# Mortgages are still confusing… and it matters – How borrower attributes and mortgage shopping behavior impact costs

Nuno Mota (Fannie Mae), Mark Palim (Fannie Mae), and Susan Woodward (Sand Hill Econometrics)

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## Abstract

The variation across borrowers in the cost of a mortgage loan is profound. For 1.1 million loans acquired by Fannie Mae from 2017 to 2019, we estimate that average total mortgage cost, upfront cash plus note rate cost, is about $7,200 (or about 3 percent of purchase price). Other things equal, loans originated through mortgage brokers had higher lender fees, while those originated at credit unions had markedly lower costs. Borrowers who paid no upfront cash to their lenders had substantial savings. Borrowers who lived in a census tract with a greater share of adults with four years of college paid less than those in tracts with fewer such adults. The pattern of differences is similar for title and settlement charges, which we estimate to average $2,400 (or about 1 percent of purchase price). However, dollar differences are much smaller and variation is more driven by geography. In a special subset of borrowers who were surveyed on their shopping approach, all else equal, borrowers who obtained multiple quotes saw cost savings, whereas those who regarded the process as "too much of a hassle" fared particularly poorly.

Borrower race is an abiding issue in mortgage lending, but the differences across races are smaller than differences by lender type, shopping approach, or education. All else equal, mortgage costs for Black and Hispanic white borrowers were higher than for non-Hispanic white borrowers, and Asian borrowers had lower costs. The advantage to Asian borrowers appears to lie in getting lower rates rather than lower cash closing costs. Differences in costs are more pronounced when measured as a percent of purchase price, particularly among low-income borrowers. For non-low-income borrowers, while mortgage costs as a percent of purchase price are still higher for Black borrowers relative to their non-Hispanic white counterparts, total closing costs net of credits are marginally lower. Differences in title and settlement costs across borrower race and ethnicity groups, once accounting for geography, were not economically meaningful.


**Keywords:** Closing Costs, Mortgage Shopping, Mortgage Pricing

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## 1. Introduction

Getting a home mortgage is the single largest financial transaction most households will ever undertake. Making a good loan choice is not easy. Mortgage math is hard. The vocabulary of lending is, for borrowers, unfamiliar and often misleading ("discount points"?). The process can be confusing and bewildering. The typical borrower faces a dozen or more individual cash charges and an interest rate that will determine the amount of the loan payments. The mortgage market is a negotiated market, prices are not fixed. The borrower's inexperience versus the skill and experience of lenders, realtors, and title and settlement agents gives a negotiating advantage to better-informed side. Some borrowers end up with good deals, and some with not-so-good. This paper studies how the cost of a mortgage varies with loan and borrower characteristics, such as loan amount, borrower race, credit score, borrower income and education, geography, type of lender, whether the borrower was a first-time homebuyer, and more.

This is the largest study of detailed mortgage closing costs ever by two orders of magnitude. Previously, Woodward (2008) studied detailed closing costs information on 7,500 loans originated in 2001. Here we study 1.1 million. Recent studies have made use of changes to the Home Mortgage Disclosure Act (HMDA) data, which includes an estimate of discount points and total upfront closing costs (e.g., Bartlett et al. 2022). However, our data has significantly greater detail on individual fees charged to borrowers. We further have an especially interesting subset of 1,379 loans whose borrowers responded to a national survey on whether and how they shopped for their mortgage. Given the literature has shown the importance of mortgage shopping behavior and consumer knowledge on the mortgage terms obtained by borrowers (Agarwal et al. 2020; Alexandrov and Koulayev, 2018; Bhutta, Fuster, and Hizmo, 2020), this sample provides particularly relevant insights.

The dataset comes from loans acquired by Fannie Mae with closing data submitted from September 2017 to September 2019. When Fannie Mae buys a loan, the data captured includes the individual charges from the Closing Disclosure, also known as the TILA (Truth in Lending Act)-RESPA (Real Estate Settlement Practices Act)-Integrated-Disclosure, or TRID. From this we learn the cash charges associated with the loan.

Just as important as the cash charges on loans are the variations in interest rates. In principle, there is a trade-off between cash paid up front and the interest rate. Borrowers can get a "no-cost" loan (more accurately, no cash up front, but they are generally referred to as "no cost") loan by paying a higher interest rate, or get a lower interest rate by paying more cash up front. This variation in interest rates is just as important as the cash paid for the lender's profit on the loan. For the borrower, reckoning the tradeoff involves guessing how long the borrower will have the mortgage (will they move and pay off their loan, or will interest rates fall and they pay it off early?), and calculating the present value of the possible interest rate differential. Even at closing, borrowers will often have only a fuzzy idea of the interest rate-cash tradeoff.

For the lenders, there is nothing fuzzy about the tradeoff. Measuring the value of interest rate variations is straightforward because the wholesale market for mortgage loans is tight and prices are quoted at least daily. The market-wide views about expected loan life are embedded in wholesale prices and reflected in a published (to wholesalers only) grid known as a "rate sheet".

To measure the cost of interest rate (or "note" rate to use precise mortgage vocabulary) differentials, we use Fannie Mae's internal pricing prevailing on the day the loan was closed. On any given day, at some interest rate, often called the "par" rate, Fannie Mae will buy, for example, a $100,000 loan (meaning the borrower borrowed $100,000) for exactly $100,000. Suppose the par rate is 4 percent. If the interest rate on the loan is higher than par, say, 4.25 percent, Fannie Mae's price will be more than $100,000. Some loans will have interest rates lower than par, for example 3.75 percent, and Fannie Mae will pay less than $100,000 for the loan.

We focus on how borrowers' minority, low-income (LI) and first-time homebuyer (FTHB) statuses are associated with differences in costs.[1] Akin to others in the literature, we find that Black and Hispanic white borrowers tend to pay more for lender and origination charges, in both dollar terms and as a percent of purchase price, and pay more for total closing costs net of any seller or lender credits, in percent of purchase price, relative to their Asian and non-Hispanic white counterparts.[2] Black borrowers' higher costs relative to non-Hispanic white borrowers are most pronounced among LI borrowers. We further find that the higher lender and origination charges for these borrowers are a function of both higher upfront cash charges and higher mortgage note rates relative to Asian and white non-Hispanic peers. This contrasts with results in Bhutta and Hizmo (2021) who indicate that higher mortgage note rates for these borrowers tend to reflect their preference for lower upfront costs but higher rates. Decomposing the total costs net of credits into its component parts further reveals that Black and Hispanic white borrowers tend to have larger seller and lender credits for upfront closing costs, likely reflecting the fact that such borrowers typically have smaller financial means and require these credits to complete the transaction. Asian borrowers, by contrast, have markedly lower costs than borrowers of all other race and ethnicity groups. Their lower costs are primarily driven by their being able to obtain meaningfully lower mortgage note rates. While some of this is explained by their generally having a better credit profile, even in our most robust specification the lower costs for Asian borrowers relative to their peers are still pronounced.

[1] LI borrowers defined as those whose disclosed income on mortgage application is at or below 80% of the Area Median Income, for the location of the property. FTHB loans are owner-occupant purchase loans in which at least one borrower has had no ownership interest (sole or joint) in a residential property during the three-year period preceding the date of the purchase.

[2] Numerous studies have highlighted how minorities tend to have higher mortgage costs, either in upfront closing costs or, more frequently, higher mortgage note rates. Some recent examples include: Ambrose, Conklin, and Lopez, 2021; Bartlett et al., 2022; Bayer, Ferreira, and Ross, 2018; and Bhutta and Hizmo, 2021.

Differences in title and settlement charges across borrower groups are significantly smaller than those in lender and origination charges, so small as to not be economically meaningful in our most robust specification (all are smaller than $20). In fact, the primary determinant of the level of title and settlement charges is the geographic location of a property. This result is a function of title and settlement charges typically being set at the state level and echoes previous results in the literature (Woodward, 2008). That being said, the cross-race and ethnicity group patterns in title and settlement charges tend to mimic those for lender and origination charges. Namely, Black and Hispanic white borrowers pay slightly more for these services than their non-Hispanic white peers and Asian borrowers slightly less. Another interesting finding related to title and settlement charges is the degree to which lender fixed effects in a regression can account for differences in charges across loans. While lenders themselves obviously do not dictate the level of title and settlement charges, the fact that certain lenders tend to work with certain title and settlement companies is likely what brings about this result. This echoes Woodward's (2008) findings that borrowers with higher lender and origination charges also tend to have higher title and settlement charges.

For LI and FTHB borrowers we find that, in dollar terms, their level of closing costs tend to be lower than for non-LI and repeat borrowers, respectively. However, assessing costs as a percent of purchase price reveals that both LI and FTHB tend to have relatively higher lender and origination charges as well as relatively higher title and settlement charges.

While the differences in costs across borrower groups are meaningful, other factors appear to also be important drivers of closing costs. As shown by others, the channel of origination plays an important role; with our results showing higher lender and origination charges for broker originated loans and smaller for credit unions, or banks, when compared to loans originated by non-depositary institutions. We further see that the borrowers in tracts with higher average levels of formal education had lower costs.

Our data also allow us to gauge whether borrowers who obtain no-cost loans, or loans where all lender compensation is through the mortgage note rate instead of via upfront costs, are able to obtain less costly loans. Indeed, our findings indicate that is the case, echoing results by Woodward (2008) and Woodward and Hall (2012), and confirming there appears to be an advantage for borrowers who are able to compare lender offers on one dimension alone (in this case, note rate). By contrast among the 1,379 loans whose borrowers were surveyed on their shopping approach, borrowers who regarded the process as "too much hassle" to seek an additional quote paid $1,430 more in closing costs than others, all else equal. The survey results further show that borrowers who got multiple quotes, particularly those who did not get those multiple quotes prior to putting a contract on their home (i.e., who knew exactly how much money they needed to cover the purchase) fared better.

The remainder of the paper proceeds as follows: section 2 describes the data and methodology; section 3 discusses the results; and section 4 concludes.

## 2. Data and Methodology

The primary data in this paper is from the records on loans acquired by Fannie Mae. The detailed cash costs come from the Uniform Closing Dataset (UCD)[3] which contains the individual charges from the Closing Disclosure or TRID. We limit the analysis to 30-year fixed rate mortgage loans for home purchase with UCD information submitted between September 2017 and September 2019, which corresponds to the first 25 months for which UCD data is available. To capture variation associated with socio-demographic characteristics that we cannot measure directly (such as education), we augment this main analysis with Census Tract data from the American Community Survey (ACS) 5-year 2015-2019 summary tables.

Table 1 presents the mean and standard deviation of all the variables used in the analysis for the overall sample and for the four race and ethnicity groups individually. The race and ethnicity groups used in the analysis are Asian, Black, Hispanic white, and non-Hispanic white. Loans to Asian and Black borrowers are those where either there is a single borrower who identifies as being Asian or Black; or, when there are multiple borrowers, the borrower identifies as Asian or Black and the remaining co-borrowers either also identify as belonging to a minority racial group or did not provide their racial group information. Loans to Hispanic white borrowers are those where all borrowers on the loan identify as white and at least one borrower identifies as Hispanic. Loans to non-Hispanic white borrowers are those where all borrowers identify as white non-Hispanic.[4] We limit the analysis set to loans in these four race and ethnicity groups, which account for 86% of all loans in the sample. Within the analysis set, the bulk of loans are classified as non-Hispanic white, accounting for 888,105 (or 77.7%) of the 1,142,429 purchase loans in the sample. The second largest group is Hispanic white, with 123,753 (or 10.8%), followed by Asian, with 74,282 (or 6.5%), and Black, with 56,289 (or 4.9%).

The upper half of Table 1 displays statistics for a series of borrower, loan, property, and lender characteristics that will be analyzed in the regressions. Black and Hispanic white borrowers tend to have lower FICO (credit score), are more likely to be lower income and owner occupants (omitted category, obtained by subtracting second-home and investor share from total) than their Asian and non-Hispanic white counterparts. Loans originated to Black and Hispanic white borrowers are typically for lower amounts, used to purchase lower-priced homes, have higher note rates, higher loan-to-value ratios (LTV) than those originated to Asian and non-Hispanic white borrowers. Looking at the distribution of lender types across borrower groups, it is notable that non-Hispanic white borrowers are more likely to use credit unions and other depository institutions to originate their mortgages than all other borrower groups. By contrast,

[3] The UCD is a component of the Uniform Mortgage Data Program, for details see: https://singlefamily.fanniemae.com/delivering/uniform-mortgage-data-program/uniform-closing-dataset

[4] Race and ethnicity groupings used in this analysis correspond to those used in Fannie Mae's Annual Housing Housing Activities and Annual Mortgage Report, for details see Table 5A in: https://www.fanniemae.com/media/38706/display

Black borrowers are the most likely group to use non-depository institutions. Asian borrowers are notably more likely to have broker-originated loans.

The second set of variables presented in Table 1 are obtained from the UCD. The UCD is designed to contain all the information present in the Closing Disclosures, including the individual fees charged by lenders, title insurance and settlement companies.[5] In our view, the groupings in which fees are displayed in the Closing Disclosures are not appropriate for our analysis. As such, we ignore the form's sections "A. Origination Charges", "B. Services Borrower Did Not Shop For", "C. Services Borrower Did Shop", and "H. Other" and instead group fees into three new categories based on fee description and payee: net lender and origination charges, title and settlement charges, and other charges. Lender and origination charges are those items charged by the lender or lender-affiliated parties that are associated with the underwriting of the loan, these include not just origination fees, but also other items such as credit reports or appraisals. Net charges are obtained by subtracting from the total for these lender and origination charges any charges that are paid for by the lender and any other lender credits. Title and settlement charges are items charged by title and settlement companies. The remaining uncategorized items are in the other charges section. For a list of the 10 most commonly charged items in each of the three categories of fees please refer to Appendix Table A1.

To fully capture the revenue that a lender receives we must combine the cash lender and origination charges with whatever premium the lender obtains from selling the mortgage in the secondary mortgage market. To do this, we make use of three additional pieces of information: average mortgage rates on locked loans from Optimal Blue, rate-to-dollar conversion ratios from Fannie Mae's loan-level guaranty fee buyup/buydown grid, and rate sheets from a large lender.[6] The buyup/buydown grid is essentially and internal rate sheet and provides lenders with a ratio for converting mortgage note rate differences into difference in guaranty fees charged on a given loan, thus allowing lenders to pool loans with different note rates into a single rate mortgage backed security (MBS). For our purposes, these ratios are useful since they are a market-based measure of the conversion between an upfront dollar charge and an ongoing mortgage note rate difference; essentially, these ratios represent a view of the expected life of a given loan. Furthermore, these ratios move up and down in response to the current interest rate environment, thus allowing us to appropriately assign a dollar value to any mortgage note rate's difference relative to a market par rate at any point in time. The Optimal Blue average locked note rate for prime borrowers allows us to obtain a view of the zero-point average mortgage rate for borrowers in the market at the time any given loan's rate was

[5] For a template of the Closing Disclosure form see: https://files.consumerfinance.gov/f/201311_cfpb_kbyo_closing-disclosure.pdf

[6] For details on loan-level buyup/buydown see: https://selling-guide.fanniemae.com/Selling-Guide/Selling-Securitizing-Delivering-Loans/Subpart-C3-Mortgage-Backed-Securities-MBS-/Chapter-C3-3-MBS-Guaranty-Fees/1050301801/C3-3-02-Accessing-Buyup-and-Buydown-Ratios-and-Calculating-Payments-or-Charges-12-04-2019.htm

locked.[7] The lender rate sheets allow us to compare the difference between the par rate in the market for a given point in time and the Optimal Blue average locked rate for prime borrowers. We expect the Optimal Blue average locked rate to be higher than the true retail market par, since lenders on average are able to obtain revenue from selling the loan in the secondary market (i.e., will charge borrowers rates that are above the true retail market par). While we have Optimal Blue lock rate data for the entire estimation sample, we only have lender rate sheets for two periods in 2021. During these periods, lender rate sheet market par rate is, on average, 48.6 basis points higher than the Optimal Blue average locked rate. We thus then subtract this 48.6 basis points difference from the Optimal Blue average locked rate in all time periods to obtain a market par rate implied by the Optimal Blue average locked rate.[8] The underlying assumption, which is a function of data availability, is that the 48.6bps margin is constant over time. We know this is unlikely to be true and in future iterations will explore how variations in lender gain on sale margins over time may impact our results. That being said, since adding in the 48.6 basis points had little impact on rate differences across borrower groups, we expect that adding a time-varying dimension to this margin will likely have minimal impact on differences across borrower groups as well.

By contrasting a mortgage's note rate with the market par rate implied by the Optimal Blue average locked rate and using the buyup/buydown grid ratios to convert that difference into a dollar amount, we obtain a complete view (lender upfront closing cost plus rate cost) of the lender and origination costs for any given loan. One concern with this approach is that a component of any given note rate's difference relative to a market par rate is going to be due to a particular borrower's credit profile. Namely, Fannie Mae charges different loan-level price adjustments (LLPAs), or different upfront charges to the lender for delivering their loans to Fannie Mae MBS, based off a series of characteristics: credit score, LTV, loan size, loan purpose, among others. These are predominantly passed on to consumers via increases in a mortgage note rate.[9] Note that the lender rate sheet and Optimal Blue average locked rate for prime borrowers are rates with zero LLPAs charged. We therefore need to account for this when gauging to what extent a given borrower's rate may be higher than the market par rate. To do this we subtract the note rate equivalent of any LLPAs (i.e., LLPA divided by the buyup ratio) that are charged from a given loan's rate, to create an *LLPA adjusted rate*, per equation (1) below. We then compare this adjusted rate to the market par rate implied by the Optimal Blue rate (*OB Implied Mkt Par* in equation), per equation (2) below.

[7] The Optimal Blue note rate we use is the average zero-point locked rate for purchase loans with conforming 30-year fixed rate mortgages, for the purchase loans for owner-occupied properties, among borrowers with a FICO score of 740 or higher and LTV at or below 60%.

[8] We have also ran versions of the analysis where we do not subtract the 48.6 basis points difference between rate sheet market par rate and Optimal Blue locked rate. The cross-borrower group differences in costs are similar, as the 48.6 basis points adjustment in rate mostly just equates to a parallel upwards shift in the note rate cost.

[9] In our analysis sample only 0.67% of purchase loans had LLPAs explicitly charged by the lender at closing.

