

Perceptions of Recent Mortgage Borrowers by Race/Ethnicity: Insights from the National Survey of Mortgage Originations

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Abstract

Existing research on understanding the sentiments of recent mortgage borrowers often lack the comparison of borrowers' perspective by various race/ethnicity. To fill this gap, we investigate the borrowers' perception of originating a new purchase or refinance mortgage by race and ethnicity using the National Survey of Mortgage Originations (NSMO). We find that compared to White borrowers, Black and Latino borrowers were more concerned about the mortgage qualification process, were more likely to select a lower closing fee, a lower down payment, and a lower monthly payment as important factors in choosing a mortgage and were less likely to express satisfaction with several aspects of their mortgage and the mortgage process. These results persist even after controlling for income, credit quality, and other borrower characteristics.

Section 1: Introduction

Borrowers' sentiments about recently getting a mortgage can vary due to multiple factors. Understanding these perceptions can help us gain insights into their pain points and how to leverage existing resources to alleviate them. To this end, we make use of a nationally representative survey, National Survey of Mortgage Originations (NSMO)¹, to examine how the perception of the origination experience as related by Black and Latino borrowers compares to White borrowers.² As such, our results reflect the perceptions, knowledge, experiences, satisfaction, and expectations in getting a mortgage from the perspective of the survey respondent.

¹ NSMO is a quarterly nationally representative mail survey jointly funded and managed by the Federal Housing Finance Agency (FHFA) and the Consumer Financial Protection Bureau (CFPB). For more on the NSMO data project, see Appendix 1 or www.fhfa.gov/nsmodata.

² For our purposes, "Black", "Latino", and "White" are based on the respondent's self-reported identification. For simplicity, we use the term "Latino" to refer to all self-identified Latino and/or Hispanic borrowers. Respondents who identify as both "White" and "Latino" are identified here as "Latino" only. This yields us an initial sample of 2,408 Black respondents, 3,104 Latino respondents, and 31,023 White respondents, with the 90 respondents who identify as both "Black" and "Latino" appearing in the counts and results for both categories. For details, see Appendix 1.

Based on the survey responses, we find several similarities in perception about mortgage experiences across race/ethnicity. For example, there was near universal agreement that owning a home is a good investment. Similarly, most borrowers cited lower interest rates, lower APR and fixed interest rates as important factors in choosing a mortgage, regardless of race/ethnicity. Most respondents also felt confident they can pay their bills on time for the next 3 months.

We also found some differences in sentiments about the mortgage process across White and minority borrowers. Based on these responses, we find that Black and Latino borrowers were more likely to express concern about qualifying for a mortgage, were less likely to express confidence they could get financial help from their friends, family, or a financial institution should the need arise, and were more likely to submit more mortgage applications on average compared to their White counterparts. Additionally, Black and Latino borrowers were more likely than their White counterparts to indicate that lowering their down payment, monthly payments, and closing fees were important in choosing their mortgage. Lastly, Black and Latino borrowers were also less likely to express satisfaction in that their mortgage had the best terms to fit their needs, the lowest interest rate, or the lowest closing costs or satisfaction in their lender/broker, their settlement agent, and their mortgage disclosure documents.

Section 2: Literature

A segment of the rich literature on racial and ethnic inequities in the housing market literature seeks to better understand disparities in the mortgage shopping and application process. In an ideal world, mortgage applicants, especially ones with prime credit, would apply to several lenders to discover the best offer. Alexandrow and Koulayev (2018) find this typically doesn't occur, resulting in significant unrealized savings. Instead, Argarwal et. al. (2017) find borrowers with lower credit scores search substantially more than borrowers with better credit and will accept worse terms if they feel their likelihood of rejection by lenders is high. An earlier study by Charles and Hurst (2002) also found that Black households perceive themselves as having a greater probability of rejection and this impacts their behavior by making them less likely to apply.

Observing these disparities in outcomes, another segment of the literature attempts to understand how endowment gaps inform these inequities. Using the 2019 SCF, Butta et. al. (2020) finds that the wealth for the median Black and Hispanic family was \$24,100 and \$36,100, respectively, compared to \$188,200 for the median White family. They further document that, compared to White families, Black and Hispanic families were less likely to receive an inheritance or a gift, to have the option to get up to \$3,000 from a friend or family member, or have a parent with a college degree. They find the typical Black and Hispanic family only has \$2,000 in liquid savings compared to around \$8,000 for the typical White family.

The interest in endowments stems from the finding that transfers from previous generations or access to wealth and knowledge from social networks are an important driver in creating and maintaining Black-White and Hispanic-White disparities in housing in the literature. Feiveson and Sabelhaus (2018) demonstrate that half of intergenerational wealth transfers go to households that were already in the top 10% of the wealth distribution, with only 8% going to the bottom 50%. Hilber and Yingchun (2008) find they can explain the Black-White housing gap by adding controls for household wealth, parental household wealth, and differences in location to a basic model of household and credit characteristics.

Choi et. al. (2018) show that children of homeowners are themselves more likely to be homeowners and the difference in parental homeownership status explains roughly 13% of the Black-White homeownership gap for adults aged 18 to 34. In another study, Cho et al (2019) show that marital composition, FICO score distribution, age, and income distribution explain the largest proportion of the black-white homeownership gap at the MSA level.

One major difference between Black and Latino households is Latino households tend to purchase in areas with higher housing costs. Dey et al. (2021) show that the median house price among Latino renters who appear to fit the profile of a potential homeowner was approximately \$395,000 compared to \$290,000 among their White counterparts and \$280,000 among their Black counterparts. The same study estimates that Black and Latino households within this profile makes roughly \$3,500 a month after taxes, while similar White households are estimated to make \$4,200 a month. Leveraging these two data points, they estimate it would take the typical White household fitting this description 4.1 years to save a 5% downpayment, while for a similar Black household it would take 4.5 years and for a similar Latino household it would take 6.2 years. For this reason, the cost of housing features more prominently in the literature around explaining that Latino-White homeownership gap compared to the Black-White gap literature.

A recent paper by Loya (2022) investigates the extent to which ethno-racial differences in perceptions in exhibited during the final stage of homebuying process. Using NSMO data from 2013-2017, the paper finds that compared to all ethno-racial groups, Black mortgage holders are more likely to experience a negative surprise, an acute lending strategy or an unexpected financial cost during mortgage closing. While our methodology is similar to Loya (2022), our objective is primarily to understand the ethno/racial difference in perception during the origination stage of homebuying process.

Section 3: Concern about Qualifying for a Mortgage

The survey asked how concerned the borrowers were about qualifying for a mortgage. Around 29.9% of all Black borrowers and 29.2% of all Latino borrowers reported being very concerned about qualifying for a mortgage when they began the process of getting their mortgage compared to 11.7% of White borrowers, a gap of 18.2% and 17.5%, respectively.³ To better understand the extent to which these basic demographic differences could help explain this variation in the distribution of responses, we build a regression framework to control for the Black-White and Latino-White borrower differences.

The regression framework we use is a Linear Probability Model (LPM) where the response variable (**Very_Concerned_i**) is 1 if the borrower responds “Very” when asked about their level of concern about qualifying and 0 otherwise on an indicator if the respondent identifies as a Black (**Black_Borrower_i**), an indicator if the respondent identifies as Latino (**Latino_Borrower_i**), as well as a vector of the credit, borrower, loan, and property characteristics (**X_i**). These characteristics are initial loan balance, Loan-to-Value (LTV) ratio, back-end Debt-to-Income (DTI) ratio, Vantage Score, reported income, age,

³ These results are based on Question 6 of the survey: “When you began the process of getting this mortgage, how concerned were you about qualifying for a mortgage?”

employment status, educational attainment, household type, loan type, loan term, property type, urbanicity status of the county, and loan purpose, along with quarter fixed effects.⁴

$$Very_Concerned_i = \alpha + \rho(Black_Borrower_i) + \tau(Hispanic_Borrower_i) + \beta X_i$$

Exhibit 1 displays the coefficient point estimate and indicators of statistical significance associated with identifying as a Black or Latino borrower across 4 specifications for all mortgages.⁵ Adding the credit controls in Model 1 reduces the Black-White borrower gap in the share of very concerned about qualifying for a mortgage from 18.2% to 10.4% and reduces the Latino-White borrower gap from 17.5% to 12.1%. The gap further reduces to around 10% for both Black and Latino borrowers by model 4. This remaining difference in the likelihood of reporting concern about qualifying for a mortgage cannot be explained by the observable differences between Black and Latino borrowers and their White counterparts.⁶

Exhibit 1: Comparison of Models on Concern about Applying for a Mortgage

Variable	All Mortgages (N = 36,445)			
	Model 1	Model 2	Model 3	Model 4
<i>R-Squared:</i>	12.04%	12.99%	14.50%	14.71%
Intercept	-0.028***	-0.038***	-0.027***	-0.039***
Black Borrower	0.104***	0.103***	0.098***	0.100***
Latino Borrower	0.121***	0.118***	0.102***	0.104***
<i>Included Controls</i>				
Mortgage Type	Yes	Yes	Yes	Yes
Credit	Yes	Yes	Yes	Yes
Loan	No	Yes	Yes	Yes
Property	No	Yes	Yes	Yes
Borrower	No	No	Yes	Yes
Geographic	No	No	No	Yes
Quarter Fixed Effects	No	No	No	Yes

⁴ For more details, including the descriptive statistics by race/ethnicity group, see Appendix 1.

⁵ The extended coefficients and statistical indicators for the credit, borrower, loan, and property characteristics are provided in Appendix 2. In this paper, we present the model results associated with the combined purchase and refinance observations. We did run purchase-only and refinance-only models for each of our results. For brevity, they are not included as they did not differ materially from the combined results but are available upon request.

⁶ The shopping experiences of minority borrowers may be biased to how close they are to the underwriting cutoffs. For example, Black borrowers may be more likely than White borrowers to have the combination of high LTV and high DTI which could lead to worse shopping experiences. To alleviate these concerns, we did a robustness check by running an alternative specification that adds an interaction term for the DTI and LTV variables, keeping everything else same as our benchmark specification i.e., Model 4. The results of this model were nearly identical to those of Model 4, indicating that the potential bias is pretty small. We further restricted our sample to only the Conventional and FHA populations, respectively. The results of those models were consistent with the results presented in Model 4, but sometimes revealed the drivers of the results were more heavily concentrated in one population or the other. These alternative results are available upon request.

