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Wealth, Race, and Place: How Neighborhood (Dis)advantage From Emerging to Middle Adulthood Affects Wealth Inequality and the Racial Wealth Gap

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ABSTRACT Do neighborhood conditions affect wealth accumulation? This study uses the National Longitudinal Survey of Youth 1979 cohort and a counterfactual estimation strategy to analyze the effect of prolonged exposure to neighborhood (dis)advantage from emerging adulthood through middle adulthood. Neighborhoods have sizable, plausibly causal effects on wealth, but these effects vary significantly by race/ethnicity and homeownership. White homeowners receive the largest payoff to reductions in neighborhood disadvantage. Black adults, regardless of homeownership, are doubly disadvantaged in the neighborhood–wealth relationship. They live in more-disadvantaged neighborhoods and receive little return to reductions in neighborhood disadvantage. Findings indicate that disparities in neighborhood (dis)advantage figure prominently in wealth inequality and the racial wealth gap.

KEYWORDS Neighborhood effects • Wealth • Inequality • Race

Introduction

Wealth is a key measure of well-being and predictor of life chances in the United States (Spilerman 2000). It plays an important role in educational, labor market, and health outcomes (Killewald et al. 2017) and serves as both a safety net in economic downturns and a means for upward mobility (Shapiro 2006). Wealth is also one of the most unequally distributed resources and a prominent feature of U.S. racial inequality. In 2016, median household wealth of Whites was 10 times that of Blacks and 8 times that of Hispanics (Dettling et al. 2017). Wealth's mobility-generating and safety net functions make it critical to racial stratification (Shapiro 2006), and wealth is a central determinant of racial disparities in educational attainment and welfare receipt (Conley 1999, 2001). Thus, many consider wealth the "sine qua non indicator of material wellbeing" (Oliver and Shapiro 2006:203).

I argue that neighborhoods are an overlooked driver of wealth inequality. For many, homes are a key source of wealth (Shapiro 2006), and home values are closely related to the neighborhoods in which they are located (Galster et al. 2008). Neighborhoods also affect educational attainment, employment, income, and other factors

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that impact wealth (Chetty et al. 2016; Vartanian and Buck 2005; Wodtke et al. 2011). Despite neighborhoods' theoretical importance, I am aware of no rigorous causal analysis of neighborhood effects on wealth. Whereas meso-level characteristics, such as neighborhoods, are underexamined, research on macro- and micro-level causes of wealth inequality is much more common (Keister 2005; Keister and Moller 2000). Still, our knowledge of the sources of wealth inequality remains limited (Pfeffer and Schoeni 2016), and most analyses of the racial wealth gap leave a sizable portion unexplained (e.g., Campbell and Kaufman 2006; Herring and Henderson 2016; Maroto 2016; Oliver and Shapiro 1995).

This study analyzes how neighborhood (dis)advantage in adulthood relates to wealth at age 50 and helps explain the racial wealth gap. It makes three contributions to research on neighborhood effects, racial inequality, and wealth inequality. First, it identifies neighborhoods as an important feature of wealth inequality. Second, it reveals two ways that neighborhoods contribute to the racial wealth gap: through (1) large disparities in neighborhood disadvantage (ND) and (2) Whites disparately benefitting from reductions in ND. Third, it responds to the recent call (Killewald et al. 2017) for research on the wealth of groups besides Blacks and Whites. Beyond these contributions, this study advances research on neighborhood effects by focusing on an understudied period of the life course (adulthood), analyzing heterogeneous effects, and using counterfactual methods with a continuous treatment.

Literature Review

Wealth Inequality in America

Wealth inequality in the United States is extreme and widening, eclipsing even the levels seen during the Roaring Twenties (Piketty 2013/2014; Saez and Zucman 2016). The richest 1% now own 40% of wealth (Saez and Zucman 2016), and the share of households with no or negative wealth is rising (Keister and Moller 2000; Pfeffer and Schoeni 2016). The middle of the distribution also shows divergence, with household wealth growing faster at the 75th percentile than at the median or the 25th percentile (Pfeffer and Schoeni 2016).

Research on wealth inequality has identified two broad types of determinants: structural (macro-level) factors, including the housing and stock markets, asset and tax policies, and racism; and individual or family (micro-level) drivers, including age, family structure, education, income, and inheritances (Keister and Moller 2000). Research on the United States and 15 other high-income countries has found that income and inheritances are the strongest predictors (Semyonov and Lewin-Epstein 2013). Several reviews offer further insight into wealth inequality (Keister 2005; Keister and Moller 2000; Killewald et al. 2017), but notably absent from research on the causes of wealth accumulation are meso-level factors, such as neighborhoods.

As is the case with overall wealth inequality, the racial wealth gap is substantial and growing (Conley 2010; Oliver and Shapiro 1995). The richest 100 U.S. households have as much wealth as all Blacks plus one third of Hispanics combined (Collins and Hoxie 2015). The determinants of the racial wealth gap vary from the determinants of general wealth accumulation. Racial wealth inequality follows centuries of racist public policy (Conley 2010; Oliver and Shapiro 1995) that "systematically prevented [Black Americans] from accumulating property" (Conley 1999:611). Homeownership is foundational for wealth accumulation given that owning a home and duration of homeownership are positively associated with wealth (Di et al. 2007; Turner and Leua 2009). Disparities in the rate and duration of homeownership can explain a large portion of the racial wealth gap (Oliver and Shapiro 1995; Shapiro 2006; Shapiro et al. 2013)—much more than income and educational attainment explain (Sullivan et al. 2015). Still, non-White homeowners have lower equity and equity conditional on socioeconomic status than do White homeowners (Killewald and Bryan 2016; Krivo and Kaufman 2004). Whites start with homes that have higher values, and their homes appreciate faster (Flippen 2004). One potential explanation for this is racialized neighborhood access; non-Whites, particularly Blacks, disproportionately reside in disadvantaged neighborhoods (Massey and Denton 1993; Newman and Holupka 2016).

Most research incorporating a range of individual-level variables cannot fully explain the racial wealth gap (e.g., Campbell and Kaufman 2006; Herring and Henderson 2016; Maroto 2016; Oliver and Shapiro 1995). A notable exception is Killewald and Bryan's (2018) analysis of median racial wealth gaps at age 50. They concluded that family social origins explain about half of the median wealth gap, income and education explain another quarter, and homeownership and other household factors explain the final quarter. Still, Maroto (2016) found that the racial wealth gap is large and difficult to explain at the top end of the wealth distribution. Thus, explanations for the median gap may not translate to the full wealth distribution, and further research on the gap is critical (Killewald et al. 2017). For a new explanation, I turn to a key meso-level feature of families' homes: the neighborhoods in which they sit.

Residential Segregation

The United States has a long history of racial residential segregation. Documented back to the nineteenth century (Du Bois 1899), segregation has waned only somewhat and remains a problem by concentrating non-White, particularly Black, Americans in less-advantaged neighborhoods (Lee et al. 2014; Logan et al. 2015; Massey and Denton 1993). Contemporary segregation results from historical inequalities (Sharkey 2013), ongoing discrimination in mortgages and housing (Fischer and Lowe 2014; Pager and Shepherd 2008; Rugh and Massey 2010), and Whites' preference for neighborhoods with few non-White residents (Krysan et al. 2009).

Unlike racial segregation, class-based segregation emerged more recently as an important consideration. Income segregation increased from 1970 to 2012, with notable increases in the 1980s and 2000s (Jargowsky 1996; Reardon et al. 2018). Class-based segregation is particularly salient for racial and ethnic minorities; low-income Blacks and Hispanics are often segregated into the most disadvantaged neighborhoods (Jargowsky 1996). Together, race/ethnicity and class constitute the two key features of contemporary neighborhood segregation (Lee et al. 2015).

These patterns suggest that neighborhoods *could* affect wealth. Rusk (2001) posited a "segregation tax," with disadvantaged groups receiving lower returns to homeownership (see also Faber and Ellen 2016; Flippen 2004; Shapiro 2004). Denton (2001) further speculated that the segregation tax is paid across the class distribution. Still, this idea is not fully developed. Why might segregated neighborhoods reduce non-Whites' wealth? Do highly segregated cities always have high wealth inequality? That is, does segregation lead to wealth disparities per se? Flippen (2010) found that metropolitan racial segregation is associated with low rates of minority homeownership, which is a potential mechanism by which segregation could cause wealth disparities. Alternatively, do the characteristics of segregated neighborhoods drive wealth through disparate access to advantaged, wealth-promoting neighborhoods?

