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Abstract

This report completes a project to estimate multiple factors that influence homeownership attainment by young adults, with a particular emphasis on their education and their parents' resources. The report begins by summarizing previous project findings on parental assistance and family wealth effects, education of young adults, and changes in the correlates of young-adult homeownership before and after the financial crisis. As a final stage of analysis, the report pulls together the findings by simulating future homeownership rate change in light of prospective changes in young-adult race/ethnicity, education, income, and wealth.

The analysis estimates prospective changes between 2015 and 2035 in the prevalence of homeownership among young adults aged 25 to 44, prime ages for first-time home-buying. Possible future homeownership changes are evaluated in light of projections of growing racial and ethnic diversity among householders and a shifting age structure. Furthermore, we present simulations that estimate changes in homeownership associated with changes in educational attainment within race/ethnic groups. Extreme volatility in home-buying behavior in the housing bubble, bust, and recovery periods creates added uncertainty regarding how future shifts in demographics and educational attainment might affect changes in young-adult homeownership.

Therefore, different simulation scenarios are created to estimate future homeownership rate changes under two alternative sets of market conditions: a “normal” period observed in 1999 to 2001, prior to the housing bubble, and a “post-crisis” period observed between 2009 and 2013, after the financial crisis and during the slow recovery following the Great Recession. We find that rising education levels—even if minority-white college education gaps were eliminated completely—would only partially reverse the steep declines in young-adult homeownership attainment witnessed since the onset of the housing bust. However, our findings also suggest that the common narrative, which holds that young-adult homeownership rates will inevitably decline due to increasing racial/ethnic diversity, does not take into account the positive effect on homeownership rates of the rising educational attainment of minorities.

INTRODUCTION

Faltering homeownership rates following the housing bust and financial crisis have become a widespread source of concern. Young adults have experienced particularly large declines, with the homeownership rate of 25- to 44-year-olds plummeting by 10 percentage points between 2006 and 2015. Possible explanations for the young-adult homeownership decline are numerous but include depressed employment and income prospects, accompanied by the continued high price of homes for sale. In fact, 50 percent of younger renters identified down payments and closing costs as their greatest obstacle to obtaining a mortgage for the purpose of purchasing a home (Fannie Mae 2014). Perhaps for this reason, anecdotal observation has it that only children with wealthy parents can afford to buy homes, with that wealth used both to support attainment of a college education and then to help cover the purchase price of a home. This wealth effect also reinforces racial inequalities in homebuying, because non-Hispanic white parents on average have much greater wealth than parents of color.

This study is the fourth in a series of reports on the multiple factors affecting homeownership of young adults. Using data on both parents and children from representative national surveys, we have sought hard evidence on factors shaping access to homeownership.

Our first study (Myers, Painter, and Zissimopoulos 2016a) addressed the influence of parental resources on adult children's transition from renting to owning (i.e., homebuying). We found that adult children who received a parental transfer of at least \$5,000 for any purpose within a two-year period were 23.0 percent more likely to transition into homeownership during that period. Even after controlling for parental wealth and other parent and child characteristics, the probability of transitioning to homeownership still increases by 13.1 percent with receipt of a transfer. We also found that children of homeowners are 6.6 percent more likely to be homebuyers themselves, all other factors equal. And children whose parents are in the highest quartile of the wealth distribution are 24.6 percent more likely to switch to homeownership than are children of parents in the lowest quartile. However, parental income has no influence, suggesting that parents are using their savings, not their checking account, to help their children buy homes.

In a second study (Myers, Painter, and Zissimopoulos 2016b), we adopted a longer-term perspective on the accumulation of homeownership, rather than short-term buying behavior, and we examined more closely the role of children's education and how parental wealth supports their children's education as a pathway to increased homeownership. The key findings are that parental income, wealth, and education are strongly supportive of higher education for their children. And, separately, higher education of children is strongly supportive of homeownership attainment. But the question remained: Would children's education still be a strong determinant of homeownership after we took account of the role of parental resources? In fact, after parental factors are added, education effects on homeownership attainment are little changed, indicating

a non-spurious effect and suggesting that education's benefits for homeownership are independent of how a person achieved higher education. Indeed, the findings suggest that parental background has a strong effect on children's chances for both higher education and homeownership; however, education maintains an independent effect on homeownership attainment that could help reduce disparities in access, a theme picked up in the current study.

The third study (Myers, Painter, Zissimopoulos, Lee, and Thunell 2017) examined changes over time in the determinants of homeownership, focusing in particular on a comparison of behavior before and after the financial crisis. Being married and having children were consistently strong determinants of homeownership in both periods, all other things equal. Compared with being non-Hispanic white, being an African-American was negatively associated with homeownership attainment in both periods. The effects of parental resources were similar before and after the crisis, except for homeownership of the parents, which was positively associated with a child's homeownership attainment before the crisis but was insignificant after the crisis. The effect of children's resources remained very similar before and after the crisis, with the exception of education, which was not associated with homeownership before the crisis (after controlling for all other factors, including child income and wealth, which themselves are affected by educational attainment), but was positively associated with homeownership after the crisis. Nonetheless, the homeownership rate of young adults fell precipitously, despite a continued strong preference for homeownership (Drew and Herbert 2013), strongly suggesting that it is the difference in market conditions after the crisis that is driving down homeownership rates. However, indicators of local housing markets used in our models show identical associations with homeownership before and after the crisis. The strong suspicion is that it is the difference in credit access between the two periods that is at the root of falling homeownership (Acolin, Goodman, and Wachter 2016).

The present study builds on the preceding findings and simulates possible changes in the homeownership rate of adults ages 25 to 44 over the next 20 years. First, we review the demographic changes underway and projected over the next 20 years by the Census Bureau and the Harvard Joint Center for Housing Studies. These trends include growing diversity among young adults and increasing numbers of older homeowners, due to the aging of the Baby Boomers.

