

# Impact of the Mortgage Meltdown on the HMDA Data

By

Rajeev Darolia, Senior Associate  
Charles River Associates

David Skanderson, Ph.D., Principal  
Charles River Associates

January 2010

The Home Mortgage Disclosure Act (HMDA) data provide an interesting lens through which to view the “Mortgage Meltdown” and its impacts on the demographics of mortgage lending.<sup>1</sup> The data also provide clues about the future focus of examination and enforcement activity, as well as about areas of possible reputation and litigation risk. Our analysis of the 2008 HMDA data suggests that regulatory attention on underwriting may increase, and that fairness in FHA and VA lending is likely to receive greater scrutiny.

A key public policy motivation behind HMDA data reporting requirements – and their expansion to include pricing in 2004 – was to increase market transparency with respect to credit availability and equal credit opportunity, in addition to providing regulators a tool for monitoring and enforcement. However, we have learned over the past few years that a variety of broad market factors can cause large swings in fair lending performance measures that have little to do with the fairness of mortgage lending.<sup>2</sup> Some recent factors that have had an influence on the HMDA data include changes in

- short-term interest rates in relation to long-term rates (the yield curve);
- market credit risk premia and liquidity risk;

---

<sup>1</sup> The Home Mortgage Disclosure Act of 1975, as amended and as implemented by Regulation C, requires most mortgage lenders with offices in metropolitan areas to disclose to the public certain information about the home loan applications they take and home loans they originate. Required data reporting includes, among other things, the loan type and purpose; property type; owner occupancy; loan amount; lien status; preapproval request status; action taken; applicant race, ethnicity, sex and income; and the spread of the Annual Percentage Rate above a specified threshold for originated loans that exceed that threshold.

<sup>2</sup> See, for example, Elaine Fortowsky and David Skanderson, “What Do Trends in HMDA Pricing Data Mean?” in the March/April 2007 issue of *ABA Bank Compliance* (Volume 28, No. 2); Robert B. Avery, Kenneth P. Brevoort, and Glenn B. Canner, “The 2006 HMDA Data,” *Federal Reserve Bulletin*, vol. 93 (December 2007), pp. A73–A109; and Robert B. Avery, Kenneth P. Brevoort, and Glenn B. Canner, “The 2007 HMDA Data,” *Federal Reserve Bulletin*, vol. 94 (December 2008), pp. A107–A146.

- the availability and cost of private mortgage insurance relative to government insurance or guarantees; and
- lender credit standards.

In this paper, we provide some insights on major trends in the HMDA data, both in the aggregate and by state, and in terms of differences by racial, ethnic and income group. These statistics should help readers benchmark where their institution stands in relation to the overall market. We also suggest what the data may indicate about the direction of regulatory attention, which fair lending compliance professionals should consider in focusing their monitoring and analysis efforts..

### **Lending Volume Declined – More So for Minorities, Not So for FHA**

Overall HMDA-reportable loan origination volume declined by 23% from 2007 to 2008 for first-lien home purchase and refinance loans on owner-occupied, site-built properties.<sup>3</sup> Underlying the aggregate trend are distinct patterns in conventional and government-backed lending. Conventional lending declined by 39%, while loans insured by the Federal Housing Administration (FHA) or guaranteed by the Veterans Administration (VA) *increased* by a whopping 185% and 49%, respectively, as shown in Exhibit 1.<sup>4</sup> The FHA share of total HMDA-reportable lending increased from 6% in 2007 to 22% in 2008, and the conventional loan share decreased from 92% to 73%. The VA share increased from 2% to 3%.

The growth in government-backed mortgage lending occurred as a direct result of the credit crisis and the federal government's response to it. First, private mortgage insurance companies tightened their underwriting standards and raised their prices, making conventional loans less affordable and attainable for borrowers with high loan-to-value (LTV) ratios. In addition, the Economic Stimulus Act of 2008 included a temporary increase in FHA loan limits, which particularly increased the availability of government-insured loans in higher-cost areas of the country.<sup>5</sup>

