

# What is the Mortgage Shopping Experience of Today's Homebuyer?

## *Lessons from Recent Fannie Mae Acquisitions*

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Prospective homebuyers must navigate the complex process of obtaining a mortgage. Research and consumer guidance suggest that obtaining multiple mortgage quotes, and being better-informed may help borrowers get a mortgage with a better set of financial terms<sup>1,2,3,4</sup>. Improved borrower outcomes also may benefit lenders in the form of increased customer satisfaction and retention.

In order to enhance our understanding of how the mortgage shopping process might be improved for the borrower, we used Fannie Mae's National Housing Survey™ to analyze the mortgage shopping behaviors and experiences of recent first-time and repeat homebuyers whose loans were acquired by Fannie Mae. Specifically, we examine a variety of demographic and other characteristics to understand which are most highly associated with the number of mortgage quotes the borrower obtained, the influence of referrals on lender choice, and the likelihood of reporting unexpected changes at closing.

We find that recent homebuyers' key shopping experiences and behaviors are most highly associated with income, age, level of previous home buying experience, and whether or not the buyer is a member of a racial/ethnic minority group<sup>5</sup>. The minority variable requires further examination due to sample size limitations within each underlying racial/ethnic group. Higher income, younger-aged, and minority borrowers are more likely to obtain multiple quotes when shopping for a mortgage. First-time homebuyers and lower-income borrowers are more likely to say that referrals from friends, family, or co-workers had a major influence on their choice of lender. Only first-time homebuyers are more likely to say that a real estate agent's or mortgage specialist's referral influenced their choice of lender. When it comes to surprises at the closing table, first-time and minority homebuyers are more likely to report unexpected changes, though we see differences between the underlying racial/ethnic groups in the descriptive results. These findings suggest that there is an opportunity to help consumers improve upon the mortgage shopping process.

## Research Methodology

In order to better understand the mortgage shopping behaviors of today's homebuyers, we sampled two groups of recent owner-occupant (non-investor) borrowers from the Fannie Mae book of business during the first quarter of 2014, in conjunction with our existing National Housing Survey<sup>6</sup>:

- **First-time homebuyers** who took out purchase mortgage loans<sup>7</sup> in May-November 2013 and whose loans were acquired by Fannie Mae in May-November 2013; this sample was generated by

<sup>1</sup> Berndt, Antje., Hollifield, Burton., and Sandás, Patrik. 2010. "The Role of Mortgage Brokers in the Subprime Crisis." National Bureau of Economic Research Working Paper 16175. <http://www.nber.org/papers/w16175.pdf>

<sup>2</sup> Woodward, Susan E., and Robert E. Hall. 2012. "Diagnosing Consumer Confusion and Sub-optimal Shopping Effort: Theory and Mortgage-Market Evidence." *American Economic Review*, 102(7): 3249-76.

<sup>3</sup> Berndt, Antje., Hollifield, Burton., and Sandás, Patrik. 2013. How Subprime Borrowers and Mortgage Brokers Shared the Pie. *Available at SSRN*. <http://www.consumer.ftc.gov/articles/0189-shopping-mortgage>;

[http://www.federalreserve.gov/consumerinfo/fivetips\\_mortgageshop.htm](http://www.federalreserve.gov/consumerinfo/fivetips_mortgageshop.htm)

<sup>5</sup> Minorities here include Asians, Blacks, and Hispanics, and Non-minorities include non-Hispanic Whites as reported in the National Housing Survey.

<sup>6</sup> Fannie Mae began conducting the monthly National Housing Survey in June of 2010. The telephone survey is conducted on a nationally representative sample of American consumers and covers a broad range of topics, including sentiment toward housing, the economy, and household finances. For more information, please visit <http://fanniemae.com/portal/research-and-analysis/housing-survey.html>.

first identifying potential first-time homebuyers according to Fannie Mae data and then surveying those borrowers to confirm that their current home is the first they've ever owned<sup>8</sup>.

- **Repeat homebuyers** who took out purchase mortgage loans in May-November 2013 and whose loans were acquired by Fannie Mae in May-November 2013; this sample only includes borrowers who have had at least one prior mortgage loan that also was acquired by Fannie Mae<sup>9</sup>.

It is important to note from the definitions above that these samples are not representative of the population of all recent first-time or repeat homebuyers with a mortgage in the United States. Among other non-Fannie Mae channels, they do not include current or prior FHA, VA, or sub-prime borrowers who may have different demographic distributions than the Fannie Mae samples. We compared our samples to the U.S. Census 2013 American Housing Survey (AHS) samples, which better represent the total population of mortgage borrowers across a selected list of demographic and loan characteristics. The Fannie Mae first-time homebuyer sample is very similar to AHS first-time homebuyers in many aspects including age, income, employment rate, percentage of minority homebuyers, front-end debt-to-income ratio (front-end DTI<sup>10</sup>) and loan-to-value ratio (LTV<sup>11</sup>), but higher in average loan amount, monthly housing cost, and purchase price. Fannie Mae repeat homebuyers in the sample are similar to AHS repeat homebuyers with respect to monthly housing cost, front-end DTI, and LTV, but have a higher average age, average income, percentage non-minority, employment rate, purchase price, and average loan amount (see Table 1 in the Appendix for further details). Readers are advised not to over-generalize the findings from this analysis to all recent homebuyers with a mortgage.

To minimize potential sampling bias, we weighted the two samples to match their corresponding population from the 2013 Fannie Mae book of business by age, gender, and race/ethnicity. The sampling weights were applied in all analyses presented in this study.

To understand better what factors may be associated with homebuyers' mortgage shopping behavior, we used logistic regression models to test and control for multiple explanatory variables simultaneously, identifying those that have statistically significant associations with a given survey result when the other variables are held constant. We created four regression models, one for each of the following mortgage outcomes: obtaining multiple quotes; referrals from friends, family, or co-workers influencing lender choice; a real estate agent's or mortgage specialist's referral influencing lender choice; and unexpected changes at mortgage closing. Each regression examines the following six characteristics as explanatory variables: level of previous buying experience (whether the buyer is a repeat or first-time homebuyer), whether or not the buyer is a member of a racial/ethnic minority group, income, education, credit score at mortgage origination, and age. The results of each logistic regression analysis indicate which ones, if any, of the six characteristics tested are associated with a significantly different likelihood of a given outcome. For example, a logistic regression will tell us whether an observed difference between first-time and repeat homebuyers' likelihood of obtaining multiple mortgage quotes is related to the difference in their level of home buying experience or other demographic differences such as age and income level distributions. For further detail on the logistic regression methodology, please see the appendix.