We also examine trends in educational attainment, which has been steadily rising since 1995. We extrapolate that trend to 2035 as a baseline condition for our homeownership rate change simulations but also present a policy scenario under which racial disparities in education are eliminated and another in which income and wealth gaps are also closed. Future homeownership rate changes under these different demographic scenarios are modeled using two different housing market contexts: one corresponding to the more "normal" conditions of housing supply and credit access that existed between 1999 and 2001, and one representing the more homeownership-constrained "post-crisis" conditions of 2009 to 2013. Discussion of the differences between the scenarios yields insights into the role that rising educational

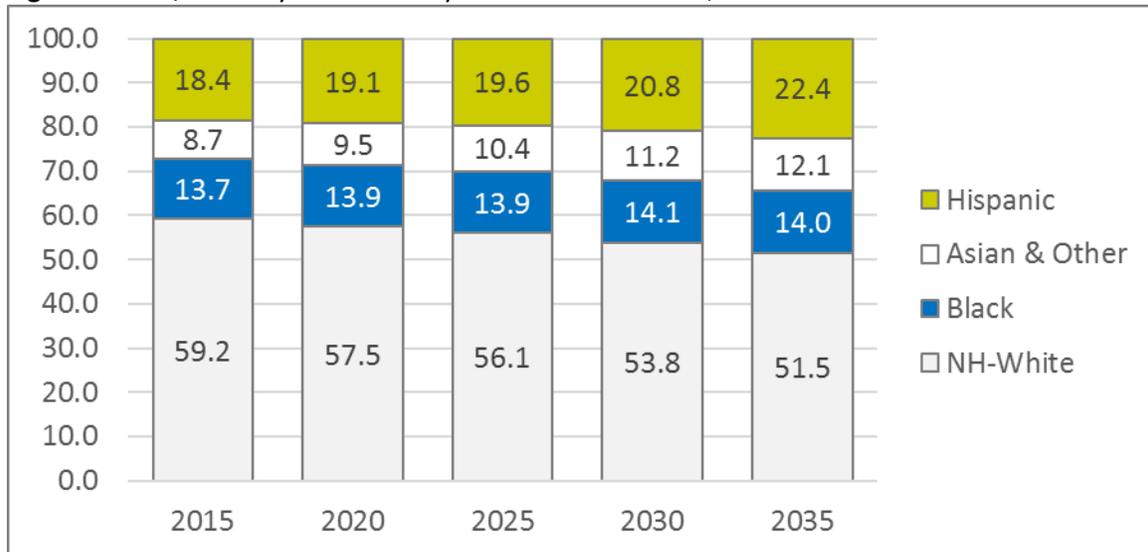
attainment—and potentially attendant gains in income and wealth—might have on young-adult homeownership rate change in the future.

BACKGROUND

The Demographic Context

Demographic changes have been substantial and are expected to continue from 2015 to 2035. Households are becoming ever more diverse, particularly among the young adults who are the subject of this study.¹ The proportion of the population aged 25 to 44 that is non-Hispanic white is expected to decline from 57.2 percent in 2015 to 48.4 percent in 2035, and the non-Hispanic white share of all householders in this age group is expected to decline similarly, from 59.2 percent to 51.5 percent (Figure 1).

Figure 1. Race/ethnicity of 25- to 44-year-old householders, 2015-2035



Source: McCue and Herbert (2016).

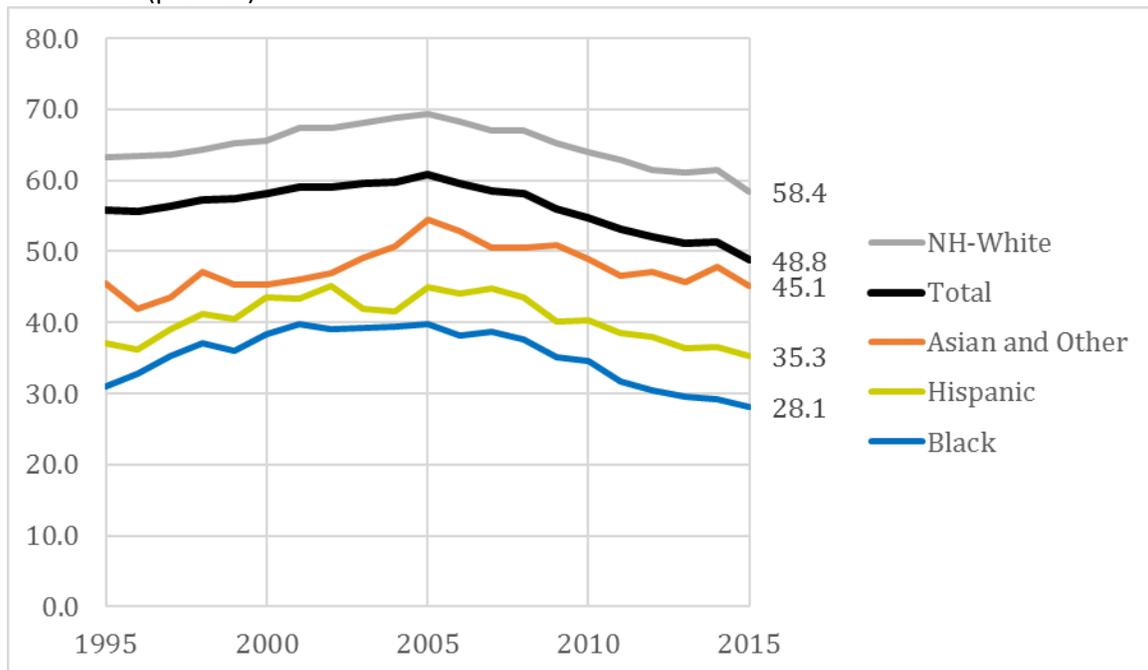
A consequence of growing household diversity is that homeownership may be reduced, because homeownership rates of racial and ethnic minorities have historically lagged those of

¹ Growing diversity is a function of racial/ethnic diversity projected in the population and the projected level of household formation by each race/ethnic and age group. Analysis is based on four large subgroups, with small numbers of multiracial and Native American residents that are non-Hispanic consolidated with Asians and Pacific Islanders, a group labeled “Asian and other.” For this analysis we adopt the household projections created by the Harvard Joint Center for Housing Studies (McCue and Herbert, 2016), which draw upon population projections prepared by the U.S. Census Bureau.

non-Hispanic whites. As shown in Figure 2, disparities have persisted throughout the economic boom of the 1990s, the housing bubble of the early 2000s, the Great Recession at the end of last decade, and into the recovery period of this decade.

Consider the following differences in homeownership rates among households aged 25 to 44 in 2015. Whereas 58.4 percent of non-Hispanic white households are homeowners, only 35.3 percent of Hispanics and 28.1 percent of African-Americans own their homes. Even among Asian and others, the homeownership rate is 45.1 percent, substantially lower than that of non-Hispanic Whites. Given that the total homeownership rate of the 25 to 44 age group is the weighted average of all the racial subgroups, the overall rate can be expected to fall as the non-Hispanic white share of young households declines. Assuming the homeownership rate for each racial subgroup remains constant at the 2015 level, the falling non-Hispanic white share of young households and corresponding increases in minority shares would produce a homeownership rate of 48.2 percent for 25- to 44-year-olds in 2025, compared to its current level of 48.8 percent. This would amount to a decline of 0.6 percentage points, all other factors held constant, unless homeownership rates rise among rapidly growing minority groups that currently have relatively low homeownership attainment.

