# THE ROLE OF PARENTS ON THE HOME OWNERSHIP EXPERIENCE OF THEIR CHILDREN: EVIDENCE FROM THE HEALTH AND RETIREMENT STUDY

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## ABSTRACT

We construct matched panel data sets of adult children with their parents to study the role of lagged parental attributes on subsequent home ownership decisions between 2000 and 2012. Earlier research has demonstrated inter-generational wealth transfers from parents to children are an important source of upfront equity used to purchase a first home, although parental attributes are often omitted as determinants of tenure due to data limitations. A significant role is found for lagged parental wealth on the ability of adult children to become and remain home owners over this period. Endowed differences in parental wealth are estimated to account for the largest explainable share of the white/non-white gap in becoming a homeowner, and maintaining home ownership once attained.

*Keywords:* Home Ownership, Foreclosure, Inter-Generational Transfers
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## I. INTRODUCTION

Increasing the home ownership rate, especially among minority households, has been a stated goal of US Government policy since at least 1992 (Goodman and Mayer, 2018; Gabriel and Rosenthal, 2005). During this time, aggregate US home ownership increased from 63.9% in 1990, to a high of 69.0% in 2006, but a persistent gap of between 19 and 23 percentage points existed between white and minority households (Collins and Margo, 2011). Recent evidence suggests an explicit role of US government policy starting in the 1930's until at least 1970 lowered minority home ownership rate, which may result in lower home ownership of their children (see Rothstein, 2017; Aaronson, Hartley, and Mazumder, 2019). In this paper, we illustrate the role played by parental attributes, especially wealth, as a possible transmission mechanism to explain transition into and out of home ownership during the Great Recession.

Earlier research has modeled tenure decisions as a result of credit and capital constraints, permanent income, and differences in the after-tax user cost of ownership (e.g., Rosen, 1979; Duca and Rosenthal, 1994; Haurin, Hendershott, and Wachter, 1997; Gabriel and Rosenthal, 2005; Haurin and Rosenthal, 2007; Diaz and Luengo-Prado, 2008). This research has predominantly used individual attributes available in cross-sectional data (i.e., the Current Population Survey and Decennial Census) to find that a persistent gap in home ownership rates exist between white and non-white households even after accounting for the above factors (Gabriel and Rosenthal, 2005). While a few studies have modeled the decision to become a homeowner based on whether their own parents were a homeowner, virtually no study has attempted to decompose endowed differences of parental wealth across racial groups, especially in the decision to maintain ownership. This is an important omission because a large down payment is required to make a home purchase, of which a gift from a parent has been identified as an important source of down

payment funds (Engelhardt, 1996; Engelhardt and Mayer, 1998). Earlier research has also shown that parental wealth can serve as a form of precautionary savings to smooth consumption following employment shocks (De Nardi, 2004).

Our analysis is most similar to earlier research that has used longitudinal data to model the determinants of becoming a homeowner (Charles and Hurst, 2002; Boehm and Schlotmann, 1999, 2002; Dawkins, 2005). We extend this earlier work by creating matched longitudinal panel data sets of adult children with their parents using responses in both the Panel Study for Income Dynamics (PSID) and the Health and Retirement Study (HRS). The matched panels enable the simultaneous measurement of lagged individual and parental attributes on the ability of individuals to become and stay a homeowner. The period before and after the 2008 Great Recession is of significant policy importance given the expansion and sudden retraction of house prices and credit. We draw upon the experiences of 22,086 unique adult children between the ages of 21 and 49 of HRS respondents in the 2000, 2004, 2008 and 2012 waves of the survey for our analysis. The corresponding sample of adult children matched to parents in the 2001, 2005, 2009 and 2013 waves of the PSID is 1,833.

We provide three main contributions to the literature using the constructed matched panel data sets. The first contribution is to illustrate the importance of parental attributes, especially non-retirement financial and housing wealth, associated with an adult child becoming a home owner. On average, 26.5% of adult children in the HRS and 31.4% in the PSID transitioned from renting to owning over the last four years across the sample. Similar to earlier research, we first find that lagged educational attainment and the home ownership status of parents has a significant role on their adult children themselves becoming owners, although those attributes diminish greatly after also controlling for lagged parental wealth. Depending on the estimate, having a

parent with at least $25,000 of non-retirement financial wealth increased the likelihood of becoming a homeowner over the next four years by 8.2 to 10.2% in the HRS holding other attributes constant. In the PSID sample, having a parent with at least $50,000 of non-retirement financial wealth increased the likelihood of the transition to home ownership by 35.8 to-42.3%. Lagged parental housing equity of at least $25,000 was also estimated to be associated with a 12.4-to-18.5% increased likelihood of transitioning to home ownership in the HRS. We found no effect of retirement wealth on maintaining ownership, which suggests the importance of the relative liquidity in wealth holdings of parents to explain the transition. These estimated effects remain robust and increase in magnitude through modeling the simultaneous decision of adult children to live independent from their parents and become a homeowner using a bivariate probit estimator with a plausible exclusion restriction in the HRS sample.

Our second contribution is to illustrate the importance of parental attributes on maintaining home ownership. The preponderance of earlier research has treated home ownership as a terminal state, which we show was more fragile than previously recognized. Virtually all down payment and most credit constraints required for a home purchase were relaxed by lenders between 2005 and 2008 (Mian and Sufi, 2009). However, this period was followed by a significant decrease in house prices and historically high levels of foreclosures, especially among minority groups. We estimate using the HRS that 10-to-13% of homeowners did not maintain ownership over the next four years during this period. While lagged individual income and educational attainment were positively associated with maintaining home ownership in the HRS, also having a parent with at least $75,000 of lagged non-retirement financial wealth and at least $50,000 of housing wealth was positive and significantly associated.[2] Even after controlling for the above individual and

[2] The magnitude of estimates using the PSID was often similar to that using the HRS, although the smaller sample size reduced the power of the analysis to affect statistical significance.

parental factors, individuals with at least one non-white parent were 6.3% less likely than those with only white parents to maintain home ownership over this period.[3]

Our third and final contribution is in decomposing the continuing effect of large estimated differences in parental wealth across racial groups on their children attaining and maintaining home ownership. Earlier researchers have attempted to explain the gap between white and non-white home ownership rates by conducting a Blinder-Oaxaca decomposition based on observable differences. However, this research has generally omitted parental attributes (Haurin, Herbert, and Rosenthal, 2007). We extend this literature and show that reported differences in parental wealth based on having at least one non-white parent explain the greatest share (23.9%) of the 15.9 percentage point (pp) gap in becoming a homeowner over the next four years in the HRS. Similarly, there was an estimated 10.2 percentage point gap in maintaining home ownership over the prior four years based on having at least one non-white parent in the HRS, of which endowed differences in parental wealth explained 29.7% of the variation. These results suggest that differences in parental wealth and other attributes between racial groups is an important explanation for why differences in homeownership rates persist.

The rest of the paper is organized as follows. We first provide a brief background based on related literature, and a summary of the panel of adult children we created from the HRS and PSID. We then describe potential challenges to identification and our solution using a bivariate probit estimator paired with an exclusion restriction based on parental health using the HRS. We conclude

[3] We define race categories used in our analysis based on whether the parents of adult children identified as "white with non-Hispanic ethnicity," "black with non-Hispanic ethnicity," or "Hispanic" ethnicity. Adult children in the PSID and HRS may have either a single parent, or multiple sets of parents as respondents. Section 3 describes in more details how the matched panels are constructed. Adult children with parents only identifying as the third racial category "other" in either survey and not of Hispanic ethnicity are omitted from the analysis.

with a decomposition of parental attributes on the likelihood of becoming and remaining a homeowner, followed by implications of the research.

## II. BACKGROUND

The impact of parental characteristics on child outcomes has been extensively studied in a diverse range of social science and medical research fields. A small portion of this research has considered home ownership as both a characteristic of parents (inter alia Green and White 1997, Boehm and Schlottman 1999, 2002; Haurin, et al. 2002) and occasionally as an outcome of interest for their children (Boehm and Schlottman 1999, 2002; Öst 2012). Dietz and Haurin (2003) provide a detailed literature review of the micro and social consequences of home ownership that goes well beyond the area of interest in the present study. However, the overall conclusion of this literature is that generally there are strong positive benefits associated with parental home ownership on child outcomes. For instance, Green and White (1997) find that the children of home-owning parents are more likely to complete high school and are less likely to become teenage parents. Boehm and Schlottman (1999) find increased income associated with higher educational attainment for the children of homeowners. Further, they find that children of homeowners are more likely to be homeowners themselves, but do not control for their parents' wealth directly.

An important aspect of parental home ownership and child housing outcomes relates to funding constraints and intergenerational wealth transfers. These wealth transfers may facilitate and accelerate the entry of children into the housing market. Haurin, Hendershott and Wachter (1996) and Ortalo-Magné and Rady (1999) both discuss the down payment constraint as an obstacle to home ownership. Prior to 2005, borrowers needed at least three percent of the home purchase price for a down payment, and received a significant decrease in their effective cost of

borrowing for having a 20% down payment. Engelhardt and Mayer (1994) specifically showed the importance of inter-generational wealth transfers in overcoming such obstacles. An important aspect of the current study is our use of housing and financial wealth measures to assess the impact of parental wealth on child housing outcomes during a period when some of those constraints were temporarily relaxed between 2005 and 2008.

A related literature has also attempted to explain the sizable observed cross-sectional differences in home ownership patterns between racial groups (e.g., Gyourko and Linneman, 1996; Gabriel and Rosenthal, 2005). Collins and Margo (2011) provides a historical overview of the differences in home ownership between white and Black households from 1870 to 2007. Despite significant gains in home ownership for both groups between 1940 and 2007, a gap in ownership between 19 and 28 percentage points has persisted.

