# Summary Analysis and Insights from the HARP Performance Data Addendum to Fannie Mae's Historical Single-Family Loan Performance Dataset

## Summary

On August 17, 2017, Fannie Mae announced additional details about its high loan-to-value (LTV) refinance option, at the direction of FHFA. This option will apply to mortgage loans owned by Fannie Mae that are originated on or after October 1, 2017 and for which at least 15 months have passed from the note date of the loan being refinanced to the note date of the new loan. The high LTV refinance option provides limited cash-out refinance opportunities to borrowers with existing Fannie Mae mortgages who are making their mortgage payments on time, but whose LTV ratio for a new mortgage exceeds 95% for a one-unit principal residence or exceeds the maximum allowable LTV ratio for a limited cash-out refinance for other segments as listed in the Eligibility Matrix. Final details, including whether or not standard risk-based loan level price adjustments apply, will be published at a future date.

In conjunction with this announcement, Fannie Mae published an addendum to its Historical Single-Family Loan Performance Dataset (dataset) that captures the profile and performance details on the subset of loans included in the primary dataset that have refinanced through the Home Affordable Refinance Program® (HARP®). This dataset is also available in our Data Dynamics™ tool that aggregates our credit risk transfer (CRT) program data and historical performance data to support investor analysis.

The purpose of this commentary is to provide insights into historical credit performance that can be gleaned from the HARP dataset addendum. The additional insights provided by the dataset addendum are important for CRT participants for two primary reasons:

> Fannie Mae announced additional details on its high loan-to-value (LTV) refinance option. Our recently enhanced Historical Single-Family Loan Performance Dataset and Data Dynamics™ have been enhanced to include loans that have refinanced through the Home Affordable Refinance Program® (HARP®) to support investor analysis.
>
> This commentary provides insights into historical credit performance that can be gleaned from the HARP dataset addendum.

1. Fannie Mae loans originated between June 2009 and September 2017 have not been eligible for HARP and will not be eligible for the recently-announced high LTV refinance option, which will provide a similar refinance solution for underwater borrowers in the future. Therefore, loans in reference pools backing outstanding CRT transactions will not be eligible to refinance through either program. However, the new HARP dataset may provide additional insight on the frequency and nature of HARP refinances in the primary dataset to aid in better understanding the historical impact of HARP on loss outcomes.
2. As specified here, in future CRT transactions, covered loans that refinance through the high LTV refinance option will remain in the reference pool and will remain covered under their respective deal.

## HARP Background

HARP, launched in mid-2009 and recently extended to December 2018, was designed to provide a market-rate refinance option, with reduced costs and streamlined underwriting requirements, to those borrowers associated with loans that were acquired by the Government Sponsored Enterprises (GSEs), but which were ineligible for standard GSE refinance guidelines, typically because the value of their property declined and the current loan-to-value (LTV) ratio was in excess of standard guideline limits. Relative to standard refinance products, the primary benefits of HARP were:

a) the ability to exceed standard refinance LTV limits,
b) lower loan delivery fees charged by the GSEs to the lenders (aka, "Loan Level Price Adjustments", or LLPAs), that enabled participating lenders to pass-through those savings to borrowers, and
c) no requirement for new or additional mortgage insurance (MI) even if the refinanced loan amount exceeded 80% of the updated property value, which further reduced borrower costs related to the purchase of MI.

The benefits of HARP are extended to borrowers whose homes are underwater (i.e. where the MTMLTV ratio exceeds 100%).

Prior to this update to the dataset, the Historical Single-Family Loan Performance Dataset (primary dataset) only showed performance activity through the liquidation date of the original mortgage – loans refinancing through HARP appeared as a prepayment. With the publication of the HARP addendum, we are now able to trace the performance of the HARP loan as an extension of the original mortgage.

This additional insight into post-HARP performance allows us to see how borrowers who refinanced under HARP performed after benefiting from the associated note rate and payment reductions. HARP qualification generally entailed (1) the borrower's demonstration of credit-worthiness as evidenced by no more than one missed payment in the year preceding the HARP refinance and (2) an origination date for the existing mortgage prior to June 1, 2009.

