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Do Mortgage Borrowing Experiences Differ by Race and Ethnicity? Evidence from the National Survey of Mortgage Originations

February 2025 Neil Bhutta and Valeria Zeballos Doubinko

Introduction

Mortgages are important financial tools for individuals and families, offering both financial flexibility and a pathway to homeownership. Because of mortgages' importance, differential access to them for minorities and other protected groups is a significant concern for policymakers and the focus of many academic studies. Much of this research has focused on whether approval decisions and mortgage rates and fees vary by race or ethnicity after controlling for applicant risk factors.[1] In this special report, we draw on data from the National Survey of Mortgage Originations (NSMO) to test for disparities along a relatively understudied dimension: the "service quality" experienced during the mortgage application and origination process.

The NSMO is a unique data set that collects information on borrowers' experiences in obtaining mortgages, their housing expectations, and their mortgage knowledge. Importantly, survey responses are linked with detailed administrative data on borrowers' credit history, the terms of their loan, and their subsequent repayment performance on the loan. We leverage the NSMO's unique features to assess whether mortgage borrowing experiences vary by race and ethnicity after controlling for an extensive set of loan and borrower characteristics.[2] We find substantial disparities in the likelihood of experiencing processing delays and delays in closing the loan, and in borrowers' satisfaction with their lender and the overall borrowing experience. These differences are especially pronounced for home purchase borrowers getting conventional mortgages, which mainly include loans sold to Fannie Mae and Freddie Mac.[3] For example, Black borrowers getting a conventional home purchase loan are about 20 percentage points more likely to report a delay in closing their loan than comparable White borrowers. Moreover, we find that negative experiences reduce borrowers' willingness to reenter the mortgage market in the future; in particular, experiencing delays at the time of home purchase is associated with about a 50 percent reduction in the likelihood of future refinancing when interest rates drop.[4]

The disparities we find could be driven by differences in service quality across lenders, rather than differential treatment of minorities within a given lender. For instance, if lower-service-quality lenders are more likely to serve minority neighborhoods,

[1] Recent studies include Bhutta and Hizmo (2021); Bartlett et al. (2022); Conklin, Gerardi, and Lambie-Hanson (forthcoming); and Bhutta, Hizmo, and Ringo (forthcoming).
[2] This analysis extends previous work in Bhutta, Hizmo, and Ringo (forthcoming).
[3] Conventional mortgages also include loans held in the portfolios of banks and credit unions, and those placed in private-label mortgage-backed securities. Nonconventional mortgages include those insured by the Federal Housing Administration (FHA) and those guaranteed by Department of Veterans Affairs (VA) and the Department of Agriculture.
[4] The opinions and analyses contained herein are solely of the users/authors of any data analyses or papers, and the FHFA cannot and does not attest to nor vouch for the quality, accuracy, or timeliness of the data, or analyses derived from these data after the data has been retrieved from FHFA.gov

then minority borrowers may, on average, get loans from a lower-quality set of lenders than White borrowers. In the NSMO data, it is not possible to explicitly compare borrower experiences at the same lender.

It is also important to keep in mind the potential limitations of survey data, such as recall and nonresponse bias, especially if these biases differ by race and ethnicity. Although we use NSMO-provided weights to adjust for nonresponse, these may not be fully corrective.

Still, our findings are consistent with previous evidence from audit studies that have found that loan officers are less likely to provide information to prospective minority mortgage applicants (Ross et al. 2008; Hanson et al. 2016). In addition, research using Consumer Financial Protection Bureau (CFPB) data has found a higher incidence of consumer complaints about mortgage lenders in minority neighborhoods (Begley and Purnanandam 2021). Finally, Loya (2021) also finds disparate mortgage borrowing experiences using the NSMO data. We build on Loya (2021) by examining a different set of outcomes and pinpointing that disparities in delays and borrower satisfaction arise most sharply in the conventional home purchase market. Additionally, we provide evidence that negative mortgage experiences can have adverse downstream effects on households by discouraging future refinancing when it would be financially beneficial to do so. This finding may help explain the well-documented tendency of many households to miss out on refinancing opportunities when interest rates decline (Keys, Pope, and Pope 2016; Gerardi, Willen, and Zhang 2023).

