The Great Migration's Impact on Southern Inequality

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April 6, 2024

PRELIMINARY DRAFT — Please click here for most recent version

Abstract

This paper studies the Great Migration—the early-20th century mass migration of Black Americans out of the U.S. South—and its impact on economic racial inequality in the South. To isolate the impacts of migration from potentially correlated impacts of local push factors, we construct a shift-share style "demand-pull" instrument, exploiting variation in preexisting Southern out-migration patterns in 1900-10 and labor demand changes outside the South in 1910–1940. We estimate that counties with one percentile higher out-of-South migration during 1910–1940 had 1.3% higher average Black weekly wages in 1940. We find no effects on White wages, resulting in a reduction in the racial wage gap. Reduced Black labor supply and improved human capital accumulation are investigated as potential mechanisms. The results provide novel evidence of how the Great Migration impacted the Southern communities migrants left.

JEL: J15, J24, J61, N32

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1 Introduction

In one of the largest movements of people in U.S. history, six million Black Americans left the South between 1910–1970 in what came to be known as the Great Migration (Administration, 2021). Fleeing the racial violence and oppression of the Jim Crow South and in pursuit of better economic opportunities for their family and future generations, they went to the North and West. The Great Migration transformed the landscape of American society with far-reaching demographic, economic, and political ramifications across the country (Boustan, 2016; Calderon et al., 2023; Collins, 2021; Derenoncourt, 2022; Gardner, 2020b; Tabellini, 2019; Wilkerson, 2011). While outcomes for migrants and the places they went have been the subject of much research, there is a dearth of empirical evidence quantifying how this large demographic movement affected the Southern communities the migrants left. This paper estimates the Great Migration's impacts on Southern local labor market outcomes and inequality.

The potential economic impacts of the Great Migration are not obvious. Depending on the extent of positive selection into migration, the large loss of population could have had negative consequences for local economic development, as well as for efforts to enact change through collective political action. Some Black thought-leaders in the early-20th century, including Booker T. Washington, Frederick Douglas, and Carter G. Woodson, spoke out against leaving the South, fearing that those choosing to migrate were leaving their communities behind for the worse rather than staying to fight for better opportunities where they were (Wilkerson, 2011; Woodson, 1918).

On the other hand, the mass movement of people using their power to "vote with their feet" could have spurred positive change. In Isabel Wilkerson's chronicle of the Great Migration, *The Warmth of Other Suns*, she writes:

> *[The Great Migration] would transofrm urban America and recast the social and political order of every city it touched. It would force the South to search its soul and finally to lay aside a feudal cast system. ...And more than that, it was the first big step the nation's servant class ever took without asking. (Wilkerson, 2011)*

Black wages in the Jim Crow south were held significantly lower through an oppressive system rather than due to competitive market forces. Leaving this system in large numbers

might have helped to force Southern employers to improve conditions and wages to keep the Black employees they relied on from leaving. The migrants North gained higher wages for themselves but inadvertently lowered wages for incumbent Northern Black workers in the process due to increased labor supply (Boustan, 2016; Boustan et al., 2010)—did an opposite effect benefit the Black workers who chose to remain in the South? Moreover, to the extent that an economic system so dependent on artificially "cheap" labor might have been a poor strategy for long-run growth, the loss of labor could help spur more efficient re-allocations to capital, leading to future economic benefits (Hornbeck & Naidu, 2014).

This paper finds evidence aligning with the latter view, that the Great Migration had positive impacts for Black workers remaining in the South.[1] We estimate that counties with more out-of-South migration during the First Wave of the Great Migration (1910–1940) had higher Black wages in 1940. We find no impact on White wages, resulting in a lower racial wage gap.

We employ recent advances in historical data-linking for our analysis. We use the Census Tree links (Buckles et al., 2023; Price et al., 2021) to link individuals between censuses and identify migrants. The Census Tree is the largest database of record links among the historical U.S. censuses created to date, created using machine learning methods to extend the hundreds of millions of real links input by users of the genealogy platform FamilySearch.org. The Census Tree has significantly higher matching rates than previous linking efforts (82%–86% for men in our study period) and is more representative of the total population than previous links, particularly for women and the Black population.

Using these linked data, we construct county migration rates for the Black and White populations.[2] Migration out of the South to Northern and Western/Midwestern states ("out-of-South migration") was similar and relatively low for both Black and White Southerners in 1900, just before the Great Migration began. As World War I ramped up, surging labor demand left a void in labor supply that Black workers were able to fill, and they began moving North in large numbers. County Black out-of-South migration rose from under 3% in 1900-10 to nearly 8% in 1920-30, before falling in the 1930s when the Great Depression

[1] We define the South as the states of the former Confederacy—Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, Virginia—plus Kentucky, Oklahoma, and West Virginia. The census-defined South region also includes Delaware, Maryland, and the District of Columbia, but we exclude these states since they were net receivers of Southern migrants, as other researchers have done (Boustan, 2016).

[2] We define migration rates here as the number of residents in year t living elsewhere in the following year t+10 census, divided by the year t population.

brought an end to the First Wave of the Great Migration (Figure 1).[3] White out-of-South migration, however, only increased from 3% to 4% during this time. As a result, the net out-migration rate for Black Southerners increased from close to 0 to approximately 7% at the 1920-30 peak, whereas for White Southerners it remained just above or below 0 in each decade.

We first examine who the migrants were. Impacts of migration to the origin location could depend on the characteristics of those selecting into migration. If migrants are positively selected, the loss of high skilled labor could have long run negative impacts for growth and may mechanically lower the average observed economic status of Black individuals in the area; if migrants are negatively selected, opposite effects are possible. We find both Black men and women migrating out of the South were positively selected on literacy, but there was relatively little selection on pre-migration occupation scores, particularly after comparing individuals from the same origin location. Selection on literacy was persistent throughout the first wave, compared to both the general population and other (within-South) migrants. The selection on literacy could indicate the particular importance of gaining information from sources such as *The Chicago Defender*, a Black newspaper which is often credited with helping Southerns learn of opportunities outside the South. It could also be that higher skilled individuals were stuck in lower occupations and had higher expected gains from migration.

Despite any positive selection, we find out-of-South migration was positively associated with Black wages in 1940. Migration could be correlated with other factors that also impact economic outcomes. For example, Boustan et al. (2020) show natural disasters through the 20th century cause increased county out-migration and lower property values. Hornbeck and Naidu (2014) and Feigenbaum et al. (2020) both estimate increases in out-migration resulting from the destruction of natural disasters the Great Mississippi Flood and the boll weevil infestation, respectively, but ultimately find positive long-run impacts. Given the Great Migration's context, the naive OLS estimate of the impact of migration on 1940 outcomes could be biased and capture impacts of these other push factors.

To isolate the impacts fo the migration on Southern economic outcomes we construct a shift-share instrument, which we describe as a "demand-pull" instrument. The instrument leverages a matrix of preexisting migration patterns between each county-to-county pair in 1900–1910, before the Great Migration began, combined with changes in Northern

[3]The Great Migration is generally thought of as taking place in two waves, the first in 1910–1940, and the second in 1940–1970. Our focus is on the first.

labor demand. Since shocks in Northern destinations are plausibly orthogonal to shocks in Southern origins, the instrument interacts the changes in Northern destinations labor demand with preexisting origin-destination migration patterns to predict the out-migration flows in Southern origins. Using the preexisting migration patterns as the levels of exposure, the instrument assigns in-flows of Southern-born Black migrants in Northern destinations to Southern origins. Researchers including Boustan et al. (2010), Tabellini (2019), and Derenoncourt (2022) use a similar strategy of adapting the classic shift-share instrumental variable design to the Great Migration context. They predict increases in the Northern Black population based on preexisting migration networks and Southern out-migration. Our demand-pull instrument is similar to those used in these papers, but in "reverse."

We estimate that Black weekly wages were 1.3% higher for every percentile increase in out-of-South migration between 1910–1940, with smaller negative and statistically insignificant impacts on White wages. As a result, racial wage inequality, measured as the ratio of Black divided by White wages, improved by .005 for each percentile increase in migration. The improvement in wages was shared by both men and women, with even larger impacts for women.

We conduct a placebo test and estimate the impact of the instrument on economic outcomes in 1900 and 1910, including occupational income scores and the Black/White occupation score ratio. We find no effect on Black occupation scores or score inequality before the Great Migration, which adds confidence that the results are not driven by correlated unobservables or differential pre-trends. We also find results are robust to a range of additional controls, such as the average White out- and in-migration during 1910–1940.

One potential explanation for the impact is that the Great Migration counties lost Black population share, tightening the supply of low-wage workers. The increased competition for labor could have improved Black workers' bargaining power and led to a rise in wages. We estimate the Great Migration decreased counties' Black population share, resulting in a lower share of the low-wage jobs being held by Black workers.

Another way the migration could have had economic benefits for the sending communities is through the potential for migrants to send remittances back. Wages were significantly higher in the North and many migrants sent money back to family members in the South, which could help them invest in human capital for future generations. For example, Theoharides (2018) finds out-migration from the Philippines in the 1990s and 2000s lead to increases in secondary school enrollment in the sending areas. Khanna et al.

(2022) examines the Philippines context further and finds migration increased incomes and education outcomes in migrant origin locations. Few Black children remained in school past 8th grade in the early 20th century, and many Black teenagers, particularly men, would work to help provide for the family. One explanation is that remittances from the North could delay the need for teen boys to work and allow them to stay in school longer.

We do not find effects on the average years of schooling for adults ages 18–40 in 1940. However, years of schooling did increase for Black teenagers. In particular, Black males ages 14–16 were significantly more likely to still be enrolled in school and were less likely to be in the labor force. The fact we only find impacts on education for the younger generations and not working aged adults could suggest delayed effects, or it could be that those who benefited with more education ended up migrating themselves, as indicated by the persistent selection on literacy. Regardless, changes in human capital to not appear to be a driver of the effect on adult wages.

The results provide novel empirical estimates of the causal effects of the Great Migration on Southern labor market outcomes. Our findings add to the narrative of the Great Migration by providing supporting quantitative evidence for some of the potential impacts that have been suggested by historians. Moreover, the paper furthers our understanding of the historical evolution of Southern economic outcomes and macroeconomic convergence.

There is a lack of empirical evidence on the migration's impacts on the South. In a recent review, Collins (2021) suggests more research is needed in this area:

> *it makes sense that studies of the Great Migration tend to focus on the migrants themselves and on the receiving cities in the North and West. But the implications for those who stayed in the South are also significant and merit more attention. There is much more to learn about how outmigration shaped Southern labor markets, demography, economic growth, and political economy.*

To our knowledge, only two papers empirically quantify impacts of the Great Migration on economic and social outcomes in the South (Feigenbaum et al., 2020; Hornbeck & Naidu, 2014); both do so indirectly by studying the impacts of natural disasters in the context of the Migration and argue out-migration was an important influence in the estimated effects. Hornbeck and Naidu (2014) study the Mississippi Flood of 1927 and find flooded counties more quickly advanced out of agriculture, with evidence suggesting migration and the changing supply of lower-skilled labor was an important channel of effect. Feigenbaum

et al. (2020) find crop destruction from the boll weevil caused decreases in racial violence and oppression, with migrants "voting with their feet" proposed as a mechanism. These papers focus on the impacts of natural disasters and argue that migration was a potential channel of the effects. We instead focus on the role of migration itself resulting from pull factors, independent of the impacts from natural disasters and other push factors. Our results are consistent with these findings suggesting the Great Migration caused positive economic change in the South.

Our results also relate to the evidence on migrant selection in the Great Migration. In earlier work, Collins and Wanamaker (2014, 2015) described migrant selection using a sample of men linked between the 1910 and 1930 censuses. They find migrants were positively selected on pre-migration earnings, but the magnitude of selection was not large. Leveraging the Census Tree Links allows us to construct a much larger linked sample and track both men's and women's location trajectories, allowing us to expand the population of interest and include more detailed comparisons (e.g., within-town selection). We also find migrants were positively selected, and this selection was partially but not fully explained by local average outcomes. In addition, our findings complement our understanding of the selection of internal migration in the early twentieth century more broadly. Complementing Zimran (2022), who studied the internal migration patterns and selection of US-born white males from 1850 to 1940, we present new evidence on migration behavior for Black men and women.