Neighborhood Effects

There are several potential mechanisms for neighborhood effects on wealth, which broadly fall into two groups: achieved statuses and housing. Considerable research has examined neighborhood effects on status attainment and behavioral outcomes. Neighborhood effects on educational and labor market outcomes are well established (Chetty et al. 2016; Sharkey and Faber 2014). Disadvantaged neighborhoods also increase the risk of crime and incarceration (Hipp et al. 2010; Peterson and Krivo 2010), negative behavioral outcomes (Sampson et al. 2002), and low levels of health and well-being (Ludwig et al. 2012; Ross and Mirowsky 2001). Each of these outcomes represents a plausible pathway for neighborhood effects on wealth. Achieved statuses seem especially likely to explain neighborhood effects on overall wealth inequality, whereas they may be less important for neighborhood-based racial wealth disparities (Keister and Moller 2000; Semyonov and Lewin-Epstein 2013; Sullivan et al. 2015).

Neighborhood demographics also correlate with home values. Whites' disinclination to move to low-income or non-White neighborhoods negatively affects home equity (Crowder and South 2008; Emerson et al. 2001; Galster et al. 2008; Krysan et al. 2009). Although both race (Anacker 2010; Coate and Schwester 2011) and class (Galster et al. 1999; Peng and Thibodeau 2013) are related to values, class is especially salient (Flippen 2004; Harris 1999). Because housing is a key source of wealth, the housing market represents a unique mechanism for neighborhood effects on wealth—one not emphasized in most research on neighborhood effects.

Legacy and structural disadvantages in the housing market imply that neighborhood effects operating through housing may be salient for racial inequality. The history of redlining, blockbusting, and urban renewal (Faber 2020; Lipsitz and Oliver 2010), coupled with contemporary inequities in appraisal (Howell and Korver-Glenn 2021), mortgage lending (Korver-Glenn 2021; Stuart 2003), foreclosure (Hall et al. 2015a, 2015b; Rugh et al. 2015), and siting of amenities (Moore et al. 2008; Morland et al. 2002), disparately concentrates value. Discrimination in the housing search process (Fischer and Lowe 2014; Korver-Glenn 2021; Pager and Shepherd 2008; Rugh and Massey 2010), as well as long-standing patterns of residential segregation (Massey and Denton 1993; Reardon et al. 2018), restricts non-Whites', especially low-income non-Whites', access to neighborhoods with strong wealth advantages. This research documenting the breadth of racism in housing suggests that the segregation tax (Rusk 2001) results from specific disadvantages in neighborhoods into which traditionally disadvantaged populations, especially Blacks (Newman and Holupka 2016), are segregated.

Because wealth determinants are multiple and vary by race, it is important to consider effect heterogeneity (e.g., Levy 2019; Wodtke et al. 2016). Housing is an outsized component of non-Whites' wealth (Kuebler 2013), so neighborhood effects through housing may be particularly important for racial and ethnic minorities. Alternatively, with the increasing concentration of wealth (Saez and Zucman 2016) and larger payoff to homeownership among Whites (Krivo and Kaufman 2004), wealth benefits may be concentrated in the most-advantaged neighborhoods, among Whites, or among homeowners.

Data

I use the restricted-use National Longitudinal Survey of Youth 1979 cohort (NLSY79) to analyze neighborhood effects on wealth accumulated at roughly age 50. The NLSY79 is a nationally representative panel survey of nearly 10,000 individuals aged 14–21 in 1979. The NLSY79 surveyed respondents annually from 1979 to 1994 and biennially afterward. During the initial wave(s), the NLSY79 also collected information from participants' parents. The NLSY79 has several useful features for this analysis. First, it includes a representative sample of Hispanics in the initial sampling frame, permitting analysis of an important but understudied group in the neighborhood effects and wealth literatures. Second, each wave collects data on residential neighborhoods and a range of variables predictive of ND. Third, wealth inequalities and racial gaps stabilize when a cohort reaches age 50 (Urban Institute 2015), so the NLSY79 represents a recent cohort at this age. For this analysis, I use the longitudinal sample of roughly 7,300 individuals who completed a survey in 2012. This number represents a 79% response rate for those alive from the main longitudinal sample, a low level of attrition for a study spanning 33 years.[1]

To merge data on participants' neighborhoods, the restricted-use NLSY79 provides wave-specific residential census tract identifiers using 2010 boundaries.[2] I use neighborhood socioeconomic data from the decennial censuses and the five-year American Community Survey (ACS) centered on 2010, which are provided by the Longitudinal Tract Database (LTDB) (Logan et al. 2014) and Social Explorer.[3] I impute intercensal

[1] Selecting 2012 respondents as the analytic sample reduces missing data and allows the use of NLSY-constructed sampling weights that adjust for observed variation in attrition and account for oversampling in the initial frame. The ongoing panel comprises 9,964 individuals first surveyed in 1979. Since the initial survey, 689 respondents were recorded as deceased. Of all other nonrespondents in 2012, 903 refused to participate, 466 could not be located, 125 were deemed too difficult to interview, and 481 did not respond for other reasons. Yearly attrition for the NLSY79 is low compared with similar surveys, and evidence suggests that longitudinal panel studies can reasonably estimate current population statistics decades after their inception (Schoeni et al. 2013).

[2] Neighborhood clustering is very low. For 84% of all person-years in the sample, the respondent is the only individual living in their tract in that year. Ninety-nine percent of all person-years have four or fewer respondents in a tract in a year.

[3] Data from Social Explorer are available at https://www.socialexplorer.com/.

data using linear interpolation, harmonize data to 2010 boundaries using the LTDB, and merge this information to respondents.

The dependent variable is family wealth in 2012, when respondents were roughly age 50 (mean age=51.5; range=47–56).[4] The NLSY79 calculates wealth as total assets minus debts. Assets include homes, automobiles, businesses, estates, stocks, bonds, and cash. Debts include property, mortgage, and other debts. The NLSY79 top codes assets for the top 2% of respondents as their group mean wealth, which is a potential limitation for analyses of the wealthiest but is unlikely to bias average neighborhood effects. This wealth measure was assessed after the Great Recession, which had outsized impacts on non-Whites' wealth (Pfeffer et al. 2013). Although 2012 may represent a high-water mark for racial inequality, it is important analytically. Non-White households recovered housing wealth at slower rates (Bricker et al. 2014; Thomas et al. 2018), and their heightened vulnerability to economic downturns represents an important aspect of inequality. Given its right skew, I transform wealth using the inverse hyperbolic sine (IHS), which is akin to the natural log with the exception that the IHS is defined for zero and negative numbers. The IHS transformation also guards against the undue influence of outliers.

The primary independent variable ("treatment") is neighborhood (dis)advantage. I calculate ND using factor analysis of seven neighborhood characteristics: poverty, unemployment, female-headed households, welfare receipt, adults without a high school diploma, adults with a college degree (negative loading), and workers holding managerial or professional jobs (negative loading). I measure these at the tract level and use the first component's score for ND, which aligns with recent neighborhood effects research (e.g., Wodtke et al. 2011). In addition to ND, I measure exposure to metropolitan or micropolitan area[5] racial residential segregation using an entropy index (Theil's *H*) based on tract-level shares of the population that are White, Black, Asian, Hispanic, and multiracial/other (see Reardon and Firebaugh 2002). If segregation causes wealth disparities per se, then this should explain any association between ND and wealth.

Another focal independent variable is race/ethnicity. I use the racial/ethnic origin with which the respondent most closely identified in 1979 to code individuals as Hispanic, non-Hispanic Black, non-Hispanic White, or non-Hispanic other race. I use screener-reported race/ethnicity from 1978 to complete missing or ambiguous data. Screener-reported race is highly valid according to respondent-provided race. Among nonmissing respondents, 97.4% of individuals have the same racial category for both measures.

This analysis includes control variables reflecting characteristics with a major effect on neighborhood attainment (Harding 2003; Quillian 2003; Sampson and Sharkey 2008; Wodtke et al. 2011). Time-invariant controls include race/ethnicity, sex

[4] Wealth data are also available for 2016. Among those surveyed in 2012 and 2016, wealth values and percentiles correlate strongly between waves. Yet, attrition due to death increased substantially between 2012 and 2016; roughly 2.3% of 2012 respondents were deceased by the 2016 wave. One quarter of all attrition due to death by 2016 occurred between the 2012 and 2016 waves. Given that wealth inequality stabilizes around age 50 and death is endogenous to wealth, I use 2012 wealth as the outcome.

[5] I assign tracts to core-based metropolitan or micropolitan areas using a Missouri Census Data Center crosswalk: https://mcdc.missouri.edu/applications/geocorr.html.

