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The Potential for Shared Equity and Other Forms of Down Payment Assistance to Expand Access to Homeownership

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Abstract: Previous studies of the financial constraints for homeownership attainment have found that cash grants to cover down payment and closing costs can fairly substantially increase the share of renters who can afford to buy a home. Shared equity homeownership is an alternative to traditional homeownership and renting that provides a substantial upfront reduction in the purchase price of the home, which reduces the cost of homeownership and can expand access for households that do not have the savings for a down payment or have incomes too low to qualify for market rate mortgages. Despite the interest in shared equity, there has been relatively modest growth in the number of these housing units, with fewer than 250,000 of them nationally. If the financial, administrative, and political barriers to shared equity programs could be overcome, how many households could potentially benefit from this alternative to renting and owning? We use household-level income, assets, and debt data from the Survey of Income and Program Participation (SIPP) to expand on previous literature by assessing how a broader range of upfront financial assistance would affect the ability of potential homeowners to buy modestly-priced homes, providing estimates of the potential scale of programs providing modest down payments as well as more substantial amounts of assistance consistent with the levels typically provided by shared equity programs. We find that 6.6 million potential homeowners could purchase a home in their county with assistance of $25,000 to $100,000, a level consistent with what shared equity programs typically provide. An additional 8.6 million would be able to purchase with assistance of $100,000 or more. Still an equal number (15.2 million) of potential homeowners would be able to buy with relatively modest assistance of $10,500 or less, amounts typically provided by traditional down payment assistance programs. We disaggregate our results by racial/ethnic group, income, and geography and show that there may be much greater demand for shared equity than can be met by current programs.

There is fairly substantial evidence that homeownership has a positive association with substantial gains in household wealth as well as with a range of social benefits, including increased civic participation, improved educational outcomes for children, and higher residential satisfaction (Herbert, McCue, and Sanchez-Moyano 2014; Rohe and Lindblad 2014). Of course, owning a home is also associated with significant financial risks—particularly for low- and moderate-income households—given potentially dramatic swings in home values and all too common changes in individual's financial circumstances (Herbert and Belsky 2008; Shlay 2006). Nonetheless, given the potential benefits of homeownership, substantially lower homeownership attainment among racial and ethnic minorities and lower-income households became a concern for U.S. policymakers beginning in the early 1990s (Retsinas and Belsky 2004; Molinsky, Belsky, and Herbert 2014). In the years following the Great Recession, the U.S. homeownership rate fell sharply, raising renewed concerns about disparities in homeownership by race and ethnicity as well as substantial declines in owning among younger households (Choi et al. 2018; Goodman, Zhu, and Pendall 2017; Joint Center for Housing Studies 2018).

Among the barriers to homeownership are a lack of knowledge about the process for purchasing a home, limited income and savings relative to the cost of housing, a weak credit history that limits access to mortgage financing, and a lack of financial and other supports to maintain homeownership after purchase (Herbert et al. 2005). Research has consistently found, however, that of these barriers, the lack of savings for a down payment and closing costs is by far the most significant barrier (Barakova et al. 2003; Herbert et al. 2005). For this reason, down payment assistance programs have been shown to have the greatest potential for expanding access to homeownership (Listokin et al. 2001; Wilson and Callis 2013). Among different forms of upfront financial assistance to enable homeownership, shared equity homeownership models have been promoted as ideally suited for households needing substantial subsidies to close the gap between how much they can afford and the cost of market-rate housing (Davis 2006; Lubell 2014). Given the magnitude of the subsidy, a hallmark of shared equity models is the retention

and growth of this subsidy for successive homeowners by capturing both the subsidy and a share of home appreciation upon sale of the home. Importantly, while shared equity homeownership models vary, they often include a range of supports both before and after purchase, from a local organization managing the program, that are intended to mitigate the risks of homeownership, increasing the likelihood that owning is sustained over time and its potential benefits realized.

Interest in shared equity models has increased in recent years as home prices have outpaced income growth in many areas of the country, making it increasingly difficult for low- and moderate-income households to afford even modestly-priced homes. In addition, the widespread prevalence of gentrification pressures in formerly low-income neighborhoods has also led to interest in forms of homeownership that both allow residents to share in the rising tide of home prices while preserving housing affordability for future low- and moderate-income residents (Thaden 2018). Private-sector shared appreciation models of homeownership have also been developed, particularly in high-cost areas.

For a variety of reasons, despite this interest in shared equity approaches, there has been relatively modest growth in the number of nonprofit shared equity housing units (Lubell 2014; Thaden 2018). Perhaps most fundamental is the lack of funding for the subsidies needed to close the gap between what the targeted households can afford and the market price of housing. There are also very few sources of funding for the operations of the organizations providing stewardship for these programs, including screening and supporting homebuyers and monitoring and overseeing the transition of these housing units between owners over time. In addition, there are also questions about the extent of consumer interest in these forms of homeownership given their financial and organizational complexity and the limitations they place on sharing in gains in future home prices (Thaden, Greer, and Saegert 2013).

In making the case for expanded funding to support shared equity programs, one important question is how large the potential demand is for such efforts. Previous studies have

assessed the number of households who would fail to meet current underwriting standards for common mortgage products but would be able to qualify with modest amounts of subsidies to either reduce mortgage payments or to provide funds for down payment or closing costs (Listokin et al. 2001; Wilson and Callis 2013). These studies, however, do not examine specifically how many potential homeowners would require relatively large subsidies to be able to afford to buy a home. As result, they do not provide a good gauge of the scale of demand for shared equity models where the write down of housing costs is fairly substantial.

The purpose of this current study is to provide a more fine-grained assessment of the distribution of potential homeowners by the amount of upfront subsidy needed to bring homeownership within reach. Specifically, using the 2014 panel of the Survey of Income and Program Participation (SIPP), we assess the number of individuals who currently could not afford a modest-priced home using standard underwriting for Federal Housing Administration insured mortgages but could buy with varying degrees of write down of the market price of the home. The primary focus of the paper is on the potential scale of demand for shared equity homeownership as indicated by the number of potential homeowners who could only afford a modest-priced home through a fairly substantial reduction in the amount of mortgage debt they would assume. Our analysis also provides estimates of the number of individuals who would be able to purchase a modest-priced home with relatively small amounts of upfront financial assistance that is typically provided by down payment assistance programs.

This study also extends previous studies by incorporating county-specific home prices to take into account the substantial variation in home prices across housing markets. Previous studies have also focused solely on existing households to assess the potential demand for homeownership. Since a fairly significant number of homeowners transition from other living arrangements where they are not the head of household (including living with parents or living with other roommates), this study also includes individuals living in these situations in the count of potential homeowners.

The results of this analysis provide the number and share of potential homebuyers needing varying levels of financial assistance in order to afford modestly-priced homes. These counts are provided for potential homebuyers by income level, race and ethnicity, and the level of house prices in the market where they live to provide an indication of which demographic groups and market areas offer the greatest potential demand for shared equity homeownership and other forms of down payment assistance. We find that 15.2 million potential homeowners would be able to purchase with substantial amounts of upfront financial assistance, including 6.6 million who could purchase with assistance of between $25,000-$100,000, with an additional 8.6 million needing $100,000 or more. Our focus is on the $25,000-$100,000 band since most shared equity programs provide subsidies of this magnitude, though some provide assistance of more than $100,000 per unit, especially in high cost areas like Washington, D.C., and the San Francisco Bay Area (Theodos et al. 2017). An equal number of potential homeowners would be able to buy with much more modest amounts of assistance of under $10,500. Results disaggregated by racial and ethnic group show that minorities would be more likely to benefit from the higher levels of assistance provided by shared equity programs: 27% of non-Hispanic whites need assistance of $25,000 or more, compared to 31% of blacks, 30% of Asians, and 36% of Hispanics. Thus, an expansion of shared equity programs would have the potential to help reduce the disparities between the white and minority homeownership rates.

The next section of the paper provides a brief review of previous studies examining financial barriers to homeownership and the potential for different forms of financial assistance to overcome these barriers. Next we present an overview of shared equity homeownership models, the typical income levels and amounts of subsidies provided in existing programs, and other common forms of down payment assistance provided to low- and moderate-income homebuyers. We then describe the data and analytic approach before presenting the results of our analysis. The paper concludes with a discussion of findings and conclusions for policy.

Financial Barriers to Homeownership

Given the high value of homes relative to incomes, the vast majority of households must rely on mortgage financing to purchase a home. In determining whether and how much credit to extend to homebuyers, lenders employ underwriting criteria that take into consideration whether the borrower's income is sufficient to cover monthly debt service payments and other recurring costs of ownership and non-housing debt. Borrowers are also required to invest some of their own savings in the home to reduce lender risk in the event that the home is foreclosed and must be sold to repay the outstanding debt. Higher levels of upfront investment in the home also have the benefit of reducing the amount that must be borrowed and so reduces the level of income needed to cover monthly mortgage costs.

A variety of studies have examined the degree to which potential homebuyers are unable to purchase modest-priced homes due to either insufficient income or savings to meet standard underwriting criteria. These studies provide an indication of the relative importance of income and savings constraints and also allow for assessments of the degree to which subsidies that supplement income or provide upfront assistance toward down payment and closing costs have the potential to make home purchase more feasible (Listokin et al. 2001).

Most prominent among these studies is a regular series of reports produced by Census Bureau researchers since the 1980s using the Survey of Income and Program Participation (SIPP), with Wilson and Callis (2013) being the most recent in this series. Using survey data from 2009, this study finds that only 6.8% of renters could afford a modestly-priced home (defined as the 25th percentile home in the state of residence). The analysis reveals that potential homebuyers are more likely to be constrained by a lack of savings than by insufficient income. For example, among renter families, 24.8% are constrained solely by a lack of sufficient savings, while only 1.8% are solely constrained by a lack of income, with a large majority (73.6%) constrained by both factors. The study further finds that reducing the mortgage interest rate by three percentage points would only increase the share of renters who can afford a

modestly-priced home by 0.5 percentage points, while providing $5,000 in upfront cash assistance would increase the share by 1.9 percentage points and a $10,000 grant would increase the share by 9.3 percentage points. The results highlight how upfront subsidies toward the purchase price of the home have great potential for expanding access to homeownership.

