



Losing Ground: Foreclosures in the Subprime Market and Their Cost to Homeowners

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SYNOPSIS

In this report, we examine foreclosure trends in the subprime market and provide the first comprehensive assessment of how homeowners have fared in the fast-growing subprime mortgage market. Our research analyzes the performance of more than six million subprime mortgages from 1998 through 2004 and projects lifetime cumulative subprime foreclosure rates for each annual cohort of subprime loans from 1998 through 2006. We investigate patterns of subprime foreclosures and, based on housing appreciation forecasts from Moody's Economy.com, project subprime foreclosure rates and losses for homeowners.

Our results show that despite low interest rates and a favorable economic environment during the past several years, the subprime market has experienced high foreclosure rates comparable to the worst foreclosure experience ever in the modern prime market. We also show that foreclosure rates will increase significantly in many markets as housing appreciation slows or reverses. As a result, we project that 2.2 million borrowers will lose their homes and up to \$164 billion of wealth in the process. Further, we find that many features of typical subprime loans substantially increase the risk of foreclosure, regardless of the borrower's credit history.

Acknowledgements

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Editor's Note

This report reflects minor corrections made since its initial release on December 19, 2006. None of these changes altered the methods, results or conclusions contained in the December 19 version.

I. EXECUTIVE SUMMARY

In this report, the Center for Responsible Lending presents research on how homeowners have fared with subprime mortgages. Analyzing the performance of more than six million subprime mortgages made from 1998 through the third quarter of 2006 and taking into account changes in housing prices, we find that foreclosure risk in the subprime market has escalated in recent years, and is likely to grow even worse in many areas.

As this year ends, 2.2 million households in the subprime market either have lost their homes to foreclosure or hold subprime mortgages that will fail over the next several years. These foreclosures will cost homeowners as much as \$164 billion, primarily in lost home equity.

We project that one out of five (19 percent) subprime mortgages originated during the past two years will end in foreclosure. This rate is nearly double the projected rate of subprime loans made in 2002, and it exceeds the worst foreclosure experience in the modern mortgage market, which occurred during the “Oil Patch” disaster of the 1980s.

In brief, these are the primary findings:

- 1. Even during the recent period of strong housing appreciation, subprime foreclosures have been high.** As many as one in eight (13 percent) subprime home loans ended in foreclosure within five years of origination.
- 2. The past housing boom masked the high proportion of homeowners who have struggled with subprime loans.** For many borrowers, strong house price growth increased the amount of equity in their homes and enabled them to refinance their mortgages despite being behind on the monthly payments. When these distressed prepayments are added to the foreclosure rates, the total “failure rate” for subprime loans approaches 25 percent.

Key Findings

- 2.2 million subprime home loans made in recent years have already failed or will end in foreclosure.
- These foreclosures will cost homeowners as much as \$164 billion.
- One out of five subprime mortgages originated during the past two years will end in foreclosure.

About this Research

Our study projects foreclosures on subprime home loans made nationwide during each year from 1998 through 2006, and measures the effects of housing appreciation on loan performance. We estimate future foreclosure rates using housing appreciation forecasts developed by Moody’s Economy.com, and predict subprime foreclosure rates in all major metropolitan areas in the United States. The study also examines factors associated with subprime foreclosures, including high-risk features typically included in subprime home loans.

3. As housing prices decline, subprime foreclosures will rise. Now that the housing boom has cooled, fewer delinquent borrowers will have the equity needed to refinance their loan or sell their home to avoid foreclosure. Our results confirm that foreclosures are more likely in housing markets with lower house price growth.

4. The chance of foreclosure on a subprime loan doubled between 2002 and 2005. Subprime loans originated in 2002 have a one-in-ten lifetime chance of foreclosing. For loans originated in 2005 and 2006, the probability shoots up to one in five.

5. Multiple subprime loans boost foreclosure risk even higher. Lenders often portray subprime loans as a stepping-stone to a prime loan. In reality, many borrowers in the subprime market refinance from one subprime loan to another, losing equity each time to cover the cost of getting a new loan. When we analyze the likelihood of foreclosure for borrowers who repeatedly refinance, we find that the risk of losing the home climbs to 36 percent. While more research is needed, this estimate relies on assumptions drawn directly from refinance patterns in the subprime market.

Why Subprime Foreclosures Matter

The report describes the first comprehensive research on foreclosures in the subprime market, assessing how frequently subprime mortgages fail and the associated costs to homeowners. The loss of home equity is significant because, for most families, the value of this ownership is their greatest financial asset. The performance of the subprime market is significant because it has rapidly grown from a niche market into a major economic force, now representing roughly one quarter of all home loans made in the United States.

Our research shows that subprime foreclosure levels have been extraordinarily high even during the recent past. As housing appreciation slows, subprime foreclosures will rise even higher in the future. The losses will inevitably have ripple effects throughout the economy and our society as over two million families lose their physical shelter, their major source of financial security, and the social benefits of homeownership.

Increased Foreclosure Rates Will Adversely Affect Communities

Increased foreclosures will have an adverse impact on many local markets and specific communities.

Problem Markets. Real estate markets that have experienced high housing appreciation in recent years will see a marked increase in subprime foreclosures as housing prices cool. In fact, increases in subprime foreclosures will be the norm. Using recent Moody's Economy.com housing appreciation forecasts, we show projected subprime foreclosure rates in every major metropolitan statistical area in the U.S. Our data show that cities in California, Nevada, New Jersey, New York and Michigan, as well as the greater Washington, D.C. area, can expect a high rate of subprime foreclosures.

Vulnerable Homeowners. It is beyond the scope of our study to analyze racial disparities related to subprime foreclosures. However, the loss of equity resulting from subprime foreclosures will affect a great many African American and Latino homeowners, since these communities receive a disproportionate share of subprime home loans.

Subprime Loans Inherently Pose Higher Risk of Default

Subprime loans are riskier in and of themselves, not just because the borrowers may have weaker credit. Borrowers who are already financially vulnerable are receiving loans known to pose a higher risk of default.

The following factors contribute to subprime foreclosures:

Risky Loans. Subprime mortgages routinely include features that increase the risk of foreclosure. Such features include adjustable interest rates, balloon payments, prepayment penalties, and loans with limited documentation of borrowers' loan qualifications. We note that the dominant type of subprime loan today is an adjustable-rate mortgage called a "2/28" that features semi-annual interest rate adjustments after a two-year fixed-rate period. The initial fixed rate is often a discounted or "teaser" rate, so the rate adjustment can lead to a significantly higher payment. Because of the resulting payment shock, these loans are sometimes referred to as "exploding ARMs."

We also note an increasing share of loan products in the subprime market that limit the amount of equity a borrower builds. These loans also carry a high risk of payment shock and may limit homeowners' ability to acquire the equity needed to refinance out of an unaffordable loan.

Loose Underwriting. Lax underwriting standards magnify the risk of loans that already include high-risk features. Subprime lenders who market exploding ARMs and other high-risk loans often do not adequately consider whether the homeowner will be able to pay when the loan's interest rate resets, even if rates stay constant. Lenders escalate the risk of foreclosure even further when they fail to require escrow for the cost of property taxes and hazard insurance, and when they approve loans without verifying the borrower's income and employment.

Predatory Lending. This report does not attempt to measure how predatory lending may contribute to subprime foreclosures, but we make several points that suggest predatory practices may play a large role: In recent years, more subprime lenders with significant market share have been successfully prosecuted for predatory lending activities. In addition, high-risk loan products and terms, so common in the subprime market, make it easier for unscrupulous lenders to entice borrowers with a low **initial** payment, regardless of whether the borrower can manage future payments. Costly fees and prepayment penalties associated with predatory loans also strip equity, making it harder for borrowers to refinance and forcing them into foreclosure more quickly. We also note reports of increasing problems associated with foreclosure "rescue" scams.

Third-Party Originators/Lack of Accountability. Mortgage brokers, who originate the majority of subprime mortgages, have a strong incentive to close as many loans as possible, but very little reason to consider the loans' future performance. Lenders shield themselves from the full potential cost of foreclosures by selling their loans to investors through the secondary mortgage market. Together, third-party originations and the risk dispersion made possible through the secondary market help distance loan originators from seriously adverse consequences of foreclosures.

Inadequate Oversight. Today there are insufficient legal and regulatory consequences for making home loans that are not appropriate or affordable for the borrower. Recently federal and state regulators issued guidance requiring lenders to tighten credit standards on certain high-risk home loans. However, these standards do not apply to all risky loan products and questionable business practices common in the subprime market.

Proposed Solutions

With billions of dollars in equity already lost, there is an urgent need to curtail foreclosures in the subprime market and mitigate losses families will incur in the future on unsustainable mortgages. In brief, CRL recommends the following:

Establish that every borrower has the means to repay his/her loan—without resorting to selling the property or refinancing under pressure. Unless subprime lenders ensure borrowers can afford their loans, other efforts to prevent foreclosures will have minimal success. For example, when offering loans with scheduled interest rate changes, lenders should consider whether the borrower will be able to afford the mortgage after the initial fixed “teaser” rate expires. Subprime lenders also should require escrow payments and appropriate verification of the borrower’s income, and they should confirm that the loans they offer make economic sense for a given borrower’s circumstances.

Ensure that all parties involved in the loan operate in good faith, and that everyone—not just the borrower—has a stake in a successful loan outcome. Recently several major banking regulators issued guidance on nontraditional mortgage product risks. The regulators’ guidance, which recognizes the risk posed by imprudent underwriting practices, should apply to **all** subprime ARM loans and non-traditional products. Similarly, the principles of the guidance should be applied to **all** subprime mortgage lenders. Mortgage brokers should be subject to standards that apply to other financial professionals, and they should have an affirmative duty to ensure that the products they recommend are suitable for their customers. Lenders and appraisers should uphold existing standards to ensure that appraisals are accurate and independent. And regulators should hold secondary market investors to basic standards of fair dealing and require them to take reasonable steps to avoid supporting abusive subprime loans.

Help existing subprime borrowers who are in danger of losing their homes. Opportunities for reasonable work-out plans can go a long way to help struggling homeowners avoid foreclosure, and regulators should focus on banning predatory lenders/servicing practices and enforcement actions against servicing practices that facilitate subprime loan failures. Community groups, lenders, and state and local governments have demonstrated the efficacy of a variety of home preservation programs, including those that involve targeted outreach to delinquent borrowers, financial counseling, and restructuring consumer debt. Another successful model comes from the states that have passed strong laws against foreclosure “rescue” scams, banning predators from targeting struggling borrowers.

II. BACKGROUND

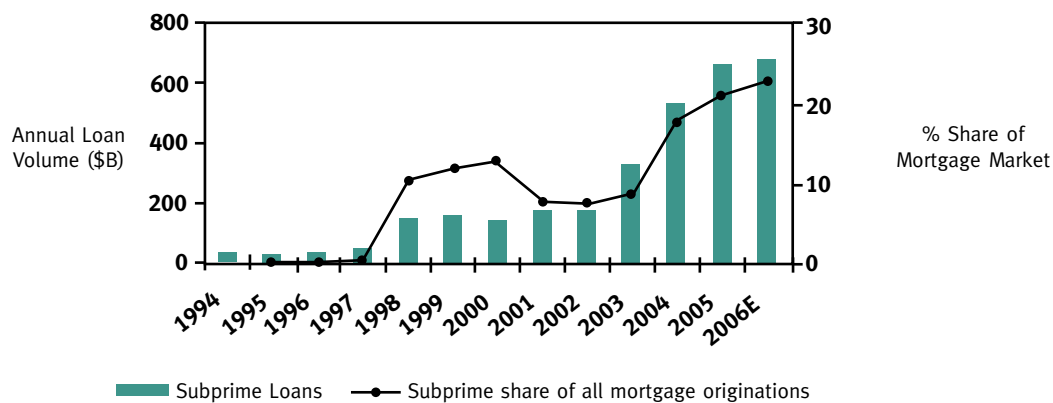
In the United States, the proportion of mortgages entering foreclosure has climbed steadily since 1980, with 847,000 new foreclosures filed in 2005.¹ This year lenders reported 318,000 new foreclosure filings for the third quarter alone, a 17 percent increase over the previous quarter and 43 percent higher than the third quarter of 2005.² In the past 12 to 18 months, there have been frequent stories in the media about risky lending practices and surges in loan defaults, especially in the subprime mortgage market.³

The subprime market is intended to provide home loans for people with impaired or limited credit histories. In addition to lower incomes and blemished credit, borrowers who get subprime loans may have unstable income, savings, or employment, and a high level of debt relative to their income.⁴ However, there is evidence that many families who receive subprime mortgages could qualify for prime loans, but are instead “steered” into accepting higher-cost subprime loans.⁵

As shown in Figure 1 below, in a short period of time subprime mortgages have grown from a small niche market to a major component of home financing. From 1994 to 2005, the subprime home loan market grew from \$35 billion to \$665 billion, and is on pace to match 2005’s record level in 2006. From 1998 to 2006, the subprime share of total mortgage originations climbed from 10 percent to 23 percent.⁶ Over most of this period, the majority of subprime loans have been refinances rather than purchase mortgages to buy homes.⁷ Subprime loans are also characterized by higher interest rates and fees than prime loans, and are more likely to include prepayment penalties and broker kickbacks.

In a short period of time subprime mortgages have grown from a small niche market to a major component of home financing.

Figure 1: Subprime Mortgage Market Growth and Share of Total Mortgage Market



Source: Inside Mortgage Finance

The growth of the subprime mortgage market has in part been spurred by the deteriorating financial situation of households in the United States. In large measure, this reflects macroeconomic factors: over the past two decades, after-tax income for the bottom 60 percent of families climbed only five to 15 percent while costs for such basics as housing, child care, and health care rose 53 to 75 percent.⁸ At the same time, rates of personal savings—the financial cushion for most families—have dropped steadily and have been negative since mid-2005.⁹ In addition, for many families, their income stream is much less certain than in the past: a 2004 study reported that the average annual variation in income for middle-income households (\$13,500 at that time) had doubled since the 1970s.¹⁰

Even as many households are financially strained, the combination of low interest rates and easy credit (particularly credit cards) has encouraged consumers to spend more, and to use debt to cover the gap between their household income and spending. By mid-2006, the percentage of the average family's disposable income that was devoted to covering debt reached an all-time high.¹¹

In this context, the lending industry has encouraged middle- and low-income families to conclude that “borrowing against their homes is a sensible way to plug holes in household budgets.”¹² American households have used refinances or home equity loans to pull money out of their homes at an unprecedented rate: over two trillion dollars in the past five years alone.¹³ And the pace accelerated in early 2006, even as interest rates were rising. In the first six months of 2006, consumers extracted over \$500 billion in home equity, more than the total amount taken out in all of 2005 (which was itself a record year).¹⁴

Taken together, these economic developments have contributed to an increase in the proportion of American families with lagging and less certain income, fewer savings, higher debt, and less home equity—in other words, prospective customers for the subprime mortgage market.

Some have heralded the growth in subprime lending as a positive break-through in extending credit. Former Federal Reserve Chairman Alan Greenspan referred to subprime lending as the “democratization of credit,” a dramatic change that enables borrowers with less-than-perfect credit to receive access to home loans that would have been denied in the past. To be sure, the community reinvestment movement, civil rights activists, and others have fought for years to bring investment to communities that have lacked access to vital capital.

