

Washington, D.C. Metropolitan Area Foreclosure Monitor:
Technical Appendix
NeighborhoodInfo DC
Revised—January, 2011

The primary data on the performance of residential mortgages presented in the Foreclosure Monitor for Fall 2010 were provided by LPS Applied Analytics, Inc.¹ LPS receives its data directly from companies that service mortgage loans and offers them services to improve mortgage processing, risk management, and data integration. The LPS database covers more than 40 million active first mortgages and 5 million second mortgages, spanning the spectrum of loan products. The company offers data at the loan level and summary files for geographies such as ZIP codes and counties. This database contains more than 80 loan attributes, including product type detail, geographic detail down to the ZIP code level, detail on adjustable-rate mortgages, credit scores, document type, property value, occupancy type, property type, loan purpose, and loan size. For more information, see LPS's web site at <http://www.lpsvcs.com/LossMit/DandA/Pages/default.aspx>.

Universe of Data

For this analysis, we used monthly loan-level data on first liens for January 2007 to September 2010 that had been aggregated to ZIP codes for the Washington, D.C., metropolitan area. The data covered loans on owner- and renter-occupied units in one- to four-unit properties (including condominiums).

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The following counts were included:

- *Total mortgage loans*
- *Delinquent loans* are loans that are at least 30 days past due, but not yet in pre-sale or post-sale foreclosure. Categories include 30 to 59 days, 60 to 89 days, and 90 days or more.
- *Loans in pre-sale foreclosure* are the current inventory of loans going through the foreclosure process (litigation in Maryland) but a sheriff sale has not occurred yet. These

¹ A previous version of this document was published in April 2010 to accompany the Spring 2010 Foreclosure Monitor. Due to changes in the source data, we changed our methodology, primarily in the weighting to account for the LPS data's underrepresentation of subprime loans.



should not be confused with “foreclosure starts,” which would indicate the number of loans beginning the foreclosure process each month.

- *Loans in post-sale foreclosure or that are real estate owned* are all loans in the LPS inventory that have completed the litigation process. This means that (1) a sheriff sale has occurred; (2) the loan is awaiting transfer to government product; (3) a third party has acquired the title, entitling certificate, or title subject to redemption; or (4) the loan is a post-sale REO. This indicator significantly underestimates the real estate owned properties because it excludes properties with loans that are no longer reported to LPS Applied Analytics as part of their active loan portfolio. However, experts believe the LPS REO indicators are a valuable representation of the relative level of REOs across a region, and of the growth of REOs across time. A comparison of the LPS REO counts to the local administrative data for ZIP codes in the District of Columbia supports this—the two had a correlation of 98 percent.

All of these are inventory numbers, meaning that a loan would be present in the data from month to month until the loan is “liquidated” through either a foreclosure completion (involuntary payoff) or if the loan is paid off (voluntary completion). Thus, this analysis does not provide the number of completed foreclosures within a given time period.

LPS assigns first-lien loans to grades using the definitions below²:

- *Prime loans* include: Agency Prime loans are First Grade A loans with either Fannie Mae (FNMA) or Freddie Mac (FHLMC) as the investor; jumbo prime loans above the conforming limit and nonagency conforming prime loans, both with FICO scores above 680 with full documentation or above 720 without complete documentation.
- *Subprime* loans are those with Grade B or C or FICO scores less than 620.
- *Alt-A* loans are Grade A loans with private or portfolio investors, incomplete documentation, and FICO scores between 620 and 719.
- *Government* loans have product type “FHA” or “VA” and Ginnie Mae (GNMA) as the investor.

The REO and Delinquency risk categories displayed in the Monitor were defined in relation to the average rate of the given indicator for all ZIP codes with more than 500 loans. We only used larger ZIP codes because the rates for smaller ZIP codes were much more volatile quarter to quarter.

Minimal: ZIP codes with values from 0 to 0.5 standard deviations below the mean.

² Definitions derive from the September, 2010 LPS Mortgage Monitor report available at: http://www.lpsvcs.com/NewsRoom/IndustryData/Documents/2010%20-%202009%20Mortgage%20Monitor/LPSMortgageMonitor_September2010.pdf



Moderate: ZIP codes with values from 0.5 standard deviations below the mean to the mean.

High: ZIP codes with values from the mean to 1.5 standard deviations above the mean.

Highest: ZIP codes with values greater than 1.5 standard deviations above the mean.

