

# The Effects of the Great Depression on Children's Intergenerational Mobility



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*This article examines the role of the Great Depression in shaping the intergenerational mobility of some of the most upwardly mobile cohorts of the twentieth century. Using newly linked census and vital records from the Longitudinal, Intergenerational Family Electronic Micro-database, we examine the occupational and educational mobility of more than 265,000 sons and daughters born in Ohio and North Carolina. We find that the deepest and most protracted downturn in U.S. history had limited effects on sons' intergenerational mobility but reduced daughters' intergenerational mobility.*

**Keywords:** children, Great Depression, intergenerational mobility

The Great Depression was the deepest and most protracted downturn in U.S. history. Between 1929 and 1933, industrial production fell by 37 percent and gross national product by 30 percent as unemployment soared to 25 percent (Temin 2000). Although the economy began to recover after 1933, unemployment remained around 15 percent for the remainder of the

decade. Despite these hardships, children of the Great Depression were resilient, resourceful, and some of the most upwardly mobile cohorts of the twentieth century (Mulvey 1992; Elder 1999; Chetty et al. 2017; Jacomé, Kuziemko, and Naidu 2021).

This article examines the role of the Great Depression in shaping relative and absolute up-

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ward intergenerational mobility both across cohorts and within cohorts across space. Relative intergenerational mobility measures how an individual's outcomes relate to their parents' outcomes and captures the fluidity of social class. Absolute upward mobility measures whether children's outcomes surpass those of their parents. The effects of the Great Depression on intergenerational mobility depend on a variety of factors, including the available socioeconomic resources (Torche, Fletcher, and Brand 2024, this issue). On the one hand, the Great Depression reduced family incomes, which may have had more adverse consequences for families with fewer socioeconomic resources before the Depression. If strained family resources among more disadvantaged families resulted in lower investments in children, the intergenerational persistence (the inverse of mobility) of socioeconomic disadvantage would increase and thus reduce mobility. On the other hand, the Great Depression may have leveled the playing field for children in different social classes by having larger absolute and relative negative effects on families with more resources to lose (Elder 1999), which could reduce the intergenerational persistence of socioeconomic advantage and increase intergenerational mobility.

Newly linked censuses and vital records from the Longitudinal, Intergenerational Family Electronic Micro-database (LIFE-M) allow the examination of occupational mobility for more than 165,000 sons and 101,000 daughters born in Ohio and North Carolina from 1900 to 1920—a sample seventy times larger for daughters than existing studies.<sup>1</sup> We measure occupational mobility for sons by relating their occupational income scores to those of their fathers. For daughters, we examine the association of their husbands' occupations with the

occupations of their fathers, because married women rarely participated in the labor market and their economic status was largely determined by their husbands (Goldin 1983; Elder 1999; Craig, Eriksson, and Niemesh 2019). For educational mobility, our samples are still large but smaller than for occupation with around ninety thousand sons and almost seventy thousand daughters. A feature of using education is that we can directly link the educational attainment of both daughters and sons to their fathers' attainment.

Large sample sizes allow us to characterize heterogeneity in the effects of the Great Depression by birth cohort, which sheds light on some of the mechanisms underlying changes in intergenerational mobility. For example, individuals on the cusp of completing their education, entering the labor market, or getting married when the Depression hit may have faced immediate resource constraints. Teens may have dropped out of school to look for work or care for their younger siblings while their parents worked, limiting their upward mobility. However, young children may have been exposed to marital conflict (Liker and Elder 1982), school closures, and more limited resources for a longer stretch of their developmental years, which could have had large cumulative effects on their opportunities and social mobility.

As a first step, our analysis benchmarks the levels of intergenerational mobility for sons in our sample against those estimates in other studies. Our estimate of rank-based occupational persistence among sons born in Ohio and North Carolina between 1900 to 1920 is 0.47, and our estimate for educational persistence is 0.44—both consistent with other estimates for the period.<sup>2</sup> A novel contribution of our study is the characterization of intergen-

1. James Feigenbaum (2015) uses from 4,730 to 4,952 father-son pairs in his analyses of ninety-nine U.S. cities. Elisa Jacomé, Ilyana Kuziemko, and Suresh Naidu (2021) report a total sample of father-son and father-daughter pairs of 5,207 in their sample, born during the 1910s. Although they do not report the number of women born in the 1910s, Jacomé and colleagues' sample sizes in tables 2 and 3 suggest that they use around 1,400 women. Dylan Connor and Michael Storper (2020) use a linked sample of 1.3 million father-son pairs based on 1920 to 1940 linkages. Finally, Hui Ren Tan (2023) uses a linked sample of 4.2 million native-born White boys up to the age of eighteen from the 1910 to the 1940 census.

2. Occupational scores and occupational ranks can be constructed in a variety of ways. We develop occupational scores following William Collins and Marianne Wanamaker (2022), and thus our estimates for occupational

erational occupational and educational mobility for daughters born in the early twentieth century. Interestingly, we find similar rates of intergenerational occupational and educational mobility for daughters as we document for sons.

Next, our analysis examines how the Great Depression disrupted patterns of intergenerational mobility, either by limiting opportunities among poorer families or by leveling the playing field. To measure the severity of the Great Depression at the county level, we follow the literature and use the decline in per capita retail sales between 1929 and 1933 (Fishback, Haines, and Kantor 2001; Fishback, Horraced, and Kantor 2005; Fishback, Horraced, and Kantor 2006; Fishback, Haines, and Kantor 2007; Fishback, Johnson, and Kantor 2010). In our sample of counties from Ohio and North Carolina, the severity of the Great Depression ranged from an 11 to 69 percent decline in per capita retail sales. Yet these differences in severity are not reflected in differences in sons' relative intergenerational occupational or educational mobility. In contrast, a more severe Depression reduced relative occupational mobility for teen daughters and resulted in differences in absolute educational mobility of both sons and daughters who were teens at the time the Great Depression began. Curiously, the effects on intergenerational mobility for teens differed in magnitude and sign for boys and girls. Teen sons with less-educated fathers in counties with a more severe Depression experienced more educational mobility, whereas teen daughters experienced less. These opposing effects may reflect the fact that different changes in educational opportunities and constraints affected boys and girls at these critical ages as well as different effects of the Depression on marital matching. We find little evidence that the Great Depression affected the occupational or educational mobility of younger children.

Our large sample sizes also allow us to ex-

plore heterogeneity across two states as well as by other community and individual-level characteristics. These analyses inform an understanding of the disparate impacts of the Great Depression on intergenerational mobility and provide insights into their potential mechanisms. We find differences in the effects of the Great Depression on intergenerational mobility across states and communities, potentially driven by differences in federal recovery grants and schooling opportunities. Internal migration across states or counties mitigated negative effects of the Great Depression on occupational mobility but not educational mobility for sons—a finding consistent with James Feigenbaum (2015). Daughters with more siblings were more negatively affected than daughters with fewer siblings, which could reflect different factors. Teen daughters' education may have been more responsive to family resource constraints if families expected the returns to these degrees (in terms of marital matching or in the labor market) to be lower. Consequently, teen daughters appear to have been more likely to drop out of school during the Great Depression to take on domestic roles, such as caring for siblings or supporting their working mothers (Elder 1999; Ress 2014). Last, we find suggestive evidence that Black Americans' mobility fell more in response to a more severe Depression than White Americans' mobility did. This article's descriptive findings suggest multiple avenues for future research.

#### **INTERGENERATIONAL MOBILITY IN THE UNITED STATES OVER TIME**

Creating economic opportunity for all, regardless of sex, race, ethnic origin, or socioeconomic status is fundamental to maintaining economic growth and a functioning democracy. This idea was the bedrock of policies that made the United States an international leader in education in the late nineteenth and early twentieth century, giving rise to one of the most educated populations in the world

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persistence are similar to theirs (0.43 for White sons and 0.67 for Black sons). When we use occupational scores provided by IPUMS, our estimate for occupational persistence is lower, at 0.36, which falls between levels in Feigenbaum (2018) and Jacomé, Kuziemko, and Naidu (2021), 0.17 to 0.40 depending on sex and cohort. Our estimates for educational persistence are higher than those in Feigenbaum (2018) and Fletcher (2019), 0.21 to 0.34 for sons.

(Goldin and Katz 2008). These educational gains set the stage for historically low rates of income inequality by the middle of the twentieth century (Goldin and Margo 1992).

In the last fifty years, income and wealth inequality in the United States have soared to their highest levels since 1917 (Piketty and Saez 2003; Kopczuk, Saez, and Song 2010). Michael Hout (1988) uses occupation data from the General Social Survey to show that mobility increased during the 1970s and 1980s, but upward mobility during the 1980s exceeded downward mobility by less than it did in the 1970s. Influential work using administrative tax data has shown that intergenerational mobility has remained steady from 1996 to 2010, or for cohorts born between 1971 and 1986 (Chetty, Hendren, Kline, Saez, and Turner 2014), although economic mobility varied considerably across place (Chetty, Hendren, Kline, and Saez 2014). In particular, residential segregation, income inequality, lower social capital, family instability, and worse primary schools are associated with lower rates of economic mobility today.

