CASH-OUT REFINANCING

The Pitfalls of Cash-Out Refinancing in a Rising Interest Rate Environment

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About the Center for Responsible Lending

The Center for Responsible Lending (CRL) is a non-partisan, nonprofit research and policy advocacy organization working to promote financial fairness and economic opportunity for all, end predatory lending, and close the racial wealth gap. CRL's expertise gives it trusted insight to evaluate the impact of financial products and policies on the wealth and economic stability of Asian, Black, Latino, rural, military, low-wage, low-wealth, and early-career workers and communities. CRL is an affiliate of Self-Help, one of the nation's largest nonprofit community development financial institutions. We work with committed local and national community, faith, and civil rights partners to create a fairer, more inclusive economy.

About the AEI Housing Center

The American Enterprise Institute (AEI) is a public policy think tank dedicated to defending human dignity, expanding human potential, and building a freer and safer world. The work of our scholars and staff advances ideas rooted in our belief in democracy, free enterprise, American strength and global leadership, solidarity with those at the periphery of our society, and a pluralistic, entrepreneurial culture.

The AEI Housing Center has three primary objectives:

- Provide transparent and objective mortgage and housing market trends at unprecedented levels of detail;
- Foster a stable system of mortgage finance that promotes sustainable homeownership; and
- Develop market-based solutions to the nation's shortage of economical housing.

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Executive Summary

The American Enterprise Institute (AEI) Housing Center and the Center for Responsible Lending (CRL) have jointly prepared this brief. Based on our analysis of both public and proprietary data, we share a common concern: Cash-strapped borrowers are being enticed into using the home equity they have accumulated as an ATM. With today's higher mortgage interest rates, taking out these first-lien, cash-out refinance loans will damage their long-term financial health. We are particularly concerned by trends and distributions for Federal Housing Administration (FHA) and Veterans Affairs (VA) programs, which typically serve minority, low-wealth, lower credit score, and veteran homeowners. Accordingly, we focus our discussion on the FHA and VA programs and the borrowers they serve.

Our research leads to the following conclusions:

- **Cash-strapped homeowners struggling to cope with high inflation and lagging wage growth are being enticed by cash-out refinance offers of easy access to their home equity, which increased dramatically during the pandemic.** Although at one time such cash-out refinances were relatively low cost because the new rate was less than, or just slightly above, the borrower's current rate, in today's environment, refinancing means substituting a new, higher interest rate that can be two to four percentage points above one's existing rate. Our research demonstrates that this can have serious longer-term repercussions for the financial health of vulnerable borrowers. For example, the typical cash-out refinance completed in late 2022 by a borrower with an FHA or VA mortgage provided about $36,000 in cash but will add about $42,000 in additional interest on the existing mortgage balance over the first seven years (not including interest on the new cash itself or the closing costs on the new loan).[1]

- **In the current interest rate environment, second-lien home equity loans are a far better way to take out cash from home equity.[2]** Second-lien home equity loans were designed to enable homeowners to convert home equity into cash without having to refinance the entire mortgage. Even though the interest rate on the new cash is higher with a home equity loan than with a cash-out refinance, that higher interest rate applies only to the new cash. Therefore, when cash-out refinance rates are above borrowers' current mortgage rates, the overall cost of the home equity loan is much lower because the borrower continues to benefit from that lower original mortgage rate—a substantial savings, as noted earlier. This factor more than offsets the higher rate of interest paid on the new cash from a home equity loan. The typical FHA or VA borrower who completed a cash-out refinance in late 2022 would have paid $38,000 less in total interest and accumulated $42,000 more in home equity had they been able to obtain a 10-year home equity loan instead. Further, because closing costs are a percentage of the loan balance, the typical FHA or VA borrower who completed a first-lien, cash-out refinance paid three to four times more in closing costs than they would have for a second-lien home equity loan.

  Many mortgage lenders, while willing to make new mortgages that the government will guarantee, such as cash-out refinances that are backed by the FHA or VA, appear much less willing to make home equity loans, especially to lower credit score borrowers. Given that interest rates now favor the home equity loan as a cost-effective means to tap home equity, the market now has the opportunity to provide these loans.

- **At the recent rate of about 13,000 FHA and VA cash-out refinance loans per month, about 160,000 of these homeowners could become saddled with more costly mortgages this year.** Of particular concern is the fact that FHA cash-out refinances are disproportionately going to financially vulnerable borrowers, including those with lower credit scores and borrowers in neighborhoods with higher shares of Black residents.

- **Lenders should make second mortgage products like home equity loans and home equity lines of credit (HELOCS) more available.** Low-wealth, lower credit score, minority, and veteran borrowers served by the FHA and VA need better alternatives for accessing their equity in a higher interest rate environment, such as traditional home equity loans. In addition, the FHA, the VA, and the government-sponsored enterprises (GSEs) should conduct an immediate review of their cash-out refinancings and implement effective measures to discourage harmful refinancings.

