	(0.094)
Parent's Income Rank	0.320***	0.244***	0.462***	0.423***	0.343***	0.379***	0.377***
	(0.002)	(0.001)	(0.022)	(0.002)	(0.037)	(0.003)	(0.001)
R-Squared	0.469	0.318	0.176	0.178	0.397	0.338	0.408
PANEL C: ADD AGE AND STATE/REGION OF ORIGIN FIXED EFFECTS							
BLACK	-25.46***	-26.25***	-18.76***	-13.04***	-21.57***	-14.66***	-22.93***
	(0.154)	(0.109)	(1.822)	(0.351)	(2.086)	(0.208)	(0.104)
Parent's Income Rank	0.288***	0.211***	0.317***	0.389***	0.352***	0.360***	0.275***
	(0.002)	(0.001)	(0.046)	(0.008)	(0.082)	(0.007)	(0.002)
R-Squared	0.508	0.370	0.281	0.250	0.441	0.383	0.460
PANEL D: ADD SONS' EDUCATION OR LITERACY CONTROLS + PARENTAL PRESENCE							
BLACK	-23.83***	-25.62***	-16.71***	-11.87***	-20.03***	-13.58***	-21.31***
	(0.154)	(0.108)	(1.827)	(0.351)	(2.031)	(0.207)	(0.105)
Parent's Income Rank	0.283***	0.206***	0.325***	0.394***	0.361***	0.371***	0.272***
	(0.002)	(0.001)	(0.046)	(0.008)	(0.082)	(0.007)	(0.002)
R-Squared	0.512	0.374	0.285	0.254	0.446	0.389	0.463

Notes and sources: Results in Columns 1a and 1b exclude father-son pairs where the father is a farmer. Results in Columns 2a and 2b are for father-son pairs where the father is a farmer and owns their own property. Results in Columns 3a and 3b are for father-son pairs where the father is a farmer and does not own their own property. Results in Column 4 are for the entirety of the 1880 sample, including farming fathers who were not matched to the agriculture census; we assign all farming fathers the income scores of farm owners in Column 4. Also see notes to Table 2 in the main text.

TABLE A.11 RESULTS EXCLUDING IMMIGRANT FATHERS

	Full Sample				
Sons' Cohort Year	1900	1930	1962	1973	1990
PANEL A: WITH FATHERS' INCOME RANK CONTROLS					
BLACK	-20.19***	-21.15***	-26.89***	-25.41***	-18.50***
	(0.491)	(0.0744)	(0.829)	(0.709)	(1.576)
Parent's Income Rank	0.455***	0.409***	0.320***	0.223***	0.257***
	(0.008)	(0.001)	(0.012)	(0.009)	(0.025)
N	226,119	1,224,330	7,593	12,662	2,511
R-Squared	0.382	0.325	0.243	0.170	0.147
PANEL B: ADD FATHERS' HUMAN CAPITAL CONTROLS					
BLACK	-23.68***	-21.58***	-27.56***	-25.64***	-19.15***
	(0.456)	(0.0748)	(0.823)	(0.710)	(1.589)
Parent's Income Rank	0.388***	0.299***	0.227***	0.155***	0.184***
	(0.008)	(0.001)	(0.013)	(0.010)	(0.028)
R-Squared	0.422	0.386	0.277	0.188	0.189
PANEL C: ADD AGE AND STATE/REGION OF ORIGIN FIXED EFFECTS					
BLACK	-22.64***	-21.30***	-26.48***	-23.50***	-18.47***
	(0.484)	(0.0779)	(0.812)	(0.691)	(1.592)
Parent's Income Rank	0.283***	0.223***	0.173***	0.122***	0.164***
	(0.005)	(0.001)	(0.013)	(0.010)	(0.028)
R-Squared	0.476	0.435	0.346	0.282	0.203
PANEL D: ADD SONS' EDUCATION OR LITERACY CONTROLS + PARENTAL PRESENCE					
BLACK	-21.09***	-20.54***	-26.36***	-23.90***	-19.88***
	(0.465)	(0.0780)	(0.815)	(0.634)	(1.534)
Parent's Income Rank	0.279***	0.219***	0.182***	0.0792***	0.129***
	(0.005)	(0.001)	(0.014)	(0.010)	(0.029)
R-Squared	0.479	0.438	0.346	0.368	0.306

Notes and sources: Results restricted to father-son pairs where the father was born in the United States. See notes to Table 2 in the main text.