Two strands of literature have emerged attempting to explain the large observed differences in aggregate home ownership rates. The first has attempted to decompose differences in the unconstrained demand for ownership between racial groups based on differences in demographics, permanent income, and the after-tax user cost of owner-occupied housing (Rosen, 1979; Gabriel and Rosenthal, 2005; Collins and Margo, 2011). Gabriel and Rosenthal (2005) find that differences in observable household attributes explain approximately two-thirds of the white/minority home ownership gap using the Survey of Consumer Finances from 1983 to 2001. An important contribution was made by Haurin and Rosenthal (2007) in recognizing that home ownership decisions are censored for non-independent households, and the gap between white and black home ownership is actually more severe after accounting for these differences.

The second strand of literature has attempted to explain why a gap persists in ownership rates by race even after accounting for observable differences between groups. This literature has

illustrated constraints minority households face with regards to racial segregation during the home search process, or the disparate treatment and impact some minority aspirant owners may face in mortgage lending markets (Munnell *et al*, 1996; Tootell, 1996; Yinger, 1998; Ross and Tootell, 2004; Zhao *et al*, 2006). While this literature has provided overwhelming evidence that some minorities are treated differently, it remains unclear what portion of the gap in home ownership is due to discrimination.

Our research is most closely linked to studies that have used longitudinal data to study tenure decisions (Charles and Hurst, 2002; Boehm and Schlottman, 2004; Dawkins, 2005; Hilber and Liu, 2008; Öst, 2012). This research has primarily used data from the Panel Study of Income Dynamics (PSID) and either looked at home ownership status in levels, or the decision to transition from owning to renting.[4] Charles and Hurst (2002) and Dawkins (2005) specifically attempted to decompose racial differences in explaining gaps in the decision to become a homeowner, and found a limited role for parental wealth in explaining such decisions. The time periods of analysis used by the above studies pre-date the home ownership gains and subsequent declines, of the 2000s. Further, this earlier branch of literature does not consider the endogeneity of the decision to live independently. Early research also dealt with a paucity of data, with a limited sample of minority racial groups, and in some cases only considered one time point for analysis.

In the section that follows we discuss our data choices and the extensive range of parental attribute variables available for the study.

[4] One exception to studies using the PSID is Öst (2012), which used longitudinal data from the Swedish Housing and Life Course Cohort Study to model home ownership status in levels.

## III. ECONOMETRIC FRAMEWORK

The previous literature has traditionally modelled the 0,1 decision (*Y*) of household *i* to be a homeowner at time *t* as a function of a large set of contemporaneous individual attributes ($\mathbf{X}^{indiv}$). This decision can be modelled by specifying

$$Y_{i,t} = \alpha + \beta X_{i,t}^{Indiv} + \varepsilon_{i,t} , \quad (1)$$

where α and β are estimated parameters, and *u* is an idiosyncratic error term. The identification of parameters in (1) relies on two main assumptions. The first is there are no unobserved or omitted determinants of being a homeowner at time *t* correlated with included attributes in **X**. The second, as outlined by Haurin and Rosenthal (2007), is that the propensity to be a homeowner is independent of the decision to be the head of an independent household. To the extent either identification assumption is violated, estimation of (1) will result in biased estimates.

We address the above identification concerns by constructing a matched panel of adult children, between the ages of 21 to 49, with their parents in both the HRS and PSID.[5] The PSID has been used in several earlier studies related to the determinants of home ownership, whereas research using the HRS is more limited. The HRS is a biennial panel conducted by the University of Michigan since 1992 and is representative of the US population over the age of 50, and their spouses since 1998. The survey is rich in parental attributes (e.g., education, wealth, home ownership status) that are potentially correlated with their children's individual attributes and ownership decisions. Respondents were asked about their children's individual home ownership experiences each wave starting in 1998, and then every four years starting in 2004. We draw upon

[5] We restrict the sample to adult children equal to and above 23 years of age to aid in the interpretation of effects associated with lagged income and educational attainment of current college enrollees. Expanding the sample to adult children equal to and above 21 years of age had no meaningful effect on the results.

the 2000, 2004, and 2008 and 2012 HRS waves in our analysis, and further restrict the sample to adult children with reported home ownership status four years prior.

The 2001, 2005, 2009 and 2013 waves of the PSID were used to create a matched panel similar to that possible using the HRS. The main difference between the PSID and HRS is that a sub-sample of children of original PSID respondents themselves became respondents to the survey, and matched to parents using a unique family identifier. Responses for adult children in the PSID were therefore self-reported and have a richer set of individual attributes (e.g., wealth) than the HRS, although the sample size is far more limited. A main limitation of using the PSID is that the home ownership status of adult children is unobserved if they cohabitating with a parent. This could potentially overstate the importance of parental attributes on tenure decisions of their children because it could instead be measuring the direct influence of those attributes on the parent's own tenure decision. In contrast, parents in the HRS are explicitly asked separate questions about their children, including whether a specific child is a homeowner.

The advantage of using longitudinal data is that we are able to separate the effects of lagged individual and parental attributes on the ability of their children to first become a homeowner, and then maintain home ownership. The decision to either become or stay a homeowner within the preceding four years can be modelled by specifying

$$Y_{i,t} = \alpha + \beta X_{i,t-4}^{Indiv} + \theta X_{i,t-4}^{Parents} + \varepsilon_{i,t} \quad , \tag{2}$$

where **X** is now lagged four years, includes both individual and parental attributes, and the sample is restricted to adult children based on their home ownership status four years prior. These lagged individual and parental attributes are listed Table 1. Lagged individual attributes include age, income, educational attainment, gender, marital status, and the presence of children in the household. Adult children could have multiple sets of parents in the PSID and HRS due to

dissolution of previous relationships, so the sample is restricted to exclude attributes of non-biological parents when biological parents are identified. Lagged parental attributes include whether a parent is married or a homeowner, highest educational attainment of either parent, and the age of their oldest parent. Housing, retirement, and non-retirement financial wealth are measured separately in the HRS and PSID at the household level. The wealth of the parent with the greatest amount is specified when multiple sets of parents could occur. Parental wealth is stratified for each category of wealth in $25,000 increments up to $75,000, where having $0 or negative wealth is the omitted category.

The racial identity of children is determined based on that of their parents, where due to either missing data or being deceased the racial identity of only one parent is sometimes only identified. Given this, adult children are classified as either having at least one black, non-Hispanic parent, at least one Hispanic parent, or only white parents not identifying as Hispanic. We omit from the sample any adult children having parents only identifying as the "other" racial category and not of Hispanic ethnicity.

The lines in Figure 1 illustrate the home ownership rates of adult children from 2000 until 2012 based on whether they have at least one non-white parent in the constructed HRS sample. For those children with only white parents, the rate of home ownership fell from a high of 61.4% in 2008 to 54.6% in 2012. For the children of respondents that had at least one Black or Hispanic parent, their rate of home ownership fell from a high of 33.1% in 2004 to 26.2% in 2012. The gap in home ownership rates was near constant and ranged from 29.4pp in 2000, decreased to 27.9pp in 2004, and then increased to 28.4pp by 2012.

## IV. BECOMING A HOMEOWNER

The second and third column of Table 1 indicate descriptive statistics for the PSID and HRS samples restricted to adult children than were renters and living independently 4 years prior and remain living independently from their parents.[6] There were 11,031 observations of 8,150 unique adult children in the HRS as compared to 1,297 observations of 891 unique adult children in the PSID meeting this requirement. Of those observations, 26.8% of adult children in the PSID became renters in the next four years as compared to 31.1% of renters in the HRS. The first set of bars for each year grouping in Figure 3 represent the percent obtaining home ownership between each wave in the HRS. The likelihood declined from a high of 32% having become homeowners between 2000 and 2004, to 21% first attaining home ownership between 2008 and 2012.

The second and third column in Table 1 indicate average individual and parental attributes of adult children who were previously renters. Home ownership is measured in the current period (i.e., 2004, 2008 and 2012), whereas the individual and parental attributes are lagged four years (i.e., 2000, 2004 and 2008). Average attributes of adult children in the PSID and HRs were similar in age (approximately 34 years old), gender (48% female), and being a college graduate (28%). Adult children in the PSID were more likely to be employed full time, have an income above $75,000 per year, and at least one black parent. The parents of adult children in the two samples were also similar in being homeowners (approximately 77%) and average housing equity, but parents in the HRS had significantly more housing retirement wealth and those in the PSID had significantly higher non-retirement financial wealth, which may be due to differences in classification.

[6] It is necessary to restrict the PSID sample to those previously living independently because their individual home ownership status is otherwise unobserved and may instead represent that of their parents if they cohabitate. The HRS is initially restricted based on the same criteria, although relaxed later in the analysis.

Table 2 presents the marginal effects of selected lagged attributes of becoming a homeowner over the previous four years using a probit estimator. The PSID and HRS sample are both restricted to adult children living independently from their parents in the current period and four years prior to aid comparison. The first column report estimates from the HRS while the second two columns report those estimated using the PSID sample. A quartic function of age is included in all specifications and always statistically significant, but excluded from results due to space limitations. Standard errors are omitted from the table to conserve space, but indicated in an extended version of the table in the appendix. Asterisks indicate statistical significance of the estimates based on standard errors clustered at the unique adult child level.

Similar to earlier research, we find an individual's lagged employment status, income, marital status, presence of children, and educational attainment were all positively correlated with becoming a homeowner over the preceding four years in the HRS. Not surprisingly, having an income above $70,000 and being a college graduate are estimated to be important. Relative to between 2000 and 2004 and holding other differences constant, individuals were 7.3pp less likely to transition to home ownership from 2005 until 2008, and 14.9pp less likely from 2009 until 2012. We also find having at least one black parent significantly decreased the likelihood of becoming a homeowner, although there was not a meaningful relationship associated with having at least one Hispanic parent.