We review below the evidence supporting each of these conclusions. A technical appendix with a discussion of calculations and methods follows this discussion.

Why Cash-Out Refinances Cost More in Today's Higher Interest Rate Environment

In a cash-out refinance, a homeowner with a mortgage takes out a new larger loan to pay off the outstanding principal on the existing mortgage and provide some amount of additional cash (the "cash out" in a cash-out refinance). Because the cash-out refinance interest rate is applied to the larger loan amount, cash-out refinances increase the amount of interest the homeowner pays on their existing loan balance when, as is now true for most homeowners, the cash-out refinance rate is above the original mortgage rate.

The median interest rate on outstanding FHA and VA loans is 3.2%, and 90% of these loans have an interest rate below 4.63%.[3] Because of the increase in interest rates in 2022, the rate on a cash-out refinance in late 2022 was close to 6.5%.[4] As a result, the typical FHA or VA borrower who completed a cash-out refinance in November 2022 and obtained about $36,000 in cash saw their monthly principal and interest payment (P&I) on the balance of their old mortgage increase by $368 (37%).[5] Assuming the borrower maintains the new mortgage for seven years, they will pay about $42,000 of additional interest on their existing loan balance; this is more than the amount of cash they obtained from the refinance.[6] This amount does not include the costs attributable to the fact that the new mortgage will be for a larger amount than the prior mortgage. This factor also drives up the monthly payment.

This higher interest expense is due to the recent substantial increase in mortgage interest rates. Had the same borrower done a cash-out refinance at the end of 2021, when mortgage rates were 3%, they would have paid $7,000 *less* in interest on their pre-cash-out refinance mortgage balance if they remained in their mortgage for the next seven years.[7]

In the Current Rate Environment, a Home Equity Loan Would Cost Less Than a Cash-Out Refinance

> **As a result, our typical FHA or VA cash-out refinance borrower would have accumulated $42,000 more in equity over seven years if they had taken out a home equity loan instead of a cash-out refinance.**

In a cash-out refinance, the new interest rate is applied to the existing mortgage balance as well as the new cash from the extracted equity. In contrast, with a home equity loan (sometimes referred to as a second mortgage), the borrower retains their original mortgage interest rate. The interest rate for the new loan is applied only to the extracted equity. With interest rates today considerably above most borrowers' current mortgage rates, a borrower's monthly P&I payment for their existing mortgage plus a home equity loan would be less than for a cash-out refinance.[8] One might ask how this can be, given that rates for home equity loans are higher than for cash-out refinances. Even at an assumed interest rate of 13% vs. 6.5% for the cash-out refinance, our typical FHA or VA cash-out refinance borrower would have ended up paying $38,000 less in total interest over the seven years following the equity extraction by maintaining their existing mortgage and taking out a $36,000 home equity loan instead.[9]

Home equity loans also usually have a shorter stated term (typically 10 years) than cash-out refinances (usually 30 years).[10] Therefore, with a home equity loan, a larger share of the borrower's monthly payments is applied to reducing the principal balance when compared to a cash-out refinance. This means that the borrower who adds a home equity loan on top of an existing mortgage will accumulate equity faster than the cash-out refinance borrower who substitutes a 30-year loan for a loan with fewer than 30 years to go till scheduled repayment. In addition, because closing costs are a percentage of the total loan amount, closing costs for our typical borrower are three to four times higher on a cash-out refinance than they would be on a home equity loan. These closing costs are typically folded into the new mortgage, further slowing home equity accumulation for the cash-out refinance borrower. As a result, our typical FHA or VA cash-out refinance borrower would have accumulated $42,000 more in equity over seven years if they had taken out a home equity loan instead of a cash-out refinance. Since the borrower pays interest on the closing costs, the higher closing costs for the cash-out refinance also contribute to the higher monthly P&I payments.

Unfortunately, market dynamics and government guarantee policies have made home equity loans much less available than cash-out refinances, especially for lower credit score borrowers. To begin with, the significantly smaller size of home equity loans means that lenders make lower fees than they do on a refinancing. Moreover, because government guarantees are generally not available for second mortgages, they carry more risk and are harder to securitize than cash-out refinances, which are eligible for government guarantees. As a result, home equity loans have historically been available almost exclusively from banks and credit unions. These types of financial institutions tend to have much more restrictive credit standards than the independent mortgage companies that are the primary source of FHA and VA loans and will lend an FHA or VA borrower the full amount of a cash-out refinance that the government will guarantee.[11] Indeed, based on a review of their websites, only three of the top 10 banks in the United States—and none of the four largest banks—offer home equity loans.