Measures of educational mobility show similar variation across space, with the South exhibiting the lowest rates of mobility (Fletcher and Han 2019). The stability of economic mobility is surprising for those familiar with the late Alan Krueger's Great Gatsby Curve, which shows that countries with higher income inequality have lower rates of economic mobility (Corak 2013). It is also surprising given that the growing gap in college enrollment and completion is highly correlated with parents' incomes (Bailey and Dynarski 2011).

Until recently, an understanding of the long-term evolution of intergenerational mobility over the twentieth century at a national level as well as its local correlates had been severely

constrained by data availability (Aaronson and Mazumder 2008). Before turning to the question of how the Great Depression affected intergenerational mobility, we first describe what recent studies tell us about intergenerational mobility in the early twentieth century.

### How High Was Intergenerational Mobility in the Past?

Joseph Ferrie's pioneering research explores occupational mobility at the national level by linking the 1850 Census to men who were ten years and older in the 1860 Census (Ferrie 1996).<sup>3</sup> This work was not only among the earliest to link individuals across censuses using automated methods, it also produced some of the first estimates of men's occupational mobility predating modern surveys and administrative data.<sup>4</sup> Ferrie created a sample of 4,938 men—9 percent of the male population in 1850, and 19 percent of the population of men with uncommon names.

Because Ferrie examines intergenerational mobility in a period without income or education measures, his work focused on occupational mobility as captured by the Altham statistic (Altham and Ferrie 2007).<sup>5</sup> In an article summing up the state of knowledge on the subject, he writes, "Nineteenth-century observers were right: the United States was in fact more mobile both socially and physically than other places at that time, and this remarkable fluidity persisted at least through the cohort that reached their thirties by 1920" (Ferrie 2005, 214). Jason Long and Joseph Ferrie (2013) extended this work across countries to compare the historical United States with nineteenth-century British fathers and sons. They find both that U.S. mobility declined over time and that U.S. men were more mobile than their Brit-

3. For earlier approaches to linking at the subnational level, see Malin 1935; Curti 1959; Bogue 1963; Thernstrom 1964; Guest 1987; and Steckel 1988.

4. For an overview of methods used to link census data, see Bailey et al. 2020.

5. This approach first groups fathers and sons into one of four broad occupational categories: unskilled labor, skilled and semiskilled labor, white-collar workers, and farmers. A matrix captures the transition rates of sons into the four categories according to their father's occupation. To examine changes in occupational mobility over time, Ferrie computes the Altham statistic to measure the strength of association between both the rows and columns of a transition matrix in two periods. Depending on one's point of view, the fact that this approach avoids ranking occupations according to socioeconomic status may be a feature or a bug.

ish counterparts.<sup>6</sup> Yu Xie and Alexandra Killewald (2013) challenge Long and Ferrie's findings of a decline in social mobility in the United States from 1880 and 1973, showing that their analysis was driven by transitions from farming to other occupations. Xi Song and colleagues (2020) account for the relatively high mobility of the children of farmers and conclude that occupational mobility was high in the nineteenth century and has been stable for cohorts born after 1900.

More recently, Claudia Olivetti and Daniel Paserman (2015) cleverly leverage the socioeconomic information contained in first names, and exploit this fact by looking at father-son and father-daughter intergenerational elasticities in status. Mechanically, their approach replaces the log earnings of an individual father in a standard intergenerational elasticity regression with the average log earnings of fathers of children named  $j$ —a generated regressor approach that uses one sample to create a proxy for an unobserved regressor in a second sample. Olivetti and Paserman document intergenerational father-son elasticities in occupational income between 1870 and 1940. These name-based measures of persistence increased from 0.35 in 1870 to 0.50 in 1920 for sons and daughters. However, from 1920 to 1940, these trends reversed, with name-based measures of persistence falling to around 0.43 for sons and 0.37 for daughters.

How these name-based measures correspond to Ferrie's occupational transitions remained an open question until Feigenbaum (2018) linked the 1915 Iowa Census to the 1940 Federal Census to construct multiple measures of intergenerational mobility. In addition to information about occupations, the 1915 Iowa Census is the first in U.S. history to include information on educational attainment and wage income—neither of which were collected in the federal census until 1940. To compare his findings with the historical and modern literature, Feigenbaum calculated Ferrie's Altham statistic (Altham and Ferrie 2007), Olivetti and Paserman's name-based statistic (Olivetti and

Paserman 2015), as well as intergenerational elasticity parameters and rank-rank correlations (Chetty, Hendren, Kline, and Saez 2014). Looking across all measures considered, Feigenbaum concludes that based on earnings, education, occupation and the socioeconomic content of names, early twentieth-century Iowa was a period of high mobility.

More recent literature, then, extends analyses to a broader set of groups. Notably, the earliest historical samples were primarily for White men, either as an explicit sample restriction or because Black men were hard to link across census years.<sup>7</sup> William Collins and Marianne Wanamaker (2022) document intergenerational mobility for Black and White American men from 1880 to 2000 and document large disparities by race. They find that White children were much more likely than Black children to be upwardly mobile from the lowest socioeconomic positions of society in every generation. Zach Ward (2021) further shows that accounting for both the over- or exclusive representation of White men in studies of intergenerational mobility and measurement error in occupational income in historical samples (due to life cycle, transitory, or linking errors) may reverse the conclusion of a more mobile past. Linking census data between 1850 and 1950 and using an instrumental variable approach to account for measurement error (Solon 1999), Ward (2021) finds that intergenerational persistence may have been twice as high in the past as previously believed and that mobility and economic opportunity are higher in the population today than historically. Another recent study similarly reverses the conventional wisdom about U.S. mobility being high historically. Elisa Jacomé, Ilyana Kuziemko, and Suresh Naidu (2021) use retrospective surveys containing information about fathers' occupations and household income to create intergenerational mobility estimates for native-born men born between 1910 and 1979. The novelty of this study over previous work is that it relies on retrospective survey data rather than linked data, which allows them to charac-

6. In addition, Long and Ferrie (2018) find that fathers' occupations influenced their grandsons' occupations.

7. This reflects the fact that Black men are more likely to have shorter names, more common names, and also names that are spelled differently over time (Bailey et al. 2020).

terize intergenerational mobility for a more representative sample of Americans. Like Ward (2021), Jacomé, Kuziemko, and Naidu (2021) find a U-shaped pattern, with intergenerational mobility being much lower in the early twentieth century than in the middle of the century, and intergenerational mobility decreasing again in the most recent period.

Intergenerational mobility for women has been studied less than for men, primarily because name changes at marriage make women difficult to follow across time in historical data. Recent papers have also worked to fill this gap in the literature. Jacqueline Craig, Katherine Eriksson, and Gregory Niemesh (2019) use women's birth ("maiden") and married names on Massachusetts marriage certificates between 1850 and 1910 to link in census data, which allows them to study intergenerational occupational mobility of women for two cohorts. Comparing the occupations of women's fathers and husbands, they estimate the persistence in occupational rank of 0.192 for 1850 to 1880 and 0.173 for 1880 to 1910. By contrast, the same parameters for fathers and sons were 0.248 and 0.181 in the same data, suggesting that women were more mobile than men in the 1850 to 1880 period but similarly mobile in the later period. Jacomé, Kuziemko, and Naidu (2021) also document trends in intergenerational mobility for native-born women born between 1910 and 1979. Again they find a U-shaped pattern, with intergenerational mobility being much lower in the early and late twentieth century than in the middle of the century. They also find that intergenerational mobility for women tended to be lower than for men for the entire period.

### **What Were the Correlates of Intergenerational Mobility in the Past?**

Small sample sizes have also limited historical research into the geographic correlates of intergenerational mobility. A closely related study by Feigenbaum (2015) investigates the impact of the Great Depression on intergenerational mobility of men in ninety-nine U.S. cities. His analysis links the 1918–1919 Bureau of Labor Statistics Cost of Living Survey with the 1920 and 1940 censuses. Observing the earnings and occupations of fathers in 1920

and sons in 1940, Feigenbaum (2015) documents how intergenerational income and occupational mobility varied with sons' exposure to the severity of the Great Depression. In particular, he finds that experiencing a more severe Depression lowered intergenerational mobility among sons. Interestingly Feigenbaum (2015) does not find evidence of education as a mechanism, even though exposure to better quality primary schools has been found to be an important correlate of upward mobility in the modern period (Chetty, Hendren, Kline, and Saez 2014).

David Card, Ciprian Domnisoru, and Lowell Taylor (2022) study upward mobility in terms of education for men and women co-residing with at least one parent in the 1940 Census, where upward educational mobility is defined as completing ninth grade, conditional on parents having five to eight years of education. Men in their sample are ages fourteen through eighteen and women sixteen through eighteen in 1940. Using variation in teacher salary across states as a proxy for school quality, the authors find evidence that upward educational mobility is strongly associated with teacher salary at the state level as well as when comparing similar cross-border counties that offered different teacher salaries due to variation in state minimum salary laws.