The NSMO Data

The NSMO is a quarterly survey of mortgage borrowers who recently got a new mortgage and includes information on individuals' demographics, their housing and economic expectations, and their experiences in the borrowing process.[5] Additionally, each NSMO survey respondent is linked to their detailed administrative mortgage and credit history data.

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The data set includes mortgage borrowers who took out a mortgage from 2013 through 2021. Our analysis sample has 39,869 observations, composed of fixed-rate home purchase and refinance first-lien mortgages with a term of 10, 15, 20 or 30 years, for single-family (including townhouses and condos) primary residences.[6]

Table 1 displays some selected summary statistics, by race and ethnicity, demonstrating the rich information about mortgage borrowers in the NSMO. As seen in the table, loan amounts, credit scores, and incomes vary considerably across racial and ethnic groups. Additionally, Black and Hispanic borrowers are the most likely to be first-time homebuyers and the least likely to have significant liquid assets, defined as being "very likely" to be able to pay their bills for three months if faced with a "personal financial crisis." Sizeable differences across groups can also be seen in the fraction using a mortgage broker, being proficient in English, being self-employed, and having a coborrower.[7] In contrast, the likelihood of "recent financial volatility," defined as experiencing unemployment or a "personal financial crisis" in the last couple years, is similar across White, Black and Hispanic borrowers.

[5] The NSMO data we use, including matched administrative data, are publicly available at www.fhfa.gov/data/national-survey-mortgage-originations-nsmo-public-use-file.
[6] We drop construction loans, loans from builders, mortgages taken out to add or remove cosigners, and new mortgages taken out on previously unmortgaged properties.
[7] Liu (2024) uses the NSMO data to study the effect of English proficiency on access to mortgage credit. Following Liu (2024), we identify borrowers with limited English proficiency as those who said that it was "important" that their lender "spoke my primary language, which is not English."

Table 1. Average Statistics by Race and Ethnicity

	White Non-Hispanic	Black	Asian	Hispanic	Other
Loan amount ($, 000s)	222	213	303	229	236
Self-Reported Income ($, 000s)	107	94	126	95	103
Credit Score	737	698	749	717	720
Loan-to-Value Ratio	75.1	84.4	70.2	79.6	78.8
Home Purchase Loan	46.0%	46.9%	43.9%	50.4%	48.1%
Conventional Loan	40.9%	37.3%	41.6%	41.1%	40.4%
First-Time Homebuyer	15.1%	25.7%	24.1%	24.7%	22.5%
Has Significant Liquid Assets	59.8%	45.2%	62.9%	50.5%	51.0%
Used Mortgage Broker	37.6%	41.3%	47.7%	46.4%	41.9%
Limited English Proficiency	8.4%	17.9%	13.0%	17.8%	11.3%
Recent Financial Volatility	20.3%	20.4%	18.5%	21.5%	25.5%
Has Self-Employment Income	17.2%	13%	16.7%	15.6%	18.4%
Presence of Coborrower	53.6%	29.8%	45%	44.8%	49.4%
N	31,028	2,542	2,166	2,906	1,227

Note: This table shows the average characteristics for individual-level data from the NSMO from 2013 through 2021, grouped by race. The sample contains respondents who took out first-lien, 30-year fixed-rate mortgages on owner-occupied single-unit homes from 2013 through 2021. To calculate the average loan amount and self-reported income, we assigned each borrower the midpoint of their category and then calculated the mean.

Source: Authors' calculations using NSMO data

Do Mortgage Borrowing Experiences Vary by Race or Ethnicity?

To explore differences in borrowing experiences by race and ethnicity, we conduct a series of ordinary least squares (OLS) regressions of six outcome variables on race and ethnicity indicator variables, controlling for an extensive set of loan, property, and borrower characteristics, including the variables listed in Table 1 as well as a few other variables.[8] These controls help us identify racial differences in delays and satisfaction among otherwise highly similar borrowers getting the same loan product through the same channels.