This paper primarily highlights results based on statistical significance at the 95 percent confidence level, unless otherwise noted.

The total percentage of responses reported for a given question may add up to less than 100 percent of the population as respondents may volunteer a response of "don't know." The addition of the "don't know" responses brings the total responses for a given question to 100 percent of the population.

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<sup>7</sup> A purchase mortgage loan is only used for the purchase of a home, not to refinance an existing mortgage or to take out a new loan on a home the borrower already owns.

<sup>8</sup> In order to be considered a "first-time homebuyer" in this analysis, respondents had to answer "yes" to each of the following survey questions: "Do you own your primary residence?" and "Is this the first home you've owned?"

<sup>9</sup> This requirement insures that no first-time homebuyers are included in the repeat homebuyer sample.

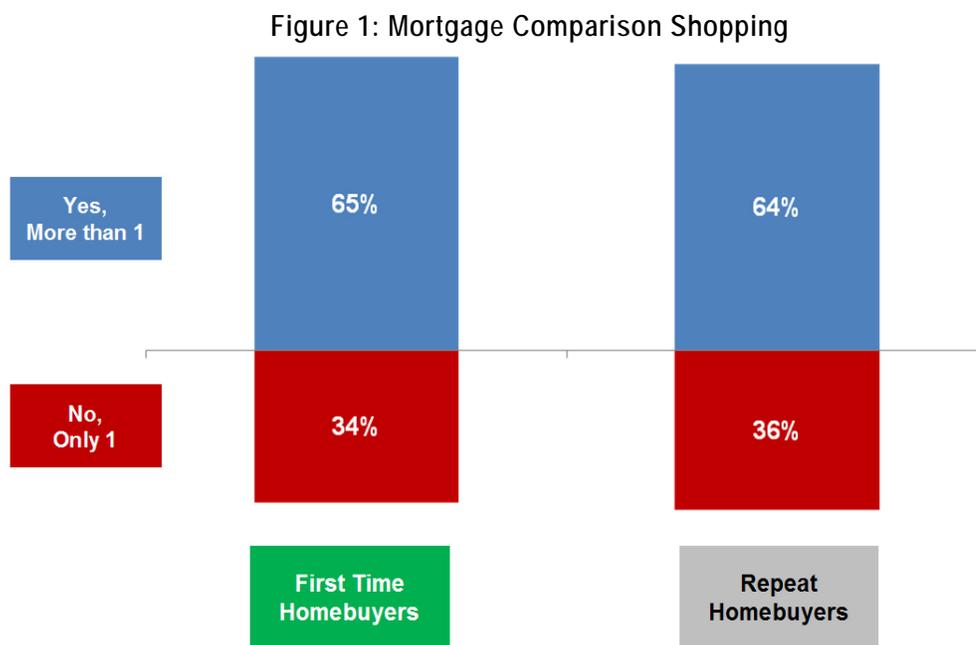
<sup>10</sup> Calculated as the ratio of monthly housing cost over monthly household income.

<sup>11</sup> Calculated as the ratio of the initial loan amount over purchase price.

## Key Findings

### **Higher Income, Younger, and Minority Homebuyers Are More Likely to Shop Around for a Mortgage**

Obtaining multiple mortgage quotes can help prospective borrowers get the most attractive deal they can and save money on mortgage closing costs and monthly payments. We asked our sample of 2013 first-time and repeat homebuyers on Fannie Mae's book of business whether they obtained multiple mortgage quotes.<sup>12</sup> About two thirds of recent borrowers (65 percent of first-time homebuyers and 64 percent of repeat homebuyers) answered "Yes," suggesting that previous home buying experience is not correlated with improved comparison shopping habits, at least among our sample of recent borrowers on Fannie Mae's book of business (Figure 1).



When we apply the logistic regression model to control for other variables, the results show that three variables are significantly associated with the likelihood of obtaining multiple mortgage quotes: income, age, and whether or not the buyer is a member of a racial/ethnic minority group. Buying experience, education, and credit score were not significantly associated with obtaining multiple quotes:

- Higher income groups in general are more likely to obtain multiple quotes. Specifically, those with an income of \$75,000-\$100,000 are 17 percent more likely than those with an income under \$50,000 to obtain multiple quotes.<sup>13</sup>
- Borrowers age 50 and above are 16 percent less likely to obtain multiple quotes than borrowers under age 30.
- Minorities are 19 percent more likely to obtain multiple quotes than non-minorities.

In the sample, 76 percent of Asians, 75 percent of Blacks, and 77 percent of Hispanics report obtaining multiple quotes, compared with 62 percent among non-minorities. Although the minority subgroup sample sizes are insufficient to yield statistically significant findings when tested separately from one another (Blacks and Hispanics each comprise 5 percent or less of the sample), directional results suggest that different minority

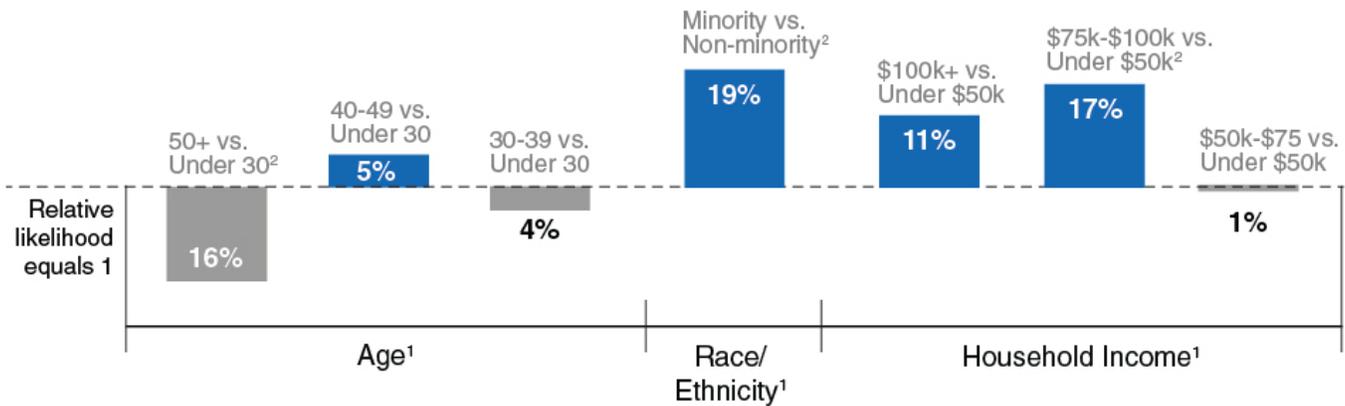
<sup>12</sup> See appendix for question text.