*Shares are based on analytic weights. Based on responding “Very”. *** denotes P-Value of < 1%. ** denotes P-Value >=1% and < 5%. * denotes P-Value >=5% and < 10%. Control selection is consistent between “All Mortgages” and the “Home Purchase” and “Refinance” subsets.*

In the tables to follow, we present the coefficient estimates and indicators of statistical significance associated with identifying as Black and Latino borrowers from model 4 as the “controlled difference” in the share of borrowers who selected the modeled response over the alternatives (i.e. the marginal effect on the share of being a Black/Latino borrower given the controls) alongside the “uncontrolled difference” (i.e. the arithmetic difference in the share who selected the given response between Black/Latino borrowers and White borrowers).

Section 4: Attitudes and Perceptions of the Housing Industry and the Future Expectations

In addition to asking about concerns around qualifying, the NSMO survey gauges agreement with general sentiments about financial industry. Exhibit 2 shows the share of borrowers who chose “agree” to the statements listed in survey questionnaire, reproduced in italics in the table below. Nearly every single borrower across all three groups agreed that “owning a home is a good financial investment”. Black and Latino borrowers, however, were less likely to agree that “most mortgage lenders would offer me roughly the same rates and fees” after controls were introduced. While this is an interesting insight, more research is needed to better contextualize the drivers of these differing shares of “agree” responses. Unfortunately, both NSMO and NMDB do not capture enough information to validate these perceptions.⁷

Most borrowers are less likely to agree that the timing of payments ought to be a matter of concern to themselves, their lender, and the financial industry. That said, Black and Latino borrowers were significantly less likely to agree with these notions compared to White borrowers. In the controlled model, Black and Latino borrowers were 2.9% and 3.6% less likely, respectively, to agree with the sentiment that “late payments will lower my credit rating” and 6.4% and 7.8%, respectively, more likely to agree that “lenders shouldn’t care about any late payments, only whether loans are fully repaid” compared to their White counterparts and after controls were introduced.

When asked if “it is okay to default or stop making mortgage payments if it is in the borrower's financial interest”,⁸ Latino borrowers were 3.5% more likely to select “agree” compared to White borrowers in the controlled model.

Most borrowers agreed that they would consider counseling or financial education in a financial crisis. However, Black and Latino borrowers were significantly more likely to share this perception compared to White borrowers, even after adding controls.

Exhibit 2: Attitudes and Perceptions

⁷ An attempt to better understand the drivers of the differing response shares by race/ethnicity and compare these perceptions against more objective measures falls outside the scope of this paper.

⁸ This question attempts to capture the share of new borrowers who may be open to a strategic default, including among people who may not be familiar with the specific term.

Characteristics (% responded "Agree")	White Borrower Mean	Black Borrower		Latino Borrower	
		Uncontrolled Difference	Controlled Difference	Uncontrolled Difference	Controlled Difference
<i>Owning a home is a good investment</i>	96.0%	0.9%	0.2%	1.5%	1.0%***
<i>Most lenders generally treat borrowers well</i>	82.4%	-9.3%	-9.1%***	-5.9%	-5.7%***
<i>Most lenders would offer me roughly the same rates and fees (1)</i>	71.0%	-14.9%	-14.6%***	-6.5%	-6.3%***
<i>Late payments will lower my credit rating</i>	93.7%	-3.3%	-2.9%***	-4.2%	-3.6%***
<i>Lenders shouldn't care about late payments, only if loans are repaid</i>	11.3%	8.5%	6.4%***	9.6%	7.8%***
<i>Would consider counseling or taking a course about managing my finances if in financial distress (2)</i>	71.9%	10.6%	7.8%***	7.8%	5.7%***
<i>It is okay to stop making mortgage payments if it is in the borrower's financial interest</i>	5.6%	0.8%	1.0%*	3.7%	3.5%***

Shares are based on analytic weights. (1) Only asked starting in Wave 7. (2) Only asked starting in Wave 11. *** denotes P-Value of < 1%. ** denotes P-Value >=1% and < 5%. * denotes P-Value >=5% and < 10%.

In addition to asking about counseling, the NSMO data also asks respondents how confident they feel that their household could get access to the listed resources in the event of a personal financial crisis in the next couple of years. Exhibit 3 documents the share of borrowers who replied “very” or “somewhat”. Most borrowers believed that it was likely that they could “pay [their] bills for the next 3 months without borrowing”, regardless of their race/ethnicity. There were no statistically significant differences between these groups in the responses after controls were introduced.

Black and Latino borrowers were, however, less likely to select “very” or “somewhat” when asked how confident they were in being able to raise money from an external source compared to White borrowers. In the controlled framework, Black and Latino borrowers were 10.7% and 6.7% less likely to indicate they were at least somewhat confident they could “get significant financial help from family or friends” and 4.3% and 8.7% less likely to indicate the same when asked about the ability to “borrow a significant amount from a bank or credit union”, respectively.

Exhibit 3: Access to Liquidity

Characteristics (% responded "Very" or "Somewhat")	White Borrower Mean	Black Borrower		Latino Borrower	
		Uncontrolled Difference	Controlled Difference	Uncontrolled Difference	Controlled Difference
<i>Pay your bills for the next 3 months</i>	86.5%	-4.7%	0.5%	-4.3%	0.0%
<i>Get significant financial help from family/friends</i>	60.4%	-12.3%	-10.7%***	-3.2%	-6.7%***
<i>Borrow a significant amount from a bank/CU</i>	69.9%	-8.4%	-4.3%***	-10.9%	-8.7%***
<i>Significantly increase your income</i>	54.3%	2.7%	4.1%***	3.3%	1.4%

Shares are based on analytic weights. Based on responding “Very or Somewhat” *** denotes P-Value of < 1%. ** denotes P-Value >=1% and < 5%. * denotes P-Value >=5% and < 10%.

Section 5: Lender and Mortgage Choice

NSMO asked several questions around what factors were important to the borrower in selecting the lender and mortgage they originated. The survey supplies a list of factors, and the borrower is asked to

select all that they considered important.⁹ Exhibit 4 contains the lender factors and the share of borrowers that reported them as important.

Most borrowers perceived having established banking relationship and lender reputation as important factors in choosing a lender. That said, both minority groups were more likely to perceive these as important factors in choosing a lender compared to their White counterparts. For example, both Black and Latino borrowers were 8.4% and 4.0%, respectively, more likely to select “having an established banking relationship” as an important factor in choosing a lender in the controlled framework.

Exhibit 4 reports some key differences in perception across the two minority groups regarding recommendations from their networks. For instance, Latino borrowers were 2.3% more likely to mark their loan originator being “a personal friend or relative” as important, 3.3% more likely to mark a “recommendation from a friend/relative/co-worker”, and 2.8% more likely to mark a “recommendation from a real estate agent/home builder” compared to White borrowers.

In contrast, Black borrowers were less likely to list recommendations from their networks as important compared to White borrowers. Black borrowers were 3.2% less likely to mark their loan originator being a friend and 3.7% less likely to mark a recommendation from a friend/relative/co-worker as being important compared to White borrowers in the controlled model.

⁹ Based on question 14 and 17 for lenders and mortgage factors, respectively. For waves 1 to 6, we code the “very” response as the equivalent of the “important” in the more recent waves.

Exhibit 4: Important Factors in Choosing a Lender

Characteristics (% responded "Important")	White Borrower Mean	Black Borrower		Latino Borrower	
		Uncontrolled Difference	Controlled Difference	Uncontrolled Difference	Controlled Difference
<i>Having an established banking relationship</i>	51.7%	5.5%	8.4%***	2.0%	4.0%***
<i>Having a local office or branch nearby</i>	45.1%	-3.3%	-1.7%	-1.2%	-1.5%*
<i>Used previously to get a mortgage</i>	36.2%	-4.6%	0.6%	-4.3%	0.9%
<i>Mortgage lender/broker is a personal friend or relative</i>	13.2%	-3.3%	-3.2%***	3.8%	2.3%***
<i>Recommendation from a friend/relative/co-worker</i>	32.9%	-1.3%	-3.7%***	9.3%	3.3%***
<i>Recommendation from a real estate agent/home builder</i>	30.7%	5.0%	-0.1%	9.3%	2.8%***
<i>Reputation of the lender/mortgage broker</i>	62.5%	5.2%	3.7%***	2.7%	0.3%
<i>Spoke my primary language, which is not English</i>	8.0%	9.3%	7.6%***	8.6%	6.3%***
<i>Could provide documents in my primary language, which is not English (1)</i>	2.1%	4.8%	3.9%***	5.6%	4.5%***

Shares are based on analytic weights. Used "Very" for waves 1 to 6, use "Important" for waves 7 plus. (1) Only asked starting in Wave 13. *** denotes P-Value of < 1%. ** denotes P-Value >=1% and < 5%. * denotes P-Value >=5% and < 10%.

A higher share of both Black and Latino borrowers selected a lender’s ability to conduct business in a language other than English as important. In the controlled framework, Black borrowers were 7.6% more likely to select having a lender/broker that spoke their primary (Non-English) language and 3.9% more likely to select having a lender that had documents in that language as being important. Latino borrowers, meanwhile, were 6.3% and 4.5% to cite speaking a Non-English language and having documents in that language as being important, respectively, compared to White borrowers in the controlled model.

More insights emerge when we compare the “spoke my primary language” row from Exhibit 4 to Exhibit 5, which speaks the share of borrowers who indicated they primarily speak a language other than English while at home. The share of Black and White borrowers who indicated they spoke a language outside of English at home roughly matches the respective share of borrowers marked “spoke my primary language, which is not English” as important in choosing a lender. Most Latino borrowers indicated that they speak another language, but the share that listed “spoke my primary language” as important is noticeably smaller. Similar shares of Black and Latino borrowers list “spoke my primary language” as an important factor in choosing a lender, even while many more Latino borrowers speak a language other than English at home.

Exhibit 5: Language Other than English Spoken at Home (% responding "Yes")

White Borrower Mean	Black-White Borrower Difference	Latino-White Borrower Difference
8.5%	9.0%	59.3%

Shares are based on analytic weights. Only asked starting in Wave 13.

One possible explanation for these nuanced differences in the distribution of responses could be many Latino borrowers who speak another language at home may also be sufficiently fluent in English to feel confident navigating the process of originating a mortgage in English or already have access to someone willing to translate. Another possible explanation is that many Spanish-speaking Latino borrowers found that all lenders they considered already offer services in Spanish and therefore didn't list it as an important factor in *choosing* a lender. The presumption that a Latino borrower is likely to speak Spanish, though, brings up an important confounding factor: the Latin America and the Caribbean region is home to a wide diversity of languages,¹⁰ making it possible that there is a non-trivial number of borrowers who identify as "Hispanic and Latino" whose primary language is neither Spanish nor English.