## Summary of the HARP Data and Profile

**Table 1** (below) illustrates the credit profile of the HARP loans included in the HARP dataset addendum. Just over one million of the 25+ million loans captured in the Single-Family Loan Performance dataset took advantage of HARP. Table 1 also shows that, on average, HARP refinances provided a 1.6% note rate reduction to borrowers. HARP note rates have generally varied between 4% and 5% (reflective of market rates in the 2009-2016 time frame, while the original loans had note rates as high as 8% for the 2000 cohort. (**See Table 2**)

While the HARP profiles and performance have been published in an addendum dataset, we recommend merging the HARP performance activity onto the original loan record to effectively extend the performance activity of each individual loan to capture the full performance of both loans. (Technical instructions and sample code have been posted here.)

**Table 1: HARP loan profile by year of HARP refinance**

| HARP Year | Loan Count | HARP UPB ($M) | HARP Borrower Credit Score | HARP Co-Borrower Credit Score | Original CLTV Ratio | HARP CLTV Ratio | Original Note Rate | HARP Note Rate |
|---|---|---|---|---|---|---|---|---|
| **2009** | 65,254 | $17,039 M | 751 | 755 | 79.7% | 92.4% | 6.27% | 5.06% |
| **2010** | 129,772 | $31,668 M | 751 | 757 | 80.3% | 94.7% | 6.14% | 4.93% |
| **2011** | 143,028 | $31,285 M | 753 | 758 | 79.8% | 97.7% | 5.97% | 4.73% |
| **2012** | 370,312 | $75,112 M | 745 | 748 | 80.3% | 111.7% | 5.89% | 4.09% |
| **2013** | 239,402 | $43,094 M | 729 | 732 | 80.9% | 109.0% | 6.02% | 4.04% |
| **2014** | 49,416 | $8,217 M | 711 | 714 | 81.7% | 102.0% | 6.14% | 4.58% |
| **2015** | 27,439 | $4,640 M | 715 | 718 | 81.9% | 98.5% | 6.03% | 4.17% |
| **2016** | 10,865 | $1,856 M | 707 | 711 | 81.7% | 97.0% | 6.10% | 4.03% |
| **Total** | **1,035,488** | **$212,911 M** | **742** | **747** | **80.4%** | **104.2%** | **6.01%** | **4.40%** |

**Table 1** shows that the average credit scores for HARP borrowers exceeded 740, generally higher than the average credit score associated with loans originated prior to June 2009. There are two potential explanations for the strong credit scores:

1. All loans were at least 12 months seasoned and required to have strong payment histories, as such they had typically improved their credit scores by successfully paying their mortgages for a number of months, and
2. Borrowers that took advantage of HARP were demonstrating a certain level of financial savvy and were sufficiently confident in their own financial status to re-commit to their mortgage obligations.

**Table 2** (below) cuts the same population by Origination Year of the original loan. Here we can see the loans originated between 2005 and 2009 make up almost 80% of the population.