Yet this increased access has come at great cost to many families, since the highest rate of home foreclosures occurs among subprime home loans. In many communities, the pressing issue today is less the availability of home-secured credit than the terms on which credit is offered. For the average American, building wealth through homeownership is the most accessible path to economic progress, but progress is not achieved when a family buys or refinances a home only to lose the home or get caught in a cycle of escalating debt.

For most families, foreclosure is a last resort, often coming in the wake of unemployment, illness, divorce, or other personal event that causes a drop in income. However, for some homeowners, the problem is not a change in income, but rather an unmanageable increase in the amount of the mortgage payment or the realization that the mortgage was not affordable in the first place.¹⁵

A few years ago, this problem likely would have received scant attention from policymakers, since subprime mortgages represented only a small fraction of the total mortgage market. Today subprime mortgages comprise almost one quarter of all mortgage originations. The merits of this expanding market are widely debated, but one point is clear: Subprime mortgage credit—and the accompanying foreclosures—have become a major force in determining how and whether many American families will attain sustainable wealth.

For a brief discussion of previous research on mortgage delinquencies and foreclosures, see Appendix 1.

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III. DATA AND METHODS

The findings presented here are based on our analysis of information from a proprietary loan-level dataset that includes more than six million securitized subprime loans totaling \$1.2 trillion originated from January 1998 through December 2004. For the full seven-year period, we estimate that the database covers over 70 percent of the U.S. subprime market, measured by dollar volume (Table 1). To focus on issues of concern to typical U.S. families, we limited our analysis to loans originated in the 50 states and the District of Columbia that were secured by a first lien and made to borrowers who occupied the home, excluding loans secured by manufactured homes or multifamily dwellings. These selection criteria leave us with an analysis dataset that comprises a substantial proportion of the overall dataset (see Table 2).

Table 1: Dataset Coverage of Subprime Market

Origination Year	Observed Subprime Volume (\$ Billions) (A)	U.S. Subprime Volume (\$ Billions)* (B)	Observed Coverage (A)/(B)
1998	62.5	150	41.2%
1999	67.7	160	42.3%
2000	64.8	138	47.0%
2001	104.4	173	60.1%
2002	166.3	213	78.1%
2003	297.4	332	90.0%
2004	448.3	529	84.7%
Total	\$1,211.4	\$1,695	71.5%

* Source: Inside Mortgage Finance

Table 2: Proportion of Subprime Loans Used in Analysis with Designated Characteristics

Origination Year	Total No. of Loans Originated in 50 States and DC (A)	No. of Owner-Occupied and 1st Lien Loans in 50 States and DC (B)	No. of Single-Family Owner-Occupied and 1st Lien Loans in 50 States and DC* (C)	Observed Coverage (C)/(A)
1998	645,194	427,301	400,926	62%
1999	722,978	509,980	479,073	66%
2000	625,961	445,697	427,916	68%
2001	793,524	577,981	554,304	70%
2002	1,128,233	839,125	816,692	72%
2003	1,814,360	1,368,940	1,348,887	74%
2004	2,439,144	1,904,728	1,877,360	77%
Total	8,169,394	6,073,752	5,905,158	72%

*These loans included single-family residences, condos, townhouses, and units in a planned development.

Identifying Foreclosures and “Distressed” Prepayments

In this study, foreclosures are the ultimate outcome of interest. The dataset used here contains both static information about the loan at origination and dynamic information on payment patterns over time. Specifically, for each month for a given loan, we know whether the borrower made a payment, and we have several measures of the loan’s status, including whether the loan was in foreclosure or delinquent, and whether the borrower was in bankruptcy. For each month, we also know the loan balance. We coded as a foreclosure any instance in which a loan balance went to zero in a given month when the prior month’s status was listed as in foreclosure, bankruptcy, or as real estate owned by the lender (REO).

When homeowners fear they can no longer make their mortgage payments and know they risk losing their home, they often use two common strategies to avoid foreclosure. One action is to seek a refinance. Another strategy is to try to salvage some equity by selling the home.¹⁶ Because the result of either of these exit strategies, if successful, is a zero dollar balance on the loan in default, they are observed in our data as prepayments. We identify instances in which a borrower prepays a mortgage that was 30 or more days delinquent as a “distressed prepayment” following research from Danis and Pennington-Cross.¹⁷

To explore the relationship among foreclosures, distressed prepayments, and differing house price appreciation rates, we examined our dataset of subprime home loans by year of origination and by metropolitan statistical area (MSA). After observing foreclosure rates and distressed prepayment rates, we estimated elementary regression models to explore the relationship among foreclosures, distressed prepayments, and housing price appreciation. We then used these results to project foreclosure experiences going forward. For more information on methods used, see Appendix 2.

A Tale of Two Foreclosure Rates

Analysts and the media often cite a mortgage foreclosure rate calculated by the Mortgage Bankers Association (MBA), which is based on data from about 150 mortgage servicers. The MBA rate commonly cited reflects the percentage of outstanding loans that are in foreclosure **at a specific point in time** (e.g., at the end of the second quarter 2006). This statistic is useful for comparing results across geographic markets.

An alternative measure is the total proportion of loans originated during a given time period that end in foreclosure. Such rates are used by mortgage lenders, investors, insurers, and rating agencies to predict the risk and profitability of a group of loans, and also may be used to compare the performance among different types of loans or loans originated in different years.

Example of Differences in Published Foreclosure Rates

2.34% MBA-reported foreclosure rate for FHA loans at end of 4Q05

6.29% Cumulative foreclosure rate at end of 2005 for FHA loans made in 2000

Sources: MBA National Delinquency Survey, 4Q 2005 and FHA Mutual Mortgage Insurance Fund Analysis FY 2005

IV. FINDINGS

A. For subprime mortgages originated from 1998 through 2006, we project that 2.2 million U.S. households will lose their homes to foreclosure, costing these households as much as \$164 billion. One out of every five (19.4 percent) subprime loans made today will fail.

For the subprime market as a whole, the 19.4 percent foreclosure rate exceeds the worst ever seen in the modern mortgage market—a 14.9 percent foreclosure rate in the “Oil Patch” states of Arkansas, Louisiana, Mississippi, and Oklahoma during the 1980s.¹⁸ Just as that episode reflected a downturn in a large regional housing market, we find that the current increase in subprime mortgage foreclosure risk is driven by the cooling of the housing sector in areas where house prices had previously climbed rapidly, such as California, Nevada, New York, New Jersey, and the Washington, D.C. area.

Our analysis shows that the increase in foreclosures is partially the result of subprime market weaknesses that have been harder to observe during a period of increasing home values: a “trade off” between foreclosure rates and the rates at which borrowers prepay their mortgages while delinquent. We find that a large proportion of borrowers have been exiting their mortgages under duress, even during recent times of remarkable housing price appreciation. For these borrowers, strong house price growth increased the amount of equity in their homes and enabled them to use this equity to refinance their mortgages despite being behind on the monthly payments. Today, without that strong appreciation, it appears that many more borrowers are unable to refinance while delinquent and find themselves in foreclosure instead.

The projected foreclosure rate and accompanying losses are based on the following findings from our research:

1. Even under recent favorable economic conditions, as many as one in eight subprime loans originated between 1998 and 2004 ended in foreclosure within five years.

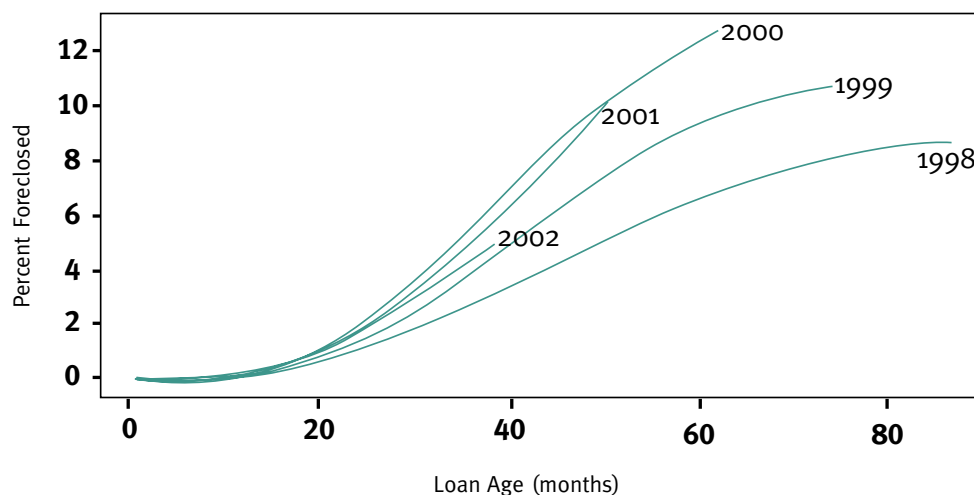
As shown in Table 3, the proportion of foreclosed subprime loans is substantial. For example, one in every eight subprime home loans (12.9 percent) originated in 2000 was foreclosed by May 2005. While Table 3 reports lower to-date cumulative foreclosures for more recent years as of this date, this is largely because these loans had not yet experienced their peak foreclosure activity as of May 2005.

Table 3: Subprime Home Loan Terminations By Year of Origination (as of May 2005)

Year of Origination	Number of Loans	Percent Prepaid (A)	Percent Foreclosed (B)	Percent of Loans Still Outstanding 1- (A) -(B)
1998	400,926	79.3	9.7	11.0
1999	479,073	71.9	12.0	16.1
2000	427,916	69.4	12.9	17.7
2001	554,304	70.2	8.2	21.6
2002	816,692	65.2	4.1	30.7
2003	1,348,887	41.7	1.2	57.1
2004	1,877,360	13.7	0.2	86.1

In fact, Figure 2 shows that more recent loans are performing quite similarly to earlier annual loan cohorts, particularly with respect to loans originated in 2000. Each line in Figure 2 represents the proportion of loans originated in a given year that have foreclosed at a given age. The slight differences between foreclosure patterns in the 2000 cohort and later cohorts is almost entirely explained by fast prepayments among those later loans (see Appendix 2 for more information).

Figure 2: Subprime Cumulative Foreclosure Rate by Year of Origination



Note: 2003 and 2004 curves are too short to depict here.

2. One in 10 subprime mortgages in recent years have prepaid while delinquent. When these distressed prepayments are added to the foreclosure rates, the composite subprime “failure rate” approaches 25 percent within five years of origination.

The data from recent years indicate that almost half of all subprime loans will be delinquent at least once within five years (see Table 4). More than one fifth will actually experience a foreclosure start. For example, 21.2 percent of 1999 loans and 22.9 percent of loans made in 2000 received a foreclosure notice at some point before June 2005. This is in and of itself a troubling trend, since these foreclosure starts have an adverse effect on a borrower’s creditworthiness as evaluated by credit scoring bureaus and lenders.

Yet Table 4 also shows that, at least in recent years, only a portion of these delinquent and defaulted loans finished the foreclosure process. Many of the rest of these delinquent and defaulted loans were prepaid, often while still delinquent. For example, for loans made in 2000, Table 4 shows that half (49.6 percent) were delinquent at some point; one in five (22.9 percent) started foreclosure at least once; one in eight (12.9 percent) finished foreclosure; and one in ten (11.1 percent) prepaid while delinquent (termed a distressed prepayment).

Undoubtedly the majority of distressed prepayments represent homeowners who could not make their monthly payments and turned either to a refinance or to the sale of their home to avoid foreclosure. In either case, they were likely to experience a loss in the process. For example, borrowers who refinance a delinquent loan typically will pay a higher interest rate on their new loan because of the higher risk. Also, if they prepay their loan during the first 24-36 months of its life, they usually will incur a prepayment penalty. Alternatively, borrowers who sell a home under pressure are likely to recover less than the full fair market value.

If the proportion of these distressed prepayments were small, this concern might be easily dismissed but, as shown in Table 4, adding distressed prepayments to observed foreclosures shows that a sizeable proportion of the market ended mortgages under duress—roughly one quarter of all subprime loans.

Table 4: Indications of Homeowner Distress as of May 2005

Origination Year	Percent Ever Delinquent	Percent Ever in Foreclosure	Percent Foreclosed (A)	Percent Prepaid In Distress (B)	Percent Foreclosed or Prepaid in Distress (A) + (B)
1998	41.8	16.0	9.7	10.8	20.5
1999	47.6	21.2	12.0	11.0	23.0
2000	49.6	22.9	12.9	11.1	24.0
2001	42.0	17.0	8.2	9.4	17.6
2002	36.0	10.9	4.1	8.3	12.4
2003	25.9	5.6	1.2	4.4	5.6
2004	16.6	2.8	0.2	1.3	1.5

3. Regression results show that distressed prepayments and foreclosure rates move in opposite directions in response to changes in housing appreciation. This suggests that distressed prepayments are “substitutes” for foreclosures in strong housing markets. In other words, strong housing appreciation may protect a market from high foreclosures, but not from failed loans.

Research on mortgage defaults has long noted that foreclosures are more likely in situations where borrowers hold less equity,¹⁹ as is the case when housing prices dip or even when the growth in prices slows. While house price increases in recent years have generally been strong in the United States, they have not been strong everywhere. Accordingly, we took advantage of the variation in housing price appreciation rates found across the nation’s metropolitan statistical areas to estimate the relationship between appreciation rates and subprime foreclosure rates. We also examined how different appreciation rates influenced the proportion of loans prepaying while delinquent, as well as the effect of varying appreciation rates on the composite failure rate (foreclosures plus distressed prepayments.) See Appendix 2 for a description of our methods.

The results in Table 5 confirm that foreclosures are more likely in housing markets experiencing less housing price appreciation. Also as expected, the results show that more borrowers refinance while delinquent in stronger housing markets. For example, for loans originated in 2001, each percentage point increase in annual housing price appreciation was associated with a 7.23 percent decrease in the odds of foreclosure and a 2.84 percent increase in the odds of distressed prepayment. Moreover,

the consistency of this pattern across multiple annual origination cohorts is additional evidence that these relationships are substantial and robust. These findings support the contention that distressed prepayments and foreclosures are substitute outcomes that respond in opposite directions to a given change in housing prices.

Table 5: Increased Percentage Risk of Various Loan Outcomes Associated with One Percentage Point Increase in Annual Housing Price Appreciation, By Year of Loan Origination

Dependent Variables	Origination Year			
	1999	2000	2001	2002
Foreclosed	-8.32***	-8.26***	-7.23***	-5.95***
Distressed prepaid	1.04*	2.63***	2.84***	2.53***
Distressed prepaid or foreclosed	-4.12***	-3.46***	-2.08***	-0.34

Notes: Unit of observation is MSA, n=950 for all models. Confidence levels: * = 95%, ** = 99%, *** = 99.9%. Increased risk measured as the percentage change in the odds of a given outcome occurring in a given MSA.

The results from Table 5 are shown graphically in Figures 3 and 4 below. As can be observed, foreclosure is downward sloping as housing price appreciation rates rise (Figure 3), while distressed prepayments are upward sloping in the face of stronger appreciation (Figure 4).