Exhibit 6: Important Factors in Choosing a Mortgage

Characteristics (% responded "Important")	White Borrower Mean	Black Borrower		Latino Borrower	
		Uncontrolled Difference	Controlled Difference	Uncontrolled Difference	Controlled Difference
<i>Lower Interest Rate</i>	96.0%	0.5%	0.9%**	0.8%	1.0%***
<i>Lower APR</i>	84.6%	2.3%	1.9%**	3.7%	3.4%***
<i>Lower Closing Fees</i>	78.2%	8.0%	5.0%***	5.3%	3.2%***
<i>Lower Down Payment</i>	55.2%	23.3%	11.2%***	15.9%	6.3%***
<i>Lower Monthly Payment</i>	73.7%	13.7%	7.3%***	10.2%	4.5%***
<i>A Fixed Interest Rate</i>	87.4%	3.2%	2.3%***	2.7%	1.7%***
<i>No Mortgage Insurance</i>	50.1%	3.0%	6.7%***	3.9%	5.5%***

Shares are based on analytic weights. Used "Very" for waves 1 to 6, use "Important" for waves 7 plus. *** denotes P-Value of < 1%. ** denotes P-Value >=1% and < 5%. * denotes P-Value >=5% and < 10%.

In addition to asking about the factors that were important in choosing a lender or broker, the NSMO survey also asks what factors were important in choosing their mortgage. The results are shown in Exhibit 6. There was near universal agreement that a lower interest rate, a lower APR, and a fixed interest rate are important factors in choosing a mortgage. While lower closing fees, a lower down payment and a lower monthly payment were also important factors for majority of borrowers, both minority groups were more likely to select these factors as being important in choosing a mortgage compared to their White counterparts, even after controls were introduced. Black and Latino borrowers were also more likely than White borrowers list not having mortgage insurance as being important.

¹⁰ Brazil is largely a Portuguese-speaking country, for instance. According to Dylan Lyons writing for Babbal (2019), South America is home to a number of indigenous languages such as Quechua, Guarani, and Aymara. Latin America and the Caribbean is also home to speakers of other Western European languages including French, German, Dutch, and Italian as well as communities of Eastern European language speakers. The region is also home to a number of Creole dialects and languages carried by successive waves of immigration, both voluntary and coerced, from Africa and all parts of Asia.

Section 6: Source of Down Payment

An important determinant of the cost of the mortgage, however, is the size of the down payment a borrower can raise. Black and Latino borrowers tend to have higher LTV ratios¹¹, indicating that they tend to have lower down payments compared to White borrowers.

The survey supplies a list of possible sources of funds and asks the respondent to select any that were used to purchase the property. The question is only asked of purchase borrowers as by construction the primary source of funds for a refinance is the previous mortgage. The results are shown in Exhibit 7.¹²

According to the exhibit, majority of the respondents use savings and other assets as primary source of down payment. Black and Latino purchase borrowers, however, were somewhat more likely to indicate that they used their savings and other assets compared to their White counterparts. Black and Latino purchase borrowers were less also likely than their White counterparts to indicate that they had funds from the sale of another property to apply to the new transaction.¹³ These results are mostly driven by repeat purchasers rather than First-Time Homebuyers.

Black and Latino purchase borrowers were less likely, compared to their White counterparts, to have indicate that they received gifts from a friend or family after controls were introduced. This is suggestively consistent with Bhutta et al (2020) who find White families are substantially more likely to receive inheritances, gifts, and other family support than Black and Hispanic families using Survey of Consumer Finance.

The perceptions regarding funds for down payment of Black and Latino purchase borrowers diverged somewhat in the other external sources they used to help fund their down payment. Black purchase borrowers were more likely to indicate that they received assistance from a government, non-profit, or seller at a rate of 3.3% after controls were introduced. Latino borrowers, however, appeared to be about as likely as their White counterparts to indicate that they received assistance from a government or non-profit after controls were introduced. Latino purchasers were less likely to indicate receiving a contribution from a seller compared to White borrowers after controls were introduced, a result that was driven by Latino First-Time Homebuyers.¹⁴

Exhibit 7: Source of Down Payment

¹¹ This can be seen in Appendix 1. It's also documented in the literature, such as in Dey et al. (2021) as an example.

¹² Given that respondents could select all that apply, the percentages in Exhibit 7 need not sum to 100%.

¹³ A little over 6% of White and Hispanic and 1.5% of Black FTHB respondents also had access to the funds from a previous transaction. As discussed in Appendix 2, we specifically define FTHB based on the respondent, so this could be funds from the sale of their spouse's property. This could also be a gift from a friend or relative.

¹⁴ After controls, Latino First-Time Homebuyers were 5.8% less likely to receive a seller contribution while Latino repeat buyers were 3.2% more likely to receive a seller contribution.

Characteristics (% responded "Used")	White Borrower Mean	Black Borrower		Latino Borrower	
		Uncontrolled Difference	Controlled Difference	Uncontrolled Difference	Controlled Difference
From Sale of another Property	28.3%	-16.7%	-5.0%***	-10.7%	-3.1%***
Savings and other Assets	64.2%	3.1%	4.6%***	1.0%	2.8%**
Assistance from Government or Nonprofit	5.6%	7.5%	3.3%***	3.6%	0.4%
Gift from Family or Friend	18.9%	1.5%	-2.8%**	5.1%	-0.8%
Seller Contribution	15.0%	9.6%	3.1%***	2.8%	-1.8%**

Shares are based on analytic weights. Refinance borrowers were not asked this question. *** denotes P-Value of < 1%. ** denotes P-Value >=1% and < 5%. * denotes P-Value >=5% and < 10%.

Section 7: Applying to Multiple Lenders

The survey asked several questions to gauge mortgage shopping behavior of borrowers. As shown in Exhibit 8, Black and Latino borrowers were 8.3% and 3.9% more likely to say they applied for more than one lender, respectively, compared to White borrowers after controls were introduced.

Exhibit 8: Share that Applied to More than One Lender (% responded "> 1")

White Borrower Mean	Black Borrower		Latino Borrower	
	Uncontrolled Difference	Controlled Difference	Uncontrolled Difference	Controlled Difference
22.2%	10.3%	8.3%***	7.1%	3.9%**

Shares are based on analytic weights. *** denotes P-Value of < 1%. ** denotes P-Value >=1% and < 5%. * denotes P-Value >=5% and < 10%.

For borrowers that report applying to more than one lender, the survey includes a follow-up question asking respondents to select all statements that may have reflected their reasoning for doing so, shown in Exhibit 9.¹⁵ Roughly 4 out of 5 borrowers marked “searching for better loan terms” as a reason they applied to two or more lenders. A higher share of Black and Latino borrowers, meanwhile, selected “concern over qualifying for a loan”¹⁶, “information learned from the Loan Estimate”, and being “turned down on earlier application” as reasons to apply to more than one lender compared to their White counterparts.

Exhibit 9: Reasons for Applying to More than One Lender

¹⁵ Given that respondents could select any that applied, the percentages in Exhibit 9 need not sum to 100%.

¹⁶ This is different from the question discussed in Section 4 in that it asks about concern *after* the borrower has applied to a lender and only to the subset of respondents who applied to more than one lender.

Characteristics (% responded "Yes")	White Borrower Mean	Black Borrower		Latino Borrower	
		Uncontrolled Difference	Controlled Difference	Uncontrolled Difference	Controlled Difference
Searching for Better Loan Terms	82.1%	-2.7%	1.0%	-0.2%	2.2%*
Concern over Qualifying for a Loan	25.7%	10.7%	2.3%	11.8%	5.6%***
Information Learned from the "Loan Estimate"	29.8%	7.3%	4.9%**	13.2%	10.6%***
Turned down on Earlier Application	16.7%	10.6%	6.8%***	6.9%	4.4%***

Shares are based on analytic weights. Question only asked to respondents who previously reported applying to more than one lender. *** denotes P-Value of < 1%. ** denotes P-Value >=1% and < 5%. * denotes P-Value >=5% and < 10%.

Section 8: Difficulties Encountered while Applying for a Mortgage

Additionally, the NSMO survey asks respondents to select any pain points they encountered during the origination process from a list. The questionnaire asks about the origination and underwriting process, the consistency of the quoted costs, and issues that might have come up at the closing table.¹⁷

As shown in Exhibit 10, Black and Latino borrowers were more likely than White borrowers to select “resolve credit errors or problems”, “have more than one appraisal”, “redo/refile paperwork due to processing delays”, “delay or postpone closing date”, “have your ‘Loan Estimate’ revised to reflect changes in your loan terms”, and “check other sources to confirm that terms of the mortgage were reasonable” as difficulties they encountered even after controls were introduced.

Exhibit 10: Difficulties Encountered in the Mortgage Process

Characteristics (% responded "Yes")	White Borrower Mean	Black Borrower		Latino Borrower	
		Uncontrolled Difference	Controlled Difference	Uncontrolled Difference	Controlled Difference
Resolve credit report errors or problems	15.6%	12.9%	6.0%***	8.3%	3.3%***
Answer follow-up requests for more information about income or assets	59.4%	2.4%	-0.7%	2.6%	-0.1%
Have more than one appraisal	6.1%	5.0%	4.0%***	4.0%	2.7%***
Redo/refile paperwork due to processing delays	16.0%	6.3%	4.0%***	6.3%	4.9%***
Delay or postpone closing date	20.4%	10.9%	7.5%***	7.3%	4.7%***
Have your 'Loan Estimate' revised to reflect changes in your loan terms (1)	23.8%	7.9%	5.3%***	8.8%	6.6%***
Have to add another co-signer to qualify (2)	6.3%	1.7%	1.2%*	6.2%	4.8%***
Check other sources to confirm that the terms of this mortgage were reasonable (2)	29.3%	5.0%	5.3%***	3.4%	2.7%***
Get documents in your primary language, which is not English (3)	3.9%	7.7%	6.7%***	6.2%	5.7%***
Have the lender/broker translate in your primary language, which is not English (3)	1.0%	3.9%	3.5%***	5.7%	5.0%***

Shares are based on analytic weights. (1) Only asked starting in Wave 5. (2) Only asked starting in Wave 7. (3) Only asked starting in Wave 13. *** denotes P-Value of < 1%. ** denotes P-Value >=1% and < 5%. * denotes P-Value >=5% and < 10%.

¹⁷ These lists are presented in Questions 20, 47, and 52, respectively.

