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## **Wealth accumulation, race, and extended family networks: New findings from the PSID**

***Abstract:** The unequal distribution of wealth is the reification of our history of unequal social relationships. Explaining the long term evolution and persistence of racial inequality between blacks and whites presents a unique challenge for the research agenda of social scientist in the United States. This study approaches this issue by providing an empirical foundation of the social dynamics involved in the accumulation of household wealth. Taking advantage of the multi-generational structure of the PSID in conjunction with its rich wealth data, I estimate a fixed-effects panel model that incorporates the contemporaneous effects of total extended family wealth on household wealth accumulation. I find that relative to non-black families, black household a) experience difficulty translating extend family resources into household wealth accumulation, b) accumulate less wealth for a given income and c) experienced a disproportionate loss of wealth during the financial crisis.*

### **Introduction:**

Racial lines cleave U.S. society in two. Explaining the long term evolution and persistence of racial inequality between blacks and whites presents a unique challenge for the research agenda of social scientist in the United States. Many aspects of the changing conditions faced by blacks have been widely documented and explored in various literatures for over a hundred years. However, a theoretically and empirically coherent story of the long term evolution of those conditions has yet to take shape. While such an ambitious goal lies outside the realistic scope of a single research project, this study approaches this issue by providing an empirical foundation of the social dynamics involved in the accumulation of household wealth. Taking advantage of the multi-generational structure of the PSID in conjunction with its rich wealth data, I estimate a fixed-effects panel model that incorporates the contemporaneous effects of total extended family wealth on household wealth accumulation. I find that relative to non-black families, black household a) experience difficulty translating extend family resources into household wealth accumulation, b)

accumulate less wealth for a given income and c) experienced a disproportionate loss of wealth during the financial crisis.

This study contributes two innovations to the literature. First, I use individual fixed-effects to control for the effects of childhood environment on long term household wealth accumulation. In this case, childhood environment serves as an aggregate proxy for all of the social factors that go into the formation of an adult: access to social networks, neighborhood effects, informal education, peer effects, culture, etc. Second, I exploit the structure of the PSID to link the entire extended family network's wealth data. This extended family link of wealth allows me to test for intergenerational transmission effects, network effects and race differentials in the wealth accumulation dynamics. Put together, these innovations give us a starting place from which to begin a discussion of the complex interactions between communities, institutional factors, the accumulation of wealth and racial inequality.

Racial inequality encompasses educational inequality, differentials in health outcomes, income inequality, employment patterns, residential status, political representation, and the list goes on. In other words, an investigation of racial inequality should consider the social, economic and political dimensions of inequality, all of which are interrelated. The primary advantage of focusing on household wealth accumulation is that it directly touches each of the different facets of racial inequality. Over the past twenty years our understanding of what constitutes the determining factors of class or socio-economic status has evolved, namely to incorporate wealth as a central factor (Conley, 2010; Oliver & Shapiro, 1997). Wealth exerts strong effect on social outcomes independent of the traditional factors associated with socio-economic status: income, employment status, and others. Family wealth, including home ownership, not only determines a child's potential for educational success, but also his or her health outcomes, and future economic

prospects (Karagiannaki, 2012; Shea, Miles, & Hayward, 1996). The second advantage to focusing this study on the accumulation of wealth is that wealth is inherently accumulative; the inequality of wealth builds on itself over time and thus provides a direct link to the past. The intergenerational transmission of the advantages associated with wealth creates the potential for long term cumulative effects of wealth inequality. Furthermore, wealth has emergent properties. Wealth determines access to neighborhoods and communities, but the characteristics of those communities are largely determined by the interactions of their constituent members. The characteristics of those communities take on a life of their own through feedback mechanisms with their residents which can be either virtuous or vicious. Neighborhood characteristics have been found to have profound effects on health, susceptibility to crime, education and access to social networks, among others (Karagiannaki, 2012; Mohanty & Raut, 2009; Ross & Mirowsky, 2001).

Despite the increasing understanding of the role of wealth in the generation of social outcomes, we still have a very limited understanding of several key components of the big picture. First, the predominant models of household wealth accumulation remain limited to those incorporating a rational maximizing agent choosing an optimal savings rate that maximizes utility subject to various constraints and considerations such as uncertainty, risk aversion, time preference and bequest motive<sup>1</sup>. From the perspective of trying to understand the interaction between wealth accumulation and our history of inequality, these models are clearly unsatisfactory. Second, although attempts have recently been made, the causal mechanisms that connect wealth to community characteristics, and then community characteristics to social outcomes, are poorly understood at both the theoretical and empirical level (Ellen & Turner, 1997; Vigdor, 2007). At the intersection of the health, public policy, history and theoretical literatures lies a theoretical and

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<sup>1</sup> See our discussion in the literature review section for examples of the life-cycle savings model and its variants.

empirical gap. The public policy literature clearly shows that both household wealth and neighborhood characteristics have large long-run effects on key social outcomes such as income, education, and health<sup>2</sup>. However, the theoretical models of wealth accumulation have thus far been unable to seriously incorporate these broader social factors<sup>3</sup>. Lastly, the historical literature on racial dynamics would benefit from a more holistic understanding of the self-perpetuating nature of racial inequality and the complex interaction between existent circumstances and constrained individual choices.

My long term goal is to model the complex interaction between individual and community wealth accumulation in a manner capable of explaining how race-class dynamics developed in the United States. To that end, this study exploits the unique structure of the Panel Study of Income Dynamics to investigate the intermingling roles of race and extended family networks on the long term accumulation of household wealth. The goal of this paper is to identify the general trends that influence the inter-temporal accumulation of wealth of U.S. households.

The paper will proceed as follows. The literature review will summarize several disparate but related literatures on the historical evolution of black-white inequality, our current empirical understanding of the wealth-neighborhood inequality nexus, and an overview of the current models of wealth accumulation. The next section will discuss the methodology, data and the model. The final section will present the empirical results and discuss some possible interpretations. The paper will conclude with a discussion of our preliminary conceptual model of wealth accumulation, and the research that remains to be done in order to further develop our understanding of this topic.

