

Mortgage costs as a share of housing costs—placing the cost of credit in broader context

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Disclaimer:

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Abstract

Housing affordability is a key policy concern and an important factor in fostering sustainable homeownership. Housing costs in turn are a critical contributor to affordability. In this paper, we focus on the different components of housing costs to show the contribution of each expense to overall housing costs, specifically focusing on a breakdown of mortgage costs. We use internal Fannie Mae loan acquisition data matched with closing costs data to establish a pro forma of housing costs for three average owner-occupant borrower profiles over a typical owner's seven-year period (all purchases, first-time homebuyers, and low-income first-time homebuyers). We find that the biggest contributors to overall housing costs are transactions costs, ongoing utility expenses, property taxes, home improvement costs, and the component of the mortgage interest rate that compensates investors for the time value of money. The guaranty fees charged by the GSEs and private mortgage insurance are estimated to be less than six percent of the cost of homeownership.

1. Introduction

Housing affordability has consistently been a central housing policy concern that has broad implications for policies related to housing supply, the cost of credit, racial equity, and economic mobility and inequality in the United States. However, assessing ‘affordability’ is not a simple task, potentially conflating several separate issues that influence household expenses and spending: housing prices, housing quality, household income, borrowing costs, housing conditions, local markets, and individual choices (Quigley and Raphael 2004). This overlap makes it difficult for stakeholders to correctly ascertain and address affordability. Specifically, for homeowners, *mortgage* affordability may be distinct from *overall* affordability, as utilities, property taxes, and home repairs and improvements may all affect homeowner outcomes, particularly for lower income households who are more likely to be cost burdened (defined below).

In this paper, we contribute to the understanding of overall housing affordability by providing insight and context into the components of housing costs, focusing on the various mortgage and transaction costs that households face as they transition into and sustain homeownership. We use examples from the Government Sponsored Enterprise (GSE) mortgage pricing system (Fannie Mae and Freddie Mac), which comprised approximately 60 percent of the overall first-lien mortgage market originations in 2020 (Urban Institute 2021).¹ Combining data from multiple sources and including internal Fannie Mae data on actual mortgage and closing costs, we use a real estate discounted cash flow analysis framework to quantify the specific user, mortgage, closing, and other homeownership costs and offer insights into the contribution of each of these costs to the full view of homeowner expenses during a typical ownership period. Additionally, we delve into the differences in overall costs across different borrower credit profiles in the GSE mortgage space, using credit score and loan-to-value (LTV) data from Fannie Mae’s 2020 acquisitions book of business.

While renters tend to have greater housing cost burdens than homeowners, in the 2019 ACS more than half of low-income homeowners (at 0-80 percent of the area median income, or AMI in accordance with the Federal Housing Finance Agency (FHFA)-mandated Housing Goal definitions)² meet the HUD standard definition of housing cost-burdened and spend more than 30 percent of their income on housing expenses;³ while 30 percent of low-income homeowners spend more than 50 percent of their income on housing. Consistently high housing cost burdens for lower income households are a major challenge for ensuring sustainable mortgage and

¹ GSE mortgages refer to those that are purchased from lenders by the GSEs and converted into mortgage-backed securities (MBS). The GSEs set underwriting standards that provide guidance for lenders who plan to sell their mortgages to the GSEs, but often these standards provide a minimum guideline for lenders, and their actual underwriting rules may be more stringent.

² For more information, see: Fannie Mae & Freddie Mac Affordable Housing Goals | Federal Housing Finance Agency (fhfa.gov)

³ Per HUD methodology, this is housing costs as a share of gross (pre-tax) income. For renters housing costs includes rent, utilities and insurance. For homeowners they include mortgage payments, insurance, property taxes, utilities, and other fees; for example, see: Vandebroucke (2011).

homeownership outcomes. Identifying the biggest contributors to housing costs is important for informing appropriate policy responses aimed at ameliorating housing costs and facilitating wealth-building through homeownership.

Generally, studies that explore the components of housing cost burdens rely on self-reported housing cost data from various Census sources or other forms of aggregated data that are used to create metrics or indices without a detailed view into the specific components of these costs—for example, the NAHB Housing Opportunity Index, the NAR Housing Affordability Index, and HUD’s Location Affordability Index.⁴ Additionally, depending on the disciplinary lens, research either focuses on the overall costs, issues with the index-components, user cost models of tenure choice, or specific nuances of mortgage finance policy, but rarely do studies combine both views to provide a larger picture of the contribution of specific housing expenses to overall cost burdens and wealth building. Our goal is to connect these often-disparate literatures on housing affordability and the cost of credit to help policymakers better understand the biggest components of cost in a homeowners’ housing budget that contribute to the cost side of cost burdens. Thus, we provide a thought exercise that elucidates the specific costs related to the mortgage, purchase, sale, and other related costs that are difficult to measure from other data sources.

This emphasis is particularly important today, given low mortgage rates by historical standards and the important current policymaker focus on addressing barriers to and the sustaining of homeownership. Our intention in this paper is threefold. First, we provide a unique view into mortgage and closing costs given our access to detailed transaction data, so we avoid relying on self-reported surveys or broader estimates of these costs. Second, we put the complexities of mortgage pricing, transaction, and ongoing expenses into the context of overall homeowner costs, and we show how these may differ for typical borrower profiles: an average homebuyer, a First-Time Homebuyer (FTHB), and a low-income FTHB (LI FTHB). Finally, we highlight the differences in components of home equity accumulation across borrowers in the context of our analysis.

Our breakdown of mortgage costs separate from other expenses leads to a few important conclusions. Ultimately, we find that non-mortgage related expenses comprise the majority of housing costs, and a few categories of homeowner expenses are consistently the largest and most salient costs for homeowners. These include: the transactions costs related to home purchase and sale, the ongoing utility, property tax, and home improvement expenses, and the component of mortgage costs that compensates investors for the time value of money.⁵ We also note areas where more work is needed to better understand potential large variation in

⁴ For more information, see:

<https://www.nahb.org/News%20and%20Economics/Housing%20Economics/Indices/Housing%20Opportunity%20Index>, <https://www.nar.realtor/research-and-statistics/housing-statistics/housing-affordability-index>, and <https://www.hudexchange.info/programs/location-affordability-index/>

⁵ Prepayment risk is a well-known and modeled component of the time value of money for mortgage investors and is reflected in the GSE MBS rates in our data.

mortgage pricing and subsequent borrower costs, such as for mortgage insurance pricing and lender 'gain- on-sale.' Turning to potential wealth building for these borrowers, all three of our profiles show equity accumulation from their ownership period, with the average homebuyer experiencing the largest gain in equity from their purchase. However, given the lower down payments, the return on the down payment (initial equity) is higher for lower income homebuyers.

2. *Prior literature*

As mentioned above, our work in this paper crosses disciplines to combine separate strands of literature on housing and mortgage costs. First, we build on prior research on understanding and addressing housing costs and affordability. For example, many prior papers highlight how the standard '*spend no more than 30 percent of income on housing*' cost-burdened measures are missing important differences in household spending across the income distribution; one of the challenges of combining this information into an interpretable index. Many papers reference the indices described above, and suggest alternative metrics, such as using the amount of income leftover after housing costs to pay for other expenses (residual income), or incorporating other localized cost measures of costs into these metrics.⁶

The user-cost model is also a well-known and useful framework in the economics literature that compares the unique costs of rental and owner housing over time to predict household tenure transitions.⁷ Notably, Bourassa and Haurin (2017) build on the user-cost model of homeownership decisions and combine it with the affordability literature to create a metropolitan-level index that incorporates transaction costs, mortgage rates, property taxes, maintenance, and tax benefits in an effort to account for the full cost of ownership, although they are unable to use actual data points as reference for many of their assumptions.

A seminal work by Quigley and Raphael (2004) outlines the complexities of assessing housing affordability and emphasizes that housing cost burdens for lower income households disparately affect homeownership opportunities for FTHBs. This is also relevant for ensuring sustainable homeownership for lower income households and FTHBs, who are often younger and more likely to be income and wealth constrained. They highlight a number of potential policy solutions to mitigate the cost-component of affordability for lower-income owners, including graduated mortgage payments, longer amortization periods, and shared equity models of ownership.

⁶ For a comprehensive overview of this work, see Mota (2015) and Goodman (2021). Stone et al (2011) provide a review of the residual income approach and place affordability metrics in an international context. Similarly, Gan and Hill (2009) emphasize distinctions in different aspects of affordability (purchase versus repayment) comparing cities in the US and Australia.

⁷ The lengthy literature here includes: Hill and Syed (2016); Hendershott and Schilling (1980); and Rosen and Rosen (1980); among many others.