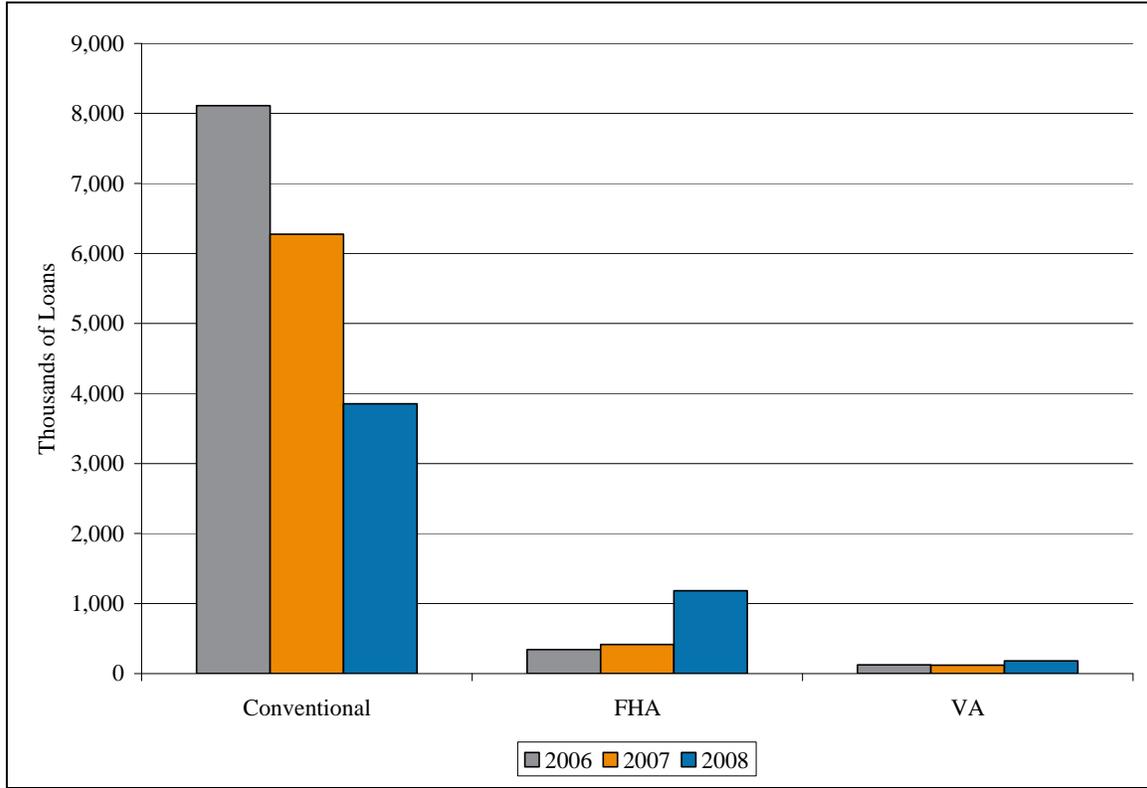
---

<sup>3</sup> All of the statistics discussed in this paper are based on home purchase and refinance loans for first-lien, one- to four-family, owner-occupied properties in the 50 states plus the District of Columbia, excluding loans for manufactured housing.

<sup>4</sup> Exhibits that report statistics based on loan type exclude details on loans guaranteed by the Farm Service Agency and Rural Housing Service, because they represent less than 1% of HMDA-reportable lending. However, they are included in reported total loan volumes.

<sup>5</sup> The Economic Stimulus Act of 2008 permitted FHA to insure loans on amounts up to 125 percent of the area median house price, up to a maximum amount of \$729,750 for one-unit properties in the highest-cost metropolitan areas. Previously, FHA's one-unit property loan limit in high-cost areas was capped at \$362,790. The increased loan limits went into effect March 6, 2008. See FHA Mortgagee Letter 2008-06.

### Exhibit 1: Loan Origination Volume by Type



The percentage changes in both total and government-backed lending differed markedly among racial and ethnic groups.<sup>6</sup> Total mortgage loan volume declined 16% for Non-Hispanic Whites and 17% for Asians, but at more than twice that rate for Blacks and Hispanics, as shown in Exhibit 2. What accounts for the difference? Factors such as differences in average borrower wealth and credit characteristics, together with the lower availability of high LTV loans and tightening of credit standards, may play a role, as may geographic differences in rates of home price declines.

The statistics clearly show that income differences – which can be examined in the HMDA data – do not explain the higher rates of decline for Blacks and Hispanics. Exhibit 2 shows the percentage declines from 2007 to 2008 in loan volume by race and ethnicity within broad income categories.<sup>7</sup> While Black and Hispanic borrowers are relatively more concentrated in lower income categories than are Non-Hispanic Whites

<sup>6</sup> For brevity, we report statistics only for Asians, Blacks, Hispanics, and Non-White Hispanics, but not for American Indians or Alaskan Natives, Native Hawaiians or Other Pacific Islanders, or loans with no race or ethnicity reported.

<sup>7</sup> Borrower and Census tract income levels are categorized relative to the Median Family Income for the Metropolitan Statistical Area or Metropolitan Division in which the borrower or tract is located, as published by the Department of Housing and Urban Development. “Low Income” indicates income less than 80% of the area median income, “Middle Income” indicates 80% to less than 120% of the area median, and “High Income” represents 120% or more of the area median.

and Asians, the percentage declines in total loan volume from 2007 to 2008 were consistently higher for Blacks and Hispanics than for Non-Hispanic Whites and Asians across income categories. The pattern is essentially the same whether we categorize loans based on borrower income or tract income.<sup>8</sup>