<sup>13</sup> This result is consistent with [previous NHS analysis](#), which shows a similar relationship between income level and the likelihood of mortgage comparison shopping.

subgroups may have similar likelihoods to one another of obtaining multiple quotes. However, in the multi-variable logistic regression analysis, we combine these minority groups into one category due to limited sample sizes. Further research at the racial/ethnic minority group level is necessary for more conclusive findings.

Figure 2: Significant explanatory variables and their relative likelihoods over the baseline groups

*Obtain Multiple Quotes*



1. The overall association of the explanatory variable with the outcome is significant at 5%
2. The difference between the two groups is significant at 5%

For further details on this analysis, please see Table 3 in the appendix.

Among those first-time and repeat homebuyers who told us they did not obtain multiple mortgage quotes, we asked this follow up question:

*What was the primary reason you did not obtain more than one mortgage quote?<sup>14</sup>*

For both first-time and repeat homebuyers on Fannie Mae’s 2013 book of business who did not report obtaining multiple quotes, the most popular reason selected was “I was satisfied with the first quote I got” (55 percent of first-time and 46 percent of repeat). The next most popular reason was “I was most comfortable with the lender I got my quote from” (18 percent of first-time and 27 percent of repeat). Note that repeat buyers are slightly more likely than first-timers to choose the latter option. For further details on the results from this survey question, please see the presentation slides that accompany this paper.

**Referrals Are More Likely to Influence First-Time and Lower Income Homebuyers’ Lender Choice**

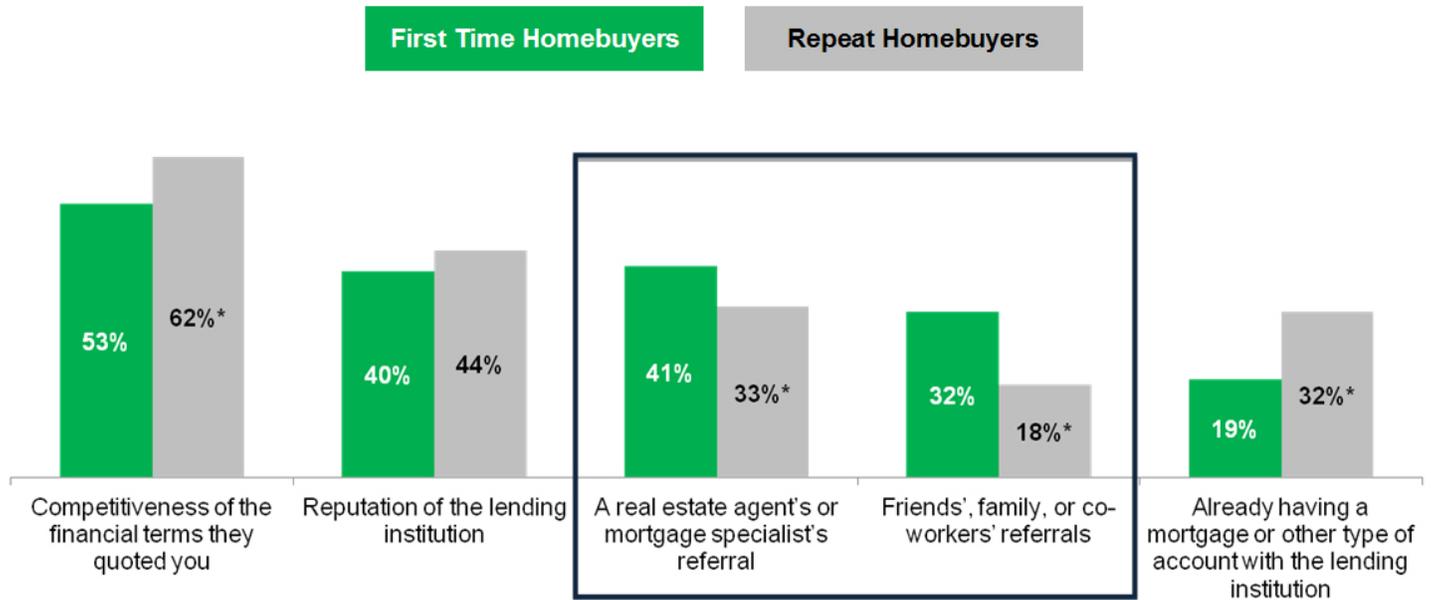
Homebuyers may be considering a number of factors when choosing a lender, including the attractiveness of the financial terms offered and the lender’s ability to execute the transaction in an efficient and upfront manner. Referrals from trusted advisors can be a key source of information to help find a lender, though it is important for homebuyers to evaluate these referrals to determine which lender best meets their individual needs. We asked our sample of 2013 first-time and repeat homebuyers on Fannie Mae’s book of business what factors had a major influence on their choice of lender.<sup>15</sup> While offer competitiveness and lender reputation were among the most commonly selected major influencers for both first-time and repeat homebuyers, referrals had more influence on first-time homebuyers than repeat homebuyers. Thirty-two percent of first time homebuyers said that “Friends’, family, or co-workers’ referrals” had a “Major Influence” on their choice of lender, compared with only 18 percent of repeat homebuyers. Forty-one percent of first-time homebuyers said that “A real estate agent’s or mortgage specialist’s referral” had a “Major Influence” on their choice of lender, compared with only

<sup>14</sup> The following answer choices were rotated randomly: “I was satisfied with the first quote I got”; “I was most comfortable with the lender I got my quote from”; “My broker shopped around for me”; “Too much hassle”; “I probably would not have been approved by anyone else”; “It is difficult to understand the differences between quotes.”