Finally, a related literature focuses specifically on the nuances of mortgage financing and its contribution to mortgage costs. Often this research looks on disparate experiences across groups or regions, focusing on risk-based pricing, borrower tradeoffs, lender overhead, natural disaster outcomes, and/or measures of bias (e.g., Bartlett et al 2021, Bhutta and Hizmo 2021, Ouazad and Kahn 2019), or on interest rate dynamics related to regulatory changes (e.g., Alexandrov et al 2021). However, much of the research only focuses on high-level pricing differences, rather than the nuances within mortgage rates, pricing, and other related mortgage costs. For example, many papers focused on GSE mortgages emphasize the upfront component of the FHFA-required guaranty fee (g-fee) rather than the ongoing g-fee and required servicing fee entirely. Several recent papers focus on secondary market pricing, lender business models, and offer important insights on the underlying dynamics between credit supply, the primary and secondary markets, and lender profits. For example, Fuster et al (2013) highlight the complexities and challenges related to understanding lender costs and the primary-secondary spread and Fuster et al (2021) looks at credit supply, the primary-secondary spread, and lender markups during COVID-19.

This paper builds on the literature by using internal Fannie Mae data to provide insight into the detailed and often unknown components of borrower home purchase mortgage and transaction costs. We then take our results and combine these often-disparate strands of literature to place mortgage and transaction costs in the context of overall housing expenses and affordability.

3. Components of housing costs

To better understand mortgage costs in the context of broader housing affordability, we create a sample pro forma view of housing expenses for three different types of homebuyers, using actual loan data from Fannie Mae's single-family purchase mortgages acquisitions matched with Fannie Mae's closing cost data for 2020. This has the advantage of providing real contextual data for overall costs that are often unavailable to researchers and policymakers, but also necessarily limits our analysis to the GSE mortgage space. Table 1 shows a breakdown of the composite borrower purchase and credit profile characteristics based on population averages for each of our borrower profiles, and Table 2 in Section 5 reviews ongoing housing costs. In Table 1, the profiles are nested, so that the average borrower includes the FTHB and the LI FTHB borrower profiles in the sample. Low-income borrowers are defined based on their disclosed income on the mortgage application being at or below 80 percent of the local AML, as described earlier. For context, FTHBs were more than half of total purchase borrowers in Fannie Mae 2020 acquisitions, and LI FTHB were roughly 40 percent of all Fannie FTHB acquisitions. The differences across borrowers are as expected: based on mean values, the average homebuyer is older, has a notably higher monthly income, lower LTV, higher down payment, and higher average home purchase price than both FTHBs and low-income FTHBs. In contrast, the low-income FTHB has less than half of the average monthly income and the smallest average purchase price across borrowers.

Table 1: Average of Each Loan Attribute by Type of Borrower⁸

	Homebuyer	First-Time Homebuyer	Low-Income First-Time Homebuyer
Average monthly income	\$9,377	\$7,453	\$4,161
Average borrower age	42	36	35
Average purchase price	\$318,281	\$291,139	\$222,243
Average credit score	754	746	747
Average loan-to-value	83%	89%	89%
Representative down payment	\$59,303	\$37,697	\$28,504
Average mortgage	\$258,978	\$253,442	\$193,740
Average mortgage payment, yr 1	\$13,730	\$13,437	\$10,272
Average purchase closing costs	\$6,693	\$6,228	\$5,298
Average broker fees at sale, yr 7	\$27,214	\$24,893	\$19,002
Average other costs at sale, yr 7	\$2,826	\$2,585	\$1,974

Source: Fannie Mae purchase acquisitions and closing cost data, 2020. Average mortgage payment is calculated by the authors using the average purchase price, LTV, mortgage, each borrower profile, combined with the mortgage note rate from the Freddie Mac PMMS as described in Section 6. Due to data limitations, the sales costs are averaged for the whole sample and applied to each borrower profile as a share of sales costs.

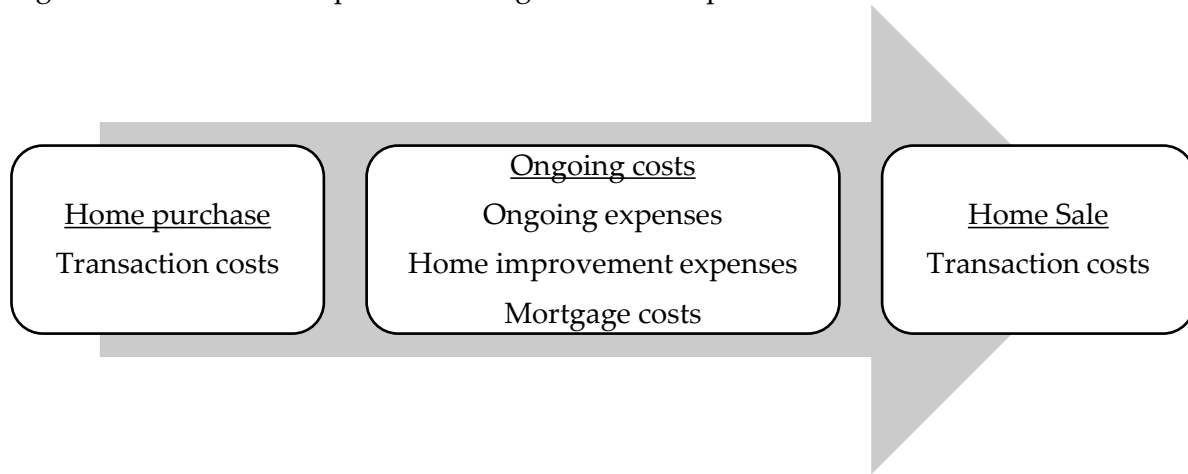
We use the associated costs for each borrower profile in our pro forma, which reflect overall housing costs to each buyer over a typical seven-year ownership period,⁹ including: closing costs at purchase, annual mortgage payments, and annual estimates of utilities, property taxes, basic home insurance (not including additional flood or hazard insurance), repairs and maintenance, and major home improvements. We further itemize the components of mortgage costs to reflect the share attributed to the annual g-fee, upfront g-fee (also known as a Loan-Level Price Adjustment, or LLPA), servicing fee, lender revenue at time of loan sale in the secondary market (lender gain-on-sale—GOS), private mortgage insurance (or PMI, included when applicable as described below), and the remaining mortgage interest. Figure 1 shows a high-level breakdown of these costs, and the next sections discuss each of these items in greater detail. Note that we are taking these expenses as given for a typical borrower, and not addressing individual household-level decision-making with respect to different housing, mortgage, and location tradeoffs.

⁸ We use Fannie Mae averages as noted above, for illustrative purposes. Since we are relying on averages, we face differing distributions within the variables. Therefore, using the average purchase price, LTV, closing costs, and mortgage amounts may not align to an actual unique borrower. We rely on the average LTV for the population samples to calculate the mortgage insurance requirements and term. However, for simplicity we adjust the down payment to match the average borrower purchase price and mortgage amount.

⁹ While the typical ownership period varies quite a bit based on a number of factors (age, income, household composition, local housing market, and overall housing market cycle), the average owner duration has fluctuated between seven and eight years in recent years:

<https://www.attomdata.com/wp-content/uploads/2021/04/Average-U.S.-Homeownership-Tenure-Q1-2021.png>

Figure 1: Homeownership Costs During an Ownership Period



4. Transaction costs

First, to fully assess the costs of homeownership, we begin with the transaction costs incurred by the borrower at the time they purchase their home. For a home purchase with a conventional conforming mortgage, an aspiring homeowner must have sufficient funds to cover their share of the down payment, closing costs, and sufficient remaining liquid savings (reserves) to meet their lenders' requirements to approve the mortgage. Closing (transaction) costs are not restricted to financing costs, and include all key transaction costs, such as: loan origination, appraisal, credit reports, title reports, title insurance, settlement charges, local transaction taxes and recordation fees, along with similar related costs.

For the purposes of this analysis, we display the down payment and principal repayment in the pro forma but separate them from the other costs that are true expenses and not part of asset building. We also assume borrowers have only one mortgage, and do not have a second mortgage or down payment assistance in the form of a forgivable second lien. Of course, accumulating wealth for a down payment is a burden for transitioning to homeownership, and there is an opportunity cost associated with having money invested in one's home in the form of the return the homeowner would have made in an alternative investment had they remained a renter. However, in this cost analysis we are not examining whether homeownership is the optimal choice for a household, but rather focusing on the drivers of housing expense for homeowners, and therefore treating equity as a contribution to savings and a separate consideration. We return to the wealth building aspect of homeownership at the end of the paper. We also include a version of our analysis where we incorporate principal repayment into overall borrower costs, as shown in Appendix A.

