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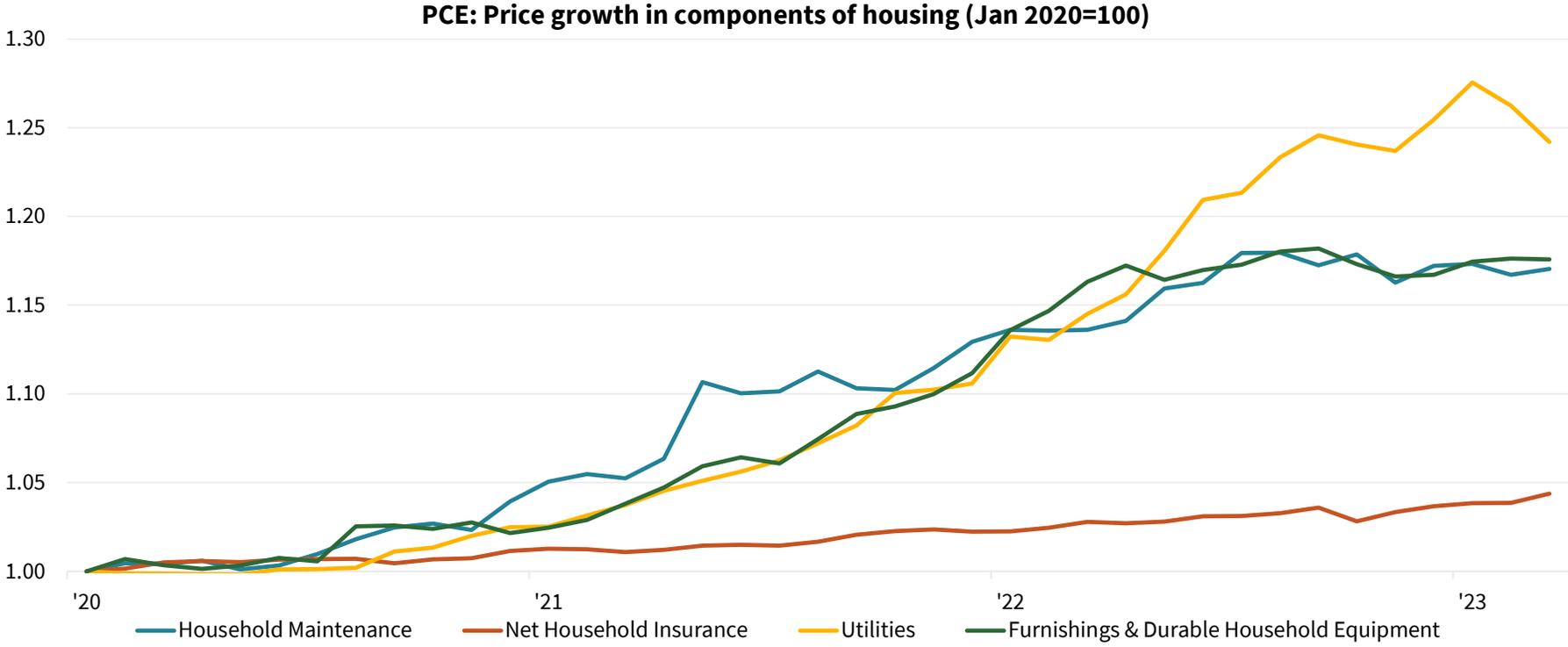
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Inflation and Homeownership - Existing and Prospective Homeowners