An earlier study by Listokin et al. (2001) employed essentially the same methodology to a 1995 wave of the SIPP and came to very similar conclusions about the much greater potential for upfront cash grants to expand access to homeownership. This study assessed the impact of both income supplements and upfront cash grants and found that the latter had a much greater impact on the share of renters who could afford to purchase a home. The largest impacts were associated with cash grants of $10,000, which increased the share that could afford to purchase a home by 26.4 percentage points. The much larger impact found in this study compared to Wilson and Callis reflects the fact that a $10,000 grant in 1995 represented a much larger share of the value of a modestly-priced home, indicating that relatively large upfront grants have the potential to substantially increase the share of renters who could purchase a home.

In addition to income and savings, access to mortgage credit is also predicated on the credit history of the borrower. There is a much thinner literature assessing the significance of impaired credit for access to homeownership given limited credit information in most publicly available data. One notable exception is Barakova et al. (2003) which incorporated estimates of credit scores to assess the relative importance of constraints on mortgage borrowing due to limited income, savings, or impaired credit. The results indicate that removing the constraint imposed by a lack of savings would increase the probability of homeownership among renters by 62%, a much greater impact than removing income (3%) or credit (10%) constraints. Like most studies assessing the significance of financial barriers to homeownership, the analysis is this study is not able to account for credit barriers to accessing mortgage financing, but the results of Barakova et al. suggest that this will result in only a small overestimate of the share who can afford to buy with upfront financial assistance alone.

Shared Equity Homeownership and Down Payment Assistance Programs

A principal concern of this paper is the potential demand for shared equity homeownership approaches that provide substantial upfront financial assistance to homebuyers, while also offering supports for homebuyers both before and after purchase to help sustain homeownership. As first framed by Davis (2006), shared equity homeownership encompasses forms of homeownership where resale of the home is restricted to limit the amount of appreciation the owner may realize in order to preserve long-term affordability of the home. The sale price of the home is generally substantially below the market value, with public or philanthropic funding used to make up the difference. These programs also typically involve oversight of this housing by a nonprofit organization or a public entity that screens and prepares buyers prior to purchase, monitors and supports homeowners after purchase, and then oversees resale of the home to another income eligible homeowner.

There are three primary legal structures used to implement shared equity homeownership: community land trusts, limited equity cooperatives, and deed restrictions (Davis 2006; Lubell 2014). In a community land trust, the land is owned by the trust and leased to the homeowner, with the ground lease establishing the rights of the trust to repurchase the property on sale under agreed upon terms. The trust is managed by a board composed of residents of the land trust, residents of the surrounding community, and public officials and other local supporters of the trust. In a limited equity cooperative, residents purchase shares in the cooperative that give them the right to occupy a home in the development and to have a say in the management of the property, including the admittance of new members. Sale prices of shares are set by the bylaws for the cooperative, with limited equity cooperatives setting these prices below market levels. Finally, deed restricted housing are homes that have covenants in their deeds limiting the resale price and income limits for the owner. Unlike community land trusts and limited equity cooperatives, deed restricted housing may not have a nonprofit

organization as a steward overseeing the property. The most common form of deed restricted housing in recent years has been developed through inclusionary zoning ordinances that mandate or incentivize developers to reserve a portion of the units to be affordable to a designated income level for a specified period of time.

For the most part, shared equity approaches to homeownership have followed one of these three models, with either public and nonprofit organizations managing these programs. In recent years, however, private forms of shared equity homeownership have started to emerge, where private investors provide an equity investment in a home in exchange for a share of future appreciation.[1] There are also shared appreciation mortgages where some portion of the home is financed using below market interest rate debt that is also entitled to a share of the home's appreciation. While the focus of this paper is primarily on the public and nonprofit forms of shared equity homeownership, the findings are also relevant for sizing the market potential of these other forms of shared equity financing.

In a recent scan of the field, Thaden (2018) finds that limited equity cooperatives account for the largest share of shared equity housing units, with an estimate of 167,000 homes, although about 100,000 of these are in New York City alone. Deed restricted housing units through inclusionary zoning programs account for at least another 50,000 units based on a field survey by Thaden and Wang (2017). Finally, community land trusts are estimated to include about 9,000 housing units in 165 active organizations. Thaden notes that despite the interest in this type of housing, there appears to have been little net growth since Davis (2006) reviewed available evidence on the number of shared equity homes across the country.

In his review of shared equity forms of homeownership, Lubell identifies several barriers to greater expansion of shared equity homeownership. Perhaps most important is the lack of a

[1] Unison is one private company that, for example, matches a 10% borrower down payment (resulting in a 20% down payment on a property) in exchange for 40% of property appreciation. See more at https://www.unison.com/

consistent source of financial subsidies that can be used to write down the cost of the home that is required to make homes affordable to the target income group. The next most significant hurdle is the cost of the administration of these programs, requiring ongoing oversight and stewardship by a nonprofit entity that must somehow generate revenue to cover these operations since there are no ongoing public sources of funding for these activities.

Consumer confusion and hesitancy about these forms of owning is another obstacle, with the limitations placed on realizing appreciating home values and the oversight provided by the program stewards making some potential homebuyers reluctant to consider shared equity options. In a series of 14 focus groups with consumers in Nashville, those currently searching for homes who felt they could afford to buy without substantial assistance were found to be least receptive to shared equity homeownership approaches, while homeowners who had defaulted on their mortgages were universally receptive to the idea (Thaden, Greer, and Saegert 2013). Further research on attitudes among financially distressed homeowners in Nashville also found substantial interest in shared equity homeownership as a means of providing greater support for owners (Saegert et al. 2015). These studies also find that consumers were concerned about not being able to fully realize the appreciation in their homes, the potential intrusion into their ability to control the properties by the program steward, and being limited in where they could choose to live and being identified as living in subsidized housing. Practitioners and advocates expressed reluctance about the limits on appreciation shared equity models place on low- and moderate-income owners (Jacobus and Sherrif 2009).

There are also a variety of alternative means of subsidizing the purchase of homes by low- and moderate-income households that do not require equity sharing or oversight by a program steward. A review of the way in which state and localities use the federal HOME program to subsidize homeownership provides a good indication of the range of these alternative approaches, as HOME is one of the most common sources of down payment assistance (Turnham et al. 2004). A survey of state and local jurisdictions' use of this funding to

provide subsidies for low- and moderate-income homebuyers found that a majority of the programs created by these entities employed forgivable loans or grants as long as the homeowner stayed in the home for at least five years. Thus, homebuyers generally capture the entire value of the subsidy, with no recapture for redeployment with subsequent homebuyers. In about one-third of the programs surveyed, assistance was provided in the form of repayable loans, although typically these programs did not require on-going payments but simply recaptured the loan amount upon sale or payoff of the first mortgage. In these cases, the original subsidy is retained but will decline in value relative to the inflation in home values over time. Based on recent reports on HOME program activity since 2013, the median amount of assistance per homebuyer provided through these programs was $19,000, with about 70% receiving less than $50,000.[2] Over its history, 70% of assisted homebuyers have had incomes between 51% and 80% of area median income (AMI), with the remaining share earning less than 30% of AMI.

There is relatively limited information available on the typical amounts of subsidy provided through shared equity programs. The most recent information available is from an evaluation of nine large shared equity programs (Theodos et al. 2017). This study found that the average difference between the market value of the home and the price paid by the homebuyer was $94,000, although the range across programs was fairly broad from a low of $27,000 to a high of $183,000. Overall, six of the programs had average amounts of assistance under $100,000. The average income of homebuyers across these programs was $44,000, representing 51% of AMI.[3] These results suggest that shared equity programs tend to provide

[2] Information on HOME program activity downloaded from https://www.hudexchange.info/programs/home/home-activities-reports/.
[3] It is not known how typical these levels of assistance are across a broader range of programs, but another recent study suggested that typical per unit subsidy was $40,000, which is well below the levels reported for these programs (Theodos et al. 2015).

much higher levels of assistance for a lower income group of homebuyers than more traditional down payment assistance as shown by experience with the HOME program.

The focus of this study is in assessing the scale of potential demand for shared equity homeownership based largely on both the amount of financial assistance needed to make homeownership attainable and the income level of potential homebuyers. Based on this review of existing program attributes and consumer attitudes we assume that shared equity homeownership programs will have the greatest appeal where the amount of assistance is fairly substantial so that owners would be unlikely to be able to afford to purchase absent this support and more willing to accept the limitations on equity accumulation and the stewardship of their ownership by an outside organization. The findings we present, however, will still allow those interested in this subject to gauge the most appropriate cutoffs for the level of assistance provided.

Data

We use data from the most recent panel of the Survey of Income and Program Participation (SIPP) to estimate the number of households nationwide that are candidates for shared equity or other forms of down payment assistance. In 2014, the SIPP surveyed a nationally-representative sample of over 29,000 households and collected data about the demographic and socioeconomic characteristics of these households, including detailed information on sources and amounts of income, assets, and debts in calendar year 2013. These detailed financial data and the large, nationally-representative sample make the SIPP the most appropriate source of data for estimating how much households could afford to spend on housing (see Listokin et al. (2001), Savage (2009) and Wilson and Callis (2013) for prior home affordability analyses using the SIPP).

Our analysis relies on individual-level internal user files of Wave 1 of the 2014 SIPP. We merge these files with restricted use data identifying individuals' residential addresses during

the survey period (from January 2013 through month of survey in early 2014). These addresses allow us to identify the state and county where individuals lived in December 2013, the month for which respondents reported information on assets and debts. We assign individuals to counties so that we can account for geographic variation in home values. This provides a more precise estimate of ability to afford a home where the individual currently lives than does a national or regional criterion home value, on which previous studies have relied.