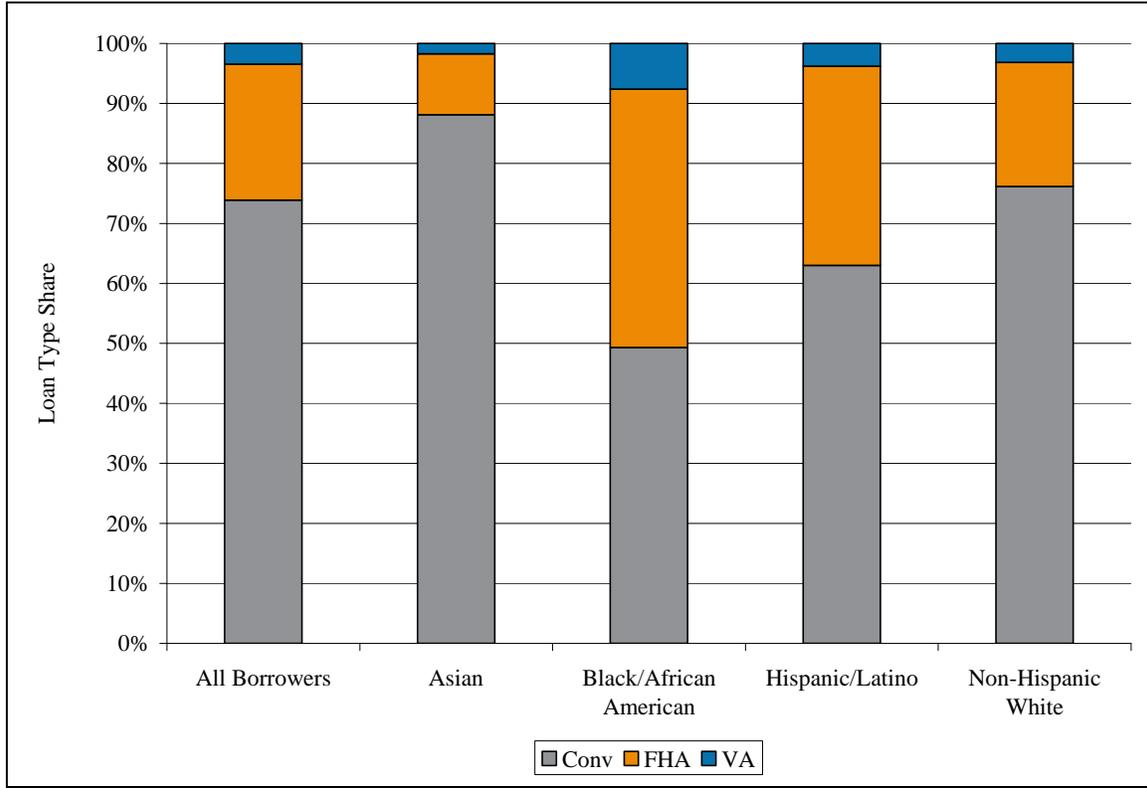
**Exhibit 2: Percentage Changes in Loan Volume, 2007-2008, By Loan Type  
Race/Ethnicity and Income Level**

	Borrower Income Level	Race/Ethnicity				
		All	Black/African American	Hispanic/Latino	Asian	Non- Hispanic White
<b>All Loan Types</b>	Low	-17%	-37%	-24%	11%	-12%
	Middle	-20%	-40%	-36%	-5%	-14%
	High	-27%	-47%	-53%	-26%	-20%
	All Incomes	-23%	-40%	-43%	-17%	-16%
<b>Conventional</b>	Low	-37%	-63%	-48%	-1%	-31%
	Middle	-39%	-66%	-59%	-16%	-33%
	High	-37%	-65%	-65%	-31%	-30%
	All Incomes	-39%	-65%	-61%	-25%	-32%
<b>FHA</b>	Low	169%	111%	203%	279%	174%
	Middle	163%	94%	177%	277%	170%
	High	223%	146%	215%	470%	227%
	All Incomes	185%	117%	198%	335%	192%
<b>VA</b>	Low	45%	26%	44%	71%	46%
	Middle	32%	12%	36%	43%	35%
	High	36%	11%	35%	64%	39%
	All Incomes	49%	30%	47%	69%	52%

As illustrated in Exhibit 2, large differences on the basis of race and ethnicity are also present in the growth rate of FHA lending. FHA loan volume increased by 335% for Asians, 198% for Hispanics, 192% for Non-Hispanic Whites, and 117% for Blacks. Though the growth in FHA lending to Asians exploded, the FHA share of their total loan volume remained a modest 10% in 2008, compared to 20% for Non-Hispanic Whites and almost 43% for Blacks, as illustrated in Exhibit 3. The reasons for the racial/ethnic differences in FHA growth rates will require further study, but it is likely that they are at least partly due the population demographics of areas with high housing prices (such as the West coast), which would have received the greatest benefit from increased FHA loan limits.

<sup>8</sup> Figures on income distributions and statistics on the basis of tract income level are available on request.