(male/female), nativity, foreign language spoken during childhood (yes/no), parental education, parental employment skill level, childhood family structure, and baseline measures of wealth and ND. Nativity is a dummy variable distinguishing first- and second-generation adolescents from third-plus-generation adolescents. Parental education measures the highest educational attainment of resident parent(s): less than a high school diploma, high school diploma, some college, or bachelor's degree or higher. Parental job skill is the highest job skill level of resident parent(s): unskilled, clerk/sales, skilled manual, or manager/professional. Childhood family structure is one of the following categories: always lived with two biological parents, always lived with one and never the other biological parent, or some other living arrangement. Family wealth was first measured in 1985, so wealth and ND in 1985 are baseline controls. I adjust all dollar values to 2012 constant dollars using the consumer price index.

Time-varying controls are characteristics of the respondent, their family, and the head of their household, which can be the respondent. Respondent controls are educational attainment (same categories as noted earlier), marital status (never married, married, or other), and age. Family controls are wealth, family size, income-to-needs ratio, inheritance value, home value, home debt, home equity, and dummy variables for inheritance receipt, homeownership status, moving since the prior survey wave, and public assistance receipt. Wealth is family wealth at the prior wave. Income-to-needs is the ratio of family income to the federal poverty threshold. Inheritance value is the IHS of the total value of estates, trusts, and inheritances that the respondent or spouse received in the last year. Home values are respondent-reported market values of primary homes at the prior wave; for renters, home values are zero.[6] Home debt is the total value of mortgages, back taxes, and other debts owed on the residential home by the respondent and their spouse at the prior wave. Home equity is the difference between home values and home debts. I transform home value, debt, and equity using the IHS. Head of household controls are the number of jobs worked, the percentage of weeks worked, and the number of hours worked per week in the last year.

Whereas I use the 2012 wave of the NLSY79 to measure the dependent variable, I use most post-baseline waves (1986–2010, excluding 1992, 2004, and 2008)[7] for the ND treatment. Cumulative ND is the average ND score across these years. I address missing data using multiple imputation with chained equations and 10 imputed data sets. I retain observations with an imputed dependent variable (see Wodtke et al. 2016). Section A of the online appendix summarizes data missingness. Data on neighborhood demographics are more likely to be missing earlier in the sample because many parts of the United States, especially rural locations, were not divided into census tracts until 1990. Still, problems from missingness are not likely to be pronounced, as I discuss later. I weight all analyses and statistics using 2012 sampling weights. Section B of the online appendix presents weighted summary statistics for the first imputed data set.

[6] Self-reported values are generally quite accurate, and research has found that errors in estimated values are uncorrelated with individual demographics and neighborhood characteristics (Bucks and Pence 2006; Kiel and Zabel 1999).

[7] I exclude 1992, 2004, and 2008 because they lack data on lagged family wealth, home value, home debt, and home equity.

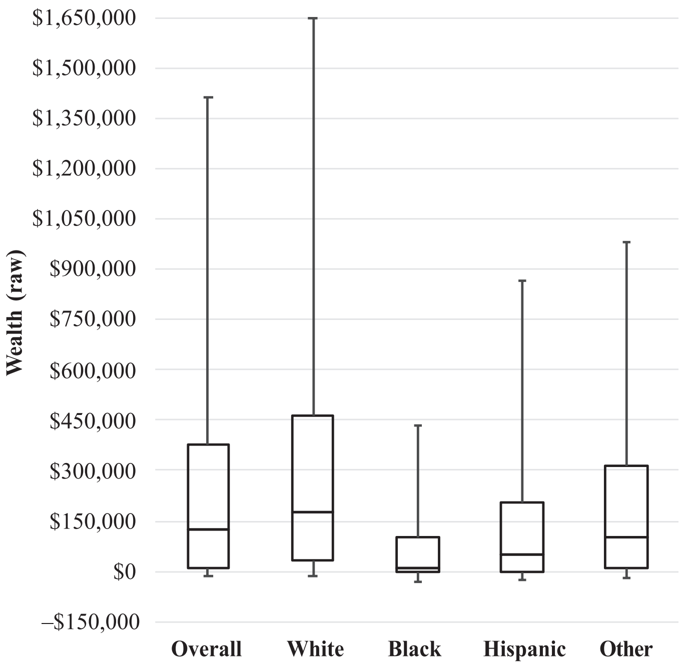

Fig. 1 Boxplots of raw wealth, by race. Statistics are weighted by 2012 respondent NLSY79 sampling weights. Boxes identify the group-specific 25th percentile, median, and 75th percentile. Whiskers identify the 5th and 95th percentiles.

Figure 1 presents a weighted boxplot of raw 2012 wealth values by race/ethnicity at roughly age 50. Wealth has strong positive skew across all groups, confirming the need for the IHS transformation. Median wealth for Whites is substantially greater than that for Blacks, Hispanics, or other races; similar disparities exist at the 25th and 75th percentiles of the race-specific distributions. In terms of averages by group (not shown), Whites, Blacks, Hispanics, and other-race individuals have mean wealth values of roughly $420,000, $90,000, $200,000, and $270,000, respectively. Mean Black and Hispanic wealth combined is 29% of mean White wealth, which aligns with other estimates.[8]

Figure 2 presents weighted boxplots of cumulative ND by race/ethnicity, similarly revealing large disparities. There is little to no overlap in the interquartile ranges of ND between Whites and Blacks or Hispanics. Whereas few Whites live in highly disadvantaged neighborhoods—those with an ND score 1 standard deviation or more above the national mean—the majority of Blacks and Hispanics live in highly disadvantaged neighborhoods. Moreover, roughly one quarter of Whites but few Blacks or Hispanics live in highly advantaged neighborhoods.

[8] The 2013 Survey of Consumer Finances (SCF), which does not top code wealth, reports mean wealth of non-Whites as 26.1% that of Whites. The difference with my calculations results at least partially from the age composition of Whites and non-Whites. The NLSY79 compares similarly aged individuals. The SCF is a cross-sectional survey of families; because Whites are older than non-Whites (the median age difference between Whites and non-Whites is roughly 10 years), the SCF reports a larger overall racial wealth gap than would likely occur within an age cohort.

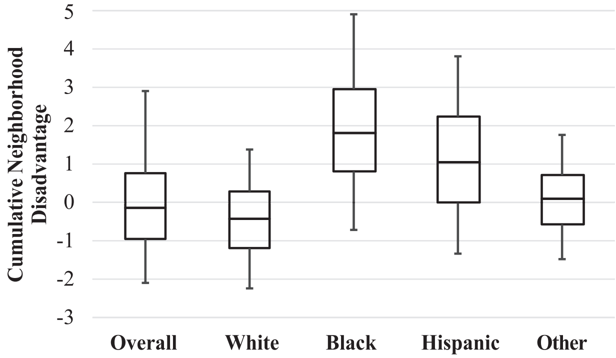

Fig. 2 Boxplots of cumulative neighborhood disadvantage, by race. Statistics are weighted by 2012 respondent NLSY79 sampling weights. Boxes identify the group-specific 25th percentile, median, and 75th percentile. Whiskers identify the 5th and 95th percentiles.

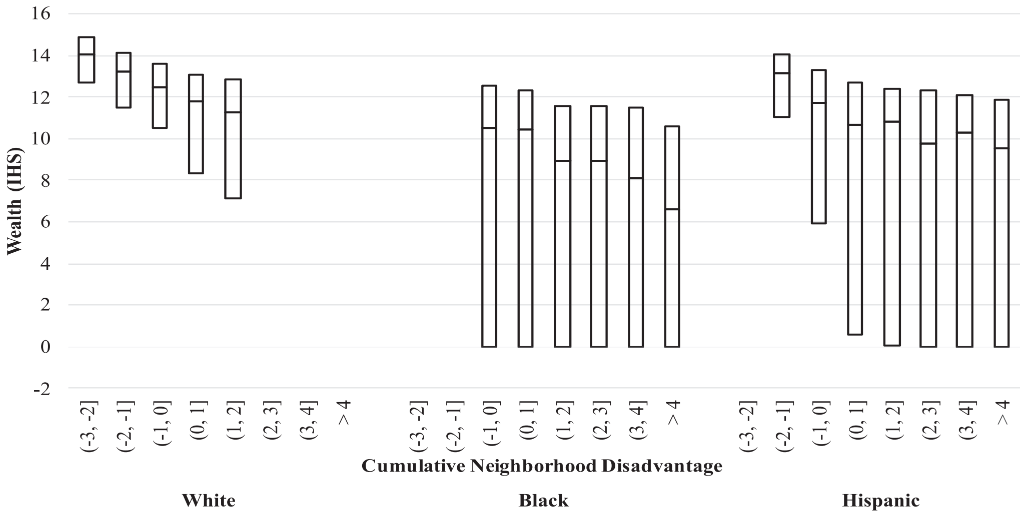

Fig. 3 Median and interquartile range of wealth, by cumulative neighborhood disadvantage and race/ethnicity. Statistics are weighted by 2012 respondent NLSY79 sampling weights. Boxes identify the group-specific 25th percentile, median, and 75th percentile. Values are omitted where the sample size within the range of cumulative neighborhood disadvantage is less than 50. Values for other-race individuals are omitted due to the overall small sample size. IHS = inverse hyperbolic sine.