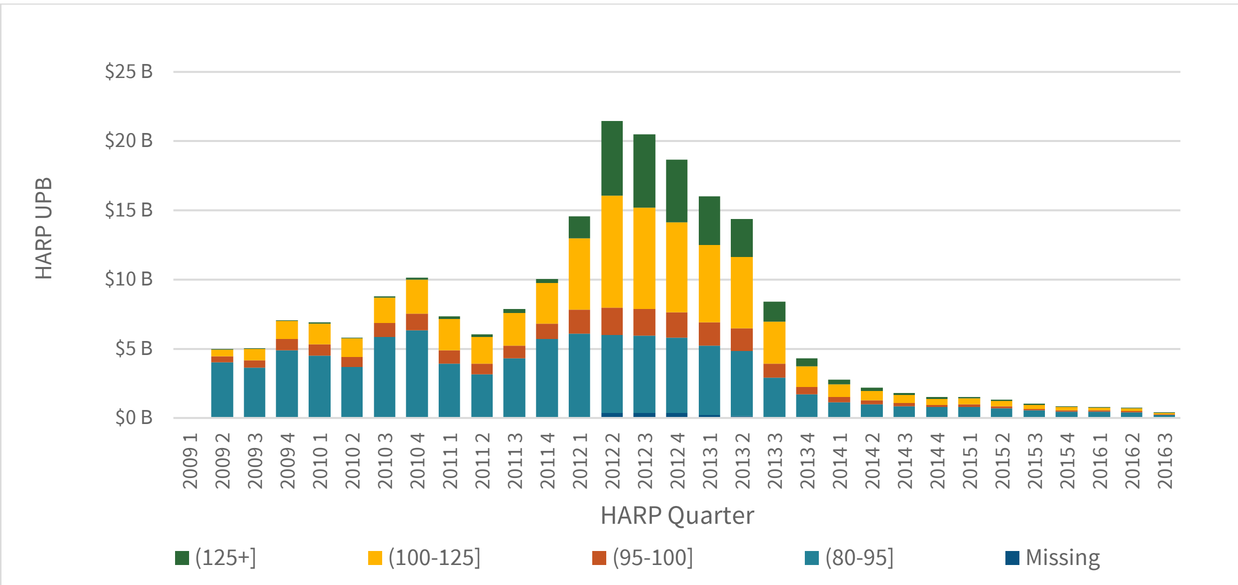
**Table 2: Original Loan Profile by Year of Origination**

| Orig Year | Loan Count | Total Orig UPB ($M) | Average Orig UPB ($) | Borrower Credit Score | Co-Borrower Credit Score | CLTV Ratio | DTI | Orig Note Rate |
|---|---|---|---|---|---|---|---|---|
| **1999** | 52 | $5 M | $ 104,615 | 702 | 709 | 86.9% | 32.7% | 7.82% |
| **2000** | 527 | $50 M | $ 95,116 | 687 | 681 | 86.6% | 35.7% | 8.15% |
| **2001** | 6,273 | $739 M | $ 117,785 | 704 | 710 | 84.5% | 34.7% | 6.90% |
| **2002** | 19,958 | $2,782 M | $ 139,385 | 718 | 723 | 82.5% | 35.0% | 6.32% |
| **2003** | 71,152 | $11,978 M | $ 168,343 | 722 | 727 | 81.4% | 34.8% | 5.74% |
| **2004** | 62,431 | $11,790 M | $ 188,845 | 722 | 727 | 80.7% | 38.0% | 5.85% |
| **2005** | 134,843 | $28,910 M | $ 214,399 | 726 | 730 | 78.4% | 39.1% | 5.85% |
| **2006** | 147,657 | $32,036 M | $ 216,963 | 724 | 728 | 78.7% | 40.0% | 6.39% |
| **2007** | 230,779 | $51,466 M | $ 223,008 | 723 | 727 | 80.8% | 40.1% | 6.34% |
| **2008** | 270,951 | $63,918 M | $ 235,902 | 744 | 748 | 81.8% | 39.7% | 6.05% |
| **2009** | 90,865 | $23,021 M | $ 253,359 | 761 | 765 | 79.7% | 35.5% | 4.99% |
| **Total** | **1,035,488** | **$226,695 M** | **$ 218,926** | **733** | **738** | **80.4%** | **38.9%** | **6.01%** |

Chart 1 below illustrates the composition of the HARP population across LTV ratio buckets at time of HARP over the term of the program. A few observations:

1. Volumes accelerated in Q4-2011 when the program terms were adjusted to cap the total LLPA charged at 0.75%, remove the maximum LTV limit for 30-year fixed rate loans, and allow loans with LTV ratios greater than 105% to be delivered into mortgage backed securities (MBS).
2. The majority of very high LTV ratio loans came through the program in the subsequent six quarters.