**Exhibit 3: Origination Share 2008, By Loan Type and Race/Ethnicity**



Another interesting pattern revealed by Exhibit 2 is that the percentage increase in FHA lending was greater for high-income borrowers than for low- or middle-income borrowers. This, too, is likely due to the increase in FHA loan limits. Also interesting is the fact that the percentage declines in total lending were greatest for high-income borrowers.

The declines in loan originations were not just a supply-side phenomenon: Exhibit 4 shows that declines in loan application volume were of a similar magnitude to the declines in originations, suggesting that a decline in the demand for home loans played an equally important role in the decline in lending. However, applications and originations did not move completely in tandem, implying denial rates changed as well.

**Exhibit 4: Percentage Changes in Loan Applications, 2007-2008, By Loan Type  
Race/Ethnicity and Income Level**

	Borrower Income Level	Race/Ethnicity				
		All	Black/African American	Hispanic/Latino	Asian	Non- Hispanic White
<b>All Loan Types</b>	Low	-20%	-35%	-20%	14%	-13%
	Middle	-24%	-40%	-36%	-4%	-16%
	High	-32%	-48%	-55%	-29%	-22%
	All Incomes	-27%	-40%	-42%	-18%	-18%
<b>Conventional</b>	Low	-38%	-55%	-39%	1%	-31%
	Middle	-41%	-59%	-53%	-14%	-33%
	High	-41%	-61%	-63%	-33%	-32%
	All Incomes	-41%	-59%	-56%	-26%	-33%
<b>FHA</b>	Low	192%	134%	227%	313%	192%
	Middle	188%	123%	200%	310%	190%
	High	260%	186%	246%	513%	259%
	All Incomes	210%	143%	221%	368%	213%
<b>VA</b>	Low	48%	29%	49%	86%	50%
	Middle	36%	18%	40%	51%	38%
	High	41%	20%	41%	69%	44%
	All Incomes	54%	36%	52%	76%	56%

**Denial Rates Increased for Some**

Many lenders, perhaps in response to changes initiated by Fannie Mae and Freddie Mac, tightened underwriting standards in 2007 and 2008, through such measures as reducing maximum LTV ratios and increasing minimum credit scores for conventional loans, as well as “soft market” or “declining market” policies that further limited LTV ratios in markets where housing prices had declined and/or were at risk of declining.<sup>9</sup> In addition, private mortgage insurance companies tightened their standards and raised prices.<sup>10</sup> Interestingly, we did not observe a significant increase in overall denial rates for conventional loans between 2007 and 2008, despite indications of tighter credit standards. However, we *did* see significant increases in denial rates for Black and Hispanic borrowers.

<sup>9</sup> See, for example, the *Senior Loan Officer Opinion Survey on Bank Lending Practices* conducted by the Federal Reserve Board. Loan officers reported tightening credit standards for subprime loans in 2008 up to the fourth quarter, when the maximum 100 percent of loan officers reported tighter credit standards. Prime loans also experienced substantial credit tightening, with approximately 70 percent of respondents reporting tighter credit standards for prime loans by the end of 2008, as compared to about 40% a year earlier. Available at <http://www.federalreserve.gov/boarddocs/snloansurvey/200908/>. A more specific example was reported by Reuters: “Wells Fargo: Over 200 markets face housing trouble.” Available at <http://www.reuters.com/article/idUSN2734821720080227>.

<sup>10</sup> See, for example, “Mortgage Insurers Raise Bar,” *Wall Street Journal*, July 15, 2008, p. A1.

Exhibit 5 shows the trends in denial rates from 2006 through 2008, by race, ethnicity, loan type and loan purpose. Aggregate denial rates changed only by a small amount from 2006 through 2008 for both conventional home purchase and refinance loans. However, conventional loan denial rates increased for Blacks and Hispanics while declining or remaining fairly stable for Non-Hispanic Whites. For example, for conventional refinance loans, the denial rates for Blacks and Hispanics increased from 53% to 61% and from 45% to 52%, respectively, between 2007 and 2008. By contrast, the denial rate for Non-Hispanic Whites declined from 34% in 2007 to 32% in 2008. We can also see that the surge in FHA lending was accompanied by substantial increases in denial rates for that product across all races and ethnicities. For some groups, FHA denial rates in 2008 were nearly double their 2006 levels.