TABLE A.12 RESULTS FOR SOUTHERN-RESIDING FATHERS ONLY

	Full Sample				
Sons' Cohort Year	1900	1930	1962	1973	1990
PANEL A: WITH FATHERS' INCOME RANK CONTROLS					
BLACK	-17.88***	-17.86***	-25.40***	-23.71***	-17.60***
	(0.736)	(0.095)	(1.029)	(0.884)	(2.531)
Parent's Income Rank	0.382***	0.370***	0.292***	0.239***	0.316***
	(0.015)	(0.0018)	(0.022)	(0.016)	(0.047)
N	64,693	432,561	2,797	4,590	882
R-Squared	0.365	0.325	0.265	0.235	0.236
PANEL B: ADD FATHERS' HUMAN CAPITAL CONTROLS					
BLACK	-19.90***	-19.07***	-26.30***	-24.41***	-19.23***
	(0.688)	(0.095)	(1.039)	(0.882)	(2.462)
Parent's Income Rank	0.335***	0.283***	0.195***	0.154***	0.191***
	(0.015)	(0.002)	(0.025)	(0.019)	(0.054)
R-Squared	0.382	0.361	0.298	0.259	0.341
PANEL C: ADD AGE AND STATE/REGION OF ORIGIN FIXED EFFECTS					
BLACK	-20.46***	-19.42***	-25.52***	-23.51***	-19.46***
	(0.618)	(0.100)	(1.047)	(0.867)	(2.442)
Parent's Income Rank	0.327***	0.264***	0.177***	0.155***	0.178***
	(0.011)	(0.002)	(0.024)	(0.018)	(0.055)
R-Squared	0.418	0.393	0.354	0.322	0.351
PANEL D: ADD SONS' EDUCATION OR LITERACY CONTROLS + PARENTAL PRESENCE					
BLACK	-19.10***	-18.68***	-25.47***	-24.33***	-21.50***
	(0.593)	(0.099)	(1.049)	(0.805)	(2.321)
Parent's Income Rank	0.319***	0.258***	0.183***	0.0969***	0.117**
	(0.011)	(0.002)	(0.024)	(0.017)	(0.057)
R-Squared	0.424	0.399	0.355	0.410	0.444

Notes and sources: Results restricted to father-son pairs where the father is residing in the southern Census region in the observation year. Also see notes to Table 2 in the main text.

TABLE A.13 RESULTS FOR URBAN-RESIDING FATHERS ONLY

	Full Sample				
Sons' Cohort Year	1900	1930	1962	1973	1990
PANEL A: WITH FATHERS' INCOME RANK CONTROLS					
BLACK	-33.65***	-33.48***	-29.72***	-25.72***	-21.03***
	(0.340)	(0.160)	(1.051)	(0.856)	(1.761)
Parent's Income Rank	0.260***	0.223***	0.255***	0.206***	0.237***
	(0.004)	(0.001)	(0.013)	(0.010)	(0.027)
N	117,016	523,187	6,144	10,348	1,970
R-Squared	0.257	0.208	0.195	0.151	0.157
PANEL B: ADD FATHERS' HUMAN CAPITAL CONTROLS					
BLACK	-33.71***	-32.88***	-29.33***	-25.69***	-21.08***
	(0.336)	(0.162)	(1.058)	(0.855)	(1.802)
Parent's Income Rank	0.261***	0.217***	0.205***	0.159***	0.181***
	(0.004)	(0.001)	(0.014)	(0.011)	(0.031)
R-Squared	0.258	0.211	0.213	0.161	0.188
PANEL C: ADD AGE AND STATE/REGION OF ORIGIN FIXED EFFECTS					
BLACK	-31.87***	-30.74***	-28.18***	-22.90***	-20.50***
	(0.387)	(0.163)	(1.029)	(0.832)	(1.807)
Parent's Income Rank	0.235***	0.184***	0.161***	0.129***	0.166***
	(0.004)	(0.001)	(0.014)	(0.011)	(0.031)
R-Squared	0.293	0.267	0.291	0.265	0.204
PANEL D: ADD SONS' EDUCATION OR LITERACY CONTROLS + PARENTAL PRESENCE					
BLACK	-30.48***	-30.43***	-28.09***	-23.39***	-21.94***
	(0.380)	(0.162)	(1.034)	(0.752)	(1.724)
Parent's Income Rank	0.232***	0.180***	0.166***	0.080***	0.129***
	(0.004)	(0.001)	(0.015)	(0.011)	(0.032)
R-Squared	0.297	0.270	0.291	0.366	0.309

Notes and sources: Results restricted to father-son pairs where the father is residing in an urban location in the observation year. Also see notes to Table 2 in the main text.