<sup>15</sup> See appendix for question text and answer choices.

33 percent of repeat homebuyers (Figure 3). These results suggest that homebuyers today who are new to the process value the advice of others who may have more experience. What is not clear is the extent to which recent homebuyers are evaluating these referrals to determine how well the recommended lenders fit their needs and whether they are aware of referring parties' interest, where applicable, in the housing transaction when making such an evaluation.

Figure 3: Factors Influencing Lender Choice



To control for other variables, we applied two logistic regression models. The first model tests the influence of friends', family, or co-workers' referrals, while the second tests the influence of a real estate agent's or mortgage specialist's referral. The results show that two variables are significantly associated with the likelihood of friends', family, or co-workers' referrals influencing lender choice: buying experience and income:

- First-time homebuyers are 31 percent more likely to be influenced by friends', family, or co-workers' referrals when choosing a lender than repeat homebuyers.
- Higher income homebuyers are less likely to be influenced by these referrals when choosing a lender than lower income homebuyers. Specifically, those with an income over \$100,000 are 37 percent less likely than those with an income under \$50,000 to be influenced by friends', family, or co-workers' referrals when choosing a lender.<sup>16</sup>

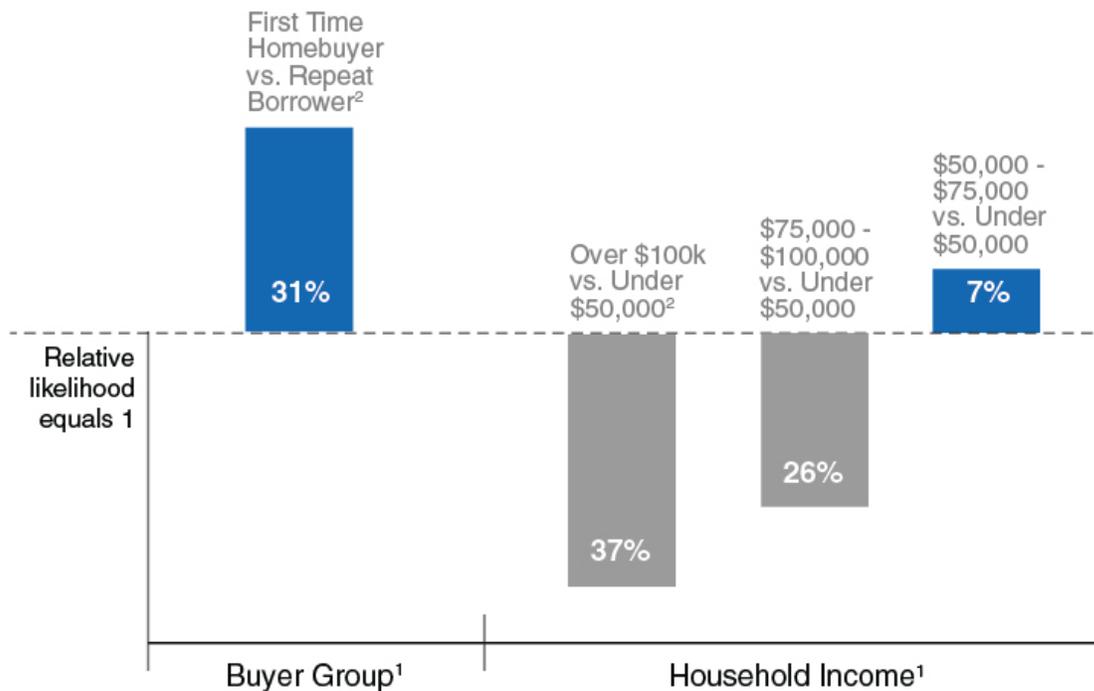
With regard to a real estate agent's or mortgage specialist's referral, the only statistically significant variable among the six tested is buying experience:

- First-time homebuyers are 29 percent more likely to be influenced by a real estate agent's or mortgage specialist's referral when choosing a lender than repeat homebuyers.

<sup>16</sup> This result is consistent with [previous NHS analysis](#), which shows a similar relationship between income level and the likelihood of being influenced by referrals.

Figure 4: Significant explanatory variables and their relative likelihoods over the baseline groups

Report major influence from friends', family, or co-workers' referrals



1. The overall association of the explanatory variable with the outcome is significant at 5%
2. The difference between the two groups is significant at 5%

For further details on this analysis, please see Table 4 and Table 5 in the appendix.