**Exhibit 5: Trend in Denial Rates by Race, Ethnicity, Loan Purpose and Type**

Race/Ethnicity	Year	All	Conventional			Government-Backed	
			All	Purchase	Refinancing	FHA	VA
All Races & Ethnicities	2006	28%	29%	18%	36%	15%	11%
	2007	31%	32%	19%	40%	24%	12%
	2008	30%	31%	18%	37%	29%	13%
Black/African American	2006	38%	40%	31%	45%	19%	14%
	2007	45%	47%	35%	53%	29%	14%
	2008	47%	55%	36%	61%	36%	17%
Hispanic/Latino	2006	30%	31%	25%	35%	17%	10%
	2007	38%	39%	30%	45%	25%	12%
	2008	40%	45%	30%	52%	30%	14%
Asian	2006	21%	21%	16%	27%	13%	8%
	2007	24%	25%	17%	33%	25%	9%
	2008	25%	25%	18%	32%	29%	11%
Non-Hispanic White	2006	23%	23%	13%	31%	13%	9%
	2007	25%	26%	13%	34%	21%	10%
	2008	25%	26%	14%	32%	25%	11%

### Denial Disparities Also Increased

The difference in denial rate patterns across racial/ethnic groups caused conventional refinance denial disparities to increase for Blacks and Hispanics, which drove the overall increase in denial disparities for conventional loans. Those figures are displayed in Exhibit 6, expressed as denial odds ratios relative to Non-Hispanic Whites.<sup>11</sup>

<sup>11</sup> The odds of denial represents the likelihood of being denied for a loan rather than approved. A denial odds ratio measures how much the likelihood of denial differs between two groups. An odds ratio of 1.0 means that the minority group and Non-Hispanic Whites had an equal likelihood of denial, a ratio greater than 1.0 means that the minority groups was more likely to be denied than Non-Hispanic Whites, and a

Denial disparities for FHA and VA loans remained relatively stable over the past two years.

**Exhibit 6: Trend in Denial Disparity Ratios by Race, Ethnicity, Loan Purpose and Type**

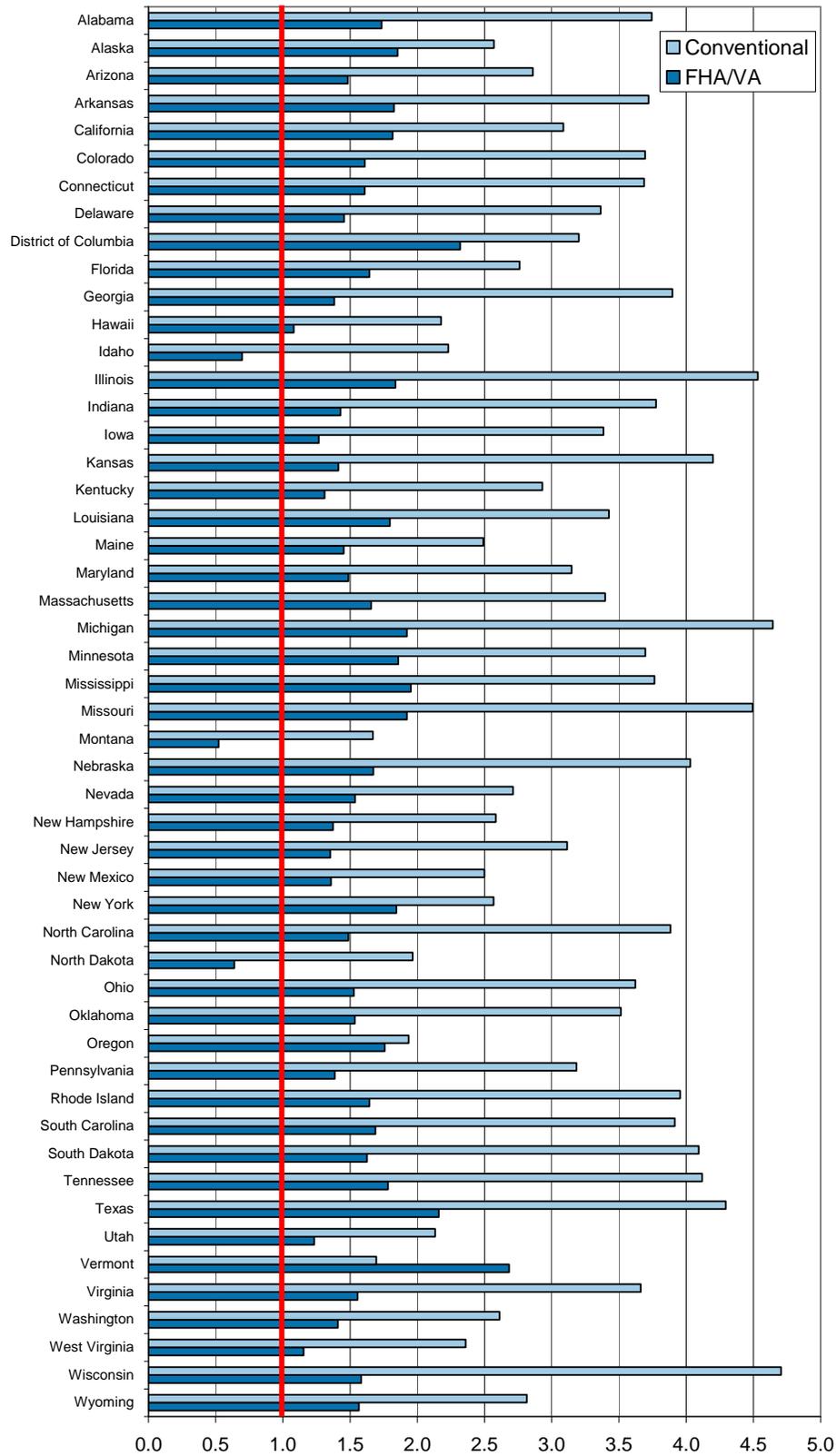
Race/Ethnicity	Year	Conventional			FHA/VA
		All	Purchase	Refinancing	
Black/African American	2007	2.5	3.4	2.2	1.6
	2008	3.4	3.4	3.3	1.6
Hispanic/Latino	2007	1.8	2.8	1.6	1.3
	2008	2.4	2.7	2.4	1.3
Asian	2007	1.0	1.4	1.0	1.1
	2008	1.0	1.4	1.0	1.2

