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Effect of Changing Demographics on Young Adult Homeownership Rates

Rachel Bogardus Drew

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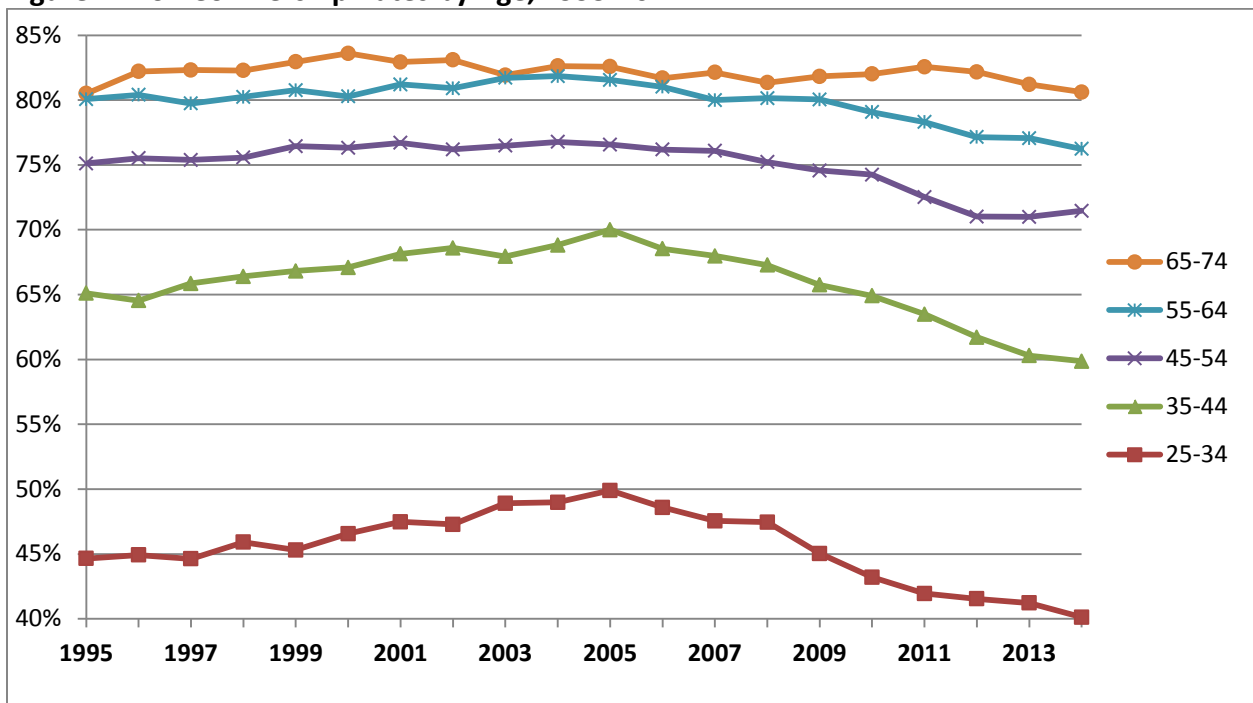
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Abstract: Changing socio-demographic characteristics of young adult households – those with householders ages 25 to 34 – are having an impact on their propensities for homeownership. Increases in the share of minority and unmarried householders are placing downward pressure on homeownership rates for this group, while at the same time higher levels of income and educational attainment are providing a boost. But events in housing markets over the last twenty years have masked these effects, first by making homeownership more attractive and attainable in the years leading up to the Great Recession, thus pushing homeownership rates up, then by lowering them after 2005 as constraints on credit and increasingly poor economic conditions inhibited home purchases by young adults. Untangling the combined effect of these trends requires analyses that can decompose demographic trends from macro and micro market conditions, to isolate the effects that specific changes in characteristics have had on young adult homeownership rates over time. This paper describes such an analysis based on econometric methods that estimate the expected change in homeownership over time due to socio-demographic factors, and finds that absent the boom and bust in housing markets over the last two decades young adults would likely have lowered their homeownership rates by over 5 percentage points, with much of that decline caused by changes in marital and family status. It concludes with some commentary on the implications of these findings for the homeownership tendencies of young adults going forward.

Introduction

The housing boom and bust of the last twenty years has produced some dramatic swings in homeownership rates. Arguably, one of the groups most affected are young adult households (with householders ages 25 to 34), who during the boom experienced the largest increase of any age group in homeownership rates, followed by the greatest decline during the housing market downturn. Their homeownership rate rose from 45 percent in 1995 to 50 percent by 2005. After reaching that peak, however, the rate declined to 40 percent by 2014 (Figure 1).

Figure 1: Homeownership Rates by Age, 1995-2014



Source: Tabulations of the 1995-2014 Current Population Survey.

The primary cause of this rise and fall in young adult homeownership rates over this period was the extraordinary conditions in the market for homes and home mortgages. The late 1990s and early 2000s saw an unprecedented boom in the national economy, which elevated incomes and house prices, making homeownership both more attractive and more attainable. Coupled with innovations in mortgage markets that made financing home purchases easier for more households, these changes encouraged more households to buy than might have otherwise done so. As a result, homeownership rates rose to record levels by the mid-2000s. Soon after,

however, the favorable conditions for homeownership abruptly changed as house prices stagnated and then declined, and the worst recession since the Great Depression set off a wave of mortgage defaults and foreclosures that caused lenders to restrict credit to potential homebuyers. The lingering economic malaise that followed further inhibited home purchases, especially for young adults with increasingly bleak income and employment prospects, rising student debt levels, and wary perspectives on the wealth potential of homeownership (Fisher and Gervais 2011; Fry 2013).

During these wild swings in housing markets, however, young adults have continued to undergo substantial shifts in their personal characteristics that were mostly underway before the homeownership boom, with important consequences for their propensities towards homeownership. The share of minority young adults, for example, has increased from under 20 percent in the 1970s to 40 percent currently, mostly due to the growth of native and foreign-born Hispanic and Asian populations. As minorities and immigrants are less likely than comparable whites and natives to own, this shift likely contributed to a decline in homeownership for young adults. Lower rates of marriage and family formation are also placing downward pressure on homeownership rates, as are higher shares of young adults living in central cities. Increasing attention to educational attainment, meanwhile, has also raised the share of young adults who are college graduates, thereby improving their income prospects and thus their demand for homeownership.

Previous research has suggested that the combined result of these socio-demographic shifts has been to lower the overall homeownership rate of young adults, with economic conditions offsetting that decline during the housing boom and exacerbating it during the bust (e.g., Gabriel and Rosenthal, forthcoming). Yet little attention has been paid to untangling the individual effects of these distinct trends in young adult characteristics, or to quantifying how much they contributed to the fall in homeownership rates over the last decade. This paper digs deeper into this issue, by detailing how the socio-demographic characteristics of young adults

have changed over time, and then modeling the expected impact on homeownership rates of these changes during both the boom and bust.

Young adults play a particular and important role in housing markets that warrants this investigation of their homeownership tendencies. Despite being a minority of households, they represent the majority of first time homebuyers (Fisher and Gervais 2011). The current and rising generation of young adults is also poised to be the largest to come of age since the Baby Boomers in the 1970s and '80s (U.S. Census Bureau 2012). Not only will their numbers influence housing demand in the near future, but they will also, with their different tastes and preferences relative to prior generations, drive trends in the types and locations of housing that will be built. Surveys show that young adults today increasingly prefer smaller homes close to urban amenities, rather than the large houses in suburban and exurban locations that their Baby Boomer parents purchased in the 1980s and 1990s (Demand Institute 2014). Given that young adults will be called on to replace Baby Boomers as the latter start to leave the housing market in the next few decades, the implications of young adult preferences for housing will have significant impacts on the makeup of the housing stock for years to come (Nelson 2013). Understanding what drives trends in their home purchasing tendencies, therefore, is important to predicting and preparing for these changes going forward.

The paper begins by describing foundational and recent research on factors that influence housing tenure (i.e., whether a household owns or rents), with emphasis on studies of socio-demographic characteristics and the homeownership tendencies of young adults from the last two decades. This is followed by a description of the data and trends demonstrating the extent of changes in young adult characteristics over this time period. Regression models then isolate the individual contributions of these characteristics to young adult homeownership propensities, with a shift-share analysis to decompose their actual from expected effects on changes in homeownership shares over time. The result of these analyses suggests that, based on changes in socio-demographic characteristics alone, young adult homeownership rates should have declined by over 5 percentage points from 1995 to 2014. Most of the expected

decline, moreover, is due to changes in the marital and family status of young adults over time, as they are increasingly delaying marriage in favor of cohabitation and additional educational attainment and career development. The final section discusses the implications for the near future of these findings about socio-demographic forces on young adult homeownership rates.