Looking forward, or analysis of the Great Migration provides an example of how out-migration might impact low-wage, oppressed communities in other parts of the world and in the future. A broader literature investigates the the effects of out-migration and potential brain drain. In an international context, out-migration has often been thought to be detrimental to development due to a loss of high skilled workers, the "brain drain" (Docquier & Rapoport, 2012). However, recent studies have also found potential benefits of skill biased out-migration on origin outcomes (Docquier & Veljanoska, 2020); for example, Theoharides (2018) finds migration out of the Philippines increased local origin secondary school enrollment. We add to this evidence by focusing on the potential impacts of internal migration on sending communities. Some research has focused on the impacts of forced migration (e.g., in war) (Becker & Ferrara, 2019). While our context is similar in the sense that migrants were often fleeing violence, it differs in that those in the forced migration literature are usually moved systematically without choice or through mass destruction. In our context, most migrants had autonomy in their decision to move[4] and the impacts are

[4]There are many historical anecdotes describing efforts by White Southerners to stop Black migrants from leaving by force. There are also cases where migrants were forced to move due to destruction from a

the result of a large movement of people collectively making a choice.

2 Historical Background

Between 1910 and 1970, approximately six million Black Americans moved out of the U.S. South in what has come to be known as the Great Migration (Administration, 2021). It was one of the largest movements of people in U.S. history, with economic, social, and political ramifications reverberating across the country. The Great Migration is typically thought of as taking place in two parts: the First Wave (the subject of this paper) during 1910–1940, and the Second Wave during 1940–1970.

Beginning in the mid-1910s, as World War I escalated, there was a surge in unmet labor demand resulting from the confluence of three forces: (1) as war efforts ramped up, industrial demand significantly increased; (2) many working-age men were sent off to the war, leaving vacant jobs; and (3) immigration was drastically reduced due to war disruptions and rising xenophobia, further tightening the labor supply. Black workers recognized the opportunity to fill this labor void,[5] and they quickly began migration North to due so. As pioneering Black Southerners put down roots and Northern employers continued needing more workers, migration networks were strengthened as friends and family migrated to join the job boom (Boustan, 2016; Wilkerson, 2011). Moreover, the need to hire Black workers to fill jobs during World War I introduced many non-Southern firms to their first experiences hiring Black employees, which might have changed racial employment decisions and facilitated more hiring in the following years (Whatley, 1990).

These conditions laid the foundation for continued mass internal migration over the subsequent decade even after World War I had subsided. Further immigration restrictions may have helped stimulate demand for Southern Black labor as well. The Emergency Quota Act of 1921 and the Immigration Act of 1924 implemented quotas that significantly limited the amount of annual immigration from many countries, putting an end to the largely open immigration policy the U.S. had toward Europe for the past century and restricting a key source of labor in the industrial North and Midwest (Abramitzky et al., 2023). The Black out-migration rate from the South doubled each decade—from just over 2% in 1900–1910 to 8% in 1920–1930—during the first wave of the Great Migration (Boustan, 2016).

natural disaster, like the Great Mississippi Flood fo 1927.

[5]Some historical evidence also suggests labor recruiters from the North were important instigators of the migration, but they quickly became less important as migration networks strengthened.

The First Wave ended during the Great Depression of the 1930s, when internal migration generally saw a sharp decline as economic prospects diminished across the country. Black Americans faced disproportionately high unemployment during the Depression, with few opportunities to move for better fortune. Once World War II began, a similar dynamic of war-induced labor demand ignited the migration again; Southern Black out-migration peaked at 14% in 1940–1950 and slowly declined each decade thereafter through the Second Wave during 1940–1970 (Boustan, 2016).

The impact of the Great Migration has been a prominent research topic in economics and the social sciences, with a wide range of outcomes studied (Collins, 2021). The bulk of the evidence relates to how the migrants fared and the changes they precipitated in their destinations. Migrants tended to benefit economically from the move through higher wages for themselves relative to the South, but they also increased competition and lowered wages for incumbent Black Northerners (Boustan, 2016; Boustan et al., 2010). Alexander et al. (2017) and Leibbrand et al. (2019) find the children of migrants had better economic outcomes on average than children of those remaining in the South. On the other hand, Derenoncourt (2022) presents causal evidence that the Great Migration lowered economic mobility for the next generation of Black children born in the 1980s, potentially resulting from backlash effects that led to increased segregation, crime, and policing. Other ways the Great Migration impacted destination cities include: increased suburbanization from "White flight" (Boustan, 2010); declines in public spending and tax revenues (Tabellini, 2019); and higher support for the civil rights movement and the Democratic Party (Calderon et al., 2023). As discussed above, there is much less evidence relating to the impacts of the Great Migration on the South.

3 Data

We use data from the 1900–1940 full count cenuses, accessed through IPUMS (Ruggles et al., 2021). The analysis focuses on the Southern states, which we define as the states of the former Confederacy—Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, Virginia—plus Kentucky, Oklahoma, and West Virginia.[6]

[6]The census-defined South region also includes Delaware, Maryland, and the District of Columbia. We exclude these states since they were net receivers of Southern migrants.

3.1 Geographies

Counties are the main geographic unit of analysis. We restrict our sample of counties to those with at least 1,000 population and 10% Black population share in 1900 (see Figure A.1 for a map of county Black population shares). County boundaries shifted over time, especially in less populated areas. To create consistent county boundaries over time, we use the borders in place in 1900 and assign each individual in the later censuses to these counties in a multi-step process that uses the counties recorded in the census as well as sub-county locations identified by the Census Place Project (Berkes et al., 2023a, 2023b). The Census Place Project geolocates the full count census population by identifying their sub-county location (e.g., city, town), providing the longitude and latitude. We identify an individual's 1900 county as follows:

1. First, we map 1910–1940 boundaries to 1900 based on area. All individuals in counties at least 99% contained within a 1900 boundary are assigned to that 1900 county. About 90%–95% of individuals are assigned this way.

2. For counties less than 99% contained in a 1900 boundary, we assign them to a county based on the latitude and longitude of the sub-county location in the Census Place Project data. Most of the individuals missing a 1900 county from step (i) are assigned to a county this way.

3. The Census Place Project geolocates nearly all (about 95%) of the individuals in 1910–1940, but approximately 1%–2% of the full count population in each of these years remained without a 1900 county boundary assignment after step (ii). For these individuals, we assign them to the 1900 county with the most area overlap.

We also use state economic areas in the construction of migration and for inference procedures. State economic areas are collections of contiguous counties that shared economic characteristics. They were created for the Census Bureau before the 1950 census (Bogue, 1951) and IPUMS created state economic areas for earlier years to match the original 1950 boundaries as closely as possible. We use the state economic areas defined by IPUMS for 1900 to match our 1900 county boundaries.

3.2 Migration

To identify migration, we first link individuals across censuses using links from the Census Tree (Buckles et al., 2023; Price et al., 2023a, 2023b, 2023c, 2023d; Price et al., 2021), which is the largest database of record links among the historical U.S. censuses created to date. The Census Tree creates high quality links by using real links input by users of the genealogy platform FamilySearch.org. These 317 million census-to-census pairs linked by FamilySearch users are then used to train a machine learning algorithm to create additional links. The result is a database of individual between-census links with significantly higher matching rates than previous linking efforts; in the 1900–1940 censuses the matching rate for men was 82%–86% and for women was 74%–79% (Buckles et al., 2023). Because of this much higher match rate, the Census Tree is more representative of the total population than previous links, particularly for women and the Black population.

Even with the relatively high level of representativeness, the sample of linked individuals from the Census Tree links still lack perfect representation of the population. We therefore create weights for the inverse probability of linkage following the recommendations in Bailey et al. (2020). We use these probability weights when calculating county migration.

We define a migrant as someone living in a different state economic area and at least 100 miles away when they are observed in the following census 10 years later. Out-of-South migrants are those living in the South in the base year but not 10 years later; within-South migrants are migrants leaving their state economic area but remaining in the South. We also examine general inter-county migration, defined simply as those living in a different county 10 years later with no other distance restrictions. We define in-migrants similarly.

To calculate migration rates, we divide the total number of out- (and in-) migrants between years t and $t+10$ and divide by the total population in t. We calculate migration rates separately for the Black and White populations.

3.3 Outcomes

The main outcomes are county average weekly wages by race and the Black/White wage ratio in 1940. We estimate weekly wages based on the census recorded wage and salary income for the past year and the number of weeks worked in the past year. We restrict the sample for estimating wages to those working in a wage/salary position and for at least 4

weeks. We use the Black/White wage ratio (i.e., average Black weekly wages divided by average White weekly wages) as a measure of inequality.

Income data were not collected in the censuses before 1940. To proxy for income in earlier years we use an occupational income score. We use the IPUMS-defined occupation score, which assigns a score based on 1950 income data.[7]

4 Description of the Migration

In 1900, the Black population was highly concentrated in the South (Figures A.1 and A.2); 86% of the total U.S. Black population lived in the region (Table A.1). By 1940, after the Great Migration's First Wave, that number had dropped to 73% living in the South, and in 1970, when the Great Migration had ended, less than half (48%) did. Many counties experienced a loss Black population relative to their total population (Figure A.1).

Figure 1 shows county-level 10-year migration rates during 1900–1940. The rate of migration out of the South to the North, Midwest, or Western states (hereafter "out-of-South migration") for both Black and white Americans was just under 3% in 1900-10, before the First Wave of the Great Migration began. Within-South migration and migration into the South was higher for White Americans. County net migration was positive (i.e., greater out-migration than in-migration) for Black Southerners starting in the Great Migration, whereas the net migration rate remained just above or below 0 for White Southerners.

The migration out of the South was geographically broad. In 1900, few counties had out-of-South migration rates higher than 2%, mostly in the bordering states (Figure 2). During 1910–1940, most counties averaged over 2.5% out-of-South migration.

Black out-of-South migration was negatively associated with Black and White within-South migration, suggesting potential substitution between the two, and positively associated with net in-migration, on average during 1900–1940 (Table 2). We then include county and year fixed effects to estimate the within-county association between changes in migration during 1900–1940. An increase in Black out-of-South migration was associated with an increase in net out-migration.

[7] A description of the occupation score construction is provided on the IPUMS website: https://usa.ipums.org/usa/chapter4/chapter4.shtml.

4.1 Migrant Selection

We next examine who the migrants were. Table 1 shows migrants were disproportionately ages 18–39, more often male, and less likely to be married in the pre-migration observation year. Migrants out of and within the South generally came less from farms than the total population, but out-of-South migrants were more often from urban areas than both the total population and other (within-South) migrants. Out-of-South migrants also had higher literacy rates, whereas within-south migrants had slightly lower rates than the general population. Finally, migrants had higher labor force participation rates and pre-migration occupation scores than the average in the population, and out-of-South migrants' average occupation scores were slightly higher than within-South migrants'.

The impacts of migration to the origin location depend on the degree of selection into migration on productive economic characteristics. If migrants are positively selected, the loss of high skilled labor could have long run negative impacts for growth and may mechanically lower the average observed economic status of Black individuals in the area; if migrants are negatively selected, opposite effects are possible. A simple Roy model would suggest that migrants would likely be higher skilled, educated, or otherwise positively selected if returns to such characteristics are relatively higher in the destination, which was likely the case for Black workers in the South (Roy, 1951).

Figure 3 shows migrants were positively selected on baseline literacy (reading and writing); out-of-South migrants were approximately 6 percentage points more likely to be literate than the rest of the Southern population. Comparing individuals within the same county or Census Place Project place (city, town) reduces the magnitude of selection to about 4pp. Comparing just among migrants rather than the total adult population (i.e., comparing out-of-South and within-South migrants), we find very similar selection on literacy. The magnitudes are very similar for both men and women.

Great Migration men were less likely to be labor force participants before migrating, possibly due to people moving for their first job, as there is no difference once comparing just among migrants. On the other hand, Great Migration women were more likely to be in the labor force than the rest of the population but less likely than other migrants. For those in the labor force, workers joining the Great Migration had slightly higher pre-migration occupational income scores.