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May 30, 2023

Non-mortgage housing costs for homeowners have grown sharply since 2020

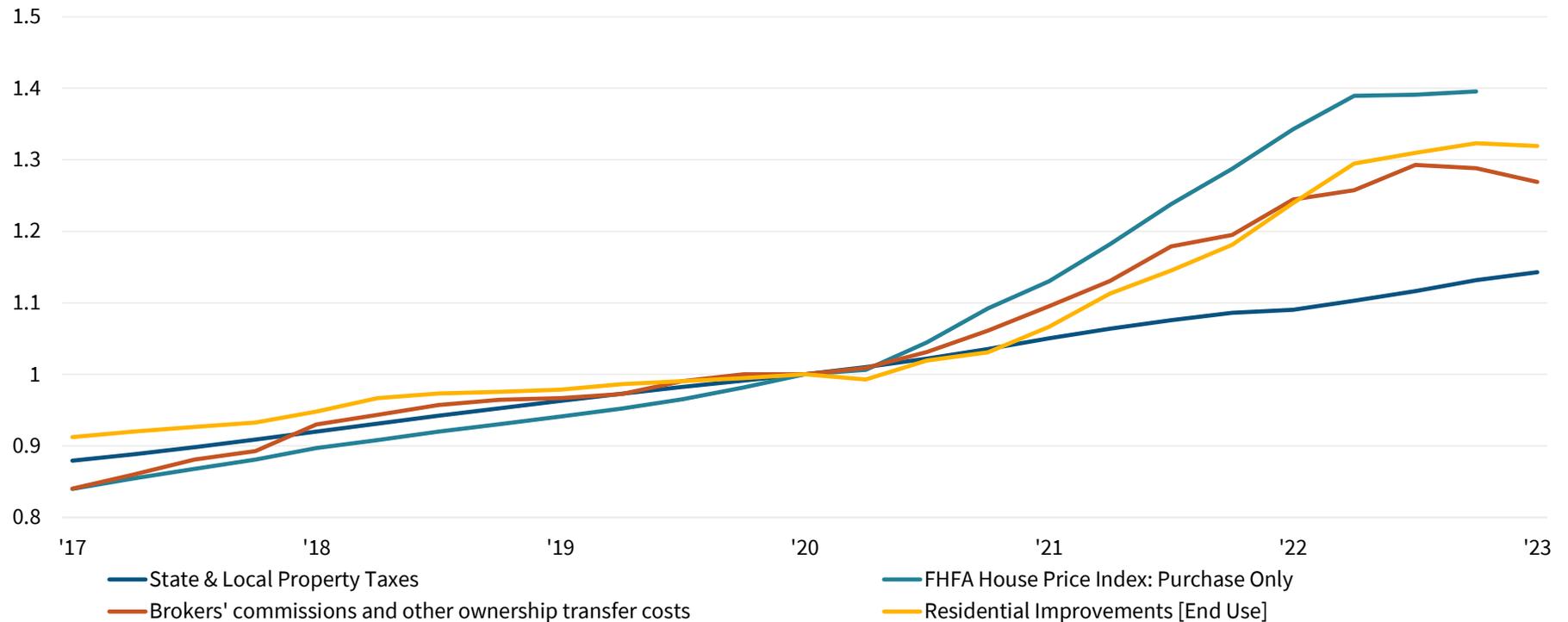


3 Source: Bureau of Economic Analysis



Home price growth has led to increase in property taxes, while labor and material cost rises affect price of improvements

Quarterly components of housing cost (Q1 2020 = 100)



Three exemplar homeowners from our housing cost study

Table 1: Average of Each Loan Attribute by Type of Borrower⁷

	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%
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. The three categories are not mutually exclusive. 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. 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.

5 Source: Fannie Mae ESR Research, “Mortgage costs as a share of housing costs—placing the cost of credit in broader context”



Costs have increased for existing homeowners, though income growth has helped offset the increase in costs

	Avg. homebuyer					
	2020 costs	% of 2020 income	Current costs	% change	% of current income	
Avg. annual income*	112524	--	128151	14%	--	
Avg. purchase price	318281	--	--	--	--	
Avg. mortgage	258978	--	--	--	--	
Avg. mortgage payment (principal & interest)**	9901	9%	9901	0%	8%	
Total utilities	2322	2%	2884	24%	2%	
Total property taxes	2901	3%	3315	14%	3%	
Total insurance	928	1%	968	4%	1%	
Total repair & maintenance	686	1%	803	17%	1%	
Total CAPEX (Improvements)	1754	2%	2314	32%	2%	
Total annual homeowner costs	18493	16%	20187	9.2%	16%	
	Avg. FTHB					
	2020 costs	% of 2020 income	Current costs	% change	% of current income	
Avg. annual income*	89436	--	101857	14%	--	
Avg. purchase price	291139	--	--	--	--	
Avg. mortgage	253442	--	--	--	--	
Avg. mortgage payment (principal & interest)**	10080	11%	10080	0%	10%	
Total utilities	2241	3%	2783	24%	3%	
Total property taxes	2528	3%	2889	14%	3%	
Total insurance	829	1%	866	4%	1%	
Total repair & maintenance	686	1%	803	17%	1%	
Total CAPEX (Improvements)	1754	2%	2314	32%	2%	
Total annual homeowner costs	18119	20%	19736	8.9%	19%	

*Income growth is an ESR estimate based on Census Bureau household income and average hourly earnings

**not accounting for amortization



Costs have increased for existing homeowners, though income growth has helped offset the increase in costs