TABLE A.14 RESULTS FOR RURAL-RESIDING FATHERS ONLY

	Full Sample				
Sons' Cohort Year	1900	1930	1962	1973	1990
PANEL A: WITH FATHERS' INCOME RANK CONTROLS					
BLACK	-21.81***	-20.63***	-24.61***	-26.20***	-13.18***
	(0.507)	(0.0796)	(1.178)	(1.182)	(3.356)
Parent's Income Rank	0.395***	0.349***	0.327***	0.208***	0.289***
	(0.009)	(0.001)	(0.022)	(0.020)	(0.054)
N	191,083	974,348	2,881	3,500	625
R-Squared	0.330	0.267	0.232	0.172	0.116
PANEL B: ADD FATHERS' HUMAN CAPITAL CONTROLS					
BLACK	-23.37***	-19.06***	-24.26***	-25.43***	-15.64***
	(0.481)	(0.0812)	(1.202)	(1.168)	(3.372)
Parent's Income Rank	0.392***	0.327***	0.282***	0.162***	0.185***
	(0.009)	(0.001)	(0.023)	(0.022)	(0.060)
R-Squared	0.351	0.294	0.250	0.192	0.214
PANEL C: ADD AGE AND STATE/REGION OF ORIGIN FIXED EFFECTS					
BLACK	-22.28***	-19.41***	-23.60***	-23.30***	-13.60***
	(0.517)	(0.0865)	(1.233)	(1.150)	(3.486)
Parent's Income Rank	0.278***	0.227***	0.192***	0.101***	0.147**
	(0.005)	(0.001)	(0.025)	(0.023)	(0.060)
R-Squared	0.417	0.353	0.318	0.270	0.238
PANEL D: ADD SONS' EDUCATION OR LITERACY CONTROLS + PARENTAL PRESENCE					
BLACK	-20.62***	-18.50***	-23.54***	-23.30***	-14.07***
	(0.498)	(0.0864)	(1.231)	(1.086)	(3.524)
Parent's Income Rank	0.274***	0.222***	0.198***	0.0706***	0.128**
	(0.005)	(0.001)	(0.026)	(0.022)	(0.063)
R-Squared	0.421	0.358	0.318	0.341	0.333

Notes and sources: Results restricted to father-son pairs where the father is residing in a rural location in the observation year. Also see notes to Table 2 in the main text.

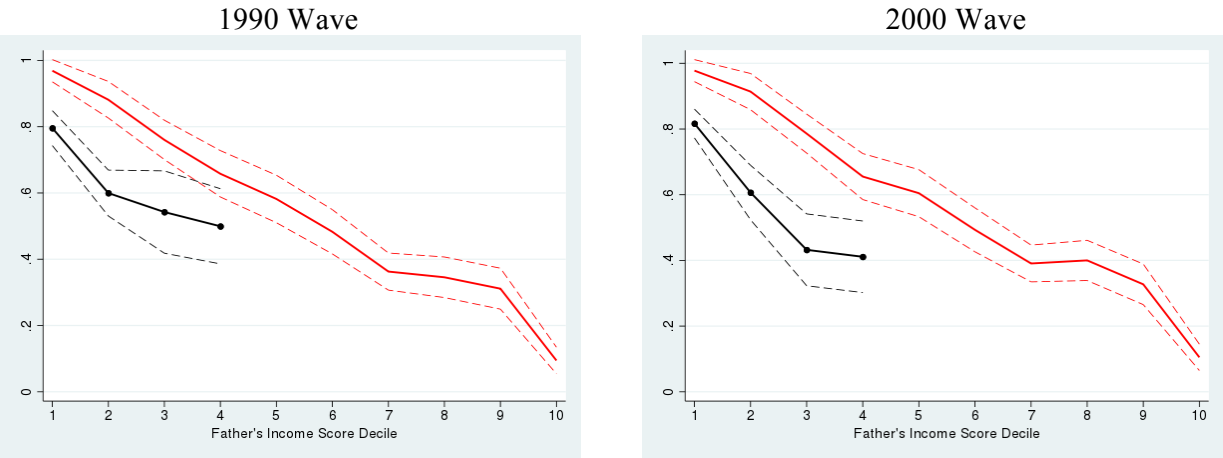
TABLE A.15 DISSIMILARITY INDEX AND HELLINGER DISTANCE FOR BLACK AND WHITE SONS OCCUPATION INCOME SCORES