(1) $$LLPA\ Adjusted\ Rate = Mortgage\ Note\ Rate - (\frac{LLPA}{Buyup\ Ratio})$$

(2) $$Note\ Rate\ Cost$$

$$= (LLPA\ Adjusted\ Rate - OB\ Implied\ Mkt\ Par\ ) * Buyup\ Ratio * Loan\ Amount$$

The lower half of Table 1 displays summary statistics for the closing costs measures by race and ethnicity group. The first variable obtained from UCD is the "no-cost loan" indicator. This is an indicator of a loan where there are either no lender and origination charges, or where all of these charges are paid by someone other than the buyer or seller. This is an important group to look at since previous work has shown that when borrowers can compare lender offers on just one dimension (i.e., note rate alone since there are no closing costs, they tend to obtain lower cost loans) (Woodward, 2008; Woodward and Hall, 2012).

The remaining variables form UCD present in Table 1 are closing costs measures presented both in dollar terms and as a percent of purchase price.[10] The latter view is important to keep in mind since for borrowers purchasing lower-priced homes the same dollar amount of charges will likely represent a greater portion of the overall costs associated with the purchase than for higher-priced homes. These closing cost measures will be the dependent variables in our models. Net Lender and Origination charges and title and settlement charges are the first two presented in this section of Table 1. Note that other than accounting for the charges paid by the lender in the net lender and origination charges measure, any charged items that may be paid by someone other than the borrower are still part of the total for each of these two cost measures. Rate cost is the dollar cost of the note rate, per the methodology described in the preceding paragraph. *L&O Charges + Rate Cost* combines net lender and origination charges and note rate cost into a single measure. Since some borrowers may prefer to pay higher upfront costs in order to get a lower rate (pay for points) or vice-versa, not including both the rate and upfront cost component would likely lead to a distorted view of cost differences across borrower groups. The final closing cost measure displayed in this section of Table 1 is *Total Costs Net of Credits*. This variable captures the total dollar amount a borrower needs to bring to the closing table. In addition to including only the borrower-paid components of the three previously described categories of charges (net lender and origination, title and settlement, and other charges), it further includes any borrower-paid taxes and recording fees, prepaids, escrow amounts, as well as discounting from the total any additional lender or seller credits.

Comparing closing costs statistics across borrower groups reveals that non-Hispanic white borrowers tend to have the lowest costs in dollar terms, with the exception of total net of credits, for which Black borrowers have the lowest. Asian borrowers have the lowest costs as a percent of purchase price. Conversely, non-Asian minority borrowers have the highest costs as

[10] Due to outliers stemming from incorrectly input dollar amounts for individual fees, our final analysis is restricted to loans for which the various closing costs measures are above the 1st percentile and below the 99th percentile of the respective closing cost measure's distribution.

a percent of purchase price. The summary statistics hint at some of the differences in costs across borrower groups, although there are a variety of factors that are correlated with race and ethnicity which drive some of the differences; factors we will control for in the regression analysis. Table 1 further shows that minority borrowers tend to be charged for more individual items in both lender and origination and in title and settlement charges. While charging for more items may sometimes be warranted, if there are indeed more tasks that need to be completed; we find there is a clear association between the number of charged items and the total charges. This is a point we will return to later in the analysis.

The final set of variables displayed in Table 1 are the Census-tract level variables from ACS data. From these we can see that Black and Hispanic white borrowers are more likely to purchase homes in Census tracts with lower median home values and median incomes, a lower share of adults with a college degree or higher level of education. We can also see that all borrower groups tend to purchase homes in Census tracts with a higher share of the population belonging to their race and ethnicity group.

Having detailed the source of all the variables used in the analysis, we now provide an overview of the empirical approach. Throughout, we will run ordinary least squares (OLS) regressions, which are of the following general form for a given cost measure for loan $i$, in county $c$, in UCD submission month and year $t$, and originated by lender $l$:

(3) $$Loan\ Cost_{i,c,t,l} = \alpha_i \text{Asian}_i + \beta_i \text{Black}_i + \gamma_i \text{Hisp. White}_i + \theta_{i,c,t,l} X_{i,c,t,l} + \lambda_c + \lambda_t + \lambda_l + \varepsilon_{i,c,t}$$

In equation (3) $\alpha_i$, $\beta_i$, and $\gamma_i$ are estimates of the difference in costs for loans to Asian, Black, and Hispanic white borrowers, respectively, relative to non-Hispanic white borrowers (the excluded category). $X_{i,c,t}$ is a vector of borrower, loan, lender and geographic attributes. $\lambda_c$, $\lambda_t$, $\lambda_l$ are fixed effects, for county, month and year of UCD submission, and lender, respectively. $\varepsilon_{i,c,t}$ is the error term.

Our final estimating equations are variations of the general specification displayed in equation (3). In most results tables, the first specification only includes the race and ethnicity group, LI and FTHB indicators. With other covariates subsequently added in order to gauge how their inclusion affects the estimated coefficients for these primary variables of interest.

For 1,396 loans in our sample we are able to supplement the data elements described above with survey answers to mortgage shopping and negotiation questions that were asked in Fannie Mae's National Housing Survey (NHS) 2019 and 2022 Q1 Special Topic segment.[11] This subset of

[11] Fannie Mae's NHS is a nationally representative survey of 1,000 consumers a month, including both owners and renters, for more information please see https://www.fanniemae.com/research-and-insights/surveys/national-housing-survey/about-national-housing-survey. For more information on the 2019 Q1 NHS Special Topic see https://www.fanniemae.com/media/33301/display.

loans can provide unique insights regarding how certain shopping behaviors can impact loan costs.[12]

## 3. Results

### 3.1 Net Lender and Origination Charges

Table 2 presents estimates from regressions where the dependent variable is net lender and origination charges plus the cost of the note rate. This represents a view of a given loan's total lender and origination costs, as well as the full revenue a lender may obtain for the loan if they sell it to the secondary market. Further, since some borrowers may prefer to pay higher upfront costs in order to get a lower rate (pay for points) or vice-versa, not including both the rate and upfront cost component would likely lead to a distorted view of cost differences across borrower groups. At this point, it is worth emphasizing that this view of costs does not account for the fact that parties other than the borrower and the lender may be paying for some of these components, for example, the seller may pay for some of these components. These non-borrower or lender paid items and other any other seller credits are accounted for in our estimate of total closing costs paid net of credits, which we will turn to at a subsequent point in the analysis.

As we move from model specifications (1) to (5) in Table 2, additional controls are added to the regressions. Model (1) includes only our main variables of interest, and mostly mirrors differences in the summary stats for this cost measure across borrower race and ethnicity groups. Namely, accounting for LI and FTHB status, Asian, Black and Hispanic white borrowers have costs that are $688, $306 and $816 greater than non-Hispanic white borrowers, respectively. Additionally, this specification shows that LI borrowers' costs are $2,193 less than those of non-LI borrowers and FTHB's $118 less than those of repeat homebuyers.

Model (2) in Table 2 adds in additional borrower, loan, property, and lender attributes to the list of controls. In so doing we observe that Black and Hispanic white borrower's cost difference relative to white borrowers are significantly reduced, down to $135 and $395 which are both less than half the respective differences displayed in model (1). The Asian borrower coefficient flips sign, now showing a discount for this group of borrowers relative to non-Hispanic white borrowers of $468, in this specification relative to model (1). From Table 1 we can see that Asian borrowers purchased homes that were significantly more expensive than for any other borrower group. In model (2) we see that the log of loan amount has a strongly and positive relationship with the level of net lender and origination charges and note rate costs. As such, its omission from the summary stats was largely driving the result that Asian borrowers had higher

[12] Summary statistics for the NHS-matched sample are visible in Appendix Table A2. 2022 Q1 Special Topic loans are originated in 2021, whereas all the other loans in the estimation samples are from UCD submissions from Sep. 2017 to Sep. 2019.

costs for this category. Model (2) also shows a similar impact of drastically changing the coefficient on LI borrowers, reducing it to a discount of $106, or 5% of its original magnitude in model (1). Again, this is largely driven by the fact that LI borrowers tend to purchase lower-priced homes. The change in the FTHB coefficient from model (1) to model (2) is more muted, displaying a slight reduction to $98. Overall, we see a large increase in model fit between model (1) and model (2), with r-squared rising from 0.087 to 0.442. This emphasizes the importance of controlling for borrower, loan, property, and lender attributes when assessing differences in costs across borrowers.

Models (3) and (4) in Table 2 add in Census tract characteristics, in (3), and then county and UCD submission month and year fixed effects. The addition of these control variables has a modestly positive impact on model fit (small improvement in r-squared), and, of our primary coefficients of interest, it has the most pronounced impact on the Black and Hispanic white borrower coefficients.

The final specification in Table 2 adds in lender fixed effects, which has a pronounced impact on model fit, with adjusted r-squared jumping from 0.486 in (4) to 0.572 in (5). This highlights how a lot of loan pricing is lender specific. In this final specification, we see that Black and Hispanic white borrowers continue to have higher charges than white non-Hispanic borrowers, and that Asian borrowers have the lowest charges. Notably, the addition of control variables to the regression has tended to decrease the Black and Hispanic white coefficients, while the opposite is true for the Asian coefficient. The final specification shows that, relative to non-Hispanic white borrowers, Black borrowers have $191 greater costs, or 3 times the initial $62 difference visible in means for this variable in Table 1; Hispanic borrower have $82 greater costs, or 12% of the Table 1 difference in means; and Asian borrowers have $386 lower costs, or 64% of the Table 1 difference in means. We further see that LI borrowers have $115 lower charges than non-LI borrowers, and that FTHB have $109 lower charges than repeat buyers. Both of these suggest that lenders may be willing to lower their costs for borrowers with lesser financial means, as tends to be the case for LI and FTHB. On the other hand, these borrowers tend to purchase lower priced homes and we see there is a clear correlation between lender and origination charges and loan amounts. Specifically, in model (5) we see a 1% increase in loan amount is associated with a $35.66 increase in costs, this is obtained by dividing the 3,566 coefficient by 100. This is a point we will return to in section 3.4 where we run these same regressions with all the cost measures as a percent of purchase price.

Of the remaining covariates in Table 2 model (5), some have particularly salient coefficients associated with them. Loans for non-owner-occupied homes and condos tend to have larger costs associated with them, notably so for investor properties.[13] Also of note in this model is that there is a certain complementarity between net lender and origination charges plus rate cost and title and settlement charges, with the coefficient indicating the former increasing 22

[13] Note that this effect remains even after accounting for the higher LLPAs charged by Fannie Mae to non-owner occupant mortgages.

cents for every dollar increase in title and settlement charges. This result is in line with that of Woodward (2008), who showed that borrowers with high lender charges also tended to have high title and settlement charges.

Looking at the coefficients on lender type (in model (4) which does not have lender fixed effects) we see that loans with the lowest charges tend to be originated by credit unions, followed by other depository institutions; whereas the highest charges are for loans by non-depositories. The specification in model (4) also allows us to observe that both correspondent- and broker-originated loans have higher costs. While not the focus of this paper, this result speaks to the literature showing that broker compensation is an important component of mortgage pricing and has important implications for differences in costs across borrower race and ethnicity (Ambrose and Conklin, 2014; Ambrose et al., 2021).

Assessing the coefficients for Census tract variables in model (5) of Table 2 reveals that, for Asian and Black borrowers, own-race and ethnicity groups tend to augment the underlying differences relative to non-Hispanic white borrowers (evident in the coefficients for own-race tract share of population having the same sign as the respective borrower race coefficients). The opposite effect is true for Hispanic white borrowers, where their own-race tract population share attenuates the group's higher costs relative to non-Hispanic white borrowers.

Looking at the other tract variables reveals that for Asian and Black borrowers the single tract attribute that most contributes to their difference in costs relative to non-Hispanic white borrowers is tract median home value. Specifically, if Asian and Black borrowers lived in tracts with the same median home value as their non-Hispanic white counterparts, their costs would be $93 lower and $47 higher, respectively, on average. This result again emphasizes the importance of home values, both the own property value directly (as proxied by the impact of loan amount) and also neighborhood home values (as proxied by tract-level median), in the level of costs, thus reiterating the need to look at costs as a percent of home value, as done later in the analysis. By contrast, for Hispanic white borrowers, the single tract attribute that most influences their difference in costs relative to non-Hispanic white borrowers is the tract share of adults with a bachelor's (BA) degree. Specifically, if Hispanic white borrowers lived in census tracts with the same share of adults with a BA degree as their non-Hispanic white counterparts, their charges would be $36 lower, on average, all else equal. The fact that having a greater share of the tract population with higher level of education is associated with lower net lender and origination charges is consistent with Woodward (2008).

The cost view of net lender and origination charges plus cost of note rate together is useful in that it captures the full cost of the loan. However, it is important to understand which of the two components may be contributing most towards the disparities in charges across borrower groups. To do so, we run regressions for net lender and origination charges and note rate cost separately. Results from these are presented in Table 3 with coefficients only displayed for our main variables of interest. The r-squared statistics in Table 3 reveal that our set of explanatory variables are better able to account for variation in note rate cost than in net lender and

origination charges, r-squared statistics for models (1) and (2) are meaningfully smaller than in models (3) and (4). Further, we see that lender fixed effects have a more pronounced impact on model fit for the upfront charges component than for note rate costs.

For Black borrowers, results in Table 3 reveals that both the upfront dollar charges and the ongoing rate cost differences contribute to their greater overall cost relative to non-Hispanic white borrowers. For Hispanic white borrowers, the greater upfront costs seem to be driving the overall cost difference relative to non-Hispanic white. This finding is particularly relevant since others in the literature (Bhutta and Hizmo, 2021) have indicated that while such minority groups tend to have a higher note rate, they may have a lower upfront cost. Bhutta and Hizmo (2021) argue that this reflects minority borrowers' preference for lower upfront costs in exchange for a higher rate. However, our findings that both note rate and upfront costs components tend to be higher, all else equal, for Black and Hispanic white borrowers relative to non-Hispanic white suggests this may not be the case.

Table 3 further shows that the overall cost discount for Asian borrower relative to non-Hispanic white borrowers is entirely driven by the relatively better mortgage note rate that these borrowers are able to obtain. Again, it is worth emphasizing that this is after accounting for all characteristics associated with the note rate, which tend to lower Asian borrower rates relative to non-Hispanic white. This suggests there is something in the mortgage shopping or bargaining process that is allowing these borrowers to obtain markedly better rates than other groups. In a similar vein, both the negative LI and FTHB coefficients in Table 2 are also driven entirely by the better note rates that these borrowers get.

### 3.2 Title and Settlement Charges

Having assessed differences in net lender and origination charges and mortgage note rates in the previous section, this section focuses on title and settlement charges. Table 4 presents results from this analysis and emulates the presentation in Table 2, with further control variables added to the models as we move from columns (1) to (5).

Column (1) in Table 4 mostly emulates the results displayed in the summary statistics visible in Table 1. Results in this column show that all borrower minority groups have higher title and settlement charges than non-Hispanic white borrowers and that LI and FTHB borrowers have lower charges than non-LI and repeat buyers, respectively. The addition of borrower, loan, lender attributes to the regression, in column (2), has a pronounced impact on the model fit; with R-squared jumping from 0.08 in (1) to 0.342 in (2). Adding these controls changes the magnitudes of charge differences for minorities relative to non-Hispanic whites, but essentially the result that these groups pay more remains. By contrast, for LI borrowers, their large charge discount relative to non-LI borrowers mostly disappears; while for FTHB the difference relative to repeat buyers is flipped, with FTHB now having higher charges. This specification in (2)

amplifies the importance in accounting for these attributes when assessing differences in charges across borrower groups.

In moving from the second to the third and fourth specification in Table 4, controls for census tract attributes and county fixed effects are added, respectively. The addition of these controls almost doubles the R-squared of 0.342 in (2) to 0.651 in (4). As noted in Woodward (2008), title insurance rates are frequently determined at the state level, with little possibility for borrowers to gain much from shopping around providers given the similarity in rates within a geographic area. As such, it is not surprising that so much variation in title and settlement charges can be attributed to the geographic location of the property. The other stark impact of adding these geographic controls to our regression is that differences in charges across borrower groups mostly disappear.

The final specification in Table 4 adds in lender fixed effects to the specification in column (4). While lenders themselves obviously do not dictate the level of title and settlement charges, the fact that certain lenders tend to work with certain title and settlement companies is what is captured with these lender fixed effects. Adding these controls still has a pronounced impact on model fit, with an R-squared 0.710 in column (5). Contrasting the R-squared statistics in specifications (5) across Table 2 and Table 4, shows that, by this measure, model fit for title and settlement charges is practically double that for regressions of net lender and origination charges and note rate. This highlights how much more unexplained variation remains in the net lender and origination and note rate cost components.

Assessing differences across borrower groups in model (5) of Table 4 shows us that the magnitudes of charge differences across groups are small. For race and ethnicity groups, only the difference in Asian borrowers' charges relative to non-Hispanic white remains statistically significant at the 1% level, at a $13 dollar discount for Asian borrowers. The same magnitude difference is evident for LI relative to non-LI buyers, with LI buyers having charges that are $14 higher, all else equal. Lastly, FTHB tend to pay $11 less in these charges than repeat buyers. Overall, these differences, while statistically significant, are not economically meaningful.

It is interesting to note that title and settlement charges increase with loan amount, with a 1% increase in loan amount being associated with an $7.41 increase in title and settlement charges. This is an expected finding given that title insurance rates are an increasing function of loan amount. As with the previous set of results, the positive correlation between the level of title and settlement and the other two categories of charges remains. This again emphasizes that the same group of borrowers tend to have both higher lender and origination charges and higher title and settlement charges, as seen by Woodward (2008).

Assessing the impact of Census tract attributes on the differences in charges across borrower groups reveals that differences in median home values tend to have the greatest impact. Specially, if Asian and Black borrowers lived in census tracts with the same median home values as non-Hispanic white borrowers, their charges would tend to be $52 lower for Asian borrowers

(tend to buy homes in higher median price areas) and $26 higher for Black borrowers (tend to buy homes in lower median price areas). For Hispanic white borrowers, the tract level attribute that most contributes to their cost difference relative to non-Hispanic white borrowers is the share of adults with a BA degree or higher, leading to on average costs that are $6 higher. So, evidently, tract attributes for Hispanic white borrowers have a smaller influence on their level of costs relative to non-Hispanic white borrowers than they do for Asian and Black borrowers.

Another salient coefficient in column (5) of Table 4 is that for the indicator of whether the property is a condo, with a $154 negative coefficient. This negative coefficient however is flipped to a positive when assessing charges as a percent of purchase price, since condos tend to have lower purchase prices.

### 3.3 Total Cost Net of Credits

Having assessed differences in two components of closing costs in the previous sections, this section focuses on total borrower paid closing costs net of any lender or seller credits. We believe there is value in this view since it most accurately captures the full cost of a loan for a given borrower relative to others. Table 5 presents results for this outcome, and emulates the approach employed in Tables 2 and 4.