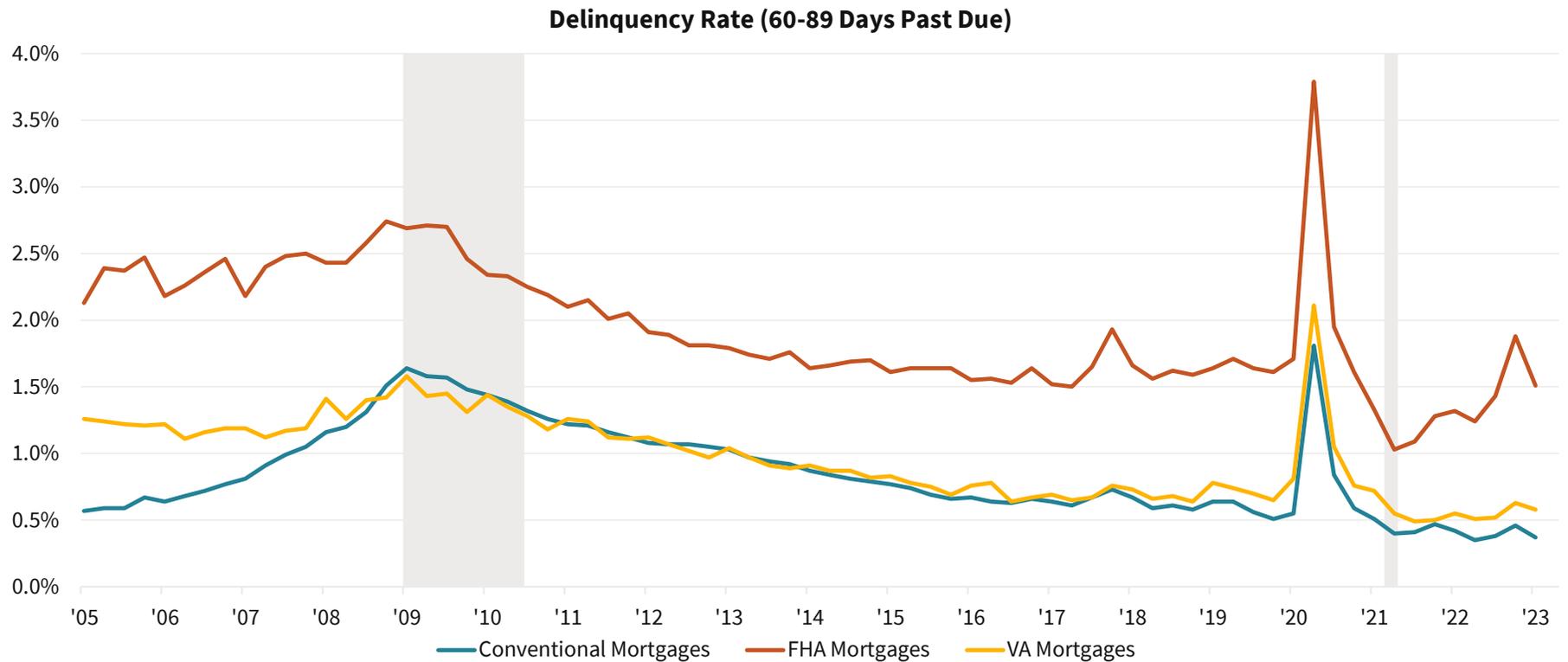
	Avg. low-income FTHB				
	2020 costs	% of 2020 income	Current costs	% change	% of current income
Avg. annual income*	49932		56867	14% --	
Avg. purchase price	222243	--	--	--	--
Avg. mortgage	193740	--	--	--	--
Avg. mortgage payment (principal & interest)**	6067	12%	6067	0%	11%
Total utilities	3075	6%	3818	24%	7%
Total property taxes	3114	6%	3559	14%	6%
Total insurance	1091	2%	1139	4%	2%
Total repair & maintenance	981	2%	1148	17%	2%
Total CAPEX (Improvements)	2506	5%	3306	32%	6%
Total annual homeowner costs	16834	34%	19037	13.1%	33%

*Income growth is an ESR estimate based on Census Bureau household income and average hourly earnings