In our stylized pro formas, we use the detailed purchase price and mortgage information for each relevant borrower profile, as displayed in Table 1. Since we are interested in the lifetime costs of owning a single home, we also incorporate the average sales costs for each borrower into our models in our estimated year of sale (year seven). Closing costs related to purchase and sale are similarly the average reported closing costs for each borrower profile, and come from

internal Fannie Mae closing costs data collected in the Uniform Closing Dataset (UCD), also reflected in Table 1.¹⁰ We also incorporate seller broker fees, again based on the average brokers fees from the UCD and compute the resale price for each typical borrower's home based on the year-over-year FHFA average nominal home price growth since 1992 (3.75 percent) applied to the purchase price for each borrower pro forma.¹¹

5. *General housing costs*

Next, we estimate ongoing housing costs for an existing home. Our pro forma assumes the typical homeowner faces: utility costs (e.g., water, electric, gas), annual property taxes, home insurance, routine repairs and maintenance (e.g., lawn mowing, minor plumbing or electrical work), and larger capital (home improvement) expenditures (e.g., a roof or HVAC system upgrade or replacement).¹² For each of these items, we compute estimates from the 2019 American Housing Survey (AHS), and incorporate inflation over time in our pro forma using the corresponding typical inflation rates for each cost, which for most items comes from the Bureau of Labor Statistics (BLS). More information about each of these categories is detailed in Table 2. For utilities, property taxes, and homeowner insurance, we tailor the average amounts to a corresponding range of property values to allow for variation in these costs based on property values for each type of borrower. We do the same for repairs and maintenance and capital expenditures; however, we acknowledge this approach may underestimate critical improvements needed by homeowners that may be necessary to protect the property's value but for which some homeowners may have difficulty paying. For example, Van Zandt and Rohe (2011) found that roughly one-third of low-income homeowners were dealing with home repairs they could not afford within their first two years of homeownership. Melzer (2017) similarly finds that homes at higher risk of default spend less on both basic repairs and larger home improvements. On the other end of the spectrum, higher income homeowners may budget for luxury upgrades that are discretionary and thus spend more on home repairs and improvements than the average buyer.¹³ We discuss these issues further in Section 10.

¹⁰ Unfortunately, we have fewer data points for sales costs in the UCD, so we cannot use precise cuts by borrower profile, instead we use the average broker fee (6.7%) and other sales costs (0.7%) for the whole sample and apply them as a percentage of the predicted sales price for each borrower profile in our sample. For a complete breakdown and study of variation in closing costs across borrowers and a thorough discussion of the UCD data, see Mota and Palim (2021).

¹¹ This assumption ignores cyclical peaks and troughs that will affect equity accumulation, as well as potential differential appreciation by value tier, but these cycles also vary by geography and local supply and demand, we are focused on national averages for simplicity in our stylized examples throughout.

¹² We exclude other potential fees such as condominium and homeowner association (HOA) fees, since only five percent of owner-occupied units are condominiums, and only roughly one-quarter of owner households pay an HOA fee. However, their inclusion in our analysis would only increase the share of non-mortgage ongoing costs relative to other owner costs.

¹³ There is a wider literature discussing the distinction between smaller maintenance expenditures and bigger improvements, as well as disparities in housing upkeep and repair needs by age, geography, and socioeconomic status, see: Begley and Lambie-Hanson (2015); Bendimerad (2005); Davidoff (2006);

Table 2: Description of Housing Cost Data used to Estimate Ongoing Annual Owner Costs

Item	\$ Amount	Inflation	Sources	Description
Utilities	\$3,444 avg \$3,324 FTHB \$3,192 LI FTHB	1.4%	AHS 2019; BLS/ Haver Data Utility Inflation, NSA, YoY, 2018	The self-reported unit-level average utility costs per month for utilities paid, which includes: gas, electricity, fuel oil, other fuel, trash collection, and water.
Property taxes	\$4,104 avg \$3,576 FTHB \$3,084 LI FTHB	3.0%	AHS 2019; ATTOM 2018	The self-reported average property taxes include all real estate taxes on the unit, including special assessments, school and county taxes, and any other relevant tax.
Home insurance	\$1,356 avg \$1,212 FTHB \$1,116 LI FTHB	1.9%	AHS 2019; BLS/ Haver: Tenants' and Household Insurance growth, NSA, YoY, 2018	The self-reported amount of average homeowner's insurance paid by homeowners.
Repairs and maintenance	\$1,010 avg \$909 FTHB \$859 LI FTHB	4.5%	AHS 2019; BLS/ Haver: Repair of household items inflation YoY, 2018	The self-reported routine home maintenance activities. This includes preventive maintenance of the exterior and interior structure (for example, painting, repairing fences, fixing water pipes, termite inspections, among many others).
Capital expenditures	\$3,558 avg \$3,261 FTHB \$3,136 FTHB	4.5%	AHS 2019; BLS/ Haver: Repair of household items inflation YoY, 2018	The self-reported homeowner expenses towards home remodeling or major improvements or replacements over the prior two years. This number excludes routine minor repair work. We divide this number by two to get our annual estimate.

Source: Amounts and description come from authors' calculations and summary from the AHS 2019, and AHS Codebook Definitions (AHS 2019). Inflation data from various sources as described.¹⁴

6. *The mortgage contribution to housing costs*

The mortgage is often the central focus in discussions of homeowner housing affordability. In its simplest form, borrowers take out a mortgage to buy a home—providing a down payment

Divringi et al (2019); Gyourko and Tracy (2006); Holupka and Newman (2011); Mayer and Lee (1981), among others.

¹⁴ For more information, see: 2019 AHS Definitions.pdf (census.gov). Given the well documented disruptions to various housing data series during the COVID-19 pandemic, we have used 2019 or earlier data for the costs in this table.

from their own savings and receiving the rest of the funds for purchase from a lender. The mortgage includes an interest rate (in the U.S., typically a fixed rate) that is charged against the outstanding principal balance, which amortizes over the mortgage term (typically 30 years). In addition, for most mortgage products when the origination LTV for the mortgage is greater than 80 percent, the borrower must also pay a mortgage insurance payment, the amount of which is subject to risk-based pricing based on borrower and property characteristics and is not readily transparent in public data.

When a borrower signs their mortgage documents it will include an interest rate for the loan, the *note rate*. The consequent interest payment compensates the lender for the time value of money (the borrower has up to 30 years to pay back the full amount of the loan), including prepayment risk (due to the penalty-free prepayment option) and the risk that the borrower may default on the loan (credit risk) along with, presumably, an element of expected profit margin. While borrowers may refinance their loan, and this will happen more often in periods of declining interest rates as borrowers seek to lower rates and costs, we are conservative in our examples and assume the same note rate exists during the seven-year homeownership period. If a borrower refinances, their overall ongoing mortgage costs in our examples would presumably decrease, and be lower than our estimates. We discuss this further in Section 10.

Once the mortgage is closed, the lender, if they are a depository, can retain the loan on their balance sheet or sell the loan in the secondary market, typically to the GSEs. Since at least 2008, most loans below the conforming loan limits that are not government loans are eventually sold to the GSEs (Urban Institute 2021). Therefore, understanding the decomposition of charges, or revenue streams, among the various institutions once a mortgage is sold in the secondary market is required to fully understand what affects the cost of mortgage credit and homeownership for middle-class Americans.

In most research, the interest rate used to estimate mortgage costs is the Freddie Mac Primary Mortgage Market Survey (PMMS). The PMMS is based on a weekly survey of lenders on the rates offered for the most common mortgage products, including the 30-year, fixed-rate, 80 percent LTV mortgage. Therefore, the PMMS only reflects a national average of rates at a given point in time, but there is considerable variation in the rates charged to borrowers for several reasons, outlined below.

Using the PMMS rate and Fannie Mae's internal data, we apportion the zero-point 30-year fixed rate mortgage interest rate for loans sold to Fannie Mae in 2020 for each of our borrower profiles to the institution or activity being paid for by the borrower's interest payment. On a given loan, the note rate paid by the borrower is split every month to: pay the loan servicer for administrative activities (sending out statements, collecting monthly payments and making disbursements); make interest payments to the MBS investor who purchased a bond that contains the mortgage; and pay the GSE (Fannie Mae or Freddie Mac) who guarantee the timely payment of principal and interest on the mortgage to the MBS investor, thereby relieving the lender and the MBS investor of borrower credit risk. In theory, any remaining part of the

borrower's interest payment can be retained by the lender who sold the loan. In practice, that excess payment is generally converted into a one-time source of additional revenue to the lender as part of selling the loan; this is termed gain-on-sale (GOS). Therefore, for a mortgage sold into the secondary market the borrower note rate can be apportioned as shown in Equation (1).¹⁵

$$\text{Mortgage Note Rate} = \text{MBS Rate} + \text{Servicing Fee} + \text{GSE G-Fees} + \text{Lender Gain-on-Sale} \quad (1)$$

Thus, once a loan is going to be sold into the secondary market, the note rate paid by the borrower needs to be sufficient to cover the yield demanded by mortgage-backed investors (MBS Rate) and related services to make the MBS security attractive to global investors. The GSEs allow lenders to collect a servicing fee of at least 25 basis points from the borrower's interest payment, with a maximum of 50 basis points starting in 2019.¹⁶ While the servicing fee may vary across lenders and loan type due to varying overhead costs, we use 25 basis points in our examples below. In addition to the MBS rate and servicing fee, the borrowers' payment must be sufficient to cover the fee charged by the GSEs for guaranteeing the timely payment of principal and interest to MBS investors and ongoing administration of MBS (g-fees). Every loan sold to a GSE is charged an ongoing g-fee. In most cases, lenders also pay an additional one-time fee at the time of loan delivery (Fannie Mae calls these Loan Level Price Adjustments or LLPAs). It is important to note that a borrower may also choose to offset some of the overall ongoing interest charge on their mortgage by paying points upfront as part of their closing costs to lower the rate, but for our analysis, we use the zero-point rate for 2020 as a starting point (i.e., we assume no upfront interest rate offset by the borrower). To calculate the zero-point rate from the PMMS series, we take the PMMS rate and associated points, then divide the points by four and add this value to the rate (in practice, each point is equal to a one-fourth rate reduction).