Figure 3: Impact of Housing Price Appreciation on Risk of Foreclosure

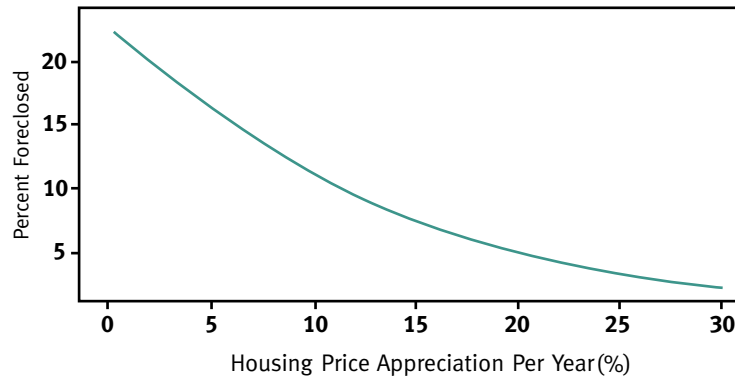
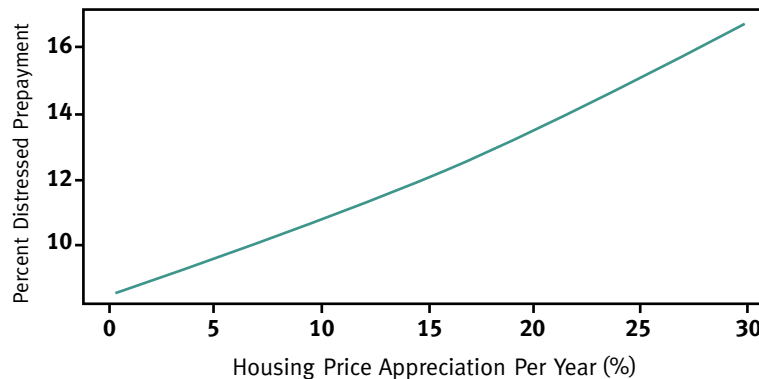


Figure 4: Impact of Housing Price Appreciation on Proportion of Distressed Prepayments



4. Ultimately, we project that 15.4 percent of subprime loans originated between 1998 and the third quarter of 2006 will foreclose, and that the probability of foreclosure will double from a low of one in ten (9.8 percent) for loans originated in 2002 to a high of one in five (19.4 percent) for loans originated in 2005 and 2006. We also estimate that, in the end, these foreclosed loans will cost homeowners as much as \$164 billion.

Applying the relationships we found between differing housing price appreciation rates and loan outcomes, we are able to provide projections for total foreclosures and associated losses for each annual cohort of subprime home loans. Essentially, this estimate is generated by using the observed foreclosure and loss rates associated with known housing price appreciation rates, and extrapolating to expected performance based on the difference between the rates of appreciation observed and those forecasted by Moody's Economy.com.²⁰ For a complete description of methods, please see Appendix 2.

Table 6 provides the results of this analysis, separately reporting observed outcomes and projected outcomes. To assist readers, the results in Table 6 are scaled to full market size and the observed outcomes are from date of origination through May 2005 and projections are for the life of the loan.²¹ So, for example, Table 6 reports that 43,260 loans made in 2002 had been foreclosed by May 2005 and projects that an additional 58,992 loans originated in that year will ultimately be foreclosed. In total, we project that 2.2 million (15.4 percent) of 14 million subprime home loans made from 1998 through 2006 will end in foreclosure. The rates of foreclosure, however, are not uniform across all years. For example, we note the increase in projected foreclosures for more recent mortgages that were originated when house prices were at their peak in late 2004 through early 2006 (see Figure 5). Specifically, total projected foreclosures climb from 9.8 percent for loans originated in 2002 to 19.4 percent for loans made in 2005 and 2006.

We note that these findings are similar to those in at least two other recent analyses of subprime mortgages. In the first, Pennington-Cross and Ho analyze the propensity of subprime adjustable rate mortgages and fixed rate mortgages to foreclose.²² After analyzing a large set of subprime loans originated from 1998 to 2005, and following those loans to the end of 2005, they report that "at the end of five years almost exactly 18 percent of the loans have defaulted and almost 70 percent have prepaid."²³ Similarly, using a large database of securitized subprime loans originated by retail lenders in 1999, researchers at the University of North Carolina reported that 20.7 percent of subprime loans they examined from that year had experienced a foreclosure start at least once within five years of origination.²⁴

In any case, these high rates of foreclosures have serious implications for households with subprime mortgages. When a foreclosure occurs, homeowners forfeit their house as well as the wealth they have invested (their down payment and principal payments) and other equity they gained as their home appreciated. Table 6 shows that homeowners have lost as much as \$45.7 billion, primarily in home equity, as a consequence of subprime foreclosures on loans originated from 1998 to 2004 as of May 2005. Going forward, Table 6 shows that homeowners who received mortgages from 1998 to 2006 are projected to lose as much as \$164 billion.

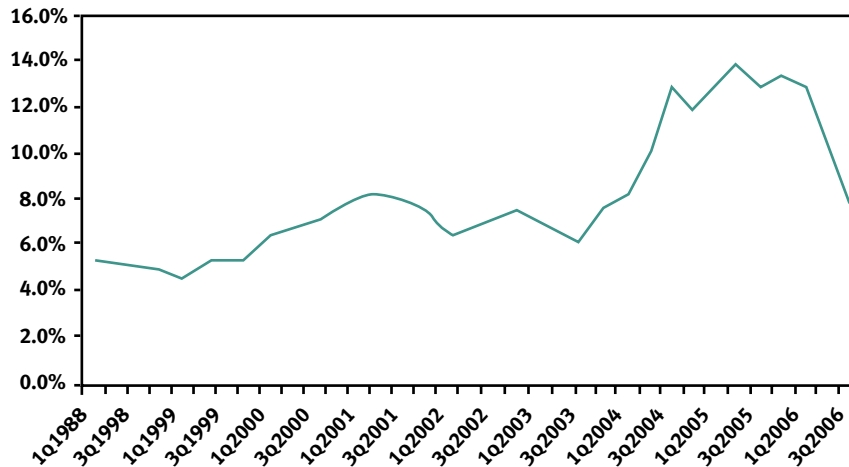
Table 6: Projected Subprime Foreclosures and Losses, by Annual Origination Cohort

Origination Year	US Subprime Loans ^a		Loans Foreclosed			Losses (\$ billions)	
	Volume (\$ billions)	No. Loans	Observed	Projected	Total	Observed	Projected
1998	114	962,273	93,209	1,541	9.8%	6.9	0.0
1999	124	1,132,280	135,891	8,676	12.8%	8.1	0.2
2000	111	911,369	117,958	15,168	14.6%	8.6	0.4
2001	145	918,557	75,152	30,312	11.5%	10.8	1.2
2002	181	1,046,072	43,260	58,992	9.8%	7.6	3.5
2003	281	1,505,854	18,635	162,829	12.1%	3.2	11.5
2004	452	2,219,547	3,808	344,687	15.7%	0.5	26.6
2005 ^b	512	3,259,908	0	632,302	19.4%	0	42.3
2006 ^{b, c}	391	2,490,275	0	483,022	19.4%	0	32.3
Total	2,311	14,446,135	487,913	1,737,529	15.4%	45.7	118.0
	Total		2,225,442		15.4%	\$164	

Notes:

- a) Includes only loans to owner-occupants in the 50 states and the District of Columbia secured by a first-lien on a single-family home, condominium, townhouse, or a unit in a planned development.
- b) 2005 and 2006 estimates of U.S. subprime lending from Inside Mortgage Finance and SMR Research Corporation modified to account for the criteria in note a.
- c) 2006 only includes loans from 1Q2006 to 3Q2006.

Figure 5: Year-over-Year Percentage Change in U.S. Housing Price Index



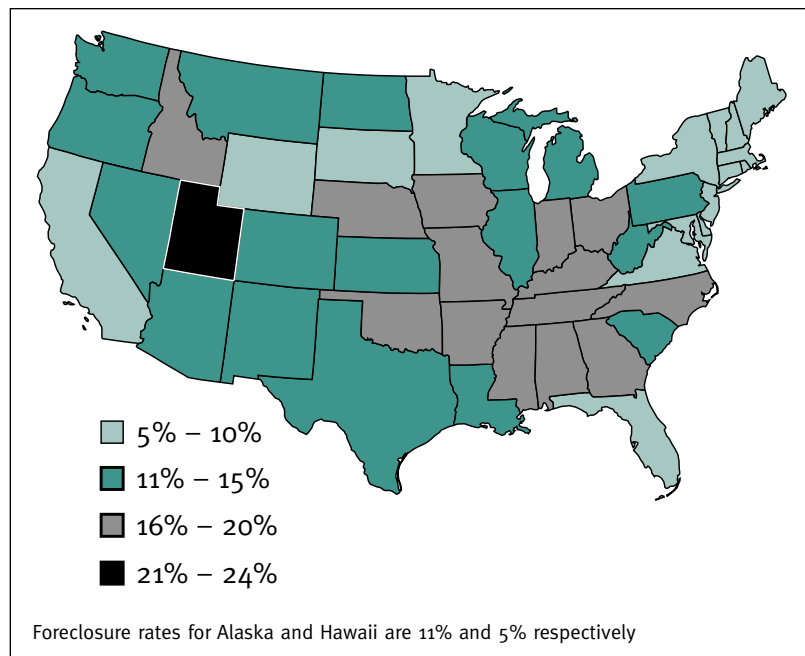
Source: Office of Federal Housing Enterprise Oversight

Further, just as foreclosure rates are not constant across all years, they also are not uniform across states. In large part, this pattern flows from the substantial variation in housing price appreciation across local markets. Figures 6 and 7 below graphically display the projected total foreclosure rates for the various states for loans originated in 1998-2001 and 2006 respectively, and the specific rates are listed in Appendix 4.

As Figure 6 shows, high subprime foreclosure rates in the past primarily were a problem for states in the central U.S., such as Ohio, Oklahoma, and Tennessee. Now Figure 7 shows a “darkening” foreclosure picture across the U.S., where almost every state will experience high foreclosure rates.²⁵ Further, foreclosure rate increases will be felt most acutely in states with previously strong appreciation (such as California, New York, Maryland and Virginia.) While methods and limitations are discussed more completely in Appendix 2, it is worth noting here that these findings do not take into account the effect that any recent policy changes may have on foreclosure rates.

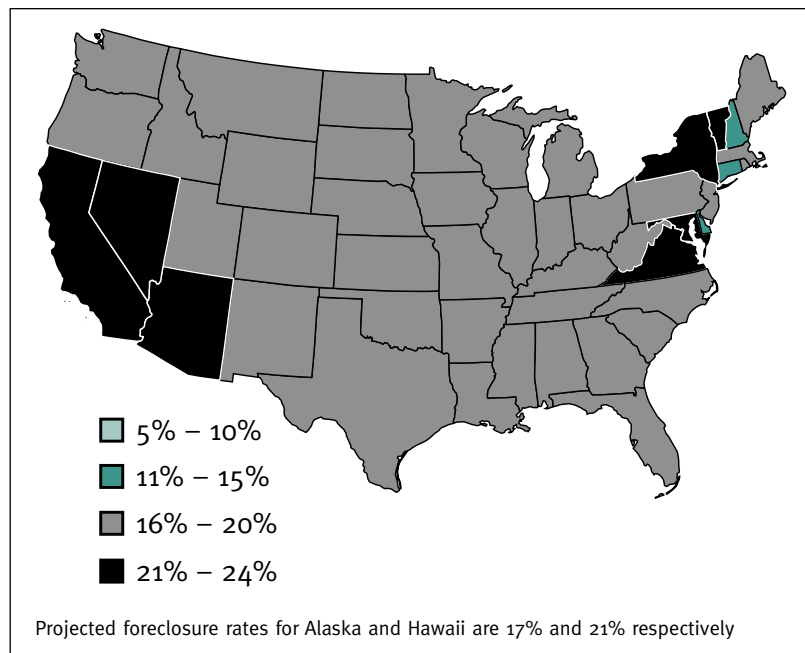
Figure 7 shows a darkening foreclosure picture across the U.S., where almost every state will experience high foreclosure rates.

Figure 6: Projected State Foreclosure Rates for Subprime Loans Originated 1998-2001



Specific rates for each state are listed in Appendix 4.

Figure 7: Projected State Foreclosure Rates for Subprime Loans Originated in 2006



Specific rates for each state are listed in Appendix 4.

5. While one in five households with subprime loans originated in 2005 and 2006 is projected to foreclose, other families who took out these loans and then refinanced into subsequent subprime loans also will experience foreclosure. Using the best information available, we estimate that one-third of families who received a subprime loan in 2005 and 2006 will ultimately lose their homes.

Our estimated 19.4 percent foreclosure rate for subprime loans originated in 2005 and 2006 is in and of itself disconcerting, but it actually represents only the likelihood that one specific subprime loan will end in foreclosure, not the cumulative foreclosure rate for an individual borrower or household who took out that initial loan. While more research is needed, one study based on a survey of thousands of borrowers found that 60 percent of subprime borrowers do not “move up” into a prime loan when refinancing, but instead get another subprime loan.²⁶ As Table 7 below illustrates, **a borrower who repeatedly refinances one subprime loan with another faces steadily increasing chances of foreclosure, reaching 36 percent by the fourth loan.**

Table 7 is based on the assumption that 19 percent of subprime loans foreclose, and 60 percent of those borrowers who refinance transition to another a subprime loan, and that these probabilities are constant for all loans. To extend this experiment, Table 8 shows the increase in the cumulative foreclosure rates after three refinances associated with variations on these assumptions. For example, if the actual foreclosure probability for a subprime loan is altered to 25 percent and the proportion of subprime borrowers who refinance and receive a subsequent subprime loan is altered to 70 percent, then the cumulative probability of foreclosure grows to 49 percent.

Table 7: Projected Multiple Loan Subprime Foreclosure Rates

	Proportion of Borrowers from Original Loan Cohort	Proportion of Original Cohort Refinanced to Prime	Proportion of Original Cohort Foreclosed	Cumulative Cohort Foreclosure Rate
Original Loan Cohort	100%	32%	20%	20%
Refinance 1	48%	15%	10%	30%
Refinance 2	23%	7%	5%	34%
Refinance 3	11%	4%	2%	36%

Table 8: Sensitivity of Cumulative Foreclosure Rate After Three Refinances to Subprime Refinance Rate and Foreclosure Rate

Foreclosure Rate	Subprime-to-Subprime Refinance Rate		
	50%	60%	70%
10%	17%	20%	23%
15%	25%	29%	32%
20%	32%	36%	41%
25%	39%	44%	49%

B. Many local markets that have experienced extraordinary housing price appreciation in recent years are likely to experience marked increases in subprime foreclosure rates.

As history has shown, local housing markets with high levels of appreciation and low foreclosure rates are in an unsustainable situation. Typically, a rapid run-up of home prices in overheated markets makes housing less affordable and leads to a slowdown. While in many cases this is a gradual process, there are times when economic conditions trigger a severe drop in house prices. It happened in the 1970s in the “rust belt” states of the Midwest, as the once dominant industrial region experienced widespread factory closings and unemployment. As mentioned previously, it happened in the mid-1980s in the Oil Patch states. And it happened in the early 1990s in both the Northeast and California.²⁷

All signs are pointing to a drop in house prices in many U.S. markets.