More recently, Hui Ren Tan (2023) examines the geography of upward mobility for White sons in the early twentieth century. Using multiple linking methods, Tan (2023) links individuals between the 1910 and 1940 Censuses and finds that the mobility map differs from today's mobility map. Men in coastal and industrial regions were considerably more upwardly mobile than today. In a related article, Dylan Connor and Michael Storper (2020) link individuals between 1920 and 1940 Censuses and compare the geography of intergenerational mobility from the early twentieth century with that in the modern period. The authors document declines in social mobility in the Midwest and persistent low mobility in the South. Interestingly, given that economic activity has shifted away from the Midwest and increased in the South, these findings suggest that an increase in economic activity may not always translate into higher mobility.

### This Study's Contribution

This study contributes to the literature in several ways. First, we investigate occupation and education-based estimates of intergenerational mobility for North Carolina and Ohio for both daughters and sons. North Carolina and Ohio are interesting to study for several reasons. North Carolina was an agricultural state specializing in tobacco and cotton with some textile industry, and Ohio was a booming and quickly industrializing state in the thriving Midwest. North Carolina had a large Black population (29 percent relative to 9.7 percent in the United States overall), whereas Ohio was a destination of the Great Migration and for immigrants seeking jobs.<sup>8</sup> Second, this article examines the relationship of the Great Depression and intergenerational mobility for large samples, which allows considerably more precision than previous analyses as well as the consideration of heterogeneous effects using a rich set of community- and individual-level characteristics as well as New Deal policies in moderating these effects.

### LIFE-M DATA AND ANALYTIC SAMPLES

This article relies on data from the Longitudinal Intergenerational Family Electronic Microdatabase project (Bailey et al. 2022). The data are public and can be downloaded from ICPSR. LIFE-M links millions of vital records (birth, death, and marriage records) in Ohio and

North Carolina to historical full count censuses (Ruggles et al. 2021). The combination of census and vital records traces an individual's residential location across time, which allows us to determine an individual's exposure to the Great Depression in childhood—regardless of where they live later in life. In addition, the LIFE-M data link a large number of children and their parents, which facilitates our analyses of intergenerational mobility. A third feature of the LIFE-M data is that they have very low rates of linking errors. LIFE-M uses carefully vetted hand-linked data to train supervised machine-learning algorithms that target a linking error rate of no higher than 3 percent. The actual error rate is further reduced by a process of extensive cross-checking and validation to cull incorrect links.<sup>9</sup> LIFE-M, therefore, provides highly accurate, large samples of father-son and father-daughter pairs, for which we observe both outcomes of fathers and children in adulthood as well as their county of residence by the Depression.

### Construction of Analytic Samples

The LIFE-M database includes approximately 2.4 million individuals linked to the 1940 Census.<sup>10</sup> Among these individuals, we limit our analytic samples to children based on four criteria: (1) those born between 1900 and 1920, (2) whose outcomes of interest were nonmissing in the 1940 Census,<sup>11</sup> (3) whose fathers' out-

8. Table A.1, in the online appendix (<https://www.rsfjournal.org/content/10/1/32/tab-supplemental>), reports mean demographic and economic characteristics of the Ohio and North Carolina population, as well as the mean characteristics of the U.S. population in the 1930 Census. Relative to the national average of the share of workers in agriculture (22 percent), the share of employment in agriculture in North Carolina and Ohio was 43 and 13 percent, respectively. Conversely, the share of workers in manufacturing employment averaged 22 percent in the United States, but 30 and 21 percent in Ohio and North Carolina, respectively.

9. As an independent validity check on data quality, the Family History and Technology Lab at Brigham Young University (BYU) compared 1,043 LIFE-M links with those already on the FamilySearch.org Family Tree. (FamilySearch.org tree links are created by genealogists and users of FamilySearch.org, who are independent of the LIFE-M process.) For 1,043 birth certificates linked to the 1940 Census by LIFE-M and FamilySearch.org users, LIFE-M links agreed with FamilySearch.org users 96.7 percent of the time. Under the assumption that the FamilySearch.org Tree is always correct, this implies a LIFE-M error rate of 3.3 percent. The true rate is lower given that some observations on the Family Tree are incorrect.

10. LIFE-M achieves link rates to the 1940 Census ranging from 12 to 28 percent, depending on state and gender (for detail, see Bailey et al. 2023, table 4).

11. For analyses of women's occupational mobility, husbands' occupations must be nonmissing.

**Table 1.** Construction of Analytical Sample

	Men	Women
<b>A. People born between 1900 and 1920 in 1940 Census</b>		
Analogous census population	1,615,764	1,654,724
LIFE-M links	327,992	307,023
% Population linked	20.3%	18.6%
<b>B. Sample for occupational mobility</b>		
Panel (A) + nonmissing occupation (or coresiding with husband reporting nonmissing occupation)		
Analogous census population	1,492,128	1,080,700
LIFE-M links	307,284	222,652
% Population linked	20.6%	20.6%
LIFE-M links and nonmissing father's occupation before 1930	183,181	112,476
% Population linked	12.3%	10.4%
LIFE-M links, nonmissing father's occupation before 1930, and known location before the Great Depression	165,768	101,855
% Population linked	11.1%	9.4%
<b>C. Sample for educational mobility</b>		
Panel (A) + reporting nonmissing education		
Analogous census population	1,577,755	1,619,518
LIFE-M links	323,093	302,844
% Population linked	20.5%	18.7%
LIFE-M links and nonmissing father's education	96,600	76,244
% Population linked	6.1%	4.7%
LIFE-M links, nonmissing father's education, and known location before the Great Depression	90,081	69,617
% Population linked	5.7%	4.3%

Source: Authors' tabulation using the LIFE-M data (Bailey et al. 2022) and the 1920–1940 Decennial Censuses (Ruggles et al. 2021).

Note: The table reports the size of the LIFE-M linked sample for women and men born in North Carolina or Ohio, as well as the analogous population in the 1940 Census. For the LIFE-M sample, the locations before the Great Depression are obtained from the children's county of residence closest to 1930, which could come from the residence county in the 1930 Census, birth county, marriage county, or residence county in the 1920 Census. If none are available for the child, then this location is obtained from the father's county of residence closest to 1930 from the same sources.

comes of interest are nonmissing,<sup>12</sup> and (4) whose county of residence prior to the Great Depression is observed.<sup>13</sup>

Table 1 describes the samples for our analysis of occupational and educational mobility.

We start with 327,992 sons and 307,023 daughters who are born between 1900 and 1920 and linked to the 1940 Census in the LIFE-M dataset (panel A). They represent around 20.3 percent and 18.6 percent of men and women, respec-

12. We require fathers' links to censuses before 1930 to obtain their occupations. We measure fathers' economic standing based on their occupational income scores or the occupational rank in national distribution. LIFE-M does not link people directly to the 1930 Census.

13. We determine an individual's county of residence prior to the Great Depression as follows. We collect an individual's location from all linked vital and census records between 1920 to 1930. If an individual was under



tively, in the same cohort in the 1940 Census. For our analysis of occupational mobility, requiring both nonmissing children's occupations (nonmissing husband occupation for women) in the 1940 Census, nonmissing fathers' occupations in at least one census by 1930, and a nonmissing county of residence prior to the Great Depression results in a sample of 165,768 sons and 101,855 daughters (panel B). The sample comprises 11.1 percent and 9.4 percent of men and women whose occupations or husbands' occupations were nonmissing in the 1940 Census. For our analysis of educational mobility, requiring both children and fathers' years of schooling in the 1940 Census, as well as county of residence prior to the Great Depression, reduces sample sizes to 90,081 sons (5.7 percent) and 69,617 daughters (4.3 percent) (see panel C).

### Sample Representativeness

Historical linked samples tend not to be representative of the corresponding population (Bailey, Cole, and Massey 2019; Bailey et al. 2020). Table 2 shows this is also true in our study. Demographic and socioeconomic variables for our analytic samples differ significantly from the 1900–1920 born populations in the 1940 Census, both at the national level (column 1) and for Ohio and North Carolina (column 2). Comparing the unweighted statistics for the LIFE-M analytic sample (column 3) with the analogous population born in Ohio and North Carolina in the 1940 Census (column 2), LIFE-M overrepresents individuals who are male, White, more educated, less likely to migrate, and more likely to be employed. The analytic sample is also more likely to include individuals with longer first and last names and less-common last names.

To improve the representativeness of our sample, we use the procedure detailed by Bailey, Connor Cole, and Catherine Massey (2019) to create inverse propensity score weights. These weights are designed to balance major demographic and socioeconomic characteristics in the linked sample and in the reference

population. This approach down-weights individuals with overrepresented characteristics and up-weights individuals with underrepresented characteristics. Column 4 of table 2 shows mean characteristics after applying these weights in column 4. Using the weights, the differences between the linked sample in 1940 and the target population is very small, both in absolute (column 5) and percentage terms (column 6). Moreover, none of the differences in the weighted sample is significantly different from zero (column 7).