Panel A of Figure 2 illustrates the distribution of parental wealth of renters in the HRS. Over 47% of parents have more than $75,000 of housing equity, although other types of wealth are more limited. The most common (41%) category of parental retirement wealth is having between $1 to $25,000 and 34% had a parent with less than $1 of non-retirement financial wealth. Having a parent with between $25,000-to-$75,000 of non-retirement financial and more than

$50,000 of housing wealth was also positively associated with becoming a homeowner. The significance of housing and non-retirement financial wealth suggests a possible transmission mechanism of intergenerational transfers that assist children into home ownership. The least liquid form of wealth is retirement accounts, which often heavily penalize early withdrawals. Consistent with the importance of either liquid or collateralizable wealth, parental retirement wealth is not a significant factor in either the HRS or PSID sample.

A common finding from earlier research found that parental home ownership is often associated with an increase in home ownership among their children (Boehm and Schlottmann, 1999). There is no estimated statistical relationship with parental homeownership status and becoming a homeowner conditional upon including parent wealth measures. It is important to note that the educational attainment of parents, homeownership status, and their wealth are all highly correlated, and hence the above should only be interpreted as conditional upon each other's inclusion in the model. A joint test of the statistical significance of parental variables reject that the variables should be excluded as determinants of becoming a homeowner at the 0.001% level.

Estimates reported in the second and third column of Table 2 were obtained using the PSID sample. The second column omits individual wealth measures and is therefore most comparable to estimates obtained using the HRS. The third column include lagged non-retirement financial and retirement wealth as individual determinants. Individual attributes in the PSID on becoming a homeowner were similar in magnitude and statistical significance to that using the HRS regardless of whether individual wealth measures were also included in the specification. Reassuringly, the decrease in likelihood in becoming a homeowner in the PSID between 2005 and 2012 were almost identical to that derived using the HRS.

The main difference is an increased importance of own educational attainment in the PSID and a decreased importance of having an income above $70,000. Whereas only having up to $25,000 was statistically significant in becoming a homeowner at the 10% level, having more than $50,000 of non-retirement financial wealth was estimated to be large (9.9pp and 11.2pp, respectively) and statistically different from 0 at the 5% level. The negative effect of having at least one black parent was estimated to be lower in magnitude (8.4pp and 8.2pp, respectively) in the PSID than the HRS, although the estimated effect of having at least one Hispanic parent in the PSID is negative and statistically significant (-13.8pp). In contrast to effects estimated using the HRS, the only parental attribute estimated to have a statistically meaningful effect on becoming a homeowner in the PSID is having a parent with at least $50,000 of non-retirement financial wealth. The p-values of the joint test of the statistical significance of parental attributes in the PSID sample with and without individual wealth measures were 0.141 and 0.222, respectively.

A limitation of the estimates reported in Table 2 is that the decision of adult children to live independently from their parents is assumed exogenous, with children living with their parents either currently or four years prior restricted from the analysis due to missing data in the PSID. Those estimates are biased if individual and parental determinants to become a homeowner are also correlated with an individual's decision to co-reside with a parent. Recent evidence from Lee and Painter (2013) and Paciorek (2016) illustrate these decisions were most likely co-determined during the Great Recession, and thus should be accounted for in the analysis.

Our own analysis of HRS similarly show the percent of adult children living independently from their parents declined for both racial groups over the sample period, although at a higher rate for adult children with only white parents. For the children of respondents with only white parents, the rate at which they lived independently fell from 92.5% in 2000 to 89.1% in 2012. For children

from families with at least one non-white parent, the rate of which they lived independently fell from 85.8% in 2000 to 84.6% in 2012. For both racial groups, the most significant decline in living independently from their parents occurred in the period from 2008 to 2012.

We follow Haurin and Rosenthal (2007) and use a bivariate probit estimator to relax the assumption that the decision to live independently and become a homeowner are independent and uncorrelated using the HRS sample. The bivariate probit estimator assumes that both error terms follow a bivariate standard normal distribution and are ideally identified based on an exclusion restriction where an instrumental variable affects one outcome (i.e., the decision to live independently), but is not a direct determinant of the other outcome. Our instrumental variable is the self-reported health and limitations to mobility of parents. Engelhardt, Eriksen, and Greenhalgh-Stanley (2016) illustrated that parental health and mobility affected the likelihood adult children coreside with their parents during this period using similar data, which are also plausibly not directly related to home ownership decisions given other specified factors.

Table 3 reports the marginal effects of individual and parental attributes on becoming a homeowner during the prior four years when the sample is expanded to include those also coresiding with their parents in the HRS. This sample expansion results in an additional 3,968 observations associated with 2,205 unique adult children. The first column reports estimated marginal effects of a probit estimator assuming the decision to coreside is independent and therefore similar to that reported in column 1 of Table 2, but with the expanded sample. The second column reports estimated marginal effects of the conditional probability of the decision to become a homeowner and live independently using a bivariate probit estimator. An F-test of the excluded instruments' relevance (i.e., a 4-point scale of self-reported parental health and up to 5

potential limitations to mobility of a parent) indicate they were meaningful determinants of cohabitation and the analysis does not suffer from weak instruments (see appendix Table 1).

With a few exceptions, the estimates reported in the two columns were similar and consistently indicated the importance of parental attributes, especially wealth. Being employed fulltime, individual income, and educational attainment remain positive and meaningful determinants of becoming a homeowner. In contrast to the earlier result treating cohabitation as exogenous, having at least 25,000 of housing and non-retirement wealth is now estimated to be consistently positive and statistically different from zero. The main difference between the unconditional and conditional estimates is the impact of parental wealth is shown to be greater when estimated conditionally, although often not at a level to reject the validity of the previous estimates. These estimates range from 1.5-to-3.2pp for non-retirement financial wealth depending on the estimate, and represent increases in the likelihood of becoming a homeowner from 4.8-to-10.2%. The impact of parental housing wealth of at least $25,000 range and above ranged from 12.4-to-18.5%. Although most likely a proxy of greater overall wealth as the mechanism is unclear, greater parental retirement wealth was also associated with an increased likelihood of becoming a homeowner. A rho test of the independence of errors is rejected at the 0.001% level implying the decision to live independently and become a homeowner are joint decisions.

## V. MAINTAIN HOME OWNERSHIP

Home ownership is usually thought of as a terminal state that once achieved is rarely lost. Figure 4 illustrates a significant and increasing percentage of adult children of HRS respondents did not maintain home ownership between 2000 and 2012. Given 55.4% of adult children in the HRS were homeowners in 2000, only 90% of those individuals were still owners four years later. This

homeowner retention rate decreased to 88% between 2004 and 2008, and further to 87% between 2008 and 2012. The homeowner retention rate among those with at least one non-white parent, as represented in the last column in each series, decreased from 82% between 2000 and 2004 to 76% between 2008 and 2012.

The decision to maintain home ownership is dependent on previously living independently and being an owner. We treat prior home ownership status as exogenous and limit our sample in the HRS and PSID to adult children that were living independently and were homeowners four years earlier. This resulted in 18,527 observations of 11,731 unique individuals in the HRS and 1,387 observations of 891 unique individuals in the PSID. The third and fourth columns of Table 1 illustrate descriptive statistics of the sample. In general terms, adult children who were homeowners four years prior were older, had a higher income, and more likely to be a college graduate and married than those previously renters. Prior homeowners were also more likely than renters to have a home owning parent and their parents on average had significantly higher wealth. The main difference between the PSID and HRS sample is that while PSID homeowners were more likely to be employed and have an income above $70,000, the average retirement and non-retirement wealth of parents in the PSID was also significantly higher than reported in the HRS. Panel B of Figure 2 illustrates the distribution of each type of parental wealth for prior homeowners. Parents of homeowners were relatively wealthier than renters with more than 65% having at least $75,000 of housing equity and almost 45% having $75,000 of retirement wealth. The percentage of parents with no non-retirement financial wealth also decreased, but remained sizable at 18%.

Table 4 reports the marginal effects of maintaining homeownership in the two samples. Statistical significance of the estimates based on clustered standard errors at the unique child level

is indicated by asterisks. Individual income and education remain important determinants of maintaining ownership in the HRS sample, although being female and the presence of children no longer have a meaningful difference. Having at least one Black or Hispanic parent, reduced the likelihood of maintaining home ownership in the HRS by 5.6pp and 1.9pp, respectively. With the exception of race, other parental demographics also had no discernible impact on maintaining ownership. Relative to the period from 2000 to 2004, time period fixed effects indicate a 3.5pp decrease in maintaining ownership between 2004 and 2008, and a sizeable 5.5 pp relative decrease between 2008 and 2012.

Focusing on parental wealth in the HRS sample, having a parent with between $0 and $25,000 of non-retirement financial wealth was estimated to be positive (1.1pp) and statistically significant. Higher levels of parental retirement wealth had no discernible effect on maintaining ownership until it reached greater than $75,000, when the effect was again positive (3.1pp) and significant. Similarly, parental housing wealth of at least $50,000 was also estimated to be positive (3.3pp and 4.0pp) and significant. Consistent with retirement wealth being less liquid to transfer or borrow against, there is no estimated effect of retirement wealth on maintenance of home ownership. A F-test of the joint significance of parental attributes using the HRS indicates they should be included in the model at the 0.001% level.

The second and third column of Table 4 report estimates obtained using the PSID sample, where the third column also includes individual wealth measures not available in the HRS. An important caveat of these results is the PSID sample is much smaller than available in HRS (i.e., only 7.5%) and the estimates therefore less precise in comparison. The point estimates were often still similar in the two samples, although often not statistically distinguishable from zero using the PSID. The only individual attributes estimated to be statistically meaningful in remaining a

homeowner using the PSID was being married (11.8pp) and having at least one black parent (-6.6pp). The point estimates of parental housing and non-retirement financial wealth are almost identical and often larger to that using the HRS, although only having a parent with between $0 and up to $25,000 was estimated to be statistically significant when individual wealth attributes were excluded. Also similar to the HRS, adult children were significantly less likely to maintain home ownership between 2005 and 2012 than the initial period.

