RESEARCH REPORT

Lower-Credit Mortgage Applicants Are Dropping Out of the Market
Evidence from the Latest Real Denial Rate Update

Bing Bai        Laurie Goodman        Bhargavi Ganesh

February 2017
ABOUT THE URBAN INSTITUTE
The nonprofit Urban Institute is dedicated to elevating the debate on social and economic policy. For nearly five decades, Urban scholars have conducted research and offered evidence-based solutions that improve lives and strengthen communities across a rapidly urbanizing world. Their objective research helps expand opportunities for all, reduce hardship among the most vulnerable, and strengthen the effectiveness of the public sector.

Copyright © February 2017. Urban Institute. Permission is granted for reproduction of this file, with attribution to the Urban Institute. Cover photo via Shutterstock.
## Contents

**Acknowledgments** iv

**Lower-Credit Mortgage Applicants Are Dropping Out of the Market** 1  
The RDR Consistently Shows the Reality of Credit Accessibility 2  
The RDR Consistently Shows Tighter Credit in the Conventional Channel than in the Government Channel 4  
RDR Results Closely Match Our Housing Credit Availability Index 7  
The RDR Shows the GSEs’ and FHA’s Efforts to Loosen the Credit Box Have Had Some Success 8  
The RDR Shows Much Smaller Racial and Ethnic Group Gaps in Denial Rates 9  
Conclusion 12

**Appendix** 14

**Notes** 18

**References** 19

**About the Authors** 20

**Statement of Independence** 22
Acknowledgments

The Housing Finance Policy Center (HFPC) was launched with generous support at the leadership level from the Citi Foundation and John D. and Catherine T. MacArthur Foundation. Additional support was provided by The Ford Foundation and The Open Society Foundations.

Ongoing support for HFPC is also provided by the Housing Finance Innovation Forum, a group of organizations and individuals that support high-quality independent research that informs evidence-based policy development. Funds raised through the Forum provide flexible resources, allowing HFPC to anticipate and respond to emerging policy issues with timely analysis. This funding supports HFPC’s research, outreach and engagement, and general operating activities.

This report is funded by these combined sources. We are grateful to them and to all our funders, who make it possible for Urban to advance its mission.

The views expressed are those of the authors and should not be attributed to the Urban Institute, its trustees, or its funders. Funders do not determine research findings or the insights and recommendations of Urban experts. Further information on the Urban Institute’s funding principles is available at www.urban.org/support.

Housing Finance Innovation Forum Members as of January 1, 2017


*Individuals.* Raj Date, Mary J. Miller, Jim Millstein, Toni Moss, Shekar Narasimhan, Beth Mlynarczyk, Faith Schwartz, and Mark Zandi

*Data partners.* CoreLogic and Moody’s Analytics
Lower-Credit Mortgage Applicants Are Dropping Out of the Market

The traditional mortgage denial rate is often used to gauge mortgage credit tightness. When the mortgage denial rate is lower, mortgage credit is thought to be looser, and when the mortgage denial rate is higher, mortgage credit is thought to be tighter. But this denial rate, the observed denial rate (ODR), is flawed. It is calculated by dividing the number of denied applications by the total number of applications and fails to consider the variation in applicants’ credit. This calculation can produce misleading conclusions on credit accessibility. For example, in 2006, a period of loose credit, the observed denial rate was higher than it was in today’s tight credit period. To address this issue, the Urban Institute’s Housing Finance Policy Center introduced a new measure of the mortgage application denial rate that controls for applicant quality (Li and Goodman 2014).

This improved measure, the real denial rate (RDR), excludes high-credit-profile (HCP) borrowers who will never be denied a mortgage and considers only those low-credit-profile (LCP) applicants who might be denied.¹ The RDR more accurately represents credit access for two reasons. First, it shows how willing lenders are to approve applicants who pose risk. Second, it controls for the large variations in applicant composition through the housing boom and bust, between conventional and government channels, and across racial and ethnic groups.

Our original RDR work was based on 2013 data. This report updates the RDR series using 2014 and 2015 owner-occupied, purchase mortgage application information obtained from the latest Home Mortgage Disclosure Act data.² The new analysis confirms that the original report’s four key findings extend to the most recent period:

1. The ODR underestimates how hard it has been to get a mortgage. The RDR suggests that a little more than one in three borrowers with less-than-perfect credit were denied mortgages in 2015. The traditional ODR suggests that a little over 1 in 10 applicants were denied mortgages in 2015, a much rosier picture compared with the RDR’s denial rate.

2. The RDR more accurately shows mortgage credit accessibility over time. Despite recent improvements, the RDR suggests mortgage accessibility is lower today than it was in the bubble years (2005–07). The ODR, however, inaccurately suggests that it is easier to get a mortgage today than it was during the bubble years.
3. Accounting for differences in shares of LCP applicants across racial and ethnic groups, the denial rate gap between whites and minorities has narrowed and declined.

4. The Federal Housing Administration (FHA) applicant pool includes more lower-credit applicants, who more easily qualify for an FHA loan than for a conventional loan.