Overall, the amount of selection into the Great Migration on observable pre-migration

economic outcomes was relatively low, emphasizing the broad nature of the migration. The individual characteristic most persistently associated with out-of-South migration was literacy. Figure 4 shows the selection on literacy existed at the turn of the century and persisted throughout the First Wave of the Great Migration, though it decreased during the period of reduced mobility in the Great Depression. It could be that migrating North required more acquisition of information than for following the familiar networks within the South, and those with better ability to read and write were more able to learn of Northern opportunities or communicate across the distance. For instance, historians have noted the importance of the distribution of the *Chicago Defender*, a Black newspaper, in the South as a key source of information about opportunities outside the South. It might also be that higher skilled workers were stuck in lower occupations and had better expected gains from migration.

5 Estimating Out-Migration Impacts: A Demand-Pull Instrument

Our goal is to estimate the impact of the Great Migration on Southern labor market outcomes (average weekly wages and the Black/White wage ratio). We estimate the effect of aggregate migration out of the South during 1910–1940 (GM) on average economic outcomes in county c in 1940

$$y_{c,1940} = \alpha + \beta GM_{c,1910\text{-}40} + X'_{c,1910}\Gamma + \varepsilon_c. \tag{1}$$

GM measures the sum of the Black out-of-South migration rates during 1910–1940

$$GM_{c,1910\text{-}40} = \sum_{t=1910}^{1930} \frac{\textit{Out-of-South migrants}_{c,t,t+10}}{\textit{Black population}_{ct}}. \tag{2}$$

Figure 5 shows GM is somewhat skewed. We follow a similar strategy as in (Derenoncourt, 2022) and define GM as the *percentile* of aggregate migration.

The Great Migration is associated with higher Black wages in 1940, as shown in Figure 7. Flows of out-migrants from Southern areas were likely to correlated with both the economic opportunities in Northern cities (pull factors) and the conditions in the origin counties (push factors). For example, Boustan et al. (2020) show natural disasters through the 20th century cause increased county out-migration and lower property values. Hornbeck and Naidu (2014)

and Feigenbaum et al. (2020) both estimate increases in out-migration resulting from the destruction of natural disasters—the Great Mississippi Flood and the boll weevil infestation, respectively. Hence, the OLS estimator for β, the effect of out-of-South migration on local economic outcomes, could be biased, reflecting both the impact of migration and the impacts of push factors.

To isolate the impacts of out-of-South migration from push factors, we construct a shift-share style instrument (Altonji & Card, 1991; Bartik, 1991; Blanchard & Katz, 1992), which we refer to as the "demand-pull" instrument. The instrument leverages a matrix of preexisting migration patterns between each county-to-county pair in 1900–1910, before the Great Migration began. Since shocks in Northern destinations are plausibly orthogonal to the shocks in Southern origins, the instrument interacts the changes in Northern destination labor demand with preexisting origin-destination migration patterns to predict the out-migration flows in Southern origins that are not caused by push factors. Using the preexisting migration patterns as the levels of exposure, the instrument assigns in-flows of Southern-born Black migrants in Northern destinations to Southern origins.

Researchers such as Boustan et al. (2010), Tabellini (2019), and Derenoncourt (2022) have used a similar strategy of adapting the classic shift-share instrumental variable design to the Great Migration context. They predict increases in the Northern Black population based on preexisting migration networks and Southern out-migration. Our demand-pull instrument is similar to the instruments used in these papers, but in "reverse."

The demand-pull instrument exploits two sources of variation: (i) cross-sectional variation in 1900–1910 migration network strength between each Northern and Southern county pair, and (ii) time series variation in labor demand in Northern counties between 1910–1940. Figure 8 illustrates the variation in preexisting out-migration networks by showing, for selected counties in 1900, the share of out-migrants going to each listed destination county. Panels A and B show the networks for counties with high and low out-migration rates, respectively. Migrants from Forsyth, NC, for example, mostly went to Northeastern states or Ohio, whereas migrants from Fulton, GA, had frequent destinations in the North, Midwest, and West. There was also variation in networks between counties within the same state.

Figure 9 compares the predicted and actual time-varying migration patterns for selected counties. Though the states of Illinois and New York were popular destinations on average, the out-migration patterns vary by origin counties. While Alleghany, VA experienced mainly

out-migration shocks to New York, out-migrants to Illinois accounted for higher outflows from Clarke, GA. Similarly, the patterns of migrant outflows were salient between Dade, FL and Madison, AL. Outflows of migrants to New York increased steadily in Dade, FL, but very few migrants from Madison, AL chose New York as their destination. The demand-pull instrument extends this example to all county-to-county pairs.

We predict Southern county c's aggregate out-of-South migration as

$$\widehat{GM}_{c,1910\text{-}40} = \sum_{t=1910}^{1930} \frac{1}{B_{ct}} \sum_{d} \lambda_{cd}^{1900\text{-}10} \times \Delta B_{d}^{t,t+10} \tag{3}$$

where $\lambda_{cd}^{1900\text{-}10}$ is the share of 1900–1910 in-migrants in Northern destination county d that came from Southern origin c, $\Delta B_{d}^{t,t+10}$ is the change in the Southern-born Black population in Northern destination county d between censuses t and t+10, and B_{ct} is the Black population in origin county c in year t.

We use the predicted $\widehat{GM}$ to instrument for migration in equation (1) using two-stage least squares. To focus on variation from changes in the North, we control for the baseline (1900–1910) Black out-of-South migration rate. Since migrants were more likely to come from urban areas we control for the baseline (1910) urban population share. Finally, to account for common state-level factors, such as general proximity to the North or state policies, we include state fixed effects to compare counties within the same state.

The identification strategy requires the instrument to be orthogonal to characteristics that are correlated with changes in economic outcomes between 1910–1940, after conditioning on the baseline controls. There could be correlated unobservables, or Great Migration counties might have been on a different trend before the migration. To provide support for the identifying assumption, we perform a placebo/pre-trend check testing whether the instrument predicts economic outcomes before the Great Migration began.

Table 3 shows the instrument does not predict Black occupation scores or score inequality in 1900 and 1910. These results add confidence that the results are not driven by correlated unobservables or differential pre-trends.

Figure 10 shows a binned scatter plot of percentiles of predicted versus actual out-of-South migration. There is a strong positive relationship between the two, suggesting a strong first stage. We report the F statistic for excluded instruments from the first stage in each regression table; the F statistic is near 40 for the baseline analysis, well above common rules

of thumb for weak instruments.

6 Impacts of the Great Migration on Southern Outcomes

Table 4 presents our estimates for the impact of out-of-South migration on Black and White wages in 1940. We estimate that a percentile increase in out-of-South migration between 1910–1940 caused Black wages to be 1.3% in 1940, with no effect found for White wages. As a result, racial wage inequality, measured as the ratio of Black divided by White wages, improved by .005 for each percentile increase in migration. The F-statistic for the first stage on GM is 40.6, well above commonly used benchmarks for weak instruments.

The OLS estimate is much smaller than the 2SLS estimate. This might indicated that omitted factors are correlated with both the migration and economic outcomes. For example, if natural disaster shocks negatively impact economic development and wages while also causing migration, the OLS estimate of the migration effects could be biased toward zero. Instead, our instrument estimates the local average treatment effect of migrating due to changes in the North.

Table 5 shows these effects are robust to a range of controls for alternative explanations. The baseline specification is shown in column (4). Adding a control for the baseline Black occupation score reduces the OLS estimate to near zero but has little effect on the estimated migration impact, as shown in column (5). Out-of-South migration was correlated with in-migration at baseline and on average during the studied period, which could be driving effects. Column (6) shows controlling for average Black in-migration during 1910–1940 does not alter the estimated effect of out-of-South migration. Similarly, column (7) controls for average White in- and out-migration during 1910–1940 does not largely change the estimated effect. Finally, it could be that the results are driven by counties in the border states, where out-of-South migration at baseline was high. Column (8) shows the estimates remain nearly identical when border states (Kentucky, Ohio, Virginia, West Virginia) are excluded, although the F-statistic decreases, partially due to a drop in sample size.

The improvement in wages was shared by both men and women, as shown in Table 6. If anything, the impact was slightly stronger for women. Women also faced a more significant racial wage disparity than men on average; the average ratio of Black to White wages was

.47 for men and .37 for women.

6.1 Potential Mechanisms

One potential reason for the improved wages could be that the large numbers of out-migrants might have helped to force Southern employers to improve conditions and wages to keep the Black employees they relied on from leaving. Research has found that migrants North gained higher wages for themselves but inadvertently lowered wages for incumbent Northern Black workers in the process due to increased labor supply (Boustan, 2016; Boustan et al., 2010). It might be that out-migration from the South reduced the labor supply and tightened the labor market for Black workers, giving them more bargaining power. Given the fact that, if anything, migrants were positively selected on pre-migration economic outcomes, they might also have left vacant higher paying jobs for stayers to move up into. We find the Great Migration decreased counties' Black population share (Table 7). There was little to no impact on labor force participation rates. As a result, the proportion of the below-median-wage workforce that was Black decreased.

Hornbeck and Naidu (2014) discuss a somewhat related potential mechanism. They outline a model in which out-migration of low-wage labor, combined with natural disaster flood shocks, leads to a re-allocation to capital that leads to long-run growth relative to areas that did not experience a flood and subsequent labor loss. They find evidence consistent with this view.

Another possibility could be that migrants sent remittances back to family members remaining in the South, which could have been used to support investments in the future generation. Theoharides (2018) and Khanna et al. (2022) finds out-migration from the Philippines in a more modern context resulted in increased incomes and higher secondary education in migrants' origin locations.

We do not find effects on the average years of schooling for adults ages 18–40 in 1940 (Table 8). However, years of schooling did increase for Black teenagers (Table 9). In particular, Black males ages 14–16 were significantly more likely to still be enrolled in school and were less likely to be in the labor force. Few Black children remained in school past 8th grade in the early 20th century, and many Black teenagers, particularly men, would work to help provide for the family. One explanation is that remittances from the North could delay the need for teen boys to work and allow them to stay in school longer. The fact we

only find impacts on education for the younger generations and not working aged adults could suggest delayed effects, or it could be that those who benefited with more education ended up migrating themselves, as indicated by the persistent selection on literacy we find. Regardless, changes in human capital to not appear to be a driver of the effect on adult wages we find.

7 Conclusion

This paper shows the Great Migration had positive economic impacts for Black workers remaining in the South. Counties with more out-of-South migration during the First Wave of the Great Migration had higher Black wages in 1940, with no difference for white wages, resulting in a reduced racial wage gap. A plausible mechanism is that Great Migration counties lost Black population share, reducing the low wage labor supply and causing employers to adapt to a tightening labor market. Employers might have had to raise wages to attract workers in an increasingly competitive market, or they might have invested in capital as a substitute (Hornbeck & Naidu, 2014), which raise future wages. There could have also been social and political changes that had implications for wage outcomes. General discriminatory, oppressive, violent behaviors could have decreased in concert with the rising competition to keep Black labor from leaving, as suggested by the work by Feigenbaum et al. (2020) on the effects of the boll weevil. Historical anecdotes also suggest some areas might have increased oppression and forceful control, which might have opposite effects (Boustan, 2016). Future research disentangling these various potential mechanisms would be worthwhile.

While we do not find impacts on adult education levels, we do find positive impacts on school enrollment for Black teens, particularly men. It could be that changes brought by the Migration, such as increased income from remittances, allowed young men to delay entering the labor force and stay in school into their later teen years (14–16), which was uncommon at the beginning of the 20th century. There was persistent selection into out-of-South migration on baseline education. The fact we find improvements in education only for the younger generation could indicate delayed effects, or it could be that the people benefiting by gaining more education in their teens also then ended up migrating in early adulthood. A key motivation in the choice to migrate was to find better opportunities for future generations (Gardner, 2020a). Given the mixed evidence on the Great Migration's impacts for the children and grandchildren of migrants and incumbent Black workers in the

North (Alexander et al., 2017; Derenoncourt, 2022; Leibbrand et al., 2019), future work should focus on understanding how children in origin locations fared.

The results provide novel empirical estimates of the causal effects of the Great Migration on Southern labor market outcomes. Our findings add to the narrative of the Great Migration by providing supporting quantitative evidence for some of the potential impacts that have been suggested by historians (Wilkerson, 2011). Moreover, the paper furthers our understanding of the historical evolution of Southern economic outcomes and macroeconomic convergence. Looking forward, or analysis of the Great Migration provides a case study for how out-migration might impact low-wage, oppressed communities in other parts of the world and in the future.