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<sup>2</sup> See Oliver & Shapiro (1997) and Shea et al. (1996) for examples.

<sup>3</sup> See Hubbard, Skinner, & Zeldes (1995) for a widely cited example of these models.

**Literature Review: Historical Overview of Racial Inequality**

Wealth represents more than just a crude measure of financial resources; wealth is the reification of historical social relationships. Household wealth serves as a torch with which to illuminate the many dimensions of economic and social life in the United States which have been affected by our history of racial animus. While historians have rarely focused on wealth due to the notorious dearth of information, historians and economic historians have long chronicled the various dimensions of racial inequality such as access to government services, residential segregation, employment trends, and quality of education, and thus constantly touch wealth inequality. However, explanations linking past *de jure* segregation to the long term persistence of racial inequality remain at best vague. In the public policy literature, researchers have found strong links between household wealth and key social outcomes such as health, education, crime, residential segregation, and other neighborhood characteristics. Additionally, empirical researchers have also found that neighborhood characteristics are important predictors of health and education outcomes. Merging these disparate literatures into a simplified story of the evolution of racial inequality in the United States provides a reasonable starting point from which to identify the gaps that deserve further attention.

In his investigation of the historical origins of racial inequality, Robert Margo (1994) summarizes an immense body of evidence to document the link between educational disparities faced by blacks in the south, demand shocks to the labor market, and long term labor market outcomes. Although Margo finds that demand side shocks were crucial for triggering the Great Northern Migration of Southern blacks, which was key for gaining access to better paying urban jobs, he also concludes that the legacy of slavery, via enforced illiteracy and unequal segregated schooling in the South, contributed to the long term economic stagnation of blacks (Margo, 1994).

Margo uses a mechanism termed “intergenerational lag” to connect the legacy of slavery and Jim Crow to long term economic inequality. He defines intergenerational lag as a set of family background effects, primarily poverty and illiteracy, which impact the educational attainment of subsequent generations. In his words, “poverty and high rates of adult illiteracy, as much as the poor quality of the schools, kept black children out of the classrooms” (Margo, 1994, p. 4).

Although important, Margo’s intergenerational lag mechanism suffers from two limitations. First, it is one dimensional, looking only at education. As Sampson (2009) points out, disadvantage is so densely concentrated in poor black neighborhoods that isolating one variable as the problem is naive. Second, it is vague. Does intergenerational lag, as the name would seem to imply, simply mean blacks need more time to catch up as each subsequent generation slightly improves its educational attainment? Or will the educational gap reach an equilibrium point of stagnation which necessitates an exogenous intervention to close to remaining portion? These questions are relevant at the theoretical and political level. After nearly 30 years of federally enforced busing following *Brown v. Board of Education*, the courts of law – and public opinion – decided that enough time had been given for catching up and any remaining inequality was their own. Most schools, particularly in the South, promptly relapsed into de facto segregation and educational inequality increased accordingly (Reardon, Grewal, Kalogrides, & Greenberg, 2012).

Although he does not explicitly link wealth to his explanation of the long persistence of racial inequality, it is natural to link the education disparities to the development patterns of neighborhoods in the South. In a different paper, Margo (1984) goes on step further and investigates the patterns of property accumulation by southern blacks before World War I. First, Margo finds that from a starting position of zero wealth, blacks predictably accumulated wealth at a faster rate than whites during the late nineteenth century. However, the rate of wealth

accumulation was attenuated by several factors. First, racial discrimination by the state: property value evaluators likely gave black properties a higher evaluation, resulting in a disproportionately high tax burden on black household. Second, high land values decreased the rate of black property accumulation relative to whites, presumably due to credit constraints. Lastly, illiteracy and tenancy were also found to stunt black property accumulation (Margo, 1984). Although the patterns of black employment and wealth accumulation changed dramatically after WWII, Margo identifies some clear structural impediments to the accumulation of property by southern blacks.

Melinda Miller (2011) poses an interesting counterfactual to Margo's (1984) findings: how would the pattern of property accumulation by southern blacks have changed if they had been given access to economic resources at the conclusion of the Civil War? Due to an interesting quirk in history, Melinda Miller (2011) is able to construct and analyze a unique natural experiment: what would have happened if freed blacks had received the promised forty acres and a mule at the conclusion of the civil war? Using agricultural surveys from the Cherokee Nation which did grant free land to ex-slaves, Miller is able to compare the wealth accumulation of freedmen who were given land in the Cherokee Nation to freedmen who were denied any land, i.e. former slaves in the South. In a multivariate regression with controls for age, literacy, family size and soil type in 1880, fifteen years after the civil war, Miller finds that the level of wealth inequality was much smaller in the Cherokee Nation than in the South. Surprisingly, black men in the Cherokee Nation had actually accumulated more wealth than white men in the South, holding everything else equal. Miller found similar trends in occupational status and home ownership rates. This result implies that wealth, in this case in the form of property, has strong long term implications on the evolution of inequality.

Following in the footsteps of Oliver and Shapiro (1995), Conley (1999) argues that race indicates relative class position due to the myriad historical factors that stymied black household wealth accumulation. Throughout the book Conley reiterates that analysis of racial outcome gaps involving the traditional notion of socio-economic status, education, income and occupational prestige, left large portions of the gap unexplained and hence attributable to racial discrimination or other unobservable factors such as perverse cultural attitudes. However, once wealth ownership is taken into account in a simple regression framework, a large portion of the racial outcome gap disappears. Using an early version of the PSID data set, Conley shows that the race gap mostly disappears when he regresses a social outcome (income, education, home ownership and premarital childbearing, among others) on the same set of independent variables that include the standard battery of demographic variables, education, income, plus the parent's accumulated wealth during adolescence and contemporaneous own wealth. Conley concludes that for the post-civil rights era generation, class, as measured by accumulated wealth, is the driving force in social outcomes, not race *per se*.