Exhibits 7 and 8 show the wide geographic variation in denial disparity ratios for Blacks and Hispanics. The red line in each chart indicates a disparity ratio of 1.0, or parity in denial rates between the minority group and Non-Hispanic Whites. The denial odds ratio for conventional loan applications from Blacks ranges from highs of 4.7 in Wisconsin and 4.6 in Michigan, to a low of 1.7 for both Montana and Vermont. Vermont is also the only state for which the Black and Hispanic denial disparities for FHA/VA loans exceed those of conventional loans. There is also less divergence between conventional and FHA/VA disparities for Hispanics than for Blacks. The geographic differences in denial disparities likely are due in large part to differences in demographic, socio-economic and housing market characteristics across the states.

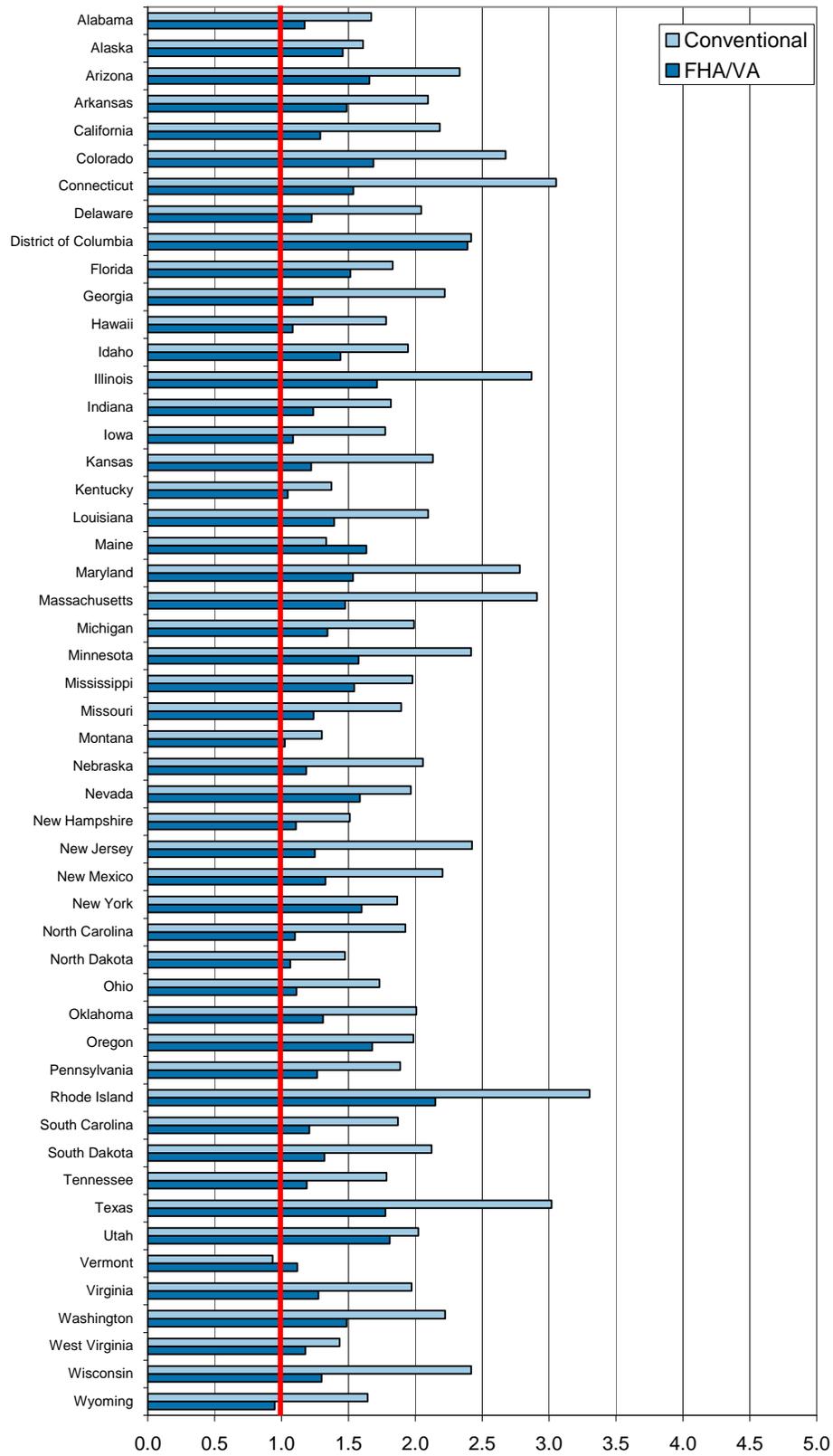
---

ratio less than 1.0 means that the minority group was less likely to be denied than Non-Hispanic Whites. For example, the odds ratio of 3.4 for Blacks in 2008 means that odds of denial for Black applicants was 3.4 times the odds of denial for White Non-Hispanic applicants. A similar interpretation applies to odds ratios for the percentage of loans with reportable APR spreads.

**Exhibit 7: Denial Disparities for Black Applicants by Loan Type and State, 2008**



**Exhibit 8: Denial Disparities for Hispanic Applicants by Loan Type and State, 2008**



## APR Spread Reporting Decreased

The proportion of HMDA-reportable first-lien mortgages with reportable annual percentage rate (APR) spreads declined dramatically in 2008, continuing the downward trend since 2006, when rate-spread reporting reached a peak due to inversion of the yield curve.<sup>12</sup> Exhibit 9 shows that the share of loans with reportable spreads declined overall and across racial and ethnic groups for conventional loans in 2007 and 2008.

A major factor in these changes, as in previous years, was variation in the relationship between market mortgage rates and the HMDA rate-spread reporting threshold, which was driven by broad market factors. As discussed in a study by Federal Reserve economists,<sup>13</sup> this variation had two countervailing components: a yield curve effect, and a risk premium or “flight to quality” effect. First, throughout 2007 and 2008, the difference between long-term and short-term interest rates was generally trending upward, as the yield curve transitioned from being inverted at the beginning of 2007, to a more normal upward slope in mid-2007, and got steadily steeper thereafter. The steepening of the yield curve tended to reduce the share of loans with APRs above the reporting threshold, because HMDA rate spread reporting for most mortgages was based on the spread of APRs over a long-term Treasury interest rate, while mortgages tend to be priced based on rates for maturities of 10 years or less.