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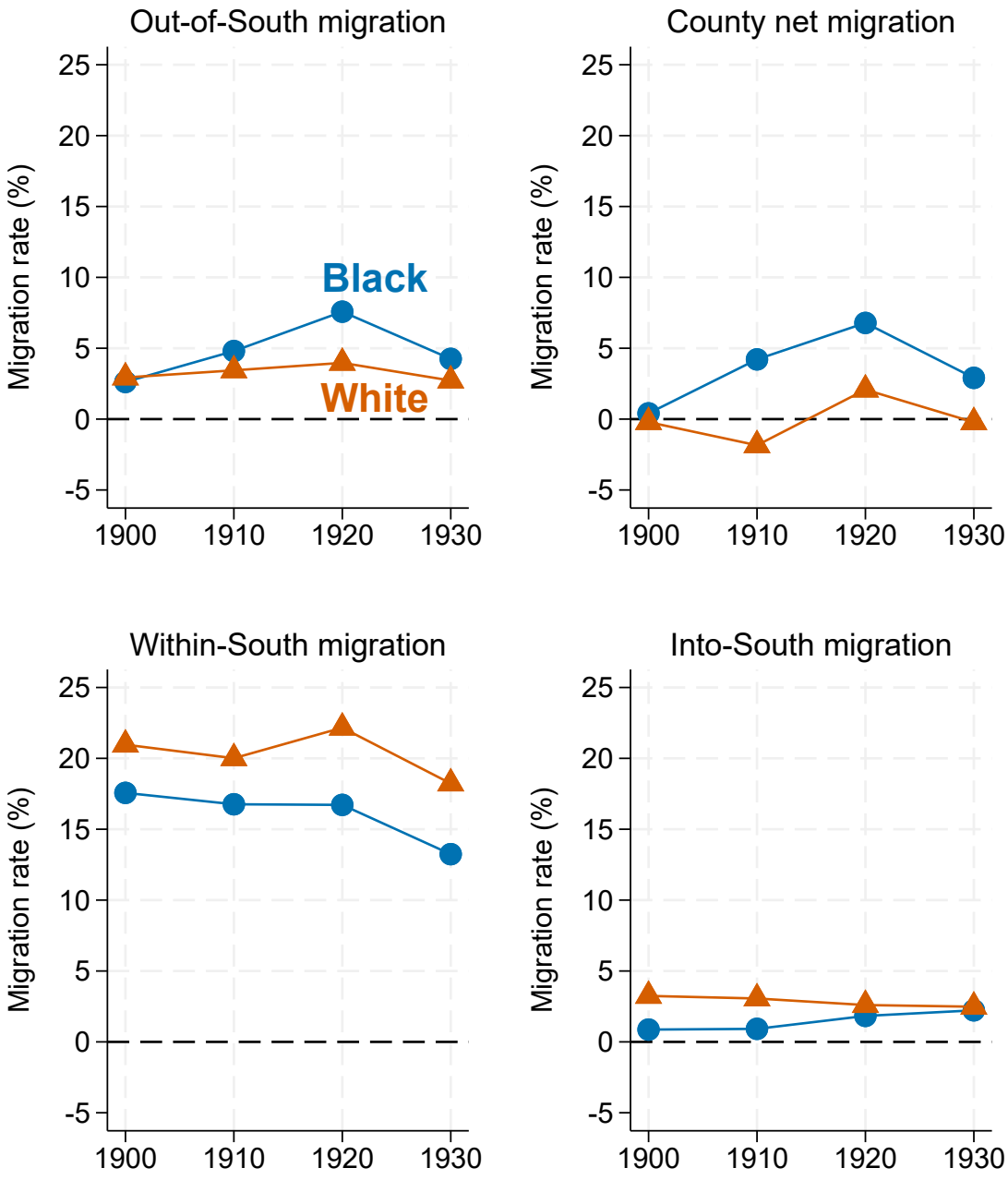
8 Figures

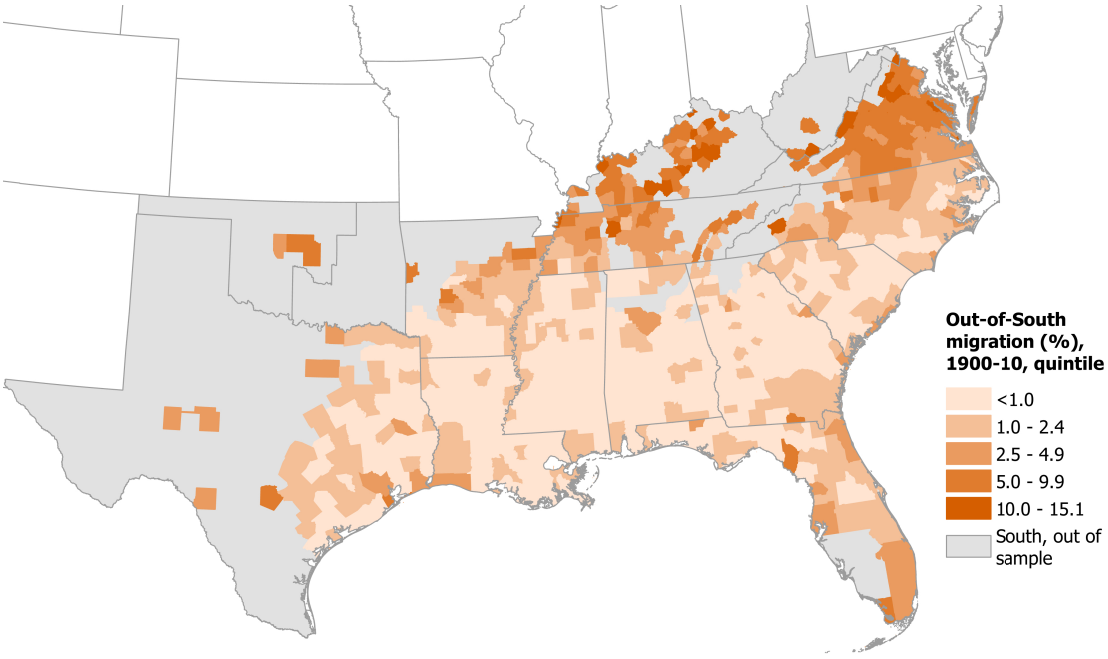
Figure 1: Southern County Migration Trends in 1900–1940



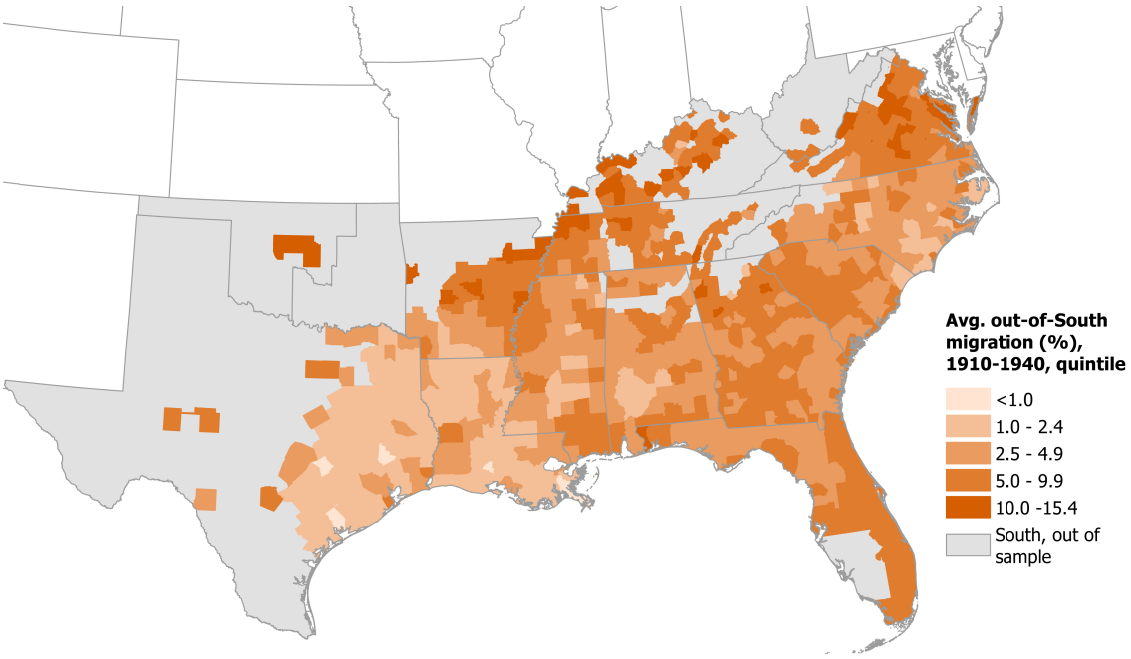
Notes: This figure shows trends in southern Black and White county migration rates between 1900 and 1940. Migration rates are calculated as the number of migrants living in the county in year t and elsewhere in year t+10. The rates shown are the population weighted means of county-level rates.

Figure 2: Black Out-of-South Migration During the Great Migration's First Wave

(a) County out-of-South migration rate in 1900-10



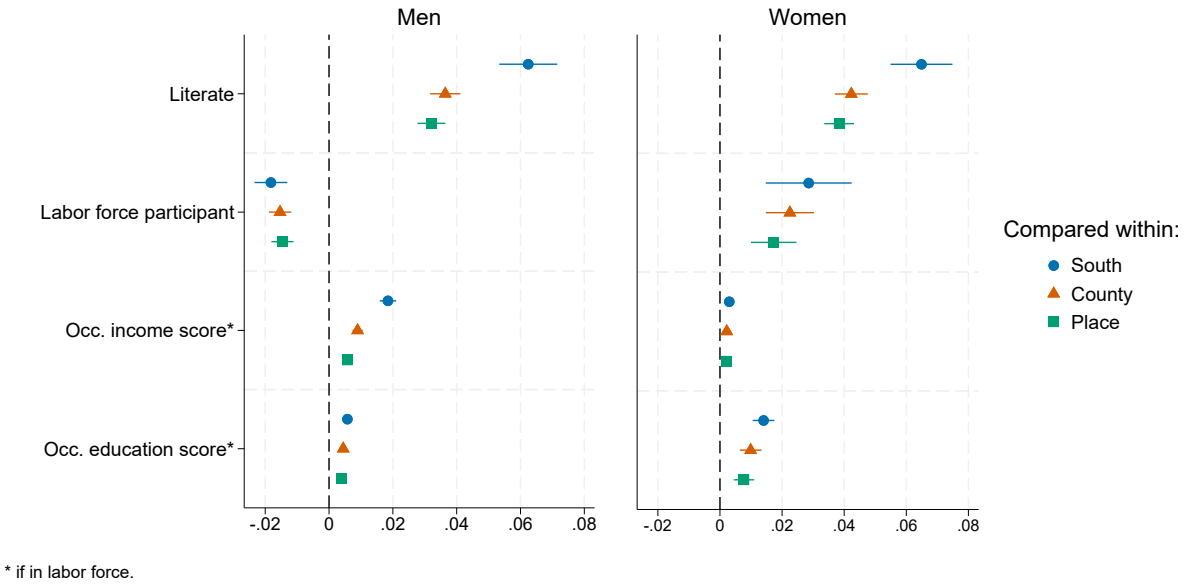
(b) County average of out-of-South migration rate during 1910-20 to 1930-40



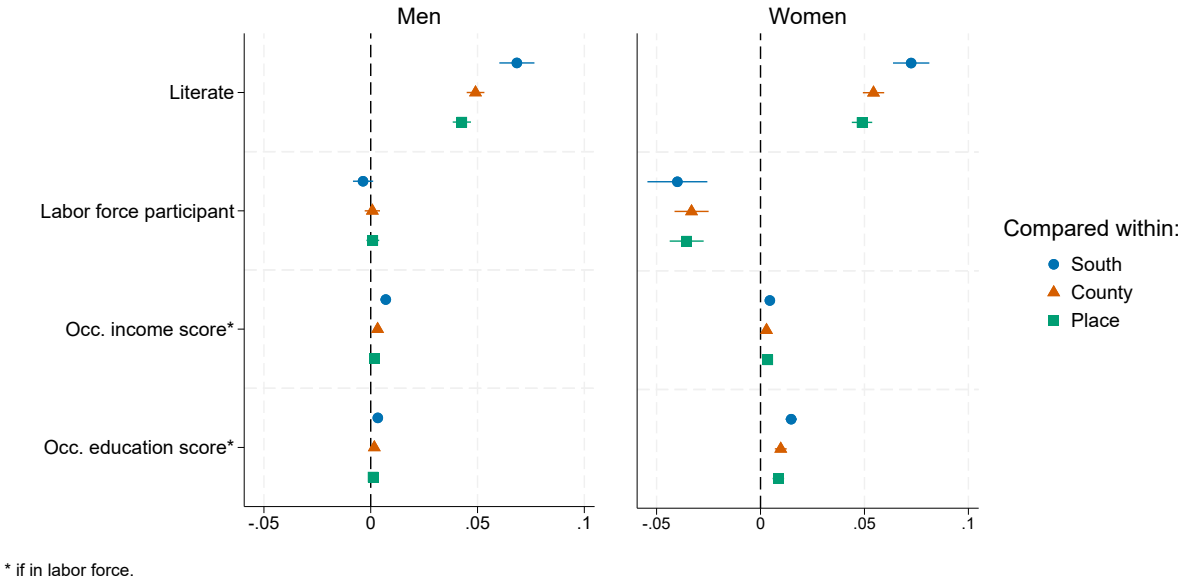
Notes: This map shows the rate of Black migration out of the South for counties at baseline (1900-10) and during the First Wave of the Great Migration (1910–1940). Migration rates are calculated as the number of migrants during years t to t+10, divided by the population in t.