Weighting Methodology

The LPS Applied Analytics does not cover the entire mortgage market, and in particular underrepresents subprime loans. The following data sources were used to adjust the raw mortgage data for these known shortcomings.³

- American Community Survey estimates by county of the owner-occupied housing units with mortgages, and of one- to four-unit rental units (single-year 2007 and 2008 and three-year averages 2005–07 and 2006–08);
- U.S. Census Bureau estimates by county of the total number of owner-occupied housing units with a mortgage (2000); and
- U.S. Census Bureau estimates by county for the number of housing units (2007 and 2008); and
- Mortgage Bankers Association's National Delinquency Survey reports on numbers of total and subprime mortgages by state (2007–2010, quarterly).

The steps below describe the adjustments to the original mortgage analysis file:

- (1) Restricted ZIP code level LPS Analytics data to first-lien mortgages with known grade.

In the LPS source data for September 2010, about 6 percent of the loans were classified as "other" grade, that is, they did not have sufficient information for LPS to assign them to one of the grades defined above. For all months, we created a "total" loan category that excluded the loans in the "other" category, assuming for purposes of this analysis that the loans with unknown grade were evenly distributed across the other grades. To simplify presentation, we also combined the agency, jumbo prime, and non-agency prime loan categories.

- (2) Weighted the number of loans from LPS Applied Analytics data to correct for the undercounting of outstanding mortgages.

³ For other examples of analysis of LPS Applied Analytics data, see LISC "ZIP Code Foreclosure Needs Scores Methodology Appendix," October 2010. (Washington, D.C., Foreclosure-Response.org), http://www.foreclosure-response.org/assets/maps&data/ZIPCodeForeclosureNeedsScore_Methodology_October2010_IntraState.pdf and Dan Immergluck, "Intra-metropolitan Patterns of Foreclosed Homes: ZIP Code Level Distributions of Real-Estate-Owned (REO) Properties during the U.S. Mortgage Crisis," *Community Affairs Discussion Paper* 01(09) (Atlanta: Federal Reserve Bank of Atlanta, 2009), http://www.frbatlanta.org/filelegacydocs/dp_0109.pdf.



The servicers that contribute data to LPS Analytics do not represent the entire mortgage market. To correct for this, we first identified the county for each ZIP code through a SAS Institute-provided ZIP code dataset and summed the number of loans for each county and month.⁴ We next calculated the number of mortgages in each year for each county by averaging the monthly LPS totals. We then created county-level weights by dividing the estimated number of housing units with a mortgage based on data from the U.S. Census Bureau by the LPS annual averages of that year.

To estimate the total number of housing units with a mortgage, we use the American Community Survey (ACS) and Decennial Census. The data include the number of owner-occupied units with a mortgage (tables B25081 in the ACS and H80 in Census 2000), but do not publish a parallel table for rental units. To estimate the number of rental units with a mortgage, we multiplied the number of rental units in one- to four-unit buildings (Tables B25032 in the ACS and H32 in the 2000 census) by 44 percent, the estimated share of rental units with a mortgage as published in the Residential Housing Finance Survey in 2001.⁵

For the housing unit data, we used single-year ACS county-level estimates for 2007 or 2008 (depending on the year of the data) when available. Since the 2009 and 2010 ACS data were not available at the time the LPS data were processed, we compared the 2008 ACS data to the 2009 and 2010 LPS annual average to create the 2009 and 2010 weights. In cases where estimates were not available for single-year data, we used the three-year estimates (2005–2007 or 2006–2008 as appropriate). As a last resort (in six cases) when single-year or three-year estimates were unavailable, the counts from the 2000 Census were multiplied by the percent change in the number of housing units from 2000 to 2007 or 2008 using the Housing Units Estimates. Table 1 lists which source was used for each county.

We then applied the county-level weights to the loan counts across ZIP codes, assuming equal weights for all loan grades. The monthly average in 2008 of the total mortgage count in the raw LPS data is 73 percent of the 2008 total that was calculated from the combination of ACS and Decennial Census data.

⁴ SAS Maps Online Zip Code Dataset, Q3 2010 available at <http://support.sas.com/rnd/datavisualization/mapsonline/html/misc.html>

⁵ Available at <http://www.census.gov/prod/2005pubs/censr-27.pdf>.