Currently, all signs are pointing to a drop in house prices in many U.S. markets, including the southwest coast of Florida, many metropolitan areas of California, Arizona, Nevada, and the greater Washington, D.C. area. As the chief economist at Moody’s Economy.com puts it: “The housing market downturn is in full swing.”²⁸

For each MSA, we project foreclosure rates based on observed and forecasted housing price appreciation rates. Again, forecasted housing price appreciation rates were obtained from a recent study by Moody’s Economy.com.²⁹ While complete MSA results are available in Appendix 5, Table 9 shows the top fifteen local markets with the highest projected foreclosure rates for subprime loans originated in 2006. Similarly, Table 10 shows the top fifteen markets with the largest increase in projected subprime foreclosure rates for loans originated in 2006, compared to foreclosure rates expected for subprime loans made from 1998 through 2001. The top fourteen markets on this list are in California.

“I have never seen a soft landing in 53 years.”

Angelo Mozilo, CEO
Countrywide Financial

Source: Patrick Crowley, “Mortgage Outlook Gloomy,”
MortgageDaily.com (August 31, 2006)

Table 9: Top 15 MSA Projected Foreclosure Rates for Subprime Loans Originated in 2006

Rank	MSA	Foreclosure Rate (%)
1	Merced, CA	25.0
2	Bakersfield, CA	24.2
3	Vallejo-Fairfield, CA	23.8
4	Las Vegas-Paradise, NV	23.7
T5	Fresno, CA	23.5
T5	Ocean City, NJ	23.5
7	Stockton, CA	23.4
8	Reno-Sparks, NV	23.2
T9	Santa Ana-Anaheim-Irvine, CA	22.8
T9	Washington-Arlington-Alexandria, DC-VA-MD-WV	22.8
11	Riverside-San Bernardino-Ontario, CA	22.6
12	Carson City, NV	22.5
T13	Atlantic City, NJ	22.2
T13	Visalia-Porterville, CA	22.2
T15	Los Angeles-Long Beach-Glendale, CA	22.0
T15	Nassau-Suffolk, NY	22.0
T15	Saginaw-Saginaw Township North, MI	22.0

See Appendix 5 for results for all MSAs.

**Table 10: Top 15 Largest Increases in Subprime Foreclosure Rates by MSA
(Comparing projected foreclosure rates on loans made from 1998–2001
to projected foreclosure rates on loans made in 2006)**

Rank based on % change		Projected Foreclosure Rate for 1998-2001 cohort of subprime loans	Projected Foreclosure Rate for 2006 cohort of subprime loans	Projected % Change
1	Santa Ana-Anaheim-Irvine, CA	3.0	22.8	668%
2	Santa Barbara-Santa Maria, CA	2.8	19.6	596%
3	San Diego-Carlsbad-San Marcos, CA	3.2	21.4	567%
4	Santa Rosa-Petaluma, CA	3.4	21.1	527%
5	Napa, CA	2.6	16.4	527%
6	San Francisco-San Mateo-Redwood City, CA	3.0	16.7	462%
7	Oxnard-Thousand Oaks-Ventura, CA	3.2	17.6	453%
8	San Luis Obispo-Paso Robles, CA	2.6	13.6	416%
9	Salinas, CA	4.0	20.4	413%
10	Vallejo-Fairfield, CA	4.7	23.8	405%
11	Oakland-Fremont-Hayward, CA	4.6	21.3	359%
12	Santa Cruz-Watsonville, CA	3.2	14.5	356%
13	San Jose-Sunnyvale-Santa Clara, CA	4.3	19.3	352%
14	Sacramento-Arden-Arcade-Roseville, CA	4.8	21.0	339%
15	Barnstable Town, MA	4.8	19.9	313%

See Appendix 5 for results for all MSAs.

C. Subprime loans are riskier in and of themselves, not just because the borrowers may have weaker credit. Borrowers who are already financially vulnerable are receiving loans associated with a higher risk of default.

We explored whether certain features of subprime loans are associated with an increased risk of entering foreclosure. Our analysis is consistent with other studies in finding that subprime loans with certain characteristics have a higher likelihood of default than subprime loans without those features, even when controlling for differences in credit scores.³⁰ These higher-risk features include adjustable interest rates (typically with large, scheduled payment increases), loans with prepayment penalties or balloon payments, and “low-doc” and “no-doc” loans, in which lenders approve borrowers for loans based on little or no verification of the borrower’s income and assets.³¹

Our analysis is consistent with other studies in finding that subprime loans with certain characteristics have a higher likelihood of default than subprime loans without those features, even when controlling for differences in credit scores.

Table 11 shows the results of this analysis. For example, we observe a higher risk of foreclosure for adjustable-rate mortgages (ARMs) compared with fixed-rate mortgages. This foreclosure risk was 62 percent to 123 percent higher, depending upon the year the loan was originated. Our dataset includes a significant number of hybrid or exploding ARMs, which have been the predominant product in the subprime market in recent years. As described in the discussion section of this report, hybrid ARMs offer low teaser rates and the high probability of severe “payment shock” when the fixed-payment period expires after two years.

We also found a 14 percent to 86 percent higher risk of foreclosure for loans with balloon payments, and a 19 percent to 70 percent higher risk for loans that carried prepayment penalties. In addition, loans that were originated with low or no documentation of the borrower’s income had five percent to 64 percent more foreclosure risk than loans with full documentation, and these loans represent just under half of the market today.³²

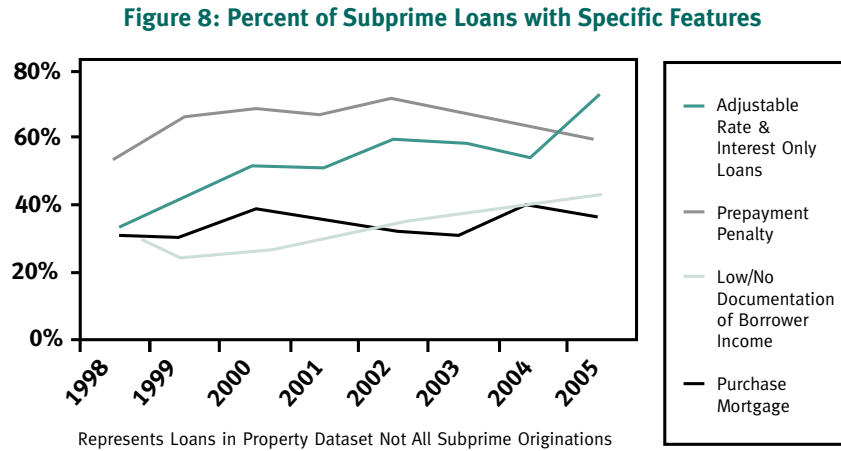
Table 11: Percentage Increase in Foreclosure Risk for Specific Loan Features by Annual Loan Cohort (Positive numbers indicate higher risk, after controlling for borrower credit scores)

	1998	1999	2000	2001	2002	2003
ARM vs. Fixed-Rate Loan	123.3***	86.0***	72.0***	61.8***	77.9***	117.1***
Balloon vs. Fixed-Rate Amortizing Loan	75.7***	51.8***	36.0***	21.7***	14.1*	85.9***
Loan with Prepayment Penalty vs. Loan with No Prepayment Penalty	70.4***	65.0***	52.4***	35.8***	25.8***	18.7***
Loan with No or Low Documentation vs. Full-Doc Loan	5.6**	19.0***	29.0***	25.8***	44.7***	63.7***
Purchase Money Loan vs. Refinance Loan	19.3** *	20.7***	28.5***	37.9***	61.0***	102.0 ***

Confidence levels: * = 95%, ** = 99%, *** = 99.9%. Detailed results available upon request.

Interestingly, subprime **purchase** loans also showed a 19 percent to 102 percent higher risk of foreclosure compared to subprime **refinance** loans. It is likely that high housing prices in recent years meant that many families strained their budgets to qualify for purchase loans. That strain may have been exacerbated by higher financing costs on subprime loans.

Further, Figure 8 illustrates that in several cases the proportion of subprime loans with higher risk features has been large, or has increased in recent years. This should be cause for significant concern, particularly since these trends have continued in 2006 (see discussion in the next section).



Source: Proprietary dataset (See Appendix 3 for summary statistics.)

V. DISCUSSION: THE COSTS AND CAUSES OF UNSUSTAINABLE HOMEOWNERSHIP

A. The Costs: Individuals and Communities

Many Americans work hard and make great sacrifices to become homeowners, and for good reasons. For most families, homeownership is the most accessible path to economic security, and is associated with a host of non-economic benefits, including safer neighborhoods, better health and higher educational achievement.³³ However, in today's refinance-dominated subprime market, many borrowers risk their economic well-being for loans with lower monthly payments in the short term but a higher risk of financial ruin in the longer term. With a one-in-five failure rate on subprime loans—even higher for borrowers who get multiple subprime mortgages—holding a subprime loan has become something of a high-stakes wager.

Some may argue that high foreclosure rates are an acceptable price to pay for expanding access to credit, but this benefit must be balanced against a high proportion of families who lose their homes, the enormous costs to these families and their communities, and the difficulty of recovering. In addition to lost equity, families who lose their homes suffer other adverse effects, including a damaged credit history. These setbacks mean that they will be forced to pay more for any type of credit in the future. Research also shows that, after families give up homeownership for any reason, it can take a decade or more to buy another home.³⁴

Even if they are able to avoid foreclosure, homeowners pay a heavy cost for being in default on their mortgage, including late fees, collection fees, and legal fees assessed by the lender or servicer. (In fact, fee-padding and other tactics used by some subprime servicers have been alleged to increase the risk of foreclosures, a potential contributory factor that is beyond the scope of this study.³⁵) Even consumers who successfully sell their home with enough proceeds to pay off their mortgage will lose home equity in sales transaction costs, and also may incur a prepayment penalty for thousands of dollars. These are just some of the direct, immediate costs of default. There are additional financial, social, and psychological costs of relocating and beginning again, which, though harder to quantify, are just as real and should not be ignored.

Subprime foreclosures will affect eight percent of recent Latino borrowers and 10 percent of recent African-American borrowers. By comparison, subprime foreclosures will likely occur among only about four percent of recent white borrowers.

1. Bearing the Brunt: Communities of Color and Low-Wealth Families

The costs of subprime foreclosures fall heavily on African-American and Latino homeowners, since subprime mortgages are disproportionately made in communities of color. The most recent lending data submitted under the Home Mortgage Disclosure Act (HMDA) show that over half of loans to African-American borrowers were higher-cost loans, which, by definition, are a proxy for subprime loans. For Latino homeowners, the portion of higher-cost loans is also very high, at four in ten. As shown in Table 12, this implies that subprime foreclosures will affect eight percent of recent Latino borrowers and 10 percent of recent African-American borrowers. By comparison, subprime foreclosures will likely occur among only about four percent of recent white borrowers.

However, while the negative impact of foreclosures falls disproportionately on communities of color, the problem is not confined to any one group. In absolute terms, white homeowners received three times as many higher-cost mortgages, and therefore will experience a significant number of foreclosures as well.³⁶

Table 12: Higher Cost Loans and Subprime Foreclosure Impact by Race/Ethnicity* 2005 Data Submitted by Lenders Under the Home Mortgage Disclosure Act

	% of Total Loans to Racial/Ethnic Groups (A)	2005 Projected Foreclosure Rate (B)	% Borrowers Affected by Foreclosure (A) * (B)
African American	52%	19.4%	10%
Latino	40%	19.4%	8%
White, Non-Latino	19%	19.4%	4%

Note: Column A data from Federal Financial Institutions Examination Council (2006).

2. The Pain Spreads: Neighborhoods and Cities

When a home goes into foreclosure, the negative effects extend beyond individual families to surrounding neighbors and the wider community. For example, Immergluck and Smith found that in Chicago a foreclosure started on a home lowered the price of other nearby single-family homes, on average, by 0.9 percent.³⁷ They also reported that the downward pressure on housing prices extended to houses that sold within two years of the foreclosure.

A foreclosure started on a home lowered the price of other nearby single-family homes by 0.9 percent.

Further, Immergluck and Smith found this negative impact was cumulative; that is, each additional foreclosure start on the block lowered values an **additional** 0.9 percent. The impact was even higher in lower-income neighborhoods, where each foreclosure dropped home values by an average of 1.44 percent. Overall, the researchers estimated that the cost to the City of Chicago for these foreclosures, as measured by reduced property value and a lower tax base, was \$598 million to \$1.4 billion.³⁸

An additional expense to communities is the cost to govern or manage parts of the foreclosure process, including house inspections, additional policing of vacant properties, sheriff sales, etc. Another study of Chicago-area foreclosures, this one by the Homeownership Preservation Fund, found that the typical cost incurred by the City for a vacant foreclosed property sold at auction was between \$5,400 and \$7,000.³⁹

B. The Causes: What Makes the Failure Rate So High?

Several factors contribute to the high rate of foreclosures in the subprime market. First, the drive for growth in the subprime market has led to a proliferation of risky loan products and looser standards for qualifying borrowers, as illustrated in Figure 8. A 2005 survey of credit underwriting practices by Office of the Comptroller of Currency (OCC) found a “clear trend toward easing of underwriting standards as banks stretch for volume and yield.”⁴⁰

Second, there is the structure of the industry itself. The high proportion of broker-originated loans in the subprime market (about two-thirds of the total) means that the primary loan sellers are those who have strong incentives to close as many loans as possible with little direct incentive to consider these loans’ viability. Lenders, in turn, can minimize the cost of unexpected foreclosures because they typically cede much of this risk to the secondary loan market.

Finally, there are insufficient legal and regulatory consequences for making home loans that are predictably unsustainable. Federal banking regulators recently issued guidance on nontraditional mortgages that requires depository institutions (such as banks) and their affiliates to tighten credit standards for certain nontraditional loans, such as interest-only and payment-option ARMs.⁴¹ Similarly, the Conference of State Bank Supervisors has issued guidance that largely is equivalent to the federal guidance, but is intended to apply to state-chartered non-depository institutions and state licensed-mortgage brokers. Observers expect that forty-nine states and the District of Columbia will issue the model guidance in some form.⁴² However, it is not clear that these standards apply to all types of risky loan products and practices common in the subprime market.

FHA Loans: Similar Borrowers, Better Record

Like subprime loans, FHA loans are intended to serve riskier borrowers. However, FHA and subprime loans have quite different foreclosure rates. For example, subprime loans originated in 2000 in our sample had a 12.9% foreclosure rate within five years. In contrast, the 2005 actuarial review of the FHA Mutual Mortgage Insurance Fund (the latest available at this time) shows that FHA loans originated in 2000 had a 6.29% foreclosure rate by year-end 2005.* (This difference is generally consistent for all the years in our sample.)

In some ways, this finding is counter-intuitive, since FHA has steadily lost market share to the subprime sector, due to lower profitability for lenders and fewer loan programs for consumers. As a result, we might expect that FHA has been “adversely selected,” with lenders using FHA for only the most credit-impaired borrowers and offering subprime loans to better qualified consumers (including the “Alt-A” borrowers with the best credit histories).

However, structural differences between FHA and subprime programs during the study period may help explain why a larger proportion of FHA borrowers avoid foreclosure. First, FHA loans are predominantly fixed-rate, amortizing loans and establish escrow accounts for taxes and insurance. Second, FHA provides more consumer protections and lower costs during the origination process. Third, FHA servicing practices emphasize curing delinquencies with foreclosure as the last resort.