The ongoing g-fee is an annual payment charged as a percentage of the loan balance for the life of the loan, which the lender passes onto the borrower through the interest (note) rate. Since April 2012, the ongoing g-fee rate incorporates 10 basis points as a contribution to the payroll tax cut, as part of the Temporary Payroll Tax Cut Continuation Act of 2011 (TCCA), and since August 2012 it has included an additional 10 basis points mandated by FHFA. The ongoing g-fee varies by product type, although over the years regulation has worked to eliminate disparities in the fees charged to lenders based on their specific loan volumes (FHFA 2020). The FHFA sets the ongoing g-fee floor for MBS transactions (as of 2021, it is around 44 basis points).

¹⁵ Here, we focus on mortgage costs as relevant to the borrower. For a detailed overview of the primary-secondary spread and components of lender profits over time, see Fuster et al (2013, 2021).

¹⁶ <https://servicing-guide.fanniemae.com/THE-SERVICING-GUIDE/Part-A-Doing-Business-with-Fannie-Mae/Subpart-A2-Getting-Started-with-Fannie-Mae/Chapter-A2-3-Servicer-Compensation/A2-3-02-Servicing-Fees-for-Portfolio-and-MBS-Mortgage/1581707841/A2-3-02-Servicing-Fees-for-Portfolio-and-MBS-Mortgage-Loans-09-09-2020.htm>

Thus, we use the ongoing g-fee average of 44 basis points in our sample pro formas below, typical for MBS transactions.¹⁷

The LLPA reflects specific borrower credit risk for a loan based on borrower credit scores, LTV, and other property and loan characteristics. The specific LLPA fees are publicly available in a matrix regularly updated by the GSEs.¹⁸ While these fees are charged to lenders upfront, lenders often convert them to an annual flow charge for purposes of passing through the fee to the borrower. Thus, for borrowers, the ongoing g-fee and the LLPA are both folded into the interest rate. The lender conversion of the LLPA into an ongoing charge is based on the specific LLPA fee for the borrower divided by the expected life of the loan, as shown in Equation (2). While this may vary by specific loan characteristics and expected prepayment risk, for our purposes we assume the LLPAs for a single-family purchase mortgage are divided by five and applied to the rate, based on typical lender behavior. For example, for the average purchase borrower profile for a single-family detached home in 2020, the LLPA would be 25 basis points, divided by five provides an annual amount of five basis points, which we assume is passed through to the borrower in their note rate.¹⁹

$$\text{Ongoing LLPA Charge} = \text{Upfront LLPA} / \text{Expected Life of Loan} \quad (2)$$

The upfront LLPA charge of course has a wide potential range of values and can be as high as 375 basis points for a borrower with a credit score below 620 and LTV greater than 97 percent. However, in practice due to the availability of special mortgage products geared to lower income borrowers with low down payments, such as HomeReady®, Housing Finance Agency (HFA) loans, and Duty To Serve lending programs, in addition to the actual credit attributes of loans delivered to Fannie Mae, many loans to low-income purchase borrowers in 2020 received LLPA rebates or credits.²⁰ These loans also typically allow lower PMI coverage levels, which gets passed through to borrowers as PMI is typically paid directly by the borrower. As an illustration of the typical LLPA variation across lower income borrowers, Table 3 shows the median LLPAs for different low-income borrower profiles in Fannie Mae’s 2020 owner-occupied purchase mortgages along with their share of total purchase owner-occupied

¹⁷ FHFA puts out an annual summary report on g-fee characteristics and trends, which includes summary information on g-fee dynamics using GSE data (FHFA 2020).

¹⁸ For example, Fannie Mae’s LLPA matrix is available here:

<https://singlefamily.fanniemae.com/media/9391/display>

¹⁹ Note, 25 basis points is the average LLPA, which we assume is fully included in our calculated zero-point rate. For LLPAs above 25 basis points, the note rate may increase to be reflective of the additional apportioned LLPA per year; however, this does not factor into our sample of borrower profiles who all receive the average LLPA of 25 basis points.

²⁰ HomeReady® is also subject to an LLPA cap. Begley et al (2021) provide an overview of borrower characteristics and early performance outcomes for the HomeReady® affordable mortgage, along with a view of the borrower cost and performance tradeoffs between FHA and HomeReady across the credit score-LTV matrix. Hembre et al (2021) similarly provide a comparative analysis of HFA loan performance using GSE data.

acquisitions. For low-income purchase borrowers, the median LLPAs ranged from -50 to 50 basis points.

Table 3: Median LLPAs for Low-Income Purchase Borrowers

	LTV <= 90%	LTV > 90%	% of total volume
LI, not FTHB, HomeReady, or HFA	25	25	8%
LI FTHB, Not HomeReady, or HFA	50	50	10%
LI FTHB, HomeReady	0	0	7%
LI FTHB, HFA	-50	-50	1%

Note: Median LLPAs for each subpopulation and LTV from Fannie Mae's 2020 acquisitions. The sample is restricted to conventional 30-year fixed rate loans on single-family homes, excluding the additional LPA associated with condominiums.

Next, we turn to the additional lender revenue, or lender gain-on-sale (GOS) received when selling a loan into the secondary market. As mentioned above, the gain-on-sale is a direct function of any remaining interest stream from the borrower once all items have been covered (MBS rate, servicing fee, and g-fees). For a view of this borrower cost, we rely on the primary-secondary spread, which is the difference between a mortgage's interest rate and the coupon rate on the MBS pool into which it is sold. This gap provides insight into the magnitude of the lender GOS. The MBS pools have coupon rates that are less than the mortgage rate, and the excess between the two is split between the g-fees, servicing fees, and remaining interest that is converted into the lender GOS, as reflected in Equation (3). We use the Bloomberg 365-day average primary-secondary spread for 2020, which was 147 basis points (PSSACF30 IR Index). We then backout the 25 basis points for servicing and the 49 basis points in g-fees, as described above. Thus, for our typical borrower, we assume the remaining 73 basis points of ongoing borrower payments is available to be capitalized into a one-time gain that goes to the lender upfront when the loan is sold. Practically, this means the 73 basis points from the annual note rate as shown in Equation (1) is converted to a one-time flow to the lender at sale. For our thought exercise, we assume the same five-year multiple as is typically applied to LLPAs. Multiplying the annualized 73 basis point charge by five equals 365 basis points or a 3.65 percent upfront gain to the lender, which they receive on the unpaid principal balance of the mortgage being securitized.²¹

While we use 73 basis points as an approximation of the typical GOS allocated in the note rate for our analysis, the GOS for any individual loan varies quite a bit across lenders depending on their business model, lender-specific costs, loan terms, and loan origination channel.²²

²¹ While there is also the difficult to predict issue of interest rate fluctuations and hedging by lenders between loan closing and sale to the secondary market, this is close to the MBA estimate of an average of 355 basis points in lender net secondary marketing income for 2020, although they also show that this number varies widely based on lender characteristics and the average was smaller in 2018 and 2019 (282 basis points) (MBA 2021, Tables B2, C2, and D2).

²² For example, mortgage brokers typically charge more for their services than direct lenders. Lenders may also have their own internal risk-based loan charges and/ or lenders may also buy-up or buy down the g-fee in their transaction with the GSEs, both of which will also change their specific profits. For a

Finally, for most loans where the origination LTV is greater than 80 percent the borrower must pay for private mortgage insurance, typically as a separate payment. Mortgage insurance may also be paid entirely upfront by the borrower, partially paid upfront and or paid by the lender (which presumably the lender takes into in the note rate offered to a potential borrower). Mortgage insurance rates vary by insurer and are not readily available to the public. Additionally, as is the case with lenders, mortgage insurance providers often have their own risk-based pricing for risk-layers that may increase charges beyond those seen in the LLPA grid (such as the number of borrowers). We use the mortgage insurance rate card published by MGIC in 2019,²³ assume it is paid separately, and that it remains in place until the LTV of the mortgage drops below 78 percent based on the Fannie Mae servicing guide²⁴ and our assumptions of price appreciation, mentioned earlier.