Figure 3: Selection into the Great Migration among Southern Black Adults Ages 18–39

(a) Selection on Observables among All Adults

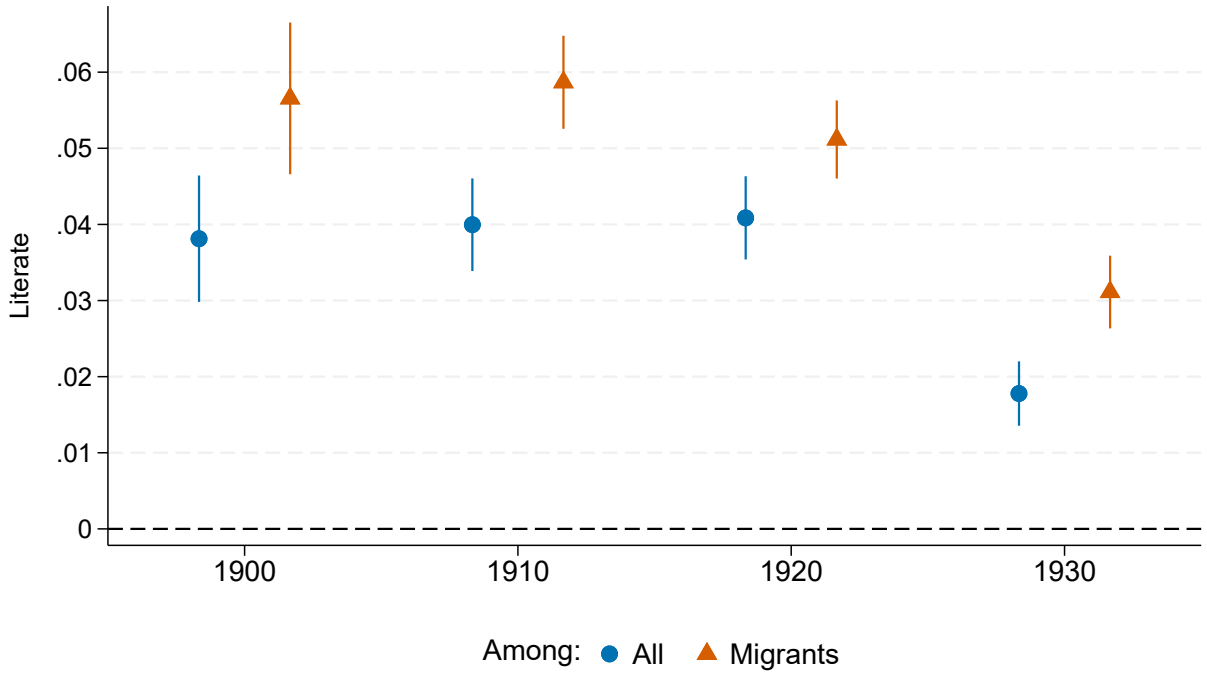


(b) Selection on Observables among Migrants



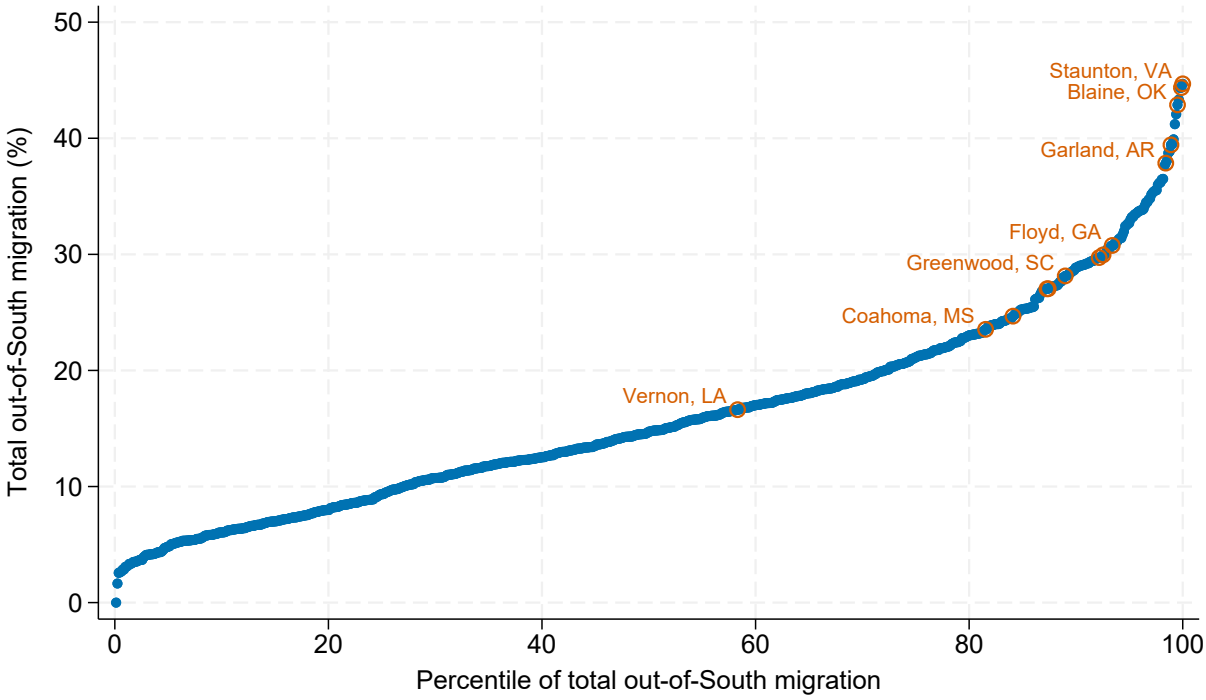
Notes: This figure shows selection into out-of-South migration on observable pre-migration characteristics among southern Black adults ages 18–39, observed in the 1910–1930 censuses and linked to the following census. Migrants are defined as those moving at least 100 miles. Each row of the figures shows results from a separate OLS regression of the given characteristic on a binary indicator for out-of-South migration, with controls for age and year fixed effects; each characteristic is estimated in regressions with fixed effects for the various indicated geographies to compare individuals within the same areas. Place refers to the place (city, town) defined in the Census Place Project (Berkes et al., 2023a). Regressions for men and women are estimated separately. Occupation score estimates are restricted to labor force participants; scores are rescaled from to range 0–1 (instead of 0–100). Standard errors are clustered by state economic area.

Figure 4: Out-of-South Migrant Selection on Literacy Over Time, Southern Black Adults Ages 18–39



Notes: This figure shows selection into out-of-South migration on observable pre-migration literacy among southern Black adults ages 18–39, observed in the 1910–1930 censuses and linked to the following census. Migrants are defined as those moving at least 100 miles. Each point shows the estimate from a separate OLS regression for each year of an indicator of literate regressed on an indicator for out-of-South migration, with controls for age and sex and Place fixed effects. Standard errors are clustered by state economic area.

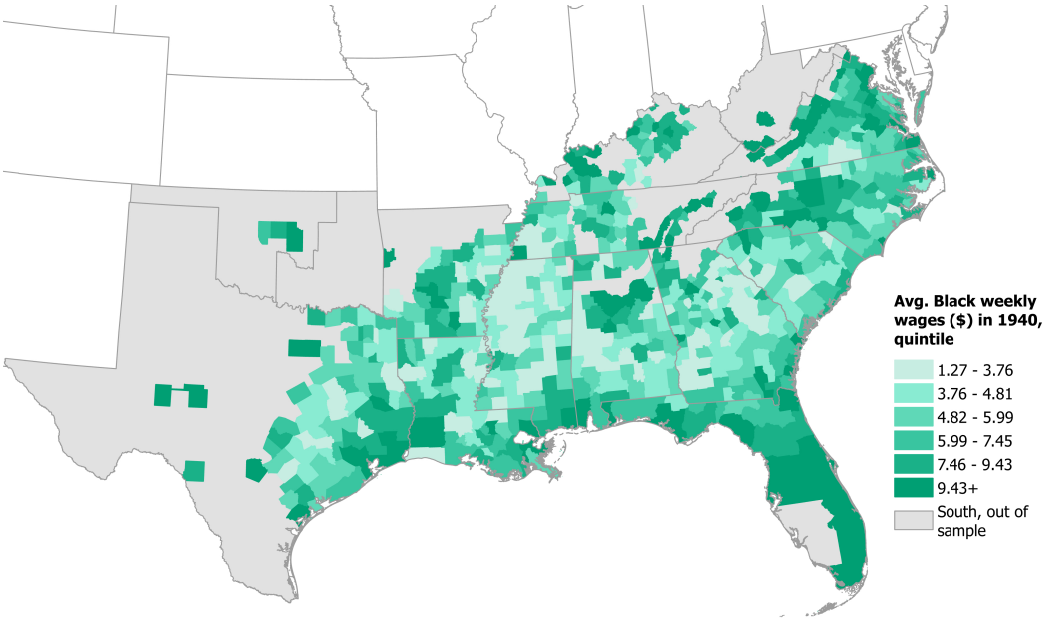
Figure 5: Quantiles of Black Out-of-South Migration During 1910–1940



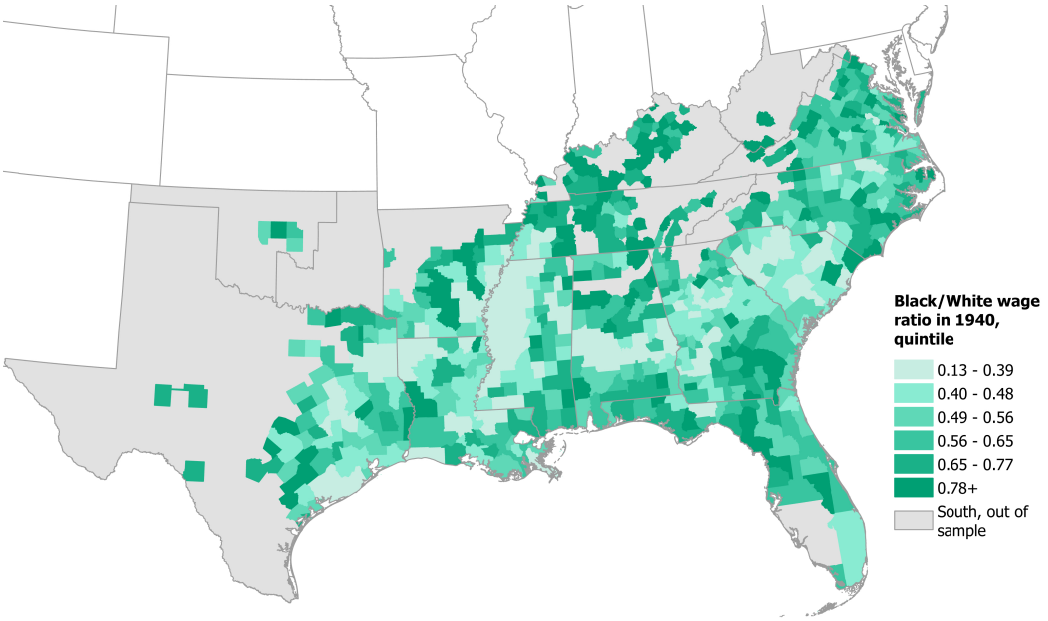
Notes: This figure shows the quantile function for aggregate out-of-South migration during 1910–1940 (i.e., the sum of the three 10-year migration rates). The largest migration rate county in each state is highlighted in orange, with select counties labeled.