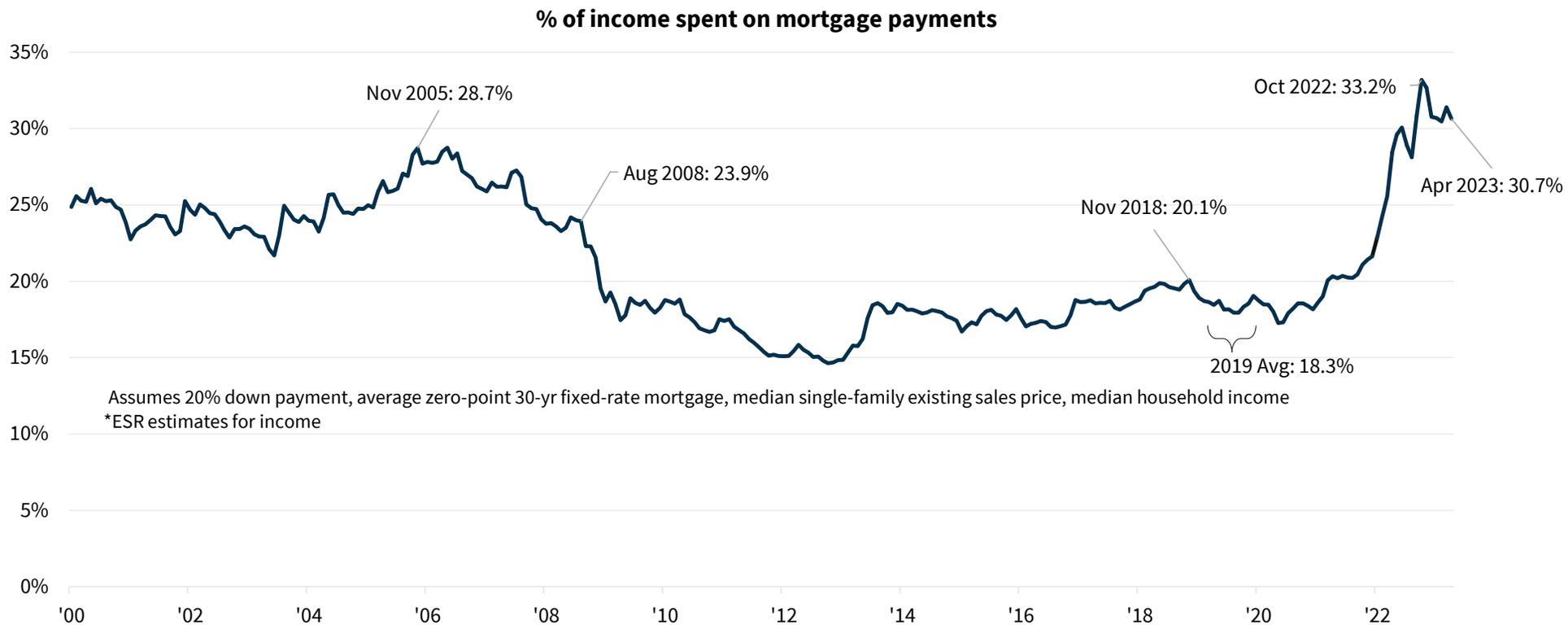
**not accounting for amortization



Delinquencies remain below 2019 levels, even though they have risen from their lows for FHA borrowers