## VI. Decomposition of Home Ownership Gaps

A significant body of research has attempted to explain persistent gaps in ownership rates between white and non-white households (see Haurin, Herbert, and Rosenthal 2007 for a review). The predominant approach to measure how external factors affects the racial gap in home ownership is to conduct a Blinder-Oaxaca decomposition (Blinder, 1973; Oaxaca, 1973). The intuition behind this procedure is to separate mean differences between groups to quantify the portion of the gap due to observable difference in attributes (i.e., the endowment effect). It has recently been applied to decompose racial gaps in home ownership rates by Carrillo and Yezer (2009), and Coulson and Dalton (2010). The majority of this research has focused on home ownership levels, with only a few studies decomposing endowment effects associated with becoming a homeowner using the decomposition method and to our knowledge no studies decomposing factors associated with maintaining home ownership.

### *Becoming a Homeowner*

Figure 3 illustrates the raw probability of becoming a homeowner over the previous four years by whether the adult child in the HRS sample has at least one non-white parent. Between

2000 and 2004, 37% of adult children with only white parents became homeowners, whereas only 22% of adult children with at least one non-white parent became a homeowner. This 15pp differential in becoming a homeowner based on racial identity remained constant between 2000 and 2008, but decreased to 11pp from 2008 to 2012. Between 2008 and 2012 an estimated 13% of adult children with at least one non-white parent became a homeowner as compared to 19% of those with only white parents.

Table 5 indicates lagged differences in individual and parental attributes based on having only white parents as compared to having at least one black or Hispanic parent. The first and fourth columns of estimates are the average attributes associated for individuals with no parents who identify as Black or Hispanic, stratified by their prior home ownership status. The second and fifth columns represent average attributes for those with at least one Black or Hispanic parent, while the third and sixth columns represent differences, respectively. Asterisks on those differences represent the statistical significance of the differences based on clustered standard errors.

Statistical and often economically meaningful differences between the two groups occurred in individual and parental attributes shown to be important determinants of becoming a homeowner earlier in the analysis. Individuals with no black or Hispanic parents were more likely to be employed full-time (6.9pp), be a college graduate (11.8pp), and have married parents (17.8pp). They were also more likely to have parents with significantly more wealth, with average differences of $90,022 in housing wealth, $135,116 in retirement wealth, and $161,171 in non-retirement financial wealth. Panel A of Figure 5 illustrates the distribution of these wealth differences based on having at least one white parent for those at-risk of becoming homeowners. A 27pp gap existed in having a parent with at least $75,000 of housing wealth, a 24pp gap in having at least $75,000 of retirement wealth, and 23pp gap in having at least $75,000 of non-

retirement financial wealth. An astonishingly 52% of renters with at least one non-white parent had parents with no non-retirement financial wealth and only 5% had more than $75,000.

The first two columns of estimates reported in Table 5 indicate the share of the gap in becoming a homeowner explained by endowment effects in the HRS sample. The first column corresponds to the decomposition when treating prior household formation as exogenous as reported in Table 2, while the estimates in the second column relax the independence assumption using a bivariate probit estimator. The average gap in becoming a homeowner over the sample period was estimated 15.4pp when treating household formation as exogenous, and 15.9pp when relaxing the assumption.

The differences in observable attributes, or endowments, were estimated to explain 57.1% and 55.4% of the gap, respectively. Figure 5 illustrates the explainable share of the gap by type of attribute. Average differences in individual demographics including age, gender, marital status, and year fixed effects explained 6.3% of the gap estimated using the bivariate probit estimator. Differences in full-time employment and individual income explained 16.4% of the gap, and individual educational attainment 11.9%. Given the effect of parental education on becoming a homeowner holding other attributes constant was negative, the higher educational attainment of white parents actually caused parental demographics (education, marital status, age, and home ownership) to explain a negative share of the gap. Differences in parental wealth were estimated to explain the largest share of the gap at 23.9%.

*Maintain Home Ownership*

The white/non-white gap in maintaining home ownership increased between 2000 and 2012. Whereas 91% of homeowners in the HRS sample with only white parents maintained home

ownership between 2000 and 2004, only 82% of those with at least one non-white parent successfully maintained it. This estimated racial gap of 9.1pp increased to 12.1pp between 2008 and 2012, with only 76% of homeowners in 2008 with at least one non-white parent remaining a homeowner in 2012 as compared to 89% of those with only white parents.

Substantial differences in attributes of homeowners based on the racial identity of their parents were also estimated to occur. The last column of Table 5 reports these differences, and illustrate some differences were less than when strictly comparing renters. Homeowners with only white parents were still more likely to be college graduates (8.1pp), have an income of at least $70,000 per year (11.6pp), and to be married (11.8pp). Homeowners with at least one non-white parent were, however, more likely to be employed full-time (5.4pp) and have the presence of children within their households (5.2pp). Differences in parental homeownership status were still large (8.3p), although smaller than that of renters (20.2pp). Average differences in parental wealth across race were larger conditional on home ownership status. Panel B of Figure 5 illustrates that whereas 40% of white parents have at least $75,000 of non-retirement financial wealth, less than 10% of non-white parents have similar wealth. Over 43% of non-white parents of homeowners had at least $75,000 in housing wealth as compared to 68% of those with only white parents.

Average differences in the above attributes, or endowments, were reported in Table 5 to explain 58.5% of the racial gap in maintaining home ownership in the HRS. Conditional upon being a homeowner four years prior, there was a 10.2pp gap in maintaining homeownership over the sample period based on having at least one non-white parent. The explainable share of the gap by each category of endowment is illustrate in the last column of Figure 6. Average differences in parental wealth explained the greatest share (29.9%) of that gap, followed by individual income (11.1%), individual demographics (8.2%), and individual education (6.2%). Whereas differences

in parental education had virtually no explanatory power of the gap in becoming a homeowner, it was estimated to explain 3.2% of the gap in maintaining home ownership.

## VII. Conclusion

In this paper, we have shown the importance of parental attributes on the ability of the adult children of HRS and PSID respondents to attain and then maintain home ownership. Previous research has primarily used cross-sectional data to explain the large and persistent gap in aggregate home-ownership rates between racial groups, where parental attributes, and especially wealth, are often omitted determinants. A limited number of earlier longitudinal studies have provided evidence of the importance of parental demographics on attaining home ownership, but have either required stronger identification assumptions, or omitted parental wealth. While the PSID has been the predominant data source to look at such questions, we also find that the HRS offers some distinct advantages over the PSID through its larger sample and ability to relax previously imposed assumptions regarding cohabitation of children and parents. It is nonetheless reassuring that many of the key results are consistent between the two data sources.

Using the constructed matched panel, we make three unique contributions to the literature. First, we illustrate the importance of parental attributes, especially their wealth, associated with their adult children becoming homeowners between 2000 and 2012. This finding is robust across a range of specifications, including modeling the joint decision of adult children to live independently from their parents and become a homeowner using a bivariate probit estimator with a plausible exclusion restriction.

Our second contribution was to illustrate that the ability to maintain or stay a homeowner is perhaps more fragile than previously thought, especially among minorities. Between 2000 and

2004, 91% of white and 82% of non-white adult children who were initially homeowners maintained that status. Between 2008 and 2012, the rates decreased to 89% and 76% for white and non-white adult children throughout the sample. Similar to having become a homeowner, we find an important role of parental wealth in the ability of their children to maintain home ownership.

Last, we provide evidence that earlier analyses omitting parental attributes have understated the explainable portion of the white/non-white racial gap in home ownership. We separately decompose factors affecting the racial gap in having become a homeowner and maintaining homeownership in the prior four years. Similar to earlier research, we illustrate significant differences occur across racial groups in wealth, especially non-retirement financial wealth. Using the HRS, these endowed differences in parental wealth explain approximately 24% of the racial gap in becoming a homeowner, and 30% of the gap in maintaining it over the next four years. These differences in endowments represent the greatest explainable share of each gap, and suggest it is important for future researchers to account for such differences.

An important caveat of the research is that despite finding a strong explanatory role of parental attributes in describing the racial gap in home ownership rates, it would be incorrect to conclude that race, or even discrimination, does not matter as much as we originally thought. We have instead identified a pathway of how pervasive differences among racial groups affect the ability of their children to attain and then maintain home ownership. Disparities in how minorities currently are or have been treated in the past could directly result in the observed differences in wealth, and lead to even further divergence in home ownership rates in the future without intervention. How best to reduce these disparities remains an open question for future research.