We use data from the 2013 American Community Survey (ACS) to estimate housing values for U.S. counties. For observations in each county, we calculate the 10th, 25th, 40th, and 50th percentile in the distribution of housing values based on all owned homes.[4] We then merge the ACS data to the individual-level SIPP sample so that we can estimate a household's ability to afford a very low-, low-, moderate-, and median-value home in their area.[5]

Analytic Approach

Potential Homeowning Units. The first step in our analysis is to determine who in the SIPP sample is eligible to become a homeowner. We create a sample of potential homeowning units (PHs) based on current tenure and household composition, as measured in December 2013.[6] Our pool of "potential homeowners" includes three main groups: (1) existing renter households; (2) existing households that neither own nor rent their homes (those of "other" tenure); and (3) non-households, comprising adult individuals and couples who currently live in someone else's home. PHs in the non-household group must include a potential head of household who is between the ages of 25 and 65.

[4] As a robustness check, we additionally calculate these same four points in the distribution based only on owned homes where the owners moved in the last year; this is a proxy for recent sales and more current values. The results are nearly identical and available upon request.
[5] We report results based on the 50th and 25th percentile housing values. Results for the 40th and 10th percentile are available upon request.
[6] The SIPP survey instrument asked respondents to report their assets and debts in December 2013 so we rely on household rosters and other individual covariates reported during this month to determine the composition of PHs.

An example may help illustrate how we construct our PH sample. Consider a case in which a woman between the ages of 25 and 65 and her husband live with the woman's parents in a home owned by the woman's parents. In this example, we consider the woman and her husband to be a PH, assuming that although they are currently a non-household, they could leave the parents' home and establish their own independent household. If the parents in this example rented rather than owned their home then this hypothetical household would include two PHs: the woman and her husband are one, and the woman's parents are a second.

We are motivated to expand our PH sample from existing renter households to also include non-households, individuals and couples living in others' homes, based on our analysis of public use data from Waves 9 and 15 of the 2008 panel of the SIPP. This analysis shows that approximately 20% of individuals who transitioned from not owning a home in Wave 9 to owning a home by Wave 15 had lived in someone else's home in the earlier wave. Restricting our sample of PHs to independent renter households, while excluding individuals and couples who live in someone else's home, would therefore omit a fairly sizeable group of potential homeowners from our estimates.

We acknowledge that the assumptions we make in building our PH sample may overestimate the total number of PHs nationwide. Including non-households in our PH sample likely overestimates the number of PHs, as some of these individuals and couples might pool income and assets with the householders of their current home to purchase a home together. For instance, in the example discussed above, the woman and her husband may pool resources with the woman's parents to purchase a home together, rather than each PH purchasing a home on their own. In that case, the household would produce only one new homeowning unit, but our assumptions would designate it as including two PHs. Not knowing who would purchase together and who would purchase separately is a limitation of our analysis; we choose to err on the side of including more PHs rather than assume certain sets of individuals would combine resources to purchase a home.

We attempt to partially counteract this overestimation by restricting our pool of non-household PHs to those headed by a potential householder between the ages of 25 and 65. We do this recognizing that there is a strong life-course component to homeownership, in that transitioning into homeownership is correlated with coupling up and aging into the 30s and 40s. Our own analysis of restricted 2015 American Housing Survey data shows that households under 25 and over 65 comprise small percentages of first-time homebuyers (7% and 2%, respectively). Yet almost half of our unrestricted sample of non-household PHs are under 25, and an additional small fraction are 65 or older.[7] The upshot is that roughly half our unrestricted sample of non-household PHs are, by the data, statistically very unlikely to become first-time homebuyers in the near future. Additionally, the vast majority of non-households in our unrestricted sample are single-earner households (93%), in part because of the sizeable portion under age 25. In a few years' time, however, many in this group may partner, simultaneously increasing their likelihood of purchasing a home and potentially doubling their financial home purchasing power. This may mean they do not need financial assistance to purchase a home, and it could also reduce the number of PHs in this group by half (i.e., if two single-person non-household PHs couple up, they become just one PH). In light of these factors, we exclude from our PH sample non-households who are under age 25. We also exclude non-households aged 65 and older, assuming that individuals and couples of this age who are not living independently are unlikely to (re)establish an independent household.

Can potential homeowners afford to buy a home? Once we identify all PHs in the 2014 SIPP, we aggregate individual-level income, assets, and debts at the household level to determine whether the PH could afford to purchase the median-priced home in its county of residence (please see Appendix Table A for our definitions of income, assets, and debts, which follow the

[7] By contrast, the vast majority of renters in our PH pool are aged 25-64.

methodology outlined in Wilson and Callis (2013)). We consider three primary components of "affordability": (1) whether a PH has sufficient assets to afford a down payment on the median-value home in its county of residence; (2) whether a PH has sufficient income to afford monthly mortgage payments on the median-value home in its county of residence; and (3) whether a PH has a manageable amount of non-housing debt.

We set the down payment amount for each PH at 3.5% of the median-value home in its county, following the minimum down payment requirement for FHA loans.[8] We define monthly mortgage payments as "affordable" if they require less than 31% of monthly household income, and we consider non-housing debt to be "manageable" if mortgage payments and debt service together consume less than 43% of monthly household income (please refer to Appendix Tables A and B for the types of debts we include in non-housing debt, as well as the loan terms we use to calculate debt service payments and monthly mortgage payments). These assumptions follow FHA front-end and back-end debt-to-income ratios, respectively, and assume no compensating factors (FHA 2019). For most PHs, non-housing debt service payments may consume no more than 12% of their monthly income; assuming that most PHs will need to pay the maximum 31% of income for mortgage payments, this leaves 12% of income remaining for non-housing debt payments (43% of monthly income less 31% for mortgage payments equals 12% for non-housing debt payments). For some higher-income PHs who can afford median mortgage payments using less than 31% of their monthly income, however, debt service payments may exceed 12%.

We begin our analysis by calculating the minimum down payment and monthly mortgage payments for the median-value home in each county. As stated above, we set the down payment amount at 3.5% of the median-value home in the area. To calculate the monthly

[8] Fannie Mae and Freddie Mac also offer 3% down payment programs. We use FHA underwriting criteria because it is generally much less restrictive than GSE underwriting requirements, which require loan level pricing adjusters for higher risk loans.

mortgage payment, we assume a 30-year mortgage with a 4.5% interest rate—the 30-year fixed rate mortgage average in the United States in December 2013 (Freddie Mac 2019). We calculate monthly mortgage payments based on a principal amount of 99.5% of the median-value home, which assumes that closing costs and other fees total 3% of the value of the home, and that these costs can be financed. The monthly payments also include state-specific property tax rates from the Tax Foundation (2015) and assume a property insurance rate of 0.35% of property value and a mortgage insurance rate of 0.85% of property value.[9]

The next step in our process is to determine whether each PH can afford the median-priced home in its county with its existing balance of assets, income, and debts. We categorize PHs as being able to afford the median-value home in their county if they meet each of our three criteria outlined above (1. having sufficient assets to afford the down payment; 2. having sufficient income to afford the mortgage payments; and 3. holding a manageable amount of non-housing debt). If PHs meet all three of these criteria, or if they have assets sufficient to buy the median-value home outright without a mortgage, we categorize them as able to afford homeownership without assistance. The PHs who do *not* meet all three criteria, and who cannot afford to buy a home with their existing balance of assets, income, and debt, are of interest for us: they represent households that could potentially afford to buy a home with up-front financial assistance.

Once we have established the pool of PHs who *cannot* afford the median-value home without assistance, we determine the type of barrier(s)—income, assets, or debts—preventing them from being able to purchase a home. Among those PHs with excessive non-housing debt, or those for whom debt service payments combined with estimated mortgage payments require more than 43% of monthly income, we attempt to re-organize PH debts and assets in ways that

[9] State-specific property tax rates are mean effective property tax rates calculated as the ratio of total real taxes paid over total home value (Tax Foundation 2015). The property insurance and mortgage insurance rates mirror JCHS assumptions used in affordability calculations for the State of the Nation's Housing Report (JCHS 2018).

might allow them to qualify for home purchase assistance. To do this, we use any existing assets the PH holds to “pay down” its excessive non-housing debt to a manageable level (again, for most PHs, this equals 12% of monthly income). We categorize PHs who do not hold sufficient assets to pay down their non-housing debt to manageable levels as “unable to purchase” even with up-front home purchase assistance, assuming that such assistance cannot be used to pay off non-housing debt. After performing these asset and debt re-organizations, our pool of candidates for up-front home purchase assistance is reduced to PHs with manageable non-housing debt, but who may still face income or asset barriers. Before moving on to our final step and assessing the amount of assistance each remaining PH needs, we categorize as “unable to purchase” all PHs with incomes that are zero or negative, assuming that they are unlikely to be able to sustain the costs of homeownership in the long term even with assistance.

Finally, we determine the amount of assistance that each PH remaining in our sample would need to purchase the median-value home in its county of residence. These remaining PHs fall into three categories: those who are constrained by a lack of savings but have sufficient income, those who have sufficient savings but low incomes, and those who are both savings and income constrained. For PHs who have sufficient income to not be constrained by the 31% front end ratio, the amount of assistance is limited to what is needed to supplement the PH’s assets in order to support a 3.5% down payment. For PHs with assets equal to or greater than 3.5% of the median-value home, but who are income constrained, the amount of assistance is determined by the difference between the mortgage amount the PH’s income could support and the median-value home plus closing costs less the 3.5% down payment. For PHs who face both income and savings constraints, we calculate the amount of assistance needed to afford the median-value home as the difference between the amount of mortgage debt the PH’s income will support and the value of the home plus closing costs less whatever assets the PH has to put

toward the home purchase. Figure 1 presents a flow chart representing the steps in our analysis.

Throughout the analysis described in this section the criterion home is the median-value home in each PH's county: we repeat this analysis for criterion homes priced at the 25th percentile of the housing price distribution in each county and report selected findings from those results below.