Many scholars of racial inequality began to use the PSID in the late 1990's due to its rich longitudinal structure. Using the PSID data, Chiteji and Stafford (1999) found that portfolio allocation serves as a key driver of the white-black wealth gap. Namely, black families were less likely to hold stocks than comparable white families, which explains at least a portion of the differential in rates of wealth accumulation. Furthermore, the portfolio allocation of young families are correlated with the portfolio allocation of their parents, thus opening up an avenue for the transmission of long term inequality (Chiteji & Stafford, 1999).

Charles and Hurst (2003) follow up on this line of inquiry by estimating and then decomposing the inter-generational correlation of household wealth. The study starts by pointing



out that their PSID sample, taken from 1984-1999, has an average age-adjusted elasticity of child wealth with respect to parental wealth of 0.37, with much higher correlations on the tail ends of the wealth distribution. The authors find that the parent-child correlation in lifetime income explains approximately half of the wealth elasticity, while parent-child correlation in the ownership patterns of particular asset types explain about 16 percent of the estimated wealth elasticity. Thus, income correlation, portfolio correlation, and all other control variables combined (education, measures of risk preference, etc.) explain only about two thirds of the estimated inter-generational wealth elasticity (Charles & Hurst, 2003). If past generations were denied the ability to accumulate wealth in the same manner as whites, then the important question that remains to be answered is how this dearth of wealth is passed on to subsequent generations.

Chiteji and Hamilton (2002) explore the family network and wealth connection from a different perspective using the same data. Using a pooled sample of wealth data from the 1994 PSID, the authors regress own wealth on contemporaneous parent wealth, parent wealth during childhood, bequests, demographic controls, economic controls, and dummies for parental and sibling need<sup>4</sup>. The authors exclude all high income and low income families in order to focus their analysis on the middle class. After decomposing the results of the pooled regression, Chiteji and Hamilton find that the three most important drivers of the black-white wealth gap are lifetime income, contemporaneous parental wealth, and sibling need, in that order. The authors conclude that household wealth accumulation cannot be satisfactorily studied without taking into account the extended family and its impacts on an individual's ability to accumulate. Interestingly, due to the high rates of income and wealth poverty among blacks, middle income blacks are disproportionately constrained in their wealth accumulation by relatives who require financial

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<sup>4</sup> Parental and sibling need are proxied by receipt of government food stamps.

assistance. I refer to this result as the Chiteji-Hamilton hypothesis because of its novel contribution to the literature and its potential to explain differences in black-white wealth accumulation trends.

In a somewhat different vein, Hilber and Liu (2008) use the PSID with a binary logit model to show that the black-white home ownership gap mostly disappears once household wealth and locational preference are accounted for. Hilber and Liu (2008) define location preference as the degree of urbanization of the original area of residence. In other words, Hilber and Liu find that if you compare a black and white family of similar wealth levels and who both live in a comparable urban environment, they will have a similar probability of owning their homes. The obvious question is, then, why do blacks have a "preference" for living in the inner city and hence having lower rates of home ownership? The current black-white homeownership gap stands at 27.5 percent. Including wealth and location preference in the model removes the previously unexplained portion of the gap, approximately 6.5 percent. The data indicates that blacks are more likely to live in counties with a large city and that this gap in location preference has been increasing. However, when they run the same binary logit model on blacks and whites separately, Hilber and Liu find that urbanization reduces the probability of owning a home by 13.7 percentage points for blacks but only by 2.8 percentage points for whites. Essentially, Hilber and Liu interpret the evidence as indicating that wealth inequality and suburbanization, which is more pronounced for whites, is driving the rising black-white home ownership gap that cannot be explained by other variables. The questions that remain, then, are why do black household have lower levels of wealth, and why do they tend to reside in large urban areas? This obviously brings up the topic of residential segregation.

Blacks in the United States have experienced far higher levels of residential segregation in the United States than any other ethnic group throughout the 20<sup>th</sup> century (Massey & Denton,

1989). While blacks were becoming geographically less segregated across state and county lines between 1900 and 1940, they were becoming increasingly isolated at the neighborhood level in the larger northern cities (Massey & Denton, 1989). Importantly, the authors points out that while blacks and whites were integrated at the state and country levels, whites were almost entirely isolated from blacks in their everyday lives. This has important implications for network effects and the concomitant economic ramifications to arise from the segregation of the United States into two separate worlds.

In order to investigate the degree of residential segregation in the United States, Massey and Denton (1989) decompose residential segregation into five separate components: evenness, isolation, clustering, concentration, and centralization. Evenness is measured using the dissimilarity index. Isolation as the percentage of blacks living in a geographic area. Massey defines clustering as “the extent to which minority areas adjoin one another spatially” (Massey, 2001, p. 16). Clustering is used to identify areas where a ghetto is an uninterrupted, racially uniform space. Centralization is defined as “the degree to which Blacks are distributed in and around the center of an urban area” (ibid). Finally, concentration is “the relative amount of physical space occupied by blacks” (ibid). Massey argues that in order to understand the nature and scope of residential segregation in the United States, all five of these dimensions must be taken into account. Hypersegregation is any situation where a particular group is subject to what is normally considered extreme amounts of segregation along all five dimensions. Blacks were the only ethnic group In the United States subject to hypersegregation in any metropolitan area (Massey & Denton, 1989). Massey and Denton (1989) used 1980 census data to identify 16 metropolitan areas, including several of the most populous metropolitan areas in the United States, where Blacks were subject to hypersegregation.