As seen previously, Table 5 column (1) results mostly mirror those presented in the summary statistics in Table 1; showing that minorities have larger costs and LI and FTHB lower costs. Adding in borrower, loan, and lender attributes in column (2) has a significant impact on the Asian, LI and FTHB borrower coefficients, flipping the sign for the former and decreasing the magnitude for the latter two. This underlines how much of the variation is explained by these attributes; a fact emphasized by the R-squared increasing by a factor of 4 in this specification relative to the one in column (1). Adding Census tract level attributes, in column (3) has a minimal impact on model fit but does significantly reduce the magnitude of the Black and Hispanic white borrower premiums relative to non-Hispanic white borrowers. A more pronounced impact on both model fit and on differences across borrower groups is evident when we add in county fixed effects, in specification (4). In this specification, the Black borrower coefficient is now small and not statistically significant at the 1% level; while the Hispanic white coefficient's magnitude is significantly reduced relative to specification (3), now at a value of -$36.

The final specification in Table 5 adds in lender fixed effects and again this has a strong impact on model fit. The fact that model fit increases substantially by adding county fixed effects and lender fixed effects is in line with the fact that we'd previously seen how county fixed effects had such a strong impact on the variation in title and settlement charges and on how lender fixed effects significantly drive lender and origination charges.

In this final specification in Table 5 we see that Asian borrowers have the largest magnitude coefficient, with a $468 discount relative to non-Hispanic white. For Black borrowers, adding in lender fixed effects increases their coefficient, to $85. The opposite is true for Hispanic white borrowers, whose coefficient drops significantly (more negative) when adding in lender fixed effects in column (5). These differing impacts of adding lender fixed effects are informative of how the specific lender these borrower groups tend to use can have a detrimental (for Hispanic white borrowers) or beneficial (for Black borrowers) impact on how costly a loan they obtain. Previous research has shown that Black borrowers tend to go to more expensive lenders than white borrowers (Bhutta and Hizmo, 2021; Bayer et al., 2018), yet here we see that their choice of lender is beneficial relative to white borrowers. For Asian borrowers, adding lender fixed effects has a similar impact to Black, in that it increases their relative cost (smaller negative coefficient) relative to non-Hispanic white borrowers. Again, this suggests that Asian borrowers tend to go to lenders that give them better deals. For LI borrowers, adding in lender fixed effects makes their negative coefficients more negative, hence suggesting they tend to go to lenders that are not as beneficial to them than non-LI buyers. For FTHB, the cost discount relative to repeat buyers is not meaningfully changed in specification (5) relative to (4) in Table 5.

Figures 1A and 1B display the coefficients for minority borrowers from speculations (4) and (5) in Tables 2, 4, and 5. These aid us in comparing the relative differences across borrower minority groups relative to white across these three cost measures. These figures emphasize how much smaller in magnitude differences across borrower groups in title and settlement charges are relative to the other two measures. They further show how for Black and Hispanic white borrowers, total closing cost net of credits differences relative to non-Hispanic white borrowers are smaller in magnitude than those visible in lender and origination charges. For Asian borrowers, the negative coefficient for lender and origination charges is enhanced in total costs net of credits. To understand which component of cost is driving these patterns, Figure 2A presents minority group coefficients for a decomposition of total closing costs net of credits into its component parts.[14]

In Figure 2A, for Asian borrowers we see that the negative coefficient on lender and origination charges paid plus rate cost is $350. This is slightly smaller in magnitude than the analogous coefficient in Figure 1B because the measure in Figure 2A only includes borrower paid lender and origination charges, whereas in column 1B some of the lender and origination charges in that measure may have been paid by another party. For Black and Hispanic white borrowers' coefficients the changes in magnitude in Figure 2A relative to 1B are less pronounced. For Asian borrowers, we see in Figure 2A that strong negative coefficients are also visible for prepaids, initial escrow, and lender credits. While prepaids and initial escrows are likely to not be something borrowers can negotiate, lender credits certainly are. As such, it is interesting to

[14] Coefficients presented in Table 2A are from model specifications analogous to column (5) specification in Tables 2, 4, and 5; i.e. they include lender fixed effects.

note that Asian borrowers not only get charged less upfront by lenders and obtain relatively better rates, but also are able to get larger credits from lenders as well.[15] By contrast, the positive Asian coefficient on seller credits, indicates that they tend to receive smaller magnitude seller credits.

For Black and Hispanic white borrowers, Figure 2A shows that seller credits are a big driver of the fact that for these groups differences in total closing costs net of credits relative to non-Hispanic white borrowers are smaller in magnitude than those evident in net lender and origination charges plus note rate cost. This emphasizes that these borrowers tend to have fewer financial means to draw upon at closing and are therefore more likely to require seller credits in order to cover all closing costs.

Table 5 results show that loan amount remains an important driver of costs, something we will return to in the next section, in which we assess costs as a percent of purchase price. We further see in Table 5 that loans originated to banks and credit unions tend to have lower total borrower paid closing costs net of credits. By contrast, loans for non-owner-occupied homes have markedly higher costs.

### 3.4 Costs as a Percent of Purchase Price

Thus far we have only looked at differences in costs in dollar terms. In this section, we now express costs as a percent of purchase price. This view is likely to more accurately reflect the level of burden that costs can have for different borrower groups. Specifically, for a borrower purchasing a million-dollar home, it is likely that $1,000 extra in closing costs are not a significant impediment to a transaction being completed. Yet for someone purchasing a $100,000 home, they may find obtaining an extra $1,000 to cover closing costs to be significantly more challenging. Table 6 presents results for the three cost measures we've analyzed, with all costs expressed as a percent of purchase price.[16]

The various panels in Figure 1 allow for a visual comparison of race and ethnicity coefficients across the three cost measures. Figures 1A and 1B show results from specification with costs in dollar terms while Figures 1C and 1D show results from specification with costs as percent of purchase price. In contrasting the upper and lower set of charts in Figure 1 we see that while most patterns hold across the two sets, it is notable that title and settlement charge and total costs paid net of credits differences for Hispanic white borrowers relative to non-Hispanic white become significantly positive for regressions of costs as a percent of purchase price but tended to be negative or not significant for regressions in dollar terms. A similar result is evident for LI

[15] Lender and seller credits are always negative, so a negative coefficient denotes credits that are larger in magnitude.

[16] Model specifications in Table 6 are analogous to the ones presented in columns (4) and (5) in Tables 2, 4, and 5. The exception is that the log of loan amount is excluded as a control variable, since it is very correlated with purchase price, which is used in constructing our dependent variables in these regressions.

borrowers. In Table 6, the coefficients are positive and significant but in the analogous regressions with charges in dollar terms they were negative. For these borrowers, who tend to purchase lower-priced homes, these costs are likely more burdensome, and the dollar costs version of the tables were masking this higher degree of burden.

Figure 2B is analogous to 2A, except that it is obtained from regressions decomposing the total closing costs paid net of credits as a percent of purchase price. Contrasting Figures 2A and 2B, we again see that most of the patterns remain unchanged. Yet, a notable difference is that the negative Asian borrower coefficient for title and settlement charges paid is more markedly negative in Table 2B. This suggests that the previous dollar charge specification may have masked the relative importance of the Asian borrower discount relative to non-Hispanic white borrowers in this component. Further, and as indicated in the previous paragraph, the Hispanic white borrower coefficients for borrower-paid lender and origination charges and title and settlement charges become more markedly positive in Figure 2B.

Analyzing differences in costs as percent of purchase price highlighted how for borrowers with lower priced homes the same dollar level of costs can represent a higher cost burden. One such group of borrowers are LI borrowers. LI borrowers have an average purchase price of approximately $197,000, compared to an average purchase price of approximately $321,000 for non-LI borrowers. In Table 6 we clearly saw a higher level of costs as a percent of purchase price for LI borrowers. Given this pronounced difference in costs by LI borrower status, we further investigate whether cost differences across race and ethnicity groups differ among LI and non-LI borrowers. The results from this exercise are presented in Table 7, where we interact borrower race and ethnicity with the LI borrower indicator.

Columns (1) and (2) present the results for regressions of net lender and origination charges when interacting LI borrower status with race and ethnicity Results in Table 7. The overall differences by race and ethnicity are mostly unchanged among non-LI borrowers. For LI borrowers however, we see that the differences by race and ethnicity are much smaller and sometimes not statistically significant. Notably, among LI borrowers, Asian borrowers have slightly higher costs as a percent of purchase price than the other borrower groups. Columns (3) and (4) present results for title and settlement charges as the dependent variable. When splitting by LI borrower status we see that the differences in Asian and Hispanic white borrower costs relative to non-Hispanic white are similar among LI and non-LI borrowers, with slightly less pronounced differences among non-LI borrowers. By contrast, while for Black borrowers in Table 6 we saw no statistically significant differences in their costs relative to non-Hispanic white borrowers; in Table 7 we see that, in the non-LI borrower group, their costs are lower than those of non-Hispanic white borrowers, whereas the opposite is true among LI borrowers. This same relative pattern in the differences between Black and non-Hispanic white borrower costs as a percent of purchase price when contrasting by LI borrower status is evident for total costs paid net of credits, visible in columns (5) and (6) in Table 7. Again, we see that within the non-LI borrower set, Black borrowers actually have costs that are a little lower than their non-

Hispanic white counterparts. Yet, among LI borrowers, Black borrower costs are markedly higher as a percent of purchase price than those of non-Hispanic white borrowers. Recall, that in Table 6 we had seen that, for the whole set of borrowers, Black borrowers' total costs paid net of credits tended to be a little larger than those of non-Hispanic white borrowers. For Asian borrowers, within the non-Li set their costs remain lower than non-Hispanic white. Yet, within LI the borrower set, their costs are higher than those of non-Hispanic white borrowers. For Hispanic white borrowers the relative differences to white non-Hispanic borrower costs remain, yet differ in magnitudes, when the sample is split by LI borrower status.

Together, results in Table 7 highlight how among the LI borrower group, who will tend to have fewer financial resources to complete a home purchase, differences by race and ethnicity can be markedly different than for borrowers overall. Notably, Black and Asian borrower total cost paid net of credit differences relative to non-Hispanic white borrowers are flipped within the LI borrower group relative to the non-LI borrower set. This is something that is masked in Table 6 when we do not interact LI borrower status with borrower race and ethnicity.

Having costs as a percent of purchase price makes it easier to compare the impacts of factors such as FICO and LTV on costs. Since both these factors are highly correlated with purchase price, comparing their impacts in dollar terms would have confounded purchase price effects and the effect of the specific factor. Figure 3 presents the coefficients estimates for the various FICO and LTV indicator variables. Figure 3A shows that FICO is highly correlated with net lender and origination charges plus note rate cost and with the total costs paid net of credits. Lower-FICO borrowers have significantly larger costs, even after accounting for the LLPA-induced added costs in our method for gauging the note rate cost. While it can be argued that lower-FICO borrowers may have some characteristics that make them harder to underwrite (e.g. gaps in income) it is notable how much higher these costs are, up to 0.3 percent of purchase price higher for borrowers with FICO scores below 680 relative to those with scores of 740 or higher. By contrast, for title and settlement charges we do still see some correlation, but with a smaller effect (0.05 for FICO below 640, relative to FICO of 740 or higher). That being said, it is not clear why title and settlement costs should vary by FICO score at all, unless it is reflecting different levels of borrower mortgage shopping experience. Similarly, there isn't an obvious reason why LTV should impact the cost of title insurance or settlement services. This may just again be a reflection of differential borrower experience, since repeat buyers will tend to have lower LTVs, or of the fact that borrowers with higher lender and origination charges also get charged higher fees for title and settlement services, and vice-versa.

Figure 3B presents coefficient estimates for LTV fixed effects for the three closing cost measures. Again, we see a clear correlation between LTV and both net lender and origination costs and total closing costs net of credits; with higher LTV borrowers generally having higher costs. The notable exception is for borrowers with an LTV above 95%, for whom the total paid net of credits is markedly lower. This is likely an indicator that these borrowers are more

financially constrained and require seller or lender credits to cover all the costs associated with closing, thus the downturn in the LTV coefficient plot for this group of borrowers.

### 3.5 NHS Results

In this section of the paper we focus on the subset of loans for which we have Fannie Mae's NHS responses to questions regarding their mortgage shopping behavior. Table 8 presents the results for regressions of total closing costs paid net of credits for this sample of 1,379 NHS-matched loans. Note that for some specifications in Table 8 the sample is around half as large. This is because certain questions were only asked in one of the 2019 or 2022 survey waves. All regressions specifications in Table 8 use the full set of controls in specification (3) in Table 5 and added state fixed effects.[17]

The first column in Table 8 does not include the answers to any survey questions. As such this is comparable to results in Table 5. Given the small sample size, none of the minority, LI, or FTHB indicators are statistically significantly different from zero, yet a similar pattern of coefficients is visible when compared to the overall sample. Namely, Asian borrowers have lower and Black or Hispanic white borrowers have higher costs than their non-Hispanic white peers; LI and FTHB borrowers have lower costs than non-LI and repeat buyers, respectively.

The first variable from NHS we include is the indicator for whether a borrower obtained multiple mortgage quotes, which occurred for 867 borrowers in the sample, or 63% (see Table A2). In specification (2) we see that the addition of this variable does not meaningfully improve model fit. Nonetheless, the coefficient itself is negative and statistically significant at the 10% level, which suggests that borrowers who obtain more than one quote tend to get lower costs. In specification (3) we add in answers to the question of why a borrower only obtained one quote. In so doing, we see that borrowers who said getting multiple quotes would be "too much of a hassle" had significantly higher costs, by $1,430, than borrowers who got multiple quotes. Together, results in specification (2) and (3) indicate that for some borrowers not getting multiple quotes has an economically meaningful impact on how much they pay at closing.

Table 8 specification (4) adds in a questions asked to borrowers who got multiple quotes, specifically when in the process they got multiple quotes. Borrowers who obtained multiple quotes after already having a contract on a home or who don't know when they got multiple quotes had costs markedly lower than those who only got one quote by $1,171 and $1,655, respectively. By contrast, those who obtained multiple quotes prior to putting a contract on a home do not appear to have significantly lower costs than borrowers who only obtained one quote. This result speaks to the fact that borrowers who have a specific value for the property they want to purchase appear to benefit more from shopping for mortgages than do those who

[17] Given the small sample size we cannot employ county or lender fixed effects for this NHS-matched sample.

shopped for a mortgage when they did not yet know how much money they would need to purchase the home.

The remainder of the questions added to the regressions, in specifications (5) through (8) were asked of all borrowers. As such, the regressions always control for whether a given borrower obtained multiple quotes. In specification (5) we include an indicator for whether the borrower said they shopped around for title and settlement services. This question was only asked in the 2022 survey wave, hence the smaller sample size, yet there is a significantly cost discount for borrowers who shopped for title and settlement services. Given that so much of the title insurance costs are fixed at state level, it's unclear how shopping for these could have such a significant impact on costs. It is more likely that indicating you shopped for title and settlement services probably reveals a level of financial sophistication that means you were generally able to get better terms. In fact, when we assess the impact of this variable on just title and settlement charges, we do not see a significant negative impact (not shown in table); suggesting that indeed the shopping for title and settlement services is revealing a borrower's financial sophistication or engagement with the process and thus having this negative correlation with total costs net of credits.

In specification (6) we add in the question about when borrowers obtained their first quote, which was asked in the 2018 survey wave. This reveals that borrowers who obtained their first quote once after making an offer for a home had costs that were $1,697 higher than those who were pre-approved prior to finding a real estate agent. This suggests that borrowers who may not know how much they may be paying on a mortgage, since they haven't gotten a quote, tend to pay more for closing costs. It is an interesting contrast to the result above, which showed that among borrowers with multiple quotes, those who obtained multiple quotes after having a contract accepted obtained lower costs. Together, these results emphasize the importance of shopping for a mortgage at the right point in time.

The last two specifications in Table 8, include answers to questions about what the borrower tried to negotiate with a lender and what they were able to negotiate, in specifications (7) and (8), respectively. Two answers to these questions have statistically significant coefficients in both specifications, though the results are stronger in specification (8) which asks what borrowers were able to negotiate. Borrowers who said they were able to negotiate mortgage insurance (MI) payment appear to have gotten a better deal. That being said, it is unclear what exactly survey respondents mean when they answer this question. Do they mean that, given they knew their mortgage would have mortgage insurance, they were able to negotiate whether they'd pay for MI monthly, or upfront as cash or rolled into the loan? Or do they mean that they were able to obtain a mortgage that was at a lower LTV and maybe avoid paying for MI? Either way, this appears to be correlated with obtaining a lower cost loan.

In Table 8 specifications (7) and (8), the one answer with a positive and significant coefficient was the one for borrowers who said they were able to negotiate origination fees. This seems like an odd result since that is indeed something borrowers should be able to negotiate.

However, it may indicate that borrowers actually traded upfront fees for a higher rate, or effectively paid for points; and that overall they were worse off. By contrast, borrowers who said they negotiated discount points do not have statistically significant differences in total costs net of credits. However, these borrowers were seen to have higher net lender and origination charges and lower note rate costs, thus indicating that they do indeed seem to have paid for points. This is a theme we will delve further into in the next section of the paper.

### 3.6 No-Cost Loans

In this section we will focus on whether there appears to be a benefit to the borrower, in terms of lower costs, by getting a "no-cost loan". Recall that we define these loans as those where there are no buyer or seller paid lender and origination charges, hence all lender compensation is through the note rate on the loan. Table 9 presents the results from this analysis for our three cost measures, in dollar terms. The specifications used in these regressions are those in columns (4) and (5) of Tables 2, 4, and 5, to which we add the indicator of whether a given loan is a no-cost loan.

Results in Table 9 show that obtaining a no-cost loan is associated with smaller lender and origination charges and even smaller total closing costs paid net of credits. Specifically, no-cost loans appear to be charged between $1,102 and $1,758 less in net lender and origination charges plus note rate cost, depending on whether we control for lender fixed effects or not. Total paid net of credits are also seen to be lower for this group, by between $1,751 and $2,183 lower for no-cost loans. For title and settlement charges there is no economically meaningful impact of having a no-cost loan on the level of charges. These results echo those in Woodward (2008) and Woodward and Hall (2012) and confirm that there appears to be an advantage for borrowers who are able to compare offers on one dimension alone, in this case note rate.