Figure 6: County Wages in 1940

(a) Average Black Weekly Wages in 1940

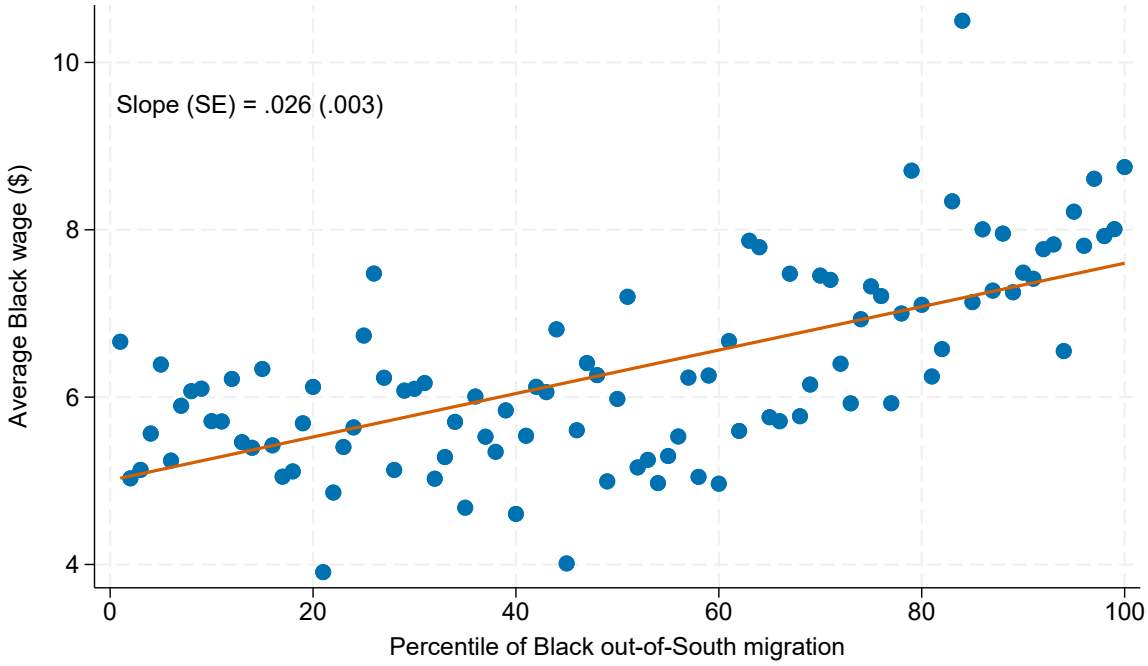


(b) Black/White Ratio of Weekly Wages in 1940



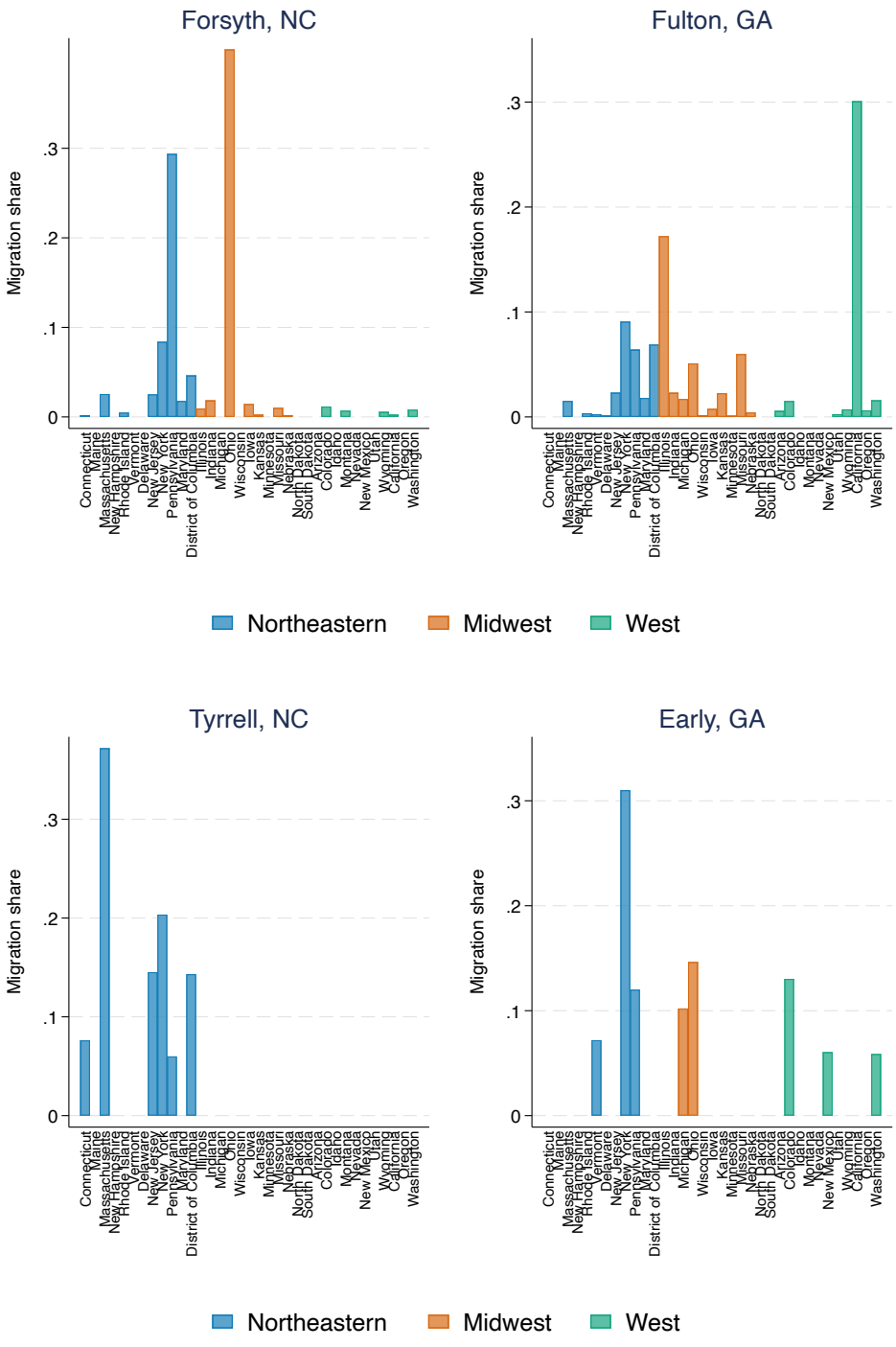
Notes: This figure shows each Southern county's average Black wages and relative wages in 1940. Wages are calculated as weekly wages based on census-reported past year wage income and weeks worked.

Figure 7: Great Migration Association with 1940 Black Wages



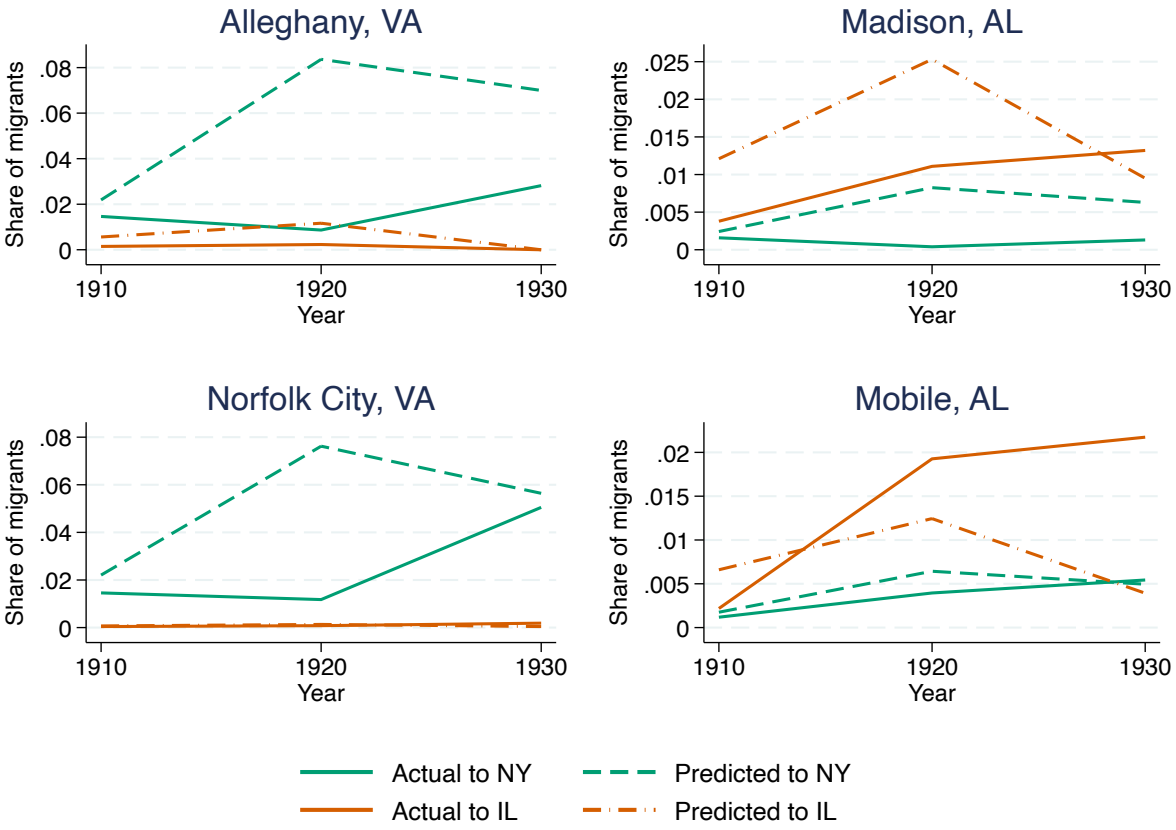
Notes: This figure shows a binned scatter plot of 100 bins of out-of-South migration during 1910–1940 and the average Black wage in 1940.

Figure 8: Example of Preexisting Migration Patterns in 1900–1910



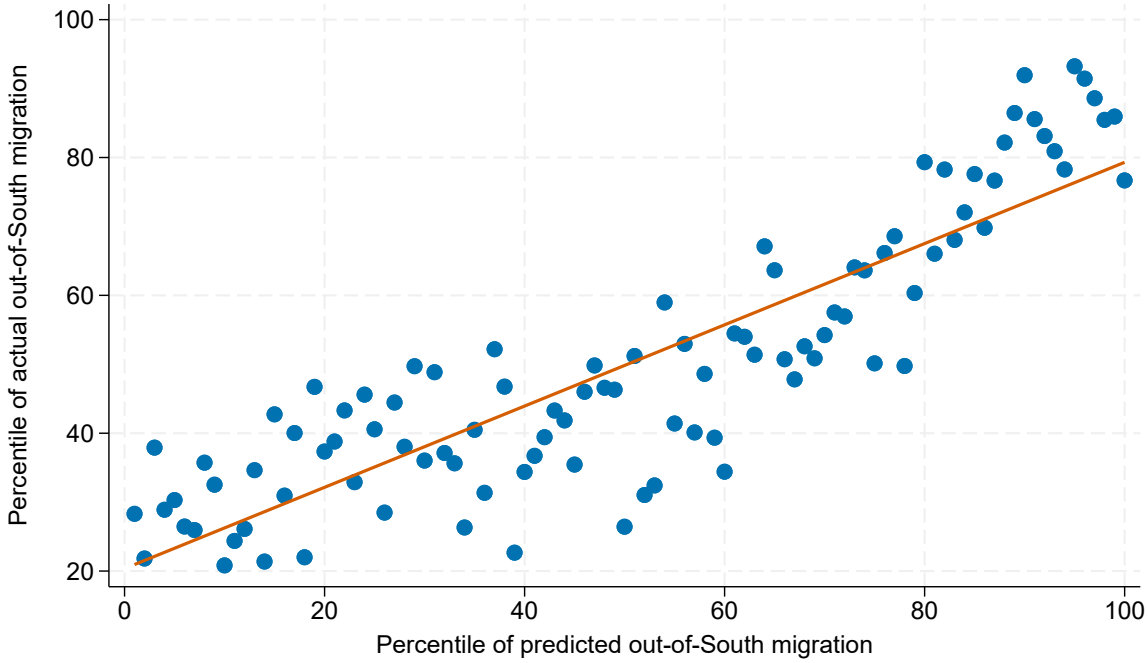
Notes: This figure illustrates the 1900 outmigration network in selected Southern counties. The upper and bottom panels include counties with relatively high and low outmigration rates, respectively. We define high (low) outmigration rates if the county's outmigration rate is above (below) the median rate. The figure shows the pattern of out-of-South migrants' destination states.