The first two outcome variables focus on delays encountered during the application process. These variables are derived from the responses to two "yes/no" survey questions from the NSMO. The first question addresses delays in closing dates: "In the process of obtaining this mortgage from your lender/broker, did you delay or postpone the closing date?" The second question relates to processing delays due to paperwork issues: "In the process of obtaining this mortgage from your lender/broker, did you redo/refile paperwork due to processing delays?" The remaining regression outcomes center on respondents' level of satisfaction with:

- The application process
- The loan closing process
- The timeliness of disclosure documents

[8] For many of these variables, we construct value bins and control for each bin as a separate dummy variable, thus allowing more flexibility with our controls. In addition to the variables shown in Table 1, we also control for property type, loan term, and borrower age and gender.

- Their mortgage lender/broker

Respondents could answer “very,” “somewhat,” or “not at all” to these questions. In this study, we use the “very satisfied” response as our outcome dummy variable.

Table 2. Racial and Ethnic Differences in Borrowing Experiences

	Were there delays in		Were you satisfied with			
	(1)	(2)	(3)	(4)	(5)	(6)
	Processing	Closing date	Application process	Closing process	Timely disclosures	Your lender
Black	0.034**	0.079***	-0.038**	-0.041***	-0.050***	-0.060***
	(0.010)	(0.012)	(0.012)	(0.012)	(0.012)	(0.011)
Asian	0.026*	0.030**	-0.064***	-0.072***	-0.079***	-0.110***
	(0.011)	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)
Hispanic	0.030***	0.046***	-0.009	-0.007	-0.024*	-0.021*
	(0.009)	(0.010)	(0.011)	(0.011)	(0.011)	(0.010)
Other	0.017	0.019	-0.001	-0.019	-0.026	-0.027
	(0.014)	(0.015)	(0.016)	(0.017)	(0.017)	(0.015)
N	38,648	38,648	38,648	38,648	38,648	38,648
Adjusted R-square	0.025	0.044	0.022	0.018	0.019	0.016
Outcome Mean	0.160	0.210	0.700	0.710	0.700	0.790

Note: This table displays regression results using individual-level data from the NSMO. The excluded race category is non-Hispanic White. Race and ethnicity reflect the identity of the survey respondent. All regressions include controls for loan purpose, loan type, property type, survey wave fixed effects, income category fixed effects, and dummies for self-employed, gender, presence of a coapplicant or spouse/partner, loan term, limited English proficiency status, first-time homebuyer status, broker use, liquid wealth, income volatility, 11 LTV categories, six credit score categories, and eight loan amount categories. Sample is limited to fixed-rate mortgages for principal residences with a term of 10, 15, 20, or 30 years. See text for additional sample details. Regressions are weighted using analytical weights. Robust standard errors shown in parentheses.

Source: Authors’ calculations using NSMO data

Table 2 presents the regression results, revealing significant racial and ethnic disparities in borrower experiences.[9] Column 1 shows that minority borrowers were more likely to report delays in paperwork processing. For example, Black borrowers were 3.4 percentage points more likely to face processing delays compared with non-Hispanic White borrowers. Similarly, minority borrowers were more likely to experience delays in their closing dates, especially Black borrowers, who were nearly 8 percentage points more likely to face delays in closing dates. The bottom row of Table 2 shows the overall mean for each outcome variable. For closing delays, 21 percent of all respondents reported a closing delay. Relative to this average, the 8-percentage point gap between Black and non-Hispanic White borrowers is quite sizeable.[10] Regarding borrower satisfaction, Columns 3–6 indicate that Black and Asian borrowers are less likely to say that they are "very satisfied" across all aspects of the mortgage process compared with non-Hispanic White borrowers. Hispanic borrowers were also less likely to say that they are "very satisfied" with timely disclosures and their lender.