7. *Putting the mortgage costs in context: a stylized example*

With the above information offering an approximation of the full view of costs, we next put the value of each component of housing costs into broader context over a period of ownership for a single property assuming our seven-year ownership period in a simplified version of a user cost model of homeownership. We use a discounted cash flow pro forma model for this analysis, and we do this as follows: first, we take the above information and create a pro forma to reflect the lifecycle view of owning a single-family home. This includes the outlays (down payment, average closing costs) for the home purchase assumed to be in the present period (or ‘year 0’) as shown in Table 1; the housing- and mortgage-related annual costs for each of the next seven years inflated by relative inflation measures for each line item, if applicable, as shown in Table 2. We also include an estimated price for the sale of the home in year seven, based on the purchase price inflated by the FHFA year-over-year average nominal housing repeat-sales price increase since January 1992 (3.75 percent) and we calculate net proceeds using this amount less the mortgage balance and average seller closing costs as a share of sale price at the end of year seven.²⁵ An example of the pro forma for the average purchase borrower in Fannie Mae’s 2020 acquisitions is shown in Table 4.

detailed explanation of lender tradeoffs in the secondary market, see Fuster et al (2013). Additionally, a discussion of market frictions, increases in lender profits and GOS, and credit supply constraints during COVID is covered in Fuster et al (2021).

²³ <https://www.mgic.com/-/media/mi/rates/rate-cards/71-61284-rate-card-pdf-bpmi-monthly-july-2018.pdf?la=en>

²⁴ [B-8.1-04: Termination of Conventional Mortgage Insurance \(05/15/2019\) \(fanniemae.com\)](#)

²⁵ In reality, price appreciation will vary greatly by location, price tier, and market cycle. We believe that 3.75 percent nominal growth rate is conservative given we also use a 2 percent discount rate in our analysis, implying real price growth of 1.75 percent over time. Additionally, the three borrower profiles

Table 4: A Pro Forma View of Purchase Borrower Costs and Payments

	Year 0	Years 1–6	Year 7
<i>Purchase Costs</i>			
Down Payment	\$59,303		
Closing Costs	\$6,693		
<i>Annual Housing Costs</i>			
Utilities		\$3,444	\$3,744
Property Taxes		\$4,104	\$4,900
Insurance		\$1,356	\$1,518
Repairs & Maintenance		\$1,010	\$1,315
Capital Expenditures		\$3,558	\$4,633
<i>Annual Mortgage Costs</i>			
MBS Rate		\$4,739	\$4,121
Ongoing G-Fee		\$1,140	\$991
Servicing		\$647	\$563
LLPA/5		\$129	\$113
Lender GOS		\$1,891	\$1,644
Mortgage Insurance		\$518	
Principal Repayment		\$5,184	\$6,299
<i>Sales Costs</i>			
Broker Commissions			\$27,758
Closing Costs			\$2,883
Total Outflow	\$65,996	\$27,720	\$ 60,482

Note: An example pro forma for the average home purchase borrower in Fannie Mae’s 2020 acquisitions. Authors’ calculations using inputs as described above and shown in Tables 1 and 2. The inflation-adjusted values for years 2–6 are not shown.

With the full seven-year pro forma in hand, we then discount the entire stream of flows to the present (year 0). We use a two percent discount rate, which is aligned with the Federal Reserve’s inflation target.²⁶ Table 5 reflects the result of this analysis with the cost breakdown for our average homebuyer, as profiled in Table 1. Note that we show the purchase price, down payment, principal repayment, sale price, and net proceeds in the table but do not include them

include housing values that are solidly within the middle-tier of typical national housing values for 2020 according to the Zillow ZHVI (\$268,418 as of December 2020).

²⁶ We also try a range of discount rates to reflect different risk premiums and borrower opportunity costs, but higher rates do not substantially change our results.

https://www.federalreserve.gov/faqs/economy_14400.htm

in our calculations of housing costs. We treat these separately as contributions to homeowner savings and discuss these elements of wealth building further in Section 9.

Table 5: Total Present Value of All Ownership Costs, Average Borrower

Ownership Costs	Investment Flows & Price Data	Costs \$	Total Costs & % of Costs
<i>Total</i>			\$184,883
<i>At Time of Purchase</i>			
Purchase Price	\$318,281		
Down Payment	\$59,303		
Closing Costs		\$6,693	3.6%
<i>Ongoing Costs Yrs 1-7</i>			
Total Annual Utility Costs		\$23,222	12.6%
Total Annual Property Taxes		\$29,007	15.7%
Total Annual Insurance		\$9,279	5.0%
Total Annual Repairs & Maintenance		\$7,462	4.0%
Total Annual Capital Expenditures		\$26,288	14.2%
MBS Rate		\$28,779	15.6%
Annual Interest Cost for GOS		\$11,480	6.2%
Total Annual G-Fee		\$6,919	3.7%
Total Annual Servicing		\$3,932	2.1%
LLPA		\$786	0.4%
Total PMI Payments		\$996	0.5%
Principal Repayment Yrs 1-7	\$36,967		
<i>At Time of Sale</i>			
Estimated Sales Price	\$411,839		
Remaining Mortgage Balance	\$214,601		
Broker Fees		\$27,214	14.7%
Other Closing Costs		\$2,826	1.5%
Net Proceeds	\$178,900		

Source: Author calculations of the total lifetime costs of ownership for the average purchase borrower in Fannie Mae's 2020 acquisitions.

From Table 5, we can see that the largest components of overall costs for the average purchase borrower are property taxes (15.7 percent), interest paid to MBS investors (15.66 percent), the home sale-related broker fees (14.7 percent), capital improvement expenditures (14.2 percent), and ongoing utility costs (12.6 percent). In contrast, the other components of housing costs are relatively small—except for lender GOS (6.2 percent), the rest of the line items comprise 5

percent or less of total costs. Ongoing non-mortgage housing costs are more than half of overall costs. Total mortgage costs not including principal repayment are about 30 percent of total costs, with the g-fee and LLPA comprising 3.5 percent of total costs, and the servicing fee 1.8 percent. Additionally, transaction costs related to purchase and sale costs comprise about 20 percent of total costs, with closing costs summing to only ~four percent of total outlays, but also 10 percent of total *upfront* costs, and broker fees comprising close to 15 percent of *overall* total costs and nearly all of the closing costs *at sale*.

8. Housing costs for FTHBs

While the focus of Table 5 is the average borrower, we saw earlier that borrower costs will vary based on borrower income, credit profile, and home purchase price. Here, we turn to the remaining two borrower profiles we outlined in Table 1: the average FTHB, and the average low-income FTHB.

Table 6: Total Present Value of All Ownership Costs, Average FTHB Borrower

Ownership Costs	Investment Flows & Price Data	Costs \$	Total Costs & % of Costs
<i>At Time of Purchase</i>			\$175,640
Purchase Price	\$291,139		
Down Payment	\$37,697		
Closing Costs		\$6,228	3.5%
<i>Ongoing Costs Yrs 1-7</i>			
Total Annual Utility Costs		\$22,413	12.8%
Total Annual Property Taxes		\$25,275	14.4%
Total Annual Insurance		\$8,293	4.7%
Total Annual Repairs & Maintenance		\$6,716.13	3.8%
Total Annual Capital Expenditures		\$24,093.85	13.7%
MBS Rate		\$28,164	16.0%
Annual Interest Cost for GOS		\$11,235	6.4%
Total Annual G-Fee		\$6,772	3.9%
Total Annual Servicing		\$3,847	2.2%
LLPA		\$769	0.4%
Total PMI payments		\$4,355	2.5%
Principal Repayment	\$36,176		
<i>At Time of Sale</i>			
Estimated Sales Price	\$376,719		
Remaining Mortgage Balance	\$210,013		
Broker Fees		\$24,893	14.2%

Other Closing Costs		\$2,585	1.5%
Net Proceeds	\$151,194		

Source: Author calculations of the total lifetime costs of ownership for the average FTHB purchase borrower in Fannie Mae's 2020 acquisitions.

Despite different purchase, leverage, and operating expense assumptions leading to lower costs by dollar amount, the overall breakdown of costs for FTHB borrowers is similar to that of the average borrower. Once again, non-mortgage ongoing costs comprise roughly half of total costs, and mortgage-costs roughly 30 percent. The largest components of overall costs are still the property taxes, interest charges net of fees and GOS, the broker fees paid at sale, utility costs, and capital improvement expenditures. The one notable difference here is that the additional cost of mortgage insurance, while still relatively small, is a bigger share of costs due to the higher initial mortgage balances and LTVs at purchase (2.5 percent of total costs in Table 6 compared to 0.5 percent of total costs in Table 5).

Similar to Table 5, transaction costs for purchase and sale over the seven-year period sum to about 20 percent of total costs, with closing costs comprising only ~4 percent of total costs, but notably a larger share, 14 percent, of total *upfront* outlays, and broker fees are 14 percent of total *overall* costs.