Overall, there is a modest, negative unweighted correlation (R = –.280) between cumulative ND and the IHS of 2012 family wealth. This correlation varies substantially by race. The correlation is –.256 among Whites, compared with only –.130 among Blacks, –.175 among Hispanics, and –.071 among other-race individuals. Figure 3 presents weighted medians and interquartile ranges of IHS wealth for different ranges of cumulative ND by race/ethnicity. At each range of ND, Whites have generally higher levels of wealth than Blacks or Hispanics. Further, the wealth benefit of a reduction in ND appears to be modestly larger at lower levels of ND, particularly for Whites and Hispanics.

Methods

To analyze further the relationship between ND and wealth, I adopt a counterfactual approach designed to yield causal conclusions. Traditional regression-control approaches for time-varying covariates can significantly bias estimates of focal relationships in an unknown direction and magnitude through overcontrolling and collider stratification (Wodtke et al. 2011). Inverse probability of treatment (IPT)–weighted marginal structural models (MSMs) solve both problems and permit adjustment for time-varying covariates (Robins 1998; Robins et al. 2000). IPT-weighted MSMs use two-stage propensity score techniques, which regress treatment status at each wave on theoretically informed controls in the first-stage regression. By weighting observations in the treatment effect (second-stage) regression by the inverse probability that they received the observed treatment sequence, IPT-weighted MSMs adjust for time-varying covariates without requiring their inclusion in the second-stage model.

I use a recent approach for IPT-weighted MSMs with a continuous treatment. In the first stage, I divide treatment into deciles to estimate IPT weights (IPTWs). Monte Carlo simulations show the efficiency of the IPTWs for use with a continuous treatment in second-stage models (Naimi et al. 2014). I predict treatment decile using an ordered logit model. Results from the ordered logit provide the predicted probability of being in each decile of treatment at each wave conditional on observed covariates, and I assign each person-year the predicted probability of exposure corresponding to the observed decile. Following Wodtke and colleagues (2011), I calculate stabilized IPTWs as follows:

$$SW = \prod_{t=1}^{T} \frac{\text{pr}(NDD_t = ndd_t \mid NDD_{t-1}, ND_0, W_0, Z_0)}{\text{pr}(NDD_t = ndd_t \mid NDD_{t-1}, ND_0, W_0, Z_0, X_t, X_{t-1})}. \tag{1}$$

The denominator is the full propensity score model estimating treatment decile (NDD) at time t based on lagged treatment decile (NDD_{t-1}), baseline ND (ND_0), baseline IHS wealth (W_0), time-invariant covariates (Z_0), time-varying covariates (X_t), and a one-wave lag of time-varying covariates (X_{t-1}).[9] The numerator of Eq. (1), which excludes time-varying covariates, stabilizes the IPTWs. Recognizing racial inequalities in neighborhood attainment (Massey and Denton 1993), I interact all controls in the numerator and denominator with dummy variables identifying Black and Hispanic individuals to allow coefficients to vary for each group. The cumulative IPTW for an individual is the product of each wave's stabilized IPTW. I censor cumulative IPTWs at the 10th and 90th percentiles by recoding weights below and above those thresholds to the relevant threshold. This decision balances concerns

[9] I control for current and one-wave lags of time-varying controls to balance concerns of endogeneity with those of data loss. Each additional year of lagged controls eliminates one additional year of treatment data owing to the lack of data on lagged controls. For the wealth, home value, home debt, and home equity controls, I use only lagged measures because contemporaneous values may be endogenous to ND. I exclude lagged age given collinearity with current age.

about selection bias with those of extremely large IPTW variance (Cole and Hernán 2008).[10]

To analyze the relationship between wealth and cumulative ND, I use the cumulative IPTWs estimated with Eq. (1) as a probability weight (multiplied with sampling weights) to estimate the following:

$$W_t = \beta_0 + \beta_1 \left(\sum_{j=1}^{J=t-1} \frac{ND_j}{t-1} \right) + \beta_2 ND_0 + \beta_3 W_0 + \beta_z Z_0 + \varepsilon. \tag{2}$$

This model controls for baseline family wealth, baseline ND, and time-invariant covariates—allowing those associations to vary across three racial/ethnic groups (Blacks, Hispanics, and Whites/others). IPTWs adjust for time-varying controls. I also test quadratic and cubic treatment terms to allow the relationship between cumulative ND and IHS wealth to be nonlinear. In addition, I explore racial variation in the relationship by interacting the treatment with dummy variables for race/ethnicity.[11]

The validity of causal conclusions hinges on a key assumption: no unmeasured confounding. All variables affecting treatment status must be controlled or highly correlated with controls. Traditional regression models also require this assumption, so IPTW MSMs are not unique in this respect. Regardless, it is a strong assumption. To guard against selection bias, I include all key neighborhood selection variables identified by prior research: race/ethnicity, income, education, and living in a female-headed household (Quillian 2003; Sampson and Sharkey 2008). I also control for lagged wealth to guard against reverse causation and control for baseline ND to help adjust for unobserved, time-invariant confounders consistently related to ND. Although no observational study can discount selection effects completely, the extensive controls included here help to minimize endogeneity issues. Moreover, the first-stage propensity score model predicts ND reasonably well (see section C of the online appendix).

After estimating overall and race-specific neighborhood effects, I investigate effect moderation by cumulative homeownership or exposure to metropolitan/micropolitan residential segregation. The potential moderators are time-varying, so I estimate effect moderation using IPT-weighted regression with residuals (Wodtke and Almirall 2017). The IPTW calculation proceeds as described in Eq. (1) with the relevant moderator (M_t, M_{t-1}) included in the numerator and denominator. Then, I residualize the moderator to purge its association with prior treatment, as described in Eq. (3), which is weighted by the cumulative stabilized IPTW at time t:

$$\hat{\delta} M_t = M_t - \hat{E}\left(M_t \mid ND_{t-1}, W_{t-1}, ND_0, W_0, Z_0 \right). \tag{3}$$

[10] Results are substantively similar if IPTWs are censored at the 5th/95th percentiles. IPTWs censored at the 1st/99th percentiles, however, have extreme variance, which produces imprecise, unstable estimates. Supplemental analyses not shown here indicate that this results from the many waves of treatment (14 for each individual) included in the analysis, potentially in combination with nonlinearity or nonadditivity in the propensity score model for neighborhood disadvantage (Lee et al. 2011).

[11] For neighborhood effects with racial/ethnic heterogeneity, I interpret predicted change in wealth for each group only for its group-specific range (5th to 95th percentile) of ND.

After creating residualized values of the moderator, I estimate moderated treatment effects using the IPT-weighted regressions with residuals in Eq. (4):

$$W_t = \beta_0 + \beta_1\left(\sum_{j=1}^{J=t-1}\frac{ND_j}{t-1}\right) + \beta_2\left(\sum_{j=1}^{J=t-1}\frac{ND_j}{t-1}\right)\left(\sum_{j=1}^{J=t-1}\frac{M_j}{t-1}\right) + \beta_3\left(\sum_{j=1}^{J=t-1}\frac{\hat{\delta}M_j}{t-1}\right) + \beta_4 ND_0 + \beta_5 W_0 + \beta_z Z_0 + \varepsilon. \tag{4}$$

If treatment effects are nonlinear or vary by race, I include the necessary terms and interactions with the moderator.

Finally, I explore the role of ND in the racial wealth gap. I estimate a series of linear models that (1) describe overall, unadjusted racial wealth inequality in 2012, (2) assess how wealth inequality changes when I adjust for time-invariant and time-varying controls, and (3) assess the extent to which wealth inequality can be explained by cumulative ND. These last models are not causal. Rather, they illustrate how ND and other variables may be salient for racial wealth inequality.

Results

Table 1 presents a sequence of models of IHS wealth at roughly age 50. Model 1 estimates the unconditional, linear association between cumulative ND and wealth. Given the IHS transformation of wealth, parameter estimates are interpretable as semi-elasticities (Bellemare and Wichman 2020).[12] A one-unit decrease in cumulative ND is associated with a 152% increase in wealth ($-1 \times -1.52 = 1.52 = 152\%$). Model 2 reveals modest nonlinearity in the relationship, which is strongest at low levels of ND.[13] Table 2 provides average adjusted predicted IHS wealth, based on the regression models in Table 1, at three illustrative values of cumulative ND: the 5th percentile, the median, and the 95th percentile (roughly –2.1, –0.1, and 2.9, respectively, for the full sample). On the basis of model 2, an individual at the median of cumulative ND has approximately 420% more wealth than a similar individual at the 95th percentile of ND. Someone at the 5th percentile of ND has roughly 370% more wealth than a similar individual at the median of ND.