Literature Review

Most studies of the determinants of housing tenure outcomes in the United States consider homeownership to be the product of combined demand for shelter as a consumption good and for housing wealth as an investment (Henderson and Ioannides 1983; Ioannides and Rosenthal 1994; Ortalo-Magné and Rady 2002). The investment side of the equation is determined by macro-economic and housing market conditions (e.g., user costs, price appreciation, and value of alternative investments) and the financial condition of households (e.g., wealth and income, risk tolerance, liquidity needs), which influence both demand for and constraints on tenure choices (Ioannides and Rosenthal 1994; Ortalo-Magné and Rady 2002; Sinai and Souleles 2005; Di and Liu 2007). Consumption demand, on the other hand, is assumed to be driven by personal preferences for housing attributes that are associated with owning and renting (e.g., stability versus mobility of residence, control versus freedom from responsibility for property). Since such preferences are difficult to directly observe and measure, many tenure studies use socio-demographic characteristics as proxies (Megbolugbe, Marks, and Shwartz 1991; Timmermans, Molin, and van Noortwijk 1994; Jansen, Coolen, and Goetgeluk 2011). Traits such as race/ethnicity, age, marital/family status, and educational attainment are assumed to represent the lifestyle and life stage of households, which shape their needs and tastes for housing. Some studies consider how changes in these characteristics over time predict transitions from renting to owning and vice versa (e.g., Clark and Dieleman 1996; Clark, Deurloo, and Dieleman 2003). In such analyses, personal financial conditions again play a role, but more as a constraint on than as a driver of preferences.

Of primary interest for this paper are specific types of socio-demographic characteristics that are known to correlate with tenure choice (owning versus renting), and which may help in

estimating how young adult homeownership tendencies have changed over time. The rest of this literature review thus focuses on studies that emphasize these factors. Race and ethnicity, for instance, are common topics of interest among tenure studies, which have consistently identified lower rates of homeownership among minorities relative to white households. Some of this gap is explained by differences between whites and minorities in other characteristics such as age, income, location, and education (Wachter and Megbolugbe 1992; Coulson 1999; Painter, Gabriel, and Myers 2001; Haurin, Herbert, and Rosenthal 2007). The lower homeownership rates of minorities that remain, even after controlling for these differences, are often attributed to reduced access to homeownership for minorities, rather than to lower preferences for owning relative to similar white households (Herbert et al. 2005).

An important source of racial differences in homeownership rates is nativity status, with immigrants generally less likely to own than native-born householders. The gaps in homeownership rates by nativity are mitigated, however, by longer durations of residence in the U.S., stronger command of English, financial literacy, and education—so much so that some long-term and high achieving immigrants have been found to surpass comparable native-born households in homeownership attainment (Myers, Megbolugbe, and Lee 1998; Coulson 1999; Drew 2002; Haurin and Rosenthal 2009). The children of immigrants, meanwhile, all else equal, also have high propensities for homeownership relative to children with native-born parents (Rosenbaum and Friedman 2004).

Household life stage, indicated by the marital status and family composition of residents, also directly influences preferences for different housing types and tenures. Married couples, for example, are presumed to favor more (financially and residentially) stable living situations that reflect their long-term relationship commitment, and thus to prefer to own rather than to rent (Clark, Deurloo, and Dieleman 1994; Clark and Huang, 2003; Grinstein-Weiss et al. 2011). Dual incomes also help increase the affordability and accessibility of homeownership for partnered versus single-person households (Hendershott et al. 2009). The presence of children in the household further promotes ownership, which is often associated with both larger dwellings

and locations in neighborhoods close to family-friendly amenities and better schools (Clark and Davies Withers 2007). The positive effect on homeownership of being married and having children also endures over the life course; divorcees and empty-nesters are more likely to own than similar adults who have never been married or had children (Carliner 1974; Drew 2014).

One aspect of lifestyle that influences homeownership, because the relative availability of owned and rented dwellings varies according to place, is the locational preference of households. Living in a dense center city generally restricts ownership options, as the majority of the housing stock located there is offered for rent, and most homes available for purchase are condominiums in multifamily structures (Schwartz 2013). Suburbs and rural areas, meanwhile, have fewer rental options and generally more homes for sale relative to cities. Location also determines how affordable the housing stock is: people who choose to live in high-cost markets may find their purchase options more constrained by their budgets than they would in more moderately-priced parts of the country (Schwartz 2013).

Other socio-economic conditions associated with homeownership reflect the financial resources of households, including current income and expected future income as determined by educational attainment. High income households are more likely to own than those with lower incomes, not only because they are better able to afford the down payment and high transaction costs of owning, but also because they likely have higher investment demand for real estate, as well as the means to pursue it as part of a diversified portfolio (Ioannides and Rosenthal 1994; Ortalo-Magné and Rady 2002; Sinai and Souleles 2005). Having a high school or college degree, meanwhile, substantially increases the expected lifetime earnings of individuals relative to those without as much education, thus ensuring continued ability to afford homeownership for the long term (Gyourko and Linneman 1997).

One of the most important personal characteristics related to homeownership, however, is age. Homeownership rates tend to correlate positively with age for those under 50 years old, and then level off before declining slightly among older seniors (Gyourko and Linneman 1997;

Gabriel and Rosenthal, forthcoming).¹ The most rapid rise in homeownership rates occurs between the early twenties and mid thirties, when most people are forming their own households and settling into careers and lifestyles that will define them through their adult lives (Haurin, Herbert, and Rosenthal 2007).

Indeed, several studies have focused on determinants of homeownership for young adults, given the importance of this group to housing markets, and have confirmed that similar demographic and financial forces determine tenure choice at this stage of life. Haurin, Hendershott, and Kim (1994) studied the homeownership choices of individuals ages 20 to 33, and found income to be a primary factor, along with the relative costs of owning and renting, availability of resources for down payments, and demographic characteristics. Subsequent analyses of the same data further found that marital status was an important indicator of homeownership for young adults, and that married couples with two working spouses were more likely to buy (Haurin, Hendershott, and Wachter 1996), while the presence of borrowing constraints had a strong negative association with homeownership (Haurin, Hendershott, and Wachter 1997). Gyourko and Linneman (1997), meanwhile, found that among young adults with similar financial circumstances, gaps in homeownership rates by educational attainment and race expanded between 1960 and 1990. At the same time, among households under 36, the effect of marital and family status on homeownership was found to have decreased, as more young adults delayed marriage and childbearing in favor of seeking further educational and career opportunities (Gyourko and Linneman 1997).

The recent decline in homeownership rates among young adults has renewed interest in studying this subset of households to understand their tenure decisions. Fisher and Gervais (2011) identified two primary reasons for trends in homeownership observed between 1980 and 2000 among households with heads 25 to 44: declines in the share of such households that are comprised of married couples, and increases in their long-term earnings risk. Gabriel and

¹ Cross-sectional data on homeownership rates by age mask trends in cohort attainment of homeownership, which suggest increasing shares of households owning homes up through age 70, and declines only among older seniors (Masnick and Di 2001).

Rosenthal (forthcoming) look at more recent data to decompose the effects of socioeconomic factors and market conditions on homeownership rates among households (segmented by age), and find that personal and financial characteristics (including marital status, race, income, educational attainment, disability status, nativity, labor market status, metro status, and three housing market indicators) collectively contributed little to changes in homeownership rates during the housing boom (2000-2005) and bust (2005-2009). Only income, metro area house prices, and metro price volatility show much effect, and mostly among households in their mid thirties and younger; specifically, having lower income, higher prices, and more volatility decreases the likelihood of homeownership for younger households, though more so in 2000 and 2009 than during the height of the housing boom in 2005. Gabriel and Rosenthal's conclusion that shifting demographic characteristics were relatively unimportant may well simply reflect the short time frame of their analysis, over which shifts in such factors as marital status and racial/ethnic composition would be less pronounced. In contrast, this period of boom and bust was marked by sharp fluctuations in housing market and economic factors.

The analysis below is similar in some respects to that of Rosenthal and Gabriel (forthcoming), in that it employs a shift-share analysis, using regression models, to separate the effects of personal characteristics from those of market conditions on changes in homeownership rates over the housing boom and bust period. It differs, however, in its exclusive focus on young adults (ages 25-34), its emphasis on socio-demographic characteristics, its longer time frame for the analysis, and its identification of specific characteristics that are driving demographically expected shifts in tenure status over time. The following section describes these characteristics and their trends among young adults through the housing boom and bust; a subsequent section delves into the econometric analysis of their collective effects on homeownership rates.