**Chart 1: Distribution of LTV at time of HARP**




# Summary of HARP Performance

Relatively speaking, HARP performance has been exceptionally strong to date. **Table 3** illustrates that in aggregate, approximately 1.5% of the Fannie Mae HARP cohort as a whole has experienced credit events (Third Party Sales (TPS), Short Sale, Real Estate Owned (REO) Sales, or Non-Performing Loan (NPL) Sales) and it has experienced credit losses in aggregate (the Net Loss Rate) of 0.42%.

**Table 3: HARP performance by HARP year**

| HARP Year | Total Orig. UPB | Active % | Prepaid % | Amortized % | Repurchase % | TPS % | Short Sale % | REO % | NPL Sale % | Net Loss Rate |
|---|---|---|---|---|---|---|---|---|---|---|
| **2009** | $17.15 B | 28.67% | 56.23% | 11.10% | 0.17% | 0.14% | 1.65% | 1.95% | 0.11% | 1.31% |
| **2010** | $32.62 B | 36.31% | 47.30% | 13.47% | 0.09% | 0.08% | 1.34% | 1.33% | 0.08% | 0.88% |
| **2011** | $33.06 B | 44.58% | 38.15% | 15.55% | 0.04% | 0.06% | 0.76% | 0.81% | 0.05% | 0.46% |
| **2012** | $80.58 B | 61.47% | 21.11% | 16.32% | 0.02% | 0.04% | 0.52% | 0.49% | 0.04% | 0.26% |
| **2013** | $46.86 B | 69.95% | 13.30% | 15.97% | 0.01% | 0.05% | 0.30% | 0.39% | 0.03% | 0.17% |
| **2014** | $9.09 B | 75.13% | 9.32% | 14.99% | 0.02% | 0.04% | 0.21% | 0.29% | 0.01% | 0.09% |
| **2015** | $5.22 B | 82.41% | 3.21% | 14.27% | 0.01% | 0.00% | 0.06% | 0.04% | 0.00% | 0.01% |
| **2016** | $2.11 B | 87.13% | 0.35% | 12.52% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| **Total** | **$226.70 B** | **55.92%** | **27.33%** | **15.19%** | **0.04%** | **0.06%** | **0.69%** | **0.72%** | **0.05%** | **0.42%** |

The strong performance can be attributed to both the mortgage payment reduction resulting from the refinance, as well as the strong credit profile of the borrowers who elected to refinance their loans under HARP.

If we consider the performance of HARP loans as an extension of the original loan's performance, we can see in **Table 4**, below, that the incremental loss is small. Even for the peak crisis years of 2006 and 2007, HARP loans have generated only 11 and 16 bps of loss, respectively.

**Table 4: HARP incremental contribution to overall vintage loss outcomes**

| Origination Year | Original UPB | HARP UPB | HARP % | Loss Outcomes with HARP Treated as Prepay | Loss with HARP Treated as Prepay | Loss Outcomes with HARP Performance Captured | Loss with HARP Performance Included | Incremental HARP Loss |
|---|---|---|---|---|---|---|---|---|
| **1999** | $15.94 B | $0.00 B | 0.03% | 0.96% | 0.14% | 0.96% | 0.14% | 0.00% |
| **2000** | $140.92 B | $0.04 B | 0.03% | 0.90% | 0.16% | 0.90% | 0.16% | 0.00% |
| **2001** | $349.66 B | $0.63 B | 0.18% | 0.88% | 0.22% | 0.88% | 0.22% | 0.00% |
| **2002** | $374.43 B | $2.39 B | 0.64% | 0.99% | 0.31% | 1.00% | 0.31% | 0.00% |
| **2003** | $497.03 B | $10.30 B | 2.07% | 1.48% | 0.48% | 1.49% | 0.48% | 0.00% |
| **2004** | $200.82 B | $10.43 B | 5.19% | 2.83% | 1.06% | 2.87% | 1.08% | 0.02% |
| **2005** | $208.34 B | $26.16 B | 12.56% | 5.86% | 2.53% | 6.01% | 2.58% | 0.05% |
| **2006** | $172.37 B | $30.03 B | 17.42% | 8.12% | 3.82% | 8.46% | 3.93% | 0.11% |
| **2007** | $217.87 B | $49.17 B | 22.57% | 8.58% | 3.60% | 9.06% | 3.76% | 0.16% |
| **2008** | $262.72 B | $61.85 B | 23.54% | 4.29% | 1.43% | 4.61% | 1.52% | 0.09% |
| **2009** | $417.03 B | $21.91 B | 5.25% | 0.60% | 0.17% | 0.61% | 0.17% | 0.00% |
| **Total** | **$2,857.13 B** | **$212.91 B** | **7.45%** | **2.80%** | **1.08%** | **2.90%** | **1.11%** | **0.03%** |