Figure 2. Homeownership rates among 25- to 44-year-olds by race/ethnicity, 1995–2015 (percent)



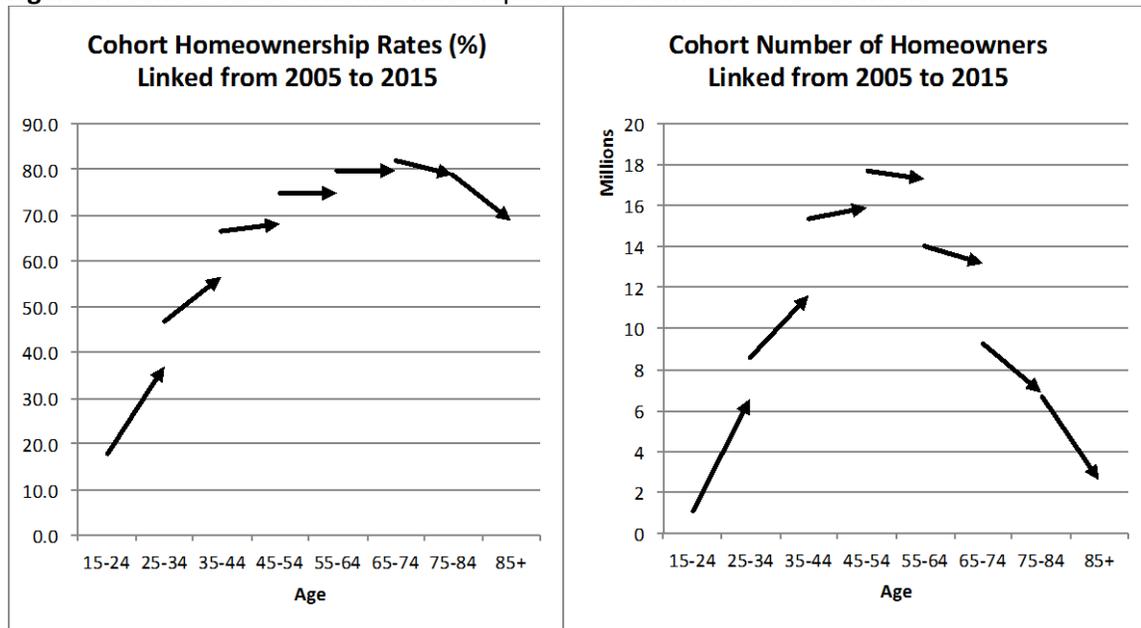
Source: Authors calculation based on the 1995–2015 Current Population Survey, Annual Social and Economic Supplement (CPS-ASEC).

Young adults have special importance in the housing market, for reasons to be discussed. However, the longstanding pattern is that older households have much higher homeownership rates than the younger generation. In 2015, 79.6 percent of households were homeowners at age

65 to 74 compared to 56.4 percent at age 35 to 44 and 36.8 percent at age 25 to 34 (Figure 3, left panel). Similar age gaps occur within all the racial subgroups because of a shared underlying process by which older people have had more time to accrue homeownership over their housing careers.

Recently, however, these generational differences appear to be widening. Young adults in 2015 are tracking well below the homeownership attainment by the same age group in 2005 (see Figure 3). The gaps between successive cohorts in the same young-adult age ranges in different decades are very substantial, fully 10 percentage points. (At age 35 to 44, the homeownership rate was 56.4 percent in 2015 compared to 66.4 percent in 2005, while at age 25 to 34, the rate fell from 46.6 percent to 36.8 percent.) The rates in 2005 were elevated during the housing bubble when credit access was extremely easy and housing supply was ample, and those in 2015 were depressed by sharp restrictions in mortgage credit and housing supply and by the slow economic recovery from the financial crisis. In the coming decade, some degree of “catch up” may be possible when cohorts advancing into middle age make up for foregone homebuying of the previous decade. Nonetheless, cohort momentum is likely to carry a substantial portion of these homeownership deficits into older ages in future decades (Myers and Lee 2016).

Figure 3. Cohort trends in homeownership rates and number of homeowners



Source: American Community Survey, 2005 and 2015

The different sizes of generations also has notable consequence. The young-adult age groups are now occupied by the large Millennial generation (here defined as those aged 15 to 34 in 2015), which is substantially larger per single year of age than Generation X (those aged 35 to 49 in 2015) or the Baby Boom generation (those aged 50 to 69 in 2015).² These size differences

² The Millennials have 4.39 million members per single year of age, compared to 4.11 million for Gen Xers and 3.96 million for Baby Boomers. Generation X has been augmented much more by foreign-born

interact with differences in homeownership rates to generate very large differences in the number of homeowners for different generations at the same age, as illustrated in the right panel of Figure 3. The three largest cohorts of homeowners, which are largely composed of Baby Boomers, are in late middle age and early elderly years in 2015. These cohorts have both very high homeownership rates and larger numbers of people. In contrast, the Gen X and Millennial cohorts are tracking through the housing market with much lower numbers of homeowners, due primarily to their lower homeownership rates.

The demographic challenge is that the success of the Millennials in attaining homeownership has growing importance because the Baby Boom and older generations have either reached or are nearing the life stage at which they will become net home sellers instead of net buyers. The numbers of potential sellers is very large: Homeowners older than 50 in 2015, which is the youngest age of the Boomers, accounted for 65 percent of all the homeowners in the United States, living in 49 million owner-occupied homes. As the Baby Boomer and older cohorts advance in age in coming decades, they will begin to vacate this huge stock of owner-occupied units. Assuming the Boomers follow the same rate of homeownership attrition as older generations did in past decades, the larger size of the Baby Boomer cohorts implies substantially larger numbers of homes being released on the market over the next two decades by older adults than was witnessed in the previous two decades.

The practical question of importance to future home sellers and their heirs, as well as to institutions that seek to safeguard the housing market, is whether there will be a commensurately large increase in the number of younger homebuyers who can absorb the large coming sell-off of homes by Baby Boomers and older generations. In particular, we need to learn the conditions under which the large Millennial generation can overcome current limitations on members' transition to homeownership so that they can begin to generate a volume of homebuying consistent with members' stated preferences for homeownership and their large numbers.