Results

Description of the sample. Table 1 shows weighted descriptive statistics of the full sample of PHs we use to estimate affordability gaps (first column) and disaggregates the sample into renters (second column) and non-households (third column). We identified approximately 14,000 PHs in the SIPP sample, representing approximately 51.2 million PHs nationally. This is a disproportionately low-income sample, reflecting the fact that homeowners, on average, have higher incomes than non-homeowners. The median PH income is $24,700, and 43% of the sample had an annual income under the first quintile cut point of the national distribution, approximately $25,000 (an additional 7% of PHs have zero or negative income). Another 23% had an annual income between $25,000 and $45,000, while 16% of the sample had a 2013 income between $45,000 and $75,000, and 11% had an income in the top two quintiles of the national distribution, above $75,000. The median amount of assets held by PHs is just $313, with a majority of PHs (51%) holding assets totaling between $1-$5,000, and fully 29% holding no assets at all. Meanwhile, the majority of PHs (53%) hold no non-housing debt, and 21% have small amounts of non-housing debt that totals under $10,000. Fully 70% of our PH sample are single-earner households, with the remaining 30% comprising married couples or non-married partners. The race and ethnicity breakdown of the PHs is approximately 53% non-Hispanic white, 18% non-Hispanic black, 19% Hispanic, 5% Asian, and 5% other race.

Breaking down our PH sample into renters, who comprise 76% of our PH sample, and non-households (24% of our sample) illuminates several noteworthy differences between the two groups.[10] Renters have higher incomes and hold more assets, on average, than the non-households in our sample. The typical renter PH has an annual household income of $27,040, while the typical non-household brings in $18,930 per year. The share of renter PHs who hold no assets at all is just over one-quarter (26%), while among non-household PHs, it is 10 percentage points higher, at 36%. Renter PHs also have more debt than do non-household PHs. While roughly half (51%) of renter PHs hold no non-housing debt, fully 61% of non-households are debt free. Further, 14% of renter PHs have upwards of $25,000 in debt, compared to just 7% of our subsample of non-households. Household composition also differs between the two groups. Among renters, 63% of PHs are single-earner households, compared to 93% of non-household PHs. The higher shares of debt-free and single-earner PHs among non-households may be due in part to their relatively younger age: the median age of renters in our PH sample is 43, while that of non-households is 35.

Table 1. Descriptive Statistics		Means	
	Full Sample	Renters	Non-Households
Income			
Zero or Negative	7%	5%	14%
$1-$24,999	43%	42%	47%
$25,000-$44,999	23%	24%	21%
$45,000-$74,999	16%	17%	12%
$75,000-$119,999	7%	8%	4%
$120,000 or more	4%	5%	2%
Median Income ($)	24,700	27,040	18,930
Single Earner	70%	63%	93%
Assets			
No Assets	29%	26%	36%
$1-$5000	51%	52%	47%
$5-$10000	6%	6%	5%
$10-25000	6%	6%	4%

[10] Our “renters” category also includes independent households who neither rent nor own their unit, whereas non-households currently live in a household headed by someone else.

$25-50000	3%	3%	2%
$50-100000	2%	2%	2%
$100,000.00	4%	4%	2%
Median Assets ($)	313	397	187
Non-Housing Debt			
No Debt	53%	51%	61%
$1-5000	14%	14%	15%
$5-$10000	7%	7%	7%
$10-25000	13%	14%	10%
$25-50000	7%	8%	5%
>=$50000	5%	6%	2%
Race-Ethnicity			
Non-Hispanic White	53%	53%	52%
Non-Hispanic Black	18%	18%	16%
Non-Hispanic Asian	5%	5%	6%
Hispanic	19%	19%	22%
Other	5%	5%	4%
Age			
<25	7%	10%	
25-34	29%	23%	46%
35-44	20%	20%	20%
45-54	18%	17%	18%
55-64	14%	14%	16%
65	12%	16%	
Median Age	42	43	35
County Price-to-Income Ratio			
PI<3	38%	38%	39%
PI >3 <5	42%	43%	41%
PI >5	19%	19%	20%
Total	51,190,000	38,900,000	12,280,000

Source: Wave 1 of the 2014 panel of the SIPP. These results were disclosed by the US Census Bureau's Disclosure Review Board, authorization number CBDRB-FY19-396.

We present some results stratified by the housing price-to-income ratio of the county in which the PH lives. We select counties as a rough proxy for the geographic boundary within which PHs are likely to search for a home. We define counties with housing price-to-income ratios of 5 or above as expensive markets, those with ratios between 3 and 5 as middle markets, and those with ratios below 3 as inexpensive markets. The counties categorized as expensive markets include coastal cities we would expect to find in this category such as San Francisco, Los Angeles, New York, and Boston. In our sample, 19% of PHs live in expensive

markets. The middle market category includes the counties containing Chicago, Phoenix, and Miami at the higher end, Atlanta, Louisville, and Providence toward the middle, and Raleigh, North Carolina, near the low end of the category. Approximately 42% of our sample lives in middle markets. The inexpensive market category includes counties located predominantly in the Midwest, Great Plains, and South: Cincinnati, St. Louis, San Antonio, Pittsburgh, and Cleveland are representative cities in this category. Thirty-eight percent of our PH sample lives in inexpensive markets.

Table 2. Mean Value across Counties at Given Percentile

	50th percentile	25th percentile
All Counties	$ 175,200	$ 111,000
Counties with PTI <3	$ 125,000	$ 80,000
Counties with PTI<3 >5	$ 199,800	$ 125,000
Counties with PTI >=5	$ 400,000	$ 280,000

Source: 2013 ACS. These results were disclosed by the US Census Bureau's Disclosure Review Board, authorization number CBDRB-FY19-396.

Table 2 shows county-level housing value distributions, for all counties and then by price-to-income (PTI) category. On average, the median value of owned homes across all counties was $175,200 in 2013.[11] Homes at the 25th percentile of the distribution across counties were valued at $111,000, on average. As expected, if we look only at counties with price-to-income ratios of 5 or above (the expensive metros), the mean value of homes at the median of the distribution is $400,000 and the 25th percentile value is $280,000. This declines to $199,800 and $125,000, respectively, in the middle market counties, and to $125,000 and $80,000 in the inexpensive counties, those with the lowest price-to-income ratios.

[11] By comparison, the National Association of Realtors median sales price of existing homes in 2013 was $197,100 in 2013 dollars (NAR, Existing Home Sales via Moody's Analytics 2014). This statistic is based on transaction closings from Multiple Listing Services and thus excludes transactions not reported by MLSs.

Can potential homeowners afford to buy a home? We find that 9% of PHs could afford to buy the median-value home in its county of residence without assistance given its income and assets as of December 2013. Meanwhile, 14% of PHs could afford to buy a home at the 25th percentile of value in its county. Our analysis of affordability identifies four barriers to affording a home, shown in Table 3. Fully 83% of PHs were unable to afford the median-value home because they had insufficient assets for a 3.5% down payment. Assets were a limiting factor even at the lower end of the housing market: 79% of PHs had insufficient assets for a 3.5% down payment on a home at the 25th percentile of the distribution in their county. Cash flow was also an affordability constraint among PHs. Three-quarters of PHs (76%) had insufficient monthly income to afford monthly mortgage payments on the median-value home in their county, assuming they could dedicate no more than 31% of their monthly income to the mortgage. Considering a home priced at the 25th percentile of the county's distribution, the monthly mortgage payment would require more than 31% of monthly income for 60% of PHs. Non-housing debt also presented a substantial obstacle. For fully 70% of PHs the combination of maximum permissible mortgage payments plus monthly payments owed on any non-housing debt exceeded the maximum back-end ratio of 43% if they were to purchase median-value homes in their area. Considering mortgage payments required for a home at the 25th percentile of value, the share is somewhat lower, but still more than half (54%) of PHs have prohibitively high amounts of non-housing debt. For almost all PHs in our sample, monthly mortgage payments would consume fully 31% of their current income, leaving 12% of income available for debt payments (per the back-end ratio of 43%): approximately 16% of PHs are limited by having debt service payments that require more than 12% of their monthly income.

Table 3. Affordability Barriers

	Full Sample		Renters	Non-Households
% Limited By	50th percentile	25th percentile	50th percentile	50th percentile
Down payment	83%	79%	82%	87%
Front end 31%	76%	60%	73%	84%
Back end 43%	70%	54%	67%	78%
Debt service <12%	16%	16%	17%	15%
Number of Barriers				
0	9%	14%	10%	6%
1	14%	23%	15%	11%
2	13%	13%	13%	12%
3	52%	40%	49%	59%
4	12%	10%	12%	13%
Total Number PHs	51,190,000	51,190,000	38,900,000	12,280,000

Source: Wave 1 of the 2014 panel of the SIPP and 2013 ACS. These results were disclosed by the US Census Bureau's Disclosure Review Board, authorization number CBDRB-FY19-396.

In addition to identifying the four barriers to affordability PHs faced, Table 3 shows the number of affordability barriers PHs would have to overcome to afford a home. Nine percent of PHs faced no affordability barriers; they could afford the median-value home. At the lower end of the housing value distribution, 14% of PHs could afford a home with no assistance. At the other extreme, 12% of PHs faced all four barriers: insufficient assets for a down payment on the median-priced home, insufficient income for mortgage payments assuming 31% of income for the mortgage and 43% of income for mortgage and non-housing debt combined, and non-housing debt service obligations of over 12% of monthly income. Just over half of PHs faced three barriers to affording the median-value home, compared to 40% of PHs with three barriers to affording a home at the 25th percentile of the housing value distribution.

Among those PHs limited by high non-housing debt, student debt contributes the most substantial barrier of any debt type (Table 4). For almost half (47%) of PHs with non-housing debt, student debt represents the majority of their total amount of debt. By contrast, credit card debt represents the majority share of non-housing debt for 29% of PHs, and vehicle debt is the

predominant type of debt for 21% of PHs. The upshot is that student debt represents by far the largest contributor to non-housing debt for the PHs in our sample, with credit card debt coming in a distant second, and vehicle debt third.

Table 4. Share of PHs with >12% Non-Housing Debt whose Outstanding Balance is Majority Education/Credit Card/Vehicle Debt

	Type of Debt			
	Education	Credit Card	Vehicle	No Predominant Type
Share of Total Debt				
Less than Half	53%	71%	79%	98%
More than Half	47%	29%	21%	2%
Total	8,297,000	8,297,000	8,297,000	8,297,000

Note: Total is PHs with housing debt service payments that require more than 12% of their monthly income. Source: Wave 1 of the 2014 panel of the SIPP. These results were disclosed by the US Census Bureau's Disclosure Review Board, authorization number CBDRB-FY19-396.