In addition, the more recent data reveal a new development in credit accessibility:

5. Access to mortgage credit began to ease in 2014 as denial rates among lower-credit borrowers fell from 41 percent in 2013 to 34 percent in 2015. Access eased for both FHA and conventional loans in 2014 and 2015, though the drop began earlier for conventional loans. These results are consistent with the trends revealed by our Housing Credit Availability Index (HCAI).³

The RDR Consistently Shows the Reality of Credit Accessibility

As Li and Goodman (2014) noted, the RDR historically tracks reality more closely than does the ODR.

According to the ODR, denial rates were lower in the boom years and higher after the financial crisis, suggesting that it was harder to get a mortgage during the boom years. The ODR was 24 percent in 1998, 14 percent in 2002, 18 percent in 2006 (during the market boom), and 17 percent during the financial crisis. From 2011 to 2013, it stayed at 14 percent before falling to 11 percent in 2015 (figure 1 and table 1).
FIGURE 1

Observed versus Real Denial Rates, 1998–2015

Notes: Based on owner-occupied purchase mortgage applications. ODR = observed denial rate. RDR = real denial rate.

TABLE 1

Observed versus Real Denial Rates and Share of Low-Credit-Profile Applicants and Borrowers, All Channels

<table>
<thead>
<tr>
<th></th>
<th>Denial Rates (%)</th>
<th>Low-Credit-Profile Shares (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ODR all</td>
<td>RDR all</td>
</tr>
<tr>
<td>1998</td>
<td>24</td>
<td>52</td>
</tr>
<tr>
<td>1999</td>
<td>23</td>
<td>47</td>
</tr>
<tr>
<td>2000</td>
<td>22</td>
<td>43</td>
</tr>
<tr>
<td>2001</td>
<td>16</td>
<td>35</td>
</tr>
<tr>
<td>2002</td>
<td>14</td>
<td>30</td>
</tr>
<tr>
<td>2003</td>
<td>14</td>
<td>29</td>
</tr>
<tr>
<td>2004</td>
<td>14</td>
<td>25</td>
</tr>
<tr>
<td>2005</td>
<td>16</td>
<td>26</td>
</tr>
<tr>
<td>2006</td>
<td>18</td>
<td>29</td>
</tr>
<tr>
<td>2007</td>
<td>18</td>
<td>35</td>
</tr>
<tr>
<td>2008</td>
<td>17</td>
<td>39</td>
</tr>
<tr>
<td>2009</td>
<td>15</td>
<td>39</td>
</tr>
<tr>
<td>2010</td>
<td>15</td>
<td>39</td>
</tr>
<tr>
<td>2011</td>
<td>14</td>
<td>40</td>
</tr>
<tr>
<td>2012</td>
<td>14</td>
<td>38</td>
</tr>
<tr>
<td>2013</td>
<td>14</td>
<td>41</td>
</tr>
<tr>
<td>2014</td>
<td>12</td>
<td>38</td>
</tr>
<tr>
<td>2015</td>
<td>11</td>
<td>34</td>
</tr>
<tr>
<td>1998–2004</td>
<td>18</td>
<td>37</td>
</tr>
<tr>
<td>2005–2007</td>
<td>17</td>
<td>30</td>
</tr>
<tr>
<td>2008–2010</td>
<td>16</td>
<td>39</td>
</tr>
<tr>
<td>2011–2015</td>
<td>13</td>
<td>38</td>
</tr>
</tbody>
</table>

Notes: Based on owner-occupied purchase mortgage applications. ODR = observed denial rate. RDR = real denial rate.
Table 1 reveals how the ODR masks reality. In the boom years, more lower-credit consumers were encouraged to submit applications; the likelihood of being rejected increased despite of loose lending standards. As the credit box tightened after the financial crisis, many lower-credit consumers were discouraged from applying, leading to a higher-credit applicant pool and a lower rejection rate. In 2006, 62 percent of loan applicants had low credit. Since 2009, the low credit share has been below 40 percent. From 2013 to 2015, only 33 percent of applicants had low credit, much lower than the 49 percent pre-bubble average (1998–2004).

By controlling for the variation in applicant mix through the boom and bust, the RDR shows that the RDRs are similar to what they were in the pre-bubble period. But the percentage of lower-credit applicants is lower. Marginal borrowers are not applying for mortgage loans.

The RDR Consistently Shows Tighter Credit in the Conventional Channel than in the Government Channel

At loan origination, a borrower chooses whether to obtain a mortgage from one of two channels: government or conventional. The government channel includes loans insured by the FHA, the US Department of Veterans Affairs, or the US Department of Agriculture. The conventional channel includes executions by the government-sponsored enterprises (GSEs), bank portfolio, and private-label securities (PLS). In the post-bubble years, as the PLS market has all but disappeared, the GSEs (Fannie Mae and Freddie Mac) are the main issuers in the conventional market. The government channel has traditionally been used disproportionately by low-income, moderate-income, and minority consumers and has always been easier to qualify for than conventional loans. Therefore, loan denial rates in the government channel would be lower than in the conventional channel.