Data and Descriptive Analysis

The data used in this analysis comes from the Current Population Survey's Annual Social and Economic (March) Supplement for the years 1995-2014 (CPS). The time frame covers the presumed entirety of the homeownership boom and bust, as the national homeownership rate

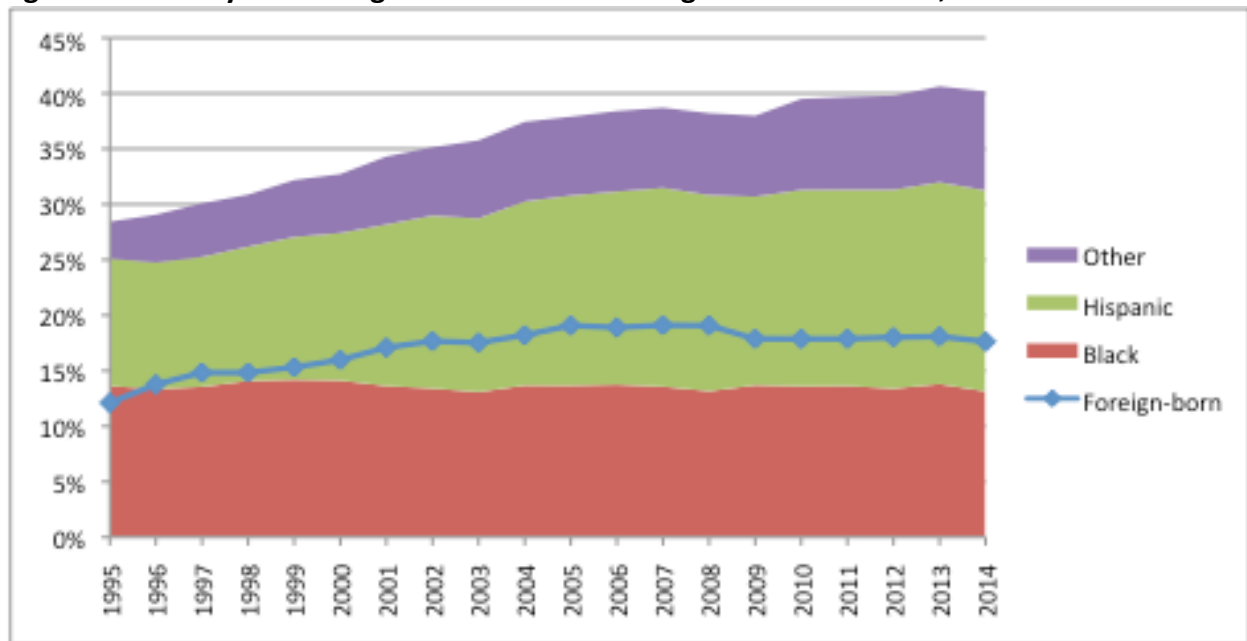
in 2012-14 returned to its average 1960-2000 level. In addition to the wild swings in homeownership rates observed during this period, the CPS shows some dramatic changes occurring in the socio-demographic status of young adult households over the last twenty years.² This section describes some of these trends and discusses the expected effects of each on young adult homeownership rates.

Race/Ethnicity and Nativity

One of the most striking changes in the composition of the young adult households during the past two decades has been a substantial increase in the share of minorities, from 28 percent in 1995 to 41 percent in 2014 (**Figure 2**). Young Hispanic householders account for biggest component of this growth: their share rose from 11 to 18 percent of households, with most of these gains occurring during the boom years. Indeed, only 2.3 of the 13 percentage point minority share gain occurred after 2005. The growth in minority households among young adults has been caused in part by rising immigration rates, since many immigrants arrive in the U.S. during their twenties. The share of foreign-born among 25-34 year old household heads grew from 12 percent in the mid-1990s to 19 percent a decade later, before falling back slightly during the recession to 17 percent.

² All data presented in this section is based on the author's calculations of weighted counts and shares of households from the CPS, and may not match published tables available from the U. S. Census Bureau.

Figure 2: Minority and Foreign-born Shares of Young Adult Households, 1995-2014



Note: White young adult households are not shown in the chart and comprise the remainder of the distribution in each year. Whites, Blacks, and Others are non-Hispanic, while Hispanics may be of any race. Other includes Asians and multi-racial categories.

Source: Tabulations of the 1995-2014 Current Population Survey.

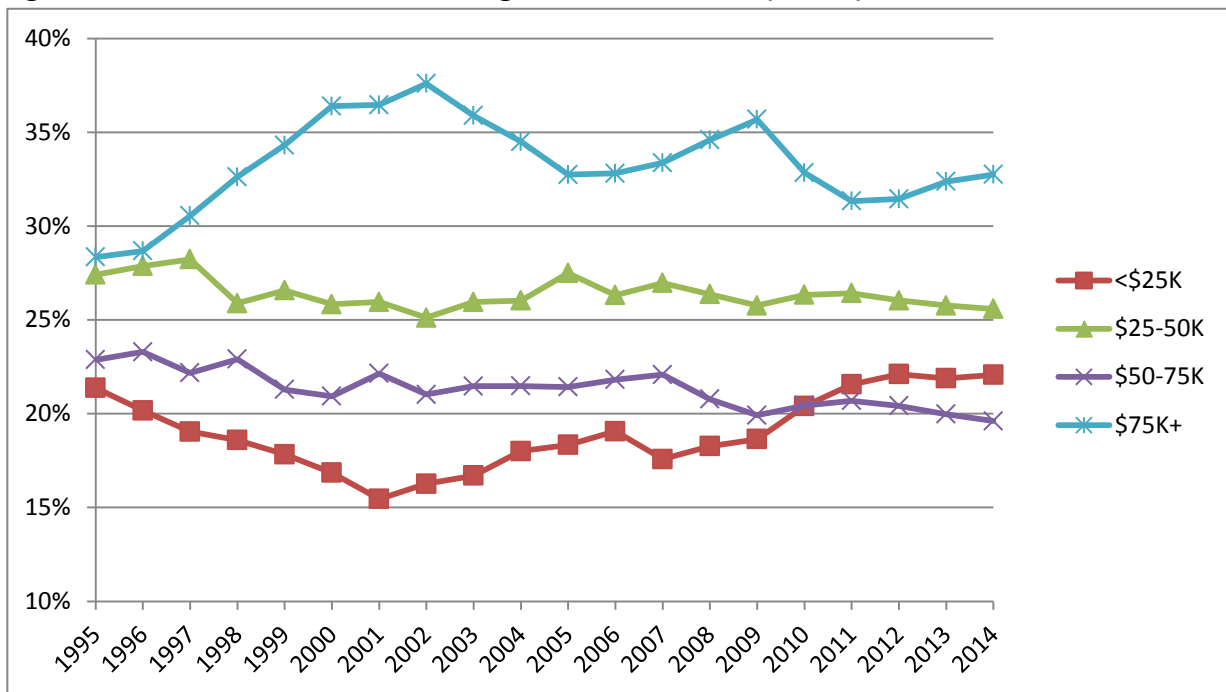
Given that non-white and foreign-born households generally have lower homeownership rates than whites and native-born householders, shifts in the distribution of young adult households towards the former likely served to depress overall homeownership rates for the age group as a whole during this period. Yet minority and immigrant homeownership rates were also rising during the housing boom (Herbert et al. 2005), potentially offsetting some of the dampening effect of their share increases on young adult homeownership. Since the collapse of the housing market, however, minority homeownership rates have declined more than those of whites³ (U.S. Census Bureau 2014), and may have exacerbated the downward pressure placed on homeownership rates by the increase in the minority share of young adult households since 2005.

³ Non-Hispanic white homeownership rates declined 3.5 percentage points from 2005-2014, versus 5.6 percentage points for non-Hispanic Blacks, 3.3 percentage points for Hispanics, and 4.2 percentage points for non-Hispanic Asian/Others, according to the Current Population Survey.

Income

The household income of young adults over the period analyzed here, when adjusted for inflation and measured in constant categories, also underwent some noticeable changes. In particular, the share of young adult households in the highest category, i.e., with real incomes over \$75,000 (expressed in 2014 dollars), increased from 28 percent in 1995 to 37 percent by 2002 (**Figure 3**). This gain was offset by declines in the share in the lowest income category, under \$25,000, from 21 to 15 percent. Since 2001, however, the low-income category has been gaining share, and as of 2014 included 22 percent of young adult households.

Figure 3: Income Distribution of Young Adult Households (2014\$), 1995-2014



Note: Incomes are expressed in 2014 dollars and adjusted for inflation by the CPI-UX for all consumers from the Bureau of Labor Statistics.

Source: Tabulations of the 1995-2014 Current Population Survey.