Models 3 and 4 add time-invariant controls and their interactions with race/ethnicity. The association between cumulative ND and IHS wealth declines moderately but remains strong. Models 5 and 6 include time-invariant controls and add IPTWs to adjust for time-varying confounding. Time-varying controls explain a larger share of the focal relationship than do time-invariant controls. Nevertheless, the IPT-weighted MSMs find a negative relationship between cumulative ND and wealth that persists at a substantively important magnitude. Model 6 indicates that the overall relationship is significantly nonlinear. Based on model 6, a reduction in cumulative ND from the median to the 5th percentile is associated with a 135% increase in wealth, whereas a

[12] For raw wealth values above approximately \$10, the IHS is essentially equivalent to the natural log plus a constant (roughly 0.693). The IHS and natural log transformations also are perfectly correlated ($R = 1.0000$). Roughly 8% of individuals reporting wealth in 2012 reported values between –\$10 and \$10; of these, all but five individuals reported zero wealth.

[13] A cubic term does not substantively improve the model.

Table 1 Linear models of inverse hyperbolic sine (IHS) wealth by cumulative neighborhood disadvantage (ND) at approximately age 50

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
ND	–1.52***	–1.65***	–1.12***	–1.23***	–0.42***	–0.51***	–0.68***	–0.69***
	(0.06)	(0.07)	(0.10)	(0.11)	(0.12)	(0.14)	(0.19)	(0.19)
ND^2		0.09***		0.09***		0.07*		–0.02
		(0.02)		(0.02)		(0.03)		(0.08)
ND × Black							0.75**	0.60
							(0.28)	(0.43)
ND × Hispanic							0.28	–0.37
							(0.31)	(0.40)
ND × Other Race							0.95†	1.26*
							(0.56)	(0.62)
ND^2 × Black								0.06
								(0.10)
ND^2 × Hispanic								0.22*
								(0.11)
ND^2 × Other Race								–0.31
								(0.22)
Constant	9.45***	9.25***	8.84***	8.74***	9.20***	9.11***	9.25***	9.24***
	(0.10)	(0.12)	(0.77)	(0.78)	(0.85)	(0.86)	(0.86)	(0.88)
Time-Invariant Controls			x	x	x	x	x	x
IPTWs					x	x	x	x

Notes: Standard errors are shown in parentheses. All models are weighted using 2012 participant sampling weights. *N* = approximately 7,300 for all models. IPTW = inverse probability of treatment weight.

†$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

reduction in ND from the 95th percentile to the median is associated with only a 92% increase in wealth (see Table 2). Figure 4 plots average adjusted predicted wealth from the 5th percentile to the 95th percentile of cumulative ND based on estimates in model 6. ND is most strongly associated with wealth at low (negative) levels of ND. Changes in ND values between 0.1 and 2.9 are associated with statistically indistinguishable changes in wealth.

Model 7 finds racial/ethnic heterogeneity in estimated neighborhood effects. Among Whites, a one-unit decrease in cumulative ND is associated with a 68% increase in wealth. This figure implies that for a White adult at the sample median of White wealth ($175,000), a one-unit reduction in ND increases wealth at age 50 by $119,000. Among Hispanics, the relationship between ND and wealth is modestly negative, but Table 2 reveals that changes in ND from the group 5th percentile to the 95th percentile do not yield statistically significant changes in wealth. Among Black and other-race adults, the association between ND and IHS wealth is essentially null—or even modestly, nonsignificantly positive (see Tables 1 and 2). Unlike the overall model, model 8 indicates that there is not significant nonlinearity in the race-specific estimated neighborhood effects. In fact, racial/ethnic heterogeneity in the focal relationship appears to explain the nonlinearity in overall estimates. As Figure 2 shows, Whites are disproportionately concentrated in advantaged neighborhoods. Because changes in ND significantly impact only Whites' wealth, ignoring racial/ethnic heterogeneity in the overall model yields an apparent nonlinear relationship that is strongest at low levels of ND.

Table 2 Predicted inverse hyperbolic sine (IHS) wealth by cumulative neighborhood disadvantage (ND) at approximately age 50 based on estimates in Table 1

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
ND, Overall								
5th percentile (–2.1)	12.64	13.10	11.78	12.21	10.26	10.62		
	(0.16)	(0.20)	(0.22)	(0.27)	(0.29)	(0.38)		
Median (–0.1)	9.60	9.41	9.55	9.35	9.42	9.27		
	(0.10)	(0.12)	(0.10)	(0.11)	(0.13)	(0.15)		
95th percentile (2.9)	5.05	5.22	6.20	6.43	8.16	8.35		
	(0.20)	(0.19)	(0.33)	(0.32)	(0.37)	(0.37)		
ND, Whites								
5th percentile (–2.3)							11.18	11.16
							(0.56)	(0.60)
Median (–0.5)							9.95	10.03
							(0.41)	(0.43)
95th percentile (1.3)							8.72	8.75
							(0.50)	(0.51)
ND, Blacks								
5th percentile (–0.7)							6.68	6.78
							(1.82)	(1.83)
Median (1.9)							6.85	6.64
							(1.85)	(1.90)
95th percentile (4.9)							7.06	7.12
							(2.04)	(2.01)
ND, Hispanics								
5th percentile (–1.4)							10.64	11.54
							(1.94)	(1.91)
Median (1.0)							9.67	8.80
							(1.98)	(2.02)
95th percentile (3.8)							8.55	8.54
							(2.25)	(2.24)
ND, Other Race								
5th percentile (–1.5)							8.22	7.46
							(1.21)	(1.40)
Median (0.1)							8.66	9.11
							(0.71)	(0.73)
95th percentile (1.7)							9.09	9.07
							(1.02)	(0.96)

Notes: Parenthetical percentile values are approximate. Standard errors are shown in parentheses. All estimates are weighted using 2012 sampling weights.

A related interpretation of these results is that neighborhood effects may operate as a spline function but that only Whites reside in advantaged neighborhoods that significantly alter wealth accumulation. It is not possible to adjudicate definitively between these interpretations with the present data.

Table 2 (model 7) shows that had a White adult at the group-specific 95th percentile of cumulative ND instead experienced the group-specific 5th percentile, they would have an estimated 246% increase in wealth. The dollar value of this increase depends on the individual's observed wealth. Figure 5 plots the estimated impact

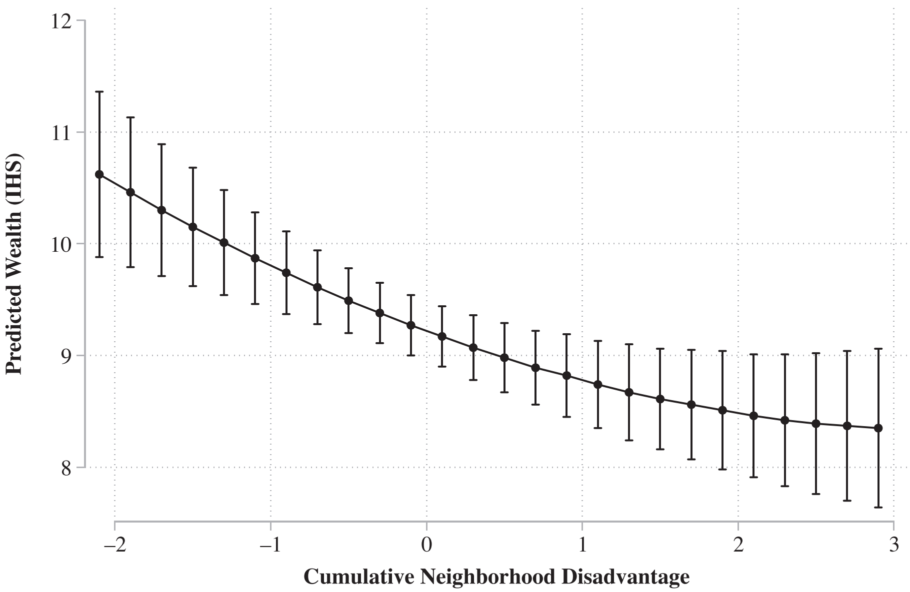

Fig. 4 Average adjusted predictions of overall wealth, by cumulative neighborhood disadvantage, based on estimates from model 6. Estimates span the 5th percentile to the 95th percentile of the distribution of cumulative neighborhood disadvantage. Estimates are combined across 10 multiple imputation data sets using Rubin's rules. Error bars indicate 95% confidence intervals. IHS = inverse hyperbolic sine.

of a 95th-to-5th percentile shift in ND for two wealth values: the group 25th percentile (panel a) and median (panel b). A White adult with $31,000 in wealth (panel a) who experienced the group 95th percentile of cumulative ND would instead be expected to have $107,000 in wealth had they experienced the 5th percentile of ND. A White adult with median wealth ($175,000), however, would instead be expected to have $603,000 in wealth had they experienced the same change. Figure 5 reveals that Whites' outsized wealth returns to reductions in ND result from two phenomena: higher overall wealth levels and greater raw—and relative—returns to reductions in ND. The results are robust to alternative approaches for missing data (see section D of the online appendix). A sensitivity analysis also provides evidence that the negative association between cumulative ND and wealth is likely to be causal among Whites (see section E of the online appendix).