ODR results confirm that was the case before the financial crisis. But after the crisis, an ODR analysis suggests that the conventional channel had lower denial rates than the government channel (figure 2 and table 2).
FIGURE 2
Observed versus Real Denial Rates: Government and Conventional Channels

![Graph showing observed versus real denial rates for government and conventional channels from 1998 to 2015.](image-url)

**Sources:** Home Mortgage Disclosure Act, CoreLogic, eMBS, and the Urban Institute.

**Notes:** Based on owner-occupied purchase mortgage applications. ODR = observed denial rate. RDR = real denial rate.

TABLE 2
Observed versus Real Denial Rate by Channel

<table>
<thead>
<tr>
<th>Year</th>
<th>Observed Denial Rates (%)</th>
<th>Real Denial Rates (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Government</td>
<td>Conventional</td>
</tr>
<tr>
<td>1998</td>
<td>9</td>
<td>28</td>
</tr>
<tr>
<td>1999</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td>2000</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>2001</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>2002</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>2003</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>2004</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>2005</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>2006</td>
<td>11</td>
<td>18</td>
</tr>
<tr>
<td>2007</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>2008</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>2009</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>2010</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>2011</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>2012</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>2013</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>2014</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>2015</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td>1998–2004</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>2005–2007</td>
<td>13</td>
<td>17</td>
</tr>
<tr>
<td>2008–2010</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>2011–2015</td>
<td>15</td>
<td>12</td>
</tr>
</tbody>
</table>

**Sources:** Home Mortgage Disclosure Act, CoreLogic, eMBS, and the Urban Institute.

**Notes:** Based on owner-occupied purchase mortgage applications.
Again, credit profile changes in the loan applicant pool explain these counterintuitive results. The average share of lower-credit applicants in the conventional channel are 45, 56, 25, and 21 percent for the pre-bubble (1998–2004), bubble (2005–07), crisis (2008–10) and postcrisis (2011–15) periods, respectively (table 3). LCP shares in the government channel, however, are 65, 77, 55, and 53 percent, respectively. Following the crisis, the conventional channel likely discouraged more lower-credit consumers from applying for mortgages than the government channel, leading to fewer borrowers being rejected by the conventional channel than by the government channel.

### TABLE 3
Share of Low-Credit-Profile Applicants and Borrowers by Channel

<table>
<thead>
<tr>
<th>Year</th>
<th>Low-Credit-Profile Applicants (%)</th>
<th>Low-Credit-Profile Borrowers (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Government</td>
<td>Conventional</td>
</tr>
<tr>
<td>1998</td>
<td>57</td>
<td>44</td>
</tr>
<tr>
<td>1999</td>
<td>60</td>
<td>46</td>
</tr>
<tr>
<td>2000</td>
<td>62</td>
<td>47</td>
</tr>
<tr>
<td>2001</td>
<td>63</td>
<td>40</td>
</tr>
<tr>
<td>2002</td>
<td>67</td>
<td>41</td>
</tr>
<tr>
<td>2003</td>
<td>70</td>
<td>44</td>
</tr>
<tr>
<td>2004</td>
<td>76</td>
<td>53</td>
</tr>
<tr>
<td>2005</td>
<td>78</td>
<td>58</td>
</tr>
<tr>
<td>2006</td>
<td>79</td>
<td>60</td>
</tr>
<tr>
<td>2007</td>
<td>73</td>
<td>50</td>
</tr>
<tr>
<td>2008</td>
<td>62</td>
<td>32</td>
</tr>
<tr>
<td>2009</td>
<td>52</td>
<td>22</td>
</tr>
<tr>
<td>2010</td>
<td>51</td>
<td>21</td>
</tr>
<tr>
<td>2011</td>
<td>51</td>
<td>21</td>
</tr>
<tr>
<td>2012</td>
<td>54</td>
<td>21</td>
</tr>
<tr>
<td>2013</td>
<td>53</td>
<td>21</td>
</tr>
<tr>
<td>2014</td>
<td>54</td>
<td>20</td>
</tr>
<tr>
<td>2015</td>
<td>52</td>
<td>20</td>
</tr>
<tr>
<td>1998–2004</td>
<td>65</td>
<td>45</td>
</tr>
<tr>
<td>2005–2007</td>
<td>77</td>
<td>56</td>
</tr>
<tr>
<td>2011–2015</td>
<td>53</td>
<td>21</td>
</tr>
</tbody>
</table>

**Sources:** Home Mortgage Disclosure Act, CoreLogic, eMBS, and the Urban Institute.

**Notes:** Based on owner-occupied purchase mortgage applications.

The RDR, however, masks nothing and consistently shows reality. The conventional channel consistently has a higher RDR than the government channel, but the two curves have the least difference in the bubble years (figure 2 and table 2). This makes sense, because during the bubble years, conventional underwriting standards declined as nontraditional products (e.g., interest-only mortgages, 40-year mortgages, mortgages with negative amortization, mortgages with an initial “teaser” payment and a reset period shorter than five years) were introduced into this market.
RDR Results Closely Match Our Housing Credit Availability Index

When we looked at the RDR in conjunction with our HCAI, which monitors the amount of risk being taken by the market (the ex ante probability of default), we found that the two measures match closely. Both the HCAI (figure 3) and the RDR show loose credit during the precrisis period of 2005–07, a dramatic tightening until 2013, and a marginal loosening since. The HCAI shows that the market is taking less than half the risk it was taking in the precrisis period. The RDR exposes the problem: few lower-credit borrowers have been applying for mortgages since the bust, tight credit standards have discouraged applications, and the denial rate of lower-credit applicants is high, but not that different from the precrisis rate.