Higher incomes are strongly associated with higher propensities for homeownership, so the gains of young adults during the late 1990s likely increased their probability of owning homes during the boom, even though the share in the highest income group declined slightly in the early 2000s. Likewise, the rising share of low-income households subsequent to the housing boom probably had a depressing effect on the homeownership rate of young adults in the more

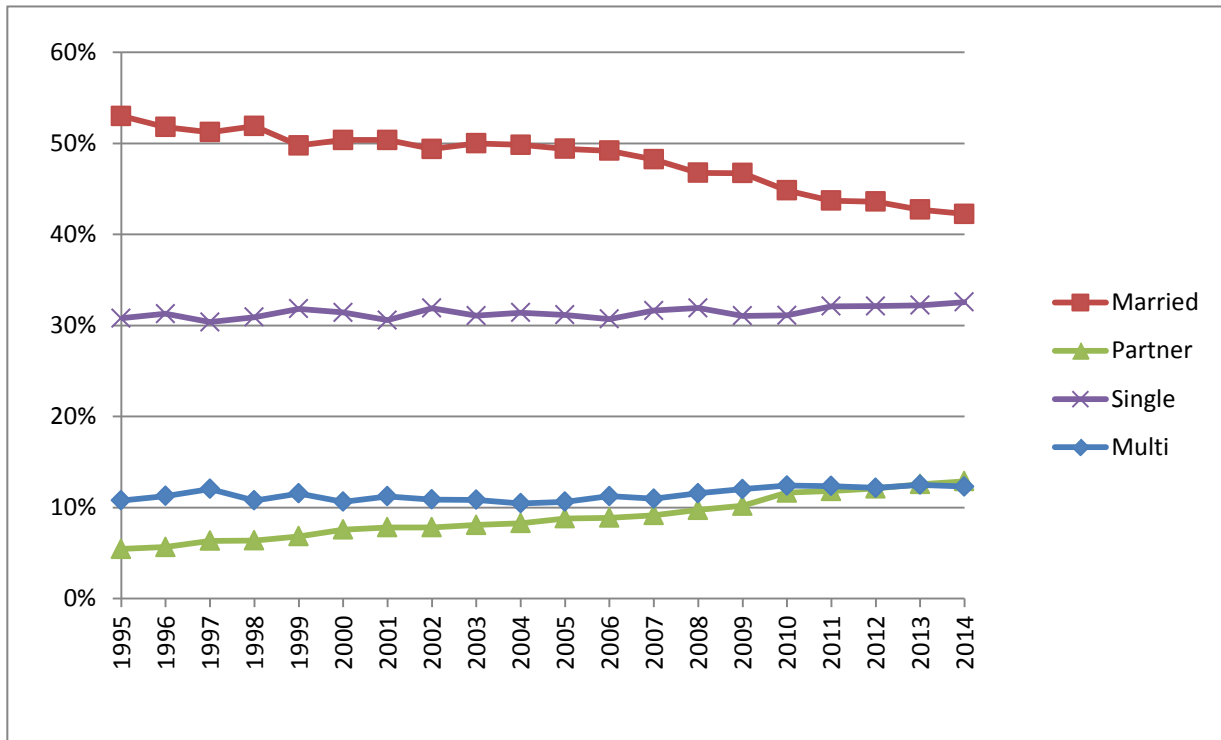
recent period.

Marital/Family Status

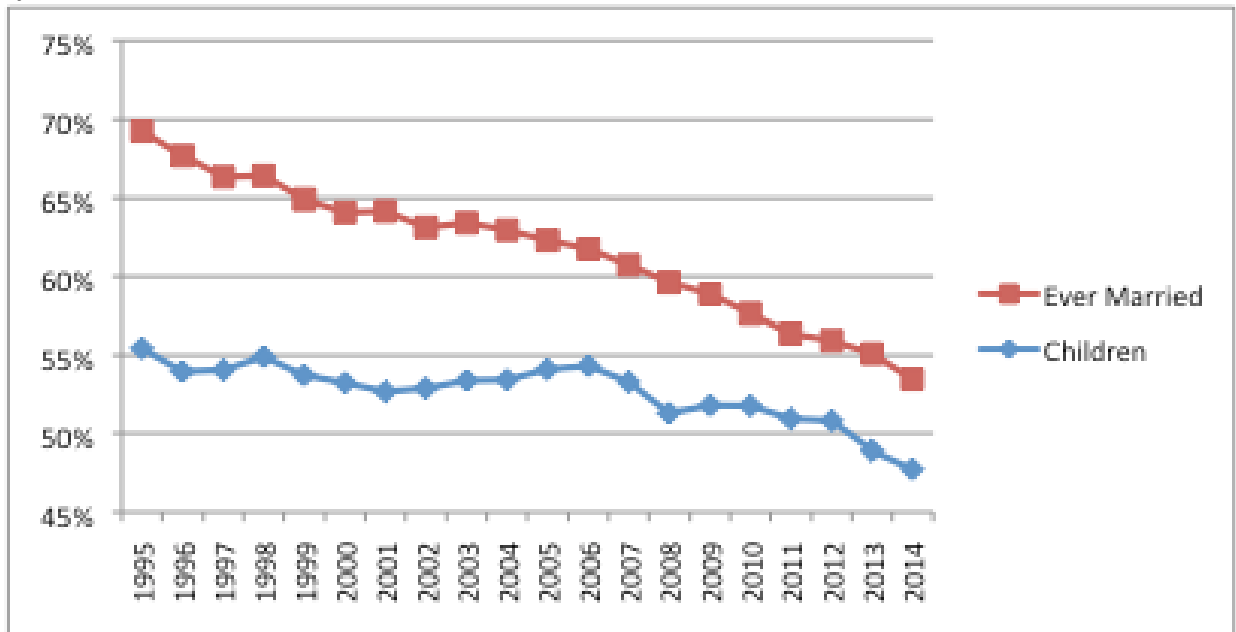
Another notable trend among young adults has been declines in the share that are married and/or living with minor children. Like the increasing minority share, this shift is actually a continuation of trends that date back to the 1970s. But while the rate of growth among non-white households has slowed, the increase in unmarried and childless households has accelerated in recent years, possibly in response to the recession (Cherlin et al. 2013). The share of young adult householders living with a spouse, which declined from 60 percent in the early 1980s, actually held steady at around 50 percent through most of the housing boom, before falling to 42 percent by 2014 (**Figure 4a**). Most of this decline was offset by rising shares of unmarried partner households, from 5 to 13 percent between 1995 and 2014, who despite their coupled status are more like single young adults in their home buying behavior. The share of young adults with children has also decreased over the last two decades, from around 54 percent to 48 percent (**Figure 4b**).

Figure 4: Marital and Parental Status of Young Adults, 1995-2014

a)



b)



Note: Married couples include married with spouse absent, but not separated. Single-adult households include single parents with no other adults living in the residence. Multi-adult households are households with more than one adult who is not the spouse or unmarried partner of the householder (e.g., roommates or other family members). Households with children include only those with the householders' own natural, adopted, foster, or step-child(ren).

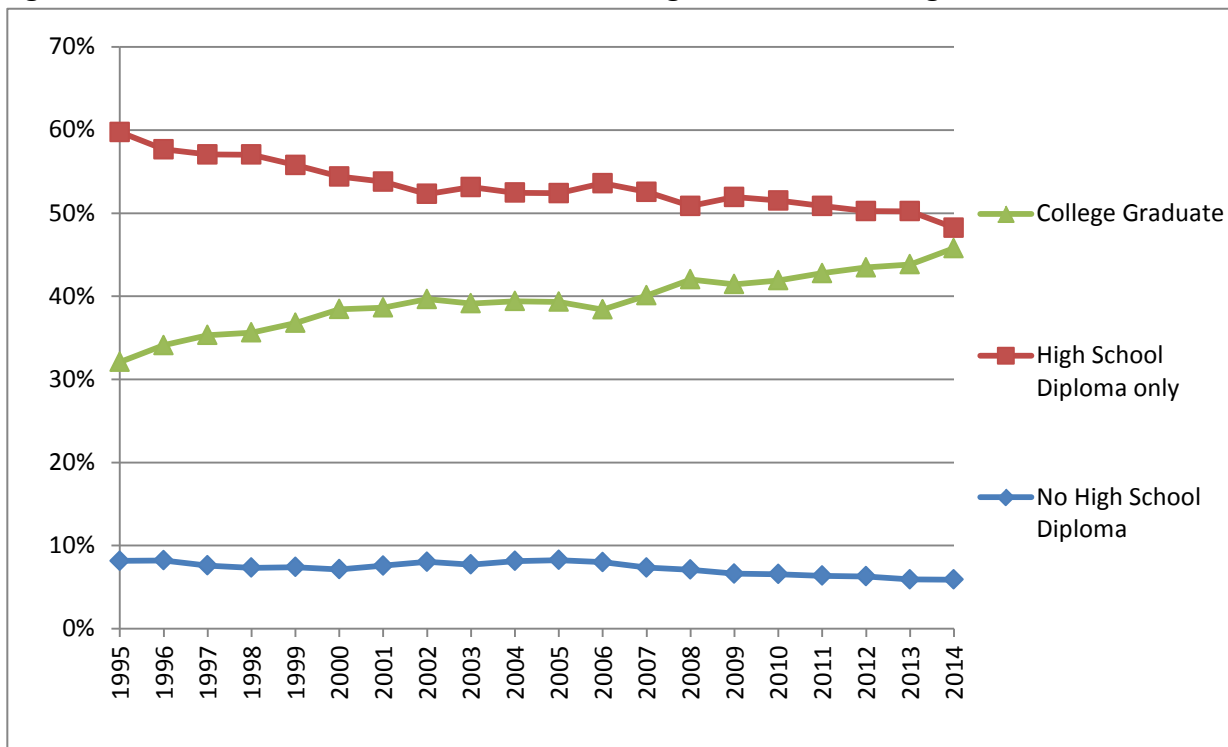
Source: Tabulations of the 1995-2014 Current Population Survey.