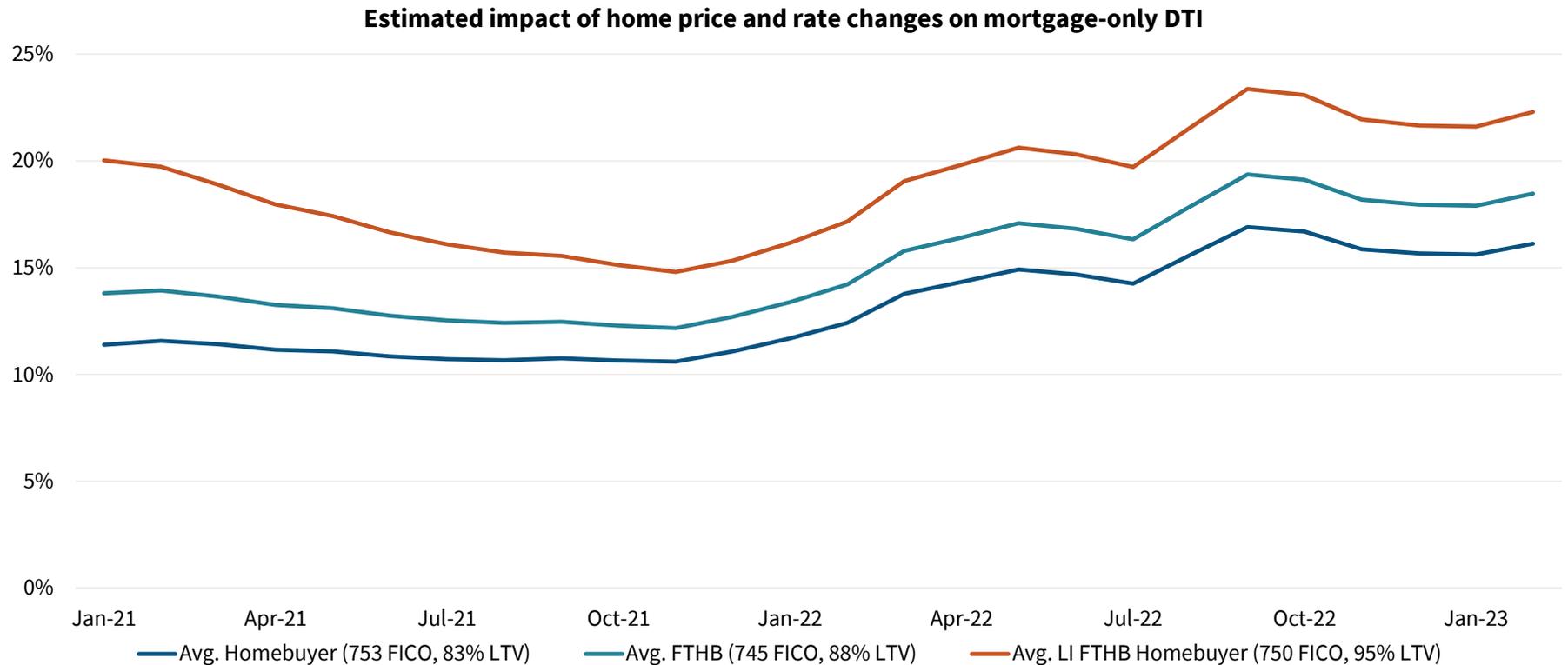


Potential homeowners – Face higher home prices and interest rates, in addition to higher non-mortgage ownership costs



Potential homeowners - Front-end DTI to purchase same home

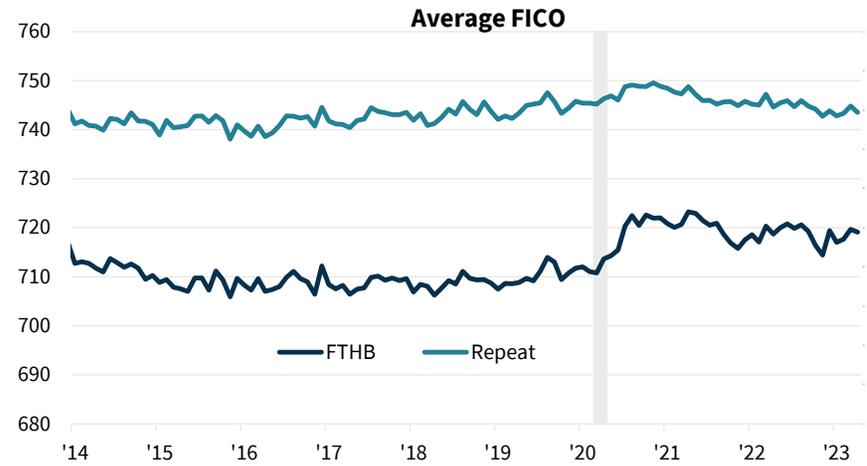
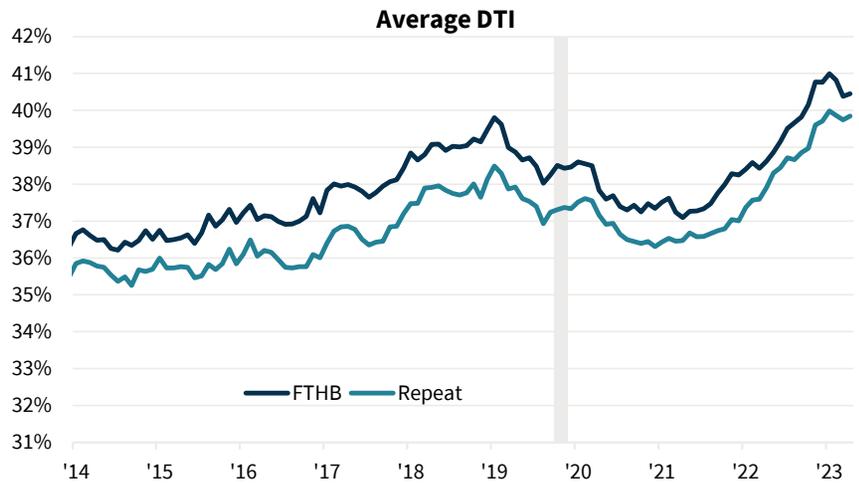
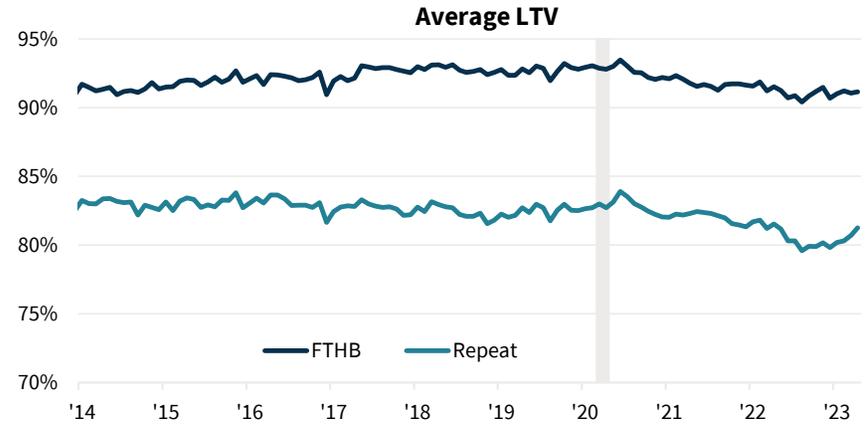
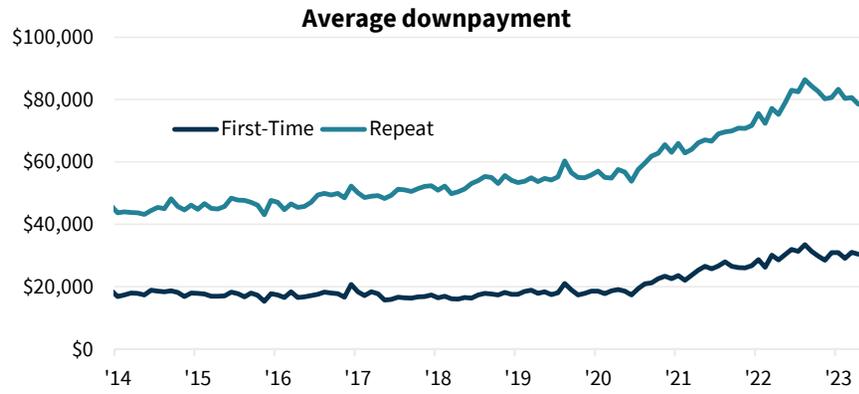
Required DTIs have risen with home prices and mortgage rates, despite rise in incomes