Our data allows us to dig deeper into which component of total costs paid net of credits is driving the markedly larger negative coefficient for no-cost loans for this measure than for net lender and origination charges. Figure 4 decomposes the no-cost loan coefficient for total paid net of credits across its component parts. In the figure we can see that both borrower-paid lender and origination charges plus note rate and borrower-paid title and settlement charges are the main drivers of this negative effect. Contrasting these two components to the coefficient estimates for these two cost measures in Table 9 suggests that while there was no negative correlation for no-cost loans and the level of title and settlement charges, there clearly is in terms of the amount of those charges that are paid. This indicates that in the case of no-cost loans, lenders sometimes pay for other, non-lender charged, items. In Figure 4, we further see a negative coefficient on taxes and government fees, again suggesting lenders may pay for some of these for no-cost loans. Lastly, it is interesting to note that no-cost loans tend to have smaller levels of seller credits (visible in the positive coefficient). This may indicate that since

such borrowers are already paying for less items at closing sellers may be less willing to cover some of these themselves.

It is also noteworthy that adding the indicator for no-cost loans into the regression has no meaningful impact on any of the race and ethnicity or LI and FTHB indicators. This suggests that differences in the likelihood of obtaining a no-cost loan are not a driver of differences in costs across borrower groups. Given that only about 0.6% of borrowers actually obtain no-cost loans the fact that it has a minimal impact on differences in costs across groups is not surprising.

### 3.7 Random Draw Analysis

In the NHS survey results we saw that borrowers who obtained multiple quotes on average saved about $500 in costs. In this section we will contrast that number to what borrowers may have obtained if they were to randomly draw another lender offer from the set of offers presented to borrowers that are similar to them within their state and take that offer if it was better than their current lender offer.[18] For this exercise, we define a lender offer as the sum of borrower-paid lender and origination charges plus note rate cost and lender credits, and similar borrowers as those within the same LTV and FICO score fixed effect groups. The results of this exercise are presented in Table 10, which displays the current mean values of the various cost measures and the savings from the better offer among the set of borrowers for whom the random draw yielded a better offer than their current one. Note that, if a borrower obtains a better lender offer, we then take the full set of costs (including all the non-lender and origination costs) from that better offer and compare it to their current cost levels to assess the savings obtained from that alternate set of costs.

The first thing to note from Table 10 is that just under half of borrowers in each group are able to obtain a better offer from the random draw. Given that we are randomly pulling from the set of offers to similar borrowers we would expect that about half of borrowers obtain a better draw, as is the case. The second thing to note is that savings to borrowers are primarily driven by the better note rate that borrowers are able to obtain from the new draw. This is to be expected given that the note rate cost is the largest individual component of total costs. Overall, borrowers who obtained savings from a better offer saved on average $3,542. This number is markedly larger than the coefficient estimate for the obtaining multiple quotes indicator in the NHS analysis (Table 8). This indicates that borrowers who get multiple quotes are clearly not a randomly chosen set of borrowers. One can divide borrowers who obtain multiple quotes into two groups, those with a greater level of financial literacy, who recognize that getting more quotes might enable them to obtain a better deal and those that may be getting more quotes because they might not have been able to afford the terms offered by a given lender. Our finding of there being potentially larger savings from randomly obtaining

[18] If there are fewer than 20 similar borrowers within the sample for a given borrower within the state we draw from the group of offers to similar borrowers within the US Census division.

quotes indicates that the former group may be more prevalent in the set of borrowers getting multiple quotes.

Looking at the savings from obtaining a better quote across borrower race and ethnicity groups in Table 10 shows there are minimal differences in savings across this dimension. It is also interesting to note that, even though the determination of whether an offer was better was solely done based off the borrower-paid lender and origination fees, note rate cost, and lender credits, savings are still visible in title and settlement charges. This again highlights the correlation between lender and origination and title and settlement charges.

### 3.8 Decomposition Analysis

In this section we perform a Blinder-Oaxaca decomposition of the differences in charges across borrower race and ethnicity groups and across lender types into those coming from the attributes of borrowers and those coming from different coefficient estimates for borrowers across groups. Table 11 Panel A displays the results for the decomposition across borrower race and ethnicity groups and Panel B displays the results for the decomposition by lender type.

Table 11 Panel A is split horizontally into three sections, by cost measure, and vertically into four sections, by borrower race and ethnicity groups. Within each cell in the table, we first report the mean values for a given cost measure for a given borrower group. For example, the top-left cell shows that mean net lender and origination charges plus note rate cost for Asian borrowers in our sample is $7,698. Below that mean cost value for the borrower group are displayed four different predicted means, and on the right columns within each cell the difference between the predicted mean and the actual mean for that borrower group. Each of the four predicted means are obtained by using coefficient estimates obtained from regressions that are limited to a particular borrower group. For example, in the top-left cell we see that the predicted mean for Asian borrowers obtained from a sample of only Asian borrowers is the same as the actual mean, since the predicted mean equals the estimation sample mean. Conversely, the second predicted mean displayed in that top-left cell is that obtained for Asian borrowers by using the coefficient estimates obtained from running the regression on Black borrowers only. The predicted mean value of net lender and origination charges plus note rate cost for Asian borrowers using Black borrower coefficients is $8,456, which is $758 higher than the actual mean for Asian borrowers.

In Table 11 Panel A, we see that Asian borrowers would always face higher costs if they were treated like any other borrower group (i.e., the difference between predicted means and actual means for all cost measures are always greater than zero). By contrast, Black borrowers would tend to face lower charges if treated like any other borrower group. For Hispanic white borrowers we see that if they were treated like Asian borrowers their costs would tend to be lower, but if they were treated like Black or white non-Hispanic borrowers their costs would be

higher. Overall, the results in Panel A shows that there are meaningful differences in the predicted impact of attributes on costs across borrower race and ethnicity groups.

Table 11 Panel B presents is split horizontally by cost measure and vertically by lender type. This exercise shows that borrowers who went to credit unions would have faced higher charges if they had gone to any other type of lender. By contrast, the opposite is true for borrowers who went to non-depository institutions (i.e., these borrowers would have experienced cost savings in any other institution type). The caveat to this result is that there may be important differences in the attributes of borrowers that go to different lender types, which may be driving the differences in the predicted coefficients across lender type. That being said, the exercise again emphasizes the fact that borrowers going to credit unions appear to be getting a better deal, as was seen in the results displayed in Tables 2 and 5.

### 3.9 Other Interesting Items

In this final section of the results we want to highlight a couple of interesting features of the data, that we have thus far not discussed. Our data allow us to gauge the extent to which borrowers who "pay for points", or those who have higher upfront charges by the lender in order to reduce the note rate on the loan, are indeed obtaining their money's worth on the rate reduction. Figure 5 displays the relationship between paying points (or receiving points, in the case of negative points) and lender and origination charges, note rate relative to the Optimal Blue benchmark, note rate cost, and net lender and origination charges plus note rate cost; with the upper panel showing costs in dollar terms and the lower panel costs as a percent of loan amount.

The first thing to note is that indeed there is a clear relationship between the level of points paid and the note rate on the loan relative to the Optimal Blue benchmark rate. In other words, borrowers who pay for points indeed get a lower rate than the market average for borrowers with their same credit profile. Secondly, net lender and origination charges increase with the level of points (i.e., if you are paying for points, indeed we see you pay more upfront). The third point, and perhaps the most salient, is that when you look at the sum of net lender and origination charges and the cost of the note rate you still see a clearly positive relationship between points and this measure of cost. This suggests that borrowers paying for points are worse off than borrowers who do not pay for points.

At this point it is important to note that an individual borrower's decision to pay for points likely reflects their expected length of stay (or length until mortgage prepayment) in a given home. So, when our estimates suggest that paying for points results in an overall increase in the cost of a mortgage, this is only true for the average borrower in the market. In other words, our method for converting mortgage rate differences to upfront charges relies on the average market life of loan, and likely underestimates the expected dollar gain from a rate reduction for borrowers who pay for points if they will indeed stay longer in their homes. That being said, it is

unclear whether borrowers actually have a good gauge on how long they expect to stay in a home and so, if the borrower paying for points is actually similar in their actual length of stay to the market average, then they indeed are worse off by paying for points.

One last feature of the data that we thought noteworthy has to do with the relationship between the number of individual charges on the closing disclosure form and the dollar amount of total lender and origination or title and settlement charges. This relationship is depicted in Figure 6. This figure plots mean charges for all loans with a given number of individual charges.

In Figure 6 we see that the bulk of closing disclosure forms have between 15 and 20 individual charges. This count includes all items in the form (i.e., in addition to lender and title or settlement company items it also includes all other items like recording fees, escrows, or prepayments). Figure 6 also clearly shows that the relationship between total charges and the number of charged items is stronger for title and settlement charges, than for net lender and origination charges. Mean net lender and origination charges plateau around $2,000 once there are around 10 charged items and remain fairly flat until the rare cases where there are around more than 30 charged items. By contrast, title and settlement charges continue exhibiting a positive slope as the number of charged items increases. This might suggest that the way lenders describe (or divide charges into individual components) has little effect on the overall level of charges. However, for title and settlement charges every individual added item indeed seems to accrue to the total. As such, borrowers should be wary of the tacking on of items by title and settlement companies.

## 4. Conclusion

In this analysis of the terms on 1.1 million loans acquired by Fannie Mae between September 2017 and September 2019, we study the fees paid to lenders and to title and settlement agents. The total compensation to lenders (which includes lender-affiliated parties such as providers of credit scores and appraisals) is reckoned as the upfront cash closing costs on the borrower's TRID closing disclosures plus an adjustment for present value differences in the note rate on the mortgage. To measure the differences coming from the note rate, we compare the note rate to the market par rate for conventional loans implied by Optimal Blue data on the day the loan was locked and adjust using an internal Fannie Mae grid of prices paid by note rate. This produces a figure that akin to a "yield spread premium" in other studies of mortgage terms, which reflects the note rate differential plus the market's expectations about prepayment on the loan. We estimate that average net lender and origination charges plus note rate costs are $7,207. Our analysis also includes estimates of total title and settlement charges, which average $2,408.

We find there are meaningful differences in the costs paid across borrower groups. Asian borrowers having markedly lower mortgage costs, driven by obtaining rates that are lower than their peers in a pronounced manner. Prior studies of mortgage terms had little to say about

differences for Asian borrowers simply because there were not many of them in the estimation samples. But now Asians comprise about six percent of the US population and 6.5 percent of the borrowers in this set. Black and Hispanic white borrower tend to have higher loan costs. For Black borrowers the higher relative costs are particularly evident among LI borrowers. For non-LI borrowers, while mortgage costs as a percent of purchase price are still higher for Black borrowers relative to their non-Hispanic white counterparts, total closing costs net of credits are marginally lower. Economically meaningful differences in costs across borrower groups are not evident in title and settlement charges; hence net lender and origination charges and the relative cost of the mortgage note rate are the primary factors contributing to cost differences.

As in previous studies or mortgage terms, differences by education are substantial. We cannot observe borrower education directly, so we use the fraction of adults in the borrower's census tract as a proxy. Our estimates indicate that borrowers who live in a census tract where all adults have a BA degree pay $530 less in net lender and origination charges plus rate costs than borrowers who live in a tract where no adults have a BA degree or higher. Even for title and settlement charges we see lower charges in higher education level census tracts. These are evident in even the most stringent version of our models, with all available controls, with costs measured in both dollar terms and as a percent of purchase price. We note that because borrower education is measured with error, the true education effect is likely larger than what our analysis can detect.

We estimate that borrowers who got "no-cost" loans paid $1,102 less in net lender and origination charges plus note rate cost compared to others. These loans are not really "no-cost" but instead involve no cash paid by to the lender at closing, so that all of the lender's compensation is in the note rate on the loan, and no-cost loans do have higher note rates. If a borrower sought quotes from lenders only on a no-cost basis, their loan comparison strategy would be simpler—they could compare loans just on the basis of rate, and be confident that among the loans they considered, the lowest-rate loan is the lowest-cost loan. What makes mortgage shopping so difficult is the tradeoff of cash fees versus the note rate on the mortgage. The cash is clear enough, but to evaluate differences in rate requires the borrower to guess how long they may stay in the home as well to guess about changes in interest rates and thus when and if they might refinance, and at what rate. One remarkable phenomenon is that no-cost loans comprise less than one percent of the loans here, vs. ten percent in the FHA Closing Cost study (Woodward, 2008) (of loans closed in 2001), and in the single-lender closing cost study (Woodward, 2003), whose loans were closed 1996 to 2000. These earlier studies also showed large savings for no-cost loans, but also far more of them. For a subset of loans we obtained answers to NHS survey questions on mortgage shopping behavior. Among this set we see that borrowers for whom obtaining a second quote was "too much of a hassle" had particularly high loan costs. By contrast, borrowers who got quotes from multiple lenders, particularly those who did not get those multiple quotes prior to putting a contract on their home (i.e., who knew exactly how much money they needed to cover the purchase) fared better.

We see the best overall mortgage deals going to borrowers who either 1) appear to have a greater level of financial literacy, or 2) simply have little cash available to meet their down payment plus closing costs. Borrowers with greater levels of financial literacy tend to choose a lower-cost type of lender, seek a loan with no up-front cash fees, or obtain multiple quotes from lenders. The borrowers with the smallest small down payments also do well on all-in cost (lender, plus title, plus credits), and appear to get help from other parties to the transaction, including the seller, to close their loans.

Overall, our research confirms that obtaining a mortgage to purchase a home remains a confusing and challenging task for consumers. One in which agents with vastly greater knowledge of the process can exploit these consumer knowledge gaps to capitalize on the transaction. The subset of loans for which we were able to complement detailed closing cost information with answers to survey questions on shopping behavior provided unique insights into the interaction between borrowers and lenders. The importance of borrower education and shopping behavior in impacting the mortgage terms borrowers obtain is a salient finding in this research and one that will continue to warrant further research.

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**Tables and Figures**

**Table 1** Summary Statistics

| | All N Obs. = 1,142,429 | | Asian N Obs. = 74,282 | | Black N Obs. = 56,289 | | Hispanic White N Obs. = 123,753 | | Non-Hispanic White N Obs. = 888,105 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. |
| Loan Amount | $230,711 | $108,172 | $273,406 | $122,277 | $214,434 | $104,811 | $226,580 | $104,029 | $228,747 | $106,873 |
| Purchase Price | $283,880 | $143,146 | $348,811 | $169,377 | $244,636 | $122,852 | $268,700 | $130,987 | $283,052 | $141,876 |
| Note Rate | 4.63% | 0.47% | 4.60% | 0.48% | 4.75% | 0.50% | 4.72% | 0.48% | 4.61% | 0.46% |
| FICO | 747.7 | 45.3 | 751.0 | 41.4 | 727.3 | 48.1 | 733.0 | 46.1 | 750.7 | 44.6 |
| LTV | 0.835 | 0.139 | 0.804 | 0.133 | 0.886 | 0.111 | 0.860 | 0.128 | 0.830 | 0.141 |
| LI | 0.299 | 0.458 | 0.316 | 0.465 | 0.390 | 0.488 | 0.338 | 0.473 | 0.286 | 0.452 |
| FTHB | 0.436 | 0.496 | 0.539 | 0.498 | 0.541 | 0.498 | 0.530 | 0.499 | 0.407 | 0.491 |
| Self Employed | 0.111 | 0.314 | 0.153 | 0.360 | 0.065 | 0.247 | 0.125 | 0.330 | 0.108 | 0.311 |
| Second Home | 0.065 | 0.246 | 0.044 | 0.205 | 0.049 | 0.216 | 0.047 | 0.211 | 0.070 | 0.255 |
| Investor Prop. | 0.066 | 0.248 | 0.161 | 0.368 | 0.066 | 0.248 | 0.064 | 0.244 | 0.058 | 0.233 |
| Condo | 0.131 | 0.337 | 0.199 | 0.400 | 0.147 | 0.355 | 0.129 | 0.335 | 0.124 | 0.330 |
| Corresp. Orig. | 0.303 | 0.459 | 0.291 | 0.454 | 0.303 | 0.460 | 0.310 | 0.463 | 0.302 | 0.459 |
| Broker Orig. | 0.090 | 0.286 | 0.162 | 0.368 | 0.087 | 0.282 | 0.110 | 0.313 | 0.081 | 0.273 |
| Credit Union | 0.067 | 0.250 | 0.037 | 0.188 | 0.055 | 0.229 | 0.061 | 0.239 | 0.071 | 0.258 |
| Depository | 0.319 | 0.466 | 0.286 | 0.452 | 0.302 | 0.459 | 0.254 | 0.435 | 0.332 | 0.471 |
| Non-Depository | 0.613 | 0.487 | 0.677 | 0.468 | 0.643 | 0.479 | 0.685 | 0.465 | 0.596 | 0.491 |
| No-cost Loan | 0.0056 | 0.075 | 0.0048 | 0.069 | 0.0065 | 0.080 | 0.0037 | 0.061 | 0.0059 | 0.076 |
| **Closing Costs ($)** | | | | | | | | | | |
| Net Lender and Orig. Charges | $2,143 | $1,644 | $2,412 | $1,943 | $2,215 | $1,779 | $2,396 | $1,778 | $2,080 | $1,581 |
| Rate Cost | $5,065 | $3,240 | $5,286 | $3,576 | $4,937 | $3,311 | $5,382 | $3,364 | $5,010 | $3,185 |
| L&O Charges + Rate Cost | $7,207 | $3,545 | $7,698 | $3,844 | $7,152 | $3,641 | $7,778 | $3,691 | $7,090 | $3,480 |
| Title and Settle. Charges | $2,408 | $1,088 | $2,859 | $1,194 | $2,417 | $1,027 | $2,690 | $1,104 | $2,330 | $1,064 |
| Total Costs Net of Credits | $11,153 | $5,373 | $12,103 | $5,556 | $10,797 | $5,503 | $11,577 | $5,455 | $11,037 | $5,326 |
| **Closing Costs (Pct. of Price)** | | | | | | | | | | |
| Net Lender and Orig. Charges | 0.94 | 0.82 | 0.86 | 0.78 | 1.13 | 1.03 | 1.08 | 0.90 | 0.92 | 0.80 |
| Rate Cost | 1.92 | 1.05 | 1.63 | 0.99 | 2.15 | 1.22 | 2.13 | 1.15 | 1.90 | 1.02 |
| L&O Charges + Rate Cost | 2.86 | 1.37 | 2.49 | 1.27 | 3.28 | 1.60 | 3.22 | 1.47 | 2.81 | 1.34 |
| Title and Settle. Charges | 0.97 | 0.51 | 0.93 | 0.46 | 1.16 | 0.66 | 1.14 | 0.58 | 0.94 | 0.48 |
| Total Costs Net of Credits | 4.40 | 2.09 | 3.92 | 1.91 | 4.98 | 2.58 | 4.79 | 2.22 | 4.34 | 2.03 |
| **Closing Costs (N Charges)** | | | | | | | | | | |
| Lender and Orig. Charges | 6.3 | 2.2 | 6.2 | 2.2 | 6.4 | 2.3 | 6.5 | 2.2 | 6.2 | 2.2 |
| Title and Settle. Charges | 7.4 | 3.2 | 8.0 | 3.5 | 7.8 | 3.2 | 8.0 | 3.3 | 7.3 | 3.2 |