The likely effect of these shifts in marital and family status has been to lower homeownership rates among young adults, as married couples and parents tend to have much higher propensities towards owning than unmarried and childless households. Indeed, recent research suggests as much as half the decrease in young adult homeownership since 1980 is the result of lower rates of marriage and family formation (Fisher and Gervais 2011). Lower marriage rates among young adults also reduce the likelihood of some unmarried householders owning homes as a result of their prior marital status, i.e., remaining homeowners following a divorce, separation, or death of a spouse with whom they lived in an owned dwelling. Indeed, the reduction in the share of young adults that have ever been married, from 70 percent in 1995 to 54 percent in 2014 (**Figure 4b**), is even more dramatic than the decline in the share of young adults who are parents. Both of these shifts further reduce the likelihood of young adults owning homes today relative to the past.

Educational Attainment

A potentially positive force on young adult homeownership rates over the last two decades has been the growth in post-secondary educational attainment among this age group. Almost half of all young adult-headed households now include someone with a college degree, up from 32 percent in the mid-1990s (**Figure 5**).⁴ Nearly all this growth is due to an increase in the percentage of high school graduates who attain college degrees; the overall percentage of high school graduates (i.e. the inverse of the share without a high-school diploma), meanwhile, has increased only slightly..

Figure 5: Maximum Educational Attainment among Residents in Young Adult Households



Source: Tabulations of the 1995-2014 Current Population Survey.

Though the time it takes to pursue a college education may delay entry into the workforce and the achievement of financial and residential stability associated with home purchases, young college graduates still tend to have higher homeownership rates than their less educated peers.

⁴ Note that these data reflect the highest educational attainment achieved by all adults in the household, rather than just the householder, since more education of household members tends to elevate household income, regardless of whether it is the head that holds the degree. As a result, the share of young households with a college graduate is larger than the share of all such graduates among the young adult population (35 percent in 2014).

Indeed, Gyourko and Linneman (1997) point to the increasing importance of educational attainment in predicting homeownership outcomes for young adults, which suggests that an increase in the share of households with college graduates should have a positive effect on the homeownership rates of young adult households overall.

Over the last two decades, other noteworthy changes in the socio-demographic characteristics of young adult households include small increases in the following shares: those living in central cities, those with female household heads, and those in the bottom half of the age range (25-29 years old) (see **Appendix A**). All of these changes likely have a slight depressing effect on the homeownership rates of young adults.

Econometric Analysis

Regression Models

To decompose the simultaneous effects of these shifts in socio-demographic characteristics on young adult homeownership rates, regression analyses were run on the tenure status of householders ages 25 to 34 controlling for their race, nativity, education, marital and family status, central city location, income distribution, and age. An additional variable is included in the analysis for the estimated median monthly mortgage principle and interest cost, which is calculated from local median house prices in the year prior to the analysis and median prevailing interest rates for a 30-year fixed rate mortgage, assuming a 10 percent down payment.⁵ All of the socio-demographic characteristic variables are expressed as binary indicators, with respondents who have a specified characteristic assigned a value of one for that variable, and a value of zero otherwise. All categorical variables (race, marital status, income, and education) have one characteristic excluded from the models as a reference category (see **Appendix A**). While regressions with binary dependent variables are traditionally estimated with a non-linear model, this analysis uses ordinary least squares (OLS) to facilitate

⁵ Local prices are the median price for the metro area (or state, if metro area is not available or identified) of the household as reported by the National Association of Realtors® (NAR). Approximately 70-80 percent of observations in the three years modeled for the analysis were in an identified metro area matched to NAR data. Estimates of monthly owner costs do not include taxes or insurance payments that are often added to mortgage costs.

interpretation and post-estimation calculations of model coefficients.⁶

The regressions are performed for three separate years of weighted CPS data: 1995, representing a period before the housing boom; 2005, at the height of the boom; and 2014, after the worst of the housing market downturn and the most recent year for which data are available. The coefficients represent the estimated difference in the homeownership rate for young adult households who have each socio-demographic characteristic relative to those in the reference category, all else equal (see **Appendix B**). For the local monthly mortgage cost, the coefficient is the estimated difference in homeownership rates from a \$1 increase in the monthly cost of owning a home. As expected, in all three years modeled, the homeownership rate is lower (i.e., coefficients are negative) for unmarried, minority, female, foreign-born, and central city households, and higher (i.e., coefficients are positive) for higher income, higher educated, older, parents, and previously married householders, when all other characteristics are controlled for. The coefficients also suggest a negative relationship between the monthly cost of owning a home and homeownership rates, as households are less likely to own when it is more expensive to do so. In the three models, all variables were statistically significant at the 0.1 percent level.

Looking across the three models, there are some trends in the coefficients that warrant mention. The coefficients for marital status, for example, increased in absolute value during the housing boom, reflecting an increasing importance of marital status differences for predicting homeownership among young adults. The subsequent decrease in the aftermath of the boom suggests that, in the current environment, marital status is becoming less relevant to tenure. The opposite, however, is true of race/ethnicity, which had coefficients closer to zero (i.e., smaller differences in homeownership rates) during the boom; recently, these coefficients have been rising in absolute value. The effect of income distributions on homeownership appears to have declined consistently throughout the study period, with the exception of the coefficient for those earning between \$25,000 and \$50,000 a year, which increased between 1995 and

⁶ The results derived from the OLS models are similar in magnitude and significance to those produced by estimating marginal effects after a more traditional binary probit regression.

2005. Education, meanwhile, was associated with larger differences in homeownership rates during the boom than before, and smaller differences currently. Metro status and nativity are both associated with differences in home ownership rates during the boom that remained in effect after the market turned, while being female and in the older half of the age group became less relevant over time. Finally, the coefficients for local monthly mortgage costs declined slightly between 1995 and 2005, suggesting a decreasing influence of higher costs as a deterrent to homeownership at the peak of the housing boom, followed by a sharp increase in 2014. All differences in coefficients across models are statistically significant at the 5 percent level.

A final comment on the results of the regression models concerns their explanatory power, which is measured by the adjusted R-square as a proxy for the amount of variation in tenure status that is explained by the variables. The combined effect of the variables included in the models declined slightly from 0.27 in 1995 to 0.24 in 2014. This suggests that only around a quarter of young adults' homeownership rate is predicted by their personal characteristics and local monthly owner costs, and that the role of other forces (e.g., attitudes towards homeownership and macro-economic factors) has increased somewhat over time. Thus regardless of the influence of individual socio-demographic factors, collectively these conditions remain less relevant to homeownership than market factors and unobserved drivers of tenure choices.

Shift-Share Analysis

An advantage of the OLS models estimated to assess socio-demographic effects on homeownership is that the product of model coefficients and mean variable values when summed over all independent variables in the model, plus the constant is equal to the mean value of the dependent variable. The mean values of all independent variables in the three models described above are shown in **Appendix A**. When multiplied by the coefficients in **Appendix B**, the result is the mean value of the tenure choice indicator, i.e., the sample homeownership rate. For the three years modeled in the regressions above, these

homeownership rates were 44.7, 49.9, and 40.1 percent, respectively.