Higher-Risk Profile of FHA and VA Homeowners Taking Out Costly Cash-Out Refinance Loans

Although the monthly total of cash-out refinances decreased over the course of 2022 with the rise in mortgage rates, the FHA and VA share of cash-out refinances steadily increased from 16% in January 2022 to 42% in January 2023.[12] At the recent rate of about 13,000 FHA and VA cash-out refinance loans per month, about 160,000 of these homeowners could become saddled with more costly mortgages this year.[13]

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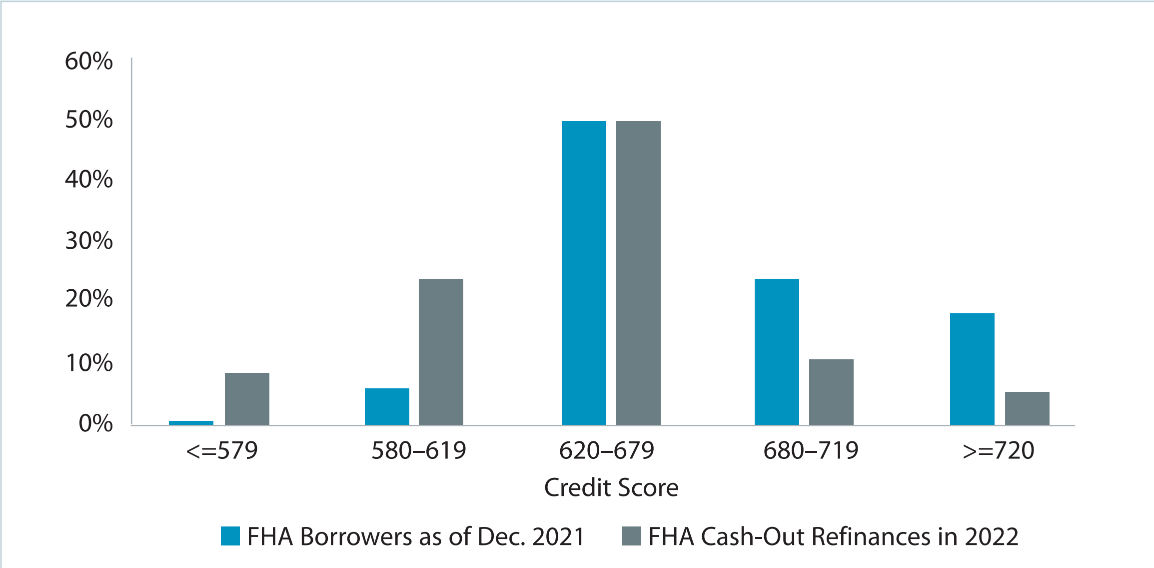
FHA borrowers are disproportionately drawn from the ranks of those with low credit scores, especially people of color. For example, between 2010 and 2019, the percentage of Black borrowers obtaining an FHA or VA mortgage ranged from 60% to 83% and in each year was at least 30 percentage points higher than for white homebuyers.[14] In 2019 the median credit scores of FHA or VA home purchase borrowers were about 664 and 714 respectively, while the median credit score for borrowers whose loans were acquired by Fannie Mae and Freddie Mac was 756.[15] FICO medians for 2013–2018 were similar.

Of particular concern is the fact that even among the group of homeowners with an FHA mortgage, FHA cash-out refinances are disproportionately going to the most vulnerable of these borrowers. For example, as seen in Figure 1 below, FHA borrowers with credit scores below 620 were more likely to do a cash-out refinance in 2022 than were borrowers with higher credit scores. The blue bars in the chart show the share of FHA mortgages as of the end of 2021 that were held by borrowers who had the indicated credit scores at loan origination. The gray bars show the share of FHA cash-out refinances made between January and December 2022 to borrowers with those credit scores at origination of the cash-out refinance. As the figure indicates, over 30% of FHA cash-out refinances went to borrowers with credit scores below 620, even though such low credit score borrowers represented less than 10% of all FHA borrowers.[16]

Figure 1. FHA Cash-Out Refinances Are Being Taken Out Disproportionately by Lower-Credit Score FHA Borrowers



Sources: FHA Snapshot, Optimal Blue, and Mutual Mortgage Insurance Fund.