10 Source: Fannie Mae ESR Research, "Mortgage costs as a share of housing costs—placing the cost of credit in broader context", Freddie Mac, Fannie Mae estimates



DTIs sit higher than pre-pandemic; LTVs remain lower



11 Source: Purchase mortgages from MRS Securitization Disclosure Data (includes Fannie Mae, Freddie Mac, and Ginnie Mae data)





Appendix – Homeownership cost study

Research Question(s)

What are the key contributors to housing costs for the average homeowner household?

What is the contribution of the different components of mortgage costs?

Purchase Costs	Mortgage costs	Operating expenses	Maintenance/ improvement expenses	Sales costs
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**Ongoing non-mortgage
housing costs**



Our Approach

1. Pro Forma:	2. Extend over time:	3. Discounted Cash Flow:	4. Calculate shares
<p>Create a pro forma of typical housing costs for the average homeowner:</p> <ul style="list-style-type: none">- Out-of-pocket purchase costs- Annual ongoing costs- Sales costs	<p>Extend the view of housing costs over the typical homeownership period</p> <ul style="list-style-type: none">- 7 years- Line-item specific inflation	<p>Discount each year of costs back to the present and aggregate total costs</p> <ul style="list-style-type: none">- 2% (Fed's inflation target)	<p>Calculate shares for each component of total costs</p>

Note: we are focusing on the GSE conventional conforming market and costs



Pro Forma Assumptions & Data

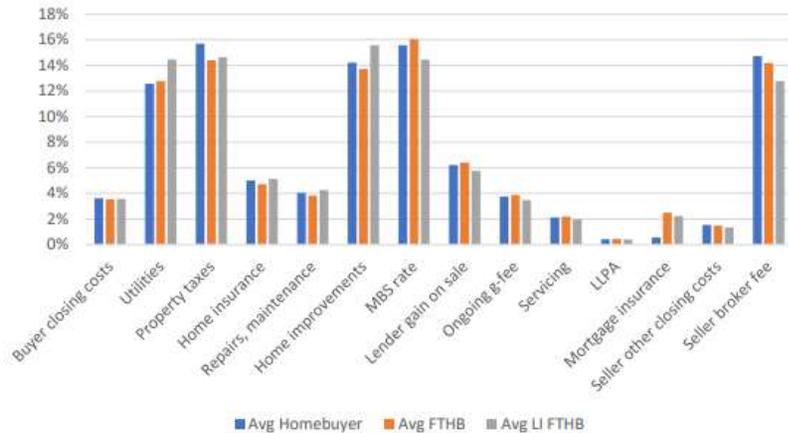
Item	Data Source
Purchase Costs	
Down payment	Average borrower in Fannie Mae's book, 2020
Closing costs	Average borrower, Fannie Mae UCD data, 2020
Non-Mortgage Housing Costs	
Utilities	American Housing Survey 2019, by property value
Property taxes	American Housing Survey 2019, by property value
Home insurance	American Housing Survey 2019, by property value
Maintenance	American Housing Survey 2019
Capital improvements	American Housing Survey 2019
Mortgage Costs	
G-fee (ongoing, upfront LLPA)	Based on borrower profile, FHFA g-fee report, 2020*
Servicing	25 basis points (GSE minimum fee)
Lender gain on sale (GOS)	2020 primary-secondary spread, net of fees
Mortgage rate net of fees	30-year zero-point rate, net of fees & GOS
Mortgage insurance	MGIC 2019 rate card
Sale Closing Costs	
Broker Commissions	Average borrower, Fannie Mae UCD data, 2020
Other closing costs	Average borrower, Fannie Mae UCD data, 2020