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TABLE 1. DESCRIPTIVE STATISTICS OF ADULT CHILDREN BETWEEN THE AGES OF 21 AND 49 OF HEALTH AND RETIREMENT STUDY (HRS) AND PANEL STUDY OF INCOME DYNAMICS (PSID) RESPONDENTS

| | Homeownership Status 4 years Prior | | | |
|---|---|---|---|---|
| | No | | Yes | |
| | HRS | PSID | HRS | PSID |
| *Outcome Variable* | | | | |
| Homeowner | 0.314 | 0.265 | 0.894 | 0.867 |
| *Lagged Individual Attributes* | | | | |
| Age | 34.071 | 33.376 | 37.890 | 37.790 |
| Employed Full-Time | 0.711 | 0.812 | 0.808 | 0.935 |
| $10,000 ≤ Income < $35,000 | 0.440 | 0.403 | 0.173 | 0.110 |
| $35,000 ≤ Income < $70,000 | 0.257 | 0.365 | 0.441 | 0.331 |
| Income > $70,000 | 0.082 | 0.128 | 0.369 | 0.545 |
| Married | 0.404 | 0.489 | 0.843 | 0.773 |
| High School Graduate | 0.343 | 0.325 | 0.273 | 0.262 |
| Some College | 0.254 | 0.315 | 0.258 | 0.296 |
| College Graduate | 0.289 | 0.276 | 0.430 | 0.423 |
| Female | 0.479 | 0.483 | 0.517 | 0.524 |
| Any Children | 0.536 | 0.726 | 0.791 | 0.837 |
| Retirement Wealth | . | 1.899 | . | 17.796 |
| Non-Retirement Financial Wealth | . | 15.786 | . | 118.775 |
| At Least 1 Black Parent | 0.244 | 0.347 | 0.079 | 0.135 |
| At Least 1 Hispanic Parent | 0.099 | 0.025 | 0.061 | 0.034 |
| *Lagged Parental Demographics & Wealth* | | | | |
| Married | 0.624 | 0.690 | 0.706 | 0.726 |
| High School Graduate | 0.300 | 0.388 | 0.351 | 0.416 |
| Some College | 0.250 | 0.233 | 0.257 | 0.221 |
| College Graduate | 0.251 | 0.233 | 0.277 | 0.280 |
| Age of Oldest Parent | 62.692 | 54.457 | 65.752 | 59.560 |
| Homeowner | 0.778 | 0.762 | 0.889 | 0.905 |
| Housing Wealth | 133.676 | 99.173 | 184.584 | 152.478 |
| Retirement Financial Wealth | 162.851 | 41.339 | 280.212 | 83.083 |
| Non-Retirement Financial Wealth | 110.462 | 297.888 | 193.025 | 445.848 |
| Observations | 11,031 | 1,297 | 18,527 | 1,387 |
| Unique Children | 8,150 | 942 | 11,731 | 891 |

*Notes*: The sample is restricted to adult children living independently from parents between the ages of 21 and 49 in the 2000, 2004, 2008 and 2012 waves of the Health and Retirement Study (HRS) and the 2001, 2005, 2009, and 2013 waves of the Panel Study of Income Dynamics (PSID). Lagged attributes are from four years prior. Wealth measures are in $1,000s of 2012 dollars adjusted for inflation using the consumer price index of the US Bureau of Labor Statistics.

TABLE 2. MARGINAL EFFECTS OF LAGGED ATTRIBUTES ON BECOMING A HOMEOWNER OVER THE PRIOR FOUR YEARS IF SAMPLE RESTRICTED TO THOSE ALSO LIVING INDEPENDENTLY

| | HRS | PSID w/o Individual Wealth | PSID w/ Individual Wealth |
|---|---|---|---|
| At Least 1 Black Parent | -0.126*** | -0.084*** | -0.082*** |
| At Least 1 Hispanic Parent | -0.008 | -0.138* | -0.138* |
| Employed Full-Time | 0.068*** | 0.003 | -0.007 |
| $10,000 ≤ Income < $35,000 | 0.084*** | 0.058 | 0.058 |
| $35,000 ≤ Income < $70,000 | 0.178*** | 0.105** | 0.093* |
| Income ≥ $70,000 | 0.261*** | 0.118** | 0.103* |
| Married | 0.105*** | 0.180*** | 0.178*** |
| High School Graduate | 0.045*** | 0.093* | 0.095* |
| Some College | 0.107*** | 0.119** | 0.129** |
| College Graduate | 0.170*** | 0.205*** | 0.224*** |
| Female | 0.029*** | -0.018 | -0.014 |
| Any Children | 0.021** | 0.052* | 0.056* |
| $0 < Financial Wealth ≤ $25,000 | | | 0.076*** |
| $25,000 < Financial Wealth ≤ $50,000 | | | 0.126*** |
| $50,000 < Financial Wealth ≤ $75,000 | | | 0.114 |
| Financial Wealth ≥ $75,000 | | | 0.064 |
| $0 < Retirement Wealth ≤ $25,000 | | | -0.004 |
| $25,000 < Retirement Wealth ≤ $50,000 | | | 0.036 |
| $50,000 < Retirement Wealth ≤ $75,000 | | | 0.071 |
| Retirement Wealth ≥ $75,000 | | | -0.148 |
| Parents: Married | 0.018* | 0.003 | 0.001 |
| Parents: High School Graduate | -0.008 | 0.052 | 0.056 |
| Parents: Some College | -0.026* | 0.063 | 0.071 |
| Parents: College Graduate | -0.040** | 0.008 | 0.011 |
| Parents: Age of Oldest Parent | -0.000 | 0.002 | 0.001 |
| Parents: Homeowner | -0.010 | -0.023 | -0.015 |
| Parents: $0 < Financial Wealth ≤ $25,000 | -0.002 | 0.025 | 0.022 |
| Parents: $25,000 < Financial Wealth ≤ $50,000 | 0.030* | -0.025 | -0.026 |
| Parents: $50,000 < Financial Wealth ≤ $75,000 | 0.016 | 0.099** | 0.095* |
| Parents: Financial Wealth ≥ $75,000 | 0.005 | 0.112*** | 0.103*** |
| Parents: $0 < Housing Wealth ≤ $25,000 | 0.030 | 0.034 | 0.031 |
| Parents: $25,000 < Housing Wealth ≤ $50,000 | 0.050* | 0.007 | -0.002 |
| Parents: $50,000 < Housing Wealth ≤ $75,000 | 0.040 | 0.002 | -0.005 |
| Parents: Housing Wealth ≥ $75,000 | 0.050* | -0.006 | -0.017 |
| Parents: $0 < Retirement Wealth ≤ $25,000 | 0.009 | -0.01 | -0.013 |
| Parents: $25,000 < Retirement Wealth ≤ $50,000 | 0.039** | 0.043 | 0.037 |
| Parents: $50,000 < Retirement Wealth ≤ $75,000 | -0.001 | 0.057 | 0.061 |
| Parents: Retirement Wealth > $75,000 | 0.028 | -0.024 | -0.025 |
| Time Period: 2005-2008 | -0.073*** | -0.072** | -0.067** |
| Time Period: 2009-2012 | -0.149*** | -0.140*** | -0.136*** |
| Observations | 11,031 | 1,297 | 1,297 |
| Unique Children | 8,150 | 942 | 942 |
| Significance of Parental Attributes | < 0.001 | 0.141 | 0.222 |

*Notes:* Estimates indicate the marginal effect of selected 4-year lagged attributes of the decision to become a homeowner. The sample is restricted to adult children living independently from their parents between the ages of 21 and 49 who were not homeowners 4-years prior in the Health and Retirement Study (HRS) and Panel Study of Income Dynamics (PSID). Asterisks indicate statistical significance using standard errors clustered at the unique adult child-level are at the following levels: *** p<0.01, ** p<0.05, * p<0.1

TABLE 3. EFFECTS OF LAGGED ATTRIBUTES ON BECOMING A HOMEOWNER OVER THE PRIOR FOUR YEARS IN THE HEALTH AND RETIREMENT STUDY (HRS) INCLUDING THOSE ALSO NOT LIVING INDEPENDENTLY 4 YEAR PRIOR WHERE LAGGED PARENTAL MOBILITY AND HEALTH USED AS INSTRUMENTAL VARIABLES FOR BIVARIATE PROBIT MODEL ESTIMATES

| | Probit | Bivariate Probit |
|---|---|---|
| | p(own = 1) | p(own = 1 \| indep = 1) |
| At Least 1 Black Parent | -0.119*** | -0.130*** |
| At Least 1 Hispanic Parent | -0.022* | -0.011 |
| Employed Full-Time | 0.067*** | 0.069*** |
| $10,000 ≤ Income < $35,000 | 0.082*** | 0.080*** |
| $35,000 ≤ Income < $70,000 | 0.172*** | 0.170*** |
| Income ≥ $70,000 | 0.253*** | 0.254*** |
| Married | 0.093*** | 0.083*** |
| High School Graduate | 0.028** | 0.031** |
| Some College | 0.086*** | 0.096*** |
| College Graduate | 0.147*** | 0.155*** |
| Female | 0.027*** | 0.029*** |
| Any Children | 0.023*** | 0.017* |
| Parents: Married | 0.020*** | 0.008 |
| Parents: High School Graduate | -0.016 | -0.010 |
| Parents: Some College | -0.035*** | -0.034*** |
| Parents: College Graduate | -0.040*** | -0.046*** |
| Parents: Age of Oldest Parent | -0.001 | -0.000 |
| Parents: Homeowner | -0.019 | -0.019 |
| Parents: $0 < Financial Wealth ≤ $25,000 | 0.004 | 0.002 |
| Parents: $25,000 < Financial Wealth ≤ $50,000 | 0.027* | 0.027* |
| Parents: $50,000 < Financial Wealth ≤ $75,000 | 0.029* | 0.032* |
| Parents: Financial Wealth ≥ $75,000 | 0.021* | 0.015 |
| Parents: $0 < Housing Wealth ≤ $25,000 | 0.028 | 0.030 |
| Parents: $25,000 < Housing Wealth ≤ $50,000 | 0.052** | 0.058** |
| Parents: $50,000 < Housing Wealth ≤ $75,000 | 0.045* | 0.051** |
| Parents: Housing Wealth ≥ $75,000 | 0.043* | 0.052** |
| Parents: $0 < Retirement Wealth ≤ $25,000 | 0.009 | 0.007 |
| Parents: $25,000 < Retirement Wealth ≤ $50,000 | 0.031** | 0.033* |
| Parents: $50,000 < Retirement Wealth ≤ $75,000 | 0.013 | 0.011 |
| Parents: Retirement Wealth ≥ $75,000 | 0.035** | 0.030* |
| Time Period: 2005-2008 | -0.057*** | -0.058*** |
| Time Period: 2009-2012 | -0.114*** | -0.112*** |
| | | |
| Observations | 14,999 | 14,999 |
| Unique Adult Children | 10,355 | 10,355 |
| P-Value of X-Test of Independence of Errors | . | < 0.001 |
| P-Value of F-Test of Parental Attributes | < 0.001 | < 0.001 |