Education Levels Rise, but Disparities Persist

Previous investigations for this project (Myers, Painter, and Zissimopoulos 2016b) have found that educational attainment has a large positive association with homeownership, even after controlling for parental wealth effects. Higher education was found to increase homeownership attainment of African-Americans even more strongly than it does non-Hispanic whites. Findings for Hispanics and Asians/others, however, were uncertain due to sample limitations in the source data for the analysis.

persons (1.71 million foreign-born persons per single year of age) than the Millennials (581 thousand foreign-born per single year of age). The unusually small Gen X cohorts created a shortage of new workers in the 1990s and early 2000s and would have led to shortfalls in new household formation had immigrants not filled the breach (Myers and Pitkin 2013). The ranks of the Boomers are already being depleted by mortality.

Obtaining a bachelor’s degree increases the likelihood of children’s homeownership through two channels. First, a college education is associated with more financial resources (earnings, savings, and wealth), which in turn make young adults more financially capable of home purchase. Second, a residual effect of education net of all other factors might reflect greater financial acumen or knowledge of home-buying procedures, or perhaps it reflects a stronger “taste” for homeownership. The overall effect of higher education is found to have been substantially more important for homeownership in the years since the Great Recession than it was in the pre-recession period (Myers, Painter, Zissimopoulos, Lee, and Thunell 2017). In a favorable sign for homeownership, attainment of a bachelor’s degree has been rising steadily since the mid-1990s, as examined below.

At the same time, disparities in educational attainment have been substantial and persistent between non-Hispanic whites and most other racial and ethnic groups (Table 1). A substantially greater share of Hispanic young adults have less than a high school education and a substantially smaller share have attained a bachelor’s degree (17.7 percent). The “Asian and other” group has the highest share with a bachelor’s degree (57.8 percent), followed by non-Hispanic whites (44.4 percent) and blacks (25.9 percent). Given that non-Hispanic whites are declining as a share of the population, while Hispanics are growing in prominence, such large disparities in educational attainment have the potential to reduce homeownership overall.

Table 1. Educational attainment of the population aged 25 to 44, by race/ethnicity, 2015 (percent)

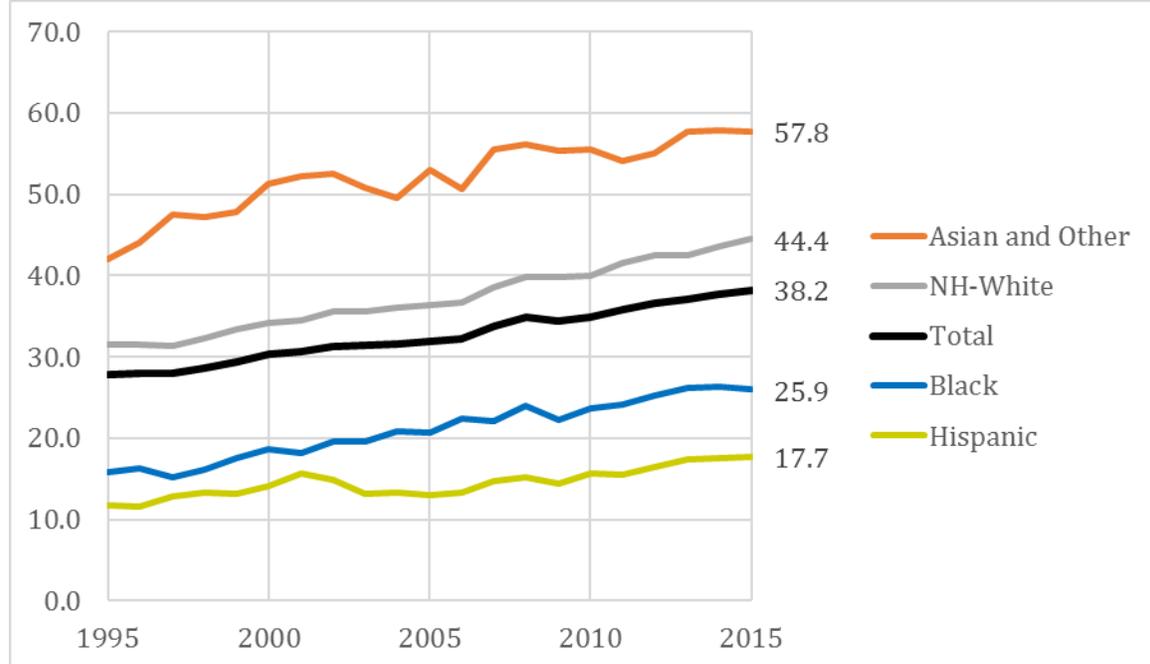
	All races	NH White	NH Black	Hispanic	Asian & Other
Total, 25-to-44	100.0	100.0	100.0	100.0	100.0
Less than HS	9.3	4.5	7.5	28.3	4.7
HS Grad	23.2	21.1	30.4	28.7	15.1
Some college	29.3	30.0	36.2	25.2	22.4
Bachelor’s +	38.2	44.4	25.9	17.7	57.8

Source: Author’s calculation based on the 2015 CPS-ASEC Data.

Note: The sample is restricted to include only "head/householder." The Asian and other category includes Asian, Native American, Pacific Islander, mixed race, and all other race/ethnicities that do not identify as black, non-Hispanic white, or Hispanic.

Fortunately, educational attainment has been steadily rising for the past 20 years among young householders of all racial/ethnic groups (Figure 4). Nonetheless, the gap between Hispanics and other groups persists and has even widened in the last decade. This continued education disparity poses a particular challenge in view of the greater growth among Hispanics as a share of the young-adult population.

Figure 4. Share of householders aged 25 to 44 with a bachelor’s degree or higher by race/ethnicity, 1995-2015 (percent)



Source: Author’s calculation based on the 1995–2015 CPS-ASEC Data.

Note: The sample is restricted to include only "head/householder." The Asian and other category includes Asian, Native American, Pacific Islander, multiracial, and all other race/ethnicities that do not identify as black, non-Hispanic white, or Hispanic.

The outlook for future education disparities is uncertain, but more equal access to higher education is a factor that is subject to policy influence. In the analysis to follow, we include two approaches for projecting prospective changes in the prevalence of higher educational attainment. The first approach extrapolates the baseline trend observed within each racial/ethnic group between 1995 and 2015. In the second approach, the college educational attainments of blacks and Hispanics are assumed to converge on the projected future educational attainment of non-Hispanic whites. In this second approach, we also estimate the associated changes in income and wealth that would be expected based on those factors’ historical relationship to education within a particular racial/ethnic group. Additional changes that could be associated with rising education, such as in marital status, are not estimated.