**Table 1** Summary Statistics (cont.)

| | All | | Asian | | Black | | Hispanic White | | Non-Hispanic White | |
|---|---|---|---|---|---|---|---|---|---|---|
| | N Obs. = 1,142,429 | | N Obs. = 74,282 | | N Obs. = 56,289 | | N Obs. = 123,753 | | N Obs. = 888,105 | |
| | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. |
| **Census Tract Characteristics** | | | | | | | | | | |
| Med. Home Value ($1,000) | $266 | $140 | $339 | $178 | $226 | $115 | $257 | $133 | $264 | $137 |
| Med. Household Income ($1,000) | $77 | $29 | $87 | $33 | $71 | $28 | $71 | $28 | $77 | $28 |
| Pct. Adults BA Deg. or Higher | 0.364 | 0.171 | 0.410 | 0.184 | 0.330 | 0.161 | 0.304 | 0.165 | 0.371 | 0.169 |
| Pct. Asian NH | 0.046 | 0.069 | 0.132 | 0.137 | 0.049 | 0.066 | 0.048 | 0.064 | 0.038 | 0.054 |
| Pct. Black NH | 0.090 | 0.140 | 0.111 | 0.141 | 0.299 | 0.274 | 0.098 | 0.136 | 0.074 | 0.115 |
| Pct. Hispanic | 0.140 | 0.169 | 0.185 | 0.174 | 0.151 | 0.159 | 0.335 | 0.268 | 0.109 | 0.127 |

**Table 2** Regressions for Net Lender and Origination Charges *plus* Cost of Note Rate

| | (1) | | (2) | | (3) | | (4) | | (5) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) |
| Asian | 688 | (13.0) | -468 | (10.4) | -536 | (10.9) | -525 | (10.6) | -386 | (9.8) |
| Black | 306 | (14.8) | 135 | (11.7) | 216 | (12.3) | 207 | (12.1) | 191 | (11.0) |
| Hispanic White | 816 | (10.3) | 395 | (8.2) | 161 | (8.8) | 130 | (8.7) | 81 | (8.0) |
| Non-Hispanic White | 0 | . | 0 | . | 0 | . | 0 | . | 0 | . |
| Low-Income | -2,193 | (7.1) | -106 | (6.3) | -168 | (6.3) | -79 | (6.4) | -115 | (5.8) |
| First-time Homebuyer | -118 | (6.5) | -98 | (5.9) | -155 | (5.9) | -109 | (5.8) | -109 | (5.3) |
| Self-Employed | | | 362 | (8.0) | 329 | (8.0) | 277 | (7.8) | 254 | (7.2) |
| Log of Loan Amount | | | 3,814 | (6.6) | 3,669 | (7.6) | 3,611 | (8.3) | 3,566 | (7.7) |
| Correspondent Originated | | | 131 | (5.8) | 159 | (5.7) | 163 | (5.7) | -118 | (7.5) |
| Broker Originated | | | 462 | (9.2) | 397 | (9.1) | 431 | (9.0) | 95 | (11.4) |
| Second Home | | | 326 | (10.9) | 163 | (10.9) | 81 | (11.1) | 83 | (10.2) |
| Investor Prop. | | | 1,351 | (11.6) | 1,212 | (11.6) | 1,158 | (11.4) | 1,219 | (10.5) |
| Condo | | | 471 | (7.6) | 338 | (8.2) | 441 | (8.6) | 457 | (7.8) |
| Credit Union | | | -2,190 | (10.4) | -2,193 | (10.3) | -2,126 | (10.7) | | |
| Depository | | | -1,725 | (5.7) | -1,676 | (5.6) | -1,618 | (5.7) | | |
| Non-Depository | | | 0 | . | 0 | . | 0 | . | | |
| T & S Charges ($) | | | 0.12 | (0.003) | 0.04 | (0.003) | 0.07 | (0.004) | 0.22 | (0.004) |
| Other Charges ($) | | | -0.05 | (0.002) | -0.04 | (0.002) | -0.04 | (0.002) | -0.03 | (0.002) |
| **Census Tract Vars.** | | | | | | | | | | |
| Med. Home Value ($1,000) | | | | | 3.30 | (0.03) | 1.36 | (0.04) | 1.24 | (0.04) |
| Med. HHd Income ($1,000) | | | | | -5.67 | (0.14) | -0.46 | (0.16) | -0.41 | (0.15) |
| Pct. Adults BA or Higher | | | | | -1,853 | (22.7) | -725 | (29.7) | -530 | (27.1) |
| Pct. Asian NH | | | | | 270 | (41.6) | -395 | (47.9) | -318 | (43.8) |
| Pct. Black NH | | | | | -399 | (19.7) | 325 | (25.0) | 277 | (22.9) |
| Pct. Hispanic | | | | | 678 | (17.9) | -177 | (26.8) | -164 | (24.5) |
| **Number of Fixed Effects** | | | | | | | | | | |
| FICO | 0 | | 7 | | 7 | | 7 | | 7 | |
| LTV | 0 | | 8 | | 8 | | 8 | | 8 | |
| County | 0 | | 0 | | 0 | | 3,124 | | 3,124 | |
| UCD Year, Month | 0 | | 0 | | 0 | | 25 | | 25 | |
| Lender | 0 | | 0 | | 0 | | 0 | | 1,207 | |
| R Squared | 0.087 | | 0.442 | | 0.454 | | 0.486 | | 0.572 | |
| N Observations | 1,142,429 | | 1,142,429 | | 1,142,429 | | 1,142,429 | | 1,142,429 | |

~ Denotes estimate not significant at the 1% level. Standard errors shown in parentheses. *T & S Charges* are total title and settlement charges. *Other Charges* are other third-party charged items such as inspections or HOA setup fees. Regression sample includes only purchase money mortgages.

**Table 3** Decomposing Net Lender and Origination Charges and Cost of Note Rate Components

| | Net Lender and Origination Charges | | | | Cost of Note Rate | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | | (2) | | (3) | | (4) | |
| | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) |
| Asian | 29 | (6.3) | 31 | (5.9) | -553 | (10.1) | -417 | (9.7) |
| Black | 122 | (7.2) | 94 | (6.6) | 85 | (11.5) | 97 | (11.0) |
| Hispanic White | 94 | (5.2) | 88 | (4.8) | 36 | (8.3) | -7~ | (7.9) |
| Non-Hispanic White | 0 | . | 0 | . | 0 | . | 0 | . |
| Low-Income | 39 | (3.8) | 36 | (3.5) | -118 | (6.1) | -151 | (5.8) |
| First-time Homebuyer | 25 | (3.5) | 23 | (3.2) | -134 | (5.5) | -133 | (5.3) |
| Lender Fixed Effects | 0 | | 1,207 | | 0 | | 1,207 | |
| R Squared | 0.154 | | 0.284 | | 0.441 | | 0.493 | |
| N Observations | 1,142,429 | | 1,142,429 | | 1,142,429 | | 1,142,429 | |

~ Denotes estimate not significant at the 1% level. Standard errors shown in parentheses. All specifications include the full set of controls visible in specification (4) in Table 2. Regression sample includes only purchase money mortgages.

**Table 4** Regressions for Total Title and Settlement Charges

| | (1) | | (2) | | (3) | | (4) | | (5) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) |
| Asian | 548 | (4.0) | 215 | (3.5) | -15 | (3.5) | -20 | (2.7) | -13 | (2.5) |
| Black | 148 | (4.5) | 224 | (3.9) | 64 | (3.9) | -0.6~ | (3.0) | 4~ | (2.8) |
| Hispanic White | 392 | (3.2) | 374 | (2.7) | 63 | (2.8) | -7 | (2.2) | -3~ | (2.0) |
| Non-Hispanic White | 0 | . | 0 | . | 0 | . | 0 | . | 0 | . |
| Low-Income | -565 | (2.2) | -22 | (2.1) | -58 | (2.0) | 9 | (1.6) | 14 | (1.5) |
| First-time Homebuyer | -24 | (2.0) | 138 | (2.0) | 64 | (1.9) | -5 | (1.5) | -11 | (1.3) |
| Self-Employed | | | 16 | (2.7) | 20 | (2.6) | 17 | (2.0) | 7 | (1.8) |
| Log of Loan Amount | | | 1,057 | (2.3) | 787 | (2.6) | 775 | (2.1) | 741 | (2.0) |
| Correspondent Originated | | | 39 | (1.9) | 41 | (1.8) | 7 | (1.4) | 3~ | (1.9) |
| Broker Originated | | | -134 | (3.1) | -169 | (2.9) | -263 | (2.3) | 6~ | (2.9) |
| Second Home | | | 40 | (3.6) | 76 | (3.5) | 33 | (2.8) | 36 | (2.6) |
| Investor Prop. | | | 148 | (3.9) | 29 | (3.7) | 13 | (2.9) | -4~ | (2.7) |
| Condo | | | 191 | (2.5) | 41 | (2.6) | -155 | (2.2) | -154 | (2.0) |
| Credit Union | | | -162 | (3.5) | -130 | (3.4) | 9 | (2.8) | | |
| Depository | | | -92 | (2.0) | -55 | (1.9) | 7 | (1.5) | | |
| Non-Depository | | | 0 | . | 0 | . | 0 | . | | |
| Net L & O Charges + Rate Cost ($) | | | 0.013 | (0.0003) | 0.004 | (0.0003) | 0.005 | (0.0002) | 0.014 | (0.0002) |
| Other Charges ($) | | | 0.068 | (0.0005) | 0.061 | (0.0005) | 0.042 | (0.0004) | 0.016 | (0.0004) |
| **Census Tract Vars.** | | | | | | | | | | |
| Med. Home Value ($1,000) | | | | | 1.50 | (0.01) | 0.71 | (0.01) | 0.69 | (0.01) |
| Med. HHd Income ($1,000) | | | | | 3.41 | (0.05) | -0.41 | (0.04) | -0.32 | (0.04) |
| Pct. Adults BA or Higher | | | | | -656 | (7.3) | -85 | (7.5) | -104 | (6.9) |
| Pct. Asian NH | | | | | 1,113 | (13.3) | 17~ | (12.1) | 14~ | (11.1) |
| Pct. Black NH | | | | | 550 | (6.3) | 119 | (6.3) | 121 | (5.8) |
| Pct. Hispanic | | | | | 1,259 | (5.6) | -30 | (6.8) | -26 | (6.2) |
| **Number of Fixed Effects** | | | | | | | | | | |
| FICO | 0 | | 7 | | 7 | | 7 | | 7 | |
| LTV | 0 | | 8 | | 8 | | 8 | | 8 | |
| County | 0 | | 0 | | 0 | | 3,124 | | 3,124 | |
| UCD Year, Month | 0 | | 0 | | 0 | | 25 | | 25 | |
| Lender | 0 | | 0 | | 0 | | 0 | | 1,207 | |
| R Squared | 0.080 | | 0.342 | | 0.404 | | 0.651 | | 0.710 | |
| N Observations | 1,142,429 | | 1,142,429 | | 1,142,429 | | 1,142,429 | | 1,142,429 | |

~ Denotes estimate not significant at the 1% level. Standard errors shown in parentheses. *L & O Charges + Rate Cost* are total lender and origination charges plus the cost of the note rate. *Other Charges* are other third-party charged items such as inspections or HOA setup fees. Regression sample includes only purchase money mortgages.

**Table 5** Regressions for Total Closing Costs Paid Net of Credits

| | (1) | | (2) | | (3) | | (4) | | (5) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) |
| Asian | 1,270 | (19.4) | -513 | (16.2) | -801 | (17.0) | -812 | (15.8) | -468 | (15.2) |
| Black | 228 | (22.1) | 454 | (18.2) | 175 | (19.3) | -15~ | (18.0) | 85 | (17.2) |
| Hispanic White | 817 | (15.5) | 601 | (12.7) | 167 | (13.9) | -36 | (13.0) | -73 | (12.4) |
| Non-Hispanic White | 0 | . | 0 | . | 0 | . | 0 | . | 0 | . |
| Low-Income | -3,533 | (10.6) | -348 | (9.9) | -412 | (9.9) | -88 | (9.5) | -156 | (9.1) |
| First-time Homebuyer | -754 | (9.8) | -59 | (9.2) | -185 | (9.3) | -413 | (8.7) | -408 | (8.3) |
| Self-Employed | | | 610 | (12.6) | 613 | (12.5) | 600 | (11.6) | 406 | (11.2) |
| Log of Loan Amount | | | 6,180 | (9.1) | 5,528 | (11.4) | 5,928 | (11.6) | 6,076 | (11.1) |
| Correspondent Originated | | | 13~ | (9.0) | 14~ | (8.9) | 1.1~ | (8.4) | -259 | (11.7) |
| Broker Originated | | | -896 | (14.3) | -952 | (14.3) | -1,188 | (13.4) | -1,362 | (17.7) |
| Second Home | | | 633 | (17) | 680 | (17.1) | 424 | (16.6) | 345 | (15.9) |
| Investor Prop. | | | 1,687 | (18.2) | 1,457 | (18.3) | 1,607 | (17.0) | 1,569 | (16.3) |
| Condo | | | 968 | (11.8) | 628 | (12.8) | 306 | (12.7) | 268 | (12.1) |
| Credit Union | | | -1,933 | (16.2) | -1,842 | (16.2) | -1,718 | (16.0) | | |
| Depository | | | -1,115 | (8.9) | -1,040 | (8.9) | -1,032 | (8.6) | | |
| Non-Depository | | | 0 | . | 0 | . | 0 | . | | |
| **Census Tract Vars.** | | | | | | | | | | |
| Med. Home Value ($1,000) | | | | | 3.30 | (0.05) | 2.88 | (0.06) | 2.83 | (0.06) |
| Med. HHd Income ($1,000) | | | | | 5.70 | (0.22) | -3.33 | (0.24) | -1.39 | (0.23) |
| Pct. Adults BA or Higher | | | | | -721 | (35.6) | 127 | (44.3) | -46~ | (42.3) |
| Pct. Asian NH | | | | | 641 | (65.2) | -766 | (71.5) | -361 | (68.3) |
| Pct. Black NH | | | | | 1159 | (30.8) | 599 | (37.4) | 723 | (35.7) |
| Pct. Hispanic | | | | | 1,812 | (27.5) | -359 | (40.0) | -266 | (38.2) |
| **Number of Fixed Effects** | | | | | | | | | | |
| FICO | 0 | | 7 | | 7 | | 7 | | 7 | |
| LTV | 0 | | 8 | | 8 | | 8 | | 8 | |
| County | 0 | | 0 | | 0 | | 3,124 | | 3,124 | |
| UCD Year, Month | 0 | | 0 | | 0 | | 25 | | 25 | |
| Lender | 0 | | 0 | | 0 | | 0 | | 1,207 | |
| R Squared | 0.106 | | 0.406 | | 0.413 | | 0.500 | | 0.548 | |
| N Observations | 1,142,429 | | 1,142,429 | | 1,142,429 | | 1,142,429 | | 1,142,429 | |

~ Denotes estimate not significant at the 1% level. Standard errors shown in parentheses. *Total Closing Costs Paid Net of Credits* includes borrower paid lender and origination charges, title and settlement charges, other charges, taxes and recording fees, prepaids, escrow amounts, and any lender or seller credits. Regression sample includes only purchase money mortgages.

**Table 6** Regressions of Costs as a Percent of Purchase Price

| | Net Lender and Origination Charges and Cost of Note Rate | | | | Title and Settlement Charges | | | | Total Closing Costs Paid Net of Credits | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | | (2) | | (3) | | (4) | | (5) | | (6) | |
| | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) |
| Asian | -0.217 | (0.004) | -0.163 | (0.004) | -0.023 | (0.002) | -0.017 | (0.001) | -0.371 | (0.007) | -0.241 | (0.007) |
| Black | 0.062 | (0.005) | 0.055 | (0.005) | 0.0002~ | (0.002) | 0.003~ | (0.002) | 0.016~ | (0.008) | 0.051 | (0.008) |
| Hispanic White | 0.087 | (0.004) | 0.061 | (0.003) | 0.015 | (0.001) | 0.015 | (0.001) | 0.066 | (0.006) | 0.045 | (0.006) |
| Non-Hispanic White | 0 | . | 0 | . | 0 | . | 0 | . | 0 | . | 0 | . |
| Low-Income | 0.204 | (0.002) | 0.155 | (0.002) | 0.177 | (0.001) | 0.172 | (0.001) | 0.574 | (0.004) | 0.527 | (0.004) |
| First-time Homebuyer | 0.036 | (0.002) | 0.034 | (0.002) | 0.038 | (0.001) | 0.034 | (0.001) | 0.003~ | (0.004) | 0.002~ | (0.004) |
| Lender Fixed Effects | 0 | | 1,207 | | 0 | | 1,207 | | 0 | | 1,207 | |
| R Squared | 0.407 | | 0.514 | | 0.497 | | 0.554 | | 0.331 | | 0.385 | |
| N Observations | 1,138,483 | | 1,138,483 | | 1,138,483 | | 1,138,483 | | 1,142,429 | | 1,142,429 | |

~ Denotes estimate not significant at the 1% level. Standard errors shown in parentheses. All specifications include the full set of controls visible in specification (4) in Tables 2, 4, and 5 for the respective dependent variables, with the exception of the log of loan amount, which is always excluded. *Total Closing Costs Net of Credits* includes lender and origination charges, title and settlement charges, other charges, taxes and recording fees, prepaids, escrow amounts, and any lender or seller credits. Regression sample includes only purchase money mortgages.