Importantly, the shares of FHA and VA cash-out refinances going to lower credit score borrowers are up from early 2021, and accordingly, the average FICO scores for FHA and VA cash-out refinance borrowers are down. As seen in Table 1, between January 2021 and November 2022, the shares of FHA and VA cash-out borrowers with scores below 660 increased from 42% to 65% and from 10% to 42%, respectively.[17] By November 2022, the average FICO score for an FHA cash-out borrower had plummeted from 671 (just above the 660 demarcation between nonprime and prime credit) to a clearly nonprime score of 645. A similar trend was observed among VA borrowers, with average scores dropping from 730 to 677.[18]

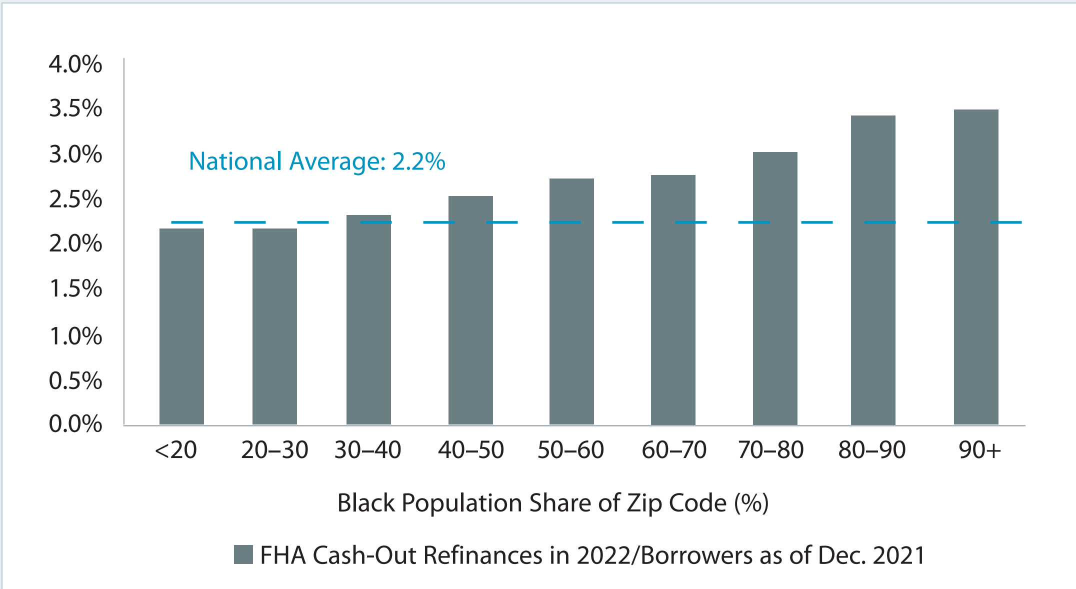
Table 1. Share of Low FICO Scores and Average FICOs for FHA and VA Cash-Out Refinances (CORs)

	Share of FHA CORs with FICO < 660	Share of VA CORs with FICO < 660	FHA COR avg. FICO	VA COR avg. FICO
Jan. 2021	42%	10%	671	730
Nov. 2022	65%	42%	645	677

Sources: Ginnie Mae, Optimal Blue, and AEI Housing Center.

Although we cannot ascertain the race of the 2022 FHA and VA cash-out refinance borrowers until loan-level data are made available later this year, we can identify the neighborhoods where these borrowers live. We find that FHA cash-out refinances are disproportionately going to borrowers in neighborhoods with higher shares of Black residents. As seen in Figure 2 below, in zip codes in which at least 40% of the population is Black, the ratio of FHA cash-out refinances to FHA borrowers is higher than the national average. This is especially true in the predominantly Black zip codes (those with at least 80% Black residents).[19] Since Black borrowers tend to have lower credit scores, this disproportionality likely is a reflection, at least in part, of disproportional cash-out refinance activity among lower credit score borrowers.

Figure 2. FHA Cash-Out Refinances Are Being Taken Out Disproportionately in Zip Codes with Higher Black Population Shares



Sources: FHA Snapshot and American Community Survey 2020.

Conclusions and Recommendations

In the current higher interest rate environment, AEI Housing Center and CRL believe that lower-wealth, lower credit score, minority, and veteran homeowners should be offered better alternatives such as traditional, second-lien home equity loans for more prudently accessing their equity. Homeowners in need of liquidity but at risk of compromising their economic futures should have ready access to clear and reliable information about the financial consequences of cash-out refinances. Increasing the availability of home equity loans and providing protections from harmful refinancings would help ensure that homeowners' current financial needs are met—and their future financial health is secure.

The following actions would help ensure that all borrowers, especially the FHA's and VA's borrowers, have equity access options that do not require them to give up their valuable current lower-rate mortgages and incur both high closing costs and large, unnecessary hits to their home equity.

(1) Lenders should develop and make broadly available second mortgage products like home equity loans and HELOCs. Broader availability at market interest rates, including for lower credit score borrowers, will save consumers money and better steward their equity while expanding lines of business for financial institutions.[20]

(2) The FHA, the VA, and the GSEs should conduct an immediate review of cash-out refinances, evaluate the risks to low-income and minority borrowers as noted in this brief, and implement effective measures to discourage harmful refinancings.