Alternative Market Conditions and Access to Mortgage Credit

The third report of this project documented that the correlates of homeownership attainment for young adults differed before and after the Great Recession (Myers, Painter, Zissimopoulos, Lee, and Thunell 2017). Many factors are different in the period following the financial crisis and recession. Homeownership rates fell substantially among younger households, in particular, for a number of reasons. Even though home-buying intentions remained strong

among young adults, actual behavior was substantially depressed. Certainly, the slow recovery of employment and salaries depressed demand, yet buyers also faced supply constraints that forced up prices, due to the very low inventories of both resale and newly built homes. Limited supply has become a particularly vexing problem in the lower-priced, starter home market where many young adults seek to buy (Duncan et al 2016; Simmons 2016).

In addition to changes in young adults' financial situation and the supply of homes for sale, another prominent difference between the pre- and post-crisis periods is that would-be homebuyers face a substantial change in credit access. Indexes of mortgage credit availability rose sharply from their levels prior to 2002 to extreme heights during the housing bubble in 2005 and 2006. Subsequently, credit access plunged after the financial crisis to levels well below those of 2001.

Substantial insight can be drawn from the Urban Institute's Housing Credit Availability Index (HCAI) that measures "the percentage of home purchase loans that are most likely to default," with lower percentages equating to less risky lending behavior and more restricted access to credit (Li and Goodman 2014; Urban Institute, 2016). The index registered 12 in 1999 and 2001, a period sometimes considered to represent "normal" credit conditions. It then climbed to 16 in 2006, at the peak of the housing bubble. The HCAI plummeted after the financial crisis and then continued to decline gradually after 2009 to reach 5 by 2013. Thus, by this measure of default risk, credit availability after the financial crisis became three times as restrictive as during the housing bubble and twice as restrictive as during the baseline period that preceded the housing bubble.

A similar conclusion about the course of credit access is gained from CoreLogic's Housing Credit Index (CoreLogic 2016). The CoreLogic index declined markedly after 2007, indicating a falling level of risk among new mortgage originations, and has remained at a low level since 2010. The most recent index value of 48 indicates that the mortgage market is characterized by half the risk that was present in the baseline year of 2001 (set to 100). The index is constructed by combining the following six dimensions of credit risk, each measured separately as a share of new originations: 1) credit score lower than 640; 2) loan-to-value ratio greater than or equal to 95; 3) debt-to-income ratio greater than or equal to 43; 4) loans on non-owner occupied units; 5) loans on condos or coops; and 6) low- or no-documentation loans. Of these components, the prevalence of low- or no-doc loans and the share with a credit score below 640 have fallen dramatically since 2001, contributing substantially to the overall reduction in risk.

Both of these credit indexes show much stricter lending behavior (and correspondingly less access) in recent years than at the height of the housing bubble or at the turn of the millennium, a time often regarded as having "normal" mortgage credit availability. In the tighter post-crisis lending environment, homebuying became substantially more difficult for households with low credit scores. Young households, in particular, were negatively impacted by these restrictions because of their necessarily shorter credit histories, as well as their difficulties gaining

steady employment as new entrants in the job market after the Great Recession. Thus, the post-crisis credit regime was very unfavorable for Millennial homebuyers.

Adjusting for house price differences, households with identical characteristics were more credit-constrained and were substantially less likely to purchase homes after the financial crisis compared with pre-crisis period. In the post-crisis period, educational attainment assumed greater weight among the homeownership determinants. Given that homeownership rates fell substantially in the latter period, the positive effects of higher education are interpreted as having prevented even greater declines in homeownership attainment.

SIMULATION SCENARIOS

In the coming decades, what is the outlook for homeownership rate change among young adults? The future course of credit availability and housing market conditions to be faced by young homebuyers are highly uncertain, as are young adults' employment and income prospects. However, light can be shed by simulating the effects of alternative scenarios for key conditions that shape homeownership outcomes. Given that our past work highlighted the critical role of a college education in homeownership attainment and that education can be influenced by public policy, we focus our simulations on homeownership rate changes under alternative future scenarios for young-adult college educational attainment. We project forward to the year 2035 based on the assumptions described below.

Prospective changes in educational attainment are represented in two ways. One approach continues baseline trends in higher educational attainment observed in each race/ethnic group between 1995 and 2015. The second approach assumes that additional policy intervention causes the educational attainment of blacks and Hispanics to converge to the projected future educational attainment of non-Hispanic whites.

Our previous research demonstrated that the association between college education and homeownership differed between the pre- and post-crisis periods. Therefore, we nest our future educational attainment scenarios within two market contexts. The market context dimension is based on differences in demand behavior, supply, and credit access that were observed, first, under the market conditions of 1999 to 2001, prior to the onset of the housing bubble, and, second, under the more restrictive credit conditions and other home-buying determinants observed from 2009 to 2013.

We estimate four alternative scenarios, as described below, repeated within each of the alternative market context periods. For each scenario, the age and racial/ethnic composition of young householders is assumed to change in accordance with household projections prepared by the Harvard Joint Center for Housing Studies (McCue and Herbert 2016). However, each scenario entails a different assumption about future paths of educational attainment and associated changes in income and wealth:

- i. Education, income, and wealth are held constant at current levels within race and ethnic groups.
- ii. Recent education trends within race and ethnic groups are assumed to continue. This scenario also assumes that income and wealth levels also increase based on the historical relationship between these economic characteristics and educational attainment within each racial and ethnic group.
- iii. Education gaps between non-Hispanic whites and other race/ethnic groups close entirely. However, because Asian educational attainment is higher than that of the non-Hispanic white population, we assume that trends in the educational attainment of Asians continues at the current rate. As with scenario (ii), income and wealth change according to the historical relationship between education and income/wealth within each racial/ethnic group.
- iv. All gaps in education, income, and wealth between white households and black and Hispanic households close.

The attributes of households used in the simulation are presented in Table 2. By comparing scenarios (i) and (ii), we observe that there would be some improvements in educational attainment among black and Hispanic households if current trends persist, which ultimately lead them to have a greater share of households in higher income and wealth quartiles (defined for all households, not just 25-to-44 year-olds). The results of the third scenario show that even substantial improvements in education may not directly lead black and Hispanic households to have corresponding levels of income and wealth as do non-Hispanic white households, likely because of substantially less intergenerational wealth. The fourth scenario describes the most dramatic improvements in education, income, and wealth among black and Hispanic households. This scenario also assumes the elimination of income and wealth disparities between black, Hispanic, and non-Hispanic white households. The results from this scenario could be understood as the upper bound of the changes in homeownership due to the improvements in education, income, and wealth among minority households.