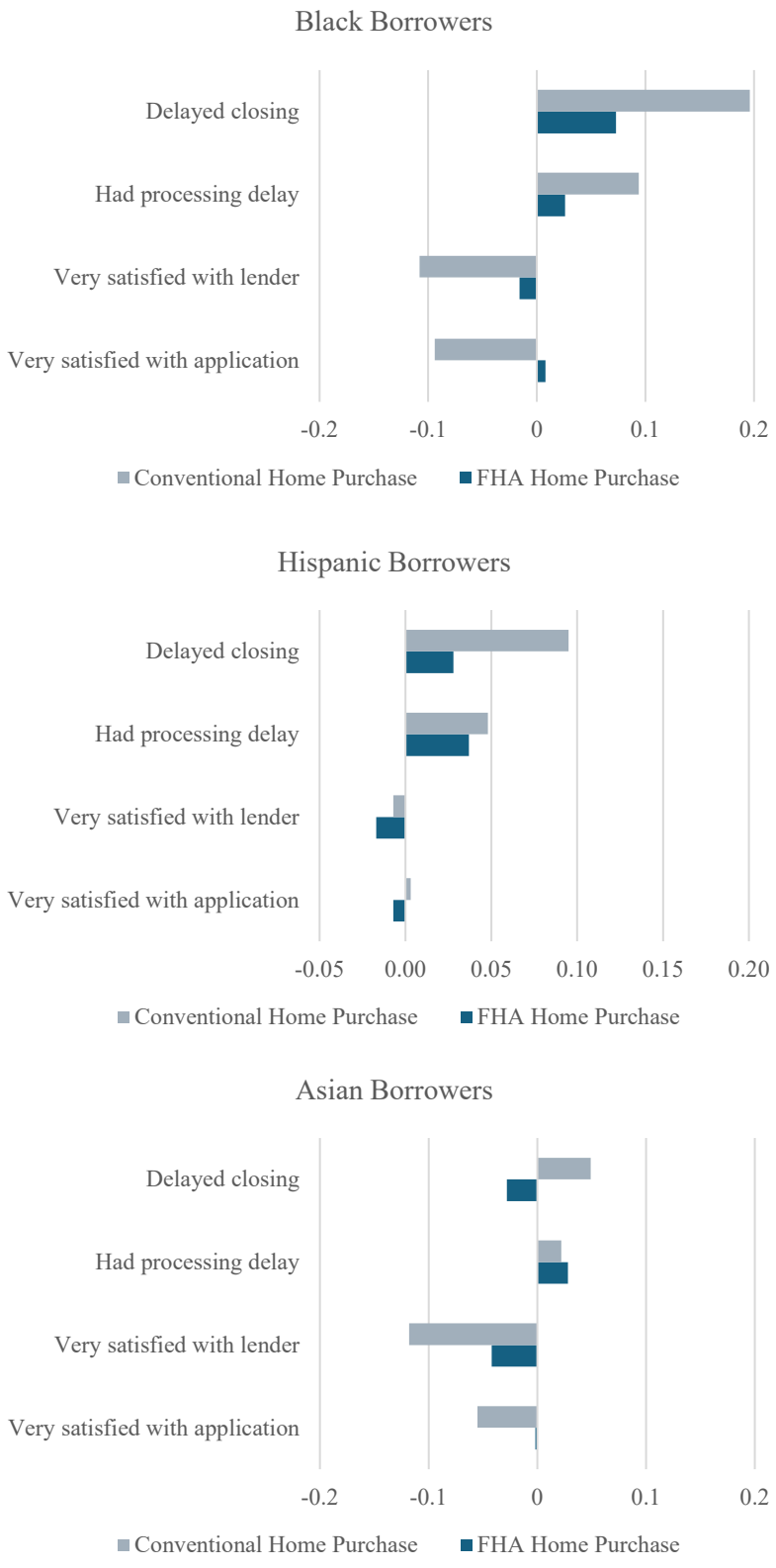
In Figure 1, we display results from similar regression specifications but focus on home purchase loans disaggregated by loan type (in the Appendix, we provide full regression tables, including results for refinance borrowers). The results indicate that racial disparities in delays and dissatisfaction are much larger in the conventional home purchase market (the grey bars) than in the FHA home purchase market (the blue bars). For instance, Black borrowers are 10 percentage points more likely to report processing delays and 20 percentage points more likely to experience closing date delays, relative to White borrowers, in the conventional home purchase market. As the figure shows, these disparities are considerably wider than for borrowers getting FHA home purchase loans. Moreover, Black borrowers getting conventional loans are substantially less likely to say they were "very satisfied" with their lender and the application process, whereas the disparities in satisfaction are far more muted when getting FHA home purchase loans.