Sons' Cohort	1900	1930	1962	1973	1990
Dissimilarity Index					
Black sons versus white sons - Actual	0.762	0.677	0.697	0.588	0.449
Black sons versus white sons - Counterfactual	0.331	0.222	0.141	0.20	0.153
% Reduction	56.6%	67.2%	79.8%	66.2%	65.9%
Hellinger Distance					
Black sons versus white sons - Actual	0.70	0.59	0.57	0.48	0.36
Black sons versus white sons - Counterfactual	0.29	0.19	0.13	0.16	0.11
% Reduction	57.8%	67.8%	77.5%	67.0%	70.3%

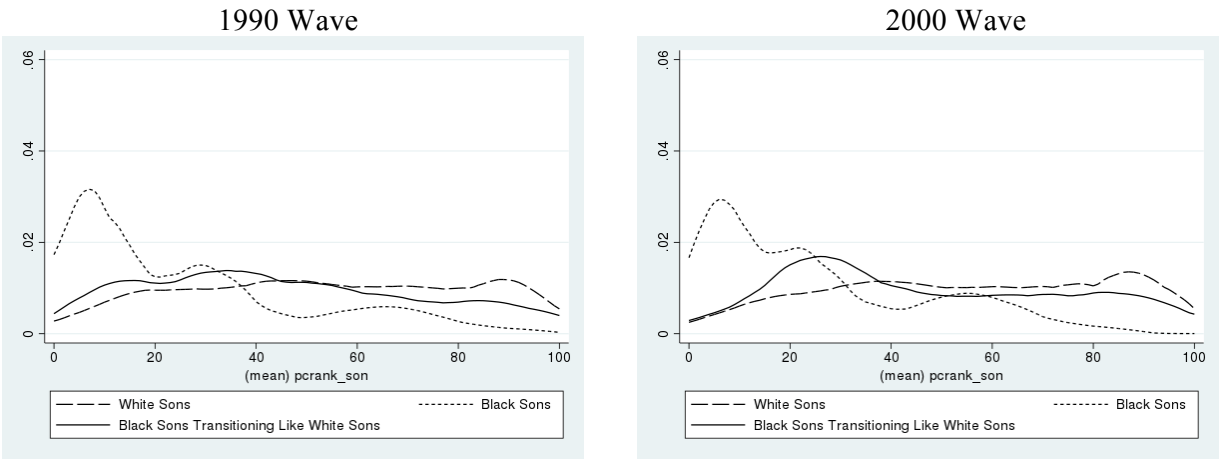
Notes and sources: See Appendix Section V for complete discussion of counterfactual construction based on calculating distributions of black sons' income ranks under white sons' transition rates. Dissimilarity index based on distribution of scores across ventiles of the national income score distribution. Hellinger distance measure based on 100 cut points of adaptive kernel distributions.

FIGURE A.1 NLSY79 SONS OBSERVED IN 1990 AND 2000

PANEL A: UPWARD RANK MOBILITY BY FATHER'S INCOME DECILE AND RACE



PANEL B: COUNTERFACTUAL KERNEL DENSITY PLOTS FOR BLACK SONS UNDER WHITE SONS' TRANSITION RATES



Notes and sources: See notes to Figures 2 and 4 in the main text. Panel A contains the baseline estimates of upward rank mobility for NLSY79 sons observed in 1990 and 2000. Panel B shows counterfactual distributions of black sons' income score rank under white father-son transition patterns for the same samples. See Appendix Section III.