Endnotes

1 All dollar amounts in this brief are in nominal terms. We explain all of our calculations in the Technical Appendix.

2 A similar conclusion was reached by the Urban Institute, https://www.urban.org/urban-wire/second-lien-securitization-could-be-key-accessing-home-equity-high-rate-environment

3 As calculated using data from eMBS.

4 Optimal Blue and AEI Housing Center. The interest rate on a cash-out refinance in early February 2023 was close to 6.25%. We use 6.5% in our calculations because our other data are from late 2022. We note that the magnitudes of the relative costs that we discuss in this brief would not be meaningfully different were we to use early 2023 data instead.

5 We assume a principal balance of $207,000 at the time of the cash-out refinance. This is the balance at three years on a 30-year $220,000 mortgage with a fixed 3.5% interest rate and an original 96.5% loan-to-value ratio.

6 We chose seven years in order to align with a rough approximation of 10 years for how long the typical borrower remains in their mortgage. (We assume that the typical cash-out refinance borrower takes out a cash-out refinance three years after their original mortgage.) Our rough approximation takes into account prepayments due to moving or refinancing, as well as defaults.

7 For example, a study of 16,000 borrowers who completed a cash-out refinance between 2012 and 2018 found that 70% reduced their interest rate and that the median interest rate reduction was 0.63 percentage points. Source: Tapping Home Equity; Income and Spending Trends Around Cash-Out Refinances and HELOCS, Dianna Farrell, Fiona Greig, and Chen Zhao, JPMorgan Chase & Co. Institute, December 2020, Table 3, p. 14. Tapping Home Equity Report (jpmorganchase.com)

8 For example, the combined principal and interest payments on a 13% home equity loan and original mortgage would be $74 a month less than the monthly principal and interest payment on the 6.5% typical FHA or VA cash-out refinance.

9 The $38,000 in saved interest on the existing mortgage balance is more than $74 x 84 (seven years, in months) because a higher proportion of each monthly payment goes toward interest with the cash-out refinance than with the home equity loan plus original mortgage. Accordingly, a lower proportion goes toward principal repayment. The longer term on the cash-out refinance, 30 years as opposed to 27 years for the original mortgage and 10 years for the home equity loan, contributes to this difference. The $38,000 is less than the $42,000 of extra interest on the cash-out refinance borrower's original mortgage balance because of the higher interest rate on a home equity loan compared to a cash-out refinance.

10 In the appendix, we also present some results for 20-year home equity loans.

11 Although home equity lines of credit have in recent years been more popular than home equity loans, that does not mean that they have been or are very available to lower credit score borrowers. For example, in 2019, the median credit score for a home equity line of credit was 773. CFPB, An Updated Review of the New and Revised Data Points in HMDA Table 6.4.2 (2020). The economics of home equity lines of credit are similar to those of home equity loans, so we do not cover them in this brief.

12 Ginnie Mae, Optimal Blue, and AEI Housing Center

13 Ginnie Mae and AEI Housing Center

14 CFPB, *Data Point: 2019 Mortgage Market Activity and Trends* Table 4.

15 CFPB, *An Updated Review of the New and Revised Data Points in HMDA* Table 6.4.2

16 FHA Snapshot, Optimal Blue, and Mutual Mortgage Insurance Fund.

17 Ginnie Mae, Optimal Blue, and AEI Housing Center

18 Ginnie Mae, Optimal Blue, and AEI Housing Center

19 Zip codes with a Black population share of less than 30% accounted for 87% of the stock of FHA borrowers in December 2021. The national average of the ratio shown in Figure 2 reflects the high weight on those zip codes' slightly below average ratios and the low weight on the other zip codes' above average ratios. Sources: FHA Snapshot and ACS 2020.

20 In today's high interest rate environment, second mortgages can also play an important role in facilitating homeownership. FHA and VA mortgages are assumable. This means that a buyer of a property with an FHA or VA mortgage that was obtained when interest rates were low can get the benefit of that rate. However, to do so the would-be homebuyer must be able to cover the difference between the outstanding mortgage and the sale price of the home, which will reflect the substantial home appreciation that has occurred in recent years. Home equity loans could enable such homebuyers to finance much of that difference and thereby assume the existing FHA or VA mortgage.

Building Our "Typical" FHA/VA Cash-Out Refinance

Our primary source of information for our "typical" FHA or VA cash-out refinance (COR) is Optimal Blue (OB) rate lock data. The OB data provide statistics for FHA and VA CORs separately and cover 57% of FHA and VA CORs.[1]

The OB cash-out amount data are:

- Total cash-out amount, including closing costs.
- COR loan amount.
- Appraised value of property.

We use these data as described in our discussion of Table A1 below.

For ease of reference, we highlight numbers in tables A1–A5 that appear in the main text, some in rounded format.