Regardless of the reason, FHA’s experience shows that it is possible to serve borrowers with lower credit scores without putting them at undue risk of losing their homes.

* Source: FHA Mutual Mortgage Insurance Fund Analysis FY 2005

These risk factors stand apart from risks posed by debt-strapped borrowers themselves—a condition that virtually defines the subprime market—and lower housing appreciation and rising interest rates, which are outside of borrowers’ or lenders’ control. Here we briefly discuss business practices and policies that have evolved in the subprime market during recent years that contribute to a high rate of foreclosures:

1. Risky Loans: Homeowners in Shock

Lenders and mortgage insurers have long known that some home loans carry an inherently greater risk of foreclosure than others. Our research identifies several factors associated with a higher rate of foreclosure in the subprime market, including mortgages with an adjustable interest rate rather than fixed; balloon payments; prepayment penalties; and loans approved without documents verifying income and/or employment. In addition regulators have expressed concern about combining multiple risk elements in one loan, stating “risk-layering features in loans to subprime borrowers may significantly increase risks for both the . . . [lender] and the borrower.”⁴³

A look at 24 foreclosures filed in January 2006 in Hardin County, Ohio:

All but two were high-interest subprime loans.

Most included prepayment penalties.

All but five had adjustable interest rate loans.

The average life span of loans was about 13 months from origination to foreclosure.

From “The Real Price of High-Risk Mortgages” by Geoff Dutton and Doug Haddix, *The Columbus Dispatch* (Feb 19, 2006).

Because the subprime market is designed to serve borrowers who have credit problems, one might expect the industry to offer subprime loan products that do not magnify the risk of loan failure. In fact, the opposite is true, because subprime lenders seek to structure loans with very low monthly payments. As a result, many subprime loans carry the risk of payment shock, meaning that the homeowner's monthly payment start low, but can quickly skyrocket to an unaffordable level.

Unfortunately, payment shock is not unusual, but represents a typical risk that comes with the overwhelming majority of subprime home loans. Today the dominant type of subprime loan is an adjustable-rate mortgage called a "2/28" that effectively operates as a two-year balloon.⁴⁴ (See "Loose Underwriting" discussion below.) This ARM comes with an initial fixed "teaser" rate for two years, followed by rate adjustments in six-month increments for the remainder of the term of the loan.⁴⁵ Hybrid ARMs and hybrid interest-only ARMs have become "the main staples of the subprime sector."⁴⁶ Through the second quarter of 2006, hybrid ARMs made up 81 percent of the subprime sector's securitized loans, up from 64 percent in 2002.⁴⁷

As a result, payment shock for subprime borrowers has become a growing concern. According to Barron's, over the next two years, reset of two-year initial interest rates on hybrid ARMs will lead to increased monthly payments on an estimated \$600 billion of subprime mortgages.⁴⁸ Fitch Ratings has calculated that by the end of 2006, payments will have increased on 41 percent of the outstanding subprime loans—29 percent of subprime loans are scheduled for an initial rate reset and another 12 percent of subprime loans will face a periodic readjustment.⁴⁹

Another problem for borrowers who receive higher-risk ARMs to purchase homes is that they make monthly payments while making little or no progress in becoming a true homeowner. Subprime loans are increasingly being made available with options that limit repayment of the loan's principal and equity accumulation (for example, interest-only, 40/50 year terms, "Option ARMs" that allow for payment of less than full amount of interest due).⁵⁰ These loans often come with slow or negative amortization that not only can produce payment shock, but also dramatically increases the risk that the borrower will not have enough equity to support a refinance.

2. Loose Underwriting: Affordability Matters

Lenders who market exploding ARMs often do not consider whether the homeowner will be able to pay when the loan's interest rate resets, setting the borrower up for failure. Subprime lenders' public disclosures indicate that some are qualifying borrowers at or near the initial start rate, even when it is clear from the terms of the loan that the interest rate can rise significantly, giving the borrower a higher monthly payment. For example, a recent prospectus shows a large subprime lender, Option One, underwriting to the lesser of the fully-indexed rate or one percentage point over the start rate.⁵¹ For a loan with a typical teaser-rate 2/28 structure, the latter would always apply. This practice indicates that lenders routinely qualify borrowers for loans based on a low interest rate when the cost of the loan is bound to rise significantly—even if interest rates remain constant. In fact, it is not uncommon for 2/28 mortgages to be originated with an interest rate four or even five percent-

Because the subprime market is designed to serve borrowers who have credit problems, one might expect the industry to offer subprime loan products that do not magnify the risk of loan failure. In fact, the opposite is true.

age points under the fully-indexed rate. For a loan with an eight percent start rate, a four percent increase is tantamount to a 40 percent increase in the payment amount.

A lender's failure to consider payment shock when underwriting is compounded by two other common business practices: failure to escrow property taxes and hazard insurance, and reduced or no documentation of income.⁵² Most subprime lenders make loans based on low monthly payments that do not escrow for taxes or insurance.⁵³ This deceptive practice gives the borrower the impression that the payment is affordable when, in fact, there are significant additional costs. A recent study by the Home Ownership Preservation Initiative in Chicago found that among low income borrowers facing difficulty in managing their mortgage payments, for as many as one in seven, tax and insurance payments are a contributing factor.⁵⁴ When homeowners are faced with large tax and insurance bills they cannot pay, the original lender or a subprime competitor can benefit by enticing the borrowers to refinance the loan and pay additional fees for their new loan. In contrast, it is common practice in the prime market to escrow taxes and insurance and to consider those costs when looking at debt-to-income and the borrower's ability to repay.⁵⁵

Inadequate documentation also compromises a lender's ability to assess the true affordability of a loan. Fitch recently noted that "loans underwritten using less than full documentation standards comprise **more than 50 percent** of the subprime sector . . ." [emphasis added].⁵⁶ Similarly, others have observed that over one-third of non-agency mortgage-backed securities in 2005 consisted of loans with alternative documentation or no documentation loans.⁵⁷ Low-doc and no-doc loans originally were intended for use with the limited category of borrowers who are self-employed or whose incomes are otherwise legitimately not reported on a W-2 tax form, but lenders have increasingly used these loans to obscure violations of sound underwriting practices. For example, a review of a sample of these "stated-income" loans disclosed that 90 percent had inflated incomes compared to IRS documents, and "more disturbingly, almost 60 percent of the stated amounts were exaggerated by more than 50 percent."⁵⁸ It seems unlikely that all of these borrowers could not document their income, or that they would choose to pay up to 1.5 percent higher interest rate to get a stated-income loan.⁵⁹

3. Predatory Lending: Harmful, Widespread, and Legal

In this report, we are not able to quantify the increased risk of subprime foreclosures that stems from predatory lending practices. However, because it is widely acknowledged that most predatory mortgage lending occurs in the subprime market, we include it here as a point of discussion.

"I hate to blame the mortgage companies because they are just trying to make a living, but it seems like almost anybody can get a mortgage these days. There are people who get low interest [rates] to start, but after two years it goes away and they can't afford it."

Kent County (DE) Sheriff James Higdon, who oversees the county's monthly foreclosure auctions. ("Mortgage Defaults Rise with Debt Level," The News Journal, March 19, 2006.)

Homeowners who are in default on subprime mortgages are particularly susceptible to foreclosure rescue scams.

During the early period covered by our data, industry representatives often commented that predatory lenders in the subprime market represented a few marginal players. However, in recent years, more subprime lenders with significant market share have been the subject of governmental enforcement and legal actions. Other subprime lenders have collapsed, often having been the subject of predatory lending allegations.⁶⁰ It no longer seems reasonable to assume that predatory lending is perpetuated by “a few bad apples.”

Representatives of the subprime industry often assert that customers in the subprime market freely choose loans with risky features, such as deeply discounted initial interest rates on ARMs. But mortgage financing is a highly complex transaction, and lenders and brokers largely control the terms of the loan. Moreover, they control information about the pricing of a wide variety of loan options which typically is not disclosed to the consumer.⁶¹ It would be highly unusual for a potential mortgage applicant to tell a lender what kind of loan they qualify for and under what terms; most often, the lender or broker makes that determination and presents it in the most appealing way possible.

Predatory practices may be particularly relevant to the high level of ARMs originated in the subprime market during recent times, when the rate differences between ARMs and fixed-rate loans have been narrow. For example, today it is possible for a subprime borrower to lock in a fixed rate for an additional 0.75%, or \$93 a month, on a typical \$175,000 loan. Credit-strapped borrowers understandably seek loans with a low monthly payment, and it is likely that unscrupulous lenders have been able to exploit the desire for manageable payments by using aggressive sales tactics to push-market ARMs with temporarily low interest rates, even if these ultimately will become unaffordable for the borrower.⁶² Even in cases where borrowers understand they are receiving a loan with a variable rate, brokers or lenders can counter any hesitation by assuring them they will be able to refinance when the rate rises.

Not all predatory practices occur during loan origination: several subprime servicers have entered settlements with regulators or are under investigation for predatory servicing practices, including failure to post on-time borrower payments, charging excessive and unwarranted fees, prematurely referring accounts to collections, and forcing homeowners into default to generate fee income.⁶³ In addition, homeowners who are in default on subprime mortgages are particularly susceptible to foreclosure rescue scams. The perpetrators of these fraudulent transactions prey upon the vulnerability of distressed borrowers, claiming to offer assistance, but instead tricking the borrowers into giving up what little equity or cash they have left. The most common foreclosure rescue scams involve one of three fraudulent schemes: first, phantom help where the “rescuer” charges outrageous fees for services that it never provides; second, a variety of supposed bailout schemes that never work, frequently involving the homeowner’s surrender of the property title to the “rescuer,” and third, “bait and switch,” in which the homeowner surrenders ownership without realizing it until it is too late.⁶⁴

4. Third-Party Originators, the Secondary Market, and Lack of Oversight

Currently mortgage brokers originate about two-thirds of subprime mortgages.⁶⁵ Brokers market to prospective borrowers, assess a borrower’s creditworthiness, recommend loan products, and prepare and submit loan applications to mortgage lenders, who fund the approved loans. When a loan closes, the broker collects a fee from the borrower, and may also collect a “yield-spread premium,” which is a cash bonus a broker receives for charging a higher interest rate on a loan than the lender required.⁶⁶

As a consequence, brokers have a direct incentive to steer borrowers into excessively high interest rates, since higher rates produce higher premiums for the broker. Advocates and policymakers have long expressed concerns about abusive broker practices and excessive fees.⁶⁷ Because brokers' compensation is based on making the loan, regardless of its risk of foreclosure, they have little incentive to focus on the likely performance of the loan in the future.⁶⁸

At the end of the day, there is one party always on the hook for a mortgage default: the homeowner.

While brokers focus on delivering a high volume of loans to lenders, lenders typically sell these loans to investors, creating a “secondary market” in mortgage loans. The investor has the right to collect payments and enforce the loan terms, including foreclosing on the home if the borrower defaults. The majority of subprime loans are pooled together and then divided into tranches which are sold as securities to large numbers of investors. As of June 30, 2006, mortgage-backed securities were the largest segment of the United States bond market, accounting for 23 percent of all bond market debt outstanding.⁶⁹

Like lenders, mortgage investors use sophisticated financial tools to limit their financial exposure to losses from foreclosures. First, pools of loans in mortgage-backed securities typically contain both high-risk and lower-risk loans, and the income on the better-performing loans subsidizes the losses on defaulted loans. Second, mortgage-backed securities are often over-collateralized; that is, the amount of the loans backing the investment is greater than its face value. Third, investors may demand a premium from the lender/seller for investing in its subprime securities. Fourth, investors are protected by a legal doctrine called “holder in due course” which prevents borrowers from making claims against the purchaser of their loan, even if, for example, that loan contained abusive features.

Further, the only “regulatory” oversight of the secondary market comes from third-party rating agencies, who evaluate the credit risk of mortgage-backed securities and award credit ratings that determine the market price for the security. However, rating agencies make no determination about “the suitability of the underlying loans for individual borrowers.”⁷⁰ At the end of the day, there is one party always “on the hook” for a mortgage default: the homeowner.

As long as subprime foreclosures remain predictable, the secondary market structure helps brokers, lenders, and investors minimize their risk of loss from defaults. Still, it is possible significantly higher foreclosures than predicted could lead to investor losses, and a decline in their appetite for subprime loans.

VI. POLICY RECOMMENDATIONS

With billions of dollars in equity already lost, there is an urgent need to curtail foreclosures in the subprime market and mitigate homeowners' losses in the future on unsustainable mortgages. Here we offer recommendations to reduce the risk of foreclosure on new subprime loans, and help subprime borrowers who currently are struggling to keep their homes:

1. Establish that every borrower has the means to repay his/her loan—without resorting to selling the property or refinancing under pressure.

A fundamental purpose of loan underwriting is to confirm the borrower's ability to repay the loan. Without prudent underwriting, attempts to prevent foreclosure just rearrange the proverbial deck chairs on the Titanic. Unfortunately, when qualifying borrowers, many subprime lenders, do not

evaluate whether the applicant can afford the loan after introductory rates expire. This way of qualifying borrowers shows no concern for whether homeownership is sustainable. Since the dominant subprime loan product is an exploding ARM with a significant rate adjustment after two years, many borrowers with subprime mortgages will face insurmountable payment shock that could have been avoided with sound underwriting.

Federal and state banking regulators have recently issued guidance that, in the simplest terms, forbid banks from using artificially low teaser rates to qualify borrowers who cannot truly afford the mortgage. Their guidance also addresses concerns about negatively amortizing loans (when loan payments do not result in lowering the principal amount owed) and approving loans without adequately verifying the borrower's income. These principles should be applied to subprime loans, particularly exploding ARMs.⁷¹

Subprime lenders should consider the ability of the borrower to pay their mortgage payments after the initial teaser rate expires, taking into account projected interest rate increases that can occur. At a minimum, lenders should not be permitted to underwrite loans based on an amount below the expected fully-indexed, fully-amortizing monthly payment. In evaluating the borrower's ability to repay, lenders also should consider the given borrower's circumstances, including the borrower's debt-to-income ratio (taking account of property taxes and insurance premiums) and the loan-to-value ratio, as well as whether the loan combines multiple high-risk factors (e.g., a low down payment combined with an interest-only feature) that put the loan at a higher risk of foreclosure.

In addition, two other practices that compound the risks posed by loose underwriting practices should be curbed. First, subprime lenders should always escrow amounts for taxes and insurance. Borrowers often are under the impression that these costs are included in their mortgage payment, and are frequently unable to meet these significant additional costs when they come due as a lump sum. Second, when underwriting subprime loans, lenders should independently verify income to ensure that the borrower will be able to afford the payments.

2. Ensure that all parties operate in good faith, and that everyone, not just the borrower, has a stake in a successful loan outcome.