Having found a significant relationship between ND and wealth, I now examine potential effect moderation. Table 3 presents IPT-weighted regressions with residuals analyzing moderation by cumulative homeownership (model 9) and cumulative metropolitan/micropolitan segregation (model 10). Given the preceding results, I allow the moderated relationships to further vary by race/ethnicity. Although it misses the threshold for statistical significance, model 9 reveals substantively important moderation of the relationship between cumulative ND and wealth by cumulative homeownership. The association between ND and *percentage* change in wealth is generally stronger among those never or rarely owning their home from 1985 to 2010.

Among Whites never owning, a one-unit decrease in ND is associated with a 142% increase in wealth by age 50. By contrast, among Whites always owning their

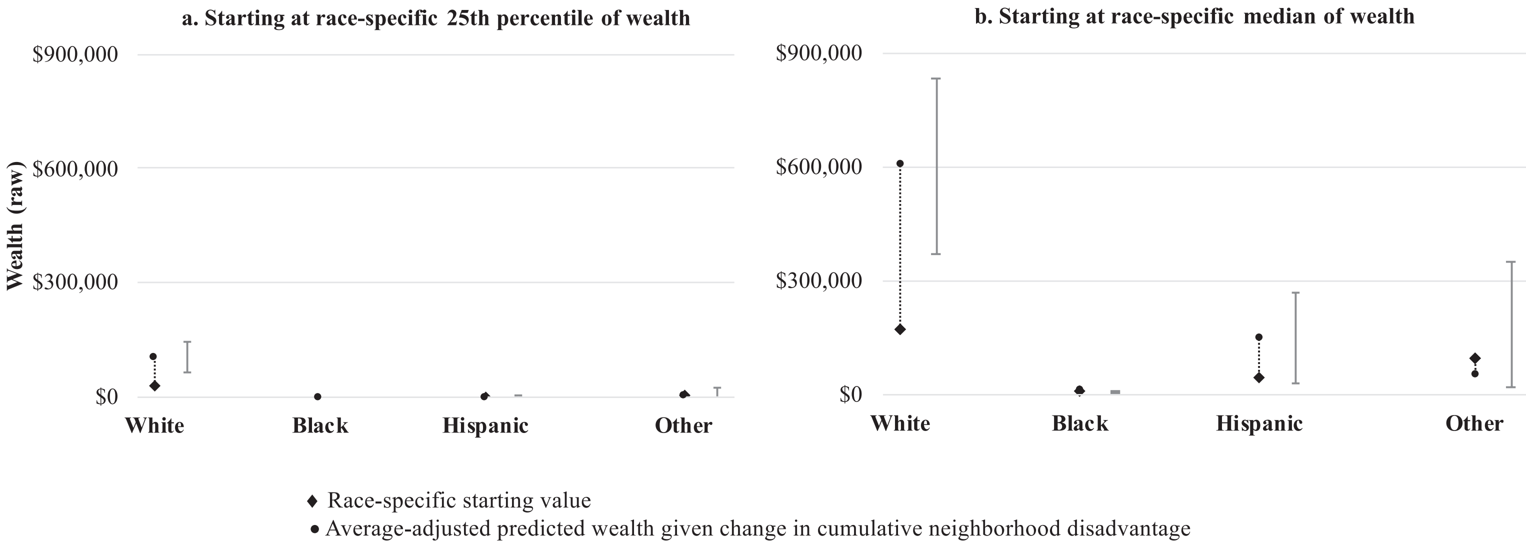

Fig. 5 Average adjusted predicted wealth given change in cumulative neighborhood disadvantage from the group 95th percentile to the group 5th percentile (based on model 7). The race-specific 25th percentile and median wealth, respectively, are approximately $31,000 and $175,000 for Whites, $0 and $12,000 for Blacks, $500 and $48,000 for Hispanics, and $7,000 and $99,000 for other-race individuals. The race-specific 5th and 95th percentiles of cumulative neighborhood disadvantage, respectively, are approximately −2.3 and 1.3 for Whites, −0.7 and 4.9 for Blacks, −1.4 and 3.8 for Hispanics, and −1.5 and 1.7 for other-race individuals. Estimates are combined across 10 multiple imputation data sets using Rubin's rules. Error bars indicate 95% confidence intervals for predicted wealth given a change in neighborhood disadvantage.

Table 3 Inverse probability of treatment–weighted regression with residuals estimating neighborhood effect moderation

	Model 9	Model 10
ND	−1.42***	−1.26**
	(0.36)	(0.43)
ND × Black	0.69[†]	0.92
	(0.40)	(0.78)
ND × Hispanic	0.38	1.30[†]
	(0.47)	(0.73)
ND × Other Race	1.24	2.67[†]
	(1.09)	(1.59)
Effect Moderation		
ND × homeownership	0.72	
	(0.46)	
ND × homeownership × Black	1.29*	
	(0.62)	
ND × homeownership × Hispanic	0.14	
	(0.68)	
ND × homeownership × other race	–0.82	
	(1.77)	
ND × segregation		1.49
		(1.53)
ND × segregation × Black		–0.83
		(2.41)
ND × segregation × Hispanic		–3.72
		(2.60)
ND × segregation × other race		–7.17
		(6.01)
Residualized Moderators		
$\hat{\delta}$ homeownership	5.09***	
	(0.57)	
$\hat{\delta}$ homeownership × Black	–3.15*	
	(1.42)	
$\hat{\delta}$ homeownership × Hispanic	−1.32	
	(1.31)	
$\hat{\delta}$ homeownership × other race	1.31	
	(2.14)	
$\hat{\delta}$ segregation		–0.60
		(1.74)
$\hat{\delta}$ segregation × Black		−1.05
		(5.32)
$\hat{\delta}$ segregation × Hispanic		–4.00
		(5.19)
$\hat{\delta}$ segregation × other race		–2.29
		(6.88)
Constant	9.13***	8.96***
	(0.92)	(0.91)

Table 3 (continued)

	Model 9	Model 10
Time-Invariant Controls	x	x
Main IPTWs	x	x
Regression With Residuals	x	x

Notes: Both treatment (ND) and moderators (homeownership and segregation) are cumulative over the analysis window. Standard errors are shown in parentheses. All models are weighted using 2012 participant sampling weights. N = approximately 7,300 for all models. IPTW = inverse probability of treatment weight.

[†]$p<.10$; *$p<.05$; **$p<.01$; ***$p<.001$

home, a one-unit decrease in ND is associated with a statistically significant, although smaller, 70% increase in wealth ($-1\times[-1.42+0.72]=0.70$). These associations must, however, be interpreted in the context of the sizable disparities in raw wealth by housing tenure. Whites always owning their home have 25th percentile and median wealth of roughly $158,000 and $343,000, respectively. Whites never owning their home have respective values of $0 and $3,200. Mean wealth totals reveal sizable inequality as well: $607,000 among Whites always owning versus $59,000 among Whites never owning their home. Thus, although the percentage increase in wealth associated with reductions in ND appears substantively larger among White non-homeowners, the estimated impact on raw wealth is substantially greater among White long-term homeowners. A White long-term homeowner with group median wealth could expect to gain $240,000 more in wealth with a one-unit reduction in ND. A White adult never owning their home and holding group median wealth could expect to gain only $4,500 more in wealth with a one-unit reduction in ND.

Among Hispanics never owning a home, ND negatively relates to wealth. A one-unit decrease in cumulative ND is expected to increase wealth by 104% ($-1\times[-1.42+0.38]=1.04$). The median wealth of Hispanic adults never owning their home is $1,500; so, although doubling this value is not insignificant, it is not transformative. For Hispanics always owning their home, a one-unit reduction in ND is associated with a nonsignificant 18% increase in wealth ($-1\times[-1.42+0.38+0.72+0.14]=0.18$). Among other-race individuals, ND is not significantly related to wealth regardless of homeownership status.