# Impact on CAS/CIRT Historical Comparative Analysis

For an assessment of a potential impact on Fannie Mae's Connecticut Avenue Securities (CAS) and Credit Insurance Risk Transfer™ (CIRT™) coverage exposure, this section will review a comparison of the primary data set to the new HARP-enhanced data set, where we can look at the subsequent performance of a loan following the refinance of the original loan into its corresponding new HARP loan. Our Data Dynamics™ tool has been enhanced to enable HARP analysis in conjunction with our dataset update.

As mentioned earlier, in the primary data set, HARP activity is reflected in the data as a prepayment outcome for the original loan. As a result, performance activity for the subsequent HARP loan did not impact the performance that was reflected for the original loan. For a cohort of loans for which no HARP or similar refinance program is available, we need to make some assumptions about what might have happened to those borrowers.

Let's consider two possible extremes:

1. At best, one might assume that borrowers would have remained attached to their original loan and that their probability of default would have mirrored the default probability associated with the HARP loan.
2. At worst, one might assume that the performance of these borrowers would have been comparable to the performance of the rest of their origination cohort that were eligible for HARP, but didn't take advantage of the program. We don't believe that this extreme treatment is appropriate for a few reasons:

a) The borrowers that took advantage of HARP are shown to have had much stronger credit attributes than the rest of their cohorts.

b) As described earlier, borrowers that took advantage of HARP were demonstrating a certain level of financial savvy and were sufficiently confident in their own financial status to re-commit to their mortgage obligations.

c) A large share of HARP loans (with LTV ratios between 80 and 97) could have refinanced through standard Selling Guide products to take advantage of the market rate incentive. (Albeit at a higher cost due to MI and LLPAs.)

As such we believe that the actual outcomes would likely have been closer to the loss level evident in the primary dataset appended with the HARP dataset addendum (as summarized in this Commentary). The charts below illustrate how the post-HARP losses would have slightly increased the aggregate loss exposure to CAS investors had the loans remained in the reference pool.

For outstanding CAS and CIRT deals, whose reference pools are not eligible for HARP (and will not be eligible for the high LTV refinance option) this means that aggregate loss exposure may be marginally higher than the level represented by using the primary data set alone, which did not include the post-HARP performance. But as represented in the charts below, the magnitude of the difference is small, even in the tail vintages.