Mortgage Brokers: Investment professionals have long had an affirmative duty to ensure that the products they recommend are suitable for their customers. Buying a home is the biggest investment that most families ever make, and, since home equity is the major source of wealth for most families, refinancing is a more relevant investment decision to most families than stock purchases. Arguably today's mortgage transactions are at least as complicated as financial decisions made with investment professionals, yet families do not have a similar assurance that their lender or broker will deal fairly with them by offering them loans that are suitable given their needs and circumstances. A securities broker who steers a borrower into an inappropriate investment risks punishment; a mortgage broker who does the same may reap higher compensation with no negative consequences. To protect homebuyers and homeowners, lenders and brokers should be required to recommend loans that are suitable and reasonably advantageous for borrowers.⁷²

Mortgage brokers, in particular, should have a fiduciary duty to use best efforts to obtain an appropriate loan for the borrower. Borrowers expect their brokers to represent their best interests, and brokers should be held to that standard. The stakes are too high to allow misplaced incentives to harm families' chances of paying a fair price for their home and building their net worth.

Appraisers: Inflated appraisals help trap borrowers in unaffordable loans they cannot refinance. A 2003 National Appraisal Survey found that 55 percent of licensed appraisers had felt pressure from a mortgage broker or lender to “hit a certain property value,” with 25 percent of appraisers saying this happens almost half the time. Survey respondents also estimated that the majority of the appraisers in their market would go along with requests to exaggerate the value or conditions of property most of the time.⁷³ Clearly, independence of the appraisal process is critical. Federal regulators have issued guidance and other interagency statements over the last several years that provide sound appraisal standards.⁷⁴ Still, there remains room for tougher enforcement and greater regulatory oversight.

Secondary Market Investors: Investors should take reasonable steps to avoid supporting unsound lending, including refusing to purchase mortgages from lenders who make abusive loans and requiring that subprime lenders use appropriate underwriting standards to ensure that borrowers can repay the loan. Policymakers can encourage investors to support responsible lending by including reasonable assignee liability provisions in protections for borrowers. Without effective assignee liability provisions, a family that has been placed into an abusive loan in violation of the law often cannot stop the foreclosure of their home. After going through foreclosure, most families lack the resources necessary to pursue separate litigation. Policymakers can craft laws that balance protections for homeowners and ensure good-faith secondary market participants do not face potentially significant exposure. For example, New Mexico, New Jersey, Massachusetts, and Rhode Island all have adopted balanced regulations that provide appropriate liability limits for investors who take appropriate steps to avoid the purchase of loans from predatory lenders.

3. Curtail steering by requiring objective pricing standards.

As noted earlier in the report, the costs of subprime foreclosures fall heavily on African-American and Latino homeowners, since subprime mortgages are disproportionately made in communities of color. This impact is particularly disturbing in light of earlier research by the Center for Responsible Lending and others that has demonstrated that African-American and Latino borrowers are at greater risk of receiving higher-rate loans than white borrowers, even after controlling for legitimate risk factors.⁷⁵ Today, through advances in technology, lenders have a stronger ability than ever to apply risk-based pricing. Increasing the fairness and objectivity of the subprime home loan origination process would significantly improve outcomes for all families. Given the many explicit ways that American public policy supports homeownership and the increased risk of foreclosure in the subprime market, it is especially important that borrowers representing equivalent risks receive similar treatment from mortgage professionals. We believe the best way to achieve this end is to eliminate discretionary pricing in the subprime loan market, prompting lenders to adopt transparent, market-driven prices for mortgages representing similar risks.⁷⁶

4. Continue to curtail equity-stripping practices such as abusive prepayment penalties.

While this study does not quantify the increased risk of subprime foreclosures that stems from predatory lending practices, it is obvious that when abusive fees and prepayment penalties associated with predatory lending strip equity from the home, they limit borrowers' options to refinance and push borrowers into foreclosure more quickly. More steps should be taken to limit abuses related to equity-stripping. For example, subprime loans should not include abusive prepayment penalties.

Second, our previous research shows that state anti-predatory lending laws are working as intended, i.e., lenders have responded by making subprime home loans that do not contain predatory terms targeted by the laws.⁷⁷ Policymakers should support legislation that builds on the proven methods for protecting families from abusive lending. Recognizing that new lending abuses continue to emerge, such laws should also ensure that all those responsible for representing and protecting families have authority to act to address new problems.

5. Help subprime borrowers who are in danger of losing their homes.

Servicing and Loss Mitigation: Many homeowners can save their homes if given opportunities for reasonable work-out plans when they have trouble making their mortgage payments. However, investors who purchase subprime loans in the secondary market often limit the flexibility that loan servicers have to work with delinquent borrowers to avoid foreclosure, especially if this requires extra time or money. As one Wall Street professional put it, “The general feeling among investors is that they are not willing to trade . . . income for increased servicing costs.”⁷⁸ In addition, settlements in 2004 between regulators and subprime servicers Fairbanks Capital Corporation and Ocwen Federal Bank disclosed numerous predatory servicing practices, including failure to post on-time borrower payments, charging excessive and unwarranted fees, prematurely referring accounts to collections, and forcing homeowners into default to generate fee income. Regulators had hoped these settlements would encourage other firms to establish servicing “best practices;” however, new FTC investigations indicate this has not happened.⁷⁹ Regulators must continue to focus on this area, especially on the way servicers handle adjustments of exotic ARM products and workout/collections practices for a growing number of delinquent subprime loans.

Home Preservation Programs: There are efforts underway in numerous markets, often as partnerships among community groups, lenders, and local or state governments, to help keep families in their homes. These include an array of interventions to assist borrowers in trouble, including (1) targeted outreach to delinquent borrowers, (2) financial counseling, (3) restructuring consumer debt, (4) funding unexpected home repairs (often the trigger for problems), (5) loan modifications, (6) short-term loans or grants to cover income shortfalls, (7) exit strategies if homeownership is unsustainable due to divorce, health crisis, etc., and, if all else fails, (8) managing repossessed property to avoid vacancies and maintain a stable neighborhood. Subsidies from state government can provide significant support to these kinds of programs, which often lack the scale to operate in an economically sustainable way on their own.⁸⁰ Even with public subsidy, however, these programs have a limited ability to assist homeowners, particularly on the scale of foreclosures anticipated by this report. Limiting abusive origination practices is critical to driving down the rate of foreclosure so that intervention programs can provide service to borrowers with exceptional circumstances.

Foreclosure Rescue Scams: As described in the Discussion section, rescue scams have proliferated, stripping home equity and financial security from vulnerable borrowers, and accelerating the cycle of decline that threatens whole communities.⁸¹ The danger from these predators will only grow as delinquencies and foreclosures climb over the next few years. Several states, including California, Georgia, Maryland, Minnesota, and Missouri, have passed laws to protect homeowners from fraudulent foreclosure rescuers. Other states should follow suit.

NOTES

- 1 The rate of new foreclosures as a percent of all loans rose from .13 in 1980 to .42 in 2005, as reported in the *National Delinquency Survey*, Mortgage Bankers Association. 2005 new foreclosure filings statistic from Realty Trac in Home Foreclosures on the Rise, MoneyNews (February 23, 2006) at <http://www.newsmax.com/archives/articles/2006/2/23/134928.shtml>.
- 2 *National Foreclosures Increase 17 Percent In Third Quarter*, Realty Trac (November 1, 2006) at <http://www.realtytrac.com/ContentManagement/PressRelease.aspx?ItemID=1362>.
- 3 See, e.g., Saskia Scholtes, Michael Mackenzie and David Wighton, US Subprime Loans Face Trouble, Financial Times (December 7, 2006); Nightmare Mortgages, Business Week (September 11, 2006).
- 4 Ira Goldstein, *Bringing Subprime Mortgages to Market and the Effects on Lower-Income Borrowers*, p. 2 Joint Center for Housing Studies, Harvard University (February 2004) at http://www.jchs.harvard.edu/publications/finance/babc/babc_04-7.pdf.
- 5 For most types of subprime loans, African-Americans and Latino borrowers are more likely to be given a higher-cost loan even after controlling for legitimate risk factors. Debbie Gruenstein Bocian, Keith S. Ernst and Wei Li, *Unfair Lending: The Effect of Race and Ethnicity on the Price of Subprime Mortgages*, Center for Responsible Lending, (May 31, 2006) at <http://www.responsiblelending.org/issues/mortgage/reports/page.jsp?itemID=29371010>. See also Darryl E. Getter, *Consumer Credit Risk and Pricing*, Journal of Consumer Affairs (June 22, 2006); Howard Lax, Michael Manti, Paul Raca, Peter Zorn, *Subprime Lending: An Investigation of Economic Efficiency*, 533, 562, 569, Housing Policy Debate 15(3) (2004).
- 6 *Subprime Mortgage Origination Indicators*, Inside B&C Lending (November 10, 2006).
- 7 See "Loan Purpose" statistics in Appendix 3.
- 8 Income figures from Isaac Shapiro, *What new CBO Data Indicate About Long-term Income Distribution Trends*, p. 1 Center on Budget and Policy Priorities, (March 7, 2005) at <http://www.cbpp.org/3-7-05tax.pdf>. Though 2006 Census data shows a very modest increase in median income nationally, it fell slightly among working-age households, and is \$2000 below 2001 recession levels; *Poverty Remains Higher, and Median Income for Non-Elderly is Lower Than When Recession Hit Bottom*, p. 3 Center on Budget and Policy Priorities, (September 1, 2006), at <http://www.cbpp.org/8-29-06pov.htm>. Household expense data from Elizabeth Warren and Amelia Warren Tyagi, *The Two Income Trap: Why Middle-Class Mothers and Fathers Are Going Broke*, p. 51 Basic Books (2003).
- 9 Personal savings dipped into negative territory in late 2005 and remained there in 2006. Personal Savings Rate, U.S. Bureau of Economic Analysis (November 29, 2006) at <http://bea.gov/briefr/saving.htm>. While the "dissavings" rate of the elderly affects that overall negative rate, it also appears to be the case that working age households save virtually nothing outside pension savings. Alicia H. Munnell, Francesca Golub-Sass, and Andrew Varani, *How Much Are Workers Saving?* p. 3, Center for Retirement Research Issue Brief # 34 (October 2005) at http://www.bc.edu/centers/crr/issues/ib_34.pdf.
- 10 Peter G. Gosselin, If America is Richer, *Why Are Its Families So Much Less Secure?* Los Angeles Times (October 10, 2004). The chances of a family experiencing an income drop of 50% or more grew from 7% in 1970 to nearly 17% in 2002. Jacob S. Hacker, *The Great Risk Shift*, p. 31 Oxford Univ. Press (2006).
- 11 Household Debt Service and Financial Obligations Ratios, Federal Reserve Board (October 12, 2006) at <http://www.federalreserve.gov/releases/housedebt/>. See also Dimitri B. Papadimitriou, Edward Chilcote, and Gennaro Zezza, *Are Housing Prices, Household Debt, and Growth Sustainable?* p. 4 Levy Economics Institute of Bard College (January, 2006) (debt-to-disposable income ratio - under 70% until 1985, today near 122%) at http://www.levy.org/modules/publib/files/sa_jan_06.pdf.
- 12 Lisa Prevost, *The Homeowner's Day of Reckoning*, Boston Globe Magazine (October 15, 2006), quoting Elizabeth Warren at http://www.boston.com/news/globe/magazine/articles/2006/10/15/the_homeowners_day_of_reckoning/?page=1.
- 13 2000 – 2004 figures from Alan Greenspan and James Kennedy, *Estimates of Home Mortgage Originations, Repayments, and Debt on One-to-Four-Family Residences*, Table 1, Line 23, p. 21, at <http://www.federalreserve.gov/pubs/feds/2005/200541/200541pap.pdf>. See also Damon Darlin, *Mortgage Lesson No. 1: Home is Not a Piggy Bank*, New York Times (November 4, 2006) at <http://www.nytimes.com/2006/11/04/business/04money.html?ex=1165554000&en=2abbe04306345d11&ei=5070>.
- 14 See Damon Darlin, note 13.
- 15 It should be noted that high appreciation is often accompanied by an increase in purchases of homes for investment purposes, rather than for owner-occupancy. Investors may be more likely to walk away from property where the value is less than the outstanding debt.
- 16 In theory, a foreclosure sale or "sheriff's sale" could bring a competitive price, and generally any surplus would have to be returned to the foreclosed homeowner. As a practical matter, a forced sale price is overwhelmingly a depressed price, and it is very rare for these sales to bring in enough to enable the homeowner to salvage any equity. See, e.g., Debra Pogrud Stark, *Facing the Facts: An Empirical Study of the Fairness and Efficiency of Foreclosures and a Proposal for Reform*, p. 30 U. Mich. J. L. Reform 639, 692 (1997). (In the two study years, foreclosing lenders were winning bidders in 85-89% of sales, and only 4.3% to 11.8% of sales had a surplus.)
- 17 Michelle A. Danis and Anthony N. Pennington-Cross, *A Dynamic Look at Subprime Loan Performance*, Working Paper 2005-029A Federal Reserve Bank of St. Louis (May 2005) at SSRN: <http://ssrn.com/abstract=761152>.
- 18 Regulators now use the Oil Patch ten-year default rate of 14.9 percent as the standard for determining whether government-sponsored mortgage enterprises (Fannie Mae and Freddie Mac) have enough capital to weather credit losses caused by a severe economic decline in the United States. This experience is now a key component in the risk-based capital standards established by the Federal Housing Enterprises Financial Safety and Soundness Act of 1992. These standards ensure that GSEs' portfolios can withstand a credit loss stress test using a 10-year cumulative default rate of 14.9%.
- 19 See, e.g., Danis et al note 17; see also *Residential Mortgage Default*, p. 21 Business Review Q3 2006 at http://www.phil.frb.org/files/br/br_q3-2006-3_residential_mortgage.pdf (Also, see Appendix 1 for a brief sampling of related research).
- 20 Mark Zandi, Celia Chen, Brian Carey, *Housing at the Tipping Point*, Moody's Economy.com (October 2006).
- 21 Projections are made through the 89th month of the loan life. At this point, the vast majority of subprime loans have typically terminated, though some small additional number of foreclosures are always possible. See, e.g., U.S. R.M.B.S. *Intel-Based Cash Flow Model*, Fitch Ratings Agency (2006) at http://www.fitchratings.com/corporate/reports/report_frame.cfm?rpt_id=282286 (showing subprime loss timing assumptions that 97.46% of losses have been occurred by month 89).
- 22 Anthony Pennington-Cross and Giang Ho, *The Termination of Subprime Hybrid and Fixed Rate Mortgages*, Working Paper 2006-042A Federal Reserve Bank of St. Louis (July 2006).
- 23 Pennington-Cross and Ho use a somewhat different definition for default than we use for foreclosed loans, designating a loan as in default once foreclosure is initiated or when it is deemed real-estate-owned by the lender (REO).
- 24 Roberto G. Quercia, Michael A. Stegman, and Walter R. Davis, *The Impact of Predatory Loan Terms on Subprime Foreclosures: The Special Case of Prepayment Penalties and Balloon Payments*, Center for Community Capitalism, Kenan Institute for Private Enterprise, University of North Carolina at Chapel Hill (January 25, 2005).