Finally, we turn to the ownership costs for low-income FTHB borrowers as shown in Table 7. Here, we see a very similar pattern to the above two profiles, with the same approximate breakdown in costs for the borrower—although ongoing non-mortgage costs are now 54 percent of total costs and mortgage costs drop to 26 percent of overall costs. Transaction costs, as before, are close to 20 percent of overall costs, with closing costs now comprising 16 percent of *upfront* outlays, and broker fees roughly 13 percent of total *overall* costs. One caveat here is that, as shown in Table 3, while the LLPAs comprise 0.3 percent of the total costs in this example, LLPAs vary based on a number of factors and may be slightly higher or close to \$0 or negative for high-LTV lower-income FTHB borrowers due to the availability of mortgage products that offer LLPA credits instead of charges for these borrowers.

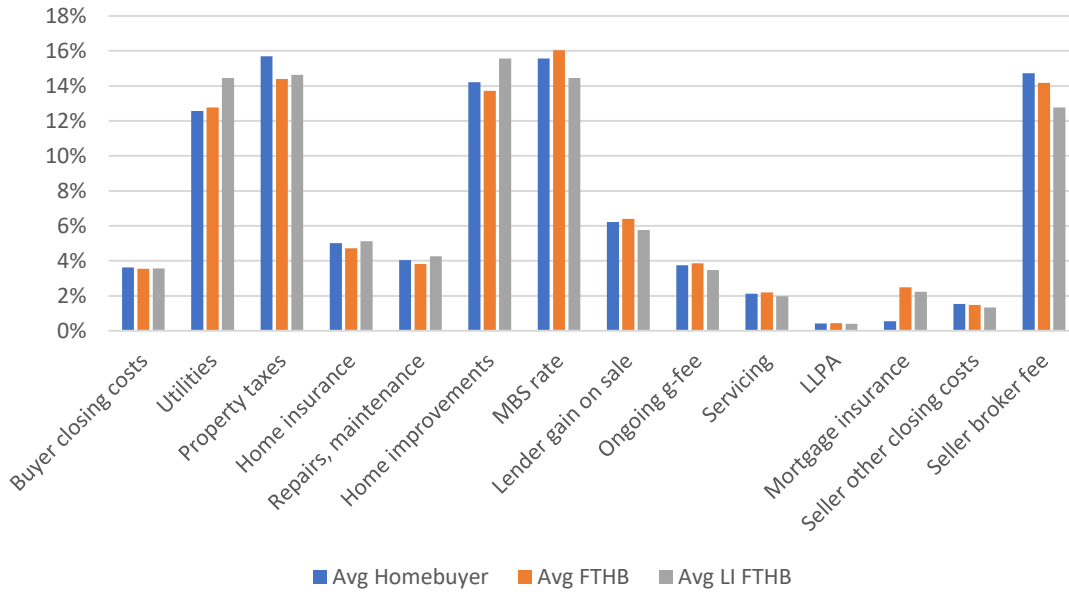
Table 7: Total Present Value of All Ownership Costs, Average Low-Income FTHB Borrower

Ownership Costs	Investment Flows & Price Data	Costs \$	Total Costs & % of Costs
<i>At Time of Purchase</i>			\$148,900
Purchase Price	\$222,243		
Down Payment	\$28,504		
Closing Costs		\$5,298	3.6%
Total Upfront Outlays	\$33,802		
<i>Ongoing Costs Yrs 1-7</i>			
Total Annual Utility Costs		\$21,523	14.5%
Total Annual Property Taxes		\$21,797	14.6%
Total Annual Insurance		\$7,636	5.1%
Total Annual Repairs & Maintenance		\$6,347	4.3%
Total Annual Capital Expenditures		\$23,170	15.6%
MBS Rate		\$21,529	14.5%
Annual Interest Cost for GOS		\$8,588	5.8%
Total Annual G-Fee		\$5,176	3.5%
Total Annual Servicing		\$2,941	2.0%
Total LLPA		\$588	0.4%
Total PMI payments		\$3,329	2.2%
Principal Repayment	\$27,655		
<i>At Time of Sale</i>			
Estimated Sales Price	\$281,932		
Remaining Mortgage Balance	\$145,747		
Broker Fees		\$19,002	12.8%
Other Closing Costs		\$1,974	1.3%
Net Proceeds	\$115,210		

Source: Author calculations of the total lifetime costs of ownership for the average low-income FTHB purchase borrower in Fannie Mae's 2020 acquisitions.

Figure 2 visually displays these cost breakdowns across the three borrower profiles. From this figure, it's clear that while many categories represent similar shares of costs across borrowers, utilities and home improvements are disproportionately larger shares of low-income FTHB borrower costs. Not surprisingly, the costs that are charged as a percentage of property or mortgage value, such as the MBS rate and the seller broker fee, decline for FTHB and low-income FTHBs who have lower property values and mortgage balances at origination. Appendix A includes an analogous version of this figure incorporating the total principal repayment for each borrower as a share of costs as well.

Figure 2: Breakdown of Borrower Costs by Borrower Profile



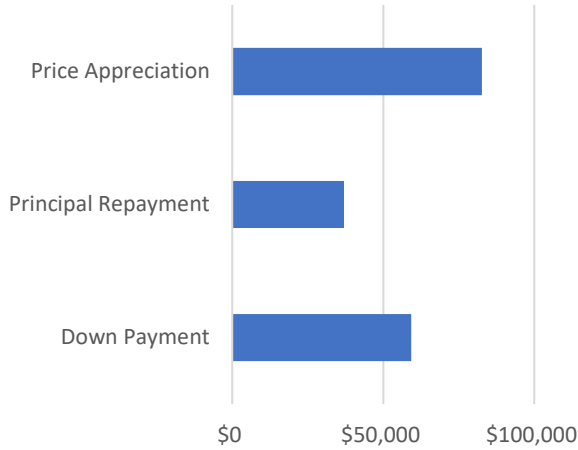
Source: Author calculations of the total lifetime costs of ownership for the average homebuyer, FTHB, and low-income FTHB purchase borrower in Fannie Mae’s 2020 acquisitions.

9. Contributions to Housing Equity

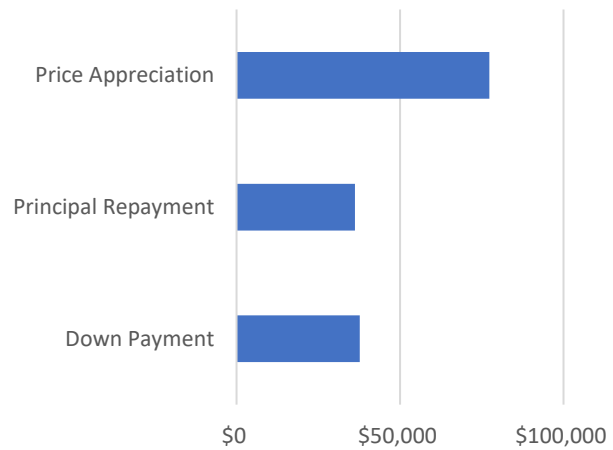
Next, we use our stylized examples to explore differences in equity and wealth building for each borrower profile. As shown in Table 1, the main differences across borrowers are with the down payment, purchase price, and LTVs. We use these differences in our pro forma assumptions, the mortgage amortization schedule, and our estimates of future sales values of properties net of sale costs described earlier to calculate the relative components of overall housing equity at the time of sale for each borrower. These results are shown in Figure 3.

Figure 3: Homeownership Equity Accumulation, by Borrower Profile

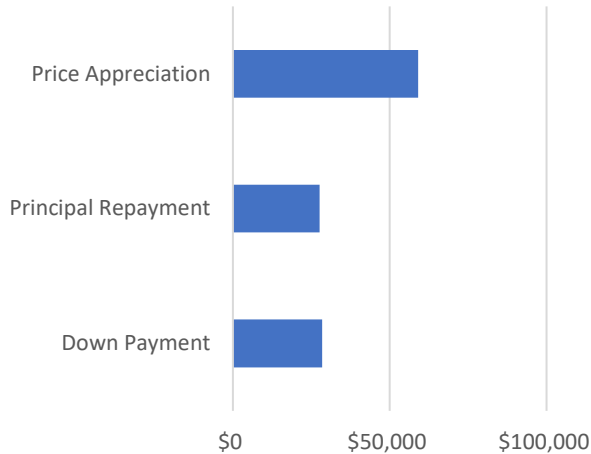
Panel A: Average Borrower



Panel B: Average FTHB Borrower



Panel C: Average Low-Income FTHB Borrower



Source: Author calculations of the total lifetime equity accumulation attributed to homeownership for the average borrower, average FTHB, and average low-income FTHB purchase borrower in Fannie Mae’s 2020 acquisitions as described in Table 1.