Table 2. Share of population aged 25-to-44 with selected attributes in 2035, by race/ethnicity and simulation scenario (percent)

	NH-White	NH-Black	Hispanic	Asian & Other
<i>% Bachelor's or Higher in 2035</i>				
(i) Pure demographic changes	44.0	26.7	17.0	58.7
(ii) = (i) + education trends	57.4	38.3	22.0	71.9
(iii) = (ii) + no disparities in education	57.4	57.4	57.4	71.9
(iv) = (iii) + no gaps in income and wealth	57.4	57.4	57.4	71.9
<i>% Top Income Quartile in 2035</i>				
(i) Pure demographic changes	33.3	12.1	14.5	32.2
(ii) = (i) + education trends	38.0	15.2	17.1	36.9

(iii) = (ii) + no disparities in education	38.0	19.5	28.8	36.9
(iv) = (iii) + no gaps in income and wealth	38.0	38.0	38.0	36.9
<i>% Top Wealth Quartile in 2035</i>				
(i) Pure demographic changes	11.4	2.1	3.4	15.5
(ii) = (i) + education trends	12.8	2.4	4.0	18.0
(iii) = (ii) + no disparities in education	12.8	2.8	6.2	18.0
(iv) = (iii) + no gaps in income and wealth	12.8	12.8	12.8	18.0

Note: The educational attainment of householders by race/ethnicity is based on the extrapolations of the trends and levels shown in Figure 4 or on completely closing gaps between black, Hispanics, and non-Hispanic whites. (Asians and other category is not converged down to the level of non-Hispanic whites.) The changes in income and wealth distribution due to improvements in educational attainment are based on the associations between education and income and between education and wealth in the 2009-2013 PSID. Quartiles are based on households of all ages in 2015. Values for top quartiles in 2035 are not the future top 25% but rather the income and wealth brackets occupied by the top 25% in 2015. Asian and other category includes Asian, Native American, Pacific Islander, multiracial and all other race/ethnicities that do not identify as black, non-Hispanic white, or Hispanic.

The two periods, 1999-2001 or 2009-2013, represent a crucial distinction of market contexts for the scenarios. Estimates for the latter, post-crisis period represent a continuation of housing supply restrictions, tight credit access and contemporary homebuying behavior, while estimates for the earlier period would represent changes in young-adult homeownership associated with future changes in demographics and education under more “normal” conditions of credit access, supply, and homebuying behavior that prevailed prior to the housing bubble and the financial crisis that followed (Li and Goodman 2014).

Each of the four demographic and education-based scenarios described above is repeated within the two market contexts. Under each market context, homeownership changes are simulated for the young-adult population aged 25 to 44 by applying coefficients estimated in the respective time periods to populations of young adults that are weighted in number by race/ethnicity and age according to household projections (2016 series) prepared by the Harvard Joint Center for Housing Studies (McCue and Herbert 2016). The four demographic/education scenarios are executed by manipulating the mean observed characteristics and assumed time trends, as described in a section below.

Estimation Results for Underlying Models

The regression estimates that define the two market contexts are presented in this section. The sample is restricted to households with householders aged 25 to 44 and is divided into four major race/ethnic groups (non-Hispanic white, black, Hispanic, and non-Hispanic Asian and other). The models are repeated for two periods, 1999-2001 (“normal” market conditions) and 2009-2013 (“post-crisis” market conditions). All models are controlled for parental resources and local area market effects, and we will focus on the estimated homeownership rate change effects of children’s education, income, and wealth.

The most notable change in homeownership determinants between 1999-2001 and 2009-2013 is the larger effect of obtaining a bachelor's degree in the latter period. In 1999-2001, none of the coefficients for a bachelor's degree are significant for any of the race/ethnic groups (Table 3). However, after the recession (Table 4), we find that a college education has substantial effects, raising homeownership by 11.0 percentage points among non-Hispanic whites and 14.1 percentage points among blacks. The coefficients for a bachelor's degree for Hispanics and Asian/Others are not significant in either period.

Household income has its expected effect, net of education and all other factors, typically raising homeownership by about 20 to 30 percentage points in the highest income quartile compared to the lowest income quartile, and by somewhat less in the second highest bracket. Wealth increases homeownership even more than income. Compared to households in the lowest wealth quartile, households in the top two wealth quartiles are at least 35 percentage points more likely to own a home, although the wealth effects are dampened somewhat in the more recent period.

Table 3. Summarized results of linear probability model of homeownership, 25 to 44 years old, 1999-2001

	NH White		NH Black		Hispanic		Asian/Other	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
<i>Education (ref less than HS)</i>								
High School Grad	0.030		-0.014		0.016		0.038	
Some College	0.022		-0.034		0.027		0.002	
BA plus	0.027		0.024		0.025		-0.092	
Missing	-0.013		-0.025		-0.104		0.013	
<i>Age Group (ref. 25 to 29)</i>								
30 to 34	0.061	**	0.076	**	0.191	**	-0.067	
35 to 39	0.060	**	0.087	***	0.130	*	-0.053	
40 to 44	0.081	***	0.156	***	0.181	**	-0.052	
Female	0.019		0.046	*	0.048		0.060	
<i>Marital status (ref. not married)</i>								
Married	0.173	***	0.142	***	0.172	**	0.112	
Partnered	0.057	+	0.024		0.153	+	0.121	
<i>Child Income Quartiles (ref. 1st quartile)</i>								
2nd quartile	0.059	*	0.049	*	0.012		0.213	*
3rd quartile	0.158	***	0.143	***	0.153	*	0.312	**
highest quartile	0.175	***	0.259	***	0.109		0.368	**
<i>Child Wealth Quartiles (ref. 1st quartile)</i>								
2nd quartile	0.267	***	0.229	***	0.295	***	0.120	
3rd quartile	0.524	***	0.533	***	0.626	***	0.470	***
highest quartile	0.575	***	0.426	***	0.569	***	0.556	***
<i>Age of the oldest child (ref. no child)</i>								
Under 6 years old	0.084	***	0.071	*	0.046		-0.039	
6 to 17 years old	0.075	***	0.070	**	0.099	+	0.074	
18 years and over	0.074	**	0.052	+	-0.013		0.137	

Parental Characteristics	Yes	Yes	Yes	Yes
Regional Characteristics	Yes	Yes	Yes	Yes
R2	0.420	0.358	0.431	0.443
N	3,780	2,485	493	255

Note: + p < 0.10, * p < 0.05, ** < 0.01, *** < 0.001. All dollar figures are adjusted to 2015 dollars. Sample is restricted to householders aged 25 to 44. Young-adult characteristics are based on the personal characteristics of the reference child who is from the PSID families. Income and wealth brackets are based on quartiles defined in 2013 and applied to earlier periods. Standard errors are clustered at individual person level. Regressions are based on unweighted counts.