*Notes:* The first column of estimates indicate the average marginal effects of a probit model of becoming a homeowner over the prior 4 years in the 2004, 2008, and 2012 Waves of the Health and Retirement Study (HRS) where the sample is not restricted to only those living independently from their parents. The second column indicate the average effect of becoming a homeowner estimated conditional upon also living independently from their parents using a bivariate probit model where lagged parental health and mobility were assumed to affect the decision to cohabitate, but not ownership directly. Asterisks indicate statistical significance based on standard errors clustered at unique adult child level at the following levels: *** p<0.01, ** p<0.05, * p<0.1

TABLE 4. MARGINAL EFFECTS OF LAGGED ATTRIBUTES ON MAINTAINING HOMEOWNERSHIP OVER THE PRIOR FOUR YEARS

| | HRS | PSID w/o Individual Wealth | PSID w/ Individual Wealth |
|---|---|---|---|
| At Least 1 Black Parent | -0.056*** | -0.066*** | -0.066*** |
| At Least 1 Hispanic Parent | -0.019** | 0.013 | 0.017 |
| Employed Full-Time | 0.009 | 0.017 | 0.02 |
| $10,000 ≤ Income < $35,000 | 0.051*** | -0.056 | -0.06 |
| $35,000 ≤ Income < $70,000 | 0.094*** | -0.051 | -0.061 |
| Income ≥ $70,000 | 0.113*** | -0.001 | -0.015 |
| Married | 0.043*** | 0.114*** | 0.113*** |
| High School Graduate | 0.045*** | 0.083 | 0.087 |
| Some College | 0.067*** | 0.113* | 0.118** |
| College Graduate | 0.101*** | 0.1 | 0.104* |
| Female | 0.007 | 0.009 | 0.008 |
| Any Children | 0.001 | 0.009 | 0.009 |
| $0 < Financial Wealth ≤ $25,000 | | | 0.022 |
| $25,000 < Financial Wealth ≤ $50,000 | | | -0.004 |
| $50,000 < Financial Wealth ≤ $75,000 | | | -0.011 |
| Financial Wealth ≥ $75,000 | | | 0.057 |
| $0 < Retirement Wealth ≤ $25,000 | | | 0.023 |
| $25,000 < Retirement Wealth ≤ $50,000 | | | 0.075** |
| $50,000 < Retirement Wealth ≤ $75,000 | | | 0.025 |
| Retirement Wealth ≥ $75,000 | | | 0.021 |
| Parents: Married | 0.000 | -0.033 | -0.034 |
| Parents: High School Graduate | 0.015* | -0.001 | -0.002 |
| Parents: Some College | 0.004 | 0.025 | 0.025 |
| Parents: College Graduate | 0.000 | 0.01 | 0.01 |
| Parents: Age of Oldest Parent | 0.000 | 0.001 | 0.001 |
| Parents: Homeowner | -0.001 | 0.01 | 0.012 |
| Parents: $0 < Financial Wealth ≤ $25,000 | 0.011* | 0.054* | 0.05 |
| Parents: $25,000 < Financial Wealth ≤ $50,000 | 0.016 | 0.046 | 0.039 |
| Parents: $50,000 < Financial Wealth ≤ $75,000 | 0.015 | 0.039 | 0.029 |
| Parents: Financial Wealth ≥ $75,000 | 0.031*** | 0.033 | 0.027 |
| Parents: $0 < Housing Wealth ≤ $25,000 | 0.017 | 0.031 | 0.032 |
| Parents: $25,000 < Housing Wealth ≤ $50,000 | 0.018 | 0.036 | 0.037 |
| Parents: $50,000 < Housing Wealth ≤ $75,000 | 0.033** | 0.043 | 0.045 |
| Parents: Housing Wealth ≥ $75,000 | 0.040*** | 0.069 | 0.068 |
| Parents: $0 < Retirement Wealth ≤ $25,000 | 0.002 | -0.024 | -0.028 |
| Parents: $25,000 < Retirement Wealth ≤ $50,000 | 0.011 | 0.033 | 0.033 |
| Parents: $50,000 < Retirement Wealth ≤ $75,000 | 0.016 | 0.007 | 0.003 |
| Parents: Retirement Wealth ≥ $75,000 | 0.017 | -0.033 | -0.04 |
| Time Period: 2005-2008* | -0.035*** | -0.048* | -0.049* |
| Time Period: 2009-2012* | -0.055*** | -0.059** | -0.057** |
| Observations | 18,527 | 1,387 | 1,387 |
| Unique Adult Children | 11,731 | 891 | 891 |
| P-Value of F-Test of Parental Attributes | < 0.001 | 0.519 | 0.472 |

*Notes:* Estimates indicate the marginal effect of 4-year lagged attributes of maintaining homeownership over the prior 4 years. The sample is restricted to adult children between the ages of 21 and 49 who were homeowners 4-years prior in the Health and Retirement Study (HRS) and Panel Study of Income Dynamics (PSID). Estimates obtained using a probit estimator. Asterisks indicate statistical significance using standard errors clustered at the unique adult child-level are at the following levels: *** p<0.01, ** p<0.05, * p<0.1

TABLE 5. AVERAGE DIFFERENCES IN INDIVIDUAL AND PARENTAL ATTRIBUTES OF ADULT CHILDREN BY PREVIOUS HOME OWNERSHIP STATUS IN HRS

| | Was Not a Homeowner 4 years Prior | | | Was a Homeowner 4 years Prior | | |
|---|---|---|---|---|---|---|
| | Only White Parents | At Least 1 Black or Hispanic Parent | Difference | Only White Parents | At Least 1 Black or Hispanic Parent | Difference |
| Age | 33.646 | 34.573 | -0.927*** | 37.929 | 37.633 | 0.296** |
| Employed Full-Time | 0.711 | 0.643 | 0.069*** | 0.800 | 0.853 | -0.054*** |
| $10,000 ≤ Income < $35,000 | 0.442 | 0.427 | 0.014 | 0.158 | 0.281 | -0.123*** |
| $35,000 ≤ Income < $70,000 | 0.262 | 0.191 | 0.071*** | 0.445 | 0.416 | 0.028** |
| Income ≥ $70,000 | 0.084 | 0.052 | 0.032*** | 0.382 | 0.267 | 0.116*** |
| Married | 0.380 | 0.347 | 0.034*** | 0.851 | 0.772 | 0.079*** |
| High School Graduate | 0.333 | 0.378 | -0.046*** | 0.272 | 0.284 | -0.011 |
| Some College | 0.263 | 0.253 | 0.011 | 0.255 | 0.284 | -0.030** |
| College Graduate | 0.315 | 0.198 | 0.118*** | 0.439 | 0.358 | 0.081*** |
| Female | 0.458 | 0.508 | -0.050*** | 0.511 | 0.556 | -0.044*** |
| Presence of Children | 0.450 | 0.634 | -0.184*** | 0.782 | 0.834 | -0.052*** |
| Parents: Married | 0.669 | 0.491 | 0.178*** | 0.724 | 0.573 | 0.150*** |
| Parents: High School Graduate | 0.319 | 0.284 | 0.035*** | 0.362 | 0.286 | 0.076*** |
| Parents: Some College | 0.264 | 0.220 | 0.044*** | 0.263 | 0.222 | 0.041*** |
| Parents: College Graduate | 0.303 | 0.117 | 0.187*** | 0.295 | 0.158 | 0.137*** |
| Parents: Age of Oldest Parent | 62.609 | 63.291 | -0.682*** | 65.851 | 65.318 | 0.533*** |
| Parents: Homeownership Status | 0.851 | 0.647 | 0.205*** | 0.899 | 0.817 | 0.082*** |
| Parents: Housing Wealth | 164.084 | 74.062 | 90.022*** | 197.313 | 100.418 | 96.896*** |
| Parents: Retirement Financial Wealth | 147.231 | 12.116 | 135.116*** | 219.744 | 26.126 | 193.618*** |
| Parents: Non-Retirement Financial Wealth | 211.167 | 49.997 | 161.171*** | 305.227 | 119.449 | 185.778*** |
| Observations | 9,692 | 5,307 | 14,999 | 15,897 | 2,630 | 18,527 |
| Unique Adult Children | 6,726 | 3,648 | 10,374 | 9,909 | 1,843 | 11,752 |

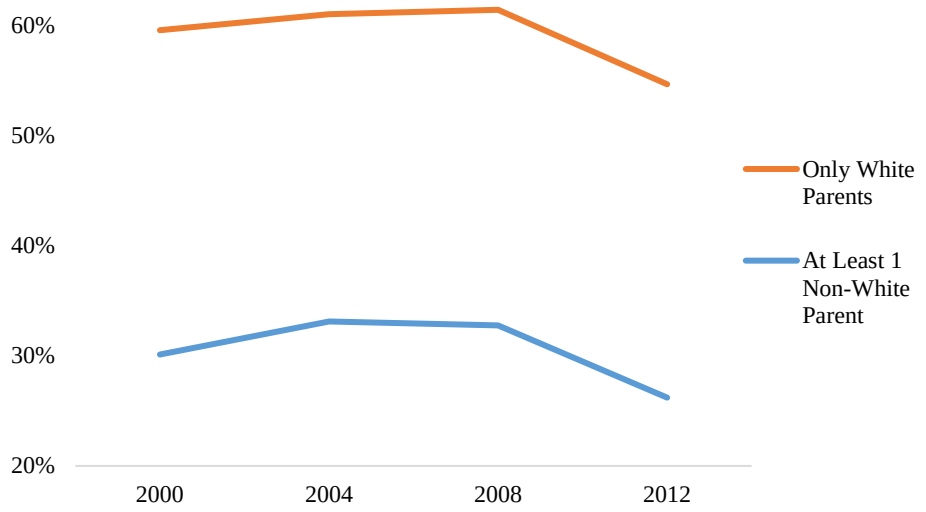
*Notes*: This table compares the un-weighted lagged determinants of home ownership based on having at least one non-white, non-Hispanic parent. The first three columns are based on those adult children not previously a homeowner four years prior, and the last three columns are for those previously a homeowner. The third and sixth column show the average difference for each attribute of adult children with only white compared to those with at least 1 non-white parent. The asterisks represent statistical significance of a *t*-test of the difference with standard errors clustered at the unique adult child level at the following significance level: *** p<0.01, ** p<0.05, * p<0.1.