Figure 4 highlights some notable differences in equity building for different borrowers. For example, for the average borrower, the total net proceeds at sale would be \$178,900 in today’s dollars, and principal repayment and price appreciation account for roughly 67 percent of this total. On the other hand, for low-income FTHB, the total net proceeds at sale are \$115,210, with 75 percent of that total accumulation due to principal repayment and appreciation. The average borrower with the initial higher down payment and purchase price ultimately experiences a greater dollar increase in wealth, but the return on the investment for the low-income FTHB is higher given the lower initial down payment. However, this reliance on principal repayment and price appreciation also creates challenges for wealth accumulation, particularly when

transaction costs are a large share of owner costs and homeownership spells vary. Longer periods of homeownership will be more advantageous for building up principal and benefitting from price appreciation, but lower income homeowners are also more likely to face volatile local home prices and to exit homeownership during economic downturns, potentially erasing these gains (Belsky et al 2005, Goodman and Mayer 2018).

10. Discussion

Addressing housing affordability to ensure sustainable homeownership for low-income and minority households is an important policy goal. High housing cost burdens for lower income owner households reveal a major challenge for achieving positive mortgage and homeownership outcomes. We know from the Global Financial Crisis that affordable mortgage products allowing buyers to stretch their monthly income into a larger mortgage using alternative underwriting standards or novel product features were not a sustainable approach to increasing and maintaining homeownership. In fact, they resulted in double-digit default rates for certain pre-crisis cohorts of low-income conventional conforming borrowers in the GSE book of business (Fout et al 2020). Identifying opportunities to reduce the cost of homeownership without increasing the chances of mortgage default is a more viable approach to achieving a sustained increase in homeownership rates.

While our results are meant to be stylized examples based on several representative borrower profiles, we have some caveats about the findings. First, given our use of averages and our combining of different data sources, we will certainly miss variation within the distributions of different variables in our assumptions—for example, our averages will mask differences in housing prices and borrower profiles across geographies. We are also using data from 2018 through 2020, and therefore are incorporating COVID's influence on the housing market and housing financing, which both lowered rates in some cases and increased rates or tightened credit in others. Also, as mentioned earlier, some items like lender GOS and mortgage insurance rates are not readily available to the public and will also vary greatly across entities and data sources, thus our assumptions are market-wide averages and general estimates. Finally, we are not including income tax benefits in our analysis. Our view is of the costs associated with the housing unit only. This means we are not accounting for state and local property tax deductions or the potential wealth-building benefits of taking the mortgage interest deduction, which is less likely to be taken by low-income households.²⁷ This is consistent with the use of pre-tax income in the standard measures of housing affordability and housing cost burdens used by HUD, among others (discussed in Section 2 above).

Nevertheless, our analysis suggests a few key takeaways and multiple potential 'high-impact' areas for policymakers to address. First, our decomposition shows that policy efforts to ameliorate housing costs would be most effective by focusing on ways to reduce the largest

²⁷ Only roughly 14 percent of all taxpayers itemize deductions, making them eligible for the deduction (Eastman and Tyger 2019).

components of overall costs. For ongoing non-mortgage costs in particular, expanding programs that help to reduce utility costs and limit property tax burdens for low-income households are obvious solutions. Potential programs to address high utility and property tax burdens for lower income households include income-based utility-assistance programs, such as through the Low Income Home Energy Assistance Program (LIHEAP) (Perl 2015; Murray and Mills 2014), and targeted property tax-relief programs, such property tax deferrals, homestead exemptions credits, and circuit breakers (Langley and Youngman 2021). Langley and Youngman (2021) provide an overview of each of these tax programs and offer detailed insights into the costs and benefits of these policies for both jurisdictions and homeowners.

Home repair and improvement expenses also stand out as a particular area of concern. Prior research shows that lower-income households are more likely to have critical home repair needs, and that even relatively modest unexpected budget shocks due to necessary home repairs and improvements may create stress for low-income households and force difficult spending tradeoffs (Acquaye 2011, Divringi et al 2019, Van Zandt and Rohe 2011). Moreover, we see an increased importance of home appreciation in overall wealth building for lower income borrowers, making expenditures that will potentially improve or maintain value and stave off depreciation particularly salient. Energy-efficient home improvements would also lower household energy-related utility costs. Thus, expanding programs that help homeowners with home repairs and improvements expenses may have the most meaningful influence on sustaining homeownership. Some examples include: home warranties, home improvement subsidies through grants or low-cost financing, weatherization assistance programs, dedicated reserve requirements, and pre-and post-purchase home maintenance training and coaching.²⁸

Second, given the potential for GOS and PMI payments to vary greatly across lender and mortgage insurance provider, and that we see their marginal contribution to housing costs is a larger component of mortgage costs or varies by borrower profile, more transparency into lender GOS and mortgage insurance contribution to costs would help policymakers and researchers assess the full magnitude of variation within these costs by lender/ insurer and potentially address these ‘black-box’ components of housing costs. Of course, refinancing may lower mortgage costs during periods of declining interest rates. Yet, much of the literature emphasizes the fact that lower income households are less likely to refinance, and lower balance loans are less likely to benefit from refinancing (Agarwal et al 2017; Gerardi et al 2020, 2021; Keys et al. 2016). Thus, policies that reduce barriers to refinancing may also be beneficial, such as the low-cost refinancing options offered by the GSEs, the streamlined refinancing programs offered by the FHA and VA programs, and expanded refinancing options for borrowers during periods of declining interest rates and housing prices, as discussed in Eberly and Krishnamurthy (2014). Research also suggests that programs that provide financial counseling to help households navigate mortgage options, lower overall costs, and to understand when

²⁸ Papers exploring programs and policy solutions to assist with energy efficiency, weatherization and other home repair costs in detail include: Acquaye (2011); Begley and Lambie-Hanson (2015); Divringi et al (2019); Fuller et al (2010); Murray and Mills (2014); Perl (2015); Rohe et al (2010); and Van Zandt and Rohe (2011).

refinancing is beneficial are also important (for example: Bhutta et al 2020; Mallaris et al 2021; Moulton and Roll 2019; and Moulton et al 2013).

Finally, we see that transaction costs consistently comprise close to 20 percent of overall costs, indicating another potential area for addressing costs, and Mota and Palim (2021) address disparities in these costs as well as potential solutions, such as capping closing costs for qualified FTHB. Additionally, the real estate broker fees paid at sale contribute to a large share (~15 percent) of overall costs and the majority of closing costs at sale, pointing to another area of potential innovation. Of course, the nominal purchase price of a home to a FTHB also influences transaction costs and overall funds a household that aspires to own a home must save and have available at time of purchasing a home. Programs aimed at reducing purchase costs to borrowers, such as shared equity and down payment assistance programs are also potential ways to help reduce upfront borrower costs and outlays. And, indeed, much discussed changes to land use policy could directly reduce the purchase price of new and existing homes, to the benefit of future FTHBs. However, these potential market effects are not immediate and will vary greatly by locality. Additionally, broad reductions in local market values from zoning reform could also lower the wealth-building potential of existing low-income and other homebuyers, so we feel addressing transaction costs directly along with providing down payment assistance are less ambiguous solutions.

11. Conclusion

In this paper, we focus on breaking out the components of housing costs for homeowners, particularly low-income and FTHBs, which we feel is crucial for informing policymakers as to the key contributors to the cost of homeownership; and, thereby, highlighting the areas and institutions that could work to reduce these costs. However, a key challenge for researchers is an accurate enumeration of such costs. We use Fannie Mae 2020 acquisitions and closing cost data combined with 2019 AHS data to derive detailed cost estimates for three different typical borrower profiles and highlight their largest components of expenses. A major contribution is our focus on the mortgage-specific components of housing costs. We also look at differences in wealth accumulation over time from homeownership for each type of borrower.

Despite differences in borrower down payment, mortgage amounts, purchase prices, and estimated utility and property tax expenses, the largest components of overall housing costs are consistently non-mortgage ongoing costs (about 50 percent of total costs). Specifically, utilities, property taxes, and home improvement expenses are the largest of these expenses for all homeowners. Of mortgage costs, which are roughly 30 percent of total costs, the note rate net of other fees (the MBS rate) is the largest component of costs, followed by the lender gain-on-sale. Transaction costs at purchase and sale are also a critical part of overall costs, collectively comprising about 20 percent of the total costs, with seller broker fees at sale as the largest expense. The fees charged to cover borrower credit risk that are part of the cost of the mortgage, GSE g-fess (roughly four) and PMI (roughly one to three percent) are a relatively small part of the cost of homeownership.

While we did not find a single cost that stands out as the panacea fix for addressing housing costs, the above analysis highlights several key areas for policymakers to address and also offers a view into potential disparities in housing costs for different borrowers. We hope this analysis will help frame future conversations related to the costs of homeownership and the barriers to sustainable transitions, ownership, and lifetime wealth building for lower income households.