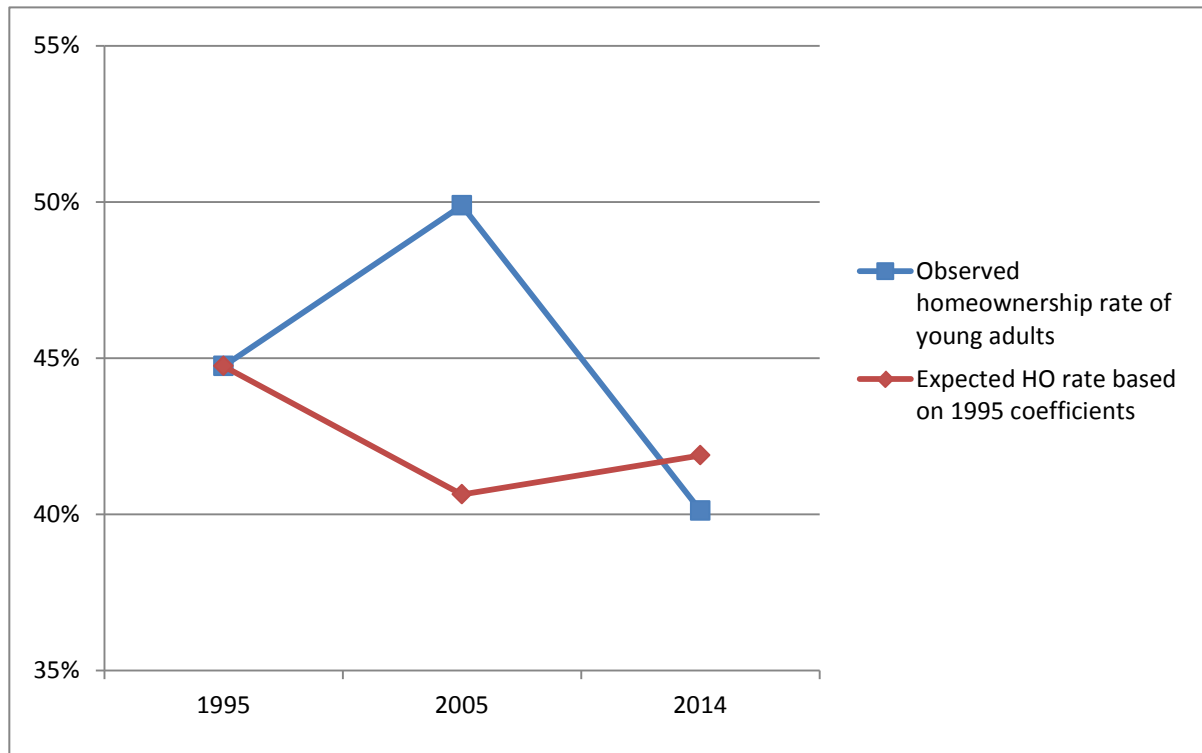
A shift-share analysis of the three regression models offers the opportunity to examine the effect of changes in means versus coefficients. That is, the product of the mean values in one year and the coefficients in another allows us to separate changes in the homeownership rate resulting from shifts in the characteristics of young adults from changes in the propensities of each characteristic for predicting tenure status. This form of shift-share analysis is demonstrated in **Appendix C**, which first applies coefficients from the 1995 model to distributions observed in 2005, to see what the expected homeownership rate for young adults would have been if only the mean values of the socio-demographic variables, i.e., the proportions of the sample that exhibited each of these characteristics, changed during the decade. The result is a homeownership rate of 40.6 percent, or 4.1 percentage points less than the actual 1995 rate. The combined effect of shifts in socio-demographic characteristics and changes in local monthly owner costs thus was expected to lower young adult homeownership rates by this amount, while in reality the rate rose by 5.2 percentage points, due mostly to favorable market and economic conditions for home buying and positive views about homeownership.

The second shift-share applies 2005 coefficients to 2014 distributions, to estimate the effect of changes in socio-demographic characteristics over this period on the homeownership rate of young adults. The result of this calculation is an expected homeownership rate of 51 percent, which is 1.1 percentage points above the observed rate of 49.9 percent as of 2005. This expected rate is heavily influenced by the relative increase in affordability of homeownership that occurred during this period, as house prices declined while interest rates reached historic lows. Absent this decline in monthly mortgage costs, the expected homeownership rate based on socio-demographic characteristics alone should have been lower than the observed rate, by around 1.7 percentage points. This suggests less impact from socio-demographic changes in the second decade of the study period relative to the first, a decrease that is consistent with the slowing growth of the minority share and the slight decline in the foreign-born share among

young adults between 2005 and 2014. This period also saw some increase in homeownership-positive factors, such as share of young adult households with college graduates. This analysis also reaffirms the primary role of macro-economic and market factors on homeownership, which at the time were considerably less conducive to home purchases among young adults, thus lowering the actual young adult homeownership rate to 40.4 percent as of 2014.

The third shift-share calculation spans the nearly two decades covered by this analysis, combining 1995 coefficients with 2014 distributions. The result is an expected homeownership rate for young adults of 41.9 percent; this suggests that the combined effect of all socio-demographic changes that occurred within the young adult population over the last nineteen years, along with changes in local monthly owner cost estimates, should have lowered the young adult homeownership rate by 2.8 percentage points from its 1995 level (**Figure 6**). This expected rate of 41.9 percent is also slightly higher than the observed 2014 homeownership rate of 40.1 percent, suggesting that more young adults would be owners now than actually are if homeownership tendencies from 1995 still prevailed. This result, however, is skewed by the relative affordability of owning today versus in the mid-1990s. Subtracting out the positive 2.2 percentage point influence of local monthly owner costs, the socio-demographic effect alone should have lowered young adult homeownership rates by 5 percentage points, bringing it nearly in line with its current level.

Figure 6: Actual vs. Expected Homeownership Rates of Young Adults, 1995-2014



Note: Expected homeownership rates (i.e., the first and third shift-share calculations in Appendix C) are the product of 1995 regression model coefficients and distributions of young adult characteristics (i.e., mean values of binary variables) in indicated years, summed over all characteristics in the model, plus the constant term.

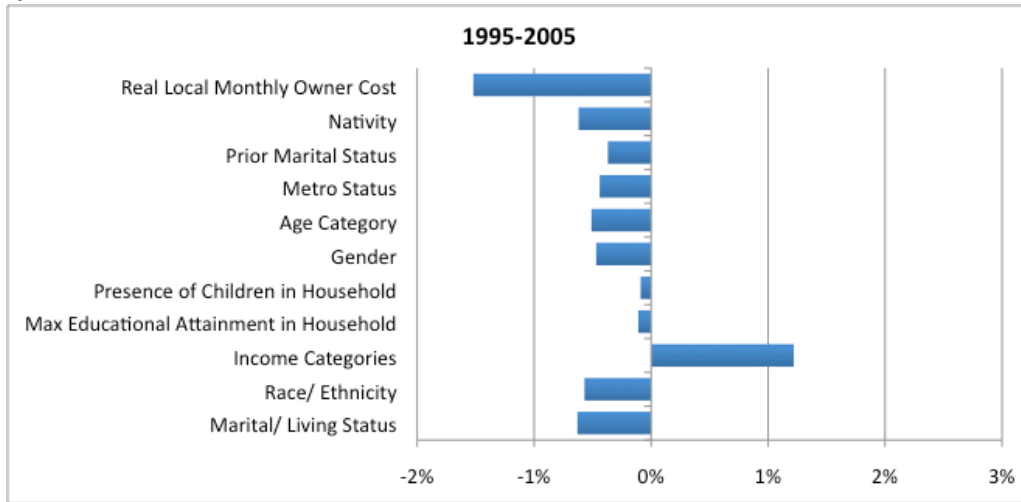
The shift-share analysis further allows for the decomposition of differences between expected and actual homeownership rates according to the variables included in the models. To isolate the effect of changes in a particular socio-demographic characteristic, the product of the distribution and coefficient for a given variable in one year is subtracted from the product of the same coefficient and the distribution for that variable in a later year. In the first shift-share analysis, for example, holding coefficients constant at 1995 estimates shows that over a third of the expected 4.2 percentage point decrease in the homeownership rate between 1995 and 2005 was due to changes in local monthly mortgage costs, while much of the remaining decline was attributable to shifts between these years in the racial/ethnic and nativity status of young adults, which each contributed about six-tenths of a percentage point to that decrease. Changes in marital and living statuses of young adults over this period, including the increase in never-married householders, added an additional percentage point to the expected decline, while the increase in higher income young adult households actually added 1.2 percentage

points to the expected homeownership rate (**Figure 7a**).