We also find that Black and Latino borrowers were more likely than their White counterparts to select “get documents in your primary language, which is not English” and “have the lender/broker translate in your primary language, which is not English” as difficulties encountered both before and after controls were introduced.

Section 9: Mortgage Satisfaction

Lastly, to examine borrowers’ self-reported satisfaction, the NSMO survey asks respondents how satisfied they were with several aspects of their mortgage and with the mortgage process. In particular, the NSMO survey asks how satisfied the respondent is that the mortgage they got was the one with the “best terms to fit your needs”, “lowest interest rate for which you could qualify”, and “lowest closing costs”. Exhibit 11 shows the share of borrowers who responded “very”.

Exhibit 11: Satisfaction with the Mortgage Terms

Characteristics (% responded "Very")	White Borrower Mean	Black Borrower		Latino Borrower	
		Uncontrolled Difference	Controlled Difference	Uncontrolled Difference	Controlled Difference
<i>Best Terms to fit your needs</i>	79.9%	-11.5%	-8.2%***	-8.8%	-5.5%***
<i>Lowest Interest Rate for which you could qualify</i>	72.5%	-10.3%	-9.1%***	-8.0%	-6.4%***
<i>Lowest Closing Costs</i>	57.9%	-1.6%	-3.5%***	-2.8%	-3.0%***

Shares are based on analytic weights. *** denotes P-Value of < 1%. ** denotes P-Value >=1% and < 5%. * denotes P-Value >=5% and < 10%.

Overall, most borrowers seem to be very satisfied with these aspects of their mortgage. However, Black and Latino borrowers were less likely to select being very satisfied with their mortgage compared to White borrowers after credit, borrower, loan, and property controls were introduced. In particular, Black and Latino borrowers were 9.1% and 6.4% less likely, respectively, compared to White borrowers to select being very satisfied that their mortgage had the lowest interest rate they could have achieved. Furthermore, Black and Latino borrowers were 8.2% and 5.5% less likely to select being very satisfied that their mortgage terms best fit their needs and 3.5% and 3.0% less likely to select being very satisfied they got the lowest closing costs attainable, respectively.

The NSMO data also asks borrowers about their satisfaction with specific aspects of the mortgage origination process. Exhibit 12 shows the share of Black, Latino, and White borrowers who responded “very” when asked their level of satisfaction with these aspects.

Exhibit 12: Satisfaction with the Mortgage Process

Characteristics (% responded "Very")	White Borrower Mean	Black Borrower		Latino Borrower	
		Uncontrolled Difference	Controlled Difference	Uncontrolled Difference	Controlled Difference
<i>Mortgage Lender/Broker you used</i>	78.4%	-5.5%	-4.9%***	-3.7%	-3.0%***
<i>Application Process</i>	66.9%	-3.0%	-3.1%***	-1.4%	-1.3%
<i>Documentation process required for the loan (1)</i>	61.1%	-0.1%	-0.6%	1.9%	1.7%*
<i>Loan Closing Process</i>	69.2%	-3.2%	-3.1%***	-2.9%	-2.2%***
<i>Information in mortgage disclosure documents</i>	68.7%	-3.5%	-3.6%***	-3.4%	-2.7%***
<i>Timeliness of mortgage disclosure documents</i>	68.8%	-4.8%	-4.7%***	-4.1%	-3.6%***
<i>Settlement Agent</i>	72.8%	-6.5%	-6.2%***	-5.9%	-5.0%***

Shares are based on analytic weights. (1) Only asked starting in Wave 7. *** denotes P-Value of < 1%. ** denotes P-Value >=1% and < 5%. * denotes P-Value >=5% and < 10%.

Black and Latino borrowers were less likely to indicate that they were very satisfied with their lender/broker and their settlement agent compared to White borrowers. Black and Latino borrowers were also less likely to say they were very satisfied with the information and timeliness in the mortgage disclosure documents, the loan closing process, and potentially the application process.

Section 10: Conclusion

To conclude, we find that comparing the NSMO responses by race/ethnicity indicates several similarities and differences in how the mortgage origination process was perceived between these groups. As our findings have shown, most borrowers share the sentiment that buying a home is a good investment regardless of race/ethnicity. However, there are material differences in perception of Black and Latino compared to White borrowers throughout the mortgage process. Black and Latino borrowers are more likely to express concern about qualifying for a mortgage at the beginning of the origination process and less likely to report satisfactions at the end of the process.

While more research is needed to further investigate how borrower perceptions of their mortgage origination experiences might compare against more neutral observations or administrative measures, these responses provide valuable insights into the relative salience of potential pain points that some borrowers may encounter in the process among White and minority borrowers. One possible way we could address Black and Latino borrowers being more likely to express concern of qualifying and being more likely to have to submit multiple applications might be through counseling and homebuyer education. Argento et. al. (2019) found those who did receive counseling or education reported better mortgage knowledge and higher levels of satisfaction with the mortgage they received, both of which could indicate a greater comfort in navigating the origination process. Programs that offer coaching and other support systems to transition families into a financial situation where they could confidently qualify for a mortgage and sustainably own could be especially impactful in closing these response gaps among Black and Latino borrowers.

PREPARED BY HOUSING INSIGHTS AND SOLUTIONS GROUP

Robert Argento, Quantitative Analytics Tech Lead
Jaya Dey, Quantitative Analytics Director

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Appendix 1: Detailed Data Description and Variable Definitions

The NSMO survey is drawn from a representative 1-in-20 sample of all closed-end first-lien residential mortgages originated between 2013 to 2019. We can link the response data back to the original record in NMDB containing the credit and administrative characteristics of the mortgage. Both NSMO and NMDB are part of the NMDB program, which is jointly sponsored by the Federal Housing Finance Agency (FHFA) and the Consumer Financial Protection Bureau (CFPB). The program matches credit records combined with administrative records from Fannie Mae, Freddie Mac, the Federal Housing Administration (FHA), the Department of Veteran Affairs (VA), and the Rural Housing Service (RHS), along with the Home Mortgage Disclosure Act (HMDA) and McDash servicing data to create the production NMDB data.¹⁸

NSMO is intended to supplement NMDB's extensive administrative and credit data with more qualitative data of the perceptions and experiences of borrowers who recently originated a new mortgage. For our study, we compare the reported experiences of Black and Latino respondents against those of White respondents. We group the responses based on the reported race and ethnicity of the borrower who filled out the survey questionnaire. "Black" respondents are those who selected only "Black or African American" on survey question 78¹⁹, regardless of ethnicity. "Latino" respondents are those who selected "Yes" on question 77 for being "Hispanic or Latino", regardless of race. "White" respondents are those who selected "White/Caucasian only" and selected "No" for being Hispanic or Latino. This yields us an initial sample of 2,408 Black respondents, 3,104 Latino respondents, and 31,023 White respondents.²⁰

Before examining how the mortgages experiences differ between Black, Latino, and White respondents, we first wanted to understand how the credit, borrower, loan, and property distributions vary between these groups. The results are shown in Exhibit A1. In the paper, we use a regression framework to see how the size of the disparities in Black, Latino, and White responses changes after accounting for the distributional differences in the characteristics of these populations.²¹

The results are consistent with the literature.²² Among all originations, the average loan to Black and Latino borrowers carried higher Loan-to-Value (LTV) ratios, higher back-end Debt-to-Income (DTI) ratios, lower credit scores, and lower reported incomes compared to White borrowers. Loans to Black borrowers typically had lower initial loan amounts compared to both White and Latino borrowers. Black and Latino borrowers were more likely to originate an FHA loan compared to White borrowers.²³ Latino

¹⁸ For FHFA and CFPB, the NMDB program is intended to meet their policymaking, research, and market monitoring obligations as required by the Housing and Economic Recovery Act of 2008 and the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, respectively. For additional details see the technical documentation [for NMDB](#) and [for NSMO](#), both available at fhfa.gov.

¹⁹ When referencing survey questions, we refer to the questionnaire for [Waves 19 to 22 \(2018 Q3 to 2019 Q2\)](#) unless otherwise noted.

²⁰ 90 respondents in our sample identified as both Black and Hispanic. They are featured in both categories in the descriptive statistics as well as within the regression framework.

²¹ Our approach builds on techniques used to examine the experiences of rural borrowers in Critchfield et. al. (2018).

²² The results are also consistent with the HMDA data. See Jo et. al. (2020) for details.

²³ Black borrowers were also twice as likely to originate a VA loan compared to White and Hispanic borrowers.

borrowers, meanwhile, tended to be younger and less likely to have a college degree compared to White and Black borrowers. A higher share of Black respondents were single female householders compared to Black and Latino respondents. Black borrowers were somewhat more likely to live in a townhome or a multi-unit dwelling compared to White and Latino borrowers. A higher share of Black and Latino borrowers lived in a central county of a Core-Based Statistical Area (CBSA) compared to White borrowers.

Our sample is selected from version 30 of the NSMO Internal Use File (IUF). What follows are more technical descriptions of how both control and response variables were created in order to conduct the analysis. In general, we try to make survey waves outside of 19 to 22 fit within the Wave 19 to 22 questionnaire framework to the extent possible.

A purchase loan is defined as answering “To buy a property” to Question 33, “Which one of these reasons best describes this most recent mortgage?” All other mortgages are characterized as refinances. “First-Time Homebuyer” means a purchase loan where there is no previous mortgage on the credit file, which can go back up to 7 years, for the respondent. “Cash-out Refinance” mean a refinance loan where the respondent reported using the money they got from this new mortgage for any one of “College expenses”, “Auto or other major purchase”, “Buy out co-borrower e.g. ex-spouse”, “Pay off other bills or debts”, “Savings”, or “Business or investment”.

The buckets of “Loan Amount” are based on the initial loan balance at origination from the NMDB data²⁴. The “LTV” buckets are based on that loan amount over the appraised value of the home used in underwriting from the NMDB data. The “DTI” buckets are based the monthly payments on all debts over the income used in underwriting at origination based on the NMDB data. The “Vantage Score” buckets are based on the respondent’s Vantage 3.0 score at origination.

The buckets of “Reported Income” are based on the survey response to Question 83, “Approximately how much is your total annual household income from all sources (wages, salaries, tips, interest, child support, investment income, retirement, social security, and alimony)?” The “Age” buckets are based on the respondent’s age as they reported it in response to Question 74. “Education Status” is based on the respondent’s highest level of education achieved according to Question 76. “Employment Status” is based on the most employed of the respondent and the spouse/partner as reported by Question 79. “Has Legal Spouse” for “Household Status” is based on Question 72 and respondent’s gender is based on Question 75.