In Table 5 we present the share of PHs who can afford a home at the 50th and 25th percentiles of the housing value distribution. This table includes PHs in all counties across the nation. The first row shows the share of PHs who can afford a home outright – this is the same share that has zero affordability barriers in Table 3. The second row reports the share of PHs who we determine will be unable to afford a home even with assistance. This means that these PHs either have negative or zero income or they have insufficient assets to pay down non-housing debt to 12% of monthly income (or, for higher-income PHs for whom estimated monthly mortgage payments would consume less than 31% of income, to 43% of income minus the share of income required for monthly mortgage payments). Just under one-quarter of PHs (24%) cannot afford homes at the 50th percentile of the housing value distribution even with assistance. For low-cost homes at the 25th percentile, the share is similar, at 22%. A relatively larger proportion of non-household PHs have insurmountable barriers than do renter PHs: almost one-third (30%) of non-household PHs are unable to purchase a median-cost home even with assistance, compared with 22% of renter PHs.

Table 5. Assistance Needed to Afford Criterion Home

	Full Sample		Renters	Non-Households
	50th percentile	25th percentile	50th percentile	50th percentile
Can Afford Outright	9%	14%	10%	6%
Unable to Purchase	24%	22%	22%	30%
Assistance Needed				
Less than $3,500	11%	26%	11%	9%
$3,500-$7,000	15%	10%	15%	13%
$7,000-$10,500	4%	3%	4%	4%
$10,500-$25,000	7%	4%	7%	9%
$25,000-$50,000	4%	4%	5%	4%
$50,000-$75,000	4%	4%	5%	4%
$75,000-$100,000	4%	3%	4%	4%
$100,000-$150,000	6%	3%	6%	6%
$150,000-$200,000	4%	2%	3%	4%
$200,000-$250,000	2%	2%	2%	2%
Over $250,000	5%	2%	5%	5%
Total	51,190,000	51,190,000	38,900,000	12,280,000

Note: PHs that are “Unable to Purchase” have either (1) high non-housing debt, even after paying down debt with any available assets; or (2) zero or negative income. For most PHs, for whom estimated mortgage payments will consume 31% of income (the maximum permissible amount under FHA’s front-end ratio), “high debt” means their monthly non-housing debt service payments exceed 12% of income. Source: Wave 1 of the 2014 panel of the SIPP and 2013 ACS. These results were disclosed by the US Census Bureau's Disclosure Review Board, authorization number CBDRB-FY19-396.

The rest of Table 5 shows the share of PHs who could afford the criterion home given specific levels of housing assistance. We present 11 categories of assistance. The level of assistance required by each PH is calculated as the sum of two discrete amounts: (1) the difference between the estimated down payment on the criterion home in the PH’s county of residence and any remaining assets the PH holds after paying down non-housing debt to a manageable level; and (2) the difference between the mortgage amount for the criterion home after down payment (99.5% of value assuming closing costs of 3% are financed and down payment of 3.5%) and the mortgage amount supported by 31% of the PH’s monthly income. PHs who face income constraints, asset constraints, or both may appear in any category; their level of support represents the sum of income and asset assistance needed.

To provide an intuitive point of reference for the assistance amounts presented, we set the upper bounds of the first three categories to reflect down payment amounts required for homes at three price points: $100,000 (requiring a down payment of $3,500), $200,000 (requiring a down payment of $7,000), and $300,000 (requiring a down payment of $10,500). We then specify eight additional categories of housing assistance of greater amounts. PHs that fall into these high-assistance categories may be well-suited for nonprofit or private sector shared equity programs, which generally provide subsidies over $25,000 to each homebuyer household (Theodos et al. 2017), while PHs that fall into the low-assistance categories may be better suited to traditional down payment assistance programs that provide grants or loans for these more modest amounts of assistance.

To afford the median-value home, 30% of all PHs need less than $10,500 in assistance (including only those PHs that are eligible for and in need of assistance and excluding PHs who can afford to buy without assistance or who are unable to purchase, 45% of PHs need less than $10,500). This share represents approximately 15.2 million PHs. Another 7% would need assistance of between $10,500 and $25,000 (11% among only those eligible for and in need of assistance), which is a significant amount of financial support, but below what most shared equity programs provide. Meanwhile, 17% of PHs (25% of those eligible for and in need of assistance) would need a very substantial amount of assistance, requiring over $100,000 in assistance to afford the median-value home. Finally, 12%, representing 6.6 million PHs, would need between $25,000 and $100,000 in assistance, corresponding to typical amounts for existing shared equity programs—our primary interest in this paper.[12]

[12] Please see Appendix Tables C and D for results based on home values from the 2016 ACS. We conduct this sensitivity analysis in recognition that home prices were unusually low in 2013 after the Great Recession. The results with 2016 home values differ very little from the results based on 2013 values.

As shown in the second column of Table 5 smaller amounts of assistance suffice as the criterion home value moves lower in the distribution.[13] For example, a home at the 25th percentile of the distribution would be affordable outright to 14% of PHs, up from 9% for the median-value home. And 40% of PHs (63% among those eligible for assistance), or 20.4 million PHs, could afford a criterion home at the 25th percentile of the distribution with up to $10,500 in assistance--an increase of 34% compared to the median-value home.

The results presented in Tables 1-3 and Table 5 are based on analyses of the full sample of PHs. Next, we disaggregate the results by race/ethnicity, income, and geography to emphasize how different groups and PHs living in different areas face different constraints to affording homeownership. Table 6 replicates part of Table 3, presenting barriers to affordability within racial/ethnic group. A higher share of black and Hispanic PHs has insufficient assets for a down payment of 3.5% on the median-value home (92% each) compared to Asian and white PHs, but even so, the vast majority of Asian and white PHs (73% and 77%, respectively) also do not have enough money for the down payment. Racial/ethnic disparities exist in income as well, with the highest relative share of Hispanic PHs having insufficient income for monthly mortgage payments (86%), followed by black PHs (81%) and Asian PHs (78%). White PHs have the lowest share with insufficient income, but even their share is well over a majority, at 71%.

[13] Results are very similar if we use county housing values reported by recent owners, as a proxy for homes that recently transacted, rather than all owners.

Table 6. Affordability Barriers, by Racial/Ethnic Group

	Whites		Blacks		Asians		Hispanics	
% Limited By	50th pct	25th pct	50th pct	25th pct	50th pct	25th pct	50th pct	25th pct
Down payment	77%	73%	92%	90%	73%	67%	92%	89%
Front end 31%	71%	54%	81%	66%	78%	67%	86%	71%
Back end 43%	64%	50%	75%	59%	71%	61%	80%	63%
Debt service <12%	17%	17%	17%	17%	11%	11%	14%	14%

Source: Wave 1 of the 2014 panel of the SIPP and 2013 ACS. These results were disclosed by the US Census Bureau's Disclosure Review Board, authorization number CBDRB-FY19-396.

Racial/ethnic disparities in affordability are also apparent from Table 7, showing the share of each group that (1) could afford to purchase outright, (2) is unable to purchase due to insurmountable barriers, and (3) could afford the criterion home given certain levels of assistance. In 2013, far higher shares of Asian and white PHs could afford to purchase the median-value home in their county without assistance compared with black and Hispanic PHs. Indeed, 14% of Asian PHs could afford to buy without assistance, as well as 12% of white PHs, compared with just 4% of black PHs and 3% of Hispanic PHs.

Table 7 shows that there is little disparity among all four race and ethnicity groups in terms of the share that are unable to purchase the median-value home even with assistance. We see more of a disparity in terms of the amount of assistance necessary for PHs to afford the median-value home, with higher shares of black and of white PHs in need of just a small amount of assistance (under $10,500) compared with Asian and Hispanic PHs. On the flip side, we see relatively larger shares of Asian and Hispanic PHs in the high-assistance categories ($100,000 and over) compared with black and white PHs. Black and Hispanic PHs are the largest potential beneficiaries of shared equity models of homeownership, which we proxy with the $25,000-$100,000 assistance categories: 15% of black PHs need assistance in the $25,000-$100,000 range, as well as 14% of Hispanic PHs, 12% of white PHs, and 6% of Asian PHs. The pattern is similar, but somewhat less pronounced, when considering a criterion home at the 25th percentile of the county housing value distribution. The shares of PHs that fall into the

categories of assistance between $25,000 and $100,000 do not vary much by race and ethnicity, with 7 to 12% of all groups falling in this range. However, a larger share of Asians (18%) and Hispanics (15%) would require $100,000 or more in assistance compared to blacks and whites (each 7%), putting these PHs out of the likely range of many shared equity programs. Meanwhile, a small amount of assistance (under $10,500) could bring homeownership of low-cost homes within reach for nearly half (45%) of black PHs, as well as 40% of whites, 39% of Hispanics, and 27% of Asians.

Table 7. Assistance Needed to Afford Criterion Home, by Racial/Ethnic Group

	Whites		Blacks		Asians		Hispanics	
	50th	25th	50th	25th	50th	25th	50th	25th
Can Afford	12%	18%	4%	6%	14%	20%	3%	6%
Unable to Purchase	24%	21%	27%	26%	22%	22%	23%	22%
Assistance Needed								
Less than $3,500	13%	28%	9%	30%	7%	14%	7%	22%
$3,500-$7,000	14%	9%	18%	11%	9%	6%	13%	12%
$7,000-$10,500	4%	3%	4%	4%	4%	6%	5%	5%
$10,500-$25,000	5%	4%	7%	5%	15%	7%	12%	5%
$25,000-$50,000	4%	4%	5%	4%	3%	1%	5%	4%
$50,000-$100,000	8%	6%	10%	8%	3%	6%	9%	8%
$100,000-$150,000	6%	3%	7%	3%	4%	4%	6%	5%
$150,000-$250,000	5%	3%	4%	3%	7%	7%	7%	6%
Over $250,000	3%	1%	5%	1%	13%	7%	9%	4%

Source: Wave 1 of the 2014 panel of the SIPP and 2013 ACS. These results were disclosed by the US Census Bureau's Disclosure Review Board, authorization number CBDRB-FY19-396.