- 25 Five states should see modest decreases in foreclosure rates (Indiana, Mississippi, Oklahoma, Tennessee, and Utah); however, these rates will still be 16% or higher.
- 26 Marsha Courchane, Peter Zorn, Brian Surette, *Subprime Borrowers: Mortgage Transitions and Outcomes*, p. 365, 374-376 *Journal of Real Estate Finance & Economics* (2004).
- 27 Rapid growth in the Northeast led to overheated markets and high house prices, which in turn slowed housing demand and hurt many industries that were reliant on construction activity. In California, the aerospace industry stumbled, creating a disproportionate loss of jobs and substantially worse real median income and poverty levels in the state.
- 28 Mark Zandi, Celia Chen, Brian Carey, *Housing at the Tipping Point*, Moody's Economy.com (October 2006).
- 29 See Zandi et al, note 28.
- 30 See, e.g., Quercia, et al, note 24, esp. p. 27-30, Table 10 at p. 35 (January, 2005) (in addition to the two highlighted terms, also cites odds ratios for other terms, including ARMs); see also Danis et al, note 17 (equity status at origination and subsequently); see generally Interagency Guidance on Nontraditional Mortgage Product Risks, 71 Fed. Reg. 58609 (October 4, 2006); Conference of State Bank Supervisors/American Assoc. of Residential Mortgage Regulators, *Guidance on Nontraditional Mortgage Product Risks* (November, 2006); Appendix I.
- 31 See note 30.
- 32 See Table 11 in the report. *Structured Finance: U.S. Subprime RMBS in Structured Finance CDOs*, Fitch Ratings Credit Policy p. 4 (August 21, 2006). Such loans weaken underwriting and facilitate the use of inflated incomes, an increasingly common phenomenon. The allegations in the States' action against Ameriquest, the nation's top subprime originator in 2003 - 2005, included "acts and practices which resulted in fabricated or inflated income information and/or non-existent or inflated amounts of assets" for applicants. See, e.g., State of Iowa, ex rel Miller v. Ameriquest Mortgage Co. et al, Eq. No.EQCE-53090 Petition, at ¶ 16(F) (March 21, 2006). A lender review of 100 stated loan files found 60% of them included incomes exaggerated by more than 50%. Merle Sharick, Erin E. Omba, Nick Larson and D. James Croft, *MARI Eighth Periodic Mortgage Fraud Case Report to the Mortgage Bankers Association*, p. 12 (April, 2006) at <http://www.mari-inc.com/pdfs/mba/MBA8thCaseRpt.pdf>.
- 33 Michael Collins, *The Many Benefits of Homeownership*, Neighborhood Reinvestment Corporation (November 1998).
- 34 Donald R. Haurin and Stuart S. Rosenthal, *The Sustainability of Homeownership: Factors Affecting the Duration of Homeownership and Rental Spells*, p. 43 HUD Office of Policy Development, (December, 2004), at <http://www.huduser.org/Publications/pdf/homeownsustainability.pdf>.
- 35 During the study period, two of the biggest subprime servicers were the subject of regulatory actions, as well as significant private litigation. In 2002, Fairbanks Capital was the number three subprime servicer and Ocwen number four. Together they serviced 12 percent of the subprime market that year. *The 2006 Mortgage Market Statistical Annual, Vol. 1*, p. 210 Inside Mortgage Finance (2006). The FTC and HUD settled an enforcement action against Fairbanks in 2003. *Fairbanks Capital Settles FTC and HUD Charges*, FTC Press Release (November 12, 2003). The Office of Thrift Supervision entered into a supervisory agreement with Ocwen in 2004, OTS Docket No. 04592 (April 19, 2004). See generally Kurt Eggert, *Limiting Abuse and Opportunism by Mortgage Servicers*, Housing Policy Debate 15(3), p. 753 Fannie Mae Foundation (2004).
- 36 The Home Mortgage Disclosure Act requires most lenders to file annual reports containing specified information about the "higher-cost loans" they originated. "Higher-cost loans" are those for which the APR exceeds the rate on a Treasury security of comparable maturity by three percentage points for first liens, and five percentage points for second liens. FRB analysis of 2005 HMDA data indicates that non-Hispanic whites received over 1.2 million higher-cost loans, compared to 388,471 for African-Americans and 375,889 for Latinos. Authors' calculations from data reported in Robert B. Avery, Kenneth P. Brevoort, and Glenn B. Canner, *Higher-Priced Home Lending and the 2005 HMDA Data*, Federal Reserve Bulletin A123, A160-161 (Sept. 8, 2006), at <http://www.federalreserve.gov/pubs/bulletin/2006/hmda/bull06hmda.pdf>.
- 37 Dan Immergluck and Geoff Smith, *The External Costs of Foreclosure: The Impact of Single-Family Mortgage Foreclosures on Property Values*, p. 57, 69, 72, 75 Housing Policy Debate (17:1) Fannie Mae Foundation (2006) at http://www.fanniemaefoundation.org/programs/hpd/pdf/hpd_1701_immergluck.pdf.
- 38 See Immergluck et al, note 37.
- 39 William G. Apgar, Mark Duda, Rochelle Nawrocki Gorey, *The Municipal Cost of Foreclosures: A Chicago Case Study*, p. 24-26 Homeownership Preservation Fund (February 27, 2005) at <http://www.nw.org/network/neighborworksProgs/foreclosuresolutions/documents/2005Apgar-DudaStudy-FullVersion.pdf>.
- 40 See *Survey of Credit Underwriting Practices 2005* p. 5 Office of the Comptroller of the Currency, National Credit Committee. The agency commented, "ambitious growth goals in a highly competitive market can create an environment that fosters imprudent credit decisions." In fact, 28% of the banks eased standards, leading the 2005 OCC survey to be its first survey where examiners reported net easing of retail underwriting standards. The trend continued in 2006: see *Survey of Credit Underwriting Practices 2006*, Office of the Comptroller of the Currency (October 2006) at <http://www.occ.treas.gov/cusurvey/2006UnderwritingSurvey.pdf>.
- 41 See 71 Fed. Reg. 58609 (October 4, 2006) for the federal Interagency Guidance on Nontraditional Mortgage Product Risks, issued by the Office of the Comptroller of the Currency, the Federal Reserve Board, the Federal Deposit Insurance Corporation, the Department of the Treasury and the National Credit Union Administration. State regulators have indicated they will adopt the federal standards for lenders subject to their oversight in November 2006.
- 42 CSBS/AARMR *Guidance on Nontraditional Mortgage Product Risks*, at http://www.csbs.org/Content/NavigationMenu/RegulatoryAffairs/FederalAgencyGuidanceDatabase/CSBS-AARMR_FINAL_GUIDANCE.pdf. These standards apply generally to interest-only and payment option ARMs, not to other higher-risk products, such as hybrid ARMs.
- 43 See Interagency Guidance on Nontraditional Mortgage Product Risks, note 42.
- 44 A balloon loan is one that is not repayable in regular monthly installments, but rather requires repayment of the remaining balance in one large lump sum. While 2/28s are not balloon loans, the impact of higher interest rates at the end of the two-year teaser rate period, resulting in higher monthly payments, may force a borrower to seek refinancing.
- 45 See, e.g., *Structured Finance: U.S. Subprime RMBS in Structured Finance CDOs*, p. 2 Fitch Ratings Credit Policy (August 21, 2006).
- 46 See *Structured Finance*, note 45.
- 47 See *Structured Finance*, note 45.
- 48 Jonathan R. Laing, *Coming Home to Roost*, p. 26 Barron's (February 13, 2006).
- 49 See *Structured Finance*, note 45.
- 50 In June 2006, Fitch noted that "in the subprime sector, 8% of the total volume were 2/38 hybrid ARMs, up from less than 1% for all of 2005." Fitch also noted that approximately one quarter of subprime ARMs include an interest-only feature. See *Structured Finance: 40, 45-, and 50-Year Mortgages: Option ARMs, Hybrid ARMs and FRMS*, p. 2, 4 Fitch Ratings Credit Policy (June 19, 2006); *Structured Finance: U.S. Subprime RMBS in Structured Finance CDOs*, p. 2 Fitch Ratings Credit Policy (August 21, 2006).
- 51 See Option One Prospectus, Option One MTG LN TR ASSET BK SER 2005 2 424B5, p. S-50 Securities and Exchange Commission Filing 05794712 (May 3, 2005).

52 See, e.g., *B&C Escrow Rate Called Low*, Mortgage Servicing News Bulletin (February 23, 2005) “Servicers of subprime mortgage loans face a perplexing conundrum: only about a quarter of the loans include escrow accounts to ensure payment of insurance premiums and property taxes, yet subprime borrowers are the least likely to save money to make such payments....Nigel Brazier, senior vice president for business development and strategic initiatives at Select Portfolio Servicing, said only about 25% of the loans in his company's subprime portfolio have escrow accounts. He said that is typical for the subprime industry.

53 See, e.g., *Attractive Underwriting Niches*, Chase Home Finance Subprime Lending marketing flier, at http://www.chase2b.com/content/portal/pdf/subprimeflyers/Subprime_AUN.pdf http://www.chase2b.com/content/portal/pdf/subprimeflyers/Subprime_AUN.pdf (available 9/18/2006) stating “ Taxes and Insurance Escrows are NOT required at any LTV, and there's NO rate add!” (suggesting that failing to escrow taxes is an “underwriting highlight” that is beneficial to the borrower). ‘Low balling’ payments by omitting tax and insurance costs were also alleged in states’ actions against Ameriquest. See, e.g., *State of Iowa, ex rel Miller v. Ameriquest Mortgage Co. et al*, Eq. No. EQCE-53090 Petition, at ¶ 16(B) (March 21, 2006).

54 *Partnership Lessons and Results: Three Year Final Report*, p. 31 Home Ownership Preservation Initiative (July 17, 2006) at www.nhschicago.org/downloads/82HOPI3YearReport_Jul17-06.pdf.

55 In fact, Fannie Mae and Freddie Mac, the major mortgage investors, require lenders to escrow taxes and insurance.

56 *Structured Finance: U.S. Subprime RMBS in Structured Finance CDOs*, p. 4 Fitch Ratings Credit Policy (August 21, 2006).

57 *What Else Is New? ARMs Dominate Subprime Mix*, p. 4 Inside B&C Lending (January 20, 2006).

58 See Sharick, et al, note 32.

59 Traditional Rate Sheet effective 12/04/06 issued by New Century Mortgage Corporation, a major subprime lender, shows that a borrower with a 600 FICO score and 80% LTV loan would pay 7.5% for a fully-documented loan, and 9.0% for a “stated wage earner” loan.

60 Associates, the target of an FTC enforcement action settled in September 2002, was number two and number three in market share in 1998 and 1999 respectively. (It was purchased by Citigroup in late 2000, and merged into CitiFinancial.) Household, the subject of a multi state enforcement action by state financial regulators and attorneys general, held either number one or number two position in market share from 1998 to 2002. (The settlement with the states was announced in October 2002). It was number four in 2003, before being purchased by HSBC. (It should be noted that these two lenders generally retained their own loans, rather than selling them on the secondary market.) Conesco (f/k/a Green Tree) was in the top ten in market share from 1998 to 2000. It filed bankruptcy in 2002. More recently, Ameriquest, which grew from number 11 in market share in 2000 to number six in 2002 to number one in 2003-2005 also settled allegations in early 2006 of predatory lending in an investigation by the states. United Companies Lending filed bankruptcy in 1999 amidst enough allegations of improper practices that legal services attorneys were on the creditors committee representing its borrowers as a class of creditors. This is not an exhaustive “where are they now” list of major lenders in this market during our seven year period, but it does indicate that problems in the market were not limited to fringe players during our study period.

61 Rate sheets provided by lenders to mortgage brokers show a wide and complex array of pricing options, and commonly include an admonition that the information is not for public (i.e., the home buyer's) consumption.

62 This was also an allegation made by the states against Ameriquest. See, e.g., *State of Iowa, ex rel Miller v. Ameriquest Mortgage Co. et al*, Eq. No. EQCE-53090 Petition, at ¶ 16(B) (March 21, 2006).

63 See note 35.

64 Steve Tripoli and Elizabeth Renuart, *Dreams Foreclosed: The Rampant Theft of Americans' Homes Through Equity-Stripping Foreclosure 'Rescue' Scams*, p. 8-9, National Consumer Law Center, (June 2005) at <http://www.consumerlaw.org/news/ForeclosureReportFinal.pdf>.

65 Mortgage brokers accounted for 59.3% of subprime originations in 2005. *Brokers Flex Their Muscle in 2005, Powering Record Subprime Year*, Inside B&C Lending (March 17, 2006). When a reporting institution makes loans through a mortgage broker, the institution rather than the broker reports the HMDA data. *A Guide to HMDA Reporting: Getting It Right!* p.6 Federal Financial Institutions Examination Council (January 1, 2004).

66 In theory, the higher rate purchased by the yield spread premium is a trade-off for lower up-front costs. However, empirical studies cast doubt on that ostensible benefit for the YSP. See, e.g., Howell E. Jackson and Jeremy Berry, *Kickbacks or Compensation: The Case of Yield Spread Premiums*, Harvard Law School (January 8, 2002) at http://www.law.harvard.edu/faculty/hjackson/pdfs/january_draft.pdf.

67 See, e.g., William Apgar, Allegra Calder and Gary Fauth, *Credit, Capital and Communities: The Implications of the Changing Mortgage Banking Industry for Community Based Organizations*, Joint Center for Housing Studies, Harvard University (March 9, 2004).

68 See e.g., Apgar et al, note 67; see also, Barrett A. Slade, Scott D. Grimshaw, Grant Richard McQueen and William P. Alexander, *Some Loans are More Equal than Others: Third-party Originations and Defaults in the Subprime Mortgage Industry* (July 2001) at SSRN: <http://ssrn.com/abstract=281233>. Under standard industry representations and warranties, a broker who sells a loan may be required to buy back the loan if there is an “early-payment default” within the first 90 days. However, this provision typically covers loans that default due to fraud, rather than because a borrower can no longer afford their loan payments.

69 By comparison, corporate bonds accounted for 20 percent of the market, and Treasury debt accounted for another 16 percent. U.S. Bond Market Debt, Bond Market Association (June 30, 2006) at <http://www.bondmarkets.com/assets/files/Outstanding%20Level.pdf>.

70 Kathleen C. Engel and Patricia A. McCoy, *Turning a Blind Eye: Wall Street Finance of Predatory Lending* (June 19, 2006) at SSRN: <http://ssrn.com/abstract=910378>.

71 Because the guidance can be read to narrowly define “nontraditional mortgages,” regulators need to confirm that the guidance applies to subprime 2/28 ARMs and similar products. In addition, CRL strongly recommends that at least some of the underwriting standards apply to all mortgage lenders and brokers, not only to depository institutions. To accomplish this goal, the FRB could exercise its discretionary authority under 15 USC Section 1639(i)(2), a provision of the Home Ownership and Equity Protection Act (HOEPA) which provides the Board with broad authority to prohibit unfair or deceptive mortgage lending practices and to address abusive refinancing practices. Specifically:

“(1) DISCRETIONARY REGULATORY AUTHORITY OF BOARD

(2) PROHIBITIONS. The Board, by regulation or order, shall prohibit acts or practices in connection with--

(A) mortgage loans that the Board finds to be unfair, deceptive, or designed to evade the provisions of this section; and

(B) refinancing of mortgage loans that the Board finds to be associated with abusive lending practices, or that are otherwise not in the interest of the borrower.”