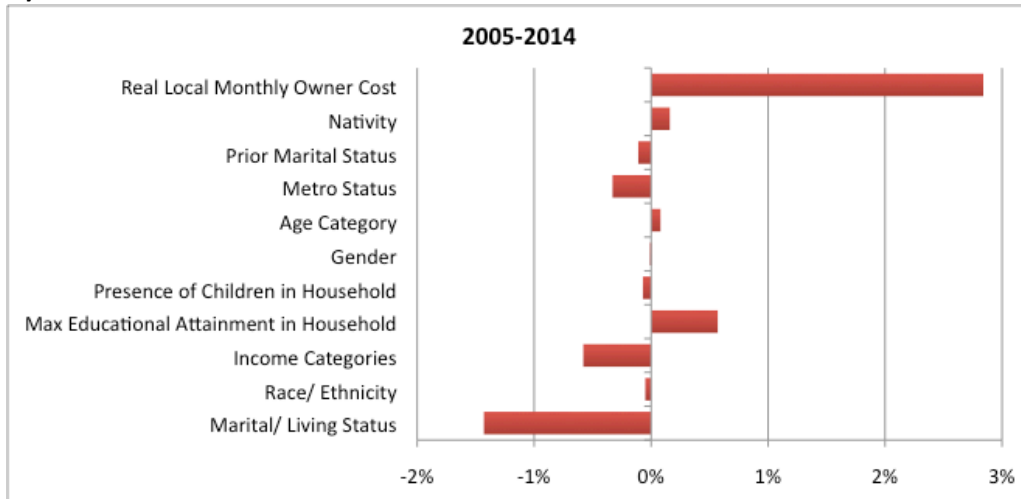
The second shift-share calculation shows that changes in estimated monthly mortgage costs were wholly responsible for expected increases in homeownership rates between 2005 and 2014; absent these dramatic swings in house prices and interest rates, shifts in socio-demographic characteristics would have lowered homeownership rates. The most important factors in the expected demographically-induced decline were shifts in marital and living statuses, as the decrease in the share of married households accelerated during the housing downturn and recession (**Figure 7b**). Growth in the share of lower income households also placed downward pressure on homeownership during this period. Small changes in the racial/ethnic and nativity distributions of young adults, meanwhile, had only a negligible effect, while changes in educational attainment among young adults were actually expected to increase homeownership by over one-half a percentage point. For the whole nineteen-year period (i.e., the third shift-share calculation), marital status shifts were still the largest socio-demographic driver of expected homeownership changes between 1995 and 2014 (**Figure 7c**). Race and nativity combined added another 1.1 percentage points to the expected decline, while higher shares of young adults living in center cities contributed 0.7 percentage points.

Figure 7: Variable Contributions to Expected Decline in the Homeownership Rate of Young Adults, 1995-2014

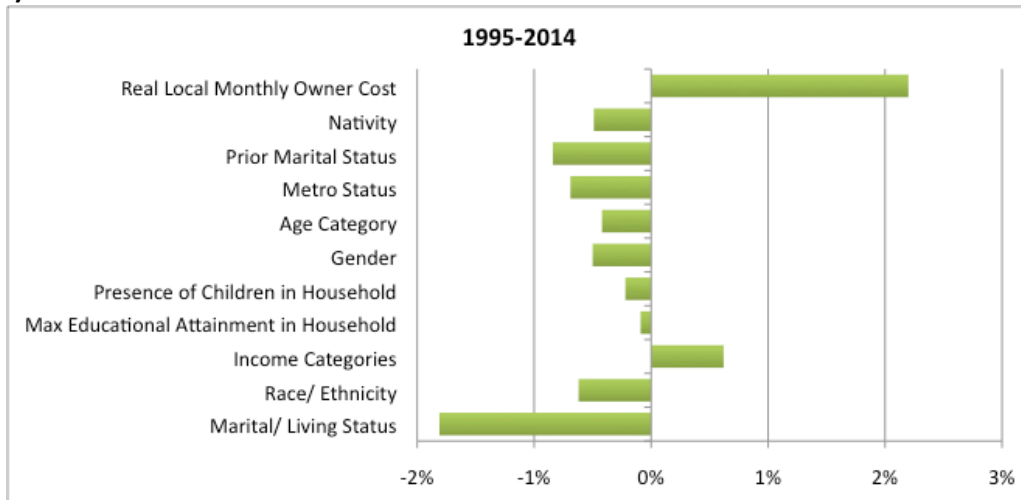
a)



b)



c)



These results make clear several important facts about the role of socio-demographic factors in shaping recent homeownership rates among young adults. First, absent the dramatic swings in housing markets and macro-economic conditions, we would have expected young adult homeownership rates to be similar to what they actually are. Most of that decline, moreover, would have occurred during the 1990s and early 2000s, when the racial/ethnic, nativity, gender, and age distribution of householders age 25 to 34 were shifting more rapidly. Second, the additional decline that was expected to take place after 2005 was mostly driven by changes in the marital status and living arrangements of young adults, which were themselves potentially influenced by the declining economy of that period. Third, however, given the low R-square values of the regression analysis, and the actual rise and fall in homeownership rates for young adults over the last twenty years, it is clear that personal characteristics play a somewhat limited role in determining the tenure status of young households. In contrast, market factors account for around three-quarters of the variation in observed tenure status, with that share growing slightly over the period examined in this analysis.

Discussion and Implications

The analysis above reveals informative details about the drivers of tenure choices among young adults over the past two decades, and in particular about the effects of demographic changes in this population. It does not, however, provide insight into the future tenure status of young households. Such a prediction would require estimates of the number and composition of young adult households going forward. The Joint Center for Housing Studies (JCHS) recently revised their household projections using current Census population projections (McCue 2014). According to their calculations, the number of households with heads ages 25 to 34 is expected to increase by 1 million between 2015 and 2035. The JCHS projections further segment expected change in households by race and marital/family composition, using estimates of the existing population by age and race, expected immigration flows, and current rates of marriage and childbearing. These estimates thus make some assumptions about future trends in socio-demographic characteristics of young adults that do not consider the effects of potential

economic conditions or other external shocks on the composition of households. Still, these projections offer some basis for discussing how further changes in socio-demographic characteristics of young adults may impact their homeownership rates.

All of the projected growth in young adult households, according to the JCHS calculations, is expected to be among minority heads, who will increase their share of all young households to fully 50 percent by 2035 (McCue 2014). This ten percentage point shift in the racial/ethnic distribution of young adult households over a twenty year period reflects a continuation of the trends observed over the past two decades, which, as the analysis above shows, contributed over a full percentage point to declines in the young adult homeownership rate. That decline, however, was calculated after taking into account changes in the marital, educational, income, and locational distributions of young adults, which are also affected by the minority share of households. Specifically, increases in the minority share of young adult households are likely to further decrease the share of these households comprised of married couples, those having college educations, and those living outside central cities; all of these decreases in turn place further downward pressure on the homeownership rate of this population. The full impact of higher minority shares on young adult homeownership rates is therefore difficult to foresee, and may actually be even greater than one percentage point.

It is important to note that these projections are based on recent estimates of headship rates for young adults, i.e., the share of individuals heading their own household, which may not remain at their current level going forward. A rise in the headship rate could occur if the economy, and particularly the job prospects for young adults, improves greatly in the near future. The JCHS's projections also do not account for other socio-demographic trends known to influence homeownership rates, such as the gender distribution of householders, the increasing appeal of urban living, and higher educational attainment among young adults. Any distributional changes in these socio-demographic characteristics of young adults will have further implications for their homeownership rates.

With continued socio-demographic changes likely to have further depressing effects on homeownership rates among young adult households, it will be up to the economy and housing markets to offer countervailing forces to encourage young adults to buy homes. As the analysis in this paper shows, the effect of favorable mortgage terms, affordable housing costs, and increases in income can be stronger drivers of tenure outcomes than socio-demographic characteristics, as evidenced during the housing boom. When both characteristics and economic conditions are less favorable to home purchases, however, young adult homeownership rates can fall precipitously, as happened after the collapse of the housing market in 2005.

Conclusion

The dramatic rise and fall in young adult homeownership rates observed over the past two decades has largely been a function of economic and market conditions, with a smaller role played by changing socio-demographic characteristics. Indeed, increases in the shares of young adult households that are minority, unmarried, and living in center cities should have lowered their homeownership rate during the 1990s and early 2000s; instead, favorable lending conditions and enthusiasm for homeownership increased the homeownership rate among householders ages 25 to 34. In the subsequent decade, after the peak of the housing boom, the homeownership rate for this group fell precipitously, even as changes in their demographic characteristics moderated relative to the prior decade.