**Chart 2: Net Loss Re-Weighted to 2006 Performance (Group 1)**

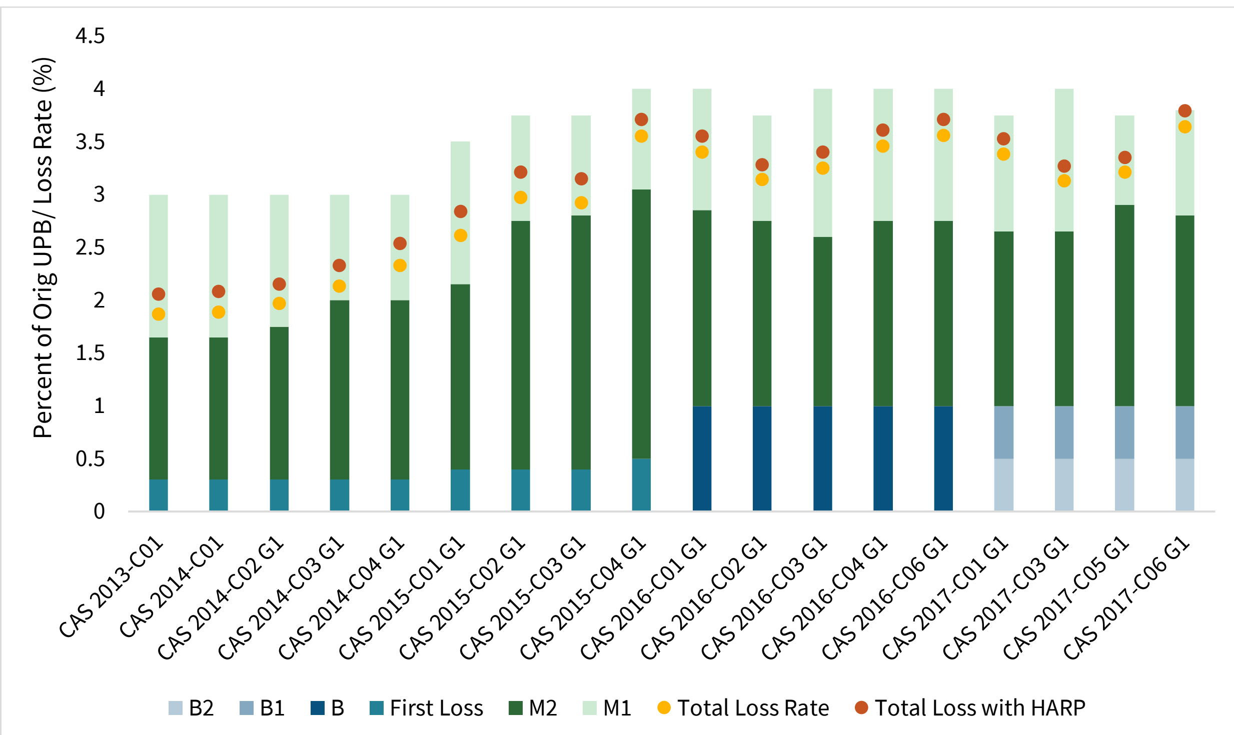
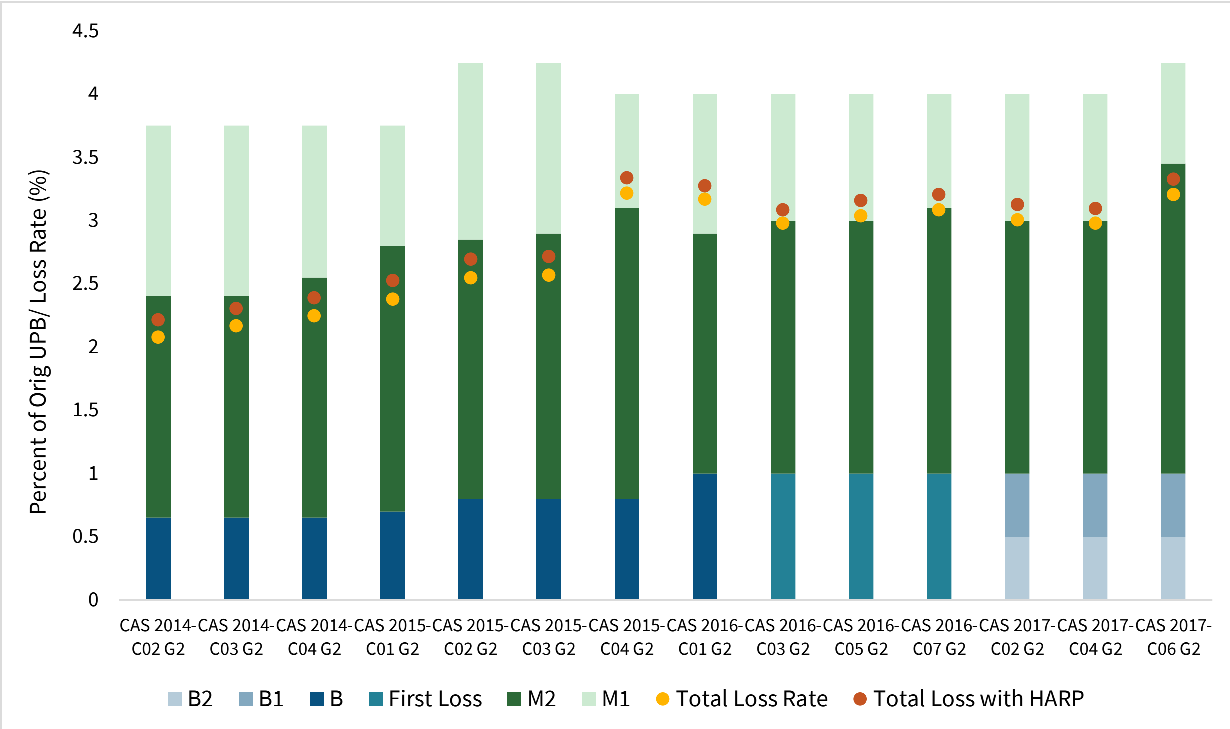