For Black adults, the relationship between cumulative ND and wealth varies significantly by homeownership status. Among Black non-homeowners, sample median and mean wealth are $0 and $18,000, respectively, so even the marginally significant 73% increase in wealth associated with a one-unit reduction in ND is substantively quite small for many individuals. Among Black long-term homeowners—a small subset of the sample—a one-unit decrease in ND is associated with a 1.27-unit *reduction* in IHS wealth ($-1\times[-1.42+0.69+0.72+1.29]=-1.27$). This result slightly misses traditional significance thresholds (it is significant at $p<.2$). Still, a 127% increase in wealth per one-unit increase in ND for Black adults always owning their home would be substantively important given that their median wealth is $64,000. I return to this potentially surprising result in the next section.

Model 10 explores moderation by cumulative exposure to racial residential segregation. For context, the sample 5th and 95th percentiles of cumulative segregation

Table 4 Linear models of inverse hyperbolic sine (IHS) wealth at approximately age 50 exploring the racial wealth gap

	Model 11	Model 12	Model 13	Model 14	Model 15
Black	–4.57***	–2.72***	–1.05***	–1.41***	–2.37***
	(0.23)	(0.32)	(0.31)	(0.33)	(0.34)
Hispanic	–2.75***	–0.93*	0.04	–0.64*	–0.76*
	(0.29)	(0.47)	(0.42)	(0.32)	(0.33)
Other Race	–1.40**	–0.66	–0.08	–0.69	–0.58
	(0.48)	(0.48)	(0.41)	(0.48)	(0.48)
ND				–1.33***	–1.67***
				(0.08)	(0.12)
ND × Black					0.91***
					(0.17)
ND × Hispanic					0.58**
					(0.19)
ND × Other Race					0.75
					(0.49)
Constant	10.32***	8.89***	1.01	9.73***	9.58***
	(0.13)	(0.58)	(4.62)	(0.14)	(0.15)
Time-Invariant Controls		x	x		
Time-Varying Controls			x		

Notes: ND = cumulative neighborhood disadvantage. Standard errors are shown in parentheses. All models are weighted using 2012 participant sampling weights. *N* = approximately 7,300 for all models.

$^*p < .05$; $^{**}p < .01$; $^{***}p < .001$

are 0.08 and 0.46, respectively. Unlike the moderation by homeownership, I find no evidence of significant moderation by segregation exposure. Estimates suggest that the neighborhood–wealth relationship could be stronger for Whites in places with low segregation. By contrast, this association might be stronger for Hispanics in highly segregated areas, although there is sizable uncertainty in this estimate. This model also controls for residualized segregation exposure, which is not significantly associated with wealth. Its nonsignificance suggests that segregation does not cause wealth disparities per se or explain the impact of ND.

Finally, the ordinary least squares models in Table 4 explore the role of ND in the racial wealth gap. Note that IHS wealth remains the dependent variable, reducing the influence of outlier wealth values disproportionately held by Whites. Model 11 demonstrates that Blacks, Hispanics, and other-race adults have significantly lower unconditional IHS wealth than Whites. Model 12 adds all time-invariant control variables, including baseline wealth and ND; the groups' wealth gaps with Whites decline by one half to two thirds. Model 13 adds time-varying controls from the 2008 and 2010 waves to model 12. The Hispanic–White and other–White gaps essentially disappear, but the Black–White wealth gap remains significant. Time-invariant and time-varying controls explain only 77% of the Black–White gap.

Model 14 adds only the measure of cumulative ND to model 11. This model explains 69% of the Black–White wealth gap, as well as 77% and 51% of the Hispanic–White and other–White wealth gaps, respectively. Thus, ND explains at least as much of the

White–non-White wealth gaps as all time-invariant controls together. Moreover, ND explains nearly as much of the Black–White wealth gap as all controls. These results do not imply that ND causes this sizable portion of the gaps; other covariates certainly play a role. Still, that such a large portion of the gaps can be explained by one variable is remarkable. Model 15 allows the relationship between ND and wealth to vary by race/ethnicity. The Hispanic–White and other–White wealth gaps observed in model 14 are largely unchanged. Yet, the Black–White wealth gap grows by more than a point, reiterating Blacks' unequal returns to neighborhood advantage.

Exploratory Analysis of Home Values for Black Homeowners

Model 9 indicates a potential counterintuitive, positive association between cumulative ND and wealth among Black long-term homeowners. The small sample size of Black long-term homeowners (roughly 50) might explain this finding's nonsignificance at traditional thresholds. Alternatively, the association may be an artifact of the specific sample. Given the substantive magnitude of the association, I investigate it further here—specifically, the possibility for differential appreciation of home values.

I explore how the potential for appreciation relates to ND for Black versus White homeowners using the 1990 decennial census and the five-year ACS centered on 2012. I estimate tract-level linear regressions for the bivariate relationships between 1990 ND and two outcomes: (1) the raw increase in median home values from 1990 to 2012 (real 2012 dollars, adjusted using the consumer price index) and (2) the percentage change in median home values from 1990 to 2012 (real dollars).[14] I specify a cubic polynomial for ND to allow for nonlinearity and estimate each regression twice using different weights: (1) the tract's number of homes owned by a non-Hispanic Black householder in 1990 and (2) the tract's number of homes owned by a non-Hispanic White householder in 1990. With weighting, these estimate the average relationship between ND and raw/relative appreciation for (1) neighborhoods in which Black homeowners reside and (2) those in which White homeowners reside, thus reflecting potential wealth gain if homeowners remain in their neighborhoods.[15] These models are exploratory and should be interpreted cautiously given the potential for moves over a 20-year period and the existence of racial disparities in home values within a neighborhood.

Figure 6 plots average predicted raw appreciation (panel a) and relative appreciation (panel b) based on these models (see section F of the online appendix for regression coefficients). Plots range from the weighted 5th to 95th percentiles of 1990

[14] Raw appreciation is not heavily skewed. To minimize outlier bias, I recode raw appreciation values below or above the 1st and 99th percentiles, respectively, to those values. I also recode relative percentage appreciation values above 10 (1,000%) to 10. Findings for raw appreciation are not sensitive to this decision, and findings for relative appreciation are substantively similar using alternative recode thresholds (2.5, 5, or 20).

[15] Although this analysis occurs at a different level (neighborhood) than the main models, these data provide far greater statistical power to detect how potential appreciation for Black homeowners might vary by ND. Long-term homeowners in the NLSY79 would be homeowners in 1990.