TABLE 5. DECOMPOSITION OF LAGGED DETERMINANTS OF BECOMING A HOMEOWNER AND MAINTAINING HOMEOWNER SHIP OVER THE PRIOR FOUR YEARS

| | Become a Homeowner | | Maintain Homewownership |
|---|---|---|---|
| | Probit | Bivariate Probit | Probit |
| Difference | -0.154 | -0.159 | -0.102 |
| | (0.009) | (0.017) | (0.009) |
| Endowment | -0.088 | -0.088 | -0.0597 |
| % Explained | 57.14% | 55.35% | 58.53% |
| Observations | 12,562 | 12,562 | 18,527 |

*Notes:* Estimates obtained from a Blinder-Oaxaca decomposition of lagged attributes on adult children between ages of 21 and 49 becoming a homeowner over the prior four years in the Panel Study of Income Dynamics (PSID) and Health and Retirement Study Standard errors clustered at the unique adult child level are reported in parentheses below estimates. The "Endowment Effect" represents the portion of each gap explainable by average differences in listed attributes. Figure 6 illustrates the percentage of the ownership gap explained by average differences by each type of endowment.

FIGURE 1. HOME OWNERSHIP RATES OF ADULT CHILDREN BETWEEN AGES OF 21 AND 49 OF HEALTH AND RETIREMENT STUDY (HRS) RESPONDENTS

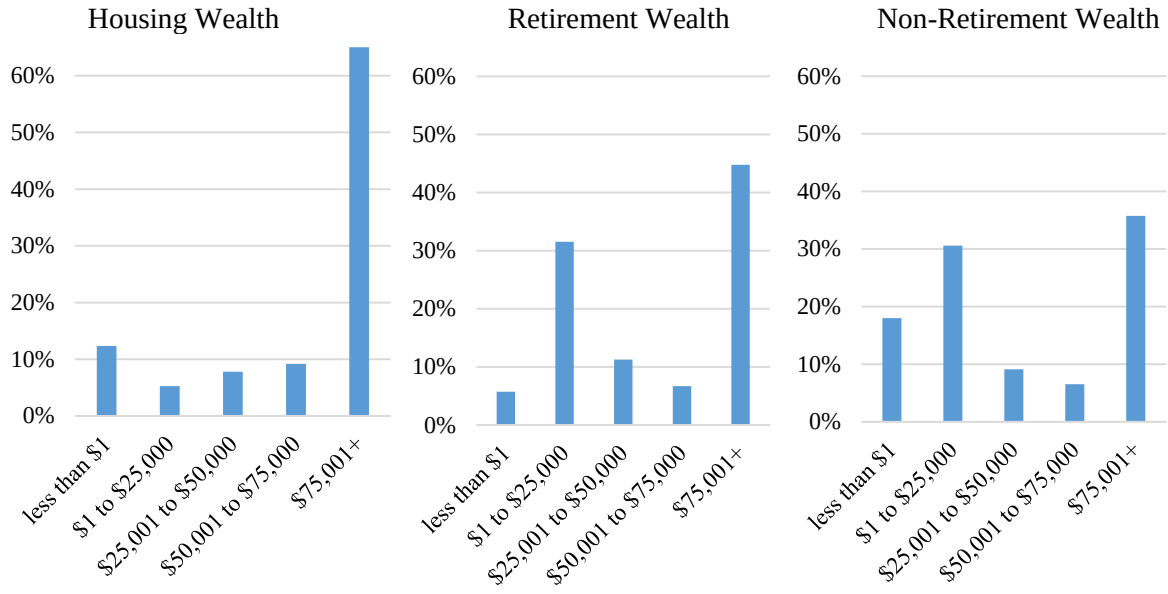



*Notes:* The figure indicates the percent of adult children (between the ages of 21 and 49) to respondents in the 2000, 2004, 2008 and 2012 waves of the Health and Retirement Study (HRS). White is defined as having a non-Hispanic ethnicity.

FIGURE 2. DISTRIBUTION OF LAGGED PARENT WEALTH BY PRIOR HOME OWNERSHIP STATUS

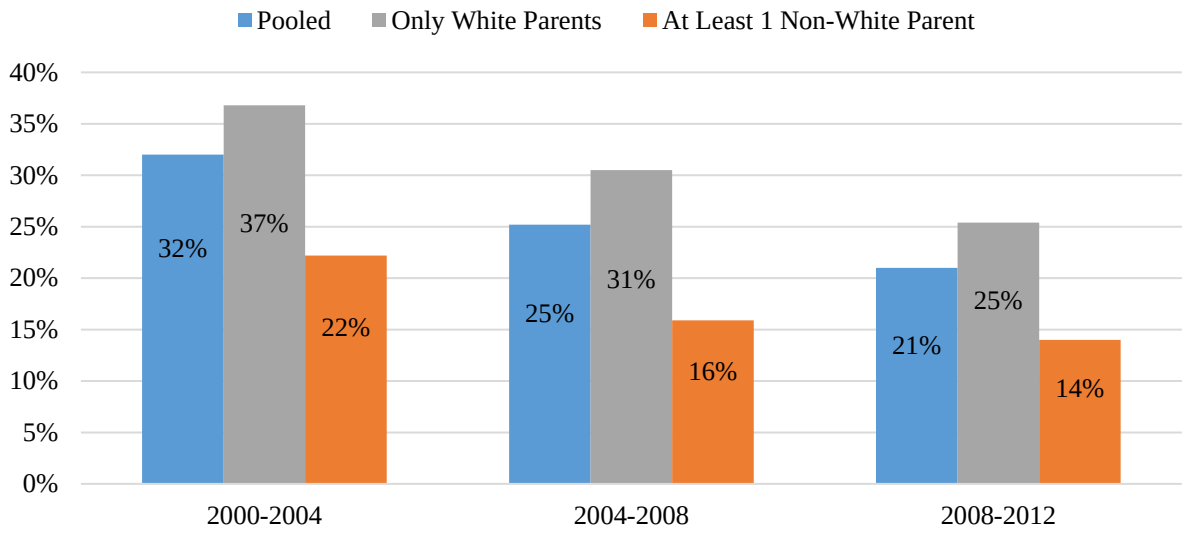
Panel A. Adult Child Was Not a Homeowner Four Years Prior


Panel B. Adult Child Was a Homeowner Four Years Prior



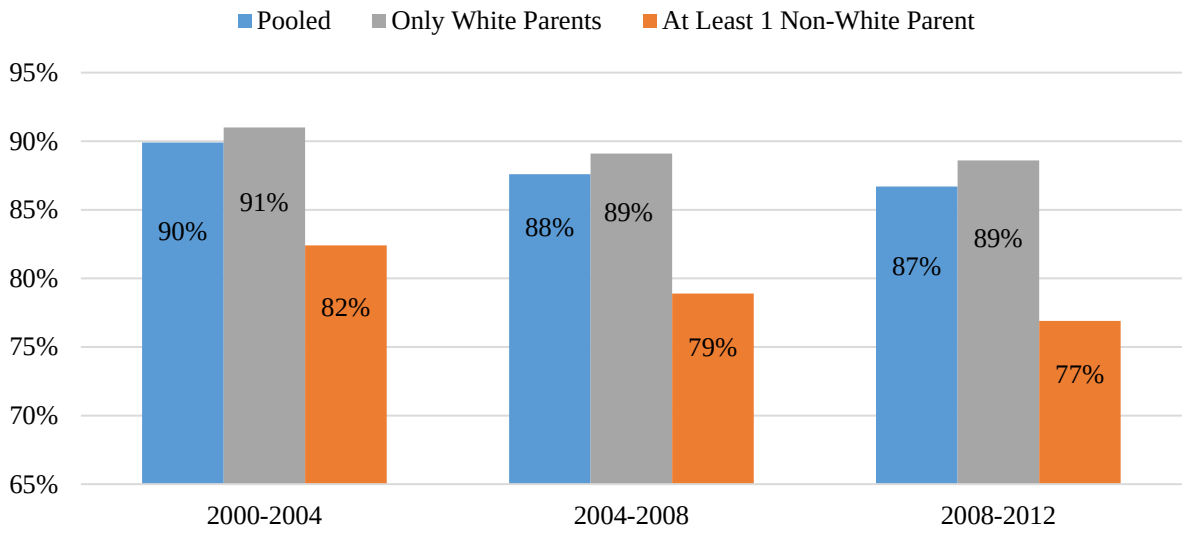

*Notes*: Each column indicates the percent of adult children (aged 21-49) of respondents to the 2004, 2008 and 2012 waves of the HRS with parental wealth corresponding to each category four years prior.

FIGURE 3. DISTRIBUTION OF ADULT CHILDREN WHO BECAME A HOMEOWNER DURING THE LAST FOUR YEARS, BY RACE OF PARENTS




*Notes*: Each column indicates the percent of adult children (aged 21–49) of respondents to the 2004, 2008 and 2012 waves of the HRS that became homeowners during the previous four years. The first column indicates the unweighted average, while the second and third columns stratify the sample on the basis of having at least one Black or Hispanic parent.