### ***First-Time and Minority Homebuyers Are More Likely to Experience Closing Table Surprises***

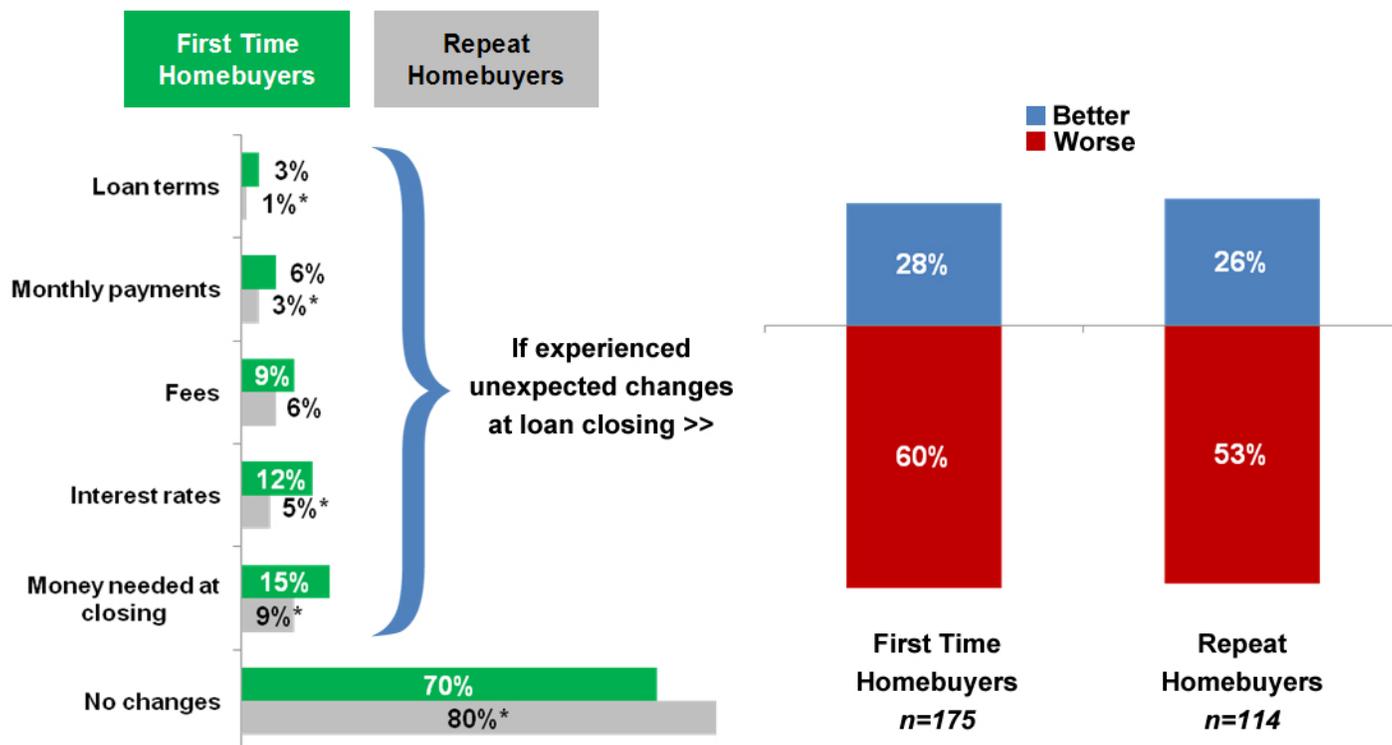
Some aspects of a mortgage loan can change from the time the borrower receives mortgage disclosure documents to the time the loan is closed. Unfavorable unexpected changes at loan closing may present additional financial challenges for borrowers. We asked our sample of 2013 first-time and repeat homebuyers on Fannie Mae's book of business whether they experienced any unexpected changes at their mortgage closing.<sup>17</sup> For those that did, we asked the following question:

*Did this/these changes make the loan better or worse for you?*

Twenty percent of the repeat homebuyer sample and 30 percent of the first-time homebuyer sample reported experiencing some unexpected change to their mortgage at closing. The majority of these homebuyers believed the changes were for the worse (60 percent of first-time homebuyers and 53 percent of repeat homebuyers who experienced unexpected changes). The most common changes reported were to the amount of money needed at closing, followed by interest rate and fees. Since these changes are self-reported via the survey, any changes to the mortgage that the homebuyer did not notice at the closing table would be reflected in the data as having experienced "no changes" (Figure 5).

<sup>17</sup> See appendix for question text and answer choices.

Figure 5: Unexpected Changes at Mortgage Closing



When we apply the logistic regression model to control for other variables, the results show that three variables are significantly associated with the likelihood of experiencing unexpected changes at loan closing: buying experience, income, and whether or not the buyer is a member of a racial/ethnic minority group. We saw no significant difference from education, credit score, and age:

- First-time homebuyers are 32 percent more likely to report unexpected changes than repeat homebuyers.
- Higher income homebuyers are less likely to report unexpected changes. Specifically, those with an income of \$75,000-\$100,000 are 24 percent less likely than those with an income under \$50,000 to report unexpected changes.
- Minority homebuyers are 33 percent more likely than non-minority homebuyers to report unexpected changes.

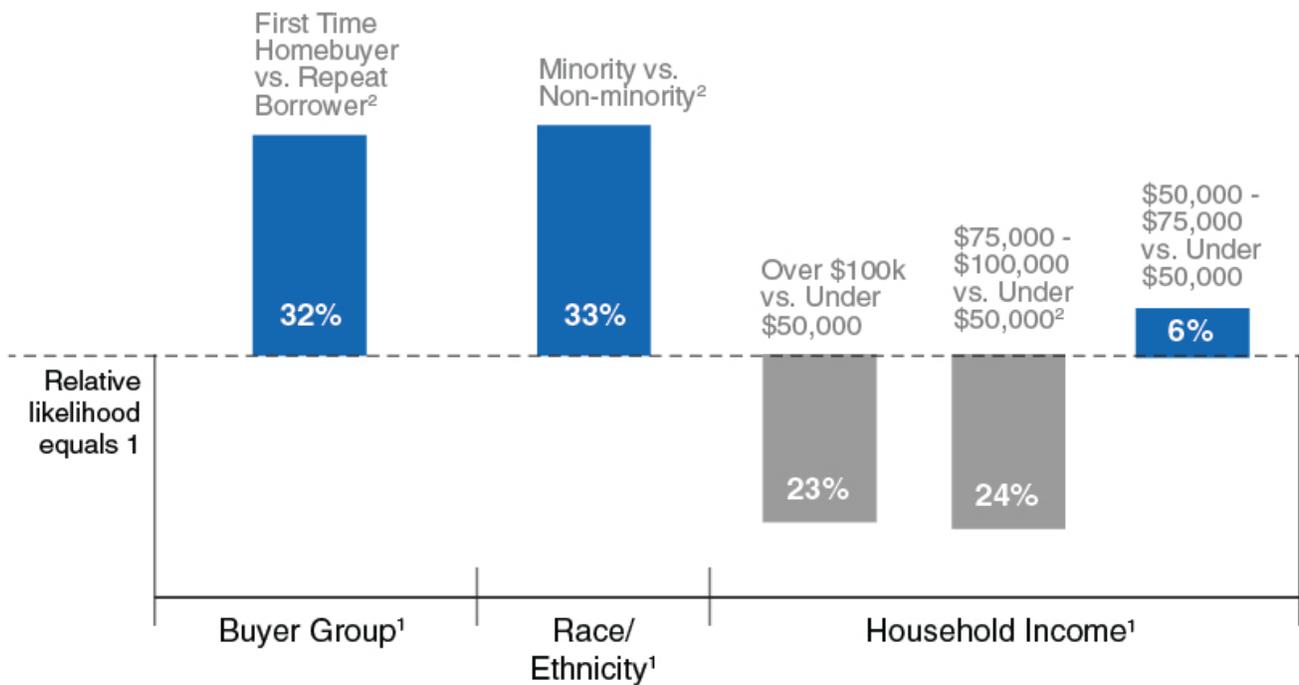
In the sample, 37 percent of Asians, 18 percent of Blacks, and 25 percent of Hispanics report unexpected changes, compared with 23 percent among non-minorities. Although the minority subgroup sample sizes are insufficient to yield statistically significant findings when tested separately from one another (Blacks and Hispanics each comprise 5 percent or less of the sample), directional results suggest that different minority subgroups may have significantly different likelihoods from one another of reporting unexpected changes at mortgage closing. However, in the multi-variable logistic regression analysis, we combine these minority groups into one category due to limited sample sizes. Further research at the racial/ethnic minority group level is necessary for more conclusive findings. Given the differences in unexpected changes among the underlying subgroups, we also recommend further research to understand whether, and to what extent, language barriers play a role in the likelihood of reporting unexpected changes at mortgage closing.