In a review of the neighborhood effects literature, Massey (2001) argues that any degree of residential segregation brings with it negative economic and social consequences, and as the degree of residential segregation increase along all five dimensions, the deleterious effects of segregation are multiplied (Massey, 2001). Neighborhood characteristics exert a strong influence over individual development during early childhood and late adolescence. In particular, educational attainment and high school dropout rates are strongly affected by the socio-economic composition of neighborhoods (ibid). Additionally, Massey states that “the concentration of male joblessness affects social behavior more than cognitive development, particularly among Blacks” (Massey, 2001, p. 26). Massey concludes that “the quantitative evidence suggest that any process that concentrates poverty within racially isolated neighborhoods will simultaneously increase the odds of socioeconomic failure within the segregated group” (Massey, 2001, p. 27). This conclusion immediately raises two questions: what social processes creates the concentration and racialization of poverty, and what are the avenues through which neighborhood characteristics impact economic and social inequality between whites and blacks?

Regarding the first question, Crowder, South and Chavez (2006) attempt to ascertain the effect of family wealth – own-household and parental – on the probability of moving out of a neighborhood, as defined by census tract, and on the racial composition of the destination neighborhood. They do this by using the longitudinal nature of the PSID and census tract information to create a multi-level model. The results show that wealth plays a very small role, if any, on the decision to move or where to move. Household and parental wealth only have a statistically significant effect on the migration patterns of blacks who rent their homes. This is the segment of the black population that have the lowest average incomes and wealth and who move residence the most often. It is worth noting, however, that approximately half of all black families

rent their place of residence. However, the size of the coefficient is very small for this group and insignificant for every other group. Overall, Crowder, South and Chavez find that a very large portion of the migration pattern of blacks remains unexplained and that further research or better models are needed to look into the discriminatory nature of the housing market or possible network effects must be looked at in order to understand racially differentiated migration patterns.

In a more recent publication, Pais, South and Crowder (2012) set out to explore what factors influence the neighborhood characteristics, namely racial composition and average socioeconomic status, of black families that have recently relocated. The study focuses on how the macro level institutions, i.e. city characteristics, limit or enable blacks and Hispanics to relocate to neighborhoods of equal or higher socio-economic status. Using the geocoded version of the PSID in conjunction with tract-level census data from the Neighborhood Change Data Base (NCDB), the authors conduct a multi-level analysis of the determinants of destination-neighborhood characteristics. The longitudinal aspects of the PSID are crucial for working around the issue of endogeneity by comparing the neighborhood characteristics of a family pre and post move. The authors use the NCDB because it normalizes all census tract boundaries from previous censuses. Linear interpolation and extrapolation was used for the years in between censuses. The study finds that minorities' ability to relocate into higher quality neighborhoods varies considerably across the different metropolitan areas (Pais et al., 2012). A slight majority of the metropolitan areas studied conformed to the strong version of the place stratification theory, meaning that blacks and Hispanics were less able than whites to leverage their income into a neighborhood that reflects their socioeconomic status. However, a slight minority of metropolitan areas conformed to the expected results of the Spatial Assimilation Theory where well-off minorities actually did just as well as whites in finding neighborhoods that reflected their socio-economic status. Finally, the

authors found that in almost all metropolitan areas the marginal effect of one extra dollar of income on the percent of white residents in the destination neighborhood was larger for blacks and Hispanics than for whites. In other words, the weak version of the Place Stratification Theory is almost universally applicable in the United States. The weak version says that minorities are forced to pay a premium in order to relocate into neighborhoods with a whiter racial composition, therefore the effect of socio-economic status on neighborhood outcomes will be stronger for minorities than for whites (Pais et al., 2012, p. 260). Additionally, higher levels of residential segregation make whites more likely to move to whiter neighborhoods while higher levels of suburbanization makes blacks less likely to live in whiter neighborhoods.

In a similar study, Sampson and Sharkey (2008) use the Project on Human Development in Chicago data set to conduct what is probably the most comprehensive study of residential mobility and racial segregation. Sampson and Sharkey (2008) investigate the sources of neighborhood sorting and identify the consequences of neighborhood selection patterns in terms of neighborhood income attainment and racial stratification. This second goal is important because it links the various individual sorting decisions to the macro level effects they generate.

The authors use a series of multi-level models which include an extraordinarily wide array of psychological, social, economic and demographic control variables. The authors come to two conclusions. First, individual and family level variables, including income and education, have surprisingly weak influence on the mobility decisions of people (Sampson & Sharkey, 2008, p. 18). Of the individual characteristics, only home ownership and age provide consistent predictions of mobility – each making people less likely to move. After accounting for most traditional and hypothesized individual characteristics, only race and socioeconomic location accounted for any “significant portion of the variance in neighborhood attainment conditions” (Sampson & Sharkey,

2008, p. 25). Second, the authors find that the mobility flows of Chicago residents by and large tend to reproduce the existing patterns of racial stratification. While residential mobility, especially out of the city, is a pathway to substantial neighborhood upgrading, only whites manage to benefit from this pathway. Whites and Latinos tend to move out of transitional neighborhood, blacks are willing to live in mixed race neighborhoods or end up in neighborhoods similar to where they came from in terms of racial composition and socioeconomic status. Thus, the decisions of individuals, largely unexplainable by individual characteristics and predicted strongly by racial and socioeconomic location, reproduce racial stratification and poverty traps. The authors interpret these results as implying that the traditionally posited constraints on mobility inadequately explain poverty traps. Instead individuals make choices of where to reside “with the parameters of choice tightly bounded by the stratified landscape in which choices are made... Preferences and structural constants thus simultaneously and dynamically work together to yield a self-reinforcing cycle of inequality” (Sampson & Sharkey, 2008, p. 27).