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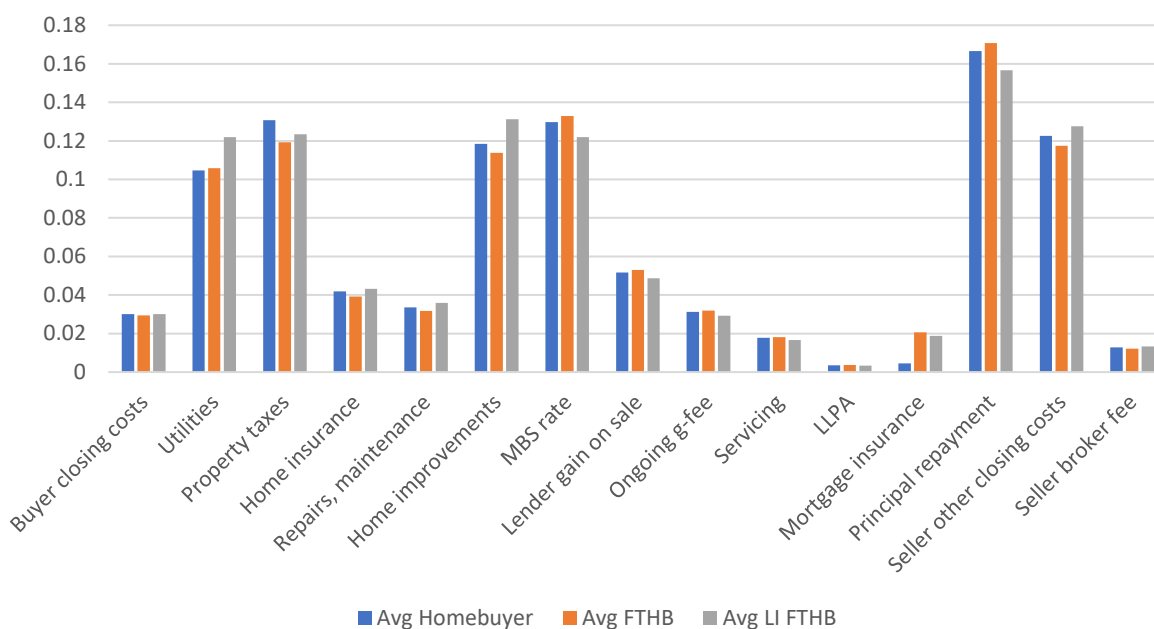
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Appendix A: Breakdown of Borrower Cost including Principal Repayment

Here, we recalculate the shares broken down in Tables 5 through 7 and Figure 2 to show what the breakdown of costs would look like including the principal component of mortgage repayment that contributes to owner’s housing equity. Incorporating principal repayment shows that transaction costs are 15 to 17 percent of total costs, ongoing non-mortgage housing expenses are 39 to 44 percent of the total, and total mortgage costs including principal are similarly 41 to 44 percent of the total, with the principal repayment comprising roughly 40 percent of the total mortgage costs. On its own, the principal repayment itself comprises 16 to 17 percent overall expenses. The other main individual expenses remain the same as before: utilities, property taxes, home improvements, the MBS rate net of other costs, and transaction costs all still stand out as key components of total costs, as reflected in Figure 1A.

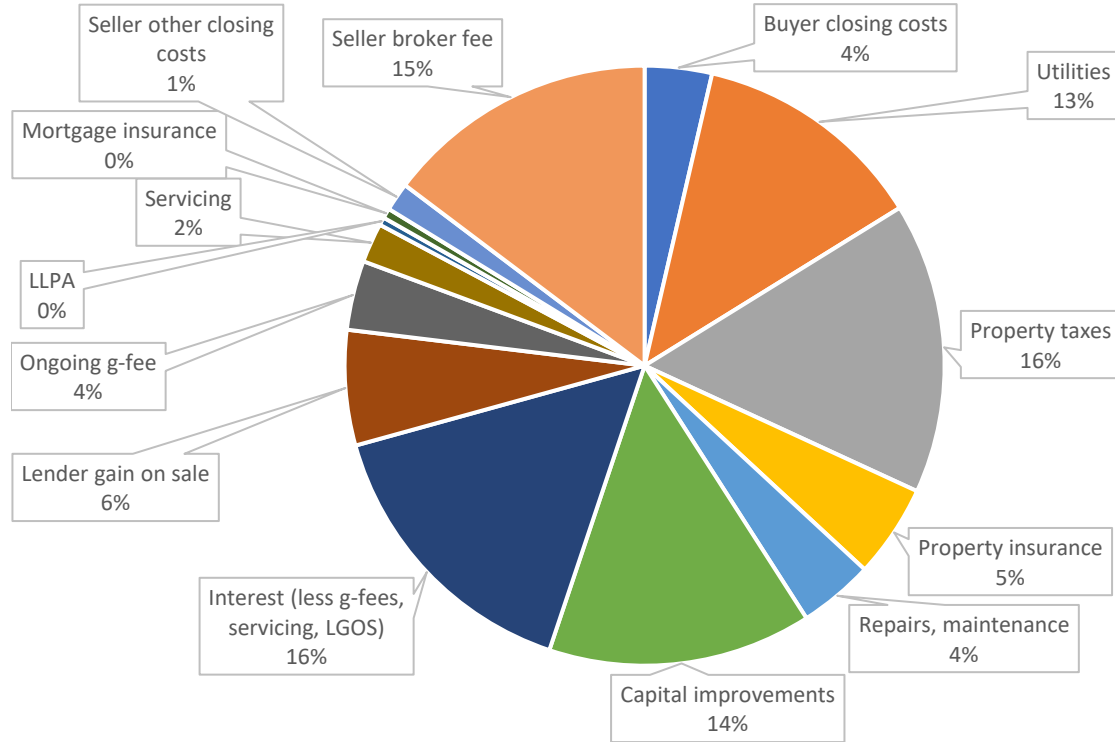
Figure 1A: Breakdown of Borrower Costs by Borrower Profile, Including Principal Repayment



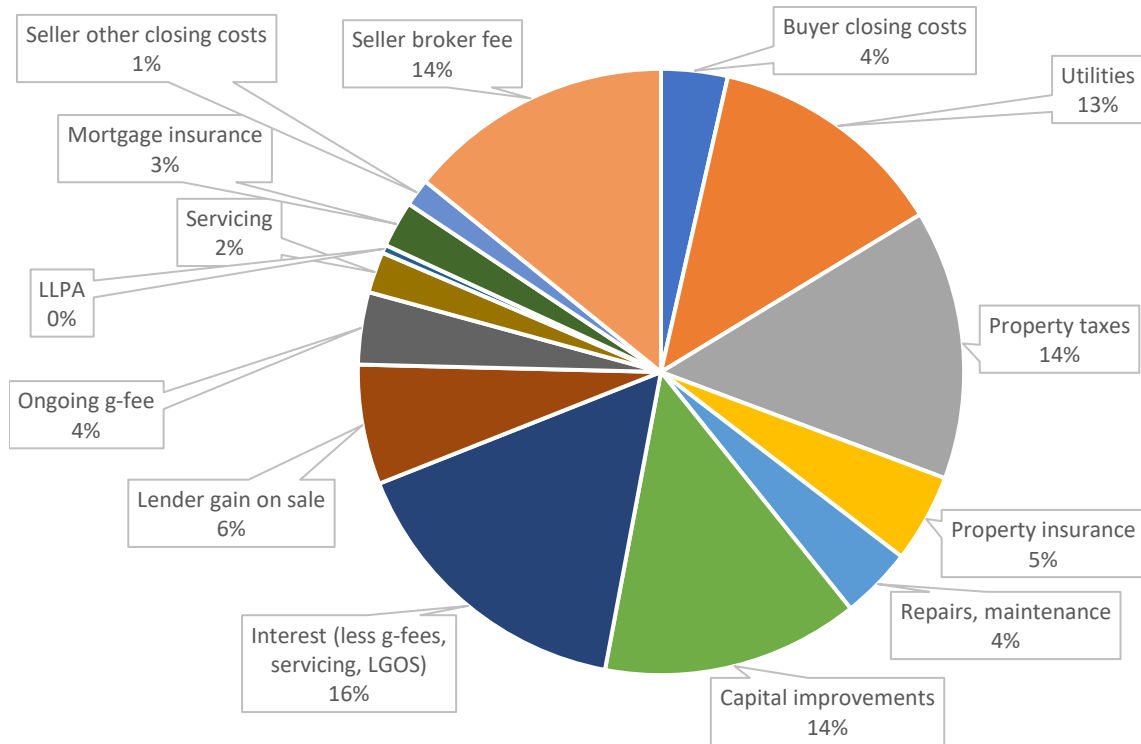
Source: Author calculations of the total lifetime costs of ownership for the average homebuyer, FTHB, and low-income FTHB purchase borrower in Fannie Mae’s 2020 acquisitions. This version incorporates principal repayment as a share of overall costs.

Additional Figures (Housing Costs per Borrower Profile in Pie Charts)

Breakdown of Costs: Average Homebuyer



Breakdown of Costs: FTHB



Breakdown of Costs: Low-Income FTHB