When compared with the “obtaining multiple quotes” results, these “unexpected changes” results seem to suggest that engaging in mortgage comparison shopping is not directly correlated with a lower likelihood of reporting unexpected changes at closing. When we look at the total sample population, we do not see a

different frequency of unexpected changes for those who obtain multiple quotes (26 percent of this group report unexpected changes) versus those who do not (23 percent of this group report unexpected changes). Further research is needed to better understand the relationship between obtaining multiple quotes and surprises at closing and what other factors might be associated with fewer surprises at closing.

Figure 6: Significant explanatory variables and their relative likelihoods over the baseline groups

Unexpected changes at mortgage closing



- 1. The overall association of the explanatory variable with the outcome is significant at 5%
- 2. The difference between the two groups is significant at 5%

For further details on this analysis, please see Table 6 in the appendix.

Taking a step back to look at the entire mortgage process, about a third (34 percent) of 2013 Fannie Mae book of business repeat homebuyers said “less paperwork” would have made the mortgage process easier when asked the following question:

*What, if anything, would have made the process of getting a mortgage easier? Please select the one that would have made the process easiest for you.<sup>18</sup>*

While “less paperwork” was by far the most popular response among the repeat homebuyer sample, first-time homebuyers’ responses were more spread out across all the options listed. Overall, the responses suggest there are a variety of pain points for consumers going through the mortgage process today. For further details on the results from this survey question, please see the presentation slides that accompany this paper.

## Implications

Research and consumer guidance suggests that obtaining multiple mortgage quotes, and being better-informed may help borrowers get a mortgage with a better set of financial terms<sup>1</sup>2<sup>3</sup>4. In order to enhance our

<sup>18</sup> The following answer choices were rotated randomly: “Less paperwork”; “Less back and forth during the approval process”; “Shorter length of time from application to closing”; “Loan terms and costs that are easier to understand”; “The ability to shop and compare loan terms from multiple lenders at once”; “More responsiveness from your lender”; an option of “None” also was included but not rotated among the other choices.

understanding of how the mortgage shopping process might be improved for the borrower, we examined a variety of demographic and other characteristics to understand which are most highly associated with the number of mortgage quotes the borrower obtained, the influence of referrals on lender choice, and the likelihood of reporting unexpected changes at closing.

There is an opportunity to help consumers be better informed and improve upon the mortgage shopping process. About a third of recent homebuyers in our survey did not shop around for a mortgage, often reporting that they were satisfied with their first quote. Previous experience getting a mortgage did not increase the likelihood of shopping around. As large and infrequent as the mortgage transaction is in most people's financial lives, these borrowers may be leaving money on the table by not shopping around and negotiating for the best terms they can get. Getting a better deal can help borrowers sustain their mortgage even in the case of unexpected increases in expenses or decreases in income. Unfortunately, comparing the cost of different mortgages is not as simple as comparing the cost of, for example, different vacuum cleaners. In the case of the comparing vacuum cleaner costs, people can typically find the total price clearly labeled without ever speaking to a salesperson, whereas comparing mortgage costs has many cost parameters (such as rate, points, lender fees, other closing costs, monthly payment, etc.) with both immediate and long-term implications that vary from borrower to borrower.

Cost does not seem to be the only issue when selecting a mortgage. The level of influence of referrals on today's first-time and lower-income homebuyers suggests that finding a lender that delivers on other dimensions such as efficiency and customer service also is a key area of focus for many. What is not clear is the extent to which recent homebuyers are evaluating these referrals to determine how well the recommended lenders fit their needs and whether they are aware of referring parties' interest, where applicable, in the housing transaction when making such an evaluation. Given the complexity and infrequency of the mortgage transaction, consumers may benefit from better tools and advice from knowledgeable but objective third parties to assess the outcomes that lenders provide across multiple variables such as cost, efficiency, and customer service, allowing them to balance these tradeoffs to best meet their needs. Lenders have an opportunity to facilitate the shopping process by providing clear information for consumers about the different mortgage product choices they offer, which may help reduce unexpected changes at closing and increase customer satisfaction and referrals.

Offers that are easier to understand and compare might motivate more borrowers to shop around, particularly if they have a better sense of the financial savings they might achieve by doing so. Encouraging homebuyers to seek multiple sources of information, determine the key criteria that are important to them, and ask detailed questions about the basis for a lender recommendation when shopping for a mortgage may help them find a lender that best meets their individual needs. This increased understanding in the earlier part of the process may help reduce the frequency of unexpected changes at the closing table.

## Appendix

### **Additional Sample Characteristics**

The first-time homebuyer sample contains 602 respondents, with a margin of error of  $\pm 3.99$  percent. The repeat homebuyer sample contains 597 respondents, with a margin of error of  $\pm 4.01$  percent.

In both samples, the vast majority of respondents reported being employed full time. The median age of the repeat homebuyer sample is 45, while the median age of the first-time homebuyer sample is 31.

It is important to note the difference between the 2013 Fannie Mae first-time and repeat homebuyer sample populations and the general population of homebuyers who took out a mortgage to buy a home in 2013. The latter includes borrowers who took out current and prior mortgages through both Fannie Mae and non-Fannie Mae channels, such as FHA and VA. Using data from the 2013 American Housing Survey (AHS) conducted by the U.S. Census, we compared general mortgage borrowers with the samples of Fannie Mae recent borrowers across a selected list of demographic and loan characteristics. As shown in Table 1 below, the Fannie Mae first-time homebuyer sample is very similar to AHS first-time homebuyers in many aspects including age, income, employment rate, percentage minority, front-end Debt-to-Income Ratio (front-end DTI<sup>19</sup>) and Loan to Value Ratio (LTV<sup>20</sup>), but higher in average loan amount, monthly housing costs, and purchase price. Fannie Mae repeat homebuyers in the sample are similar to AHS repeat homebuyers with respect to monthly housing costs, front-end DTI, and LTV, but have a higher average age, average income, percentage non-minority, employment rate, purchase price, and average loan amount. Readers are advised not to over-generalize the findings from this analysis to all recent homebuyers with a mortgage, especially for the repeat homebuyers, since the differences are quite notable between the Fannie Mae sample populations and the general U.S. population.