**Table 7** Regressions of Costs as a Percent of Purchase Price by Borrower Income

| | Net Lender and Origination Charges and Cost of Note Rate | | | | Title and Settlement Charges | | | | Total Closing Costs Paid Net of Credits | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | | (2) | | (3) | | (4) | | (5) | | (6) | |
| | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) |
| Not Low-Income & Asian | -0.235 | (0.005) | -0.171 | (0.005) | -0.008 | (0.002) | -0.002~ | (0.002) | -0.398 | (0.008) | -0.237 | (0.008) |
| Not Low-Income & Black | 0.062 | (0.006) | 0.057 | (0.006) | -0.0189 | (0.002) | -0.015 | (0.002) | -0.063 | (0.010) | -0.016 | (0.010) |
| Not Low-Income & Hisp. W. | 0.079 | (0.004) | 0.060 | (0.004) | 0.009 | (0.001) | 0.010 | (0.001) | 0.052 | (0.007) | 0.046 | (0.007) |
| Not Low-Income & Non-Hispanic White | 0 | . | 0 | . | 0 | . | 0 | . | 0 | . | 0 | . |
| Low-Income | 0.198 | (0.003) | 0.154 | (0.003) | 0.175 | (0.001) | 0.171 | (0.001) | 0.552 | (0.004) | 0.518 | (0.004) |
| Low-Income & Asian | 0.057 | (0.009) | 0.027 | (0.008) | -0.048 | (0.003) | -0.044 | (0.003) | 0.084 | (0.014) | -0.011~ | (0.014) |
| Low-Income & Black | 0.002~ | (0.010) | -0.003~ | (0.009) | 0.051 | (0.003) | 0.049 | (0.003) | 0.217 | (0.015) | 0.181 | (0.015) |
| Low-Income & Hispanic W. | 0.025 | (0.007) | 0.003~ | (0.006) | 0.018 | (0.002) | 0.017 | (0.002) | 0.043 | (0.011) | 0.0005~ | (0.011) |
| Low-Income & Non-Hisp. W. | 0 | . | 0 | . | 0 | . | 0 | . | 0 | . | 0 | . |
| First-time Homebuyer | 0.036 | (0.002) | 0.034 | (0.002) | 0.038 | (0.001) | 0.034 | (0.001) | 0.003~ | (0.004) | 0.002~ | (0.004) |
| Lender Fixed Effects | 0 | | 1,207 | | 0 | | 1,207 | | 0 | | 1,207 | |
| R Squared | 0.407 | | 0.514 | | 0.498 | | 0.554 | | 0.331 | | 0.385 | |
| N Observations | 1,138,483 | | 1,138,483 | | 1,138,483 | | 1,138,483 | | 1,142,429 | | 1,142,429 | |

~ Denotes estimate not significant at the 1% level. Standard errors shown in parentheses. All specifications include the full set of controls visible in specification (4) in Tables 2, 4, and 5 for the respective dependent variables, with the exception of the log of loan amount, which is always excluded. *Total Closing Costs Net of Credits* includes lender and origination charges, title and settlement charges, other charges, taxes and recording fees, prepaids, escrow amounts, and any lender or seller credits. Regression sample includes only purchase money mortgages.

**Table 8** Impact of Shopping and other NHS Questions on Total Closing Costs Paid Net of Credits

| | (1) | | (2) | | (3) | | (4) | | (5) | | (6) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) |
| Asian | -880 | (559) | -845 | (559) | -834 | (561) | -808 | (557) | -718 | (720) | -1,253 | (913) |
| Black | 429 | (482) | 424 | (481) | 366 | (483) | 376 | (480) | 186 | (638) | 499 | (772) |
| Hispanic White | 520 | (403) | 514 | (403) | 503 | (405) | 515 | (402) | 1,159* | (597) | 78 | (561) |
| Non-Hispanic White | 0 | . | 0 | . | 0 | | 0 | . | 0 | . | 0 | . |
| Low-Income | -188 | (291) | -193 | (291) | -202 | (293) | -208 | (290) | -160 | (404) | 31 | (445) |
| First-time Homebuyer | -444 | (271) | -404 | (272) | -436 | (274) | -417 | (271) | -238 | (387) | -511 | (406) |
| **Did you get multiple quotes?** | | | | | | | | | | | | |
| Multiple Quotes | | | -410* | (242) | 0 | . | | | -500 | (338) | -357 | (365) |
| Single Quote | | | 0 | . | | | 0 | . | 0 | . | 0 | . |
| **Why only one quote?** | | | | | | | | | | | | |
| Too much hassle | | | | | 1,430** | (707) | | | | | | |
| Was satisfied with the 1st | | | | | 493 | (386) | | | | | | |
| Probably not approved elsewhere | | | | | -1,593 | (1,366) | | | | | | |
| My broker shopped around for me | | | | | 810 | (501) | | | | | | |
| I was comfortable with the lender | | | | | 66 | (347) | | | | | | |
| Difficult to understand quote differences | | | | | 525 | (1,469) | | | | | | |
| New quote lead to cred pull - impact credit | | | | | 517 | (1,680) | | | | | | |
| Don't know | | | | | 437 | (773) | | | | | | |
| **When did you get multiple quotes?** | | | | | | | | | | | | |
| Before contract on home | | | | | | | -122 | (256) | | | | |
| After contract on home | | | | | | | -1,171*** | (363) | | | | |
| Don't know | | | | | | | -1,655** | (785) | | | | |
| **Shopped for Title and Settlement services** | | | | | | | | | -1,066* | (624) | | |
| **When did you get your first quote?** | | | | | | | | | | | | |
| Pre-approved before finding a RE agent | | | | | | | | | | | 0 | . |
| Pre-approved right after finding a RE agent | | | | | | | | | | | 157 | (435) |
| Pre-approved once visited some homes | | | | | | | | | | | 289 | (616) |
| 1st quote once close to making offer | | | | | | | | | | | -818 | (587) |
| 1st quote after making an offer | | | | | | | | | | | 1,697** | (688) |
| Don't know | | | | | | | | | | | -433 | (907) |
| NHS Survey Waves | '19 & '22 | | '19 & '22 | | '19 & '22 | | '19 & '22 | | '22 | | '19 | |
| R Squared | 0.567 | | 0.568 | | 0.568 | | 0.571 | | 0.595 | | 0.488 | |
| N Observations | 1,379 | | 1,379 | | 1,379 | | 1,379 | | 719 | | 660 | |

**Table 8** Impact of Shopping and other NHS Questions on Total Closing Costs Paid Net of Credits (Continued)

| | (7) | | (8) | |
|---|---|---|---|---|
| | Coef. | (S.E.) | Coef. | (S.E.) |
| Asian | -858 | (561) | -852 | (560) |
| Black | 411 | (483) | 440 | (482) |
| Hispanic White | 514 | (406) | 530 | (404) |
| Non-Hispanic White | 0 | . | 0 | . |
| Low-Income | -165 | (292) | -173 | (292) |
| First-time Homebuyer | -338 | (273) | -348 | (273) |
| **Did you get multiple quotes?** | | | | |
| Multiple Quotes | -514** | (248) | -499** | (245) |
| Single Quote | 0 | . | 0 | . |
| **What did you try to negotiate?** | | | | |
| Don't Know / None of These | 0 | . | | |
| Discount points | -63 | (360) | | |
| Origination fees | 781* | (401) | | |
| Taxes | 461 | (623) | | |
| Title insurance | -277 | (515) | | |
| Interest rate | 232 | (249) | | |
| Prepayment penalty | 18 | (530) | | |
| Mortgage insurance | -600* | (361) | | |
| Appraisal fee | 18 | (382) | | |
| Other | -299 | (686) | | |
| **What were you able to negotiate?** | | | | |
| Don't Know / None of These | | | 0 | . |
| Discount points | | | 132 | (402) |
| Origination fees | | | 1,011** | (445) |
| Taxes | | | 1,063 | (1,054) |
| Title insurance | | | -489 | (626) |
| Interest rate | | | 72 | (263) |
| Prepayment penalty | | | 539 | (678) |
| Mortgage insurance | | | -970** | (423) |
| Appraisal fee | | | 310 | (415) |
| Other | | | -42 | (861) |
| NHS Survey Waves | '19 & '22 | | '19 & '22 | |
| R Squared | 0.568 | | 0.570 | |
| N Observations | 1,379 | | 1,379 | |

*, **, *** Denotes estimate significant at the 10%, 5%, and 1% level. Standard errors shown in parentheses. All specifications include the full set of controls visible in specification (3) in Table 5 plus state fixed effects. *Total Closing Costs Net of Credits* includes lender and origination charges, title and settlement charges, other charges, taxes and recording fees, prepaids, escrow amounts, and any lender or seller credits. Regression sample includes only purchase money mortgages from NHS sample.

**Table 9** Assessing differences in charges for no-cost loans

| | Net Lender and Origination Charges and Cost of Note Rate | | | | Title and Settlement Charges | | | | Total Closing Costs Paid Net of Credits | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | | (2) | | (3) | | (4) | | (5) | | (6) | |
| | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) | Coef. | (S.E.) |
| Asian | -525 | (10.6) | -387 | (9.8) | -20 | (2.7) | -13 | (2.5) | -813 | (15.8) | -469 | (15.2) |
| Black | 209 | (12.0) | 192 | (11.0) | -0.6~ | (3.0) | 4~ | (2.8) | -13~ | (18.0) | 87 | (17.2) |
| Hispanic White | 129 | (8.7) | 81 | (8.0) | -7 | (2.2) | -3~ | (2.0) | -37 | (12.9) | -74 | (12.4) |
| Non-Hispanic White | 0 | . | 0 | . | 0 | . | 0 | . | 0 | . | 0 | . |
| Low-Income | -82 | (6.4) | -116 | (5.8) | 9 | (1.6) | 14 | (1.5) | -92 | (9.5) | -158 | (9.1) |
| First-time Homebuyer | -117 | (5.8) | -113 | (5.3) | -5 | (1.5) | -11 | (1.3) | -422 | (8.7) | -414 | (8.3) |
| No-Cost Loan | -1,758 | (32.0) | -1,102 | (30.5) | 5~ | (8.1) | 39 | (7.7) | -2,183 | (47.8) | -1,751 | (47.5) |
| Lender Fixed Effects | 0 | | 1,207 | | 0 | | 1,207 | | 0 | | 1,207 | |
| R Squared | 0.487 | | 0.573 | | 0.651 | | 0.710 | | 0.501 | | 0.548 | |
| N Observations | 1,142,427 | | 1,142,427 | | 1,142,427 | | 1,142,427 | | 1,142,427 | | 1,142,427 | |

~ Denotes estimate not significant at the 1% level. Standard errors shown in parentheses. All specifications include the full set of controls visible in specification (4) in Tables 2, 4, and 5 for the respective dependent variables. *Total Closing Costs Net of Credits* includes lender and origination charges, title and settlement charges, other charges, taxes and recording fees, prepaids, escrow amounts, and any lender or seller credits. Regression sample includes only purchase money mortgages.

**Table 10** Random Draw Analysis

The table below presents results from an exercise in which we randomly pick from the set of lender offers given to borrowers that are similar to the target borrower. Where, lender offer = borrower-paid lender charges + note rate cost + lender credits; "similar borrowers" are those in the same FICO and LTV fixed effect cell and in the same state (or Census region if fewer than 20 observations to pick from). In the table below we present current mean values and savings among borrowers that received a better offer, *i.e.* one with a lender offer lower than their current one. Where savings are the difference between the current mean value and those for the better offer.

| | | By Borrower Race and Ethnicity | | | |
|---|---|---|---|---|---|
| | All Borrowers | Asian | Black | Hispanic White | Non-Hispanic White |
| **Current Mean Values ($)** | | | | | |
| Net Lender Cash Charges | $2,339 | $2,636 | $2,457 | $2,623 | $2,270 |
| Rate Cost | $6,458 | $6,867 | $6,371 | $6,812 | $6,383 |
| Net Lender Cash Charges + Rate Cost | $8,797 | $9,503 | $8,827 | $9,435 | $8,654 |
| Title Charges | $2,515 | $2,944 | $2,516 | $2,825 | $2,440 |
| Total Closing Costs Net of Credits | $12,864 | $13,889 | $12,516 | $13,432 | $12,729 |
| Lender Offer | $8,550 | $9,145 | $8,504 | $9,140 | $8,427 |
| **Savings from Better Offer ($)** | | | | | |
| Net Lender Cash Charges | $409 | $557 | $565 | $541 | $370 |
| Rate Cost | $2,992 | $3,149 | $2,987 | $3,046 | $2,973 |
| Net Lender Cash Charges + Rate Cost | $3,401 | $3,706 | $3,552 | $3,587 | $3,343 |
| Title Charges | $346 | $465 | $359 | $386 | $331 |
| Total Closing Costs Net of Credits | $3,930 | $4,286 | $4,080 | $4,205 | $3,856 |
| Lender Offer | $3,542 | $3,774 | $3,656 | $3,768 | $3,486 |
| **Share of Borrowers with Better Offer** | 48.5% | 47.7% | 47.6% | 48.5% | 48.6% |

**Table 11** Decomposition Analysis

This section performs a Blinder-Oaxaca decomposition of the differences in costs across borrower race and ethnicity groups and institution type. In each panel below we present the mean values for each group and the values predicted for a given group if we used model coefficients estimated for another group.

| **Panel A – Decomposition by Borrower Race and Ethnicity Groups** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Asian N= 74,282 | | Black N= 56,289 | | Hispanic White N= 123,753 | | Non-Hispanic White N= 888,105 | |
| | | Mean | (Pred. – Mean) | Mean | (Pred. – Mean) | Mean | (Pred. – Mean) | Mean | (Pred. – Mean) |
| Net Lender and Origination Charges + Rate Cost | Mean | $7,698 | | $7,152 | | $7,778 | | $7,090 | |
| | Predicted Means - | | | | | | | | |
| | Asian Coef. | $7,698 | $0 | $6,846 | -$306 | $7,550 | -$228 | $6,899 | -$191 |
| | Black Coef. | $8,456 | $758 | $7,152 | $0 | $7,862 | $84 | $7,347 | $257 |
| | Hispanic Wht Coef. | $8,240 | $542 | $6,981 | -$171 | $7,778 | $0 | $7,141 | $51 |
| | Non-Hisp Wht Coef. | $8,081 | $383 | $6,940 | -$212 | $7,660 | -$118 | $7,090 | $0 |
| Total Title and Settlement Charges | Mean | $2,859 | | $2,417 | | $2,690 | | $2,330 | |
| | Predicted Means - | | | | | | | | |
| | Asian Coef. | $2,859 | $0 | $2,453 | $36 | $2,698 | $8 | $2,432 | $101 |
| | Black Coef. | $2,895 | $36 | $2,417 | $0 | $2,715 | $25 | $2,453 | $122 |
| | Hispanic Wht Coef. | $2,868 | $9 | $2,411 | -$6 | $2,690 | $0 | $2,374 | $44 |
| | Non-Hisp Wht Coef. | $2,875 | $16 | $2,415 | -$2 | $2,707 | $17 | $2,330 | $0 |
| Total Costs Paid Net of Credits | Mean | $12,103 | | $10,797 | | $11,577 | | $11,037 | |
| | Predicted Means - | | | | | | | | |
| | Asian Coef. | $12,103 | $0 | $10,831 | $34 | $11,406 | -$172 | $10,810 | -$227 |
| | Black Coef. | $12,977 | $874 | $10,797 | $0 | $11,720 | $143 | $11,255 | $218 |
| | Hispanic Wht Coef. | $12,575 | $472 | $10,563 | -$234 | $11,577 | $0 | $10,945 | -$92 |
| | Non-Hisp Wht Coef. | $12,595 | $491 | $10,689 | -$108 | $11,630 | $53 | $11,037 | $0 |

In order to estimate coefficients, models are run separately for each borrower race and ethnicity group. All model specifications include the full set of controls visible in specification (5) in Tables 2, 4, and 5 for the respective dependent variables.

| Panel B – Decomposition by Lender Type | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Credit Union N= 76,810 | | Depository N= 364,917 | | Non-Depository N= 700,702 | |
| | | Mean | (Pred. – Mean) | Mean | (Pred. – Mean) | Mean | (Pred. – Mean) |
| Net Lender and Origination Charges + Rate Cost | Mean | $5,068 | | $5,833 | | $8,158 | |
| | Predicted Means - | | | | | | |
| | Credit Union Coef. | $5,068 | $0 | $5,643 | -$190 | $6,249 | -$1,909 |
| | Depository Coef. | $5,500 | $433 | $5,833 | $0 | $6,498 | -$1,660 |
| | Non-Depository Coef. | $7,235 | $2,168 | $7,432 | $1,599 | $8,158 | $0 |
| Total Title and Settlement Charges | Mean | $2,078 | | $2,262 | | $2,520 | |
| | Predicted Means - | | | | | | |
| | Credit Union Coef. | $2,078 | $0 | $2,353 | $91 | $2,715 | $195 |
| | Depository Coef. | $2,098 | $20 | $2,262 | $0 | $2,553 | $33 |
| | Non-Depository Coef. | $2,079 | $2 | $2,269 | $7 | $2,520 | $0 |
| Total Net of Credits | Mean | $8,802 | | $10,141 | | $11,938 | |
| | Predicted Means - | | | | | | |
| | Credit Union Coef. | $8,802 | $0 | $9,868 | -$273 | $10,716 | -$1,222 |
| | Depository Coef. | $9,387 | $585 | $10,141 | $0 | $11,045 | -$893 |
| | Non-Depository Coef. | $10,663 | $1,861 | $11,222 | $1,081 | $11,938 | $0 |

In order to estimate coefficients, models are run separately for each lender type group. All model specifications include the full set of controls visible in specification (5) in Tables 2, 4, and 5 for the respective dependent variables.