Figure 9: Example of Predicted and Actual Migration Patterns in 1910–1940



Notes: The figure shows the actual and the predicted numbers of outmigrants moved to New York and Illinois states in each decade. The predicted outmigration population is the instrumented migration outflows scaled by the 1900 county Black population.

Figure 10: Predicted and Actual Out-of-South Migration, 1910–1940



Notes: This figure shows a binned scatter plot of predicted vs actual migration.

9 Tables

Table 1: Summary of Southern Black Population Characteristics in 1910–1930

	Out-of-South migrants	Within-South migrants	Total population
Age (years)			
0-10	0.18	0.19	0.26
11-17	0.21	0.18	0.15
18-29	0.34	0.31	0.23
30-39	0.13	0.13	0.14
40-49	0.07	0.09	0.11
50+	0.07	0.10	0.11
Among adults ages 18-39			
Male	0.59	0.59	0.48
Married	0.50	0.50	0.60
Farm resident	0.30	0.33	0.35
Urban	0.45	0.38	0.44
Owner-occupied home	0.26	0.19	0.24
Literate (read + write)	0.85	0.78	0.83
Labor force participant	0.74	0.77	0.70
Occupation score if in LF	14.96	14.28	14.04

Notes: This table shows summary statistics for basic characteristics of the Black population by migration status. The sample includes those observed in the 1910–1930 censuses and linked to the following decade's census, using Census Tree links (Buckles et al., 2023). Statistics are weighted using inverse probability of linkage weights.

Table 2: Great Migration Associations With Other Types of Migration

	Black migration (%)			White migration (%)			
	w/in-So	In	Net	Out-So	w/in-So	In	Net
	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Baseline association, 1900-10							
Black out-of-South migration (%)	−1.116***	0.401	−0.678*	0.800***	−1.033***	0.851**	−1.303***
	(0.195)	(0.454)	(0.401)	(0.071)	(0.170)	(0.399)	(0.400)
R^2	0.098	0.003	0.009	0.481	0.123	0.014	0.031
Panel B. Average association, 1910-40							
Black out-of-South migration (%)	−1.074***	0.606***	−0.807***	0.672***	−0.712***	0.684**	−1.021***
	(0.184)	(0.221)	(0.184)	(0.058)	(0.143)	(0.267)	(0.226)
R^2	0.130	0.026	0.057	0.412	0.099	0.021	0.058
Panel C. Within-county associations, 1900-40							
Black out-of-South migration (%)	0.319***	−0.486***	1.794***	0.211***	0.260***	−0.438***	0.915***
	(0.074)	(0.181)	(0.219)	(0.031)	(0.069)	(0.154)	(0.183)
County fixed effects	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y
R^2	0.883	0.669	0.521	0.910	0.841	0.710	0.593
Counties	814	814	814	814	814	814	814
Outcome mean, 1900-10	17.510	30.165	0.363	2.935	20.917	30.711	−0.259
Outcome mean, 1930-40	13.177	23.136	2.910	2.718	18.170	26.919	−0.125

Notes: *** $p<.01$, ** $p<.05$, * $p<.10$. This table shows associations between Black out-of-South migration and other types of county Black and White migration during 1900–1940. Panel A shows county associations for the baseline 1900-10 migration period. Panel B shows county associations during 1900–1940 with county and year fixed effects added. Migration between t and t+10 is measured as a percentage of the t population. Estimates are weighted by the 1900 county population.

Table 3: Pre-trend Test: Instrument Effect on Outcomes Before the Great Migration

	Black score		White score		$\frac{\text{Black}}{\text{White}}$ ratio	
	1900	1910	1900	1910	1900	1910
	(1)	(2)	(3)	(4)	(5)	(6)
$\widehat{GM}$	0.006	−0.003	0.014***	0.004	−0.000	−0.000
	(0.004)	(0.003)	(0.005)	(0.006)	(0.000)	(0.000)
State fixed effects	Y	Y	Y	Y	Y	Y
Baseline controls	Y	Y	Y	Y	Y	Y
Outcome mean	13.769	12.707	17.980	18.688	0.779	0.694
R^2	0.435	0.466	0.734	0.729	0.542	0.523
Counties	817	817	817	817	817	817

Notes: *** $p<.01$, ** $p<.05$, * $p<.10$. This table shows OLS estimates of the effect of a percentile increase in predicted out-of-South migration during 1910–1940 ($\widehat{GM}$) and average county occupational income scores before the Great Migration; scores range (0–80). Estimates are weighted by 1900 county population. Standard errors are clustered by state economic area. Baseline controls include the 1900-10 Black out-of-South migration rate, the urban population share in 1910, and the log of total Black population in 1910.

Table 4: Impacts of the Great Migration on Southern Wages and Wage Inequality in 1940

	Black log(wage) (1)	White log(wage) (2)	$\frac{\text{Black}}{\text{White}}$ wage ratio (7)
Panel A. OLS			
GM	0.002**	0.001**	0.000
	(0.001)	(0.001)	(0.000)
R^2	0.628	0.608	0.490
Panel B. Reduced form			
$\widehat{GM}$	0.004***	0.001	0.001***
	(0.001)	(0.001)	(0.000)
R^2	0.641	0.605	0.511
Panel C. 2SLS			
GM^{SSIV}	0.013***	0.002	0.005***
	(0.003)	(0.002)	(0.001)
First stage on GM			
$\widehat{GM}$	0.326***	0.326***	0.326***
	(0.050)	(0.050)	(0.050)
F-stat	40.617	40.617	40.617
State fixed effects	Y	Y	Y
Baseline controls	Y	Y	Y
Outcome mean	1.815	2.715	0.427
Avgerage wage ($)	6.659	15.917	
Counties	816	816	816

Notes: *** $p<.01$, ** $p<.05$, * $p<.10$. This table shows estimates of the impact of a percentile increase in aggregate out-of-South migration during 1910–1940 (GM) on average county wages in 1940. Predicted out-of-South migration ($\widehat{GM}$), constructed from 1900-10 migration patterns and 1910–1940 population changes outside the South, is used as an instrument for actual out-of-South migration (GM). Standard errors are clustered by state economic area. Estimates are weighted by 1900 county population. Wages are the natural logarithm of average county wages, calculated as average weekly wages based on census-reported past year wage income and weeks worked. Baseline controls include the 1900-10 Black out-of-South migration rate, the urban population share in 1910, and the log of total Black population in 1910.

Table 5: Robustness of Estimate for Great Migration Impact on Black Wages

	Log of average Black wage							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. 2SLS								
GM^{SSIV}	0.014***	0.015***	0.018***	0.013***	0.011***	0.014***	0.012***	0.013**
	(0.002)	(0.001)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)
First stage F-stat	153.176	241.642	105.983	40.617	38.186	39.608	41.157	14.760
Panel B. OLS								
GM	0.006***	0.009***	0.007***	0.002**	0.000	0.002	0.002	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
R-squared	0.159	0.475	0.490	0.628	0.732	0.636	0.651	0.634
State fixed effects		Y	Y	Y	Y	Y	Y	Y
Black out-of-South migration, 1900-10			Y	Y	Y	Y	Y	Y
County characteristics, 1910				Y	Y	Y	Y	Y
Avg. Black occupation score, 1910					Y			
Avg. Black in-migration, 1910-40						Y		
Avg. White out- and in-migration, 1910-40							Y	
Exclude border states								Y
Counties	816	816	816	816	816	816	816	661

Notes: *** $p<.01$, ** $p<.05$, * $p<.10$. This table shows estimates of the impact of a percentile increase in aggregate out-of-South migration during 1910–1940 (GM) on average county wages in 1940. Predicted out-of-South migration ($\widehat{GM}$), constructed from 1900-10 migration patterns and 1910–1940 population changes outside the South, is used as an instrument for actual out-of-South migration (GM). Standard errors are clustered by state economic area. Estimates are weighted by 1900 county population. Wages are the natural logarithm of average county wages, calculated as average weekly wages based on census-reported past year wage income and weeks worked.

Table 6: Great Migration Impacts on 1940 Wages by Race and Gender

	Wages among men:			Wages among women:		
	Black	White	Ratio	Black	White	Ratio
GM^{SSIV}	0.012***	0.002	0.004***	0.017***	0.001	0.005***
	(0.003)	(0.002)	(0.001)	(0.004)	(0.003)	(0.001)
State fixed effects	Y	Y	Y	Y	Y	Y
Baseline controls	Y	Y	Y	Y	Y	Y
F-stat	40.617	40.617	40.617	40.617	40.617	40.617
Outcome mean	1.997	2.794	0.469	1.385	2.447	0.372
Avgerage wage ($)	7.929	17.346		4.436	12.047	
Counties	816	816	816	816	816	816

Notes: *** $p<.01$, ** $p<.05$, * $p<.10$. This table shows 2SLS estimates of the impact of a percentile increase in out-of-South migration during 1910–1940 (GM) and average county wages in 1940. Predicted out-of-South migration ($\widehat{GM}$), constructed from 1900-10 migration patterns and 1910–1940 population changes outside the South, is used as an instrument for actual out-of-South migration (GM). Standard errors are clustered by state economic area. Estimates are weighted by 1900 county population. Wages are the natural logarithm of average county wages, calculated as average weekly wages based on census-reported past year wage income and weeks worked. Baseline controls include the 1900-10 Black out-of-South migration rate, the urban population share in 1910, and the log of total Black population in 1910.

Table 7: Great Migration Impacts on Labor Supply in 1940

	Black % of population	LFP rate (%)		% of low-wage workers	
		Black	White	Black	White
	(1)	(2)	(3)	(4)	(5)
GM^{2SLS}	−0.321***	0.038	0.064**	−0.368**	0.256***
	(0.070)	(0.038)	(0.029)	(0.164)	(0.094)
State fixed effects	Y	Y	Y	Y	Y
Baseline controls	Y	Y	Y	Y	Y
Outcome mean	32.783	61.455	54.327	50.952	46.883
First stage F-stat.	41.305	39.682	40.634	39.123	39.123
Counties	816	816	816	816	816

Notes: *** $p<.01$, ** $p<.05$, * $p<.10$. This table shows estimates of the impact of a percentile increase in aggregate out-of-South migration during 1910–1940 (GM) on county labor force outcomes in 1940. Predicted out-of-South migration ($\widehat{GM}$), constructed from 1900-10 migration patterns and 1910–1940 population changes outside the South, is used as an instrument for actual out-of-South migration (GM). Standard errors are clustered by state economic area. Estimates are weighted by 1900 county population. Labor force participation rate calculated among adults age 18+. % of low-wage workers defined as the share of the total number of workers with wages below the county median. Baseline controls in all columns include the 1900-10 Black out-of-South migration rate, the urban population share in 1910, and the log of total Black population in 1910; columns (1), (4), and (5) control for the Black population share in 1910, and columns (2) and (3) control for the Black and White labor force participation rate in 1910.