**FIGURE 3**
Default Risk Taken by the Mortgage Market, Q1 1998–Q2 2016

The RDR Shows the GSEs’ and FHA’s Efforts to Loosen the Credit Box Have Had Some Success

Figure 2 shows that while the conventional channel continues to have higher denial rates than the government channel, the RDR has declined in both channels since 2013. Moreover, the RDR for conventional loans started to drop in 2011, while the RDR for government loans started to drop in 2014. The same pattern can be seen in our HCAI, which shows that credit availability for GSE loans steadily began rising in 2011, while government loans did not experience an increase until 2014 (figure 3).

Why Do the Data Show a Lag for the Government Channel When It Comes to Loosening the Credit Box?

For the past five years, the GSEs and their conservator, the Federal Housing Finance Agency, have clarified the standards for mortgage put-backs, including the introduction of reps and warrants sunsets in 2012, the relaxation of the sunset eligibility requirement and clarifications of life-of-loan exclusions in 2014, the defect taxonomy in 2015, and an independent dispute resolution process in 2016. The GSEs have also expanded their due diligence to evaluate lender underwriting quality shortly after loan purchase, often allowing lenders to correct mistakes. And recently, Fannie Mae announced Day 1 certainty, waiving certain reps and warrants at origination. Freddie Mac is expected to incorporate a similar program shortly. These policies have led to significant progress in lender clarity (Goodman, Parrott, and Zhu 2015).

The FHA, however, has lagged behind the GSEs and the Federal Housing Finance Agency in its efforts to reduce lender uncertainty. The FHA published the FHA Single-Family Housing Policy Handbook in March 2015, the FHA defect taxonomy in June 2015, and the Supplemental Performance Metric in August 2015. The handbook puts together more than 900 issued mortgagee letters, and the Supplemental Performance Metric assures lenders will not be shut down if they have a more risky book of business than their peers. But these measures are not enough to counteract the False Claims Act, a powerful tool the US Department of Justice has used to pursue expensive claims against mortgage originators (Goodman 2015). FHA’s most promising tool to reassure lenders is the defect taxonomy, which outlines the various errors at origination and grades their severity. But the taxonomy does not list remedies for each error type, providing no mechanism for the FHA to rely on the taxonomy or tie it to actions against mortgage lenders under the False Claims Act.
The RDR Shows Much Smaller Racial and Ethnic Group Gaps in Denial Rates

The ODR indicates that denial rates are consistently highest for blacks and Hispanics (figure 4a). Meanwhile, white and Asian applicants tend to have lower denial rates. The ODR indicates that in 2015, black applicants had twice the denial rate of white applicants, Hispanic applicants had 1.5 times the denial rate, and Asian applicants had 1.2 times the denial rate.

FIGURE 4A
Observed Denial Rates by Race/Ethnicity: All Channels

Notes: Based on owner-occupied purchase mortgage applications. Blacks and whites are non-Hispanic.
FIGURE 4B
Real Denial Rates by Race/Ethnicity: All Channels

Notes: Based on owner-occupied purchase mortgage applications. Blacks and whites are non-Hispanic.

The RDR, however, shows smaller racial and ethnic gaps (figure 4b). In 2015, black applicants had 1.2 times the denial rate of white applicants, Hispanic applicants had 1.1 times the denial rate, and Asian applicants had 1.5 times the denial rate.

The differences between the ODR and RDR results are because of credit profile differences across groups. In 2015, the average share of lower-credit applicants was 63 percent for black applicants, 56 percent for Hispanic applicants, 41 percent for white applicants, and 37 percent for Asian applicants. Once we control for these credit profiles, the racial differences in denial rates do not go away, but they are smaller.

Our results indicate that in recent years, Asians have the highest RDRs—higher than white, black, or Hispanic applicants—because Asian applicants use the conventional channel more frequently than the other groups.

Figure 5, which shows the RDR by channel and race/ethnicity, demonstrates that Asian applicants have real denial rates in each channel just above but close to those for white applicants. The discrepancy between RDRs for white and Asian applicants is because about 80 percent of LCP Asian applicants use the conventional channel versus about 62.5 percent of white applicants. We believe this is because Asian borrowers tend to live on the high-cost coasts, areas that rely more heavily on
conventional financing. Because the denial rate is higher for conventional loans than for government loans, higher Asian denial rates make sense.

**FIGURE 5A**

**Real Denial Rate by Race/Ethnicity: Conventional Channel**


Notes: Based on owner-occupied purchase mortgage applications. Blacks and whites are non-Hispanic.
Conclusion

Our updated analysis of the 2014 and 2015 Home Mortgage Disclosure Act data show a higher real denial rate than traditional denial rate, providing a more accurate picture of mortgage credit access. By considering only borrowers with lower-credit profiles, the real denial rate reduces the distortion varying credit profiles have on the more traditionally used denial rate.