### Measuring the Great Depression's Severity

We measure the local severity of the Great Depression using the change (typically a decline, therefore negative) in retail sales per capita between 1929 and 1933. Although this is an imperfect measure, other measures of economic downturns, such as changes in the unemployment rate or GDP per capita, are not available at the county level during the 1930s. So, the county-level change in retail sales is the most commonly used measure of the Depression's severity in the literature (Fishback, Haines, and Kantor 2001; Fishback, Horracc, and Kantor 2005; Fishback, Horracc, and Kantor 2006; Fishback, Haines, and Kantor 2007; Fishback, Johnson, and Kantor 2010). In addition, retail sales continue to be strongly correlated with economic fluctuations today (for instance, during the COVID-19 pandemic, Chetty et al. 2020).

Figure 1 maps variation in the severity of the Great Depression by county (darker colors indicate a more severe downturn). The magnitude of the economic downturn varied greatly across states but also across counties within Ohio and North Carolina. From 1929 to 1933, the log changes in retail sales per capita in these states ranged from  $-0.69$  to  $-0.11$  and  $-1.51$  to  $0.14$ , respectively. Although the average severity of the Depression was similar in Ohio and North Carolina, the county-level variation in North Carolina (mean =  $-0.42$ , standard deviation =  $0.23$ ) was more than twice that in Ohio (mean =  $-0.43$ , standard deviation =  $0.10$ ). The mountain and coastal regions of North Caro-

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age fifteen between 1920 and 1930, we also collect the father's location from vital and census records. Among all collected locations, we choose the location temporally closest to 1930; children's locations are preferred if the father's location was observed in the same year.

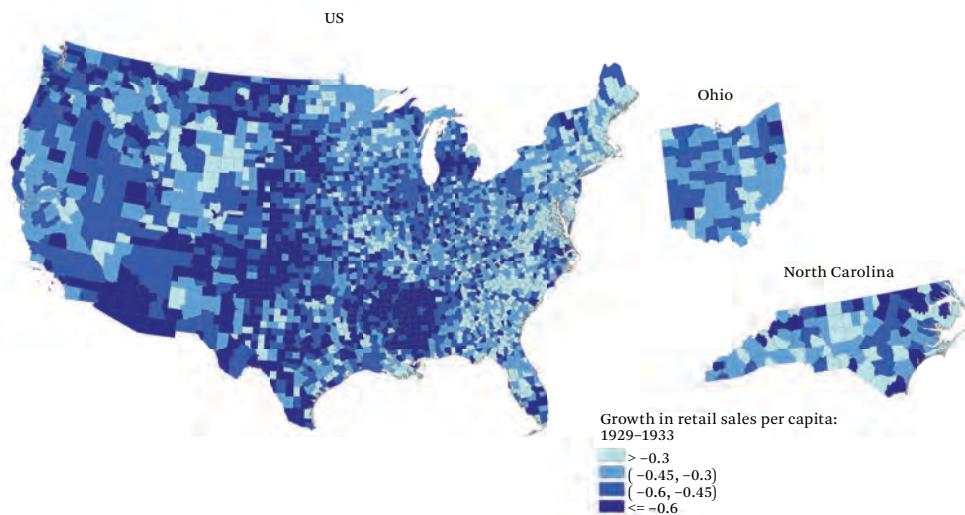
**Table 2.** External Validity and Representativeness of LIFE-M Sample

	1940 Census U.S.-Born Population	1940 Census Sample	LIFE-M Sample (Unweighted)	LIFE-M Sample (Weighted)	Difference (4)-(2)	Difference/Mean (5) / (4)	P-value of Difference in (5)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Male	0.493	0.494	0.568	0.494	-0.000478	-0.0969%	0.900
Age in 1940	29.3	29.2	28.9	29.3	0.0747	0.255%	0.141
Black	0.106	0.134	0.0177	0.134	0.000124	0.0926%	0.978
Urban	0.581	0.556	0.565	0.555	-0.000239	-0.043%	0.950
Farm	0.202	0.226	0.218	0.228	0.00281	1.23%	0.483
Ever married	0.694	0.703	0.695	0.704	0.00134	0.190%	0.683
Graduated high school	0.356	0.364	0.462	0.368	0.00322	0.874%	0.367
Five-year migration	0.0779	0.0591	0.0402	0.058	-0.00107	-1.84%	0.444
Has occupation	0.636	0.639	0.656	0.644	0.00459	0.713%	0.134
Occupational income score	14.3	14.3	15.8	14.3	-0.0466	-0.327%	0.477
Length of first name	5.61	5.57	5.75	5.56	-0.0172	-0.310%	0.484
Length of last name	6.42	6.32	6.52	6.32	0.00142	0.0225%	0.884
First name commonality	0.776	0.779	0.793	0.776	-0.00247	-0.318%	0.113
Last name commonality	0.596	0.612	0.541	0.615	0.00284	0.461%	0.123

*Source:* Authors' tabulation using LIFE-M data (Bailey et al. 2022) and the 1940 Decennial Census (Ruggles et al. 2021).

*Note:* This table reports means of selected demographic and economic variables for the LIFE-M analytic samples of those born in Ohio and North Carolina and the reference population in the 1940 Census. Column 1 reports means for each variable for the full population born in the U.S. between 1900 and 1920; column 2 reports means for individuals born in Ohio and North Carolina between 1900 and 1920; column 3 and 4 report means for individuals in the LIFE-M analytic samples, either unweighted or weighted, respectively; column 5 reports the difference between weighted means for LIFE-M sample and the means for the population in column 2; column 6 reports the mean difference as a percentage of the weighted mean reported in column 4; column 7 reports the *p*-value of a hypothesis test for equality of the mean between column 4 and 2.

**Figure 1.** Geographic Distribution of Great Depression's Severity as Measured by the Growth in Retail Sales, 1929–1933



Source: Authors' tabulation using Fishback et al. 2005.

Note: The growth rates in retail sales per capita are calculated by differences between the per capita retail sales in 1929 and 1933.

lina were hardest hit, whereas the severity of the Depression was more evenly distributed across counties in Ohio.

The causes of the Depression's severity are elusive, but some correlates are known. For instance, the Depression was more severe in the mountain states and less severe in the upper South (Rosenbloom and Sundstrom 1999), where industry focused on natural resource extraction (Wallis 1989). Carol Heim (1998) suggests that states specializing in tobacco, such as North Carolina, had a less severe Depression, owing to fairly inelastic demand for tobacco products. Finally, Feigenbaum (2015) shows that the severity of the Depression is correlated with the share of workers in heavy manufacturing, booms in manufacturing employment in the 1920s, and the rate of bank failures in ninety-nine cities across the United States.<sup>14</sup>

## EMPIRICAL ANALYSIS

Following the literature (Black and Devereux 2011; Solon 1999), we estimate relative intergenerational persistence (the inverse of mobility) using the following regression specification:

$$Y_i = \alpha + \beta Y_i^f + X_i \Phi + \varepsilon_i \quad (1)$$

where the variable,  $Y_i$ , is the outcome of child  $i$ , and  $Y_i^f$  is the same outcome for the child's father. For our measure of occupational mobility, we use the occupational ranks of children or fathers as described below. For education, we use the level of years of schooling (rather than log years of schooling) to include individuals reporting zero years of schooling (Hertz et al. 2008; Azam and Bhatt 2015; Feigenbaum 2018). The model also includes a quartic function of the child's age in the 1940 Census. For our anal-

14. Table A.2 shows similar patterns in Ohio and North Carolina. Within these states, the severity of the Great Depression is correlated with the share of manufacturing employees in Ohio and North Carolina, although in opposite directions. In the eighty-eight Ohio counties, the share of manufacturing employees in 1929 is positively correlated with the severity of the Depression (or negatively correlated with the growth in retail sales between 1929 and 1933, column 3). In the one hundred North Carolina counties, the reverse is true. The share of manufacturing employees in 1929 is negatively correlated with the severity of the Depression (column 5), but this negative relationship evaporates in regressions including per capita New Deal grants for the Agricultural Adjustment Administration and Public Works and Relief.

ysis of occupational persistence, we also control for a quartic function in the father's age when his occupation is observed to help account for life cycle bias (Dahl and DeLeire 2008; Black and Devereux 2011; Bhattacharya and Mazumder 2011; Chetty, Hendren, Kline, and Saez 2014). The coefficient,  $\beta$ , captures the intergenerational persistence in the outcome between a child and father. A lower  $\beta$  implies a lower level of persistence and, therefore, a higher level of intergenerational mobility.