Among the characteristics shown by this study to have the greatest effect on young adult homeownership rates, the decline in the share of married couples (both currently and formerly married) had the largest impact, accounting for 40 percent of the expected change in homeownership due to socio-demographic shifts. Most of this effect occurred during the downturn, when economic conditions may have themselves been inhibiting marriages and family formation. Changes in the race and nativity of young adults, meanwhile, have slowed in recent years, reducing the effect of these factors on homeownership. The future of these trends is uncertain, but if recent experience is any guide, they will continue to place downward

pressure on young adult homeownership rates in the near term.

Appendix A: Mean Values of Variables used in Regression Analysis

		1995	2005	2014
Number of households (000s)		19,474	19,331	20,033
Marital/ Living Status	Married Couple*	0.530	0.494	0.423
	Partnered Couple	0.054	0.088	0.129
	Single Adult	0.308	0.312	0.326
	Multi Adult	0.108	0.106	0.123
Race/ Ethnicity	Non-Hispanic White*	0.716	0.621	0.598
	Non-Hispanic Black	0.136	0.137	0.131
	Hispanic	0.115	0.171	0.181
	Non-Hispanic Other	0.033	0.071	0.089
Income Categories (2014\$)	Under \$25,000*	0.214	0.183	0.221
	\$25,000-\$50,000	0.274	0.275	0.256
	\$50,000-\$75,000	0.229	0.214	0.196
	\$75,000 or more	0.283	0.327	0.327
Max Educational Attainment in Household	No Degree*	0.082	0.083	0.059
	High-School Degree	0.598	0.524	0.483
	College Degree	0.321	0.393	0.458
Presence of Children in Household	No*	0.446	0.459	0.478
	Yes	0.554	0.541	0.523
Gender	Male*	0.635	0.517	0.509
	Female	0.365	0.483	0.491
Age Category	25-29 years old*	0.432	0.475	0.468
	30-34 years old	0.568	0.525	0.533
Metro Status	Non-Central City*	0.723	0.677	0.651
	Central City	0.277	0.323	0.349
Prior Marital Status	Never Married*	0.308	0.377	0.465
	Ever Married	0.693	0.623	0.535
Nativity	Native-born*	0.879	0.809	0.824
	Foreign-born	0.121	0.191	0.176
Local Monthly Owner Cost (2014\$)		\$1,235	\$1,432	\$953
Homeownership Rate (Dependent Variable)		44.7%	49.9%	40.1%

Notes: Counts and distributions are calculated using weighted CPS data. Variables indicated with an asterisk (*) are designated reference categories and thus excluded from the regression analyses.

Appendix B: Results of Regression Analyses on Tenure Status for Young Adult Households

		1995	2005	2014
Number of Observations (unweighted)		11,122	13,479	8,761
Marital/ Living Status	Married Couple*	-	-	-
	Partnered Couple	-0.180	-0.218	-0.176
	Single Adult	-0.132	-0.184	-0.131
	Multi Adult	-0.155	-0.165	-0.124
Race/ Ethnicity	Non-Hispanic White*	-	-	-
	Non-Hispanic Black	-0.152	-0.091	-0.133
	Hispanic	-0.078	-0.021	-0.025
	Non-Hispanic Other	-0.033	-0.044	-0.008
Income Categories (2014\$)	Under \$25,000*	-	-	-
	\$25,000-\$50,000	0.092	0.100	0.091
	\$50,000-\$75,000	0.232	0.216	0.183
	\$75,000 or more	0.352	0.334	0.306
Max Educational Attainment in Household	No Degree*	-	-	-
	High-School Degree	0.048	0.069	0.009
	College Degree	0.034	0.132	0.072
Presence of Children in Household	No*	-	-	-
	Yes	0.068	0.037	0.089
Gender	Male*	-	-	-
	Female	-0.040	-0.008	-0.017
Age Category	25-29 years old*	-	-	-
	30-34 years old	0.118	0.106	0.067
Metro Status	Non-Central City*	-	-	-
	Central City	-0.096	-0.125	-0.123
Prior Marital Status	Never Married*	-	-	-
	Ever Married	0.053	0.012	0.017
Nativity	Native-born*	-	-	-
	Foreign-born	-0.088	-0.109	-0.111
Local Monthly Owner Cost (2014\$)		-0.00008	-0.00006	-0.00012
Constant		0.334	0.408	0.405
Adjusted R-Square		0.2684	0.2613	0.2372

Note: The models were all run using weighted data. All regression coefficients are statistically significant at the 0.1 percent level. Variables indicated with an asterisk (*) are designated reference categories and thus excluded from the regression analyses.

Appendix C: Shift-Share Analysis of Regression Results on Tenure Status for Young Adult Households

		Shift 1: 1995-2005			Shift 2: 2005-2014			Shift 3: 1995-2014		
		Coef95 x Mean05	Diff. from 1995	Total Percentage Point Diff.	Coef05 x Mean14	Diff. from 2005	Total Percentage Point Diff.	Coef95 x Mean14	Diff. from 1995	Total Percentage Point Diff.
Marital/ Living Status	Married Couple*	0.0000	0.0000	-0.63%	0.0000	0.0000	-1.43%	0.0000	0.0000	-1.81%
	Partnered Couple	-0.0158	-0.0061		-0.0281	-0.0089		-0.0232	-0.0134	
	Single Adult	-0.0410	-0.0005		-0.0601	-0.0026		-0.0429	-0.0023	
	Multi Adult	-0.0165	0.0002		-0.0203	-0.0027		-0.0190	-0.0024	
Race/ Ethnicity	Non-Hispanic White*	0.0000	0.0000	-0.57%	0.0000	0.0000	-0.05%	0.0000	0.0000	-0.62%
	Non-Hispanic Black	-0.0208	-0.0001		-0.0120	0.0005		-0.0200	0.0007	
	Hispanic	-0.0133	-0.0044		-0.0038	-0.0002		-0.0141	-0.0051	
	Non-Hispanic Other	-0.0023	-0.0012		-0.0039	-0.0008		-0.0029	-0.0018	
Income Categories (2014\$)	Under \$25,000*	0.0000	0.0000	1.22%	0.0000	0.0000	-0.58%	0.0000	0.0000	0.62%
	\$25,000-\$50,000	0.0253	0.0001		0.0255	-0.0019		0.0236	-0.0017	
	\$50,000-\$75,000	0.0497	-0.0034		0.0424	-0.0039		0.0455	-0.0076	
	\$75,000 or more	0.1151	0.0155		0.1093	0.0000		0.1151	0.0155	
Max Educational Attainment in Household	No Degree*	0.0000	0.0000	-0.11%	0.0000	0.0000	0.57%	0.0000	0.0000	-0.09%
	High School Degree	0.0251	-0.0035		0.0333	-0.0028		0.0231	-0.0055	
	College Degree	0.0132	0.0024		0.0605	0.0086		0.0154	0.0046	
Presence of Children in Household	No*	0.0000	0.0000	-0.09%	0.0000	0.0000	-0.07%	0.0000	0.0000	-0.22%
	Yes	0.0367	-0.0009		0.0192	-0.0007		0.0355	-0.0022	
Gender	Male*	0.0000	0.0000	-0.47%	0.0000	0.0000	-0.01%	0.0000	0.0000	-0.50%
	Female	-0.0192	-0.0047		-0.0041	-0.0001		-0.0195	-0.0050	
Age Category	25-29 years old*	0.0000	0.0000	-0.51%	0.0000	0.0000	0.08%	0.0000	0.0000	-0.42%
	30-34 years old	0.0619	-0.0051		0.0562	0.0008		0.0628	-0.0042	
Metro Status	Non-Central City*	0.0000	0.0000	-0.44%	0.0000	0.0000	-0.33%	0.0000	0.0000	-0.69%
	Central City	-0.0310	-0.0044		-0.0437	-0.0033		-0.0336	-0.0069	
Prior Marital Status	Never Married*	0.0000	0.0000	-0.37%	0.0000	0.0000	-0.11%	0.0000	0.0000	-0.84%
	Ever Married	0.0330	-0.0037		0.0065	-0.0011		0.0283	-0.0084	
Nativity	Native-born*	0.0000	0.0000	-0.62%	0.0000	0.0000	0.16%	0.0000	0.0000	-0.49%
	Foreign-born	-0.0169	-0.0062		-0.0191	0.0016		-0.0156	-0.0049	
Local Monthly Owner Cost (2014\$)		-0.1112	-0.0152	-1.52%	-0.0565	0.0284	2.84%	-0.0740	0.0220	2.20%
Constant		0.3345	0.0000		0.4085	0.0000		0.3345	0.0000	
Expected Homeownership Rate		40.6%	-4.1%		51.0%	1.1%		41.9%	-2.9%	

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