Many categories have similar shares of costs across borrowers

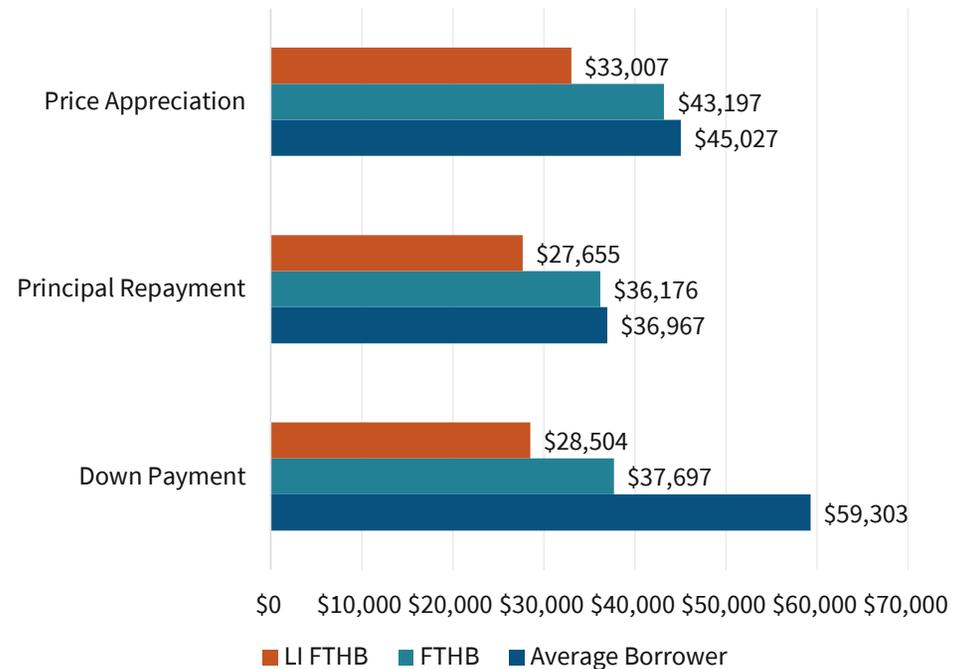
However, utilities and home improvements are disproportionately larger shares of low-income FTHB borrower costs

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.

Homeownership Equity Accumulation, by Borrower Profile



Discounted Total Cash Flow View of Housing Costs over a 10 Year Ownership Period, Average Borrower

Average homebuyer borrower profile in 2020: 753 FICO, 83% LTV

Ownership Costs DCF		Total Costs & % of Costs
Upfront		\$175,541
Purchase Price	\$318,281	
Down Payment	\$36,600	
Closing Costs	\$6,693	3.8%
Total Upfront Costs	\$43,293	
Ongoing Costs Yrs 1-10		
Total Annual Utility Costs	\$23,222	13.2%
Total Annual Property Taxes	\$29,007	16.5%
Total Annual Insurance	\$9,279	5.3%
Total Annual R&M	\$6,864	3.9%
Total Annual Capex	\$17,544	10.0%
Total Annual FRM interest	\$28,150	16.0%
Annual interest cost due to LGOS	\$12,109	6.9%
Total Annual g-fee	\$6,920	3.9%
Total Annual servicing	\$3,932	2.2%
LLPA	\$786	0.4%
Total MI payments	\$996	0.6%
Principal Repayment	\$36,967	
Sale Costs		
Estimated Sales Price	\$411,839	
Remaining Mortgage Balance	\$ 214,606	
Broker fees	\$ 27,214	15.5%
Other closing costs (est)	\$ 2,826	1.6%
Net Proceeds	\$ 178,895	

Closing costs are 15% of total upfront costs

Utilities, taxes, capex, and interest charges net of fees and GOS are the largest ongoing charges

Ongoing non-mortgage housing costs are ~50% of overall costs

Brokers fees are a significant component of sales and overall costs

Note: Values are based on estimated average housing and borrowing costs for the average purchase borrower profile in 2020. All future values are discounted to the present value. Purchase values are assumed to occur in the present. Total estimated annual ongoing housing costs are assumed for 7 years with line-item specific inflation, then discounted to the present for a full view of housing costs.