Expanding equation (1) to allow the intergenerational mobility to vary across children's birth years  $b$  yields the following statistical model:

$$Y_{ib} = \alpha + \sum_b \delta_b (D_{b(i)} \times Y_i^f) + X_i \Phi + \varepsilon_{ib} \quad (2)$$

where  $D_{b(i)}$  is a set of indicators for birth year  $b$  and  $\delta_b$  is the cohort-specific estimate of intergenerational persistence. All other variables are defined as in equation (1).

### Measures of Socioeconomic Status

Intergenerational mobility in socioeconomic status is measured in a variety of ways in economics and sociology (such as income, occupation, educational attainment, wealth), but limitations in historical data sources dictate our focus on two outcomes: occupational income ranks and years of education. These measures have several features in this historical setting. First, occupation is consistently reported in historical censuses before 1940. Second, both occupation and education have the advantage of being more stable and less subject to life-cycle biases and transitory shocks.

Occupational ranks are determined by ordering occupational income scores for sons within the same birth cohort following Collins and Wanmaker (2022). These occupational income scores are based on the mean income at the occupation, race, region level reported in the 1940 Census and adjusted for farmers' income. Because most women did not participate in the labor market and, as a result, did not report an occupation in the early twentieth century, we follow the literature and use husbands' occupational income scores as the basis for determining women's occupational rank within the national distribution (Goldin 1983; Elder 1999;

Craig, Eriksson, and Niemesh 2019; Olivetti and Paserman 2015). Using husbands' occupation limits our sample to married daughters co-residing with their husbands. We calculate fathers' occupational income rank prior to the Great Depression with reference to all fathers of children in a given birth cohort. For instance, to determine fathers' occupational ranks for children born from 1900 to 1910, we rank all fathers of children in the birth cohort in the 1910 Census. Similarly, to determine fathers' occupational ranks for children born from 1911 through 1920, we rank all fathers of children within a cohort in the 1920 Census.

The second outcome we examine is years of education. An advantage of education as a measure of socioeconomic status is that it is available for both daughters and sons, which circumvents the need to use husbands' education as a proxy for daughters' SES. However, years of schooling is only observed in the 1940 Census, which limits our sample to individuals with fathers also linked to the 1940 Census.

### Measuring the Disruptive Effects of the Great Depression on Intergenerational Mobility

We test for the effects of the Great Depression on relative intergenerational mobility using the following statistical model,

$$Y_{igc} = \alpha + \beta Y_i^f + \gamma Y_i^f \times GD_c + \sum_{g \in (1,2)} \delta_g (D_{g(i)} \times Y_i^f) + \sum_{g \in (1,2)} \psi_g (D_{g(i)} \times GD_c) + \sum_{g \in (1,2)} \lambda_g (D_{g(i)} \times Y_i^f \times GD_c) + X_i \Phi + \theta_g + \rho_c + \varepsilon_{igc} \quad (3)$$

where the dependent variable  $Y_{igc}$  is the outcome of child  $i$ , who was in birth cohort group  $g$  and lived in county  $c$  before the Great Depression.  $Y_i^f$  is the father's outcome prior to the Great Depression.  $GD_c$  measures the Great Depression's severity in county  $c$  and is defined as the number of standard deviations in the national average growth rate of retail sales per capita between 1929 and 1933. Note that a larger positive GD number implies a smaller decline in per capita retail sales. In the model for occupational mobility analysis, we also control for a quartic function of the child's age and the father's age when their occupations were observed (represented by  $X_i$ ). We also include

fixed effects for birth cohort groups ( $\theta_g$ ) and county of residence ( $\rho_c$ ) to account for differences across cohort and time-invariant county differences.

$D_{g(t)}$  includes indicators for birth cohort groups, including individuals born between 1900 and 1911 ( $g = 0$ ), 1912 and 1914 ( $g = 1$ ), and 1915 and 1920 ( $g = 2$ ). Children born between 1900 and 1911 were ages eighteen to twenty-nine at the onset of the Great Depression, had largely completed their schooling, and had already entered the labor market; therefore, they should be less affected than the two younger cohorts. The Depression may have had a large cumulative effect on the occupational or educational mobility of children ages nine to fourteen in 1929. Similarly, it may have affected the educational and occupational mobility of children of high school age (fifteen to seventeen). The coefficients of interest,  $\lambda_{g \in \{1,2\}}$ , capture the different effects of the Great Depression on the intergenerational persistence for children in those younger cohort groups.

A key assumption underlying equation (3) is that no other omitted county-level factors are correlated with the severity of the Great Depression and also affect intergenerational mobility differently across cohorts. This assumption is supported by research. In a set of cities, Feigenbaum (2015) shows no *ex ante* association in the severity of the Great Depression and intergenerational mobility for men born between 1900 and 1920. Because we expect the Depression to have little effect on the education and occupational training of the oldest group, we use that cohort as an additional control group in the analysis to account for pre-existing, unobserved differences between the Great Depression and intergenerational mobility.

A final set of results examines heterogeneity in the effects by county or individual characteristics. To do this, we extend the model in equation (3) by interacting each term with the individual or county characteristics of interest.

These characteristics are defined as dummy variables for an individual or community characteristic, which we discuss in more detail later.

### Absolute Intergenerational Mobility Estimates

In addition to relative mobility, we document the effect of the Great Depression on absolute upward mobility. We estimate a model for children born to fathers who were ranked in the lowest quartile of national distribution in terms of the occupational income score. For our educational analysis, we focus on the children born to fathers with six or fewer years of schooling.

$$Y_{igc} = \alpha \sum_{g \in \{1,2\}} \psi_g (D_{g(t)} \times GD_c) + X_i \Phi + \theta_g + \rho_c + \varepsilon_{igc} \quad (4)$$

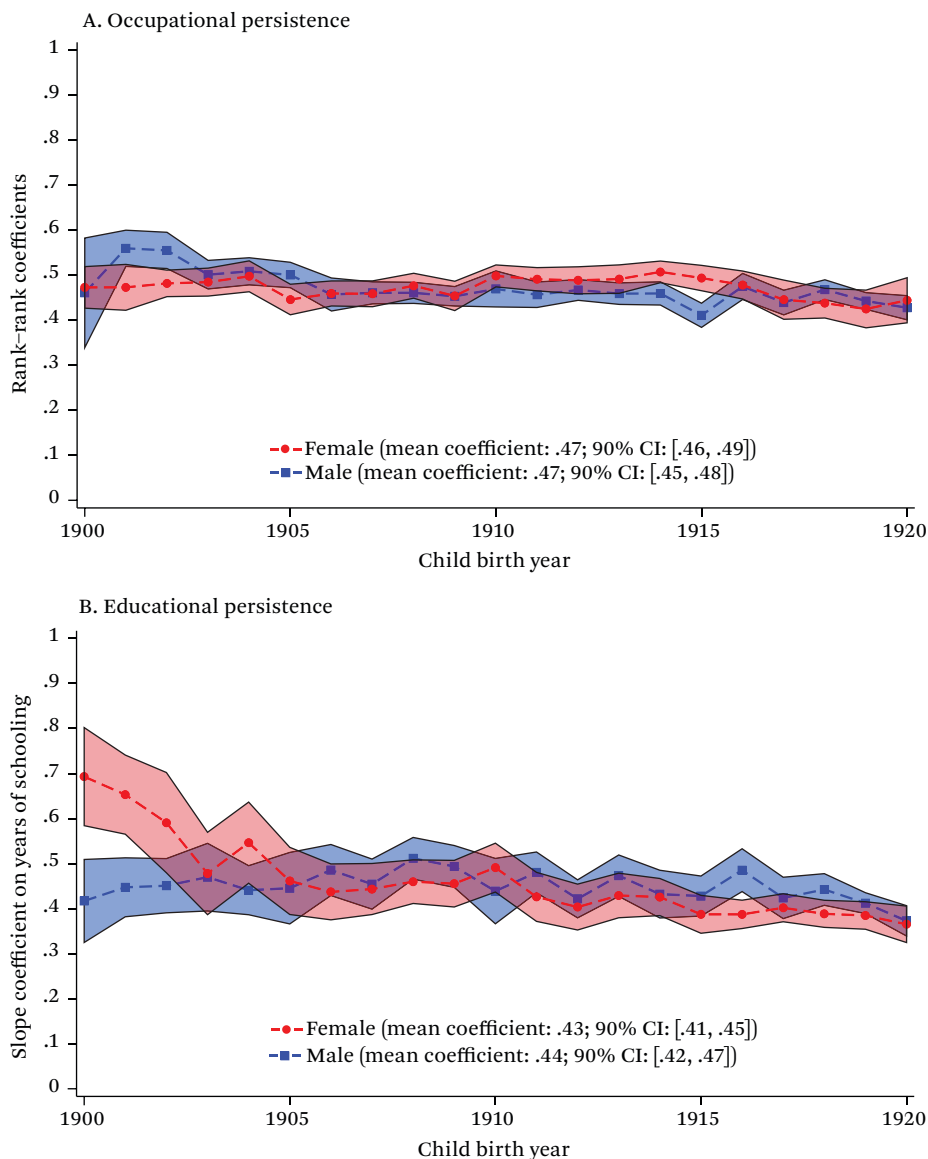
The coefficient of interest  $\psi_g$  captures the impact of exposure to the Depression on a child's occupational rank or years of schooling for children in the two younger cohort groups,  $g$ , relative to the oldest cohort group.