“Loan Type” and “Loan Term” are based on the NMDB data. “Property Type” is based the response to Question 60. “Urbanicity” is based Census’ September 2018 CBSA definitions and the property location according to the NMDB data. The quarterly fixed effects are based on origination date according to the NMDB data.

²⁴ Specifically, NMDB version 16.0.

Exhibit A1: Share of Property, Mortgage, and Borrower Characteristics by Race and Mortgage Type: Credit and Loan Characteristics

Characteristics	All Mortgages			Home Purchase			Refinance		
	White Borrowers (n=31,023)	Black Borrowers (n=2,408)	Latino Borrowers (n=3,104)	White Borrowers (n=15,569)	Black Borrowers (n=1,158)	Latino Borrowers (n=1,705)	White Borrowers (n=15,454)	Black Borrowers (n=1,250)	Latino Borrowers (n=1,399)
Mortgage Type									
Home Purchase	52	52	58	100	100	100	-	-	-
First-Time Homebuyer	21	29	32	39	57	56	-	-	-
Repeat Purchase	32	23	26	61	43	44	-	-	-
Refinance	48	48	42	-	-	-	100	100	100
Regular Refinance	34	33	29	-	-	-	72	69	69
Cash-out Refinance	13	15	13	-	-	-	28	31	31
Credit Characteristics									
<i>Loan Amount Bucket</i>									
\$0 to \$84,999	11	12	9	11	10	7	12	15	11
\$85,000 to \$149,999	24	27	25	24	26	25	25	29	24
\$150,000 to \$199,999	17	19	19	17	20	21	18	17	17
\$200,000 to \$399,999	35	33	36	37	36	37	33	30	36
\$400,000 or More	12	9	11	12	9	10	12	9	12
<i>Loan-to-Value (LTV) Bucket</i>									
LTV <= 80%	57	33	44	43	19	26	72	49	69
80% < LTV <= 90%	13	14	12	13	8	10	13	20	16
90% < LTV <= 95%	11	12	13	16	16	18	5	8	6
95% < LTV <= 97%	10	22	21	17	38	33	2	5	3
LTV > 97%	10	18	11	11	19	13	8	17	7
<i>Debt-to-Income (DTI) Bucket</i>									
DTI <= 35%	50	32	33	48	29	30	52	35	37
35% < DTI <= 40%	17	17	18	18	18	19	16	17	17
40% < DTI <= 43%	11	14	14	12	16	13	10	12	14
43% < DTI <= 45%	7	9	9	8	10	10	7	8	9
45% < DTI <= 50%	9	14	14	10	15	17	8	12	11
DTI > 50%	6	13	12	5	12	11	7	15	12
<i>Vantage Score Bucket</i>									
Above 780	31	12	16	31	12	15	31	12	18
661 to 780	53	54	59	53	54	61	52	54	56
601 to 660	12	24	18	12	25	19	13	24	18
600 and Below	4	10	7	3	9	6	4	10	8
Loan Characteristics									
<i>Loan Type</i>									
Conventional	76	48	60	71	40	49	82	56	74
FHA insured	13	31	28	17	41	36	9	21	17
VA guaranteed	9	19	10	9	15	11	9	22	9
FSA/RHS insured	2	2	2	4	4	3	0	0	0
<i>Loan Term</i>									
30-Year	76	81	82	89	94	93	61	67	67
15-Year	14	10	11	6	3	4	22	18	19
Other	10	9	8	4	3	3	17	15	14

All figures are percentages. Shares may not sum to 100 due to rounding. Shares are based on analytic weights.

Exhibit A1 (continued - 1)

Characteristics	All Mortgages			Home Purchase			Refinance		
	White Borrowers (n=31,023)	Black Borrowers (n=2,408)	Latino Borrowers (n=3,104)	White Borrowers (n=15,569)	Black Borrowers (n=1,158)	Latino Borrowers (n=1,705)	White Borrowers (n=15,454)	Black Borrowers (n=1,250)	Latino Borrowers (n=1,399)
Borrower Characteristics									
<i>Reported Income Bucket</i>									
Less than \$35,000	5	8	8	5	8	9	5	9	8
\$35,000 to \$49,999	9	14	15	10	15	17	9	12	12
\$50,000 to \$74,999	18	24	23	20	25	23	17	22	22
\$75,000 to \$99,999	19	19	19	19	19	19	19	19	19
\$100,000 to \$174,999	30	25	25	29	23	23	32	27	28
\$175,000 and Above	18	11	10	17	10	9	19	11	11
<i>Age Bucket</i>									
35 or Younger	26	21	32	39	34	46	13	7	14
36 to 45	22	25	28	22	30	26	23	21	31
46 to 55	22	24	21	17	20	16	27	28	28
56 to 65	18	18	12	13	11	8	22	26	18
66 or Older	12	12	6	8	6	4	15	18	10
<i>Education Status</i>									
Some schooling	1	1	4	1	1	5	1	1	4
High school graduate	10	9	13	9	9	12	12	10	15
Technical school	5	5	6	5	5	6	6	5	7
Some college	19	23	23	18	21	21	20	25	26
College graduate	37	36	32	39	37	34	35	34	29
Postgraduate studies	28	27	21	28	27	22	27	26	19
<i>Employment Status</i>									
Employed/ Self-Employed Full Time	77	78	83	80	86	86	72	69	78
Employed/ Self-Employed Part Time	6	4	5	5	4	4	7	5	5
Retired	13	16	8	10	8	5	16	24	12
Not Working for Pay	4	3	4	4	3	4	5	2	5
<i>Household Status</i>									
Has Legal Spouse	68	51	63	64	47	60	72	55	67
Single Male	15	17	17	17	19	20	13	15	13
Single Female	17	32	20	18	34	20	15	30	20
Property Characteristics									
<i>Property Type</i>									
Single-family Detached	84	81	84	82	78	82	87	84	86
Mobile/Manufactured Home	2	1	1	2	1	1	2	1	1
Townhouse	6	10	6	7	12	6	5	7	6
2-to-4 Unit Dwelling	2	4	3	2	4	4	2	4	3
Apartment/Condo/Co-op	5	4	5	6	5	6	4	4	4
Other	0	0	0	0	0	0	0	0	0
Geographic Characteristics									
<i>Urbanicity</i>									
Central County	87	93	93	87	93	91	87	93	95
Outlying County	8	6	6	8	6	7	8	5	4
Non-Metro County	5	1	1	5	1	2	5	2	1

All figures are percentages. Shares may not sum to 100 due to rounding. Shares are based on analytic weights.

Exhibit A1 (continued - 2)

Characteristics	All Mortgages			Home Purchase			Refinance		
	White Borrowers (n=31,023)	Black Borrowers (n=2,408)	Latino Borrowers (n=3,104)	White Borrowers (n=15,569)	Black Borrowers (n=1,158)	Latino Borrowers (n=1,705)	White Borrowers (n=15,454)	Black Borrowers (n=1,250)	Latino Borrowers (n=1,399)
<i>Quarter Fixed Effects</i>									
2013Q1	5	4	4	2	2	2	8	5	6
2013Q2	6	5	4	4	3	3	8	6	5
2013Q3	5	4	4	4	3	3	5	5	5
2013Q4	3	3	3	3	3	3	3	3	3
2014Q1	2	2	2	2	2	2	2	2	2
2014Q2	3	2	2	3	2	2	3	2	3
2014Q3	3	3	3	3	3	3	3	2	3
2014Q4	3	3	3	3	2	2	3	3	3
2015Q1	3	3	3	3	2	2	4	4	3
2015Q2	4	4	4	4	4	3	4	4	4
2015Q3	4	3	4	4	3	4	3	3	4
2015Q4	3	3	2	3	3	2	3	3	3
2016Q1	3	3	3	3	2	3	3	4	4
2016Q2	4	4	4	4	4	4	4	5	4
2016Q3	5	4	4	4	3	4	5	4	4
2016Q4	4	4	5	4	4	4	5	3	5
2017Q1	3	3	3	3	4	3	3	3	4
2017Q2	3	4	4	4	6	4	2	3	3
2017Q3	4	4	4	4	5	5	3	3	4
2017Q4	3	4	4	3	5	4	3	3	3
2018Q1	3	3	3	3	3	3	2	3	3
2018Q2	3	3	4	4	5	6	2	2	2
2018Q3	3	4	4	4	6	5	2	3	2
2018Q4	3	3	4	3	4	4	2	3	2
2019Q1	2	3	3	3	4	4	2	3	2
2019Q2	4	4	3	5	5	4	3	4	3
2019Q3	4	6	6	4	6	6	5	6	5
2019Q4	4	5	5	4	4	5	5	5	6

All figures are percentages. Shares may not sum to 100 due to rounding. Shares are based on analytic weights.

Appendix 2: Full Comparison of Models on Concern about Qualifying for a Mortgage

Exhibit A2 contains the full comparison of models summarized in Exhibit 3.

Exhibit A2: Full Comparison of Models on Concern about Applying for a Mortgage

Variable	All Mortgages			
	Model 1	Model 2	Model 3	Model 4
<i>R-Squared:</i>	12.04%	12.99%	14.50%	14.71%
<i>N Obs:</i>	36,445	36,445	36,445	36,445
Intercept	-0.028***	-0.013**	-0.027***	-0.039***
Is a Black Borrower	0.104***	0.103***	0.098***	0.100***
Is a Latino Borrower	0.121***	0.118***	0.102***	0.104***
Mortgage Type Controls				
First-Time Homebuyer	0.087***	0.078***	0.082***	0.085***
Cash-out Refinance	0.000	-0.001	-0.008	-0.003
Credit Controls				
<i>UPB Bucket</i>				
\$0 to \$84,999	0.080***	0.076***	-0.008	-0.014
\$85,000 to \$149,999	0.058***	0.052***	-0.009	-0.013*
\$150,000 to \$199,999	0.027***	0.022***	-0.018**	-0.021***
\$200,000 to \$399,999	0.016***	0.016***	-0.004	-0.005
\$400,000 or More	Ref.	Ref.	Ref.	Ref.
<i>LTV Bucket</i>				
LTV <= 80%	Ref.	Ref.	Ref.	Ref.
80% < LTV <= 90%	0.017***	0.000	0.001	0.000
90% < LTV <= 95%	0.024***	0.011*	0.013**	0.013**
95% < LTV <= 97%	0.140***	0.070***	0.072***	0.072***
LTV > 97%	0.064***	0.048***	0.046***	0.043***
<i>DTI Bucket</i>				
DTI <= 35%	Ref.	Ref.	Ref.	Ref.
35% < DTI <= 40%	0.034***	0.032***	0.023***	0.024***
40% < DTI <= 43%	0.033***	0.032***	0.019***	0.019***
43% < DTI <= 45%	0.043***	0.044***	0.030***	0.030***
45% < DTI <= 50%	0.054***	0.049***	0.031***	0.035***
DTI > 50%	0.075***	0.071***	0.048***	0.046***
<i>Vantage Bucket</i>				
Above 780	Ref.	Ref.	Ref.	Ref.
661 to 780	0.044***	0.038***	0.034***	0.034***
601 to 660	0.140***	0.122***	0.115***	0.114***
600 and Below	0.185***	0.166***	0.157***	0.159***
Loan Controls				
<i>Loan Type</i>				
Conventional		Ref.	Ref.	Ref.
FHA insured		0.096***	0.085***	0.086***
VA guaranteed		-0.019***	-0.024***	-0.022***
FSA/RHS insured		0.143***	0.114***	0.113***
<i>Loan Term</i>				
30-Year		Ref.	Ref.	Ref.
15-Year		-0.025***	-0.014**	-0.0154***
Other		-0.016**	-0.010	-0.0107*