The real denial rate peaked in 2013 and has been dropping since. Government loans have continued to have lower denial rates than conventional loans, but denial rates for conventional loans started to decrease before denial rates for FHA loans. These finding are consistent with our Housing Credit Availability Index. The updated results also show that racial discrepancies in denial rates exist because
of differences in credit composition among these groups, including credit scores, loan-to-value ratios, and debt-to-income ratios.

The recent findings show a small improvement in access to credit in the mortgage market. This success is likely because of the strides the GSEs and the FHA have made in expanding credit, as well as the increases in the market share of nonbank lenders, which have shallower pockets and are less sensitive to rep and warrant and False Claims Act risk. But while the denial rate among lower-credit applicants has moved closer to precrisis levels, lower-credit applicants account for a lower share of total applicants in 2015 than they did before the crisis (33 versus 49 percent). The tight credit conditions have discouraged more consumers with less-than-perfect credit from applying for a loan, and many of these consumers were likely filtered out in the preapproval process prevalent in today's market.
### Appendix

#### TABLE A1

**Observed and Real Denial Rates, All Channels**

<table>
<thead>
<tr>
<th>Year</th>
<th>Observed Denial Rate (%)</th>
<th>Real Denial Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Black</td>
<td>Hispanic</td>
</tr>
<tr>
<td>1998</td>
<td>43</td>
<td>29</td>
</tr>
<tr>
<td>1999</td>
<td>39</td>
<td>27</td>
</tr>
<tr>
<td>2000</td>
<td>37</td>
<td>26</td>
</tr>
<tr>
<td>2001</td>
<td>29</td>
<td>21</td>
</tr>
<tr>
<td>2002</td>
<td>25</td>
<td>18</td>
</tr>
<tr>
<td>2003</td>
<td>24</td>
<td>19</td>
</tr>
<tr>
<td>2004</td>
<td>23</td>
<td>19</td>
</tr>
<tr>
<td>2005</td>
<td>26</td>
<td>22</td>
</tr>
<tr>
<td>2006</td>
<td>30</td>
<td>26</td>
</tr>
<tr>
<td>2007</td>
<td>33</td>
<td>30</td>
</tr>
<tr>
<td>2008</td>
<td>29</td>
<td>27</td>
</tr>
<tr>
<td>2009</td>
<td>24</td>
<td>22</td>
</tr>
<tr>
<td>2010</td>
<td>24</td>
<td>21</td>
</tr>
<tr>
<td>2011</td>
<td>24</td>
<td>20</td>
</tr>
<tr>
<td>2012</td>
<td>24</td>
<td>19</td>
</tr>
<tr>
<td>2013</td>
<td>24</td>
<td>20</td>
</tr>
<tr>
<td>2014</td>
<td>21</td>
<td>17</td>
</tr>
<tr>
<td>2015</td>
<td>20</td>
<td>15</td>
</tr>
</tbody>
</table>

*Sources:* Home Mortgage Disclosure Act, CoreLogic, eMBS, and the Urban Institute.

*Notes:* Based on owner-occupied purchase mortgage applications. Blacks and whites are non-Hispanic.
### TABLE A2
Share of Low-Credit-Profile Applicants and Borrowers, All Channels

<table>
<thead>
<tr>
<th></th>
<th>Applicants (%)</th>
<th></th>
<th></th>
<th>Borrowers (%)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Black</td>
<td>Hispanic</td>
<td>White</td>
<td>Asian</td>
<td>Black</td>
</tr>
<tr>
<td>1998</td>
<td>68</td>
<td>57</td>
<td>44</td>
<td>33</td>
<td>43</td>
</tr>
<tr>
<td>1999</td>
<td>68</td>
<td>58</td>
<td>47</td>
<td>39</td>
<td>50</td>
</tr>
<tr>
<td>2000</td>
<td>68</td>
<td>58</td>
<td>48</td>
<td>36</td>
<td>50</td>
</tr>
<tr>
<td>2001</td>
<td>64</td>
<td>55</td>
<td>42</td>
<td>36</td>
<td>49</td>
</tr>
<tr>
<td>2002</td>
<td>63</td>
<td>56</td>
<td>43</td>
<td>37</td>
<td>51</td>
</tr>
<tr>
<td>2003</td>
<td>65</td>
<td>59</td>
<td>45</td>
<td>42</td>
<td>53</td>
</tr>
<tr>
<td>2004</td>
<td>70</td>
<td>64</td>
<td>51</td>
<td>51</td>
<td>61</td>
</tr>
<tr>
<td>2005</td>
<td>72</td>
<td>69</td>
<td>55</td>
<td>57</td>
<td>63</td>
</tr>
<tr>
<td>2006</td>
<td>76</td>
<td>73</td>
<td>56</td>
<td>58</td>
<td>65</td>
</tr>
<tr>
<td>2007</td>
<td>71</td>
<td>66</td>
<td>47</td>
<td>48</td>
<td>56</td>
</tr>
<tr>
<td>2008</td>
<td>63</td>
<td>56</td>
<td>39</td>
<td>35</td>
<td>48</td>
</tr>
<tr>
<td>2009</td>
<td>57</td>
<td>51</td>
<td>35</td>
<td>30</td>
<td>43</td>
</tr>
<tr>
<td>2010</td>
<td>56</td>
<td>50</td>
<td>34</td>
<td>29</td>
<td>43</td>
</tr>
<tr>
<td>2011</td>
<td>55</td>
<td>48</td>
<td>33</td>
<td>29</td>
<td>41</td>
</tr>
<tr>
<td>2012</td>
<td>56</td>
<td>49</td>
<td>33</td>
<td>30</td>
<td>41</td>
</tr>
<tr>
<td>2013</td>
<td>52</td>
<td>46</td>
<td>31</td>
<td>28</td>
<td>37</td>
</tr>
<tr>
<td>2014</td>
<td>51</td>
<td>44</td>
<td>30</td>
<td>27</td>
<td>37</td>
</tr>
<tr>
<td>2015</td>
<td>50</td>
<td>44</td>
<td>30</td>
<td>26</td>
<td>38</td>
</tr>
</tbody>
</table>