However, working in the opposite direction was the fact that the credit and liquidity crisis in 2008 was pushing down rates on Treasury securities relative to riskier securities (including mortgages and mortgage-backed securities). Other things equal, this factor would tend to increase the share of loans with reportable APR spreads. On net, it appears that the yield-curve effect dominated, resulting in the observed decline in “higher-priced” lending.

The dominant role of market interest rate trends in APR spread reporting reinforces the notion that variations in the share of loans with reportable spreads may have had little to do with variations in the amount of high-risk or subprime lending activity in 2008. This is expected to change under the new reporting rules adopted by the Federal Reserve Board. Under the new rules, the spread between a loan’s APR and a comparable rate from the Freddie Mac Primary Mortgage Market Survey (PMMS) will be used to determine whether a loan is reported as higher priced for HMDA, rather than the Treasury rates used previously. The new rules took effect for all loans with application dates on or after October 1, 2009, and for loans regardless of application date originated in 2010. First-lien loans now must be reported if their APR is 1.50 percentage points or more over the PMMS benchmark, and second-lien loans must be reported if their spread is 3.50 percentage points or more. The new approach should reduce

---

<sup>12</sup> The yield curve represents the relationship between short-term and long-term interest rates. Yield curve “inversion” refers to a situation where short-term rates are higher than long-term rates, which is the opposite of the usual pattern.

<sup>13</sup> Robert B. Avery, Neil Bhutta, Kenneth P. Brevoort, Glenn B. Canner, and Christa N. Gibbs, “The 2008 HMDA Data: The Mortgage Market during a Turbulent Year,” September 30, 2009, forthcoming in the *Federal Reserve Bulletin*, vol. 95 (December 2009).

substantially the volatility in rate spread reporting percentages, because the new rate indices specifically track market mortgage rates.

**Exhibit 9: Share of Loans with Reportable APR Spreads**

Race/Ethnicity	Year	All	Conventional			Government-Backed	
			All	Purchase	Refinancing	FHA	VA
All Races & Ethnicities	2006	27%	28%	25%	31%	3%	0%
	2007	17%	18%	14%	22%	5%	0%
	2008	10%	9%	7%	10%	13%	1%
Black/African American	2006	48%	53%	53%	52%	4%	0%
	2007	33%	38%	33%	41%	7%	0%
	2008	18%	23%	16%	27%	16%	1%
Hispanic/Latino	2006	39%	41%	45%	37%	3%	0%
	2007	25%	27%	27%	27%	5%	0%
	2008	13%	14%	14%	14%	14%	1%
Asian	2006	17%	17%	16%	19%	1%	0%
	2007	9%	9%	7%	12%	3%	0%
	2008	4%	3%	3%	3%	9%	1%
Non-Hispanic White	2006	21%	22%	18%	26%	2%	0%
	2007	14%	15%	11%	18%	5%	0%
	2008	9%	9%	7%	10%	11%	1%