Exhibit A2 (continued - 1)

Variable	All Mortgages			
	Model 1	Model 2	Model 3	Model 4
Borrower Controls				
<i>Reported Income Bucket</i>				
Less than \$35,000			0.181***	0.179***
\$35,000 to \$49,999			0.125***	0.124***
\$50,000 to \$74,999			0.080***	0.080***
\$75,000 to \$99,999			0.060***	0.060***
\$100,000 to \$174,999			0.021***	0.021***
\$175,000 and Above			Ref.	Ref.
<i>Age Bucket</i>				
35 or Younger			-0.013	-0.014
36 to 45			0.028***	0.027***
46 to 55			0.034***	0.033***
56 to 65			0.018**	0.017**
66 or Older			Ref.	Ref.
<i>Education Status</i>				
Some schooling			0.088***	0.089***
High school graduate			0.016**	0.016**
Technical school			0.022***	0.023***
Some college			0.008	0.008
College graduate			-0.007	-0.007
Postgraduate studies			Ref.	Ref.
<i>Employment Status</i>				
Employed/Self-Employed Full Time			Ref.	Ref.
Employed/Self-Employed Part Time			-0.003	-0.002
Retired			-0.021***	-0.021***
Not Working for Pay			-0.015*	-0.015*
<i>Household Status</i>				
Couple			Ref.	Ref.
Single Male			-0.033***	-0.032***
Single Female			-0.001	0.000
Property Controls				
<i>Property Type</i>				
Single-family Detached		Ref.	Ref.	Ref.
Mobile/Manufactured Home		0.027**	0.013	0.013
Townhouse		-0.001	0.006	0.006
2-to-4 Unit Dwelling		-0.001	0.003	0.003
Apartment/Condo/Co-op		-0.008	0.003	0.002
Other		-0.003	0.006	0.008
Geographic Controls				
<i>Urbanicity</i>				
Non-Metro County				0.021**
Outlying County				-0.008
Central County				Ref.

Exhibit A2 (continued - 2)

Variable	All Mortgages			
	Model 1	Model 2	Model 3	Model 4
<i>Quarter Fixed Effects</i>				
2013Q1				0.011
2013Q2				0.012
2013Q3				0.026**
2013Q4				0.050***
2014Q1				0.044***
2014Q2				0.035***
2014Q3				0.038***
2015Q4				0.040***
2015Q1				0.029**
2015Q2				0.018
2015Q3				0.014
2015Q4				0.021
2016Q1				0.009
2016Q2				0.009
2016Q3				0.023**
2016Q4				0.013
2017Q1				0.012
2017Q2				-0.009
2017Q3				0.011
2017Q4				0.024*
2018Q1				0.003
2018Q2				0.007
2018Q3				-0.007
2018Q4				0.011
2019Q1				-0.009
2019Q2				0.016
2019Q3				-0.021*
2019Q4				Ref.

Exhibit A2 (continued - 3)

Variable	Home Purchase			
	Model 1	Model 2	Model 3	Model 4
<i>R-Squared:</i>	14.22%	15.48%	17.28%	17.51%
<i>N Obs:</i>	18,380	18,380	18,380	18,380
Intercept	-0.045***	-0.029***	-0.060***	-0.063***
Is a Black Borrower	0.128***	0.124***	0.113***	0.114***
Is a Hispanic Borrower	0.118***	0.113***	0.097***	0.098***
Mortgage Type Controls				
First-Time Homebuyer	0.074***	0.069***	0.080***	0.082***
Cash-out Refinance				
Credit Controls				
<i>UPB Bucket</i>				
\$0 to \$84,999	0.089***	0.082***	-0.003	-0.006
\$85,000 to \$149,999	0.078***	0.067***	0.006	0.003
\$150,000 to \$199,999	0.028***	0.020**	-0.018*	-0.020*
\$200,000 to \$399,999	0.016*	0.014	-0.005	-0.006
\$400,000 or More	Ref.	Ref.	Ref.	Ref.
<i>LTV Bucket</i>				
LTV <= 80%	Ref.	Ref.	Ref.	Ref.
80% < LTV <= 90%	0.029***	0.014	0.013	0.013
90% < LTV <= 95%	0.027***	0.011	0.010	0.011
95% < LTV <= 97%	0.140***	0.032***	0.032***	0.035***
LTV > 97%	0.073***	0.035***	0.030**	0.030**
<i>DTI Bucket</i>				
DTI <= 35%	Ref.	Ref.	Ref.	Ref.
35% < DTI <= 40%	0.033***	0.030***	0.023***	0.023***
40% < DTI <= 43%	0.041***	0.041***	0.029***	0.030***
43% < DTI <= 45%	0.051***	0.054***	0.040***	0.040***
45% < DTI <= 50%	0.056***	0.050***	0.033***	0.036***
DTI > 50%	0.098***	0.081***	0.065***	0.067***
<i>Vantage Bucket</i>				
Above 780	Ref.	Ref.	Ref.	Ref.
661 to 780	0.058***	0.050***	0.049***	0.049***
601 to 660	0.172***	0.148***	0.137***	0.138***
600 and Below	0.220***	0.193***	0.183***	0.185***
Loan Controls				
<i>Loan Type</i>				
Conventional		Ref.	Ref.	Ref.
FHA insured		0.144***	0.127***	0.1242***
VA guaranteed		0.008	-0.001	-0.001
FSA/RHS insured		0.152***	0.119***	0.1171***
<i>Loan Term</i>				
30-Year		Ref.	Ref.	Ref.
15-Year		-0.038***	-0.025**	-0.0264**
Other		0.007	0.008	0.008

Exhibit A2 (continued - 4)

Variable	Home Purchase			
	Model 1	Model 2	Model 3	Model 4
Borrower Controls				
<i>Reported Income Bucket</i>				
Less than \$35,000			0.171***	0.168***
\$35,000 to \$49,999			0.136***	0.134***
\$50,000 to \$74,999			0.087***	0.086***
\$75,000 to \$99,999			0.060***	0.060***
\$100,000 to \$174,999			0.027***	0.026***
\$175,000 and Above			Ref.	Ref.
<i>Age Bucket</i>				
35 or Younger			-0.011	-0.013
36 to 45			0.054***	0.053***
46 to 55			0.058***	0.057***
56 to 65			0.032**	0.032**
66 or Older			Ref.	Ref.
<i>Education Status</i>				
Some schooling			0.094***	0.095***
High school graduate			0.026**	0.026**
Technical school			0.035***	0.036***
Some college			0.013	0.013
College graduate			-0.010	-0.010
Postgraduate studies			Ref.	Ref.
<i>Employment Status</i>				
Employed/Self-Employed Full Time			Ref.	Ref.
Employed/Self-Employed Part Time			-0.019	-0.018
Retired			-0.014	-0.015
Not Working for Pay			-0.014	-0.014
<i>Household Status</i>				
Couple			Ref.	Ref.
Single Male			-0.053***	-0.052***
Single Female			0.005	0.006
Property Controls				
<i>Property Type</i>				
Single-family Detached		Ref.	Ref.	Ref.
Mobile/Manufactured Home		-0.011	-0.025	-0.023
Townhouse		0.004	0.011	0.012
2-to-4 Unit Dwelling		-0.005	0.003	0.003
Apartment/Condo/Co-op		-0.007	0.002	0.001
Other		-0.015	0.000	0.001
Geographic Controls				
<i>Urbanicity</i>				
Non-Metro County				0.011
Outlying County				-0.010
Central County				Ref.

Exhibit A2 (continued - 5)

Variable	Home Purchase			
	Model 1	Model 2	Model 3	Model 4
Quarter Fixed Effects				
2013Q1				0.008
2013Q2				-0.015
2013Q3				0.030
2013Q4				0.063***
2014Q1				0.033
2014Q2				0.030
2014Q3				0.007
2015Q4				0.011
2015Q1				0.018
2015Q2				0.017
2015Q3				0.004
2015Q4				0.008
2016Q1				-0.011
2016Q2				-0.010
2016Q3				0.023
2016Q4				0.011
2017Q1				0.001
2017Q2				-0.014
2017Q3				0.008
2017Q4				0.019
2018Q1				-0.008
2018Q2				0.008
2018Q3				-0.024
2018Q4				-0.002
2019Q1				-0.022
2019Q2				0.007
2019Q3				-0.021
2019Q4				Ref.