## RESULTS

We begin by benchmarking rates of intergenerational mobility in the LIFE-M data to the rates in the literature. Figure 2 shows that occupational persistence for sons born between 1900 and 1920 is around 0.47, and educational persistence is around 0.44. In addition, we find little evidence of differences in mobility by sons' birth year. A unique feature of our analysis is that the LIFE-M data also permit an examination of daughters' intergenerational mobility. Because many women did not work for pay or report an occupation in the early twentieth century, we examine daughters' occupational mobility based on husbands' and fathers' occupational ranks. We find that occupational and educational mobility for daughters is almost identical to that of sons.<sup>15</sup>

Because our analysis of occupational mobility for daughters is limited to married women

15. The coefficients of intergenerational occupational and educational persistence are plotted in figure 2. Hypothesis tests for equal coefficients for daughters and sons yield an F-statistic of 0.22 for occupational persistence ( $p = .64$ ) and an F-statistic of 0.37 ( $p = .54$ ). We cannot reject the null hypothesis that the persistence coefficients for daughters and sons are equal at any statistical significance.

**Figure 2.** Intergenerational Persistence Estimates, by Birth Cohort and Sex

Source: Authors' tabulation using LIFE-M data (Bailey et al. 2022).

Note: This figure plots intergenerational occupational and educational mobility by child's birth year. In panel A, we estimate intergenerational occupational mobility by regressing a child's occupational rank (husband's occupational rank, if women) on father's occupational rank and allow the rank-rank coefficient to change by child's birth year. Occupational ranks are based on the national distribution of occupational income scores created by Collins and Wanamaker (2022). In panel B, we estimate educational mobility by regressing a child's years of schooling on father's years of schooling and also allow the slope coefficients to change by child's birth year. Regressions are weighted by the inverse propensity scores, and 90 percent confidence intervals are shown as well as the point estimates. To smooth the trend by birth year, we drop two people with large weights causing large standard errors. To see similar plots by state, see figures A.1 and A.2.

residing with their husbands, a natural question is whether findings are sensitive to this sample restriction. Although we cannot observe husband's occupation for unmarried women, we check differences in educational mobility based on all daughters versus married daughters. Reassuringly, educational mobility for married daughters is not statistically different,<sup>16</sup> suggesting that our findings for daughters' occupational mobility are not driven by this data limitation.

### The Disruptive Effects of the Great Depression

We next examine the effects of the Great Depression on occupational and educational intergenerational mobility. Recall, the Great Depression could have two opposing effects. First, it could stretch the resources of families and limit educational attainment, leading to more limited opportunities and decreasing intergenerational mobility. Alternatively, the Great Depression could level the playing field for children in different social classes and reduce the role of parental socioeconomic status in determining children's outcomes, leading to an increase in mobility.

Table 3, panel A, reports the main results for relative mobility. First, we find little evidence that the Great Depression affected sons' relative occupational and educational mobility, regardless of marital status (columns 1–2 and columns 4–5) and age at the time the Depression began (rows 5–6). However, the Great Depression appears to have limited daughters' intergenerational mobility. For daughters born between 1912 and 1914 (ages fifteen to seventeen at the onset of the Depression), we find negative and statistically significant coefficients on the interaction term between fathers' outcomes, the Great Depression's severity, and birth cohort groups (columns 3, 6, and 7). Being exposed to a decline in retail sales of one standard deviation led to a sizable decline in the occupational mobility of daughters who were teens at the start of the Depression. Moreover, the effect is large at  $-0.075$  relative to the intergenerational persistence of  $0.30$  for the oldest

group of cohorts, those who were eighteen to twenty-nine years old when the Depression began (column 3). Similarly, a more severe Depression decreased educational mobility for teen daughters by  $0.16$  relative to the daughters older than eighteen at the start of the Depression (column 6)—a 40 percent increase in educational persistence ( $0.16/0.40$ ). This negative effect is larger for married daughters residing with their husbands (column 7).

Absolute upward educational mobility of daughters and sons who were ages fifteen to seventeen at the time of the Depression's onset was also affected. Consistent with our relative educational mobility findings, daughters ages fifteen to seventeen at the time experienced reduced mobility, relative to daughters ages eighteen and older (panel B, column 6). In contrast, for comparable sons, we find that a more severe economic downturn increased educational mobility. The absence of effects on occupational mobility for sons, however, suggests that changes in education had little effect on occupational choice.

### Heterogeneous Effects by Individual and Community Characteristics

A second set of results examines whether the Depression's effects differed across state, county characteristics, and individual circumstances and characteristics. Effect sizes may have varied across these dimensions for many reasons. County-level or individual effect heterogeneity may reflect differences in treatment (for example, difference in the severity of the Depression by community or across individuals) or effects of the same treatment (for example, that people respond differently to the same severity of the Depression due to different circumstances or constraints).

We explore whether the impact of the Great Depression differed in North Carolina, where the dominant sector was agriculture. We also explore whether the Great Depression's effects on intergenerational mobility were moderated by the major programs of the New Deal. In addition, we explore how the local economy (such as retail sales and manufacturing employment)

16. Coefficients are reported in table 3 in row 1, columns 6 and 7. We formally test the equality of coefficients under the null hypothesis that the two coefficients are equal, which we fail to reject ( $F$ -statistic =  $.68$ ,  $p = .41$ ).

**Table 3.** Intergenerational Persistence in Ohio and North Carolina, by Sex and Birth Cohort

	Occupation All Men (1)	Occupation Married Men (2)	Occupation Married Women (3)	Education All Men (4)	Education Married Men (5)	Education All Women (6)	Education Married Women (7)
<b>A. Relative Mobility</b>							
Father's outcome	0.319*** (0.0156)	0.323*** (0.0170)	0.295*** (0.0190)	0.365*** (0.0251)	0.360*** (0.0271)	0.398*** (0.0278)	0.356*** (0.0188)
Father's outcome x GD	-0.00333 (0.0207)	0.00821 (0.0257)	0.0325 (0.0298)	0.0215 (0.0401)	0.0234 (0.0471)	0.0290 (0.0581)	0.0736 (0.0514)
Father's outcome x 1 (born from 1912 to 1914)	-0.0270** (0.0132)	-0.0460*** (0.0152)	0.0259 (0.0232)	0.00132 (0.0366)	-0.0419 (0.0261)	0.0338 (0.0535)	0.100* (0.0602)
Father's outcome x 1 (born from 1915 to 1920)	-0.0437*** (0.0128)	-0.0667*** (0.0165)	-0.0225 (0.0260)	-0.0281 (0.0287)	-0.124*** (0.0349)	-0.0712** (0.0292)	-0.0300 (0.0301)
Father's outcome x GD x 1 (born from 1912 to 1914)	0.0328 (0.0231)	-0.00265 (0.0254)	-0.0753* (0.0406)	0.0673 (0.0559)	0.0552 (0.0441)	-0.157** (0.0664)	-0.270*** (0.0695)
Father's outcome x GD x 1 (born from 1915 to 1920)	-0.00305 (0.0246)	-0.0450 (0.0386)	0.0141 (0.0472)	-0.000162 (0.0477)	-0.0169 (0.0579)	0.00895 (0.0562)	-0.0438 (0.0594)
N	164,302	105,826	101,354	90,014	43,847	69,580	40,393
<b>B. Absolute Upward Mobility</b>							
1 (born from 1912 to 1914)	-1.206 (1.514)	-2.555 (2.885)	-2.413 (3.269)	0.305 (0.193)	0.462*** (0.147)	-0.0330 (0.272)	-0.0151 (0.278)
1 (born from 1915 to 1920)	-3.783 (2.578)	-2.173 (3.364)	-6.497 (4.642)	0.476*** (0.129)	0.475*** (0.148)	0.421** (0.168)	0.303** (0.129)

(continued)



**Table 3.** (continued)

	Occupation							Education	
	Occupation All Men (1)	Occupation Married Men (2)	Married Women (3)	Education All Men (4)	Education Married Men (5)	Education All Women (6)	Education Married Women (7)		
GD x 1 (born from 1912 to 1914)	-0.523 (1.934)	-0.226 (2.342)	2.980 (2.635)	-0.447** (0.215)	-0.366** (0.177)	0.540* (0.285)	0.653** (0.269)		
GD x 1 (born from 1915 to 1920)	1.739* (0.964)	2.746 (1.907)	1.955 (2.496)	0.0683 (0.152)	0.154 (0.199)	0.0165 (0.252)	0.0489 (0.172)		
N	24,119	15,701	15,954	24,674	12,382	18,812	11,322		

Source: Authors' tabulation using LIFE-M data (Bailey et al. 2022) and the 1940 Decennial Census (Ruggles et al. 2021).