**Table 1. Source for Total Number of Mortgages***ACS single year*

District of Columbia
Charles County, MD
Frederick County, MD
Montgomery County, MD
Prince George's County, MD
Alexandria city, VA
Arlington County, VA
Fairfax County, VA
Loudoun County, VA
Prince William County, VA

ACS three-year average

Calvert County, MD
Fairfax city, VA
Fauquier County, VA
Stafford County, VA
Warren County, VA
Jefferson County, WV

Decennial Census/Annual housing unit estimates

Clarke County, VA
Falls Church city, VA
Fredericksburg city, VA
Manassas city, VA
Manassas Park city, VA
Spotsylvania County, VA

- (3) Adjusted weighted subprime loan counts from Step 2 based on counts from the Mortgage Bankers Association (MBA)

The MBA's National Delinquency Survey (NDS) data represents the share of subprime lending in the mortgage market more accurately than LPS data, so we use MBA to adjust for the underrepresentation of subprime loans in our data. NDS is published at the state level, so the general step is to create a weight by comparing the LPS subprime share to the MBA subprime share for each state.



We created state level weights for each quarter of data from 2007 to 2010 for subprime loans using the following steps⁶:

- We divided the MBA state share of subprime loans by the subprime share from the LPS state-level source.
- We then applied the appropriate state-level subprime weight to the subprime loan count in each ZIP code.
- Adjusted Number of Subprime Loans for Each ZIP Code =

$$\text{NumSubprime}_{\text{ACSLPS}} \times \left(\frac{\text{Pct Subprime}_{\text{MBA}}}{\text{Pct Subprime}_{\text{LPSState}}} \right)$$

where

$\text{NumSubprime}_{\text{ACSLPS}}$ = Number of subprime loans from LPS data weighted to ACS totals (as described above)

$\text{PctSubprime}_{\text{MBA}}$ = Percent of all loans in a given state that are subprime according to the MBA

$\text{PctSubprime}_{\text{LPSState}}$ = Percent of all loans in a given state that are subprime according to the LPS data

In order to preserve the total loan count represented in the weighted LPS data, we reduced the prime, Alt-A, and government loan counts in each ZIP code by a commensurate percentage. The delinquency and foreclosure shares for each loan grade remained unchanged. Within each loan grade, we used the original LPS Applied Analytics delinquencies, foreclosures, and post-sale/REOs shares to recalculate the new troubled loan counts based on the final weighted loan total for each ZIP code.

Overall, this shifted the September 2010 share of subprime loans from 4 percent of metropolitan area mortgages to 8 percent.

(4) Summarized ZIP code level adjusted data to larger geographic levels.

For the last step, we summarized the ZIP code level data for the metropolitan area, subareas, and counties.

⁶ Mortgage Bankers Association data for 2007 and 2008 were not available for West Virginia, so the first quarter 2009 weight was applied to West Virginia ZIP codes for the 2007 and 2008 data.



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About NeighborhoodInfo DC: NeighborhoodInfo DC is a partnership between the Urban Institute and the Washington, D.C. Local Initiatives Support Corporation to provide community-based organizations and citizens in the District of Columbia and the Washington region with local data and analysis they can use to improve the quality of life in their neighborhoods.

About the Metropolitan Washington Council of Governments (COG): COG is a regional organization comprised of 21 local governments surrounding our nation's capital, plus area members of the Maryland and Virginia legislatures, the U.S. Senate, and the U.S. House of Representatives. COG provides a focus for action and develops sound regional responses to such issues as the environment, affordable housing, economic development, health and family concerns, human services, population growth, public safety, and transportation.

About Fannie Mae: This publication was funded through a grant from Fannie Mae. Fannie Mae exists to expand affordable housing and bring global capital to local communities in order to serve the U.S. housing market. Fannie Mae has a federal charter and operates in America's secondary mortgage market to enhance the liquidity of the mortgage market by providing funds to mortgage bankers and other lenders so that they may lend to homebuyers.

For More Information: Electronic versions of the *Foreclosure Monitor* and its *Technical Appendix* are available online at www.mwcog.org and www.NeighborhoodInfoDC.org. To learn more about foreclosure prevention activities in the region, visit the Capital Area Foreclosure Network (CAFN) at www.CapitalAreaForeclosureNetwork.org.

The views expressed are those of the authors and should not be attributed to the Urban Institute, Metropolitan Washington Council of Governments, Fannie Mae, their trustees, or their funders.