Similarly, the middle and bottom panels of Figure 1 show that there are significantly larger disparities for Hispanic and Asian borrowers, respectively, when getting conventional home purchase loans, compared with FHA loans.

In this analysis, we are unable to identify the mechanism driving wider disparities in service quality in the conventional market. One relevant fact may be that there can be significant differences in the composition of lender types that provide conventional loans versus FHA loans. For example, according to CFPB's analysis of 2021 Home Mortgage Disclosure Act data, banks and credit unions accounted for about 37 percent of conventional home purchase originations but just 16 percent of nonconventional originations (Liu et al. 2022). If differential treatment is more likely at banks and credit unions than at nonbank mortgage lenders, this might help explain our findings. That said, there may also be important differences between FHA and conventional loans in the origination and underwriting processes, as well as in the skills and abilities of loan officers that tend to work in these channels (e.g., some loan officers may have less experience working with minority borrowers). An important avenue for future research would be to better understand *why* disparities in service quality arise, especially in the market for conventional mortgages.

[9] To keep Table 2 succinct, we do not report the coefficients on the nonrace variables in the model in the table.
[10] The geographic region (state or county) of the borrower is potentially an important control variable, but it is not available in the public NSMO data. However, Bhutta, Hizmo, and Ringo (forthcoming), using a confidential version of the NSMO data where county is observed, do not find that controlling for geographic location explains racial differences in delays.

Figure 1. Racial and Ethnic Differences in Borrowing Experiences Across Subsets



Note: This figure displays regression results using individual-level data from the NSMO. Each bar represents a regression coefficient, and we run separate regressions for each loan type. The y-axis in each figure lists the outcome variables, and the x-axis measures the coefficient value on race/ethnicity listed at the top of each figure (relative to non-Hispanic White; all coefficients and standard errors are provided in Appendix Table A1). Race and ethnicity reflect the identity of the survey respondent. Sample is limited to fixed-rate mortgages for principal residences with a term of 10, 15, 20, or 30 years. See text for additional sample details. Regressions are weighted using analytical weights. All regressions include the same set of controls described in Table 2.

Source: Authors' calculations using NSMO data

Does a Bad Home Buying Experience Affect Future Refinancing?

We conclude our analysis by examining how delays and dissatisfaction with the mortgage process impact future outcomes, particularly the likelihood of refinancing. In the NSMO, we do not explicitly observe when a borrower refinances their loan, but we can observe when a mortgage is paid off for any reason. We study the probability of loan payoff in 2020–2021 as a proxy for refinancing, given high refinancing activity during this period as many homeowners took advantage of sharp declines in mortgage rates. We examine whether this refinancing proxy is related to satisfaction and delays experienced when borrowers first took out their loan.

For this analysis, we define "satisfaction" as a composite variable derived from the four satisfaction questions studied earlier, divided by the highest potential total value (i.e., someone who was "very satisfied" along all four dimensions would have a value of 1). We define "delays" as a flag equal to 1 if an individual experienced either a processing delay requiring paperwork to be redone or a delay in their closing date.