Table 4. Summarized results of linear probability model of homeownership, 25 to 44 years old, 2009-2013

	NH White		NH Black		Hispanic		Asian/Other	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
<i>Education (ref less than HS)</i>								
High School Grad	0.075	**	0.016		-0.021		0.152	*
Some College	0.112	***	0.068	***	-0.044		-0.029	
BA plus	0.110	***	0.141	***	-0.029		0.094	
Missing	-0.073		-0.025		-0.030		-0.068	
<i>Age Group (ref. 25 to 29)</i>								
30 to 34	0.070	***	0.048	***	0.102	**	0.096	+
35 to 39	0.118	***	0.069	***	0.177	***	0.103	
40 to 44	0.134	***	0.161	***	0.212	***	0.103	
Female	-0.003		0.026	*	0.001		0.040	
<i>Marital status (ref. not married)</i>								
Married	0.193	***	0.114	***	0.169	***	0.233	***
Partnered	-0.011		0.014		0.039		0.229	**
<i>Child Income Quartiles (ref. 1st quartile)</i>								
2nd quartile	0.100	***	0.034	**	0.043		0.032	
3rd quartile	0.229	***	0.109	***	0.202	***	0.129	+
highest quartile	0.292	***	0.212	***	0.226	***	0.181	*
<i>Child Wealth Quartiles (ref. 1st quartile)</i>								
2nd quartile	0.127	***	0.131	***	0.022		0.033	
3rd quartile	0.360	***	0.570	***	0.433	***	0.434	***
highest quartile	0.358	***	0.410	***	0.393	***	0.440	***
<i>Age of the oldest child (ref. no child)</i>								
Under 6 years old	0.089	***	0.028		0.082	*	0.007	
6 to 17 years old	0.048	**	0.021		0.058	+	-0.036	
18 years and over	-0.026		0.007		0.082		0.143	
Parental Characteristics	Yes		Yes		Yes		Yes	
Regional Characteristics	Yes		Yes		Yes		Yes	
R2	0.417		0.381		0.432		0.462	
N	6,148		4,378		984		369	

Note: + p < 0.10, * p < 0.05, ** < 0.01, *** < 0.001. All dollar figures are adjusted to 2015 dollars. Sample is restricted to householders aged 25-to-44. Young-adult characteristics are based on the personal characteristics of the reference child who is from the PSID families. Income and wealth brackets are based

on quartiles defined in 2013 and applied to earlier periods. Standard errors are clustered at individual person level. Regressions are based on unweighted counts.

Simulated Homeownership Rate Changes

Table 5 provides the simulated young-adult homeownership rate changes that result from repeating the four demographic/education scenarios within each of the two market contexts, as described above. The simulations are based on the model estimates in Tables 3 and 4. In the first demographic/education scenario, the simulations incorporate expected changes in the racial/ethnic mix of young householders projected by the Joint Center for Housing Studies (McCue and Herbert 2016). This scenario can be considered a demographic baseline for what might happen to young-adult homeownership rates as the minority share of households increases.

Table 5. Expected homeownership rate change among 25- to-44-year-olds, 2015-2035, under the varying assumptions of four demographic/education scenarios estimated with coefficients from the “normal” and “post-crisis” periods

<i>Homeownership Rate Change, 2015–35 (percentage points)</i>		
	<i>Based on Normal period (1999-2001)</i>	<i>Based on Post-crisis period (2009-2013)</i>
<i>i. Projected changing demographics but continued current levels of education, income, and wealth</i>	-0.7	-0.9
<i>ii. (i) + education trends and associated improvements in income and wealth</i>	1.3	1.7
<i>iii. (ii) + eliminate disparities in education</i>	2.4	2.9
<i>iv. (iii) + no gaps in income and wealth</i>	6.2	6.7

Note: The probability of homeownership by age, race/ethnicity, and educational attainment is computed based on the stratified regressions shown in Tables 3 and 4. The projected numbers of households by age and race/ethnicity from 2015 to 2035 are based on the household projections by the Joint Center for Housing Studies (McCue and Herbert, 2016). The shares of households by age, race/ethnicity, and education attainment of householders are based on the 2015 CPS ASEC. The values for all covariates, including income and wealth, are fixed at the mean values of the sample. Simulated values are calculated by varying education, income, and wealth status and fixing values for other variables at 2015 levels.

As is expected, simulations in Table 5 Panel (i) suggest that homeownership rates among households aged 25 to 44 will fall with the changing race/ethnicity mix between 2015 and 2035. However, the reduction is only 0.7 to 0.9 percentage points, depending on which market context (“normal” or “post-crisis”) is used to estimate the simulation model coefficients. Despite the disparities in homeownership rates between non-Hispanic whites and others, the overall young-adult homeownership rate falls just slightly because the non-Hispanic white share of households only declines from 59.2 percent to 51.5 percent over the 20-year simulation period, as shown previously in Figure 1.

Next, we simulate the expected change in homeownership if the education trends of racial and ethnic subgroups continue to rise linearly at the same rates as displayed in Figure 4. We assume that income and wealth will also increase with the corresponding increase in education based on the correlations among these characteristics within racial/ethnic groups in

the most current PSID data (2009-2013). While other characteristics such as marriage are correlated with education levels, we chose not to alter marriage levels, as our analysis did not estimate specific links between education and marriage. The implication of not altering marriage rates is to lower the estimated impact of these changes in education on the changes in young-adult homeownership attainment.

As indicated by Table 5 Panel (ii), extrapolating education and associated income and wealth trends increases homeownership among young households by 1.3 percentage points in the normal market scenario and 1.7 percentage points in the post-crisis market context. Rather than the predictions of some that homeownership rates will fall because of changing demographics, Table 5 Panel (ii) suggests that *rising* homeownership rates among young households can accompany increases in racial/ethnic minority shares because other characteristics are not expected to remain static. Homeownership rates among young households are predicted to increase slightly more using estimates from the most recent, post-crisis period because homeownership rates were more sensitive to changes in education levels in the recent period than in the earlier, normal market period.

We next simulate the increase in homeownership rates if new investments in education for racial and ethnic minorities elevated their education to that of non-Hispanic white households.³ As with the preceding scenario, income and wealth are assumed to increase according to the historical relationship between education and income/wealth within each racial/ethnic group. If these increases did occur, then the homeownership rates would increase by 2.4 to 2.9 percentage points (Table 5 Panel [iii]). This is approximately double the increase projected if there were no changes in education policy, as depicted in the previous simulation.