Discounted Total Cash Flow View of Housing Costs over a 10 Year Ownership Period, Average FTHB Borrower

Average first-time homebuyer borrower profile in 2020: 745 FICO, 88% LTV

Ownership Costs DCF		Total Costs & % of Costs
Upfront		\$169,238
Purchase Price	\$291,139	
Down Payment	\$18,750	
Closing Costs	\$6,228	3.7%
Total Upfront Costs	\$24,978	
Ongoing Costs Yrs 1-10		
Total Annual Utility Costs	\$22,413	13.2%
Total Annual Property Taxes	\$25,275	14.9%
Total Annual Insurance	\$8,293	4.9%
Total Annual R&M	\$6,864	4.1%
Total Annual Capex	\$17,544	10.4%
Total Annual FRM interest	\$27,548	16.3%
Annual interest cost due to LGOS	\$11,850	7.0%
Total Annual g-fee	\$6,772	4.0%
Total Annual servicing	\$3,847	2.3%
LPA	\$769	0.5%
Total MI payments	\$4,355	2.6%
Principal Repayment	\$36,176	
Sale Costs		
Estimated Sales Price	\$376,719	
Remaining Mortgage Balance	\$ 210,013	
Broker fees	\$ 24,893	14.7%
Other closing costs (est)	\$ 2,585	1.5%
Net Proceeds	\$ 151,194	

Closing costs are 25% of upfront total costs

Utilities, taxes, capex, and interest charges net of fees and GOS are the largest ongoing charges

Ongoing non-mortgage housing costs are ~50% of overall costs

Brokers fees are a significant component of sales and overall costs

Note: Values are based on estimated average housing and borrowing costs for the average purchase borrower profile in 2020. All future values are discounted to the present value. Purchase values are assumed to occur in the present. Total estimated annual ongoing housing costs are assumed for 7 years with line-item specific inflation, then discounted to the present for a full view of housing costs.



Discounted Total Cash Flow View of Housing Costs over a 10 Year Ownership Period, Average LI FTTHB Borrower

Average low-income first-time homebuyer borrower profile in 2020: 750 FICO, 95% LTV

Ownership Costs DCF		Total Costs & % of Costs
Upfront		\$144,478
Purchase Price	\$224,617	
Down Payment	\$12,500	
Closing Costs	\$5,298	3.7%
Total Upfront Costs	\$17,798	
Ongoing Costs Yrs 1-7		
Total Annual Utility Costs	\$21,523	14.9%
Total Annual Property Taxes	\$21,797	15.1%
Total Annual Insurance	\$7,636	5.3%
Total Annual R&M	\$6,864	4.8%
Total Annual Capex	\$17,544	12.1%
Total Annual FRM interest	\$21,059	14.6%
Annual interest cost due to LGOS	\$9,059	6.3%
Total Annual g-fee	\$5,176	3.6%
Total Annual servicing	\$2,941	2.0%
Total LLPA	\$588	0.4%
Total MI payments	\$3,792	2.6%
Principal Repayment	\$27,655	
Sale Costs		
Estimated Sales Price	\$284,944	
Remaining Mortgage Balance	\$ 145,748	
Broker fees	\$ 19,205	13.3%
Other closing costs (est)	\$ 1,995	1.4%
Net Proceeds	\$ 117,996	

Closing costs are 30% of upfront total costs

Utilities, taxes, capex, and interest charges net of fees and GOS are the largest ongoing charges*

Ongoing non-mortgage housing costs are ~50% of overall costs

Brokers fees are a significant component of sales and overall costs

Note: Values are based on estimated average housing and borrowing costs for the average purchase borrower profile in 2020. All future values are discounted to the present value. Purchase values are assumed to occur in the present. Total estimated annual ongoing housing costs are assumed for 7 years with line-item specific inflation, then discounted to the present for a full view of housing costs.



Conclusions

Ongoing routine costs, including utilities, property taxes, and capital improvements, all comprise a large share of total housing costs

Programs focused on lowering transaction costs and alleviating ongoing maintenance and improvement costs may be critical for sustainable homeownership initiatives

Transaction costs are also a large share of overall ownership costs

The share of overall costs for different categories are fairly consistent across borrower profiles

Given lower down payments and higher leverage, housing price appreciation is a larger component of overall potential wealth-building for lower income households



Caveats

We are relying on averages of national estimates thus miss nuances in the distributions of variables across borrowers

We're combining estimates from various sources, some of which calculated their estimates based on internal information and methodologies that are not available to the public

Lender gain on sale is an estimate based on the primary-secondary spread, but will vary lender and loan

Mortgage insurance pricing is not publicly available (relying only on MGIC rates)

We are not including income tax benefits in our analysis. Our view is of the costs associated with the housing unit only



Almost 40% of households have incomes below \$50,000