**Figure 1** Contrasting Race and Ethnicity Differences Relative to Non-Hispanic White Borrowers in Dollar Charges or Charges as a Percent of Purchase Price

Figure 1A Differences in Dollars

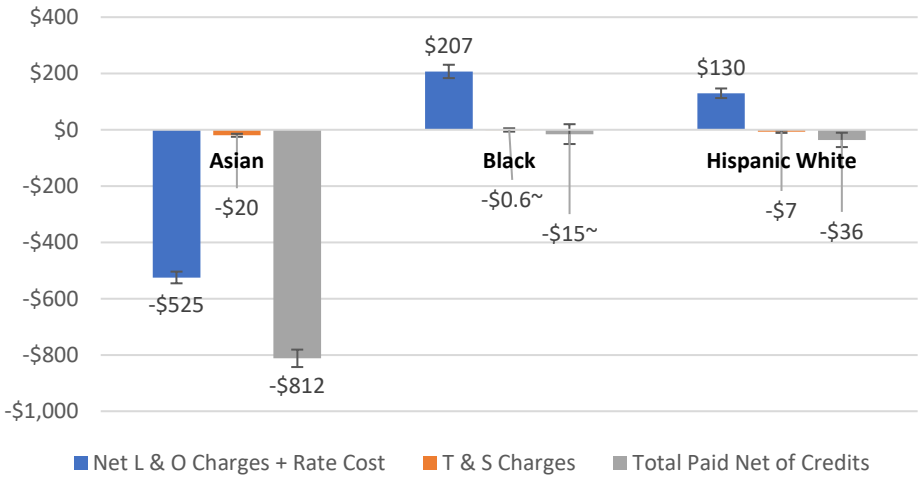



Figure 1B Differences in Dollars - with Lender FEs

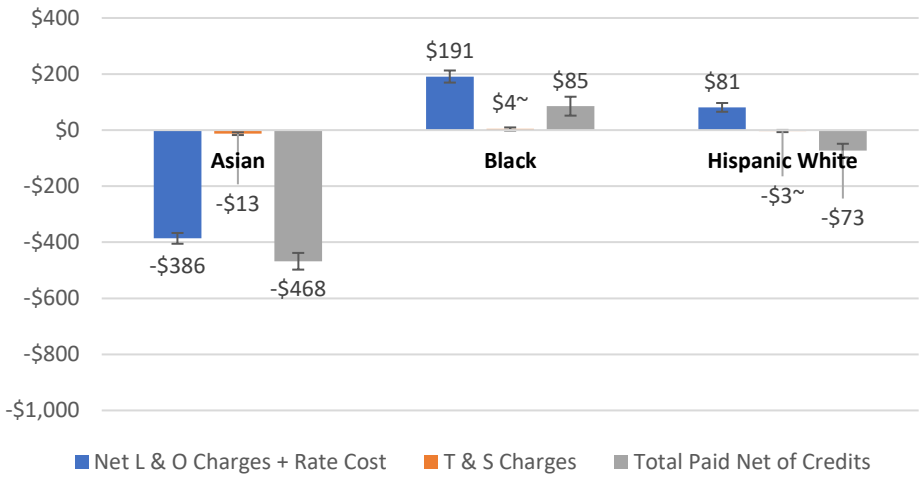



Figure 1C Differences as a Percent of Purchase Price

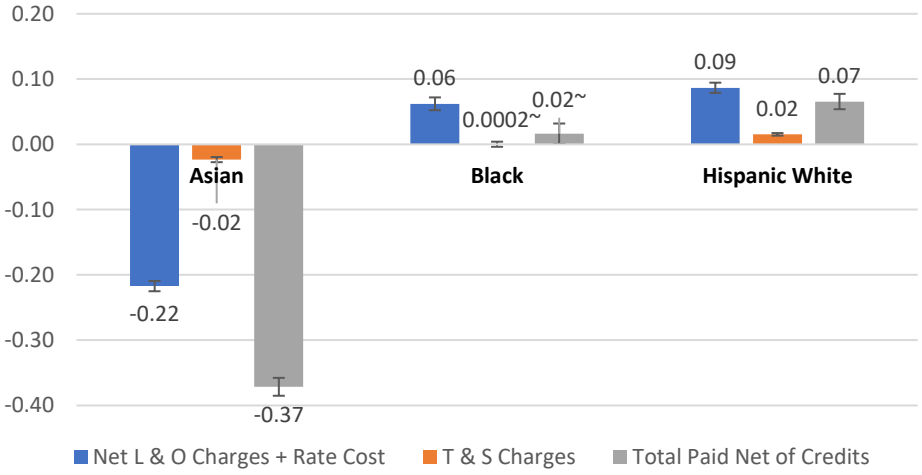
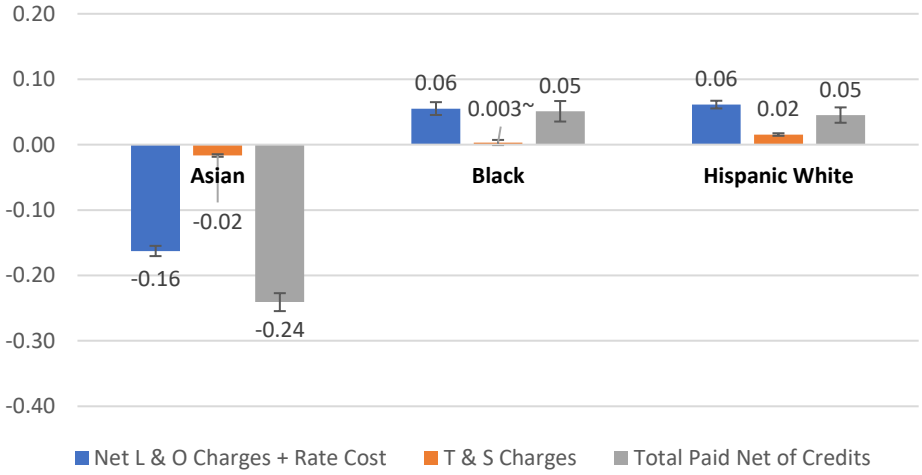
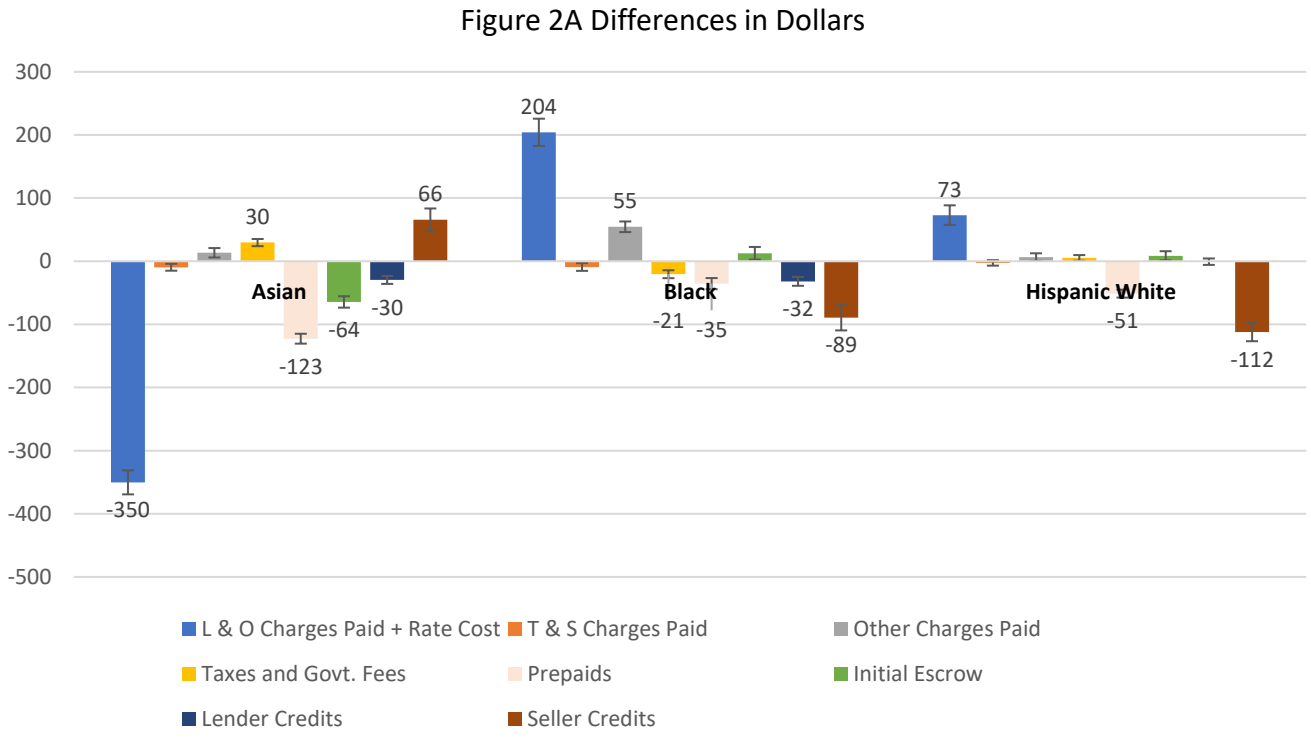


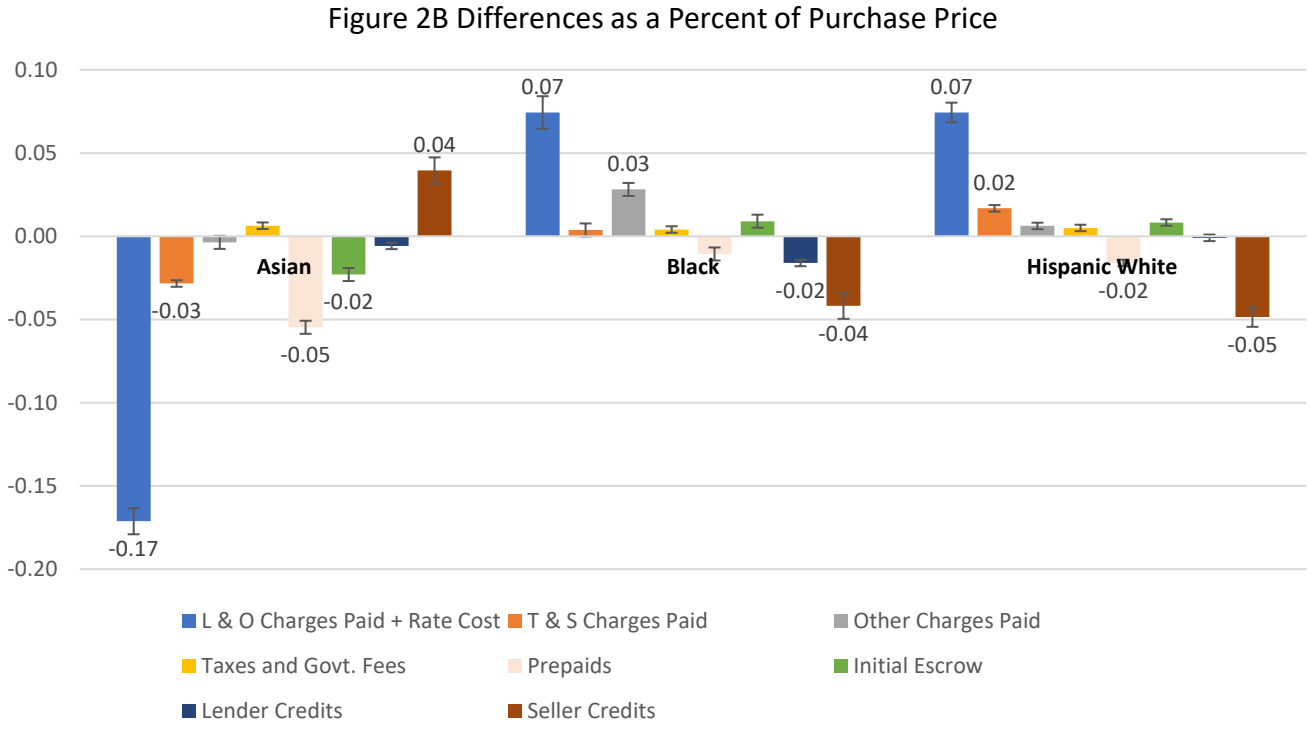

Figure 1D Differences as a Pct. of Price - with Lender FEs




Note: ~ Denotes estimate not significant at the 1% level. Error bars display 95% confidence bands around the estimates. All estimates presented above in dollar terms are obtained from model specifications that include the full set of controls visible in specification (4) in Tables 2, 4, and 5 for the respective dependent variables. Estimates presented as a percent of price are from the same model specifications but with the log of loan amount excluded from regressors. Regression sample includes only purchase money mortgages.

**Figure 2** Decomposing Race and Ethnicity Differences Relative to Non-Hispanic White Borrowers in Total Closing Costs Net of Credits




Note: Credits are always negative, so a negative coefficient denotes a credit that is larger in magnitude. Error bars display 95% confidence bands around the estimates. Estimates smaller than $20 or 2 basis points of property price do not have values displayed. All dollar estimates presented above are obtained using the model specification (5) of Table 5, thus include lender fixed effects. Estimates presented as a percent of price are from the same model specifications but with the log of loan amount excluded from regressors. Regression sample includes only purchase money mortgages.

**Figure 3** Impacts of FICO Score and LTV Ratio on Costs as a Percent of Purchase Price

Figure 3A FICO Score Fixed Effect Coefficient Estimates

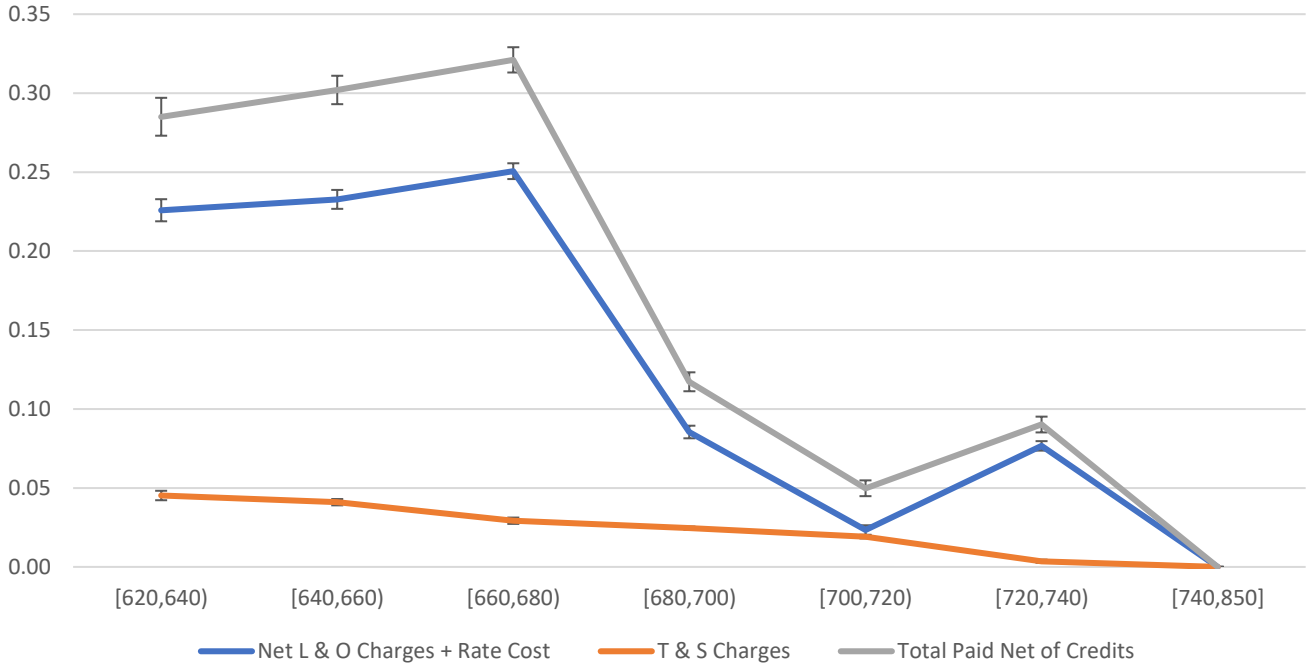
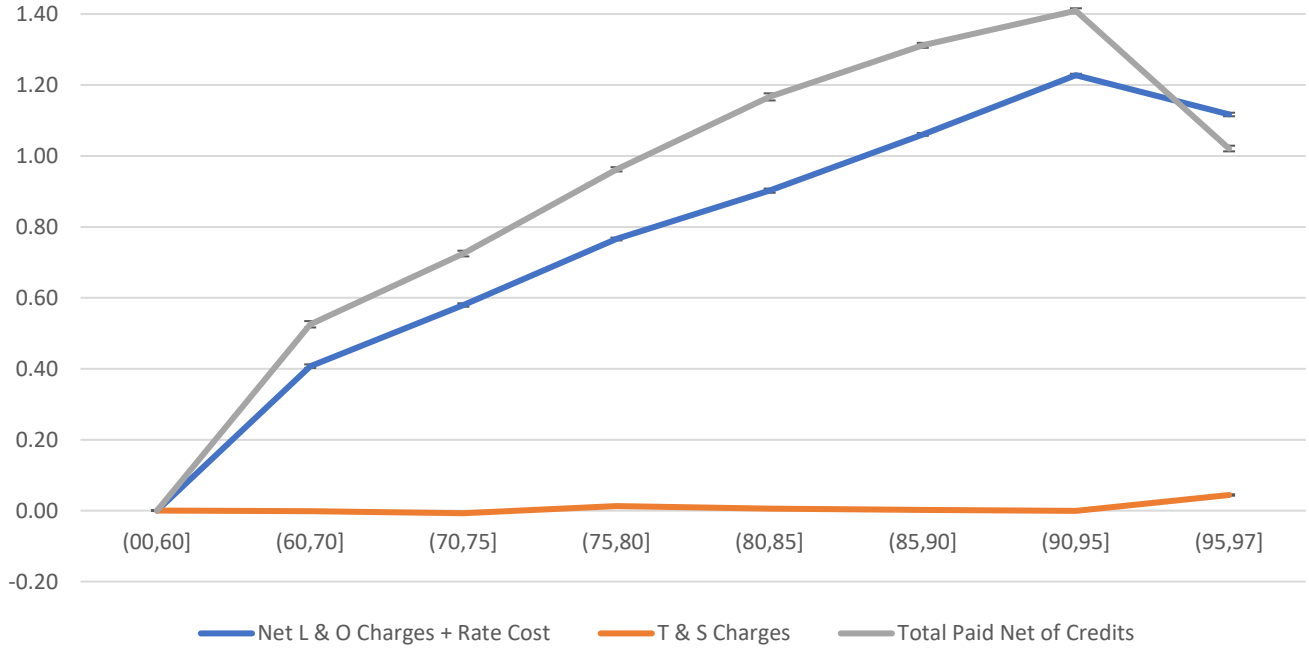
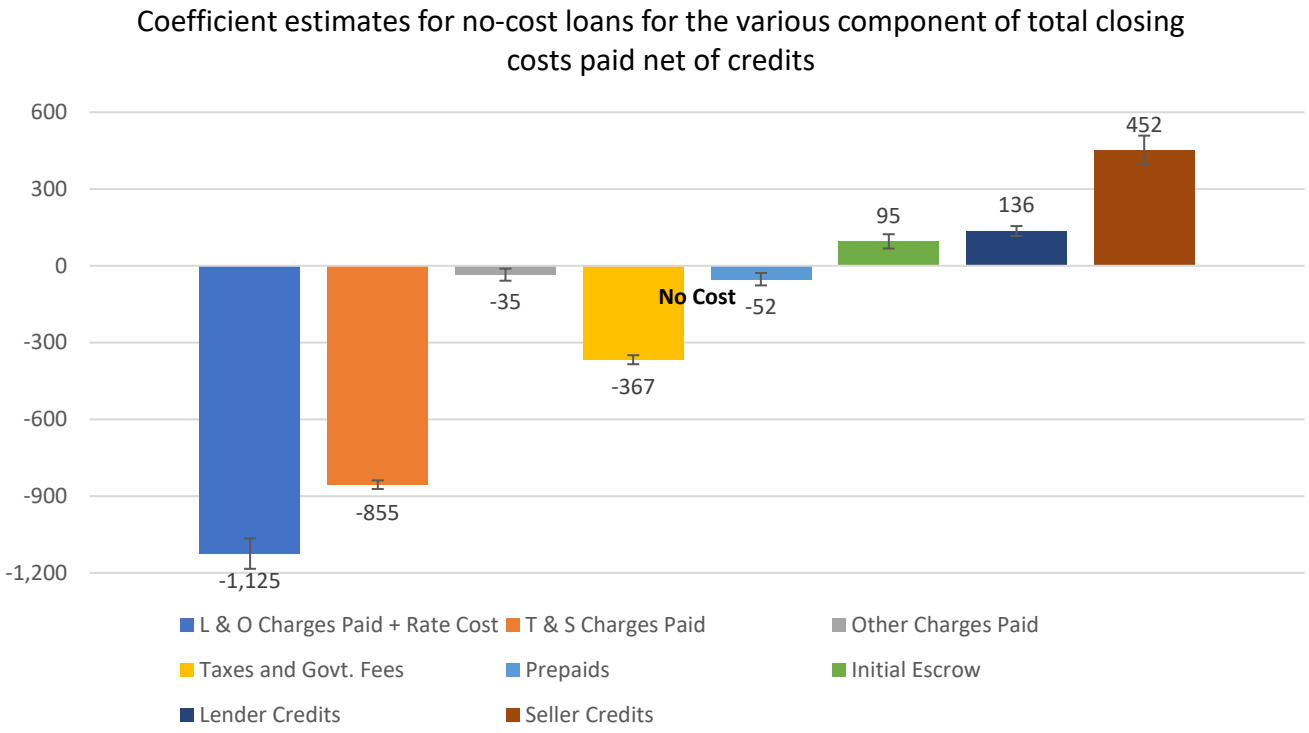



Figure 3B LTV Ratio Fixed Effect Coefficient Estimates




Note: Error bars display 95% confidence bands around the estimates. Estimates for FICO Score coefficients in T & S Charges regressions are not statistically different from zero. All estimates obtained from regressions using specifications with lender fixed effects used in Table 6. Regression sample includes only purchase money mortgages.