Table 8 disaggregates the results from the full sample based on PH annual income. A very small share, just 1%, of PHs with income under $25,000 could afford the median-value home, with 37% deemed unable to afford a home even with assistance (around one-third of whom are barred from receiving assistance due to zero or negative income). These shares are nearly reversed among PHs with income above $75,000, with 39% able to purchase outright and only 4% unable to purchase even with assistance. PHs in the two middle income categories have much greater potential need for assistance, with 79% of those earning $25,000-$45,000

potentially benefiting from assistance as well as 72% of those earning $45,000-$75,000. In keeping with this, homeownership assistance of between $25,000 and $100,000, such as that provided by shared equity programs, would help the biggest shares of PHs in the first and second income quintiles to afford a median-value home. Approximately 5 million PHs in these two lower-income categories could afford the median-value home in their county with between $25,000 and $100,000 in assistance. An even larger number of lower-income PHs in the first two income quintiles—some 9.1 million—could afford to buy the median-value home in their county with assistance of less than $10,500.

Table 8. Assistance Needed to Afford Criterion Home, by Income Level

	< $25,000 50th percentile	$25,000-$45,000 50th percentile	$45,000-$75,000 50th percentile	> $75,000 50th percentile
Can Afford	1%	6%	18%	39%
Unable to Purchase	37%	15%	10%	4%
Assistance Needed				
Less than $25,000	30%	40%	49%	48%
$25,000-$100,000	16%	16%	5%	3%
$100,000-$250,000	15%	10%	9%	4%
Over $250,000	2%	13%	8%	3%
Total	25,700,000	11,760,000	7,997,000	5,731,000

Source: Wave 1 of the 2014 panel of the SIPP and 2013 ACS. These results were disclosed by the US Census Bureau's Disclosure Review Board, authorization number CBDRB-FY19-396.

Geography also plays an important role in determining homeownership affordability. As described above, we categorize counties into three groups based on the housing price-to-income ratio: expensive, middle market, and inexpensive. Table 9 presents the affordability gaps by county price category. In the expensive markets (counties), just 8% of PHs could afford the median-value home with housing assistance under $10,500, while fully one-third of PHs would need over $100,000 of assistance to afford this criterion home. In the middle market counties, assistance needs are far lower: nearly one-third of PHs (6.6 million) require less than $10,500 in assistance to afford the median-value home, while 19% (4.2 million) would need at

least $100,000. Even in the inexpensive markets, nearly 6% of PHs need over $100,000 in assistance to afford the median-value home, but at the same time fully 40% could buy with less than $10,500 in assistance. In terms of the share of PHs that would need assistance in the $25,000-$100,000 shared equity range, the shares are quite low in the expensive markets (5%), but substantially higher in the middle (12%) and inexpensive markets (17%).

Table 9. Assistance Needed to Afford Criterion Home, by County Price-to-Income Ratio

	Price-to-Income Ratio above 5		Price-to-Income Ratio between 3 and 5		Price-to-Income Ratio below 3	
	50th percentile	25th percentile	50th percentile	25th percentile	50th percentile	25th percentile
Can Afford	6%	10%	9%	13%	11%	16%
Unable to Purchase	24%	24%	25%	23%	23%	21%
Assistance Needed						
Less than $3,500	4%	5%	6%	20%	19%	44%
$3,500-$7,000	1%	5%	17%	17%	19%	4%
$7,000-$10,500	3%	12%	7%	2%	1%	1%
$10,500-$25,000	23%	9%	4%	3%	3%	4%
$25,000-$50,000	3%	2%	4%	4%	6%	5%
$50,000-$75,000	1%	3%	4%	5%	6%	4%
$75,000-$100,000	1%	2%	4%	4%	5%	1%
$100,000-$150,000	3%	5%	9%	5%	5%	
$150,000-$200,000	4%	7%	6%	2%		
$200,000-$250,000	4%	6%	3%	1%		
Over $250,000	23%	10%	2%	0%		
Over $150,000					1%	
Over $100,000						1%
Total	9,786,000	9,786,000	21,720,000	21,710,000	19,680,000	19,690,000

Note: Blank cells have insufficient sample size for us to report, so we collapse those rows into the “Over $250,000”, “Over $150,000”, and “Over $100,000” aggregate assistance categories at the bottom of the table. Source: Wave 1 of the 2014 panel of the SIPP and 2013 ACS. These results were disclosed by the US Census Bureau's Disclosure Review Board, authorization number CBDRB-FY19-396.

A further focus on specific income levels within expensive, middle market, and inexpensive counties suggests that the biggest share of PHs who could be helped by between

$25,000 and $100,000 of housing assistance is in the second income quintile and middle market counties (Table 10). We focus on the second and third income quintiles as our target group for shared equity assistance for two reasons: first, although a large share of PHs in the lowest income quintile are eligible for and in need of assistance, they may be less likely to be homeowner ready due to weaker credit histories and a lack of ability to save even modest amounts toward home purchase; and second, shared equity programs have tended to target households with incomes of approximately $44,000 (Theodos et al. 2017). Roughly one-quarter (26%) of PHs with income between $25,000 and $45,000 in middle market counties (1.3 million PHs) and 8% of PHs in these areas with income between $45,000 and $75,000 (280,000 PHs) could afford the median-value home with between $25,000 and $100,000 of assistance. Almost one-third (30%) of PHs in the second income quintile and over half (55%) of those in the third income quintile in middle market counties (3.4 million total) could buy with less than $25,000 of housing assistance, while 1.4 million would need over $100,000 to afford the median-value home. The majority of PHs in these income categories living in expensive counties (72% in each group) would need over $100,000 in assistance to afford the median-value home, while 64% and 65% of PHs in these income categories in inexpensive counties could afford the median-value home with less than $25,000 in assistance.

Table 10. Assistance Needed to Afford Criterion Home, by Income and Price-to-Income Ratio

	50th percentile: Income $25,000-$45,000		
	PI Ratio above 5	PI Ratio between 3 and 5	PI Ratio below 3
Can Afford	1%	4%	11%
Unable to Purchase	12%	18%	14%
Assistance Needed			
Less than $25,000	11%	30%	64%
$25,000-$100,000	3%	26%	10%
$100,000-$250,000	8%	19%	1%
Over $250,000	64%	4%	
Over $150,000			1%
Total	2,030,000	5,098,000	4,631,000

	50th percentile: Income $45,000-$75,000		
	PI Ratio above 5	PI Ratio between 3 and 5	PI Ratio below 3
Can Afford	2%	17%	28%
Unable to Purchase	14%	13%	6%
Assistance Needed			
Less than $25,000	5%	55%	65%
$25,000-$100,000	8%	8%	
$100,000-$250,000	36%	6%	
Over $250,000	36%	2%	
Over $7,000			2%
Total	1,584,000	3,472,000	2,940,000

Note: Blank cells have insufficient sample size for us to report, so we collapse those rows into the "Over $150,000" and "Over $7,000" aggregate assistance categories at the bottom of the panels. Source: Wave 1 of the 2014 panel of the SIPP and 2013 ACS. These results were disclosed by the US Census Bureau's Disclosure Review Board, authorization number CBDRB-FY19-396.

In sum, our aggregate statistics show that a large share of PHs cannot afford to purchase in their home counties because they have insufficient assets to afford a 3.5% down payment and do not have high enough incomes to support monthly mortgage payments for the criterion home. Analysis of the full sample shows that nearly 6.6 million PHs could afford to buy the median-value home in their county with between $25,000 and $100,000 in assistance, the range we think is most suitable to shared equity models based on past research. An additional 8 million PHs could afford to buy with more than $100,000 of assistance, a level of assistance some shared equity programs do reach, perhaps private sector options in particular. There are, however, 15.2 million PHs that would be brought within reach of homeownership with just $10,500 or less in assistance. For low-cost homes at the 25th percentile of the distribution, the numbers are comparably large, even though more PHs can afford homes at that price point without assistance. Some 5.5 million PHs could afford to buy a low-cost home in their area through a shared equity program or similar form of assistance that provides $25,000-$100,000 of assistance, and fully 20.5 million PHs could buy a low-cost home in their area with small amounts of assistance totaling just $10,500 or less.

Our results also demonstrate that there are disparities amongst racial and ethnic groups in terms of barriers to affordability and the amount of assistance that would be necessary for

PHs to afford the criterion home. We take advantage of the large national sample of the SIPP to look at affordability and assistance necessary to achieve homeownership within different income groups and in counties with different types of housing markets, providing estimates for how many PHs could afford homeownership in different scenarios. In the next section, we discuss where and in what situations a shared equity approach to homeownership assistance could be particularly valuable in terms of helping PHs become homeowners, and where smaller forms of assistance might be sufficient to close existing gaps in access to homeownership.

Discussion and Conclusion

Our goal in this paper is to estimate the number of PHs that could benefit from homeownership assistance programs with a primary focus on those that could be assisted by shared equity approaches to homeownership. Our review of the literature on shared equity and other homeownership assistance programs suggests that the amount of assistance typically provided by shared equity programs falls within the range of $25,000 to $100,000, although larger amounts are also not uncommon. In interpreting our results, we focus on the number and share of PHs who would benefit from this level of assistance. Still, many PHs could afford homeownership in their home counties with less than $25,000 in assistance; other types of homeownership assistance may be more appropriate than shared equity for these PHs given the cost of administering shared equity programs and consumers' preference for traditional homeownership when it is financially feasible to afford a home without large amounts of financial support.