Table A1: Cash-Out Refinances Completed in October and November 2022

	Average FHA	Average VA	Average FHA or VA
Total Cash-Out Amount ($, from OB) (1)	$43,586	$47,533	$45,559
COR Loan Amount ($, from OB) (2)	$205,418	$301,868	$253,643
Cash-Out Amount (% of COR Loan Amount) (3)	21%	16%	18%
Balance on Original Mortgage at Time of COR (4)	$161,832	$254,336	$208,084
Appraisal at Time of COR ($, from OB) (5)	$307,586	$378,245	$342,916
Cash-Out Amount (% of Appraisal) (6)	14%	13%	13%
COR Mark-to-Market LTV) (7)	67%	80%	74%
Mark-to-Market LTV on Original Mortgage at Time of COR) (8)	53%	67%	61%

Sources: Optimal Blue as of November 15, 2022 and authors' calculations.

To compare the typical FHA/VA COR to the original loan plus a home equity loan (HEL), we need to estimate the original mortgage amount and the resulting monthly payment. We do this by working backward from the balance on the original mortgage at the time of the COR. The balance on the original mortgage at the time of the COR appears in row (4) of Table A1 and is equal to row (2) minus row (1).

We make two assumptions in order to back out the original mortgage amount. First, 36 months have elapsed between the original mortgage origination date and the COR origination date. Second, the interest rate on the existing mortgage is 3.5%. This rate is similar to the level of the Freddie Mac Primary Market Mortgage Survey rate for a 30-year, fixed-rate mortgage, which ranged from 3.57% to 3.75% in October and November 2019 (three years before the COR origination date).[2]

We calculate that an original $220,000 30-year mortgage at a fixed interest rate of 3.50% would amortize such that, 36 months after origination, the remaining principal balance would be $206,878, roughly matching the FHA or VA average in Table A1, $208,084. We therefore use $220,000 as the original loan amount for our "typical" FHA/VA cash-out refinance and $206,878 for the balance on the original mortgage at the time of the COR. We set the total cash-out amount at $46,000, which makes the principal balance on our typical cash-out refinance $252,878, roughly matching the COR loan amount of $253,643 in the last column of row (2) of Table A1.

Note that the data in the FHA column of Table A1 are similar enough to those in the VA column that, by matching the averages across the FHA and VA data, our typical COR roughly represents both FHA and VA CORs.

Rows (3) and (6)–(8) of Table A1 add context to the cash-out amount, the COR loan amount, and the balance on the original mortgage. Row (3) reports the cash-out amount as a percentage of the COR loan amount. Rows (6)–(8) report the cash-out amount, the COR loan amount, and the balance on the original mortgage as percentages of home appraisals at the time of the COR.

Comparing the Terms of the Original Mortgage, Cash-Out Refinance, and Home Equity Loan

Using and building on the data from the last column of rows (1) and (2) of Table A1, the derived original mortgage amount ($220,000), and the derived balance on the original mortgage at the time of the COR, ($206,878), we provide in Table A2 characteristics of our typical FHA/VA original mortgage, COR, home equity loan (HEL), and original mortgage plus HEL.

Table A2: Comparing a COR to an Original Mortgage and an Original Mortgage + HEL

	Original Mortgage	COR	HEL	Original Mortgage + HEL
Loan Amount at Origination	$220,000	$252,878	$35,885	
Stated Interest Rate	3.5%	6.5%	13%	
Stated Term (Months)	360	360	120	
Net Cash Proceeds		$35,885	$35,885	
Monthly P&I	$988	$1,598	$536	$1,524
Increase Over Original Mortgage P&I		$610		$536
Percent Increase Over Original Mortgage P&I		62%		54%
Decrease of Original + HEL From COR P&I				$74
Effective Interest Rate on Net Cash Proceeds		21.5%	13%	
Closing Costs (% of Loan Amount)		4%	7%	
Closing Costs		$10,115	$2,512	

Source: Authors' calculations.

The first column of Table A2 shows the terms of the original mortgage as described in the previous section. In addition, we include the monthly P&I payment ($988).

The second column shows the terms of the typical cash-out refinance, starting with the loan balance of $252,878, calculated as described in the previous section. For the COR interest rate, we use OB Mortgage Market Indices.[3] Our chosen rate of 6.5% is within the late January 2023 range (6.32–6.55%) for 30-year, fixed-rate mortgages for borrowers with a FICO score below 680 (reflective of the typical FHA/VA COR borrower). The net cash proceeds for the COR equal the gross equity extracted ($46,000), minus the closing costs ($10,115), or $35,885. We round the latter figure to $36,000 in the main text. We assume that closing costs are 4% of the loan amount, based on the ratio of median closing costs to median loan amount of FHA CORs (4.8%) and VA CORs (3.3%) completed in 2021 as per data collected under the Home Mortgage Disclosure Act. The monthly P&I payment on the cash-out refinance is $1,598, a $610 increase (or 62%) over the original loan.

The HEL terms are shown in the third column. Since we are proposing the HEL as an alternative to the COR, we set the origination date and net cash proceeds for the HEL to be the same as that for the COR. We also assume the HEL has a 10-year term. We assume a HEL interest rate of 13%.[4] On these assumptions, the monthly P&I on the HEL is $536.