The causal connection between residential segregation and racial inequality relies on the neighborhood effects literature. Sampson et al. (2002) put forth several stylized facts from the neighborhood effects literature. First, the geographic segregation and isolation of African Americans correlates strongly with concentrated disadvantage (Sampson et al., 2002, p. 446). Next, as discussed in the original Moynihan report and established in the subsequent literature, social dislocations tend to group together at the neighborhood level. These social dislocations include “crime, adolescent delinquency, social and physical disorder, low birthweight, infant mortality, school dropout, and child maltreatment” (Sampson et al., 2002, p. 446). Additionally, these two trends are related to each other. The cluster of social dislocations are strongly predicted by disadvantage and racial isolation. Finally, the most recent literature has confirmed that the

neighborhood concentration of disadvantage has steadily increased over the past several decades and perhaps concomitantly, the concentration of privilege and affluence on the opposite end of the spectrum has also increased (Sampson et al., 2002, p. 447).

Sampson (2009) finds that even the absolutely poorest white community in Chicago is better off in terms of income than the median black community. Although this finding only pertains to income, it indicates that when we look at neighborhood characteristics, the disadvantages are highly concentrated in a small amount of predominantly black neighborhoods. Essentially, if disadvantage is broadly defined, it is not empirically possible to estimate the effect of disadvantage on white communities because there is not even one case of a disadvantaged white community in the data for Chicago. Second, the unemployment rate is not correlated with poverty in white communities, whereas it is highly correlated in black communities (Sampson, 2009, p. 267). This implies that white communities have access to resources that allow them to counteract the negative effects of unemployment while black communities have no such resources. In Sampson's words, this dynamic is "part of what helps to create the synergistic intersection of racial segregation with concentrated racial resource disadvantage" (Sampson, 2009, p. 267).

Regarding the durability of neighborhood disadvantage, Sampson finds that between 1970 and 2000 both neighborhood poverty and neighborhood disadvantage are remarkably stable. Additionally, Sampson finds that residential segregation is remarkably stable in Chicago as well as the United States. Despite being an era of great residential change, gentrification and relocation, not a single neighborhood in Chicago went from being majority black to majority white between 1970 and 2000. Black neighborhoods stayed black, and some white neighborhoods turned black. Perhaps even more importantly, Sampson's measure of disadvantage is highly correlated with



black neighborhoods over time, whereas disadvantage has almost no correlation with white neighborhoods over time.

Social scientists have also pointed out that health plays an important role in the wealth-neighborhood-inequality nexus. Meer, Miller and Rosen (2003) use the PSID data to build a panel model with inheritance as an instrumental variable. They argue that once the endogeneity of wealth and health is removed by the use of instrumental variables estimation, that short term fluctuations in wealth no longer have any effects on health while health retains a strong influence over household wealth accumulation. This, however, does not rule out a long term impact of wealth on health. Other authors have found similar results. Michaud and van Soest (2008) use a dynamic vector autoregression panel model to endogenously determine the direction of causality between short term fluctuations of health and wealth. They find no evidence that wealth has a causal effect on health while finding "strong evidence of causal effects from both spouses' health on household wealth" (Michaud and van Soest, 2008, pp.1312). Finally, Ross and Mirowsky (2001) use micro data from Illinois to show a strong correlation between living in a disadvantaged neighborhood and poor health, even after controlling for the standard set of individual characteristics. They show that the level of perceived neighborhood disorder is the primary driver of this result. In other words, the chronic stress that results from the insecurity of disadvantaged neighborhoods seems to have serious long term health effects (Ross & Mirowsky, 2001).

When the results of Ross and Mirowsky (2001) are put together with the observations of the other authors, we can start to piece together a story of black-white inequality in the United States. Patterns of residential mobility were largely determined by preexisting racial and economic divisions and thus reinforce racial and economic segregation (Sampson et al., 2002; Sampson & Sharkey, 2008). This dynamic created areas of highly concentrated disadvantage which almost

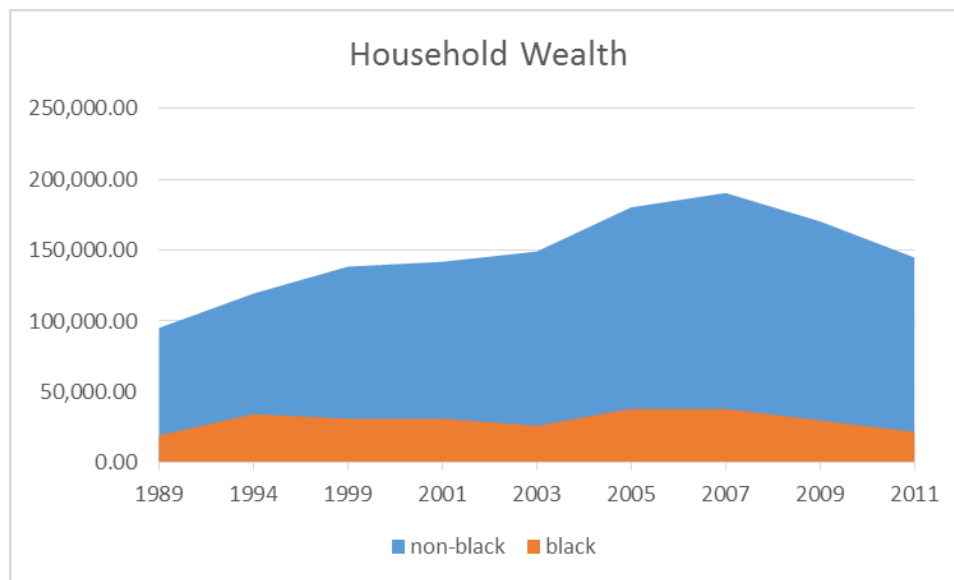
exclusively affected blacks (Massey, 2001; Pais et al., 2012; Sampson, 2009). The concentrated neighborhood disadvantage along with the history of educational disparity hurt the educational outcomes and health outcomes of residents which in turn impacted their long term economic prospects (Margo, 1994; Ross & Mirowsky, 2001). Aggregated over generations and amplified by political and ideological powerlessness, blacks in the United States found themselves in a situation of extreme vulnerability (Charles & Hurst, 2003; N. S. Chiteji & Hamilton, 2002; Margo, 1994; Sugrue, 2005).