Table 8: Great Migration Impacts on Adult Human Capital Accumulation

	Average years of education, adults ages 18–40			
	Black men	Black women	White men	White women
	(1)	(2)	(3)	(4)
GM^{2SLS}	0.008	0.007	−0.009	−0.015**
	(0.007)	(0.007)	(0.007)	(0.007)
State fixed effects	Y	Y	Y	Y
Baseline controls	Y	Y	Y	Y
Outcome mean	5.337	6.354	8.654	9.379
First stage F-stat.	37.056	37.056	37.056	37.056
Counties	816	816	816	816

Notes: *** $p<.01$, ** $p<.05$, * $p<.10$. This table shows estimates of the impact of a percentile increase in aggregate out-of-South migration during 1910–1940 (GM) on county labor force outcomes in 1940. Predicted out-of-South migration ($\widehat{GM}$), constructed from 1900-10 migration patterns and 1910–1940 population changes outside the South, is used as an instrument for actual out-of-South migration (GM). Standard errors are clustered by state economic area. Estimates are weighted by 1900 county population. Baseline controls in all columns include the 1900-10 Black out-of-South migration rate, the urban population share in 1910, the log of total Black population in 1910, and the Black and White adult literacy rates in 1910.

Table 9: Great Migration Impacts on Black Teens Ages 14–16

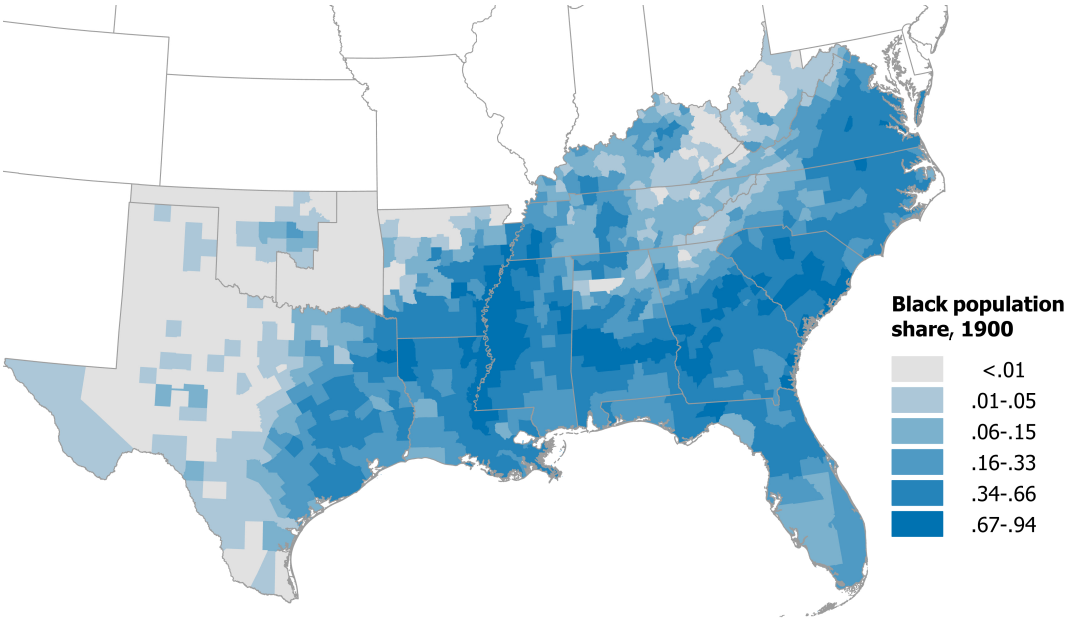
	Average outcomes for Black teens ages 14-16					
	Years educated		In school (%)		In labor force (%)	
	Men	Women	Men	Women	Men	Women
	(1)	(2)	(3)	(4)	(5)	(6)
GM^{2SLS}	0.018***	0.018***	0.203***	0.058	−0.410***	−0.147*
	(0.006)	(0.007)	(0.070)	(0.065)	(0.093)	(0.088)
State fixed effects	Y	Y	Y	Y	Y	Y
Baseline controls	Y	Y	Y	Y	Y	Y
Outcome mean	5.293	6.178	68.224	73.727	34.606	16.383
First stage F-stat.	39.922	40.020	39.922	40.020	37.906	31.242
Counties	814	814	814	814	814	814

Notes: *** $p<.01$, ** $p<.05$, * $p<.10$. This table shows estimates of the impact of a percentile increase in aggregate out-of-South migration during 1910–1940 (GM) on county labor force outcomes in 1940. Predicted out-of-South migration ($\widehat{GM}$), constructed from 1900-10 migration patterns and 1910–1940 population changes outside the South, is used as an instrument for actual out-of-South migration (GM). Standard errors are clustered by state economic area. Estimates are weighted by 1900 county population. Baseline controls in all columns include the 1900-10 Black out-of-South migration rate, the urban population share in 1910, the log of total Black population in 1910; columns (1)–(4) control for the Black teen school enrollment rate by gender in 1910, and columns (5) and (6) control for the Black teen labor force participation rate by gender in 1910.

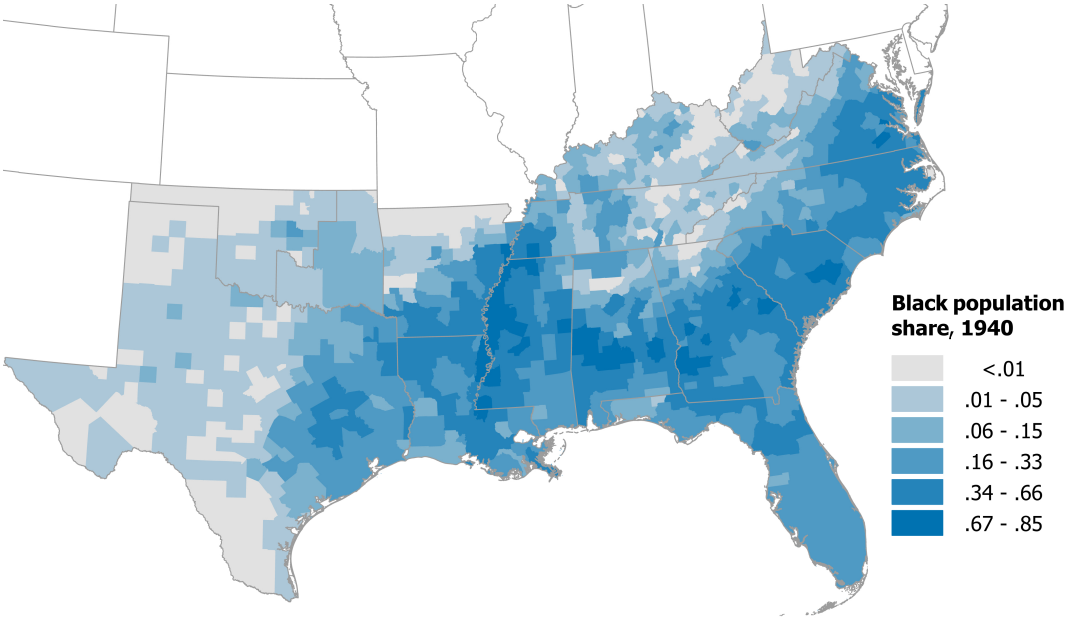
A Appendix

Figure A.1: Spatial Distribution of the Southern Black Population in 1900 and 1940

(a) County Black Population Share in 1900



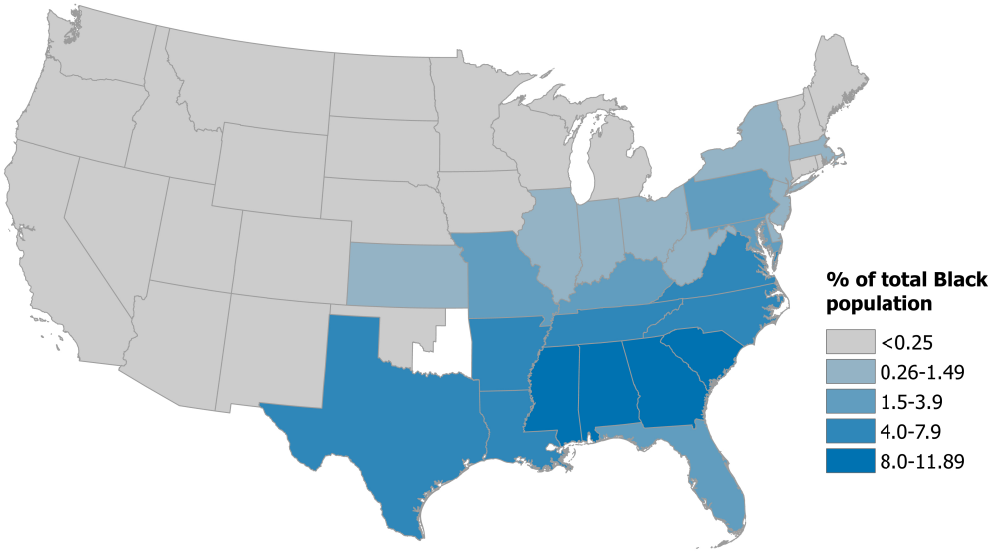
(b) County Black Population Share in 1940



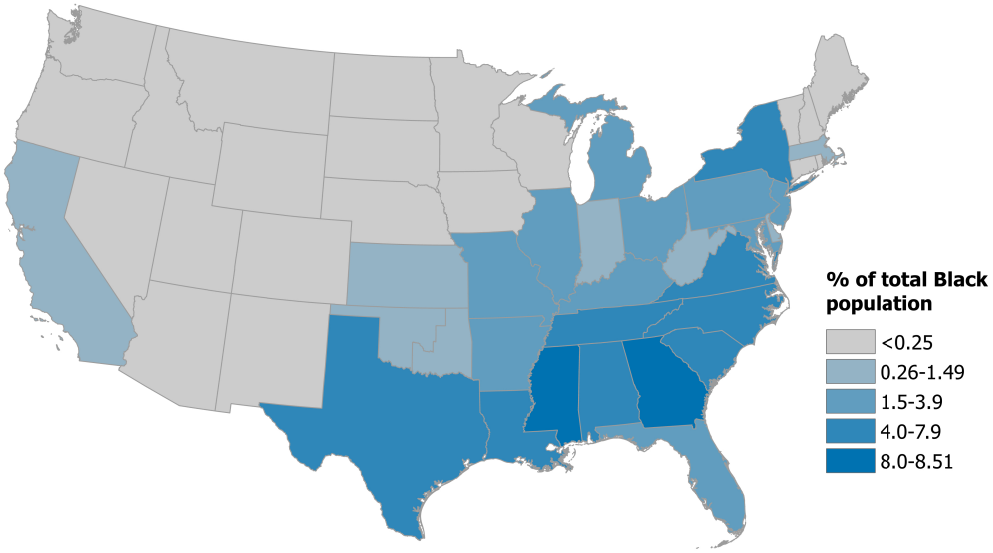
Notes: This figure shows each Southern county's Black population share in 1900 and 1940. See Figure A.2 for a map of the distribution of the total Black population across all U.S. states.

Figure A.2: Spatial Distribution of Black Americans in 1900 and 1940

(a) Percentage of the total U.S. Black population living in each state in 1900



(b) Percentage of the total U.S. Black population living in each state in 1940



Notes: This map shows the percentage of the total U.S. Black population that was living in each state in 1900 and 1940.

Table A.1: Spatial Distribution of the U.S. Black Population During the Great Migration

	% of Black pop. living in region			
	South	Northeast	Midwest	West
Year				
1900	86.1	8.3	5.3	0.3
1910	85.1	8.8	5.6	0.6
1920	81.6	10.1	7.5	0.7
1930	75.1	13.3	10.6	1.0
1940	73.3	14.5	10.9	1.3
1950	67.4	16.5	13.0	3.1
1960	54.9	21.3	18.2	5.6
1970	47.5	24.9	20.1	7.5

Notes: This table shows the percent of the total U.S. Black population that was living in each Census region in each year from 1900 through the Great Migration. We alter the Census definitions to include Delaware, D.C., and Maryland as Northeast instead of South, to match our definition in the text. Years 1900–1940 use the full count censuses, and year 1950–1970 use the 1% IPUMS census samples.