Note: This table reports the estimated effects of the Great Depression on intergenerational persistence (mobility is the opposite) in occupation and education. The dependent variables in columns 1 through 3 are occupational ranks in a national distribution, based on the occupational scores (Collins and Wanmaker 2022). The occupational scores are based on average earned income by occupation, race, and region and adjusted for farmers' incomes according to farm size. For married women in column 3, we use their husbands' occupational ranks as the dependent variable. The dependent variables in columns 4 through 7 are children's years of schooling, which is based on the highest grades completed in the 1940 Census. Father's outcome is father's occupational rank for columns 1 through 3 and father's years of schooling in columns 4 through 7. In panel A, we estimate the effects of the Great Depression on relative intergenerational persistence by regressing children's outcomes on interaction terms between severity of the Great Depression, father's outcome, and children's birth cohorts. The severity of the Great Depression is measured by the growth rates in retail sales per capita between 1929 and 1933 (Fishback et al. 2005). We rescale the raw growth rates and measure it by the number of standard deviations different from the national average. A positive value means a faster growth of per capita retail sales than the national average, therefore, a less severe economic downturn. Children are grouped in three cohorts: (1) born between 1900 and 1911, who were older than eighteen by 1929; (2) born between 1912 and 1914, who were about high school age by 1929; (3) born between 1915 and 1920, who were younger than high school age by 1929. We use cohorts from 1900 to 1911 as our base group. In columns 1 through 3, we control for a quartic function of children and fathers' ages when their occupations were observed. In panel B, we estimate the effects of the Great Depression on absolute upward mobility by regressing children's outcomes on the interaction between the severity of the Great Depression and the children's birth cohorts, only for children in the bottom of the distribution for fathers' outcomes. For occupational analysis in columns 1 through 3, we focus on the children with fathers ranked below the 25th percentile in the national occupational distribution. For education analysis in columns 4 through 7, we focus on the children with fathers who have six or fewer years of schooling. For all specifications, we control for county fixed effects, birth cohort group fixed effects, the dual interactions between father's outcome and severity of the Great Depression, and the dual interaction between father's outcome and children's birth cohorts. A positive coefficient on the triple interaction terms in panel A implies that a less severe economic downturn increases intergenerational persistence (or a more severe economic downturn increases mobility) for individuals in the specified cohort, relative to the base cohorts (1900 to 1911). A positive coefficient on the interaction terms in panel B implies that a less severe economic downturn increases children's outcome (or a more severe economic downturn decreases children's outcome) in the specified cohorts, relative to the base cohorts (1900 to 1911). Standard errors are clustered at the county level.

\*  $p < .10$ ; \*\*  $p < .05$ ; \*\*\*  $p < .01$

and culture (such as political and religious) might have led to different effects. For example, a stronger economy and community might have been able to mitigate the negative impacts of the Great Depression. Finally, we explore differences in the effects by individual-level characteristics including, race, residence type (urban or farm), immigration status, migration, and family size and composition. Black Americans were excluded from many of the benefits of the New Deal policies (Lieberman 2001; Murphy 2020); some people might have been able to move to better opportunities (Feigenbaum 2015); and larger families with young children may have experienced more financial stress than smaller families.

Figure 3 plots heterogeneous effects of the Great Depression on intergenerational mobility by a set of county and individual characteristics. We display the results by different combinations of outcomes and sex. The plotted coefficients are from the interaction terms between father's outcome, the Great Depression's severity, indicator for a specified cohort group, and the county or individual characteristic of interest. These coefficients describe how the effects of the Great Depression on intergenerational mobility differ for individuals with and without a specified characteristic. A positive coefficient means that a less severe economic downturn increases intergenerational persistence (or a more severe economic downturn increases mobility) for children with the specified attribute or living in a county with that attribute. We also report the sample size underlying the estimates for each attribute as the availability of information varies.

Although many estimates are imprecise and not statistically different from zero, a closer look highlights some interesting heterogeneity that is masked in the aggregated results. For sons age fifteen to seventeen in 1929, we find reduced occupational mobility in communities with above median Public Works spending ( $p = .03$ ), but increased mobility for those who moved counties or states ( $p = .07$ ). However, none of these associations remain statistically significant after using the Bonferroni method to account for seven within-domain independent tests (the multiple-test corrected  $p$ -value for significance at the 10-percent level is  $.014$ ).

We find that negative effects of the Great Depression on sons' educational mobility are especially pronounced among Black boys ( $p = .03$ ) and in communities with above median retail sales ( $p = .03$ ), Public Works spending ( $p = .002$ ), and church membership ( $p = .003$ ), but positive effects on mobility appear for boys in locations with more manufacturing employment ( $p = .04$ ). Only the associations with Public Works spending and church membership remain statistically significant after using the Bonferroni method to account for multiple tests.

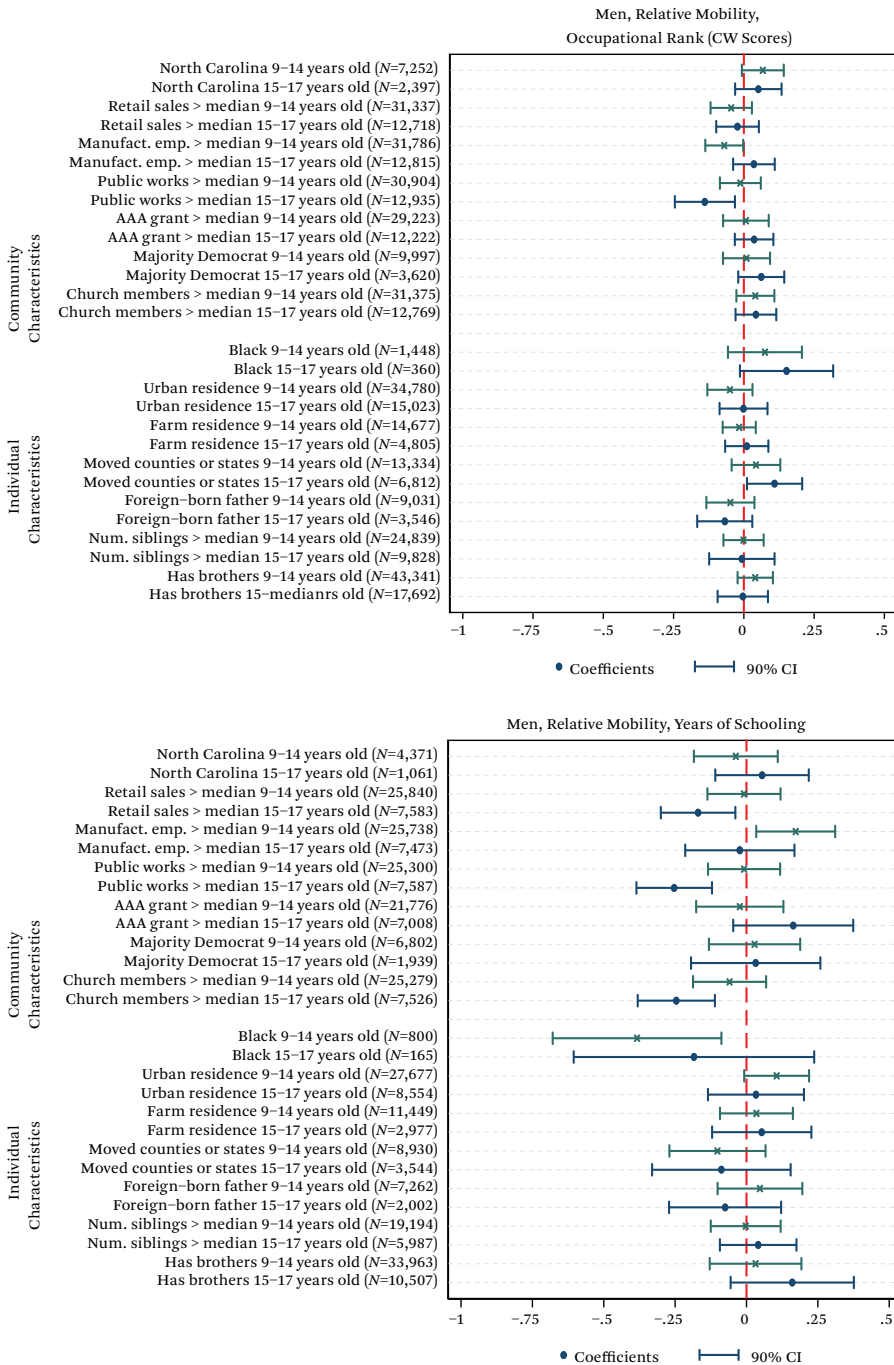
Similarly, we find that negative effects of the Great Depression on daughters' educational mobility are especially pronounced among Black girls ( $p = .07$ ) and for girls in families with more siblings ( $p = .013$ ). The latter finding remains statistically significant after correcting  $p$ -values for multiple tests and could reflect family constraints, favoring daughters dropping out of school to find work or help care for their siblings (while their parents worked) in counties that were more severely affected by the Great Depression. We also find that, among daughters age fifteen to seventeen in 1929, the negative impacts are driven by daughters in North Carolina, as opposed to Ohio.