Overall, we find that 9% of PHs could afford to buy the median-value home and 14% could afford the 25th percentile home in their county of residence given income and assets as of December 2013. This estimate is higher than found by Wilson and Callis (2013) using the 2009 SIPP data in which 7% of renters could afford to buy the 25th percentile-priced home. There are several reasons for the differences in these estimates. Perhaps most important is the difference

in market conditions between the time periods studied, with 2013 representing a relatively affordable period due to declines in both house prices and interest rates relative to 2009. In addition, we estimate affordability for approximately 14,000 PHs in the SIPP sample, representing approximately 51.2 million PHs. The PHs in our sample include individuals and families living with other households in addition to renter households and individuals living independently; this explains why our sample represents a higher number of PHs than it would if we considered only renting families and individuals. Finally, we use county-level housing value estimates from 2013 to assess affordability rather than national or regional values to provide a more precise estimate of housing affordability. It is important to note that the results presented in this paper may not be representative of what PHs would face in the housing market today. The 2013 housing values are close to the bottom of the trend in housing prices following the Great Recession and so do not incorporate the rapid appreciation experienced in many areas of the country in recent years.[14]

How many PHs could potentially benefit from shared equity and what are their characteristics? Approximately 12% of PHs could afford the median-value home in their county with between $25,000 and $100,000 of housing assistance. Twelve percent may appear to be a small share, but it represents nearly 6.6 million PHs nationally. There are currently approximately 250,000 shared equity homes across the country (Thaden 2018). Our estimate that nearly 6.6 million PHs could potentially become homeowners through shared equity suggests that there may be substantial unmet demand for this type of homeownership program. Even assuming half of the PHs in this category were not interested in shared equity or not prepared to buy a home leaves enough demand for more than a tenfold increase in the number

[14] To account for this, we conduct two sensitivity analyses in the Appendix (Tables C and D) that substitute 2016 American Community Survey home values for the 2013 values we use throughout this analysis. Using the 2016 home values brings our estimate of the number of PHs that can afford to buy the median-value home in their county down to 8%, closer to the estimates offered by Wilson and Callis (2013).

of shared equity units across the country. Furthermore, if even greater levels of subsidy were available through nonprofit shared equity or private sector shared appreciation programs, an additional 8.6 million households could purchase with assistance of $100,000 or more.

Focusing on affordability gaps by racial/ethnic group shows that between 13% and 15% each of white, black, and Hispanic PHs would require between $25,000 and $100,000 of assistance to afford the median-value home in their area, compared with 6% of Asians. These shares represent approximately 3.4 million white PHs, 1.4 million black PHs, 1.4 million Hispanic PHs, and 160,000 Asian PHs that would be the target audience for shared equity programs. The 2013 homeownership rate among blacks was 43.8%. If all 1.4 million black PHs became homeowners in 2013, the homeownership rate among blacks would have been 10 percentage points higher, at 53.6%. Even if just 10% of these black PHs (140,000) transitioned to homeownership as a result of housing assistance, the homeownership rate among blacks would have been 1% higher. Among Hispanics, the 2013 homeownership rate would have been 55.5% compared to 46.1%, assuming all 1.4 million PHs transitioned to homeownership. The disparity between the white and black homeownership rate and white and Hispanic homeownership rate would have been 5 percentage points smaller if all black and Hispanic PHs transitioned to homeownership. Relatively larger shares of black and white PHs would be able to access homeownership with small amounts of assistance (under $10,500) compared with Asians and Hispanics. As a group, however, blacks and Hispanics would be the greatest beneficiaries of a shared equity type of program that provided $25,000-$100,000 in assistance.

Another goal for shared equity programs is to increase homeownership among low-and moderate-income households to extend the wealth accumulation and residential stability benefits of homeownership to households lower in the income distribution. Our results by income category do suggest that higher shares of PHs with income in the first three quintiles of the national income distribution – below $75,000 in 2013 – would benefit from assistance between $25,000 and $100,000 compared to PHs with income above $75,000. Over 4 million

PHs in the first income quintile, 1.8 million in the second, and 400,000 in the third fall into the range of assistance appropriate for shared equity. Our sample is disproportionately low income, with 50% of the sample in the lowest income quintile and 23% in the second income quintile. It is not surprising, therefore, that the distribution of PHs who could be assisted by $25,000 to $100,000 is also skewed toward the lowest income. It is notable, however, that few participants in existing shared equity programs have incomes below $25,000. This likely reflects a range of factors, including poor credit histories, limited ability to save even modest amounts toward home purchase, and perhaps unstable income that may make homeownership riskier. While this income group represents a large number of PHs, those with higher incomes may be a more appropriate target for shared equity programs.

One of the strengths of our analysis and of the restricted use SIPP data that we use is our ability to identify the county in which each PH lives. With this information we estimate affordability specific to the housing market in which each PH would likely become a homeowner. The most potential demand for shared equity programs appears to be in middle market and inexpensive counties: nearly 2.7 million PHs in middle market counties and 3.3 million PHs in inexpensive counties need between $25,000 and $100,000 in assistance to afford the median-value home. By comparison, only 440,000 PHs in the expensive counties could buy the median-value home with between $25,000 and $100,000 in assistance. Approximately 3.2 million PHs in these expensive counties would need over $100,000 to afford the median-value home. Shared equity or shared appreciation models providing over $100,000 in assistance would be particularly useful if targeted to these high cost areas.

In addition to the level of house prices, the likely rate of future appreciation in the market is also an important factor to consider in targeting areas where shared equity programs may be most effective. High rates of house price appreciation may make it difficult for these programs to maintain affordability over time unless they capture a relatively high share of appreciation, which will limit the returns realized by participating homeowners. On the other hand, areas where

home price appreciation is weak will offer only limited financial returns to owners. Indeed, prospective homeowners expressed hesitation about shared equity programs given their concern about limited equity appreciation in areas with low housing price growth (Thaden et al. 2013). For these reasons, middle-priced markets may hold the most promise for shared equity programs.

Summarizing these results highlights the fact that many PHs could potentially benefit from shared equity. These estimates demonstrate that approximately 6.6 million PHs could become homeowners with a level of assistance consistent with a shared equity approach to homeownership. This does not mean, however, that all of these PHs should become homeowners or that shared equity is the most appropriate strategy for those who are good candidates for homeownership. As we discuss at the beginning of this paper, there are many challenges to shared equity programs. Some of the challenges relate to the supply of shared equity homes – in particular, the source of funding for subsidies on the order of $25,000 to $100,000 per unit, the administrative burden of keeping track and maintaining affordability of units receiving shared equity investment, and political barriers to shared equity (Lubell 2014). Other challenges exist on the demand side. PHs may be reluctant to purchase within a shared equity program as they are hesitant to share appreciation and accept oversight by program administrators when traditional homeownership is within reach (Lubell 2014; Saegert et al. 2015).

Another contribution of this analysis is the finding that a large number of PHs – approximately 19 million – could afford the median-value home in their area with far less assistance: less than $25,000 and in many cases less than $10,500. These estimates suggest that shared equity programs are not necessarily the best approach to encouraging and supporting homeownership among all PHs. For the PHs with affordability gaps under $10,500, it likely makes more sense for them to receive down payment assistance in the form of a grant or forgivable loan rather than take part in a program that requires continuous administration and

oversight by an organizational steward. Programs that encourage and subsidize savings may also be efficient and effective means of providing this more modest amount of funds needed to purchase a home. For larger amounts of assistance up to $25,000, a repayable loan that does not entail ongoing payments but still recaptures the subsidy for use with future homebuyers may be more efficient. We argue for shared equity as one option of many approaches to encouraging and supporting homeownership among non-owners: our results identify scenarios in which shared equity may make sense and other scenarios in which another option may be more efficient. It is important to acknowledge that shared equity programs inherently involve limits on the wealth building potential of homeownership that do not result from other programs that promote homeownership because any equity appreciation must be shared with the subsidizing organization or used to keep the subsidized unit affordable for the next purchaser. Previous research finds that shared equity programs reached low-income buyers, that the units involved stayed relatively affordable, and that buyers realized wealth gains (Temkin et al. 2013). Homeowners who use down payment assistance to facilitate a purchase, however, are typically not subject to the same restrictions on equity accrual and thus get to keep any additional equity they earn while owning their home. It would be particularly problematic to encourage homeownership among non-white PHs or other groups historically disadvantaged in terms of wealth accumulation solely through an approach that limits long-term gains.

We made a number of analytical choices to be as inclusive as possible in terms of the number of individuals and households we count as potential homeowner units. One of these, that we discuss above, involves including individuals and couples who live in someone else's home as PHs. As a result, our analysis includes approximately 51 million PHs, a substantially larger number than the 42.4 million renter households in 2013. Another analytic decision that contributes to a larger sample size is our inclusion of PHs with negative, zero, and very low incomes. We categorize PHs with negative or zero income as unable to purchase the criterion home and many of the lowest income PHs in our sample end up in the unable to purchase

category as well. It would be reasonable to set a higher income cut off, such as $15,000, for the unable to purchase category, but that would exclude some low-income households with assets who could achieve homeownership with some assistance. We find that over 4 million PHs in the lowest income category – under $25,000 per year – could afford homeownership with assistance between $25,000 and $100,000. As discussed above, however, there are likely other characteristics of these households that make them less promising candidates for homeownership. Any homeownership promotion program should consider a range of factors that contribute to homeownership readiness beyond the income, assets, and debt data available to incorporate here.

There are at least three additional limitations to this analysis that are worth highlighting. We use Wave 1 of the 2014 panel of the SIPP to estimate affordability because the SIPP survey includes detailed measures of income, assets, and debt for all adults in all households in a large nationally representative sample. In addition, we rely on internal user files with geographic identifiers for SIPP respondents, allowing a finer-grained comparison of PH finances to county-specific housing values. The SIPP data do, however, present a couple of disadvantages. One disadvantage is that the most recent data available were collected in 2013. We acknowledge that housing values in 2013 were, in general, much lower than housing values in 2019, and the national distribution and distribution of housing values in expensive, middle market, and inexpensive counties may seem surprisingly low to this audience. Ideally, we would have more recent survey data with up-to-date income, assets, and debt figures so we could run this analysis using more recent housing values, though our results based on 2016 housing values are not meaningfully different. A second disadvantage is the lack of information on expenditures in the SIPP. We had to make a series of assumptions about PHs' debt service payments so that we could determine how much income they could dedicate to a mortgage payment (see Appendix Table B). Blanket assumptions about the term and interest rate of various types of loans introduce error into the estimates; with data on expenditures and debt service payments in

particular we could estimate more precisely PHs' income available for mortgage payments. A third limitation is the lack of information on PHs credit history and history of homeownership in the SIPP. Qualitative work suggests that individuals with a history of mortgage delinquency or foreclosure may be particularly interested in the shared equity model of homeownership (Saegert et al. 2015; Thaden et al. 2013); estimating affordability among this group would be valuable in future research.