Table 1: Characteristics of 2013 First-Time and Repeat Homebuyers by Source<sup>21</sup>

<i>Showing medians</i>	<b>Fannie Mae First-Time Home Buyers</b>	<b>AHS First-Time Home Buyers with Mortgage</b>	<b>Fannie Mae Repeat Home Buyers</b>	<b>AHS Repeat Home Buyers with Mortgage</b>
Age	31	30	45	42
Annual Household Income	\$66,396	\$66,961	\$104,172	\$91,974
% Minority	22%	25%	11%	23%
%Employed Full-Time <sup>22</sup>	93%	95%	89%	82%
Monthly Housing Cost	\$1,275	\$1,165	\$1,626	\$1,625
Purchase Price	\$200,000	\$150,000	\$285,000	\$220,000
Loan Amount	\$175,000	\$126,000	\$226,000	\$198,500
FICO Credit Score	762	N/A	779	N/A
Front-End DTI	0.25	0.22	0.20	0.21
LTV	0.90	0.90	0.80	0.82

<sup>19</sup> Calculated as the ratio of monthly housing cost over monthly household income.

<sup>20</sup> Calculated as the ratio of the initial loan amount over purchase price.

<sup>21</sup> Sources: Fannie Mae National Housing Survey, samples are weighted to represent the new purchase loan population originated and acquired by Fannie Mae in May–November 2013; U.S. Census American Housing Survey (AHS)

<sup>22</sup> AHS employment rate includes both full-time and part-time and can't be separated.

## **Logistic Regression Methodology**

Observed differences in shopping behaviors between first-time and repeat homebuyers may be attributed to many factors, such as buying experience, demographic, and credit characteristics. To better understand what factors may be associated with homebuyers' shopping behavior, we used logistic regression models to test for meaningful associations. The main advantage of a logistic regression model is that it can take into account multiple explanatory variables simultaneously, estimating their effects, and testing for their significance. This approach allows us to disentangle effects in ways that are not possible via use of cross-tabulations (for example, observed differences in the percent of borrowers who obtain multiple quotes between those with college degrees versus those without them may be partially attributable to differences in their income and credit score distributions), because in the regression analysis these confounding factors can be held constant while evaluating the factor of interest.

For a logistic regression model, the dependent variable of interest needs to be coded as a 0/1 variable, while the explanatory variables can be either continuous or categorical. In this study, we used the following shopping behaviors as dependent variables in logistic regressions:

1. Whether homebuyers obtained multiple mortgage quotes (Yes = 1, No = 0)
2. Whether homebuyers think friends', family, or co-workers' referrals had a major influence on their choice of lender (major influence = 1, minor or no influence = 0)
3. Whether homebuyers think a real estate agent's or mortgage specialist's referral had a major influence on their choice of lender (major influence = 1, minor or no influence = 0)
4. Whether homebuyers experienced unexpected changes during mortgage closing (Yes = 1, No = 0)

Table 2 below lists demographic and credit characteristics used in the regression models as the explanatory variables. In order to test the association of these explanatory variables with the outcomes of interest, we selected a baseline value for each variable as noted in Table 1 above. Other values for the explanatory variable were then compared with the baseline value in order to determine which associations are statistically significant.

Table 2: Borrowers' Demographic and Credit variables

Variable Name	Value Coding
Buying Experience	<ul style="list-style-type: none"> <li>• First-time homebuyer</li> <li>• Repeat homebuyer (Baseline)</li> </ul>
Age	<ul style="list-style-type: none"> <li>• Under 30 (Baseline)</li> <li>• 30 – 39</li> <li>• 40 – 49</li> <li>• 50 and greater</li> </ul>
Race/Ethnicity	<ul style="list-style-type: none"> <li>• Non-minority (Baseline)</li> <li>• Minority</li> </ul>
Household Income	<ul style="list-style-type: none"> <li>• Under \$50,000 (Baseline)</li> <li>• \$50,000 – \$74,999</li> <li>• \$75,000 – \$99,999</li> <li>• \$100,000 and greater</li> </ul>
Education Attainment	<ul style="list-style-type: none"> <li>• College degree or higher</li> <li>• No college degree (Baseline)</li> </ul>
Credit Score at Mortgage Origination	<ul style="list-style-type: none"> <li>• Under 725 (Baseline)</li> <li>• 725 – 774</li> <li>• 775 – 799</li> <li>• 800 and greater</li> </ul>

An odds ratio (OR) is the most commonly used statistical measure for presenting logistic regression results<sup>23</sup>. It is the ratio of the odds of a given event (e.g., obtaining multiple quotes) happening within Group 1 (e.g., first-time homebuyers) versus the odds of event happening in Group 2 (e.g., repeat homebuyers).

$$OR = \frac{\frac{P_1}{1 - P_1}}{\frac{P_2}{1 - P_2}}$$

P<sub>1</sub>: probability of event happening in Group 1

P<sub>2</sub>: probability of event happening in Group 2

When the baseline probability is small (e.g., 10 percent), the odds ratio is a good proxy for the relative likelihood (RL) of the event happening. But in our analysis, baseline probability can be high (e.g., the probability of obtaining multiple quotes is approximately 60 percent). To avoid misinterpretation, we calculated the relative likelihood value to compliment every odds ratio presented in the appendix. The relative likelihood measures can be directly interpreted as the percent of increased/reduced probability that a given event will occur in Group 1 versus Group 2.

$$RL = \frac{P_1}{P_2}$$

In the sections below, for each logistic regression model, we present both odds ratios and relative likelihoods.

<sup>23</sup> Stokes, Maura E., Charles S.Davis, and Gary G.Koch. 2000. *Categorical Data Analysis Using the SAS System, Second Edition*. Cary, NC: SAS Institute Inc.