Exhibit A2 (continued - 6)

Variable	Refinance			
	Model 1	Model 2	Model 3	Model 4
<i>R-Squared:</i>	6.49%	7.16%	8.82%	9.26%
<i>N Obs:</i>	18,065	18,065	18,065	18,065
Intercept	-0.007	0.005	-0.004	-0.026*
Is a Black Borrower	0.083***	0.085***	0.085***	0.086***
Is a Latino Borrower	0.125***	0.123***	0.109***	0.111***
Mortgage Type Controls				
First-Time Homebuyer				
Cash-out Refinance	0.007	0.006	0.002	0.008
Credit Controls				
<i>UPB Bucket</i>				
\$0 to \$84,999	0.071***	0.072***	-0.014	-0.024**
\$85,000 to \$149,999	0.038***	0.038***	-0.025***	-0.031***
\$150,000 to \$199,999	0.026***	0.026***	-0.018*	-0.021**
\$200,000 to \$399,999	0.015**	0.017**	-0.005	-0.007
\$400,000 or More	Ref.	Ref.	Ref.	Ref.
<i>LTV Bucket</i>				
LTV <= 80%	Ref.	Ref.	Ref.	Ref.
80% < LTV <= 90%	0.012*	0.001	0.001	-0.003
90% < LTV <= 95%	0.021**	0.017	0.019*	0.015
95% < LTV <= 97%	0.070***	0.055***	0.048***	0.044***
LTV > 97%	0.047***	0.049***	0.046***	0.041***
<i>DTI Bucket</i>				
DTI <= 35%	Ref.	Ref.	Ref.	Ref.
35% < DTI <= 40%	0.036***	0.035***	0.025***	0.025***
40% < DTI <= 43%	0.022***	0.021***	0.007	0.006
43% < DTI <= 45%	0.033***	0.032***	0.016*	0.016*
45% < DTI <= 50%	0.051***	0.047***	0.030***	0.034***
DTI > 50%	0.066***	0.065***	0.038***	0.034***
<i>Vantage Bucket</i>				
Above 780	Ref.	Ref.	Ref.	Ref.
661 to 780	0.032***	0.027***	0.023***	0.023***
601 to 660	0.109***	0.099***	0.096***	0.095***
600 and Below	0.155***	0.144***	0.138***	0.138***
Loan Controls				
<i>Loan Type</i>				
Conventional		Ref.	Ref.	Ref.
FHA insured		0.052***	0.046***	0.051***
VA guaranteed		-0.037***	-0.039***	-0.034***
FSA/RHS insured		0.172***	0.150***	0.154***
<i>Loan Term</i>				
30-Year		Ref.	Ref.	Ref.
15-Year		-0.023***	-0.009	-0.009
Other		-0.022***	-0.010	-0.010

Exhibit A2 (continued - 7)

Variable	Refinance			
	Model 1	Model 2	Model 3	Model 4
Borrower Controls				
<i>Reported Income Bucket</i>				
Less than \$35,000			0.194***	0.191***
\$35,000 to \$49,999			0.112***	0.111***
\$50,000 to \$74,999			0.078***	0.078***
\$75,000 to \$99,999			0.062***	0.061***
\$100,000 to \$174,999			0.019***	0.020***
\$175,000 and Above			Ref.	Ref.
<i>Age Bucket</i>				
35 or Younger			0.017	0.017
36 to 45			0.006	0.005
46 to 55			0.018**	0.017*
56 to 65			0.010	0.009
66 or Older			Ref.	Ref.
<i>Education Status</i>				
Some schooling			0.070***	0.071***
High school graduate			0.008	0.008
Technical school			0.011	0.012
Some college			0.004	0.004
College graduate			-0.003	-0.002
Postgraduate studies			Ref.	Ref.
<i>Employment Status</i>				
Employed/Self-Employed Full Time			Ref.	Ref.
Employed/Self-Employed Part Time			0.013	0.014
Retired			-0.021**	-0.021**
Not Working for Pay			-0.014	-0.015
<i>Household Status</i>				
Couple			Ref.	Ref.
Single Male			-0.008	-0.006
Single Female			-0.008	-0.007
Property Controls				
<i>Property Type</i>				
Single-family Detached		Ref.	Ref.	Ref.
Mobile/Manufactured Home		0.069***	0.052***	0.049***
Townhouse		-0.008	-0.004	-0.004
2-to-4 Unit Dwelling		0.002	0.002	0.002
Apartment/Condo/Co-op		-0.004	0.004	0.001
Other		0.028	0.005	0.014
Geographic Controls				
<i>Urbanicity</i>				
Non-Metro County				0.023**
Outlying County				-0.008
Central County				Ref.

Exhibit A2 (continued - 8)

Variable	Refinance			
	Model 1	Model 2	Model 3	Model 4
Quarter Fixed Effects				
2013Q1				0.019
2013Q2				0.038***
2013Q3				0.028**
2013Q4				0.046***
2014Q1				0.056***
2014Q2				0.038**
2014Q3				0.073***
2015Q4				0.070***
2015Q1				0.043***
2015Q2				0.018
2015Q3				0.025
2015Q4				0.033**
2016Q1				0.032**
2016Q2				0.032**
2016Q3				0.022
2016Q4				0.013
2017Q1				0.026*
2017Q2				-0.012
2017Q3				0.010
2017Q4				0.026
2018Q1				0.014
2018Q2				-0.017
2018Q3				0.019
2018Q4				0.027
2019Q1				0.009
2019Q2				0.024
2019Q3				-0.021
2019Q4				Ref.

Shares are based on analytic weights. *** denotes P-Value of < 1%. ** denotes P-Value >=1% and < 5%. * denotes P-Value >=5% and < 10%.

Appendix 3: Summary Statistics for Subsets of Waves

Exhibit A3 shows the summary statistics from Exhibit A1 for smaller subsets of the sample that only include later waves. We show these statistics because some questions were only asked in later waves. From the exhibit, we can see the distributions only change modestly.

Exhibit A3: Property, Mortgage, and Borrower Characteristics by Race and Mortgage Type
Among subsets of Full Sample

Characteristics	All Mortgages			Waves 5 to 21			Waves 7 to 21		
	White Borrowers (n=31,023)	Black Borrowers (n=2,408)	Latino Borrowers (n=3,104)	White Borrowers (n=23,803)	Black Borrowers (n=1,930)	Latino Borrowers (n=2,468)	White Borrowers (n=21,378)	Black Borrowers (n=1,767)	Latino Borrowers (n=2,212)
Mortgage Type									
Home Purchase	52	52	58	56	54	61	56	54	61
First-Time Homebuyer	21	29	32	22	31	34	22	31	35
Repeat Purchase	32	23	26	34	23	26	33	23	26
Refinance	48	48	42	44	46	39	44	46	39
Regular Refinance	34	33	29	30	29	25	29	28	25
Cash-out Refinance	13	15	13	15	17	14	15	18	15
Credit Characteristics									
<i>Loan Amount Bucket</i>									
\$0 to \$84,999	11	12	9	10	11	7	10	11	7
\$85,000 to \$149,999	24	27	25	23	24	23	22	24	23
\$150,000 to \$199,999	17	19	19	17	19	19	17	19	19
\$200,000 to \$399,999	35	33	36	37	35	38	37	36	39
\$400,000 or More	12	9	11	13	10	12	13	10	13
<i>Loan-to-Value (LTV) Bucket</i>									
LTV <= 80%	57	33	44	57	34	43	57	35	43
80% < LTV <= 90%	13	14	12	13	14	13	13	14	13
90% < LTV <= 95%	11	12	13	11	12	13	11	12	13
95% < LTV <= 97%	10	22	21	10	23	22	10	23	22
LTV > 97%	10	18	11	9	17	10	9	17	9
<i>Debt-to-Income (DTI) Bucket</i>									
DTI <= 35%	50	32	33	48	31	31	48	31	31
35% < DTI <= 40%	17	17	18	17	18	19	17	18	19
40% < DTI <= 43%	11	14	14	12	15	14	12	15	14
43% < DTI <= 45%	7	9	9	7	10	10	7	9	10
45% < DTI <= 50%	9	14	14	10	15	16	10	15	16
DTI > 50%	6	13	12	5	12	11	5	12	11
<i>Vantage Score Bucket</i>									
Above 780	31	12	16	30	11	15	30	11	14
661 to 780	53	54	59	53	53	59	53	53	59
601 to 660	12	24	18	13	25	19	13	25	20
600 and Below	4	10	7	4	11	7	4	11	7
Loan Characteristics									
<i>Loan Type</i>									
Conventional	76	48	60	75	47	59	75	47	58
FHA insured	13	31	28	13	32	28	14	32	29
VA guaranteed	9	19	10	9	19	11	9	19	11
FSA/RHS insured	2	2	2	2	2	2	2	2	2
<i>Loan Term</i>									
30-Year	76	81	82	78	82	84	78	83	84
15-Year	14	10	11	13	9	9	13	9	9
Other	10	9	8	10	8	7	10	9	7

Exhibit A3 (continued - 1)

Characteristics	All Mortgages			Home Purchase			Refinance		
	White Borrowers (n=31,023)	Black Borrowers (n=2,408)	Hispanic Borrowers (n=3,104)	White Borrowers (n=23,803)	Black Borrowers (n=1,930)	Hispanic Borrowers (n=2,468)	White Borrowers (n=21,378)	Black Borrowers (n=1,767)	Hispanic Borrowers (n=2,212)
Borrower Characteristics									
<i>Reported Income Bucket</i>									
Less than \$35,000	5	8	8	5	7	8	5	7	8
\$35,000 to \$49,999	9	14	15	9	13	15	9	13	14
\$50,000 to \$74,999	18	24	23	18	24	23	18	24	23
\$75,000 to \$99,999	19	19	19	19	20	19	19	20	19
\$100,000 to \$174,999	30	25	25	31	25	25	31	25	25
\$175,000 and Above	18	11	10	18	11	10	18	11	10
<i>Age Bucket</i>									
35 or Younger	26	21	32	28	21	34	27	21	34
36 to 45	22	25	28	22	25	28	23	25	28
46 to 55	22	24	21	21	24	21	21	24	21
56 to 65	18	18	12	17	18	12	17	18	12
66 or Older	12	12	6	12	12	6	12	12	6
<i>Education Status</i>									
Some schooling	1	1	4	1	1	4	1	1	4
High school graduate	10	9	13	10	9	13	10	9	13
Technical school	5	5	6	5	5	7	6	5	7
Some college	19	23	23	19	23	23	19	23	23
College graduate	37	36	32	37	36	32	37	36	32
Postgraduate studies	28	27	21	27	26	21	27	26	21
<i>Employment Status</i>									
Employed/ Self-Employed Full Time	77	78	83	77	77	83	77	77	83
Employed/ Self-Employed Part Time	6	4	5	6	4	5	6	4	5
Retired	13	16	8	13	16	8	13	16	8
Not Working for Pay	4	3	4	4	3	4	4	3	5
<i>Household Status</i>									
Has Legal Spouse	68	51	63	67	50	62	67	50	62
Single Male	15	17	17	16	18	18	16	17	18
Single Female	17	32	20	17	32	20	17	32	20
Property Characteristics									
<i>Property Type</i>									
Single-family Detached	84	81	84	84	81	85	84	81	85
Mobile/Manufactured Home	2	1	1	2	1	1	2	1	1
Townhouse	6	10	6	6	10	6	6	10	6
2-to-4 Unit Dwelling	2	4	3	2	4	3	2	4	3
Apartment/Condo/Co-op	5	4	5	5	4	5	5	4	5
Other	0	0	0	0	0	0	0	0	0
Geographic Characteristics									
<i>Urbanicity</i>									
Central County	87	93	93	87	93	93	87	93	92
Outlying County	8	6	6	8	6	6	8	6	6
Non-Metro County	5	1	1	5	2	1	5	1	1