FIGURE 4. MAINTAINED HOME OWNERSHIP OVER THE LAST FOUR YEARS

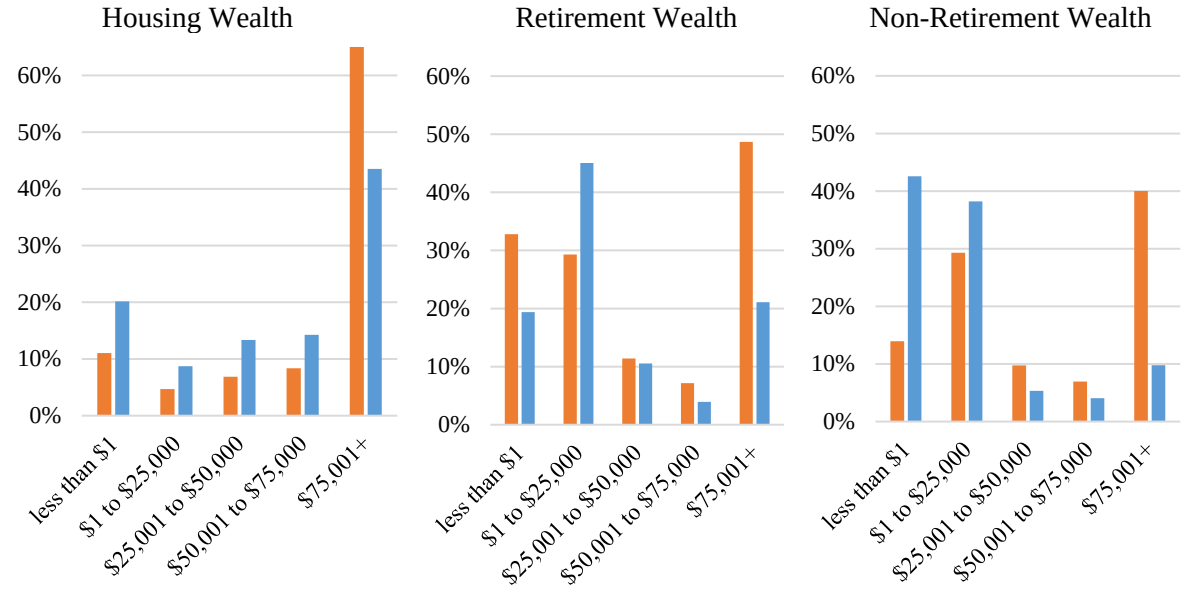



*Notes*. Each column indicates the percent of adult children (aged 21–49) of respondents to the 2004, 2008 and 2012 waves of the HRS, who maintained home ownership during the previous four years. The first column indicates the unweighted average, while the second and third columns stratify the sample on the basis of having at least one Black or Hispanic parent.

FIGURE 5. DISTRIBUTION OF LAGGED PARENTAL WEALTH BY PRIOR HOME OWNERSHIP STATUS AND HAVING AT LEAST ONE NON-WHITE PARENT

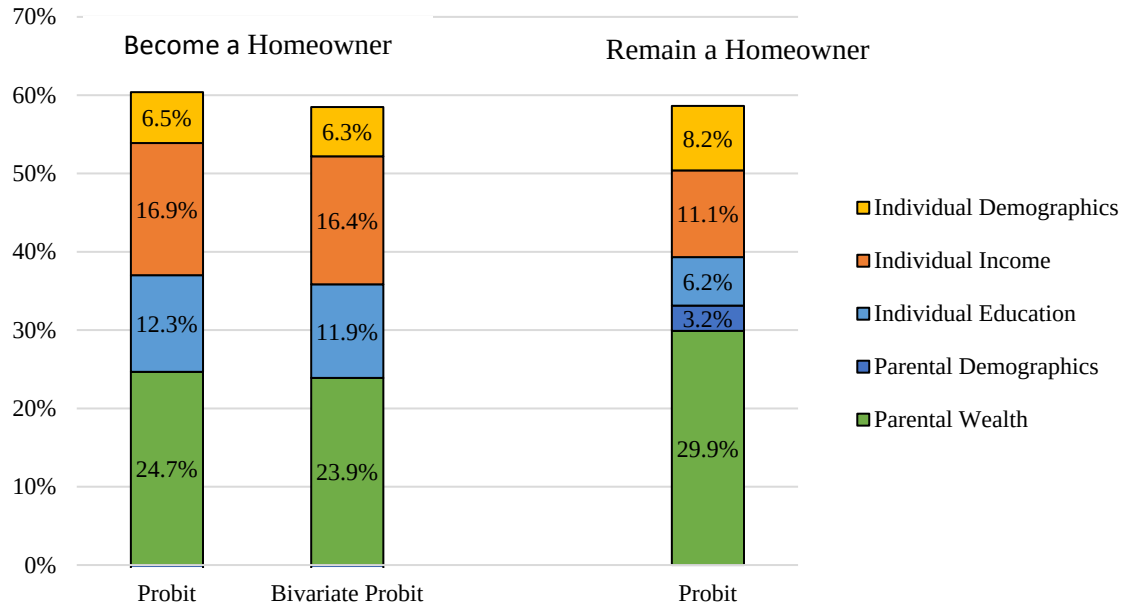
Panel A. Adult Child Was Not a Homeowner Four Year Prior


Panel B. Adult Child Was a Homeowner Four Years Prior




*Notes*: The first column each in category indicates the percent of adult children (age 21–49) of respondents to the 2004, 2008 and 2012 waves of the HRS, with only white, non-Hispanic parent and parental wealth corresponding to each category four years prior. The second column indicates the same for adult children with at least one Black or Hispanic parent.

FIGURE 6. PERCENTAGE SHARE OF THE WHITE/NON-WHITE GAP IN BECOMING A HOMEOWNER AND MAINTAINING HOME OWNERSHIP OVER THE PRIOR FOUR YEARS EXPLAINED BY DIFFERENCES IN ENDOWMENTS




*Notes:* Each column in the figure illustrate the percent of the gap in either becoming a homeowner or maintaining home ownership based on having at least one black or Hispanic (i.e., non-white) parent explained by observable average group differences according to a Blinder-Oaxaca decomposition in the HRS. Each segment represents the explainable share by type of endowment. Individual demographics include marital and employment status, gender, presence of children in the households, and time fixed effects. Individual income represents whether employed fulltime and 3 categories of family income. Individual education represents if highest educational attainment was high school or equivalent, some college, or college graduate and above. Parental demographics include whether a parent is married, highest educational attainment, age of oldest parent, and whether they are a homeowner. Parental wealth include housing, retirement, and non-retirement financial wealth in $25,000 categories up until $100,000. The racial gap in becoming a homeowner was 15.4pp and 15.9pp, respecitively. The racial gap in maintaining home ownership over the last four years for 10.2pp.

APPENDIX TABLE 1. EFFECTS OF LAGGED ATTRIBUTES ON LIVING INDENDENTLY FROM PARENTS OVER THE PRIOR FOUR YEARS IN HRS WHERE LAGGED PARENTAL MOBILITY AND HEALTH USED AS INSTRUMENTAL VARIABLES FOR BIVARIATE PROBIT MODEL ESTIMATES

| | without Instrumental Variables | with Instrumental Variables |
|---|---|---|
| At Least 1 Black Parent | 0.004 | 0.003 |
| At Least 1 Hispanic Parent | -0.063*** | -0.062*** |
| Employed Full-Time | 0.030*** | 0.030*** |
| $10,000 ≤ Income < $35,000 | 0.047*** | 0.045*** |
| $35,000 ≤ Income < $70,000 | 0.093*** | 0.091*** |
| Income ≥ $70,000 | 0.115*** | 0.113*** |
| Married | 0.093*** | 0.093*** |
| High School Graduate | -0.009 | -0.011 |
| Some College | -0.021 | -0.023* |
| College Graduate | 0.028* | 0.024* |
| Female | 0.001 | 0.002 |
| Any Children | 0.055*** | 0.056*** |
| Parents: Married | 0.056*** | 0.063*** |
| Parents: High School Graduate | -0.025** | -0.029*** |
| Parents: Some College | -0.011 | -0.015 |
| Parents: College Graduate | 0.024* | 0.017 |
| Parents: Age of Oldest Parent | -0.005*** | -0.004*** |
| Parents: Homeowner | -0.041** | -0.041** |
| Parents: $0 < Financial Wealth ≤ $25,000 | 0.021*** | 0.018** |
| Parents: $25,000 < Financial Wealth ≤ $50,000 | 0.026** | 0.023* |
| Parents: $50,000 < Financial Wealth ≤ $75,000 | 0.015 | 0.009 |
| Parents: Financial Wealth ≥ $75,000 | 0.057*** | 0.051*** |
| Parents: $0 < Housing Wealth ≤ $25,000 | 0.009 | 0.009 |
| Parents: $25,000 < Housing Wealth ≤ $50,000 | 0.005 | 0.003 |
| Parents: $50,000 < Housing Wealth ≤ $75,000 | -0.009 | -0.012 |
| Parents: Housing Wealth ≥ $75,000 | -0.019 | -0.024 |
| Parents: $0 < Retirement Wealth ≤ $25,000 | 0.013 | 0.009 |
| Parents: $25,000 < Retirement Wealth ≤ $50,000 | 0.011 | 0.005 |
| Parents: $50,000 < Retirement Wealth ≤ $75,000 | 0.019 | 0.011 |
| Parents: Retirement Wealth ≥ $75,000 | 0.048*** | 0.040*** |
| Parents: Self-Reported Health of Parents | | -0.010*** |
| Parents: Up to 5 Limitations to Mobility | | -0.006** |
| Time Period: 2005-2008 | -0.025*** | -0.024*** |
| Time Period: 2009-2012 | -0.048*** | -0.046*** |
| | | |
| Observations | 14,999 | 14,999 |
| Unique Adult Children | 10,355 | 10,355 |
| Test Statistic of Excluded Instruments ($\chi^2$~2) | . | 24.13 |
| P-Value of F-Test of Parental Attributes | < 0.001 | < 0.001 |

*Notes:* The estimates indicate the average marginal effects of a probit model of living independentlyfrom parents in the 2004, 2008, and 2012 Waves of the Health and Retirement Study (HRS) Asterisks indicate statistical significance based on standard errors clustered at unique adult child level at the following levels: *** p<0.01, ** p<0.05, * p<0.1