## DISCUSSION AND CONCLUSION

Our novel, large-scale historical LIFE-M dataset produces estimates of intergenerational occupational mobility that track with other studies of the period for sons. LIFE-M also facilitates the exploration of occupational and educational mobility of daughters and suggests their intergenerational mobility was similar to that of sons in this period. Large samples allow detailed investigation into the role of the severity of the Great Depression in shaping intergenerational mobility across various characteristics.

Despite the magnitude and variation in the Depression's severity, we find little evidence that it negatively affected the relative intergenerational mobility of sons. In fact, sons with less-educated fathers achieved more absolute upward mobility in educational attainment. Perhaps sons from deprived households during the Great Depression learned how to work hard and hustle (Elder 1999; Furstenberg 1975) or

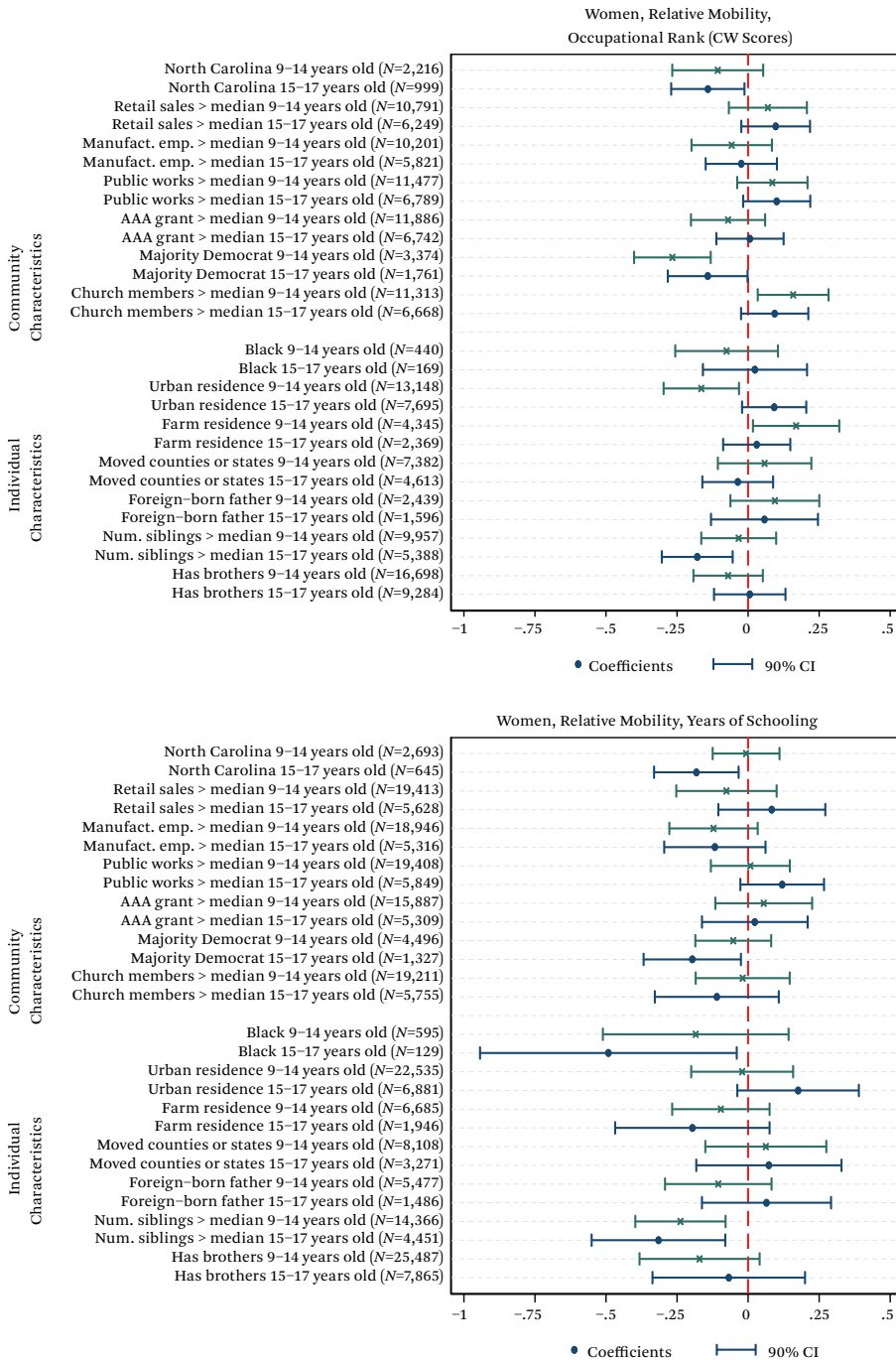
**Figure 3.** Heterogeneous Effects of Great Depression on Intergenerational Mobility, by Individual and County Characteristics



Source: Authors' tabulation using the LIFE-M data (Bailey et al. 2022).

Notes: This figure plots heterogeneous effects by various community and individual-level attributes. A positive coefficient in this figure indicates that a more severe economic downturn increases mobility for individuals with the specified attributes or living in a community with that attribute, compared to the individual without that attribute. Results are similar if we use continuous measures for applicable attributes. The median values of retail sales, manufacturing employment, public works funding, etc.,

Figure 3. (continued)



are listed in table A.3. We also report the number of people satisfying the specified attribute in parentheses. For example, in the occupational analysis, there are 7,252 men in North Carolina ages nine to fourteen by 1929. The confidence intervals have not been adjusted for multiple hypothesis testing. See text for discussion of *p*-values applying the Bonferroni correction (Dunn 1961). To see similar plots by state, see figure A.3.

benefited from government policies and work programs, like the Civilian Conservation Corps and Works Progress Administration (Fishback 2017). Consistent with this story, we find evidence that, among sons born to fathers with less than six years of education, educational attainment increased more in counties with a more severe Great Depression. Perhaps sons from disadvantaged families in less severely hit counties saw forgoing education and participating in the labor market as an agreeable trade-off. Interestingly, not detecting any improvement in sons' intergenerational occupational mobility suggests that the jobs the sons took forgoing education did not improve their occupational standing.

Alternatively, daughters' intergenerational educational mobility was negatively affected, and more so for those high school age and those living in North Carolina. Our heterogeneity analysis on siblings indicates that the Depression's severity had larger negative effects on girls' mobility for large families. This is consistent with the hypothesis that daughters of the Great Depression were more likely to forgo their education to stay home and take on domestic roles (Elder 1999; Furstenberg 1975). Another hypothesis is that daughters lost more due to Depression-era school closings through two channels: reduced own educational attainment could also affect daughters' own occupations (such as clerical work) as well as their marriage prospects. For example, related research shows that Black women gained more than Black men from newly constructed Rosenwald schools in terms of educational attainment and subsequently their labor-force participation and occupational standing (Mohammed and Mohnen 2023). Our analyses also show that teen daughters' intergenerational occupational mobility, as measured by their husband's occupation, also declined in more severely hit counties, perhaps due to worse marital matches.

In addition to county-level variation in the severity of the Depression, the recovery from the Depression also differed. More New Deal

spending contributed to higher per capita income growth (Garrett and Wheelock 2006), but spending varied across states and counties, making recovery efforts unequal across space (Fishback, Kantor, and Wallis, 2003). Recovery efforts also varied by program and across people. For example, increased spending in public works and relief programs aided in recovery, whereas increased spending on Agricultural Adjustment Act (AAA) grants had a negative impact (Fishback, Horrace, and Kantor 2005). These differences may arise because of whom these programs benefited. Public works and relief programs targeted the unemployed, whereas AAA grants targeted landowners. However, we also find little evidence that public works spending and AAA grants mitigated the negative impacts of the Great Depression on intergenerational mobility. Occupational and educational mobility for daughters appears unaffected by these recovery efforts, and occupational and educational mobility for sons age fifteen to seventeen in 1929 was negatively affected by the public works spending.<sup>17</sup>

Finally, Black Americans were more negatively affected by a more severe Depression. One explanation is that Black Americans were more economically disadvantaged than White Americans and faced substantial institutional discrimination in the early twentieth century. In addition, Black Americans lacked access to many of the New Deal programs.

Understanding how much each of these explanations mitigated or exacerbated the hardships of the Depression is a promising area of future research to help shed light on how contemporary disruptive events and economic crises and mitigation efforts affect the arc of children's lives.

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17. Anna Baranowska-Rataj, Björn Högberg, and Jonas Voßemer (2023, this issue) find that Sweden's robust safety net effectively mitigates negative birth outcomes from job loss. We find, however, that perhaps this unemployment support did not provide promising pathways toward mobility.

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