In conclusion, our results suggest that there are as many as 6.6 million potential homeowners that could achieve homeownership with the assistance of shared equity programs assuming that these programs are most suitable when assistance of between $25,000 and $100,000 is needed to make homeownership attainable. This estimate of the potential beneficiaries far exceeds the current number of shared equity units in existence across the United States. We show that there may be much greater demand for shared equity than can be met by current programs. We report estimates demonstrating how many PHs would be helped into homeownership by different levels of housing assistance. We do not advocate for shared equity to be the only approach to homeownership assistance; instead we present evidence suggesting there may be substantial demand for shared equity as one type of program among many that are made available for individuals and households who face asset, income, and/or debt constraints to buying a home outright without any assistance.

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Appendix Tables

Appendix Table A. Key Terms		
Term	**Definition**	
Potential Homeowning Units (PHs)	Includes individuals and couples who are: • Current household heads who rent • Current household heads who are "other" non-owners OR • Aged 25—65 • Not current householders (living in someone else's home) • Not the spouse or unmarried partner of current householders	Excludes individuals and couples who are: • Non-households under age 25 or over age 65 • Current homeowners
Monthly income	Includes: • Earned income • Other income [e.g., survivor benefits, disability benefits, child support, alimony] • Social insurance income	Excludes: • Investment income • Property income
Assets	Includes: • Savings accounts • Checking accounts • Stocks and mutual funds • Bonds	Excludes:[15] • Rental properties • Other real estate • Other assets • Businesses • Retirement accounts • Education savings accounts
Debts	Includes: • Education debt (student loans) • Credit card debt • Vehicle debt	Excludes:[16] • Rental property debt • Other real estate debt • Business debt • Other debt

[15] These are less liquid forms of assets. Very few PHs have assets in these categories; among PHs who do, we assume they would be unlikely to tap these kinds of assets to help finance a home purchase.
[16] Very few PHs have debt in these auxiliary categories, so we exclude them for simplicity.

Appendix Table B. Mortgage Payment & Debt Service Assumptions		
Term	**Definition**	**Data Source**
Monthly mortgage payments	Loan terms: • 30-year fixed • 4.5% interest rate (US average in December 2013 for 30-year fixed-rate mortgage)	Freddie Mac
	Principal amount: • 99.5% of area median home value (assuming closing costs and other fees total 3% of home value, and can be financed)	2013 American Community Survey, 1-Year Data
	Other included costs: • State-specific property tax rates • Property insurance: 0.35% of property value • Mortgage insurance: 0.85% of property value	Tax Foundation & FHA
Down payments	3.5% of home value (minimum amount down for FHA loans)	FHA
Student loan payments	Loan terms: • 10-year loan term • 6% interest rate	Board of Governors of the Federal Reserve System
Vehicle debt payments	Loan terms: • 5-year loan term • 4.42% interest rate	Board of Governors of the Federal Reserve System
Credit card debt payments	Balance >$2000: • Monthly payment = 5% of balance Balance <$2000: • $25 minimum monthly payment	Board of Governors of the Federal Reserve System

The following tables (Appendix Tables C and D) re-calculate the distribution of affordability barriers and the amount of assistance needed to afford the median-priced home in each PH's county with home values from the 2016 American Community Survey. We present these tables as a sensitivity analysis, acknowledging that in 2013 home values were at an unusually low point due to the Great Recession.

Appendix Table C. Affordability Barriers, 2016 Home Values

% Limited By	50th percentile
Down payment	84%
Front end 31%	80%
Back end 43%	75%
Debt service <12%	16%
Number of Barriers	
0	8%
1	12%
2	12%
3	56%
4	13%
Total Number PHs	51,190,000

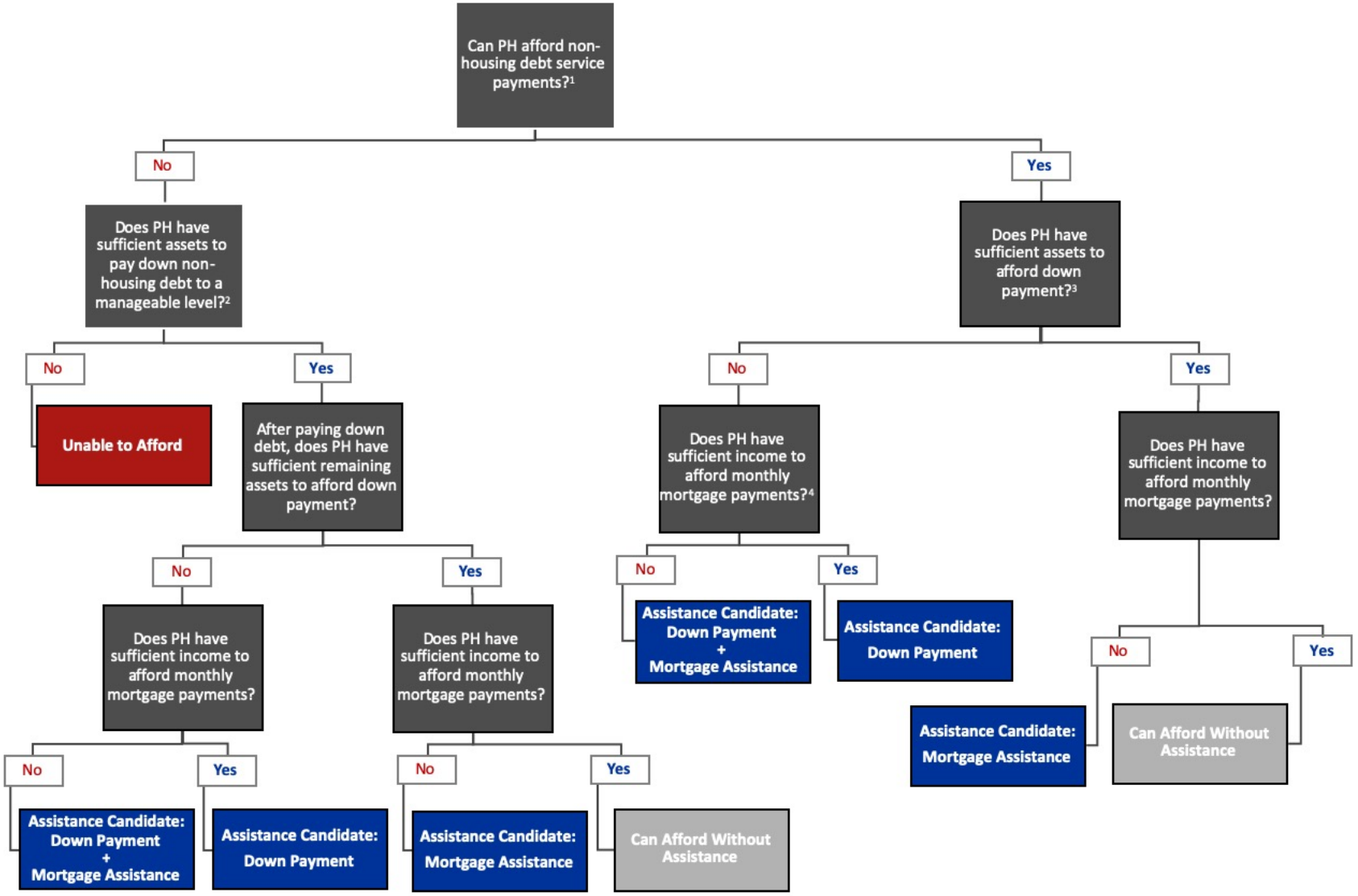
Source: Wave 1 of the 2014 panel of the SIPP and 2016 ACS. These results were disclosed by the US Census Bureau's Disclosure Review Board, authorization number CBDRB-FY19-396.

Appendix Table D. Assistance Needed to Afford Criterion Home, 2016 Home Values

	50th percentile
Can Afford	8%
Unable to Purchase	25%
Assistance Needed	
Less than $3,500	8%
$3,500-$7,000	13%
$7,000-$10,500	6%
$10,500-$25,000	9%
$25,000-$50,000	4%
$50,000-$75,000	4%
$75,000-$100,000	4%
$100,000-$150,000	6%
$150,000-$200,000	4%
$200,000-$250,000	3%
Over $250,000	7%
Total	51,190,000

Source: Wave 1 of the 2014 panel of the SIPP and 2016 ACS. These results were disclosed by the US Census Bureau's Disclosure Review Board, authorization number CBDRB-FY19-396.

Figure 1. Flow chart showing method of determining necessary home purchase assistance



1. PHs can “afford” non-housing debt service payments if their monthly debt payments + estimated mortgage payments on the median-priced home in their county of residence do not exceed 43% of their monthly income (FHA’s back-end ratio). In most cases, PHs would pay 31% of their monthly income toward mortgage payments, which means their debt payments cannot exceed 12% of their income. However, debt payments may exceed 12% of income if a PH’s income is sufficiently high that mortgage payments require less than 31% of income. For instance, we allow PHs to pay 15% of their income toward debt service if estimated mortgage payments on the median-priced home in their county would consume only 28% of their income.
2. We use any existing assets to “pay down” PH’s non-housing debt until it reaches a level such that their monthly debt payments + estimated mortgage payments on the median-priced home in their county do not exceed 43% of their monthly income. In most cases, this means that we pay debt down to a level such that monthly debt service payments require 12% of PH monthly income. See point 1 above for further information.
3. We assume a down payment of 3.5% on the median-priced home in each PH’s county of residence. Please see Appendix Table B for further information about our down payment assumptions.
4. We calculate monthly mortgage payments on the median-priced home in each PH’s county of residence, and assume that a PH can afford payments if they require less than 31% of the PH’s income each month. Please see Appendix Table B for further information about our mortgage payment assumptions. PHs with incomes that are zero or negative are categorized as unable to purchase.