We regress our refinancing in 2020–2021 indicator on both delays and satisfaction, interacting these variables with the national average mortgage rates in the month when borrowers took out their mortgage. Borrowers with a relatively high rate on their existing mortgage should be more likely to refinance in 2020–2021, all else equal, and the coefficient on the interaction terms will test whether this relationship between rates and refinancing is affected by borrowers' previous experiences taking out their mortgage. These regressions are conducted on a sample restricted to NSMO respondents who took out their mortgage in 2019 or earlier, with that mortgage still active at the end of 2019. We exclude individuals in forbearance or delinquency in 2019, 2020, or 2021, since these individuals would not likely be eligible to refinance. We have a similar set of controls as before but also add in an updated credit score as of the end of 2019 to help account for refinancing eligibility. As before, we include survey-wave fixed effects, which helps account for the age of the loan and potential confounding cohort effects, since older mortgages may be less likely to be refinanced.

Table 3. Do Delays and Dissatisfaction Influence Future Refinancing?

	(1)	(2)
Avg Mtg Rate at Origination	0.112***	0.064
	(0.028)	(0.039)
Experienced Delays	0.182	
	(0.116)	
Experience Delays X Avg Mtg Rate	-0.057*	
	(0.029)	
Very Satisfied		-0.156
		(0.157)
Very Satisfied x Avg Mtg Rate		0.043
		(0.040)
N	9,290	9,290
Adjusted R-square	0.109	0.107
Outcome mean	0.57	0.57

Note: This table displays regression results using individual-level data from the National Survey of Mortgage Originations (NSMO). The outcome variable is an indicator equal to 1 for loans paid off in 2020 or 2021. The sample is restricted to home purchase borrowers who bought a home from 2013 through 2019, whose mortgage was still active at the end of 2019, and who did not go into delinquency or forbearance in 2020–2022. See text for additional sample restrictions. All regressions include the same set of controls described in Table 2, in addition to controlling for borrowers' updated credit scores at the end of 2019. Regressions are weighted using analytical weights. Robust standard errors in parentheses.

Source: Authors' calculations using NSMO data

Table 3 presents the regression results. In column 1, the coefficient in the top row indicates that, among borrowers who did not experience delays when they took out their mortgage, a 1 percentage point increase in mortgage rates at the time of origination is associated with an 11-percentage point increase in the likelihood of paying off their mortgage in 2020 or 2021. In other words, those who had more to gain from refinancing when rates dropped during the pandemic were indeed much more likely to do so. That said, the key result in this column is shown by the coefficient on the interaction term, which shows that having experienced delays in closing or processing (or both) when taking out their mortgage cuts the likelihood of refinancing in response to rates by more than half (by 5.7 percentage points). This is consistent with the idea that a bad experience could make borrowers reluctant to reenter the mortgage market even when it would be financially beneficial to do so.

In column 2, the coefficient on the interaction term is positive, indicating that higher satisfaction with the lending process when they took out their loan increases the responsiveness of refinancing to interest rate declines. However, this result is not statistically significant.

Conclusion

In this report, we assess racial disparities in borrowers' experiences in the mortgage lending process. Using NSMO data, we find that minority borrowers are more likely to encounter delays and report lower satisfaction with their mortgage experiences compared with non-Hispanic White borrowers, with especially large disparities in the market for conventional home purchase loans. Moreover, we provide evidence that experiencing delays reduces borrowers' willingness to refinance in the future when interest rates drop.

The disparities in delays and satisfaction are present after controlling for an extensive set of borrower and loan characteristics, including credit score, loan-to-value (LTV) ratio, income, age, borrowing experience, liquid wealth, and more. Still, these disparities are not necessarily driven by differential treatment of minorities within a given lender. We may not observe all relevant control variables, and it is important to keep in mind some of the potential limitations of survey data such as recall and nonresponse bias. Additionally, because we do not observe the specific lender borrowers go to, these disparities could be driven by differential access to high-service-quality lenders.

Regardless of the precise mechanism, and with appropriate caveats in mind, our findings highlight an important issue that has received relatively little attention, namely that mortgage borrowing experiences appear to differ significantly for minorities. Even as the industry has demonstrated improvement in racial disparities along better-measured and more readily observed dimensions such as denial rates and pricing (Bhutta and Hizmo 2021; Bhutta, Hizmo, and Ringo forthcoming), disparities along other dimensions such as the ones we study here could dampen minority demand for mortgages and homeownership, and the willingness to refinance so as to better maximize the wealth accumulation associated with homeownership.