**Sources:** Home Mortgage Disclosure Act, CoreLogic, eMBS, and the Urban Institute.

**Notes:** Based on owner-occupied purchase mortgage applications. Blacks and whites are non-Hispanic.

### TABLE A3
Observed and Real Denial Rates, Conventional Channel

<table>
<thead>
<tr>
<th></th>
<th>Observed Denial Rate (%)</th>
<th>Real Denial Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Black</td>
<td>Hispanic</td>
</tr>
<tr>
<td>1998</td>
<td>54</td>
<td>38</td>
</tr>
<tr>
<td>1999</td>
<td>49</td>
<td>35</td>
</tr>
<tr>
<td>2000</td>
<td>46</td>
<td>33</td>
</tr>
<tr>
<td>2001</td>
<td>37</td>
<td>25</td>
</tr>
<tr>
<td>2002</td>
<td>30</td>
<td>21</td>
</tr>
<tr>
<td>2003</td>
<td>27</td>
<td>21</td>
</tr>
<tr>
<td>2004</td>
<td>24</td>
<td>19</td>
</tr>
<tr>
<td>2005</td>
<td>26</td>
<td>22</td>
</tr>
<tr>
<td>2006</td>
<td>31</td>
<td>26</td>
</tr>
<tr>
<td>2007</td>
<td>35</td>
<td>31</td>
</tr>
<tr>
<td>2008</td>
<td>35</td>
<td>31</td>
</tr>
<tr>
<td>2009</td>
<td>33</td>
<td>27</td>
</tr>
<tr>
<td>2010</td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td>2011</td>
<td>29</td>
<td>23</td>
</tr>
<tr>
<td>2012</td>
<td>28</td>
<td>21</td>
</tr>
<tr>
<td>2013</td>
<td>26</td>
<td>20</td>
</tr>
<tr>
<td>2014</td>
<td>22</td>
<td>17</td>
</tr>
<tr>
<td>2015</td>
<td>21</td>
<td>16</td>
</tr>
</tbody>
</table>

**Sources:** Home Mortgage Disclosure Act, CoreLogic, eMBS, and the Urban Institute.

**Notes:** Based on owner-occupied purchase mortgage applications. Blacks and whites are non-Hispanic.
### TABLE A4
Share of Low-Credit-Profile Applicants and Borrowers, Conventional Channel