**Chart 3: Net Loss Re-Weighted to 2006 Performance (Group 2)**




The picture is similar for future CRT transactions which will maintain coverage of the loan via the "continuance of coverage" approach as noted in our recent announcement. For these structures, assuming that the HARP-related loss rates are replicated in future CRT deals, the incremental losses for the cohort may remain in line with the values shown in **Charts 2 and 3** (above). (These charts represent the historical losses that were experienced by loans with credit attributes similar to the specified CAS reference pools, for the 2006 vintage.) For loans eligible for the high LTV refinance option, we need to consider that only the high LTV subset of HARP will be eligible – the LTV ratio floor is 95% for one-unit principal residences. Loans ineligible for the high LTV refinance option due to LTV ratios < 95% may be able to refinance through standard guide products, so may prepay out of the reference pools and may also be eligible for modifications.

## Summary


To support investor analysis, Fannie Mae has provided a HARP dataset, which when appended to Fannie Mae's primary historical dataset, may provide additional insight into the performance of loans that refinanced through HARP. For existing CRT transactions, loans that are ineligible to refinance through either HARP or the high LTV refinance option will remain in their respective reference pools through maturity or other disposition. For future CRT transactions, coverage will be maintained on loans refinanced through the high LTV refinance option. As a result, lifetime credit losses may be higher on such future transactions, but the historical experience of HARP loans indicates that they are not likely to be significantly higher.

## Additional Resources

- Fannie Mae's historical Single-Family Loan Performance Dataset
- Data Dynamics
- Data Dynamics Tutorial: HARP Performance Data Addendum to Fannie Mae's Historical Single-Family Loan Performance Dataset
- Credit Risk Transfer announcement related to the high LTV refinance option
- Fannie Mae's Credit Risk Transfer programs
- Sign-up to receive CRT news and commentary

Investors may contact Fannie Mae's Investor Help line at **1-800-2FANNIE, Option 3** or via e-mail with any questions.

*While we have provided the HARP dataset, the new high LTV refinance option differs from HARP, due to features such as the eligibility date, the LTV ratio requirements, and because borrowers may use the high LTV refinance option more than once as long as all other requirements, including seasoning and payment history, are met, as mentioned in our recent CRT announcement. There can be no assurance that the past performance of refinanced loans will be predictive or that borrowers participating in the high LTV refinance option will have the same credit profile as borrowers that participate in HARP. However, investors may find such information useful in assessing how loans may perform as part of the new high LTV refinance option.*

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