**Figure 4** Decomposing difference in total closing costs paid net of credits for no-cost loans




Note: Credits are always negative, so a negative coefficient denotes a credit that is larger in magnitude. Error bars display 95% confidence bands around the estimates. All estimates obtained from regressions using specifications with lender fixed effects used in column 6 of Table 9.

**Figure 5** Relationship between Points Paid or Received and Lender Charges, Rate, and Rate Cost

Figure 5A Charges and Costs in Dollars

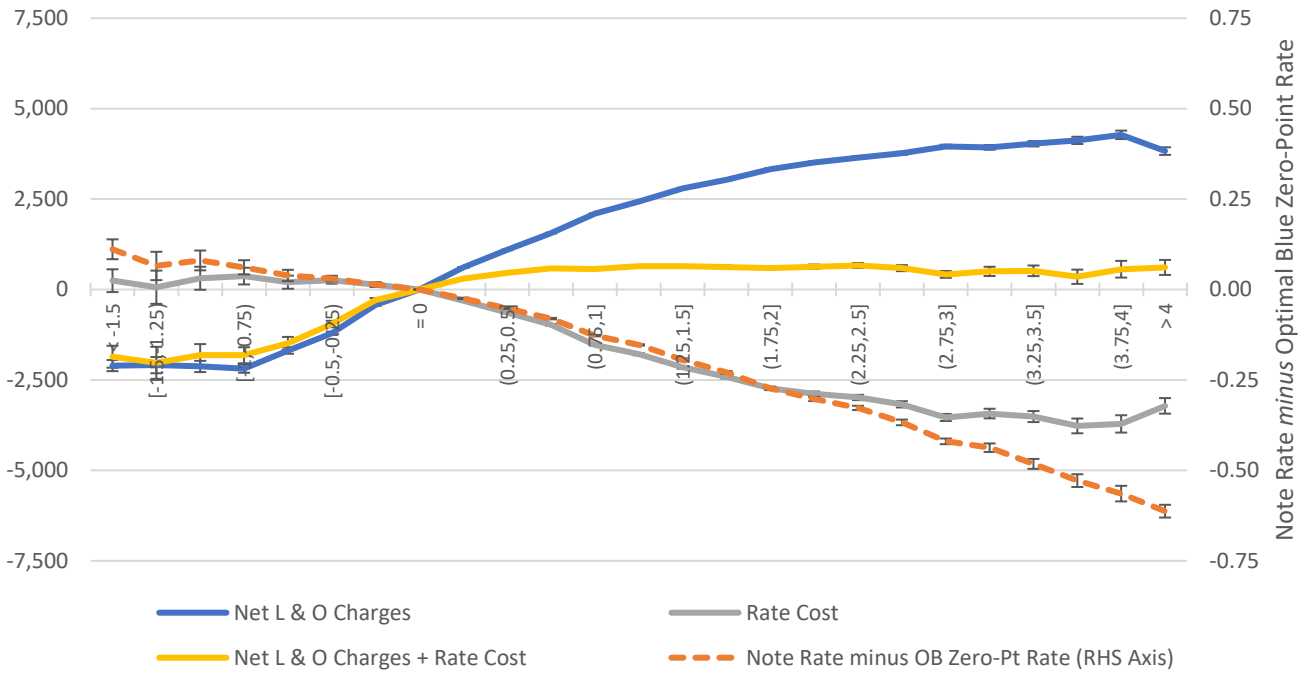
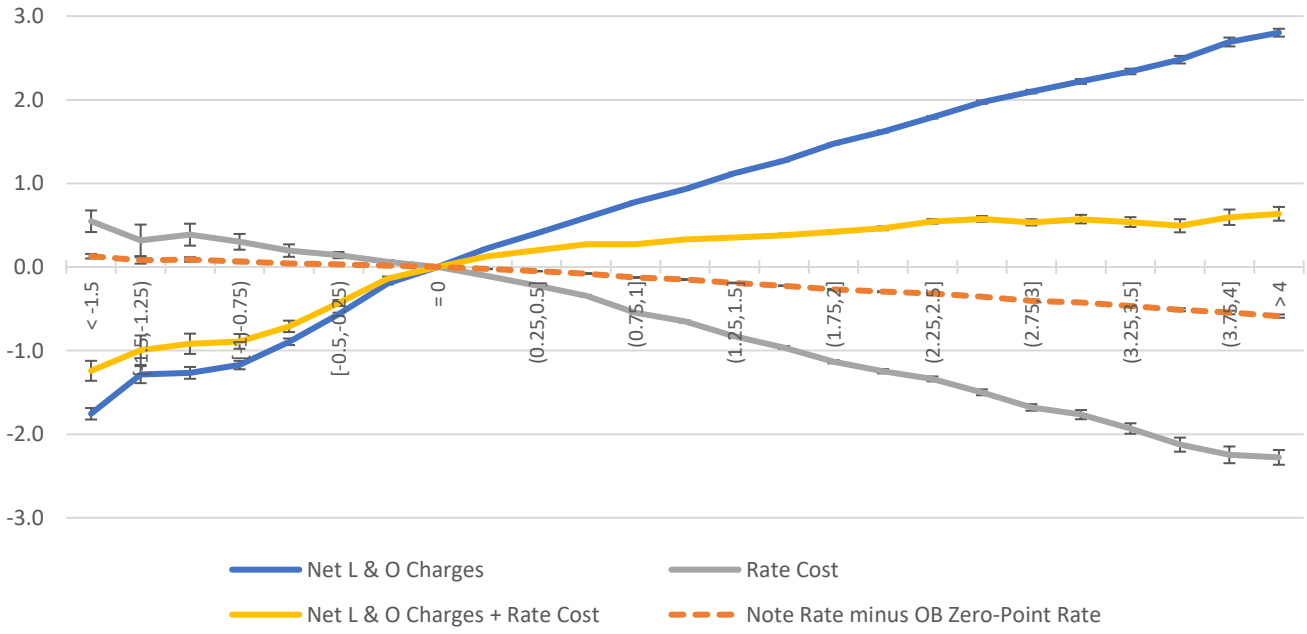
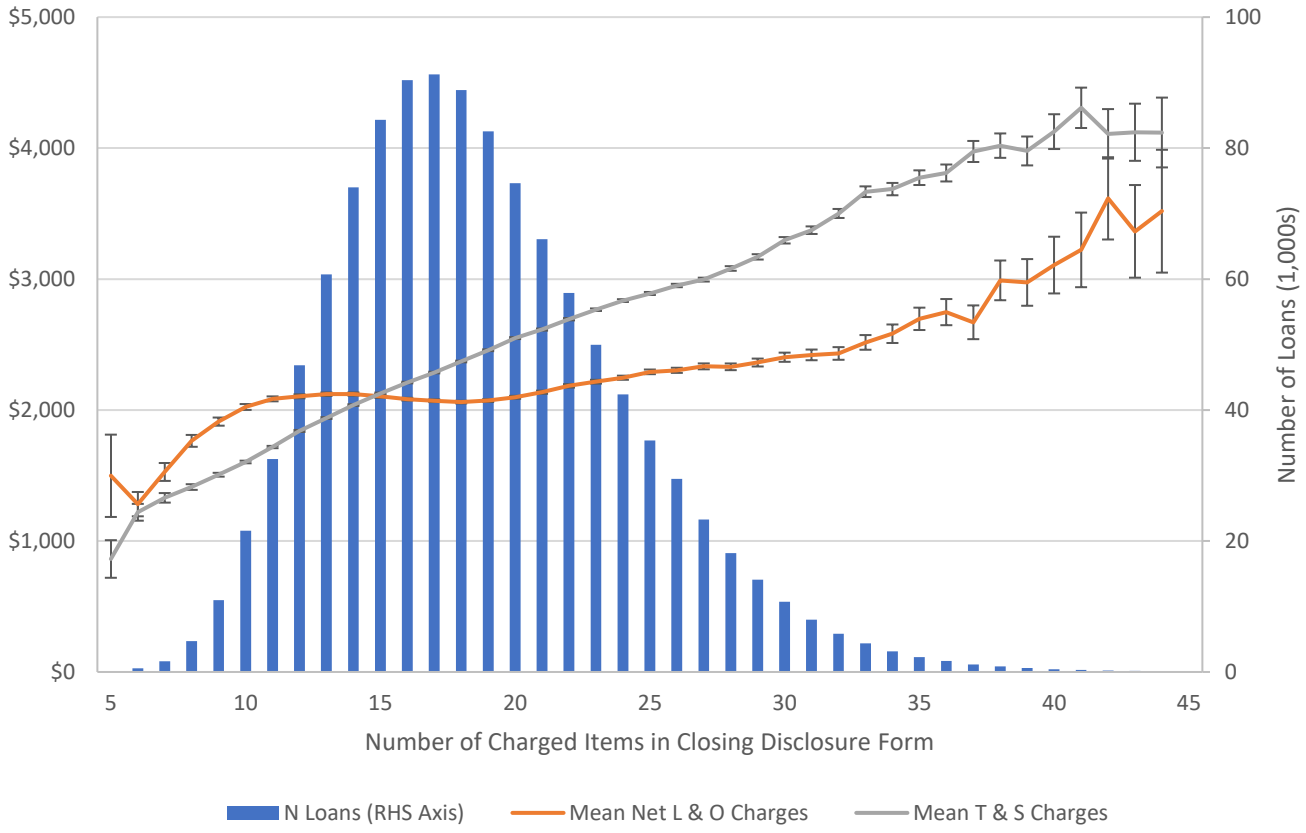



Figure 5B Charges and Costs as a Percent of Purchase Price




Note: Error bars display 95% confidence band around estimates. All estimates obtained from regressions using full set of controls, including lender fixed effects, with added fixed effects for points paid or received as a percent of loan amount, in 0.25% increments.

**Figure 6** Relationship between Number of Charged Items and Total Charges




Note: Error bars display 95% confidence band around estimated means. Only displaying values for when at least 100 loans in a given number of charged items bin. Sample includes only purchase money mortgages.

## Appendix

**Table A1** Top 10 most common items in each category of closing costs

| Lender and origination Charges | Title and settlement charges | Other charges |
|---|---|---|
| Appraisal fee | Title lender coverage premium | Home warranty fee |
| Credit report fee | Title owner coverage premium | HOA transfer fee |
| Flood certification fee | Settlement fee | HOA dues |
| Processing fee | Title endorsement fee | Homeowners association dues |
| Automated underwriting fee | Title closing fee | Pest inspection fee |
| Loan origination fee | Courier fee | Homeowners dues |
| Property tax status research fee | Title examination fee | Home warranty |
| Document preparation fee | Title closing protection letter fee | HOA capital contribution |
| Application fee | Wire transfer fee | HAO special assessment |
| Tax related service fee | Survey fee | Attorney fees |

**Table A2** Summary Statistics for NHS matched sample

| | All | | Asian | | Black | | Hispanic White | | Non-Hispanic White | |
|---|---|---|---|---|---|---|---|---|---|---|
| | N Obs. = 1,396 | | N Obs. = 82 | | N Obs. = 109 | | N Obs. = 166 | | N Obs. = 1,039 | |
| | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. |
| Loan Amount | $263,697 | $121,046 | $312,170 | $126,162 | $257,695 | $132,073 | $268,402 | $113,902 | $259,750 | $119,849 |
| Purchase Price | $315,514 | $154,244 | $376,630 | $150,143 | $287,546 | $150,281 | $315,643 | $153,108 | $313,604 | $154,134 |
| Note Rate | 3.89% | 0.86% | 3.76% | 0.87% | 4.02% | 0.89% | 4.09% | 0.82% | 3.85% | 0.85% |
| FICO | 748.0 | 43.7 | 753.8 | 39.2 | 735.1 | 43.8 | 741.4 | 44.2 | 750.0 | 43.7 |
| LTV | 0.855 | 0.130 | 0.838 | 0.135 | 0.907 | 0.091 | 0.870 | 0.129 | 0.849 | 0.132 |
| LI | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 |
| FTHB | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Self Employed | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Second Home | 0.295 | 0.456 | 0.268 | 0.446 | 0.312 | 0.465 | 0.301 | 0.460 | 0.295 | 0.456 |
| Investor Prop. | 0.518 | 0.500 | 0.793 | 0.408 | 0.532 | 0.501 | 0.566 | 0.497 | 0.487 | 0.500 |
| Condo | 0.085 | 0.278 | 0.061 | 0.241 | 0.064 | 0.246 | 0.072 | 0.260 | 0.090 | 0.287 |
| Corresp. Orig. | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Broker Orig. | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Credit Union | 0.277 | 0.447 | 0.500 | 0.503 | 0.339 | 0.476 | 0.265 | 0.443 | 0.254 | 0.436 |
| Depository | 0.241 | 0.428 | 0.293 | 0.458 | 0.303 | 0.462 | 0.247 | 0.433 | 0.230 | 0.421 |
| Non-Depository | 0.090 | 0.286 | 0.085 | 0.281 | 0.110 | 0.314 | 0.090 | 0.288 | 0.088 | 0.283 |
| No-Cost Loan | 0.006 | 0.076 | 0.000 | 0.000 | 0.009 | 0.096 | 0.000 | 0.000 | 0.007 | 0.082 |
| **Closing Costs ($)** | | | | | | | | | | |
| Net Lender and Orig. Charges | $2,178 | $1,753 | $2,016 | $2,100 | $2,153 | $2,212 | $2,461 | $1,752 | $2,148 | $1,665 |
| Rate Cost | $6,013 | $3,398 | $5,842 | $3,055 | $6,097 | $3,090 | $6,549 | $3,764 | $5,932 | $3,390 |
| L&O Charges + Rate Cost | $8,191 | $3,752 | $7,858 | $3,650 | $8,249 | $3,817 | $9,010 | $4,034 | $8,080 | $3,695 |
| Title and Settle. Charges | $2,593 | $1,166 | $3,118 | $1,139 | $2,684 | $1,159 | $2,828 | $1,179 | $2,504 | $1,151 |
| Total Costs Net of Credits | $13,027 | $6,263 | $13,705 | $6,226 | $13,216 | $6,405 | $13,952 | $6,659 | $12,805 | $6,176 |
| **Closing Costs (Pct. of Price)** | | | | | | | | | | |
| Net Lender and Orig. Charges | 0.85 | 0.74 | 0.60 | 0.62 | 0.90 | 0.96 | 0.94 | 0.74 | 0.85 | 0.72 |
| Rate Cost | 2.01 | 0.93 | 1.66 | 0.90 | 2.29 | 0.94 | 2.13 | 0.94 | 1.99 | 0.92 |
| L&O Charges + Rate Cost | 2.86 | 1.20 | 2.27 | 1.11 | 3.19 | 1.34 | 3.07 | 1.18 | 2.84 | 1.18 |
| Title and Settle. Charges | 0.92 | 0.42 | 0.90 | 0.36 | 1.09 | 0.52 | 1.00 | 0.44 | 0.89 | 0.40 |
| Total Costs Net of Credits | 4.48 | 1.86 | 4.08 | 2.70 | 5.06 | 2.11 | 4.73 | 1.86 | 4.42 | 1.73 |
| **Closing Costs (N Charges)** | | | | | | | | | | |
| Lender and Orig. Charges | 6.1 | 2.2 | 5.4 | 1.9 | 6.2 | 2.4 | 6.4 | 2.2 | 6.0 | 2.1 |
| Title and Settle. Charges | 7.6 | 3.2 | 8.3 | 3.4 | 8.2 | 3.2 | 7.6 | 3.1 | 7.5 | 3.2 |

**Table A2** Summary Statistics for NHS matched sample (Continued)

| | All N Obs. = 1,396 | | Asian N Obs. = 82 | | Black N Obs. = 109 | | Hispanic White N Obs. = 166 | | Non-Hispanic White N Obs. = 1,039 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. |
| **Census Tract Characteristics** | | | | | | | | | | |
| Med. Home Value ($1,000) | $259 | $138 | $335 | $174 | $225 | $108 | $255 | $145 | $258 | $134 |
| Med. Household Income ($1,000) | $76 | $29 | $91 | $33 | $71 | $28 | $75 | $27 | $76 | $28 |
| Pct. Adults BA Deg. or Higher | 0.369 | 0.170 | 0.459 | 0.182 | 0.353 | 0.155 | 0.335 | 0.165 | 0.369 | 0.170 |
| Pct. Asian NH | 0.043 | 0.066 | 0.104 | 0.094 | 0.045 | 0.053 | 0.046 | 0.064 | 0.038 | 0.062 |
| Pct. Black NH | 0.103 | 0.159 | 0.092 | 0.102 | 0.299 | 0.281 | 0.089 | 0.127 | 0.086 | 0.134 |
| Pct. Hispanic | 0.132 | 0.156 | 0.167 | 0.158 | 0.140 | 0.150 | 0.256 | 0.239 | 0.108 | 0.127 |
| **NHS Question** | | | | | | | | | | |
| Got Multiple Quotes | 0.629 | 0.483 | 0.747 | 0.438 | 0.664 | 0.475 | 0.622 | 0.486 | 0.617 | 0.486 |