<table>
<thead>
<tr>
<th>Year</th>
<th>Black Applicants (%)</th>
<th>Hispanic Applicants (%)</th>
<th>White Applicants (%)</th>
<th>Asian Applicants (%)</th>
<th>Black Borrowers (%)</th>
<th>Hispanic Borrowers (%)</th>
<th>White Borrowers (%)</th>
<th>Asian Borrowers (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>69</td>
<td>55</td>
<td>41</td>
<td>30</td>
<td>32</td>
<td>26</td>
<td>22</td>
<td>20</td>
</tr>
<tr>
<td>1999</td>
<td>68</td>
<td>55</td>
<td>44</td>
<td>33</td>
<td>39</td>
<td>31</td>
<td>26</td>
<td>23</td>
</tr>
<tr>
<td>2000</td>
<td>69</td>
<td>56</td>
<td>45</td>
<td>37</td>
<td>42</td>
<td>35</td>
<td>29</td>
<td>27</td>
</tr>
<tr>
<td>2001</td>
<td>61</td>
<td>49</td>
<td>38</td>
<td>33</td>
<td>39</td>
<td>32</td>
<td>26</td>
<td>24</td>
</tr>
<tr>
<td>2002</td>
<td>59</td>
<td>50</td>
<td>38</td>
<td>34</td>
<td>42</td>
<td>37</td>
<td>29</td>
<td>27</td>
</tr>
<tr>
<td>2003</td>
<td>61</td>
<td>55</td>
<td>41</td>
<td>40</td>
<td>47</td>
<td>43</td>
<td>33</td>
<td>32</td>
</tr>
<tr>
<td>2004</td>
<td>68</td>
<td>62</td>
<td>49</td>
<td>51</td>
<td>57</td>
<td>54</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>2005</td>
<td>71</td>
<td>68</td>
<td>54</td>
<td>57</td>
<td>61</td>
<td>59</td>
<td>47</td>
<td>49</td>
</tr>
<tr>
<td>2006</td>
<td>75</td>
<td>73</td>
<td>54</td>
<td>58</td>
<td>64</td>
<td>63</td>
<td>47</td>
<td>49</td>
</tr>
<tr>
<td>2007</td>
<td>69</td>
<td>65</td>
<td>45</td>
<td>47</td>
<td>52</td>
<td>49</td>
<td>36</td>
<td>35</td>
</tr>
<tr>
<td>2008</td>
<td>53</td>
<td>47</td>
<td>28</td>
<td>30</td>
<td>28</td>
<td>23</td>
<td>17</td>
<td>14</td>
</tr>
<tr>
<td>2009</td>
<td>44</td>
<td>35</td>
<td>20</td>
<td>22</td>
<td>16</td>
<td>11</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>2010</td>
<td>43</td>
<td>32</td>
<td>19</td>
<td>20</td>
<td>19</td>
<td>11</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>2011</td>
<td>43</td>
<td>33</td>
<td>19</td>
<td>21</td>
<td>19</td>
<td>13</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>2012</td>
<td>38</td>
<td>30</td>
<td>20</td>
<td>22</td>
<td>14</td>
<td>11</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>2013</td>
<td>36</td>
<td>29</td>
<td>20</td>
<td>21</td>
<td>14</td>
<td>12</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>2014</td>
<td>33</td>
<td>27</td>
<td>19</td>
<td>21</td>
<td>13</td>
<td>12</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>2015</td>
<td>31</td>
<td>26</td>
<td>18</td>
<td>19</td>
<td>14</td>
<td>12</td>
<td>11</td>
<td>9</td>
</tr>
</tbody>
</table>

**Sources:** Home Mortgage Disclosure Act, CoreLogic, eMBS, and the Urban Institute.

**Notes:** Based on owner-occupied purchase mortgage applications. Blacks and whites are non-Hispanic.

### TABLE A5
Observed and Real Denial Rates, Government Channel

<table>
<thead>
<tr>
<th>Year</th>
<th>Observed Denial Rate (%)</th>
<th>Real Denial Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Black</td>
<td>Hispanic</td>
</tr>
<tr>
<td>1998</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>1999</td>
<td>14</td>
<td>11</td>
</tr>
<tr>
<td>2000</td>
<td>17</td>
<td>12</td>
</tr>
<tr>
<td>2001</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>2002</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>2003</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>2004</td>
<td>17</td>
<td>16</td>
</tr>
<tr>
<td>2005</td>
<td>17</td>
<td>16</td>
</tr>
<tr>
<td>2006</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>2007</td>
<td>22</td>
<td>19</td>
</tr>
<tr>
<td>2008</td>
<td>24</td>
<td>22</td>
</tr>
<tr>
<td>2009</td>
<td>22</td>
<td>20</td>
</tr>
<tr>
<td>2010</td>
<td>22</td>
<td>20</td>
</tr>
<tr>
<td>2011</td>
<td>22</td>
<td>19</td>
</tr>
<tr>
<td>2012</td>
<td>23</td>
<td>19</td>
</tr>
<tr>
<td>2013</td>
<td>23</td>
<td>19</td>
</tr>
<tr>
<td>2014</td>
<td>21</td>
<td>17</td>
</tr>
<tr>
<td>2015</td>
<td>19</td>
<td>15</td>
</tr>
</tbody>
</table>

**Sources:** Home Mortgage Disclosure Act, CoreLogic, eMBS, and the Urban Institute.

**Notes:** Based on owner-occupied purchase mortgage applications. Blacks and whites are non-Hispanic.
### TABLE A6
Share of Low-Credit-Profile Applicants and Borrowers, Government Channel