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Appendix

Table A1. Racial and Ethnic Differences in Borrowing Experiences Across Subsets

	Were there delays in		Were you satisfied with			
	(1) Processing	(2) Closing date	(3) Application process	(4) Closing process	(5) Timely disclosures	(6) Your lender
Conventional Home Purchase						
Black	0.094***	0.196***	-0.094***	-0.109***	-0.089**	-0.108***
	(0.024)	(0.029)	(0.027)	(0.028)	(0.028)	(0.027)
Asian	0.022	0.049*	-0.055*	-0.084***	-0.073***	-0.118***
	(0.017)	(0.02)	(0.022)	(0.022)	(0.022)	(0.021)
Hispanic	0.048**	0.095***	0.003	-0.025	-0.024	-0.007
	(0.016)	(0.02)	(0.02)	(0.021)	(0.021)	(0.018)
Other	0.035	0.063*	-0.038	-0.035	-0.041	-0.058
	(0.024)	(0.031)	(0.033)	(0.032)	(0.033)	(0.031)
N	12,171	12,171	12,171	12,171	12,171	12,171
Adjusted R-square	0.023	0.028	0.025	0.02	0.022	0.015
Outcome Mean	0.14	0.22	0.68	0.68	0.69	0.78
FHA Home Purchase						
Black	0.026	0.073*	0.008	-0.003	-0.016	-0.016
	(0.028)	(0.032)	(0.030)	(0.03)	(0.031)	(0.028)
Asian	0.028	-0.028	-0.002	0.032	0.014	-0.042
	(0.055)	(0.058)	(0.057)	(0.058)	(0.057)	(0.055)
Hispanic	0.037	0.028	-0.007	0.02	-0.009	-0.017
	(0.026)	(0.029)	(0.029)	(0.028)	(0.029)	(0.027)
Other	0.081	0.001	-0.01	0.005	-0.03	-0.014
	(0.05)	(0.05)	(0.052	(0.052)	(0.05)	(0.047)
N	3,186	3,186	3,186	3,186	3,186	3,186
Adjusted R-square	0.034	0.054	0.027	0.02	0.025	0.018
Outcome Mean	0.25	0.36	0.65	0.66	0.65	0.76
Conventional Refinance						
Black	0.020	0.056**	-0.034	-0.02	-0.055**	-0.058**
	(0.016)	(0.018)	(0.02)	(0.02)	(0.021)	(0.019)
Asian	0.023	0.024	-0.071***	-0.066***	-0.082***	-0.098***
	(0.014)	(0.015)	(0.018)	(0.018)	(0.018)	(0.017)
Hispanic	0.01	0.033*	0.006	-0.002	-0.011	-0.008
	(0.013)	(0.015)	(0.017)	(0.017)	(0.017)	(0.015)
Other	-0.028	-0.021	0.022	-0.011	-0.002	0.000
	(0.019)	(0.019)	(0.024)	(0.025)	(0.025)	(0.021)
N	16,972	16,972	16,972	16,972	16,972	16972
Adjusted R-square	0.019	0.018	0.019	0.016	0.018	0.02
Outcome Mean	0.14	0.16	0.72	0.73	0.72	0.8

Note: This table displays regression results using individual-level data from the NSMO. Each panel and column represent separate regressions. The excluded race category is non-Hispanic White. Race and ethnicity reflect the identity of the survey respondent. All regressions include controls for loan purpose, loan type, property type, survey wave fixed effects, income category fixed effects, and dummies for self-employed, gender, presence of a coapplicant or spouse/partner, loan term, limited English proficiency status, first-time homebuyer status, broker use, liquid wealth, income volatility, 11 LTV categories, six credit score categories, and eight loan amount categories. Samples are limited to fixed-rate mortgages for principal residences with a term of 10, 15, 20, or 30 years. See text for additional sample details. Regressions are weighted using analytical weights. Robust standard errors shown in parentheses.

Source: Authors' calculations using NSMO data

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