We assume that closing costs for the HEL are paid up front by the lender and recouped over time from the borrower through a higher interest rate rather than paid by the borrower up front using the extracted equity. However, in order to compare the closing costs between the COR and the HEL, we make the conservative assumption that closing costs on the HEL are 7% of the loan amount, which is just above the 2% to 6% range provided on a lender's website.[5] Based on our conservative assumption, closing costs on the typical FHA/VA COR are four times the closing costs on a HEL that generates the same net proceeds to the borrower.

The final column in Table A2 shows the monthly P&I payments of the original loan plus HEL, which is $1,524, an increase of $536 or 54% over the original P&I payment. Note that the total P&I payment on the original loan plus HEL is $74 less than the monthly P&I on the COR.[6]

Regarding the effective interest rate shown in Table A2, this is calculated as the interest rate implied by the increase in monthly P&I applied to the net proceeds. In other words, for the COR, in order to borrow $35,885, the borrower is paying an additional $610 per month in P&I, which implies an effective interest rate of 21.5%. The effective interest rate on the COR is more than three times the headline (or stated) interest rate of 6.5%. For the HEL, the effective interest rate matches the headline interest rate of 13%, and is considerably lower than the effective interest rate on the COR.

The Effect of Higher Interest Rates on Monthly P&I Payments

In the main text, we report the increase in the monthly P&I payment on the original mortgage balance at the time of the COR that is due solely to the increase in the interest rate: $368. Table A3 adds context by reporting separately the change in P&I resulting from each step of the COR.

First, we apply the new interest rate (6.5%) to the existing loan, while leaving the loan balance and remaining term unchanged, which is a rate-only refinance. The higher interest rate leads to an increase of $368 per month (37%) in P&I. Next, we increase the term to 360 months, effectively creating a rate/term refinance. In this case, the monthly P&I would be $1,308, an increase of 32%; this means the effect of extending the term on the loan from 324 months (the remaining term on the original loan when the COR was completed) to 360 months is a modest decrease in the monthly payment of $48, or 5%. Finally, we increase the loan balance by the gross proceeds, converting the rate/term refinance to a COR, and recover the $1,598 monthly P&I payment. The incremental increase in monthly payment from the equity extraction in this example is $290, or 30%.

Table A3: How a Rate Change, Term Extension, and Equity Extraction Change Monthly P&I

	Monthly P&I Payment	Change from Original ($)	Change from Original (%)
Original Monthly P&I	$988		
New Monthly P&I if Rate-Only Refinance	$1,356	$368	37%
New Monthly P&I if Rate/Term Refinance	$1,308	$320	32%
New Monthly P&I if COR	$1,598	$610	62%

Source: Authors' calculations.

Calculating the Relative Costs of a COR and an Original Mortgage Plus a HEL over Time

In the main text, we report the difference in the interest paid on the existing mortgage balance between a COR and the original mortgage, over the seven years after the COR, for a COR at 6.5% and 3%. These results appear in the first column of Table A4. (The main text reports rounded numbers.) Table A4 also reports these differences for longer timespans.

Table A4: Difference in Interest That Will Have Been Paid on Balance of Existing Mortgage

	7 Years After COR (10 Years After Original Mortgage)	10 Years After COR (13 Years After Original Mortgage)	15 Years After COR (18 Years After Original Mortgage)	27 Years After COR (30 Years After Original Mortgage)
Interest if Using COR at 6.5%—Interest if Staying in Original Mortgage	$41,894	$59,065	$85,025	$118,726
Interest if Using COR at 3%— Interest if Staying in Original Mortgage	-$7,484	-$10,136	-$13,982	-$18,586

Source: Authors' calculations.

The main text also reports, for the seven years after the COR or HEL, the difference in the interest paid on the existing mortgage balance between a COR and a HEL while still staying in the original mortgage. Also included is the difference in the equity accumulated in these two scenarios. These results appear in the first two rows of the first column of Table A5. (The main text reports rounded numbers.) Table A5 also reports these differences for longer timespans. In addition, while we focused on 10-year HELs in the main text, Table A5 also reports differences based on HELs with a 20-year stated term.

Table A5: Differences in Interest Costs and Equity Accumulated—COR vs. Original Mortgage Plus HEL

	7 Years After COR/HEL (10 Years After Original Mortgage)	10 Years After COR/HEL (13 Years After Original Mortgage)	15 Years After COR/HEL (18 Years After Original Mortgage)	27 Years After COR/HEL (30 Years After Original Mortgage)	30 Years After COR/HEL (33 Years After Original Mortgage)
Interest if Using COR—Interest if Using Original Plus 10-Year HEL	$37,954	$60,892	$102,329	$174,925	$180,315
Equity Accumulated if Using COR—Equity Accumulated if Using Original Plus 10-Year HEL	-$42,402	-$62,653	-$67,461	-$52,150	$0
Interest if Using COR—Interest if Using Original Plus 20-Year HEL	$31,966	$46,581	$72,472	$138,320	$143,711
Equity Accumulated if Using COR—Equity Accumulated if Using Original Plus 20-Year HEL	-$26,722	-$34,495	-$48,984	-$52,150	$0

Source: Authors' calculations.