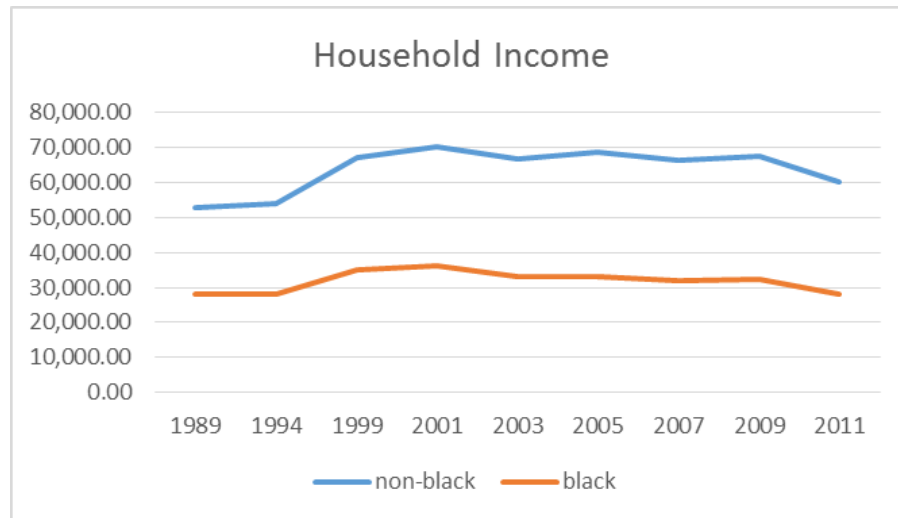
The economic vulnerability of blacks was especially clear during the 2007/2008 mortgage crisis. Blacks were four times as likely as whites to be given subprime mortgages in 2004 (Wade, 2012). Even after controlling for income and credit worthiness, blacks were twice as likely as comparable whites to be given a subprime mortgage (ibid). Subprime lending served as the causal mechanism through which black segregation is related to the disproportionately high foreclosure rates in the United States (Rugh & Massey, 2010). Blacks in heavily segregated areas were disproportionately targeted for subprime loans (Been, Ellen, & Madar, 2009). Thus, black households were simultaneously hit with disproportionately high unemployment and a spike in mortgage interest rates (Rugh & Massey, 2010). With few economic resources with which to cushion the blow, and exacerbated by the concentration of neighborhood disadvantage, foreclosure rates ravaged black communities throughout the United States, almost certainly leaving a mark of disadvantage on future generations.

## **Data**

The Panel Study of Income Dynamics, the PSID, started to survey approximately 5,000 families in 1968, collected valuable economic, demographic and health information on a year basis. Three key features set the PSID apart from other longitudinal data sets. First, the sheer scope

of the PSID makes it an invaluable data set. Incorporating nearly 45 years' worth of detailed data makes the PSID one of the world's longest running longitudinal data sets. Second, the relational structure of the PSID makes it extremely valuable for researchers interested in family networks and intergenerational studies. The PSID follows the original 5,000 families, the households formed by the children of the original 5,000 families, and the households formed by the children of the children of the original 5,000 families. This structure makes it possible to explicitly model extended family structure as well as multi-generational dynamics. Lastly, starting in 1984, the PSID began to collect detailed wealth information of all its sample households at five year intervals, and then at two year intervals starting in 1999. Lastly, in order to maximize the use of all available information, I use multiple imputations by chained equations to impute partially missing wealth values in a very conservative manner.





This study fully utilizes the longitudinal and relational structure of the PSID to link extended family networks into coherent units of study in a panel framework while integrating detailed measures of total household wealth, household income and other demographic information. The advantage of using the PSID in this manner is that it allows me to link the wealth holdings of the extended family network to the wealth accumulation of each household in the study while incorporating fixed effects to control for unobserved heterogeneity. I follow the established norm in the literature in defining wealth and the list of control variables (Juster, Smith, & Stafford, 1999; Meer et al., 2003; Smith, 1995). Household wealth, my dependent variable, is defined as the sum of primary home value, net value of other real estate, net value of vehicles, net value of farm or businesses, net value of stocks and other financial instruments such as bonds, and cash accounts, minus the value of any mortgages on the primary home and other debts, which includes credit cards, student loans and other miscellaneous debts<sup>5 6</sup>. The control variables include age, age squared, number of children living in the household, and dummy indicators for married, and

<sup>5</sup> All wealth components are self-reported values

<sup>6</sup> All wealth values used in this study are adjust for inflation with 2000 as the base year using the BLS CPI estimates.

divorced<sup>7</sup>. Years of education and race are not included as a control variables because they are collinear with the fixed effects in the majority of cases. However, race is incorporated into the model through the use of race-dummy interaction variables.

As a first step in my exploration of this subject I keep the sample as broad as possible by incorporation all members of generation two as well as all members of generation three. By generation two I mean the 4,000 or so children of the original 5,000 families which head their own households, and generation three refers to the approximately 1,000 children of generation two which head their own households. The members of generation two are obviously older, with an average of 42.3 in 2001, while generation three had an average age of 25.6 in 2001.

Contemporaneous extended family wealth is the key variable of interest in this study. For extended family wealth I use a simple summation of the wealth of all available extended family members on any given year. This variable potentially includes the wealth of parents, grandparents, aunts, uncles, cousins, siblings and adult offspring – the extended family network in its entirety. I say potentially because while response rates are generally very high in the PSID, the measure of wealth, made up of nine separate asset types, contains a large amount of values coded as unknown. Thus, many observations have no available wealth information in one year, but may have wealth information in the subsequent year. Additionally, grandparents tend to drop out of the data in extremely high numbers, especially in the later years of our sample. This is an unavoidable trend due to old age, health issues, or death. Thus, the number of family members counted in the measure of total extended family wealth varies from year to year. So, while our measure of total extended

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<sup>7</sup> Households are only coded as female headed if there is no adult male living within the household at the time of the interview.

family wealth does capture real variation in the total amount of assets owned by the extended family, some of the year to year variation is due to non-response or attrition.