<table>
<thead>
<tr>
<th>Year</th>
<th>Applicants (%)</th>
<th></th>
<th>Borrowers (%)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Black</td>
<td>Hispanic</td>
<td>White</td>
<td>Asian</td>
</tr>
<tr>
<td>1998</td>
<td>62</td>
<td>58</td>
<td>56</td>
<td>57</td>
</tr>
<tr>
<td>1999</td>
<td>65</td>
<td>61</td>
<td>59</td>
<td>60</td>
</tr>
<tr>
<td>2000</td>
<td>66</td>
<td>62</td>
<td>61</td>
<td>60</td>
</tr>
<tr>
<td>2001</td>
<td>66</td>
<td>64</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td>2002</td>
<td>70</td>
<td>69</td>
<td>66</td>
<td>67</td>
</tr>
<tr>
<td>2003</td>
<td>73</td>
<td>72</td>
<td>68</td>
<td>70</td>
</tr>
<tr>
<td>2004</td>
<td>80</td>
<td>78</td>
<td>75</td>
<td>76</td>
</tr>
<tr>
<td>2005</td>
<td>82</td>
<td>80</td>
<td>76</td>
<td>76</td>
</tr>
<tr>
<td>2006</td>
<td>83</td>
<td>81</td>
<td>78</td>
<td>77</td>
</tr>
<tr>
<td>2007</td>
<td>79</td>
<td>77</td>
<td>71</td>
<td>71</td>
</tr>
<tr>
<td>2008</td>
<td>70</td>
<td>66</td>
<td>59</td>
<td>61</td>
</tr>
<tr>
<td>2009</td>
<td>60</td>
<td>58</td>
<td>50</td>
<td>52</td>
</tr>
<tr>
<td>2010</td>
<td>60</td>
<td>57</td>
<td>49</td>
<td>51</td>
</tr>
<tr>
<td>2011</td>
<td>59</td>
<td>55</td>
<td>48</td>
<td>51</td>
</tr>
<tr>
<td>2012</td>
<td>62</td>
<td>58</td>
<td>51</td>
<td>54</td>
</tr>
<tr>
<td>2013</td>
<td>60</td>
<td>57</td>
<td>51</td>
<td>54</td>
</tr>
<tr>
<td>2014</td>
<td>60</td>
<td>57</td>
<td>52</td>
<td>55</td>
</tr>
<tr>
<td>2015</td>
<td>59</td>
<td>56</td>
<td>50</td>
<td>53</td>
</tr>
</tbody>
</table>

**Sources:** Home Mortgage Disclosure Act, CoreLogic, eMBS, and the Urban Institute.

**Notes:** Based on owner-occupied purchase mortgage applications. Blacks and whites are non-Hispanic.
Notes

1. See Li and Goodman (2014) for more details on how these applicants are defined and how RDR is calculated. We use loan-to-value ratio, FICO credit score, and debt-to-income ratio to measure a borrower’s ex ante default risk. Borrowers with higher risk are more likely LCP than those with lower credit risk. We assign zero probability of being LCP to consumers who apply for nonrisky products and have near-perfect credit characteristics (FICO score above 700, loan-to-value ratio less than 78, and debt-to-income ratio less than 30).

2. Home Mortgage Disclosure Act data are released nine months after a calendar year ends. The 2015 data were released in September 2016.

References


About the Authors

**Bing Bai** is a research associate with the Housing Finance Policy Center at the Urban Institute, where he helps build, manage, and explore data to analyze housing finance trends and related policy issues. Formerly an economic modeling senior at Freddie Mac, Bai conducted research on housing and mortgage markets and developed models to evaluate foreclosure alternatives for nonperforming mortgage loans. He holds a PhD in economics from Clemson University.

**Laurie Goodman** is codirector of the Housing Finance Policy Center. The center is dedicated to providing policymakers data-driven analyses of housing finance policy issues that they can depend on for relevance, accuracy, and independence. Before joining the Urban Institute in 2013, Goodman spent 30 years as an analyst and research department manager at several Wall Street firms. From 2008 to 2013, she was a senior managing director at Amherst Securities Group, LP, a boutique broker/dealer specializing in securitized products, where her strategy effort became known for its analysis of housing policy issues. From 1993 to 2008, Goodman was head of global fixed income research and manager of US securitized products research at UBS and predecessor firms, which were ranked first by *Institutional Investor* for 11 straight years. Before that, she was a senior fixed income analyst, a mortgage portfolio manager, and a senior economist at the Federal Reserve Bank of New York. Goodman was inducted into the Fixed Income Analysts Hall of Fame in 2009. She serves on the board of directors of MFA Financial and is a member of the Bipartisan Policy Center’s Housing Commission, the Federal Reserve Bank of New York’s Financial Advisory Roundtable, and the New York State Mortgage Relief Incentive Fund Advisory Committee. She has published more than 200 journal articles and has coauthored and coedited five books. Goodman has a BA in mathematics from the University of Pennsylvania and an MA and PhD in economics from Stanford University.

**Bhargavi Ganesh** is a research assistant in the Housing Finance Policy Center. Before joining the Urban Institute, she interned in finance and worked on research, underwriting, and surveillance of housing finance investments. She received a BA with honors in economics and a minor in math and environmental studies from New York University. While there, Ganesh was a staff writer and online codirector for news and
policy-related student publications. For her senior thesis, she received an undergraduate research grant to study catastrophe risk perception and flood insurance reform along the East Coast.
STATEMENT OF INDEPENDENCE

The Urban Institute strives to meet the highest standards of integrity and quality in its research and analyses and in the evidence-based policy recommendations offered by its researchers and experts. We believe that operating consistent with the values of independence, rigor, and transparency is essential to maintaining those standards. As an organization, the Urban Institute does not take positions on issues, but it does empower and support its experts in sharing their own evidence-based views and policy recommendations that have been shaped by scholarship. Funders do not determine our research findings or the insights and recommendations of our experts. Urban scholars and experts are expected to be objective and follow the evidence wherever it may lead.