Lastly, we simulate how much homeownership rates would increase if the wealth and income of racial and ethnic minorities would increase to that of non-Hispanic white households (Table 5 Panel [iv]). In the previous scenario, wealth and income of minority households would remain substantially below that of non-Hispanic whites despite the leveling of educational attainment because there are large income and, in particular, wealth gaps even for households that have a bachelor's degree. This is due at least in part to the fact that non-Hispanic white households have much larger levels of intergenerational transmission of wealth.

When education, income, and wealth levels are equal to that of non-Hispanic white households, the homeownership rate of young households increases by 6.2 to 6.7 percentage points. While this scenario is unlikely to happen because changes in wealth of this magnitude would likely take several generations, it is instructive to note how much homeownership rates might increase.

³ Because educational attainment for the Asian and other subgroup is higher than for non-Hispanic whites, we do not adjust it downward to the level of non-Hispanic whites.

Finally, it is worth noting that comparisons of the simulation results across the “normal” and tighter “post-crisis” periods consistently suggest that rising levels of education, income, and wealth (scenarios ii through iv) are more important under the tighter market conditions context (as proxied with the 2009-2013 data). As might be expected, resources such as education, income, and wealth are more important to overcome the additional barriers to homeownership posed by tight credit and limited housing supply, and we find that the differential importance of resource endowments across the two periods leads to a difference in the estimated increase in the homeownership rate of about one-half percentage point.

DISCUSSION

Young-adult homeownership rates have been depressed recently for many reasons. While the most obvious cause was the foreclosure crisis, many other factors have contributed to lower homeownership. As Millennials entered the housing market during the difficult economy following the Great Recession, their housing demand was depressed due to less successful entries into the job market than previous cohorts. In addition, delays in marriage and childbearing likely further depressed homeownership rates. Other important factors include tighter mortgage credit after the financial crisis and a limited supply of entry-level homes suitable for young buyers. Given these multiple contributing factors, some of which are more subject to policy intervention than others, policy makers and housing professionals are grappling with the scope for policy in impacting future homeownership rates.

In this research, which spanned a series of reports, we attempted to provide insights into the efficacy of three policy levers that might impact homeownership rates. The potentially important role of down payment assistance was suggested by our first paper, which isolated the independent impact of receiving a parental transfer on increasing the likelihood of homebuying. In our second report, the potential importance of policies for increasing educational attainment was highlighted by isolating the impact of receiving a bachelor’s degree on homeownership attainment. In both of these analyses, superior controls for parental income and wealth were included than employed in past research. Finally, in the third paper we tested the importance of different credit and economic conditions on the sensitivity of households to the key predictors of homeownership, and we found that the association between homeownership and college education was particularly sensitive to the pre- versus post-recession market contexts.

In the analysis presented above, we simulated how changes in the demographic characteristics of young adults would affect future changes in the homeownership rate. Our results contradicted a popular narrative that because young adults are increasingly likely to be racial and ethnic minorities, and because these groups currently have less income and wealth, homeownership rates would be expected to decline. Our simulations did indicate that the homeownership rate among young adults would decline over the next 20 years by between 0.5 and 1.0 percentage point, but only under the unlikely assumption that education, income, and wealth remain constant within racial/ethnic groups as the diversity of young adults increases.

However, we argue that this is the wrong scenario to consider. Because education levels of racial and ethnic minorities have been rising steadily, and because income and wealth tend to increase with higher education levels, we would expect the probability of homeownership to go up for these groups. Taking these rising education levels (and associated gains in incomes and wealth) into account yields an *increase* of about 1.5 percentage points in the young-adult homeownership rate over the next two decades. Although we did not simulate any particular policy for increasing college educational attainment among racial and ethnic minorities, we did find that completely closing interracial gaps in education could result in an even larger future increase in the young-adult homeownership rate of roughly 2.5 percentage points. We note that substantial wealth gaps between non-Hispanic whites and racial and ethnic minorities would likely remain even if the education gap were closed, but with intergenerational increases in wealth, homeownership would increase even further. This is supported by our final scenario, which found that young-adult homeownership rates would increase by between 6.0 and 7.0 percentage points over the next 20 years were interracial gaps in income and wealth to close along with gaps in educational attainment.

These simulated education-related gains in young-adult homeownership rates are impressive and reinforce the findings from our previous research that showed the key role of a college education in achieving homeownership. The simulations also clearly show that rising educational attainment among racial and ethnic minorities outweighs the assumed negative effect of growing racial and ethnic diversity on the overall young-adult homeownership rate.

However, rising education levels—even in the case where the minority-white college education gap closes completely—would only partially reverse the steep declines in young-adult homeownership attainment witnessed since the onset of the housing bust. Our simulations indicate that this would be true regardless of whether advances in education occur in a restrictive, post-crisis market context, or in a more favorable “normal” market context similar to that of the pre-bubble era.

Furthermore, it’s important to note that our simulations, which are focused on the role of demographic and education change on future changes in homeownership attainment, do not attempt to predict how much the young-adult homeownership rate would be boosted by a *change in the market context itself*. The difference in market contexts between the pre-crisis (1999-2001) and post-crisis (2009-2013) periods likely has an even more substantial impact on young-adult homeownership than the changes in demographics, education, income, and wealth simulated in this paper.

Indeed, net of all other factors, the 2015 homeownership rate of households aged 25 to 44 simulated using the post-crisis market model was 7.6 percentage points lower than the rate simulated using the model for the “normal” period preceding the bubble and crisis. This result suggests that, were credit access and housing supply to return to their levels prior to the crisis and also prior to the overly loose underwriting days of the housing bubble, homeownership rates of young adults would rise more than if it were possible to raise education levels of all race/ethnic

groups to at least the level of non-Hispanic whites, and also raise income and wealth levels in a commensurate manner. It would seem, in particular, that a change in policies shaping credit access could be more attainable than reducing housing supply restrictions across a multitude of jurisdictions or eliminating interracial differences in education, income, and wealth.

Whether intervention comes in the form of closing interracial gaps in educational attainment or of policies more directly related to housing, such as providing down payment assistance, encouraging increased housing supply, or expanding access to mortgage credit, the looming sell-off of millions of Baby Boomer homes provides ample motivation for investigating alternative policies to bolster the homeownership demand of today's young adults. The aging of Baby Boomers and their eventual departure from owner-occupancy will create a much larger generational succession in the housing market than ever seen before, and an intergenerational hand-off that sustains home values will require much larger demand from young buyers. The fates of the generations are tied together, and so far the young are lagging behind.

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