To the extent that the variation in extended family wealth due to non-response is randomly distributed throughout the sample, it is not necessarily a matter of concern. However, to minimize the potential bias and to maximize the use of available information I utilize the technique multiple imputation by chained equations, MICE, to impute the value of missing components of wealth. Data imputation is a delicate technique that can be easily create bias. However, the pattern of missing data in our sample was such that the MICE method could significantly attenuate unwanted survey variability while using conservative assumptions. Our measure of wealth is comprised of nine separate components, but a significant amount of observations contained unknown values in just one or two of the nine wealth components. Thus, imputation of one or two values would allow us to utilize the large amount of available data.

Multiple imputation by chained equations is particularly well suited to our data because the unknown values are distributed approximately evenly throughout the nine different wealth components. MICE works as follows: the value of stocks is regressed on the eight other wealth components using the observations that contain complete data. This same process is repeated for each of the nine wealth components. These parameter estimates as well as the estimated variability within and between variables are used to run multiple monte carlo simulations which are then averaged to produce the imputed estimates (White, Royston, & Wood, 2011). This imputation method is useful because it preserves the statistical variability within and between variables while producing imputations in an intuitive manner that fully utilizes all availed information (Royston, 2004). In this study I imputed missing values for observations which had unknown values for either one or two of the nine wealth components. I felt this balanced the need to fully utilize

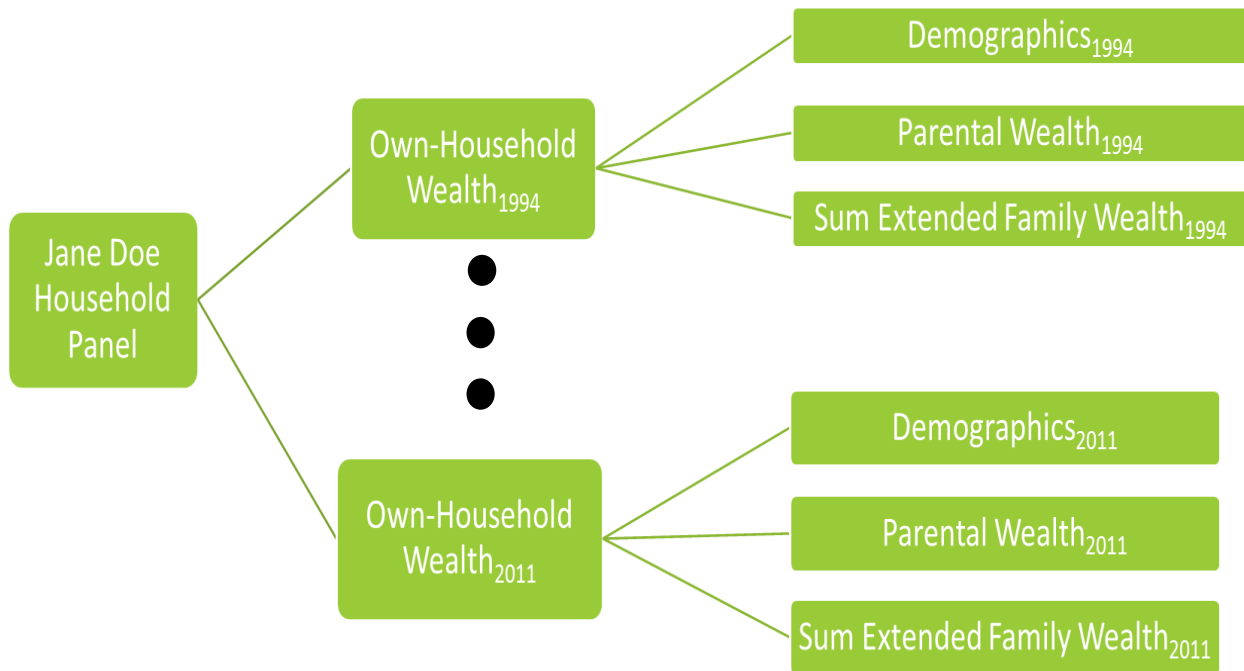
available information while maintaining data quality. Of the 38,281 wealth observations in my sample, 4,118 were imputed with one missing value and 895 were imputed with two missing values. Graphical analysis indicates that the observations with imputed values followed the same general patterns as the non-imputed observations.

The data has several shortcomings that may affect the results. I drop the top and bottom one percent outliers who own very large sums of wealth. This is particularly important because wealth tends to have very large levels of inequality, especially in the tails. Large outliers are worrisome because OLS panel models tend to be disproportionately biased by the outlier observations. There are three ways to deal with this problem. First, running a log-log model would attenuate the effect of outliers but is unfortunately not viable due to a large amount of zero and negative observations of our key variable, wealth. Second, I could drop extreme outliers but this would only partially solve the problem due to the inherent large accumulation of wealth at the top of the distribution. Third, I could use a quantile panel model to estimate the results. This fixes the problem because a quantile regression minimizes the absolute value of the sum of errors instead of the sum of squares and is thus not biased by outliers. I plan on exploring this possibility more in the future.

Another empirical issue with the PSID is the significant amount of attrition inherent in such a long term study, which may also lead to self-selection bias. However, the PSID cohorts have been found to be representative of the overall population if the appropriate sample weights are used (Ziliak & Kniesner, 1998). However, this does not fully obviate the attrition bias issue. As Fitzgerald, Gottschalk, & Moffitt (1998) point out, it is still possible for intergenerational correlations to suffer from attrition bias even if the sample remains representative, especially in a

three generation sample. There is no obvious way to deal with the intergeneration attrition issue at the moment.