**APR Spread Reporting Disparities**

The aggregate share of loans with reportable APR spreads fell from 2007 to 2008, as all groups’ reporting percentages have converged to the teens or single digits. However, Exhibit 10 shows that Blacks and Hispanics continue to be more likely than Non-Hispanic Whites to receive loans with an APR spread above the reporting threshold. The reportable APR disparity for Blacks receiving conventional refinance loans and Hispanics receiving FHA or VA loans increased slightly in 2008.

As in past years, disparities in the magnitudes of reported APR spreads remain miniscule, so we will not discuss them here.

**Exhibit 10: APR Spread Reporting Disparity Ratios by Race, Ethnicity, Loan Purpose and Type**

Race/Ethnicity	Year	Conventional			FHA/VA
		All	Purchase	Refinancing	
Black/African American	2007	3.4	4.1	3.0	1.5
	2008	3.1	2.6	3.3	1.4
Hispanic/Latino	2007	2.2	3.4	1.6	1.2
	2008	1.6	2.2	1.4	1.3
Asian	2007	0.7	0.8	0.7	0.5
	2008	0.4	0.5	0.3	0.7

**Implications for Regulatory Risk**

It is widely accepted that HMDA data alone cannot be used to draw conclusions regarding lending discrimination. The data do not provide information about borrower credit risk or loan product characteristics that are used in underwriting and pricing decisions; or about supply, demand and competitive factors that may affect borrowers in different markets. Nevertheless, we expect some impact of the latest HMDA data on the focus of regulators’ fair lending examinations, because all of the federal bank regulatory agencies use the data in their examination scoping process.

First, the dramatic increase in FHA and VA loan volumes may result in greater attention being paid by examiners to the fairness of underwriting and pricing in that product area. In past years, in-depth fair lending analysis and examination of government-backed loans was constrained for many lenders by the lack of substantial loan volume – especially when looking at specific metropolitan areas. That constraint is less binding with respect to 2008 HMDA-reportable lending, so FHA and VA lending should be given appropriate scrutiny by banks in their internal monitoring. We would expect any shift in regulatory focus to be temporary, however, because the eventual recovery of credit markets should cause volume to start shifting back toward conventional lending and away from government-backed lending.

Second, the increases in denial rates and denial disparities, should generally increase the likelihood that lenders would attract regulatory attention based on denial disparities. At the same time, the reduced percentage of loans with reportable APR spreads suggests that we should expect fewer lenders to stand out in terms of the extent of HMDA-reportable pricing, though disparities among races and ethnicities may persist. This latter change is likely to be temporary, however: though the volatility in APR-spread reporting can be expected to continue in the 2009 data, the recent HMDA reporting rule changes should take much of the “noise” out of the pricing statistics in 2010.

From a practical perspective, this analysis suggests that lenders need to (1) regularly examine their data carefully, (2) understand what underlying economic factors and lending policy changes are driving any adverse changes in their fair lending performance indicators, and (3) determine whether changes in their HMDA statistics actually pose a fair lending compliance risk.

### *About the Authors*

**Rajeev Darolia** is a senior associate in the Financial Economics Practice of Charles River Associates in Washington, DC, where he conducts research and statistical analysis of discrimination claims regarding consumer loan underwriting, pricing and redlining, among other financial topics. Prior to joining CRA, he was a consultant with another firm, where he performed financial and economic analysis in litigation and regulatory actions on issues regarding valuation, accounting, damages, securities fraud, and corporate governance. He earned his M.A. in economics from the University of San Francisco, and is working on his Ph.D. in Public Policy at the George Washington University. Reach him by phone at (202) 662-7868 or via e-mail at [rdarolia@crai.com](mailto:rdarolia@crai.com).

**David Skanderson** is a principal in the Financial Economics Practice at Charles River Associates in Washington, DC, where he provides financial institutions with quantitative analysis of regulatory and litigation issues, and advises institutions on their fair lending compliance management programs. Prior to joining Charles River Associates, Dr. Skanderson was a first vice president at Washington Mutual Bank F.A., responsible for the bank's fair lending analytics, HMDA compliance and compliance testing functions. Previously, he was a senior manager at another major consulting firm, where he provided statistical analysis to lenders to assist in their compliance with fair lending and HMDA laws and regulations, and provided other statistical analysis and modeling services to corporate clients on regulatory and public-policy issues. He earned his M.A. and Ph.D. in economics at the University of Rochester. Reach him by phone at (202) 662-3955 or via e-mail at [dskanderson@crai.com](mailto:dskanderson@crai.com).