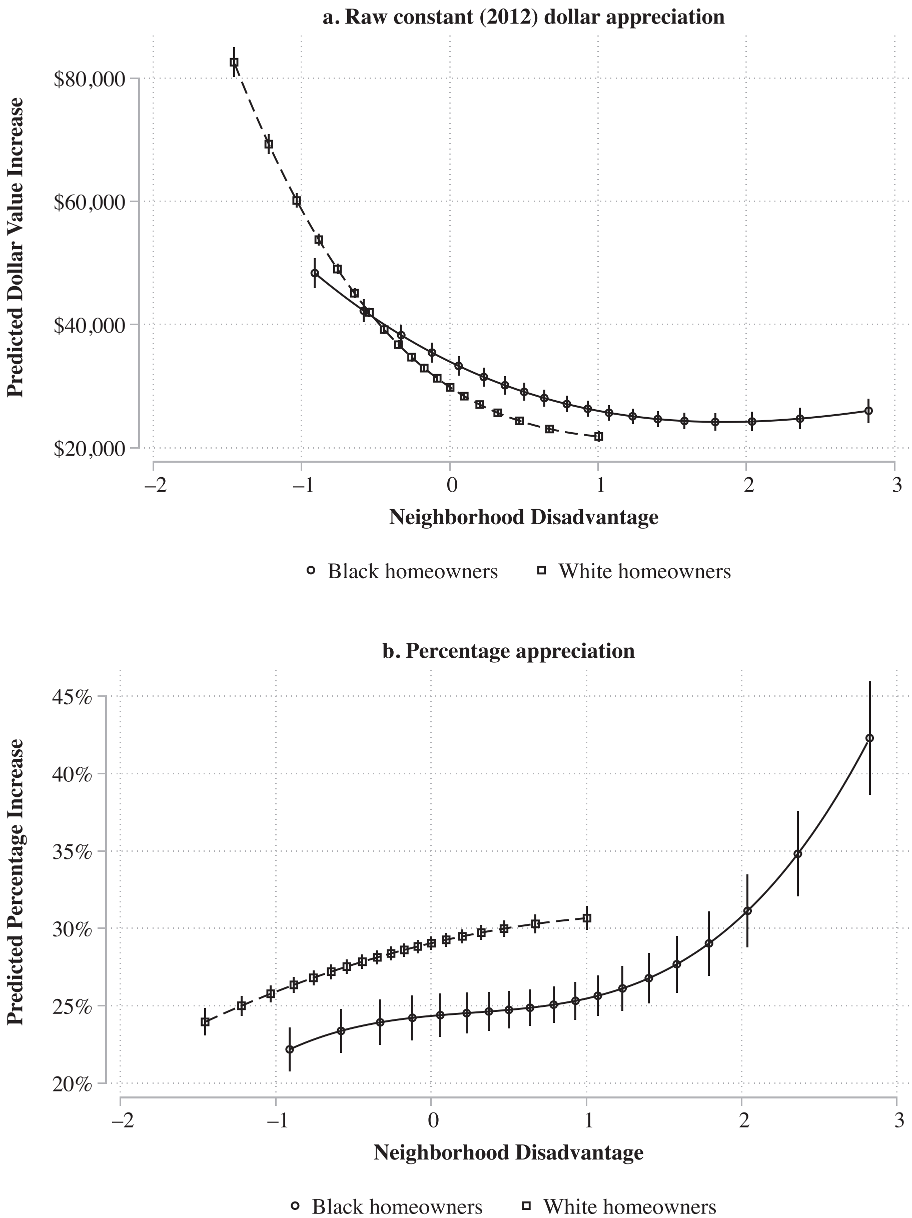

Fig. 6 Average predicted tract-level future median home appreciation from 1990 to 2012, by 1990 neighborhood disadvantage for Black homeowners and White homeowners. Predictions occur at race-specific homeowners' (weighted) 5th to 95th percentiles of 1990 neighborhood disadvantage at increments of 5 percentiles (i.e., 5th, 10th, 15th . . . 90th, 95th percentiles). Estimates are based on regression models shown in section F of the online appendix.

ND for Black and White homeowners. For both groups, potential raw appreciation from 1990 to 2012 is negatively related to ND, but this relationship is much stronger among White homeowners' neighborhoods. Among Black homeowners in 1990, those living in neighborhoods at the race- and homeownership-specific 30th percentile of ND would have seen neighborhood median appreciation by 2012 of just a few thousand dollars more than those living in neighborhoods at the 95th percentile of disadvantage. This finding explains why relative appreciation varies so strongly by ND for Black homeowners' 1990 neighborhoods. Home values tend to be lower as ND increases; thus, whereas predicted relative appreciation is roughly 25% in neighborhoods at the 30th percentile of disadvantage among 1990 Black homeowners, it is over 42% in neighborhoods at the 95th percentile. Among White homeowners' 1990 neighborhoods, relative appreciation increases only modestly with ND. Panel b also reveals that where 1990 ND scores overlap for Black and White homeowners, relative appreciation is consistently higher in White homeowners' neighborhoods. Only in highly disadvantaged neighborhoods—where 1990 White homeowners rarely reside—do Black homeowners see relative appreciation outpace that among White homeowners' neighborhoods. This pattern of results is consistent with differential appreciation playing a role in the observed sizable, positive (though nonsignificant) association between cumulative ND and wealth for Black long-term homeowners.

Conclusion

This research adds to a robust literature examining neighborhood effects on life chances. Disadvantaged neighborhoods have well-documented negative effects on educational, economic, and behavioral outcomes early in the life course (Chetty et al. 2016; Sharkey and Faber 2014; Wodtke 2013; Wodtke et al. 2011). The general focus on how neighborhoods affect children and youth leaves open questions regarding how neighborhoods affect adults, on whom there are comparatively few studies (e.g., Osterman 1991; Vartanian and Buck 2005). The present research complements and extends prior work by providing, to my knowledge, the first rigorous quantitative analysis of neighborhood effects on wealth.

I analyze the impact of neighborhood disadvantage from emerging adulthood to middle adulthood on wealth at age 50, arguing that neighborhoods play a critical role in wealth accumulation after accounting for reverse causation and selection effects. Lower ND is associated with significantly greater wealth accumulation, but the benefits are concentrated among Whites, especially White homeowners. Among White adults continuously owning their home in this study, the median individual holds \$343,000 in wealth at age 50; had this individual experienced a one-unit reduction in cumulative ND, which is equivalent to going from median ND to 20th percentile ND, they would instead have an estimated \$583,000 in wealth—a 70% increase. A sensitivity analysis suggests that neighborhood effects on Whites' wealth are potentially causal. Black and Hispanic adults who rarely or never own homes do see wealth benefits from reductions in ND, but these benefits are modest given the groups' overall low levels of wealth. Perhaps surprisingly, Black long-term homeowners have a potentially strong, positive association between cumulative ND and wealth, although the association misses traditional significance thresholds and is based on a small sample.

An exploratory analysis suggests that stronger relative home appreciation for Black homeowners in disadvantaged neighborhoods might play a role in such a relationship.

This study's findings are unlikely to be unique to the NLSY79 cohort. Residential segregation remains pronounced (Lee et al. 2014; Reardon et al. 2018), and homes are a key source of wealth (Kuebler 2013; Shapiro 2006). Thus, neighborhoods will continue to be an important aspect of U.S. wealth inequality. One advantage of using the NLSY79 is its representative sample of Hispanics. Future research could extend this analysis to other cohorts using alternative surveys. Given the variation in explanations for racial wealth inequality across the wealth distribution (Maroto 2016), research analyzing how neighborhood effects vary across the wealth distribution would also be worthwhile. Future work might also explore mechanisms for neighborhood effects on wealth, the dynamic relationship between neighborhood conditions and wealth across the life course, and how ND specifically affects Black long-term homeowners.

These questions notwithstanding, the present results implicate meso-level neighborhood conditions as a key aspect of U.S. wealth inequality and the racial wealth gap. Research on wealth inequality, which is characterized by macro- and micro-level explanations (Keister 2005; Keister and Moller 2000; Semyonov and Lewin-Epstein 2013), would be enriched by integrating such meso-level features. Analyses of the racial wealth gap identify differences in homeownership, educational attainment, income, and intergenerational resources as key drivers (Campbell and Kaufman 2006; Herring and Henderson 2016; Keister 2000; Killewald and Bryan 2018; Oliver and Shapiro 1995). This study quantifies the importance of ND. Eliminating disparities in ND and equalizing returns to neighborhood conditions would reduce the racial wealth gap markedly. Blacks are doubly disadvantaged through exposure to ND and returns to neighborhood advantage. By contrast, Whites are the primary beneficiaries of these neighborhood-based inequalities.

The racist history of U.S. housing has linked wealth, race, and place over many decades (Conley 2010; Oliver and Shapiro 1995). Exclusionary practices through the mid-twentieth century, such as redlining and urban renewal, restricted Black Americans' ability to accumulate wealth while advantaging Whites (Faber 2020; Lipsitz and Oliver 2010). Since the mid-twentieth century, a "predatory inclusion" of Black Americans in the housing market has focused on the extraction of Black wealth via higher interest rates, subprime mortgages and other exploitative loans or contracts, and foreclosure disparities (Taylor 2019; see also Hall et al. 2015a; Korver-Glenn 2021; Rugh et al. 2015). This history aligns with the intergenerational heritability of wealth that Pfeffer and Killewald (2018) observed, as well as the disparate returns to neighborhood advantage for Whites found in this study.

Given these facts, a commonly touted strategy for alleviating the racial wealth gap—increasing minority homeownership (Asante-Muhammad et al. 2016; Shapiro 2006; Shapiro et al. 2013; Sullivan et al. 2015)—may be constrained in its potential effectiveness. Integrating low-income and non-White populations into more-advantaged neighborhoods can be beneficial for achieved status (Chetty et al. 2020; Chetty et al. 2016), but integration efforts can also valorize Whiteness and the middle class as ideal while neglecting the needs of low-income and non-White populations (Pattillo 2009). When integration occurs through gentrification of low-income, non-White neighborhoods, it often leads to the cultural and political disempowerment of remaining long-term residents (e.g., Hyra 2017). Recognizing Whites' persistent preference for racial homophily (Krysan et al. 2009), any desegregation efforts must ensure that Blacks, Hispanics, and other non-White groups have primacy in translating neighborhoods and homes into wealth.

Independent of desegregation, investment in low-wealth communities is critical, especially in predominantly non-White neighborhoods (Sharkey 2013). Obama-era place-based models, such as Choice Neighborhoods and Promise Neighborhoods, could be useful, although they would require significantly greater funding and scale. Targeted mortgage assistance and loan forgiveness could further remediate the lasting effects of racism in the housing market. More generally, however, adequately addressing the pervasiveness of racial inequality resulting from ongoing structural racism and the history of slavery, racial terror, and Jim Crow likely requires reparations. Even with significant policy intervention, these problems will not be solved soon. Residential segregation and disparities in neighborhood conditions remain dramatic, and they will affect generations of Americans for years to come. ■

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