## Detailed Regression Results

### OBTAIN MULTIPLE QUOTES

*Question: When shopping for your current mortgage, did you obtain offers or quotes from more than one financial institution or mortgage broker? Please count only those offers or quotes made based on your specific mortgage qualifications.*

Table 3: Odds Ratios and Relative Likelihoods of Obtaining Multiple Mortgage Quotes

Effect of Explanatory Variable		Odds Ratio	Relative Likelihood
Buyer Group	First-Time Homebuyer vs. Repeat Borrower	1.02	1.01
Age <sup>1</sup>	50 and above vs. Under 30 <sup>2</sup>	0.63	0.84
	40 - 49 vs. Under 30	1.17	1.05
	30 - 39 vs. Under 30	0.9	0.96
Race/Ethnicity <sup>1</sup>	Minority vs. Non-minority <sup>2</sup>	1.74	1.19
Household Income <sup>1</sup>	Over \$100,000 vs. Under \$50,000	1.34	1.11
	\$75,000 - \$100,000 vs. Under \$50,000 <sup>2</sup>	1.57	1.17
	\$50,000 - \$75,000 vs. Under \$50,000	0.97	0.99
Education	College degree vs. No college degree	1.28	1.1
Credit Score	800 or higher vs. Under 725	1.11	1.04
	775 - 799 vs. Under 725	1	1
	725 - 774 vs. Under 725	1.11	1.04

1. The overall association of the explanatory variable with the outcome is significant at 5%
2. The difference between the two groups is significant at 5%

### IMPACTS OF REFERRAL ON CHOOSING A LENDER

*Question: What level of influence did this factor have on your choice of lender?*

*[Influence levels]*

- *Major influence*
- *Minor influence*
- *No influence*

*[Factors rotated randomly; no limit on the number of factors that can be selected as a "major influence"]*

- *A real estate agent's or mortgage specialist's referral*
- *Already having a mortgage or other type of account with the lending institution*
- *Reputation of the lending institution*
- *Competitiveness of the financial terms they quoted you*
- *Friends', family, or co-workers' referrals*

Table 4: Odds Ratios and Relative Likelihoods of Noting “Friends’, Family, Or Co-workers’ Referrals” Had a Major Influence on Lender Choice

Effect of Explanatory Variable		Odds Ratio	Relative Likelihood
Buyer Group <sup>1</sup>	First-Time Homebuyer vs. Repeat Borrower <sup>2</sup>	1.43	1.31
Age <sup>1</sup>	50 and above vs. Under 30 <sup>2</sup>	0.62	0.69
	40 - 49 vs. Under 30	0.74	0.8
	30 - 39 vs. Under 30	0.94	0.96
Race/Ethnicity	Minority vs. Non-minority	0.97	0.98
Household Income <sup>1</sup>	Over \$100,000 vs. Under \$50,000 <sup>2</sup>	0.55	0.63
	\$75,000 - \$100,000 vs. Under \$50,000	0.67	0.74
	\$50,000 - \$75,000 vs. Under \$50,000	1.1	1.07
Education	College degree vs. No college degree	1.33	1.25
Credit Score <sup>1</sup>	800 or higher vs. Under 725	1.04	1.03
	775 - 799 vs. Under 725 <sup>2</sup>	0.6	0.67
	725 - 774 vs. Under 725	0.95	0.96

1. The overall association of the explanatory variable with the outcome is significant at 5%
2. The difference between the two groups is significant at 5%

Table 5: Odds Ratios and Relative Likelihoods of Noting “A real estate agent’s or mortgage specialist’s referral” Had a Major Influence on Lender Choice

Effect of Explanatory Variable		Odds Ratio	Relative Likelihood
Buyer Group <sup>1</sup>	First-Time Homebuyer vs. Repeat Borrower <sup>2</sup>	1.5	1.29
Age	50 and above vs. Under 30	1.45	1.26
	40 - 49 vs. Under 30	1.23	1.14
	30 - 39 vs. Under 30	1.12	1.07
Race/Ethnicity	Minority vs. Non-minority	1.18	1.11
Household Income	Over \$100,000 vs. Under \$50,000	0.91	0.94
	\$75,000 - \$100,000 vs. Under \$50,000	0.85	0.9
	\$50,000 - \$75,000 vs. Under \$50,000	1.01	1.01
Education	College degree vs. No college degree	0.86	0.91
Credit Score	800 or higher vs. Under 725	1.36	1.2
	775 - 799 vs. Under 725	0.95	0.97
	725 - 774 vs. Under 725	1.1	1.06

1. The overall association of the explanatory variable with the outcome is significant at 5%
2. The difference between the two groups is significant at 5%

## EXPERIENCE UNEXPECTED CHANGES AT MORTGAGE CLOSING

*Did you experience any unexpected changes in any of the following items at your loan closing?  
Please tell me all that apply. [Choices rotated randomly]*

- *Loan terms*
- *Monthly payments*
- *Fees*
- *Interest rates*
- *Money needed at closing*
- *No changes*

Table 4: Odds Ratios and Relative Likelihoods of Experiencing Unexpected Changes during Mortgage Closing

Effect of Explanatory Variable		Odds Ratio	Relative Likelihood
Buyer Group <sup>1</sup>	First-Time Homebuyer vs. Repeat Borrower <sup>2</sup>	1.43	1.32
Age	50 and above vs. Under 30	0.69	0.75
	40 - 49 vs. Under 30	0.92	0.94
	30 - 39 vs. Under 30	0.82	0.86
Race/Ethnicity <sup>1</sup>	Minority vs. Non-minority <sup>2</sup>	1.45	1.33
Household Income <sup>1</sup>	Over \$100,000 vs. Under \$50,000	0.71	0.77
	\$75,000 - \$100,000 vs. Under \$50,000 <sup>2</sup>	0.7	0.76
	\$50,000 - \$75,000 vs. Under \$50,000	1.09	1.06
Education	College degree vs. No college degree	1.33	1.25
Credit Score	800 or higher vs. Under 725	1.05	1.03
	775 - 799 vs. Under 725	0.72	0.78
	725 - 774 vs. Under 725	0.74	0.79

1. The overall association of the explanatory variable with the outcome is significant at 5%
2. The difference between the two groups is significant at 5%

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