Exhibit A3 (continued - 2)

Characteristics	All Mortgages			Home Purchase			Refinance		
	White Borrowers (n=31,023)	Black Borrowers (n=2,408)	Hispanic Borrowers (n=3,104)	White Borrowers (n=23,803)	Black Borrowers (n=1,930)	Hispanic Borrowers (n=2,468)	White Borrowers (n=21,378)	Black Borrowers (n=1,767)	Hispanic Borrowers (n=2,212)
<i>Quarter Fixed Effects</i>									
2013Q1	5	4	4	0	0	0	0	0	0
2013Q2	6	5	4	0	0	0	0	0	0
2013Q3	5	4	4	0	0	0	0	0	0
2013Q4	3	3	3	0	0	0	0	0	0
2014Q1	2	2	2	0	0	0	0	0	0
2014Q2	3	2	2	1	0	1	0	0	0
2014Q3	3	3	3	3	2	3	0	0	0
2014Q4	3	3	3	4	3	3	1	1	1
2015Q1	3	3	3	4	4	3	5	4	3
2015Q2	4	4	4	5	5	5	6	5	5
2015Q3	4	3	4	5	4	5	5	4	5
2015Q4	3	3	2	4	4	3	5	4	3
2016Q1	3	3	3	4	4	4	4	4	4
2016Q2	4	4	4	5	5	5	6	6	5
2016Q3	5	4	4	6	5	5	6	5	6
2016Q4	4	4	5	6	5	6	6	5	6
2017Q1	3	3	3	4	4	4	4	5	5
2017Q2	3	4	4	5	5	4	5	6	5
2017Q3	4	4	4	5	5	5	5	5	6
2017Q4	3	4	4	4	5	4	5	5	5
2018Q1	3	3	3	4	4	3	4	4	4
2018Q2	3	3	4	4	4	5	5	4	6
2018Q3	3	4	4	4	5	5	5	6	5
2018Q4	3	3	4	3	4	4	4	4	5
2019Q1	2	3	3	3	4	4	3	4	4
2019Q2	4	4	3	5	6	4	5	6	4
2019Q3	4	6	6	6	7	7	6	7	8
2019Q4	4	5	5	6	6	7	6	6	7

Exhibit A3 (continued - 3)

Characteristics	All Mortgages			Waves 11 to 21			Waves 13 to 21		
	White Borrowers (n=31,023)	Black Borrowers (n=2,408)	Latino Borrowers (n=3,104)	White Borrowers (n=16,133)	Black Borrowers (n=1,342)	Latino Borrowers (n=1,736)	White Borrowers (n=13,802)	Black Borrowers (n=1,137)	Latino Borrowers (n=1,486)
Mortgage Type									
Home Purchase	52	52	58	58	57	62	59	58	63
First-Time Homebuyer	21	29	32	23	32	36	24	33	36
Repeat Purchase	32	23	26	35	25	26	35	25	27
Refinance	48	48	42	42	43	38	41	42	37
Regular Refinance	34	33	29	26	24	22	25	22	20
Cash-out Refinance	13	15	13	16	19	16	17	20	16
Credit Characteristics									
Loan Amount Bucket									
\$0 to \$84,999	11	12	9	9	10	6	9	10	6
\$85,000 to \$149,999	24	27	25	22	23	22	21	22	22
\$150,000 to \$199,999	17	19	19	17	19	19	17	19	20
\$200,000 to \$399,999	35	33	36	38	36	39	39	36	38
\$400,000 or More	12	9	11	13	11	14	14	12	14
Loan-to-Value (LTV) Bucket									
LTV <= 80%	57	33	44	57	34	43	57	35	43
80% < LTV <= 90%	13	14	12	13	14	13	13	13	13
90% < LTV <= 95%	11	12	13	12	12	14	12	11	14
95% < LTV <= 97%	10	22	21	11	23	22	11	24	22
LTV > 97%	10	18	11	8	17	9	8	16	9
Debt-to-Income (DTI) Bucket									
DTI <= 35%	50	32	33	47	30	31	47	29	31
35% < DTI <= 40%	17	17	18	17	18	19	17	17	19
40% < DTI <= 43%	11	14	14	11	15	13	12	15	13
43% < DTI <= 45%	7	9	9	7	10	10	7	10	10
45% < DTI <= 50%	9	14	14	12	16	17	12	17	18
DTI > 50%	6	13	12	5	12	11	5	12	10
Vantage Score Bucket									
Above 780	31	12	16	30	11	14	30	12	14
661 to 780	53	54	59	53	52	59	53	52	58
601 to 660	12	24	18	13	26	19	13	26	19
600 and Below	4	10	7	4	10	8	4	10	8
Loan Characteristics									
Loan Type									
Conventional	76	48	60	75	47	59	76	48	60
FHA insured	13	31	28	13	31	28	13	31	27
VA guaranteed	9	19	10	9	20	11	9	19	11
FSA/RHS insured	2	2	2	2	2	2	2	2	2
Loan Term									
30-Year	76	81	82	78	83	85	79	84	86
15-Year	14	10	11	12	8	9	12	8	8
Other	10	9	8	9	9	7	9	8	6

Exhibit A3 (continued - 4)

Characteristics	All Mortgages			Home Purchase			Refinance		
	White Borrowers (n=31,023)	Black Borrowers (n=2,408)	Latino Borrowers (n=3,104)	White Borrowers (n=16,133)	Black Borrowers (n=1,342)	Latino Borrowers (n=1,736)	White Borrowers (n=13,802)	Black Borrowers (n=1,137)	Latino Borrowers (n=1,486)
Borrower Characteristics									
<i>Reported Income Bucket</i>									
Less than \$35,000	5	8	8	4	7	8	4	7	7
\$35,000 to \$49,999	9	14	15	9	14	14	9	14	14
\$50,000 to \$74,999	18	24	23	18	23	22	18	23	22
\$75,000 to \$99,999	19	19	19	19	20	19	19	20	20
\$100,000 to \$174,999	30	25	25	31	25	26	31	24	26
\$175,000 and Above	18	11	10	19	12	11	19	12	11
<i>Age Bucket</i>									
35 or Younger	26	21	32	28	21	34	27	22	34
36 to 45	22	25	28	23	26	28	23	26	27
46 to 55	22	24	21	21	23	21	21	23	21
56 to 65	18	18	12	17	18	12	17	17	11
66 or Older	12	12	6	12	12	6	12	12	6
<i>Education Status</i>									
Some schooling	1	1	4	1	1	4	1	1	3
High school graduate	10	9	13	10	9	14	10	9	14
Technical school	5	5	6	6	5	7	6	6	7
Some college	19	23	23	19	23	23	19	23	22
College graduate	37	36	32	37	37	33	37	37	33
Postgraduate studies	28	27	21	27	25	21	28	25	21
<i>Employment Status</i>									
Employed/ Self-Employed Full Time	77	78	83	77	77	83	76	77	83
Employed/ Self-Employed Part Time	6	4	5	6	5	5	6	5	5
Retired	13	16	8	13	16	7	13	15	7
Not Working for Pay	4	3	4	4	3	5	4	3	5
<i>Household Status</i>									
Has Legal Spouse	68	51	63	66	50	61	66	50	60
Single Male	15	17	17	16	18	18	16	17	18
Single Female	17	32	20	17	32	21	17	33	21
Property Characteristics									
<i>Property Type</i>									
Single-family Detached	84	81	84	84	80	85	84	79	85
Mobile/Manufactured Home	2	1	1	2	1	1	2	1	1
Townhouse	6	10	6	6	10	6	6	11	6
2-to-4 Unit Dwelling	2	4	3	3	5	4	2	5	4
Apartment/Condo/Co-op	5	4	5	4	4	4	4	4	4
Other	0	0	0	0	0	0	0	0	0
Geographic Characteristics									
<i>Urbanicity</i>									
Central County	87	93	93	87	93	93	86	93	92
Outlying County	8	6	6	8	6	6	8	6	6
Non-Metro County	5	1	1	5	1	2	5	1	2

Exhibit A3 (continued - 5)

Characteristics	All Mortgages			Home Purchase			Refinance		
	White Borrowers (n=31,023)	Black Borrowers (n=2,408)	Latino Borrowers (n=3,104)	White Borrowers (n=16,133)	Black Borrowers (n=1,342)	Latino Borrowers (n=1,736)	White Borrowers (n=13,802)	Black Borrowers (n=1,137)	Latino Borrowers (n=1,486)
Quarter Fixed Effects									
2013Q1	5	4	4	0	0	0	0	0	0
2013Q2	6	5	4	0	0	0	0	0	0
2013Q3	5	4	4	0	0	0	0	0	0
2013Q4	3	3	3	0	0	0	0	0	0
2014Q1	2	2	2	0	0	0	0	0	0
2014Q2	3	2	2	0	0	0	0	0	0
2014Q3	3	3	3	0	0	0	0	0	0
2014Q4	3	3	3	0	0	0	0	0	0
2015Q1	3	3	3	0	0	0	0	0	0
2015Q2	4	4	4	0	0	0	0	0	0
2015Q3	4	3	4	0	0	0	0	0	0
2015Q4	3	3	2	1	1	1	0	0	0
2016Q1	3	3	3	4	3	4	0	0	0
2016Q2	4	4	4	7	7	6	1	1	1
2016Q3	5	4	4	8	6	7	6	4	6
2016Q4	4	4	5	8	6	8	9	7	9
2017Q1	3	3	3	6	6	6	7	6	6
2017Q2	3	4	4	6	7	6	7	8	6
2017Q3	4	4	4	6	6	7	8	7	8
2017Q4	3	4	4	6	7	6	7	8	7
2018Q1	3	3	3	5	5	4	6	6	5
2018Q2	3	3	4	6	5	7	7	6	8
2018Q3	3	4	4	6	7	6	7	8	7
2018Q4	3	3	4	5	6	6	5	6	7
2019Q1	2	3	3	4	5	5	5	6	5
2019Q2	4	4	3	7	7	5	8	8	6
2019Q3	4	6	6	8	9	9	9	10	10
2019Q4	4	5	5	8	8	9	9	9	10

All figures are percentages. Shares may not sum to 100 due to rounding. Shares are based on analytic weights.