Distribution of FHA CORs and FHA Borrowers by Credit Score

In addition to the cash-out amounts reported in Table A1, the OB rate lock data provide FHA CORs counts and VA CORs counts by borrower credit score category. The counts used for the gray bars in Figure 1 in the main text are based on the FHA CORs originated in January–December 2022, as indicated in the OB data. As mentioned above, since a rate lock typically turns into an actual loan origination in approximately six weeks, we apply a six-week shift to the OB data to translate the rate lock date into the loan origination date.

The counts of FHA borrowers as of December 2021 (blue bars in Figure 1) are based on the number of FHA purchase loans originated in 2012–2021, from the FHA Single-Family Portfolio Snapshot data.[7] The Snapshot indicates a total of 7.705 million FHA purchase loans, which we use as a proxy for the FHA stock as of December 2021. Our estimate closely tracks with the estimate of 7.369 million from the FHA Single-Family Loan Performance Trends Report.[8] Since the FHA Snapshot data do not provide borrower credit scores, we estimate the borrower credit score distribution using the distribution of credit scores by fiscal year for borrowers obtaining FHA endorsements obtained from the Mutual Mortgage Insurance Fund report.[9]

FICO Distribution of FHA and VA CORs

The summary statistics in Table 1 in the main text are based on CORs originated in January 2021 and November 2022 from the Ginnie Mae Mortgage-Backed Securities (MBS) data.

Distribution of FHA CORs Propensity by Black Population Share

The counts of FHA CORs are based on the FHA refinance loans originated in January–September 2022, by zip code, from the FHA Single-Family Portfolio Snapshot data. We use the number of refinance loans as a proxy for the number of CORs since FHA CORs accounted for almost 80% of the FHA's total refinance volume during those months.

The counts of existing FHA borrowers, by zip code, as of December 2021 are based on the numbers of FHA purchase loans originated in 2012–2021 from the FHA Snapshot data.

We group the zip codes based on the Black population share from the 2020 American Community Survey. We then estimate FHA CORs/existing FHA borrowers within each group.

Endnotes

1 The OB rate lock data also include data on GSE CORs, which we do not use in this brief.

2 OB dates are rate lock dates. A rate lock typically turns into an actual loan origination in approximately six weeks, so we apply a six-week shift to the OB data to convert the rate lock date into the loan origination date.

3 OPTIMAL BLUE MORTGAGE MARKET INDICES – Optimal Blue

4 Based on an online quote from Discover on 11/3/22 for a borrower with a credit score between 640 and 659. Monthly Payment Calculator - How Much Can You Afford (discover.com)

5 https://www.rocketmortgage.com/learn/home-equity-loan-closing-costs

6 In Table A5, we report differences in interest costs and equity accumulated between a COR and the existing loan plus HEL for 20-year HELs in addition to 10-year HELs. Had we used a 20-year HEL, the monthly P&I payment on the existing loan plus HEL would be $1,408, an increase of $420 or 43% over the original P&I payment. In this case, the total P&I payment on the existing loan plus HEL is $190 less than the monthly P&I on the COR.

7 FHA Single Family Portfolio SnapShot | HUD.gov / U.S. Department of Housing and Urban Development (HUD)

8 https://www.hud.gov/program_offices/housing/hsgrroom/loanperformance

9 https://www.hud.gov/sites/dfiles/Housing/documents/2021FHAAnnualReportMMIFund.pdf

AEI Housing Center

MISSION

The AEI Housing Center has three primary objectives:

- Provide transparent and objective mortgage and housing market trends at unprecedented levels of detail;
- Foster a stable system of mortgage finance that promotes sustainable homeownership; and
- Develop market-based solutions to the nation's shortage of economical housing.

We pursue these objectives through the use of the best available data and by producing rigorous research on important policy issues.

CONTACT

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CRL
Center for Responsible Lending

www.responsiblelending.org

The Center for Responsible Lending (CRL) is working to ensure a fair, inclusive financial marketplace that creates opportunities for all responsible borrowers, regardless of their income, because too many hard-working people are deceived by dishonest and harmful lending practices.

CRL's work focuses on those who may be marginalized or underserved by the existing financial marketplace, or in many cases, people who are targeted for unfair and abusive financial products that leave them worse off. This includes people of color, women, rural residents, and low-wealth families and communities.

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