### Model



This study organizes the data from the PSID into a panel spanning from 1989 until 2011. The model enables us to test for possible wealth transmissions, wealth drains or general wealth correlations across family members as well as controlling for unobserved heterogeneity through the use of individual fixed-effects. The decision to use a fixed-effects panel model was driven by several considerations. First, unobserved heterogeneity leads to endogeneity issues if not addressed properly. The most obvious sources of unobserved heterogeneity are an individual's ability, intelligence, inherent motivation, and social connections. If we make the assumption that these particular unobserved traits and their effects do not change over time, then the fixed effects model should control for these traits. This is why I interpret the fixed effects as controlling for the long



term effects childhood environment. The general category of childhood environment would include the effect of particular family resources, quality of education, informal education, the effects of role models, peer effects, access to family or neighborhood social networks, and countless other variables that go into the formation of an adult. To the extent that we can assume that the effects of childhood environment accumulate until the individual becomes an adult, defined as when the individual creates his or her own household, and thereafter remain constant, the individual fixed-effects model controls for the effects of childhood environment. This assumption is not restrictive if we consider that our measures of wealth, extended family wealth and other social/demographic factors can capture or proxy a large range of factors that change an individual's ability to accumulate wealth once that individual starts his or her own household, thus allowing us to empirically separate the accumulated effect of childhood environment from the changing effect of the adult environment.

## Empirical Results

VARIABLES	Table 1 <sup>#</sup>	
	wealth	se
wealth		
age	-734.9	(1,685)
age2	74.12***	(19.91)
income	0.851***	(0.234)
black*income	-0.507**	(0.221)
married	5,962	(6,132)
divorced	-14,409**	(5,739)
children	4,691*	(2,448)
extended Family	0.0267***	(0.00580)
black*ext-family	-0.0242***	(0.00867)
family members	14.08	(1,472)
black*famMember	-4,684***	(1,337)
2009	6,629	(5,781)
Black*2009	-20,532***	(6,505)
imputed	44,923***	(5,454)
Constant	-92,610***	(26,515)

Observations	37,793
R-squared	0.065
Number of id	9,135
<hr/>	
Robust standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	
# all values adjust to year 2000 dollars	

Table 1 shows several important results from my regression analysis. First, age, marriage, divorce and children exhibit the expected signs and magnitudes. Looking at income we see that black households experience more difficulty transforming income into wealth than non-black households. Non-black households on average accumulate an extra \$0.85 of assets for each extra dollar of household income, whereas black households only accumulate an extra \$0.35 worth of assets for each additional dollar of income, holding everything else equal. Looking at the coefficients for extended family wealth and the interacted extended family wealth variable, we see an interesting and counterintuitive result: non-black extended family networks are much more closely intertwined in terms of wealth accumulation than black households. For non-black households, if a member of the extended family accumulates an additional \$1,000 worth of assets, then the household in question would accumulate an additional \$27 on average after holding everything else equal. For black households, an extra \$1000 of extended family wealth translates into approximately \$2 of extra assets, a negligible amount. This result partially contradicts the Chiteji-Hamilton hypothesis because it implies that non-blacks may be more heavily burdened by their relatives than blacks (Chiteji & Hamilton, 2002). However, the Chiteji-Hamilton hypothesis specifically refers to the effect that needy relatives have on middle income blacks while this result is more general. Thus, the two results are not necessarily mutually exclusive. This result may be driven by several different dynamics. First, non-black households may have access to exclusive social networks that allow them to leverage their resources into benefits that accrue to their

extended family networks. These exclusive social networks might provide access to investment opportunities, easy access to credit, business partnerships, financial information, or lucrative job offers. Blacks, on the other hand, may simply not have as much access to these exclusive networks despite similar amounts of wealth.

Another interesting result is the differential effect of the size of the extended family on wealth accumulation. While the number of members of the extended family does not statistically matter to non-black families, black families appear to suffer a wealth penalty for being members of large extended families. One additional household in the extended family network correlates with an average loss of \$4684 worth of assets for black households. This trend may be explainable by a variant of the Chiteji-Hamilton hypothesis wherein the additional household poses a financial burden on the rest of the extended family, or perhaps growing up with six siblings instead of five may hamper long term wealth accumulation through some mechanism.

The last interesting result from the regression analysis is the differential impact of the 2007 financial crisis. The interacted dummy variable for year 2009 indicates that black households on average lost \$20,532 worth of assets more than non-black households, holding everything else equal. This result should come as no surprise given the predatory practice of subprime lenders of targeting black households in heavily segregated neighborhoods (Been et al., 2009; Powell, 2009). Additionally, the effect of the financial crisis may have been amplified by the spatial concentration of subprime lending and job loss that resulted from the financial crisis, thus exacerbating an already dismal situation in heavily affected communities.

## Discussion

The results from this study indicate that exploring the causal mechanisms underlying the familial wealth disconnect observed among black households is an important avenue for future research. The black household familial disconnect is the central result from this study for several reasons. First, it indicates that perhaps there are underlying economic barriers that stunt the wealth accumulation of black families via the familial disconnect. If the wealth accumulation of non-black households contains a synergistic component wherein extended families tend to rise together and feed off each other's success, then the level of wealth inequality in the United States is set to stay on a self-perpetuating path. Although the self-perpetuating dynamic would affect everyone, it would disproportionately increase the black-white wealth. Considering the large and persistent effects that household wealth and inequality exert on social outcomes, my central result is a matter of considerable concern with important policy ramifications. Exploring the spatial components of the black familial disconnect presents an exciting avenue for elaborating on this finding. Several studies over the past decade have begun to emphasize the spatial component of inequality and social outcomes but have yet to investigate how wealth accumulation is mediated through social relationships with a spatial component (Hilber & Liu, 2007; Sampson & Sharkey, 2008).

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