While this grant of authority occurs in HOEPA, Congress granted this authority to the Board for all mortgage loans, not just loans that are governed by HOEPA that meet the definition of “high cost.” Each of the substantive limitations that HOEPA imposes refer specifically to high-cost mortgages. By contrast, the discretionary authority granted by subsection (1) refers to “mortgage loans” generally.

72 For a thoughtful discussion of suitability standards in the securities framework and their adaptability to the mortgage context, see Kathleen C. Engel and Patricia A. McCoy, *A Tale of Three Markets: The Law and Economics of Predatory Lending* Vol. 80 Texas Law Review p. 1317-1363 (May 2002).

73 Julie Haviv, *Some US Appraisers Feel Pressure To Inflate Home Values*, The Wall Street Journal (February 10, 2004) at http://www.octoberresearch.com/ai_survey/in_the_news.html.

74 Office of the Comptroller of the Currency, Board of Governors of the Federal Reserve System, Federal Deposit Insurance Corporation, Office of Thrift Supervision and National Credit Union Administration, *Frequently Asked Questions on the Appraisal Regulations and the Interagency Statement on Independent Appraisal and Evaluation Functions* (March 21, 2005). See also, *Interagency Appraisal and Evaluation Guidelines* (October 27, 1994) and the joint statement *Independent Appraisal and Evaluation Functions* (October 28, 2003).

75 See Bocian et al, note 5.

76 See the Bocian et al report, note 5, for a more complete discussion of CRL's policy recommendations on discretionary pricing.

77 Wei Li and Keith S. Ernst, *The Best Value in the Subprime Market: State Predatory Lending Reforms*, Center for Responsible Lending (February 23, 2006).

78 Neil J. Morse, *The Sticky Business of Nonprime Servicing*, Mortgage Banking (February 2005).

79 Brian Collins, *FTC Eyes Servicers*, p. 1 Mortgage Servicing News (December 2006/January 2007).

80 J. Michael Collins and Rochelle Nawrocki Gorey, *Analyzing Elements of Leading Nonprofit Default Intervention Programs*, Fannie Mae Foundation (June 2005) at <http://content.knowledgeplex.org/kp2/cache/documents/94953.pdf>.

81 Steve Tripoli and Elizabeth Renuart, *Dreams Foreclosed: The Rampant Theft of Americans' Homes Through Equity-Stripping Foreclosure 'Rescue' Scams*, p. 8-9, National Consumer Law Center (June 2005) at <http://www.consumerlaw.org/news/ForeclosureReportFinal.pdf>.

Appendix 1: Previous Studies on Mortgage Delinquencies and Foreclosures

First-generation mortgage foreclosure studies¹ during the 1960s looked at foreclosures from the lenders' underwriting perspective; that is, how foreclosure risk was influenced by loan types, borrower characteristics, and the amount of equity in a home (as measured by the loan-to-value ratio, or LTV). Studies in the late 1970s through the 1980s further analyzed foreclosures based on borrower behavior, describing an "option" model where default and prepayment were rational decisions by the consumer based on their income, costs, and home equity. More recent studies incorporated the perspective of mortgage investors, who are concerned both with the rate of foreclosures and the expected default losses in a pool of loans.

Despite differences in perspective and approach, economic studies and empirical research have identified several common factors that increase the likelihood of default and foreclosure. A central role is played by the amount of equity a borrower has in his home, determined by the current loan-to-value ratio. For example, a study of conventional loans originated from 1975-1983 and purchased by Freddie Mac showed that loans with downpayments of five percent had default rates that were double those of loans with 10 or 15 percent downpayments.²

While home equity is a dominant factor in mortgage foreclosures, studies indicate borrower characteristics play a role as well, although there is some disagreement as to the level of importance for specific characteristics. (The fact that many of these characteristics—for example, the amount of other financial assets held by a borrower—must be deduced through proxy measurements rather than actual data makes this analysis quite difficult.) One factor, the variability of household income, consistently shows an effect on mortgage default and delinquency.³ Further, studies of affordable housing loans made in the early 1990s demonstrated that "layered" mortgage risk factors could quickly escalate default rates: for example, high debt-to-income payment ratios (above the then-standard 33/38) multiplied the default rate 3.6 times, turning a typical 6 percent default rate on a conventional 5-percent down loan into a 20 percent default rate.⁴

The lender's cost to foreclose also affects whether they will opt for foreclosure or try to work with delinquent borrowers. Foreclosures are more likely to occur in states with shorter foreclosure periods, or where lenders can pursue non-judicial foreclosures or obtain deficiency judgments against borrowers to recover default losses.)⁵

1 Characterizations from *Residential Mortgage Default: A Review of the Literature*, Roberto G. Quercia and Michael A. Stegman, *Journal of Housing Research* - Volume 3 Issue 2 (1992).

2 Robert Van Order and Peter Zorn. *Income, Location and Default: Some Implications for Community Lending*, *Real Estate Economics* 28 (2000).

3 J.P. Herzog and J.S. Early, *Home Mortgage Delinquency and Foreclosure*, National Bureau of Economic Research (1970). T. Campbell and J. Dietrich, *The Determinants of Default on Conventional Residential Mortgages*, *Journal of Finance* 38 (5) (1983).

4 Michael K. Stamper, *Revisiting Targeted-Affordable Lending, Secondary Mortgage Markets* (October 1997). Gordon H. Steinbach, *Ready to Make the Grade*, *Mortgage Banking* (June 1995).

5 T.M. Clauretie, *A Note on Mortgage Risk: Default vs. Loss Rate*, *Journal of the American Real Estate and Urban Economics Association* 18 (2) (1990).

Studies show that delinquencies and defaults occur on subprime loans for many of the same reasons as past-due prime loans: lower FICO scores and higher loan-to-value ratios—especially in markets with poor housing appreciation.⁶ The presence of predatory loan terms such as prepayment penalties or balloon payments also increases odds that subprime loans will default.⁷ Overall, subprime mortgage loans have much higher default rates than prime loans. One study reported that in the 28th month of a loan, a typical subprime loan defaults more than 8 times more often than a typical prime loan (with a range of 3.5 to 12 times more often, depending upon the credit score of the borrower).⁸

In two other recent analyses of subprime mortgages, researchers analyzed the propensity of subprime adjustable rate mortgages and fixed rate mortgages to foreclose. The first study examined a large set of subprime loans originated from 1998 to 2005, and reported that at the end of five years almost 18 percent of the loans had defaulted.⁹ Similarly, using a large database of securitized subprime loans originated by retail lenders in 1999, other researchers reported that 20.7 percent of subprime loans they examined from that year had experienced a foreclosure at least once within five years of origination.¹⁰

6 Michelle A. Danis and Anthony N. Pennington-Cross, *A Dynamic Look at Subprime Loan Performance*, FRB St. Louis Working Paper No. 2005-029A (May 2005).

7 Roberto G. Quercia, Michael A. Stegman, Walter R. Davis, *The Impact of Predatory Loan Terms on Subprime Foreclosures: The Special Case of Prepayment Penalties and Balloon Payments*, Center for Community Capitalism, Kenan Institute for Private Enterprise, University of North Carolina at Chapel Hill (January 2005).

8 Anthony Pennington-Cross, *Patterns of Default and Prepayment for Prime and Nonprime Mortgages*. OFHEO Working Paper 02-1 (2002).

9 Anthony Pennington-Cross and Giang Ho, *The Termination of Subprime Hybrid and Fixed Rate Mortgages*, Federal Reserve Bank of St. Louis Working Paper 042-A (July 2006). They define a loan as in default once foreclosure is initiated or when it is deemed real estate owned by the lender.

10 See Note 7.

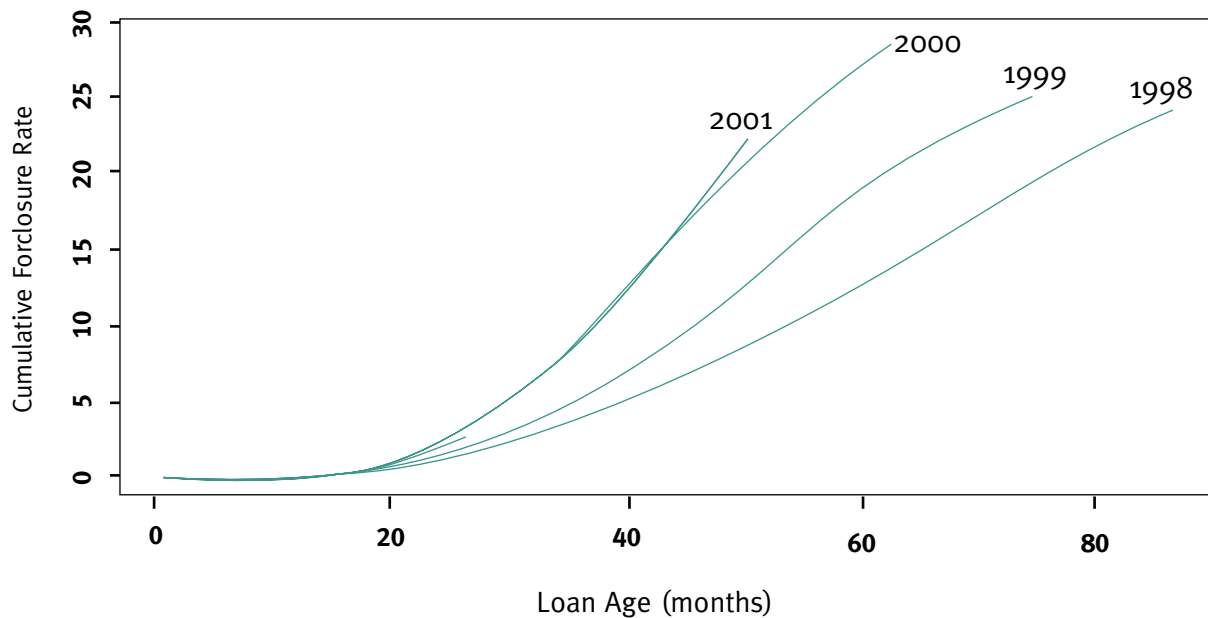
Appendix 2: Methods and Limitations

In this appendix, we describe the methods used to arrive at each finding and the limitations entailed in both the procedures and the data used. All statistical procedures were executed in SAS 9.1.3 SAS/STAT© and SAS/ETS© modules.

Finding A1.

Prepaid loans were defined as loans with a balance that went to zero when the preceding month showed that loan to have a status other than foreclosure, bankruptcy, or Real Estate Owned by the lender (REO). The latter category most commonly represents mortgages where the home has been signed over to the lender to avoid foreclosure, sometimes referred to as a deed-in-lieu of foreclosure. Foreclosed loans were defined as loans with a balance that went to zero when the preceding month showed the loan to have a status of foreclosure, bankruptcy, or REO. These definitions are imperfect in the sense that some small number of loans that are coded as foreclosures and associated with, for example, a bankruptcy status may actually represent refinances and, conversely, some loans that achieve a zero balance while, for example, 90 days delinquent may actually represent a foreclosure. Nevertheless, we believe these are reasonable standards for implementing generally understood definitions of prepayment and foreclosure.

Table 3 simply represents a tabulation of the incidence of these outcomes observed in the loan-level dataset used in this study. Figure 2 presents the cumulative accumulation of foreclosures for each annual cohort of subprime loans by the age of loans from that cohort at the time their balance is set to zero. We also include immediately below this paragraph a cumulative foreclosure curve conditional on non-prepayment. By drawing the foreclosure curves conditional on non-prepayment, the figure below is essentially presenting the cumulative foreclosure rate that would be expected if no loans prepaid and all loans experienced the odds of foreclosure associated with loans that did not prepay. This cumulative conditional curve is shown below and allows one to observe marked differences between the 1998 and 1999 loans, on one hand, and the loans from 2000 onward on the other:



Note: 2002 and 2003 curves are too short to depict here.

Finding A2.

In this section, we simply expand the range of measurements used to evaluate patterns of borrower distress. The definitions used are straightforward. A loan is counted as “ever delinquent” if, at any point, payment status was listed as 30 days past due. A loan is counted as “ever foreclosed” if it ever achieved a payment status of foreclosed, bankruptcy, or REO. It is worth noting that foreclosed here means that the loan entered foreclosure status and not that it finished foreclosure. A loan is counted as “prepaid in distress” if its balance went to zero when the preceding month showed a status of 30 or more days delinquent but not in foreclosure, bankruptcy, or REO.

Finding A3.

To develop the relationships in Table 5, we estimated robust regression models (PROC ROBUSTREG) for several annual cohorts of subprime loans. In each case, the dependent variable is the natural logarithm of the odds of a given outcome. For example, if the outcome of interest is foreclosure, the dependent variable is the log of the odds a loan will be foreclosed or, in other words, $\ln(P/(1-P))$ where P is the probability that a loan will be foreclosed. The independent variable in all models is the average housing price appreciation in the MSA measured at the loan-level for loans belonging to the annual cohort being modeled from origination until time of termination or, if still outstanding at the time, until May 2005. The unit of observation for the regression is an MSA. The results presented in Table 5 have been transformed to odds ratios. The correct interpretation of the coefficients presented is that they show the expected change to the odds ratio that results from a one-percentage point change in annual house price appreciation (HPA). For example, for loans originated in 2000, let X_1 be the annualized HPA for MSA₁, X_2 be the annual HPA for MSA₂, Y_1 be the odds of foreclosure for loans in MSA₁, and Y_2 be the odds of foreclosure for loans in MSA₂. If $X_2 - X_1 = 1\%$, then $(Y_2 - Y_1)/Y_1 = -8.32\%$.

The simplicity of this approach is one of its strengths. By observing outcomes on millions of subprime loans across hundreds of geographies and several annual cohorts, we essentially allow loan-level variations in credit quality to become random noise, allowing us to observe the correlation

between appreciation and a given outcome of interest. These findings, however, are not without their limitations. For example, we do not control for the effects of differing legal environments, the possibility that ineffective servicers may have a geographic nexus, or the effects from different interest rate environments. Nevertheless, since our results are largely consistent across multiple annual cohorts and highly significant, we believe that none of these limitations are fatal to our analysis.

Also, while option theory widely used to model prepayment and defaults in mortgages squarely suggests that lower appreciation rates should be associated with increased defaults, we also do not claim that our results purely represent the effects of such appreciation. Indeed, numerous factors such as unemployment and/or population change can be correlated with housing price appreciation rates and we include no such controls. In this case, however, our goal is not to understand the precise relationship of housing price appreciation to default, but rather to use it as an instrument for projections.

Finding A4.

The observed foreclosures presented in Table 6 are tabulated directly from the dataset. The projections presented in Table 6 are based on a modified life table method. Life tables are generally used to allow one to understand the probability of experiencing a given outcome. They are commonly used in the life insurance industry, for example, to estimate the risk of mortality for an insured.

To construct our life table, we used observations from all subprime loans originated at least 60 months prior to May 2005, following their performance for 89 months after origination. Fitch loss timing assumptions indicates that 97.5 percent of subprime loan losses will be incurred by 89 months of age.¹ We discarded any additional potential foreclosures as trivial additions and deem the experience through 89 months to be equivalent to the entire cumulative experience rate. There are three possible performance outcomes over this time period: outstanding, prepaid, or foreclosed. For any given month i , let a_i be the number of loans still outstanding at the beginning of the month. Let b_i be the number of loans foreclosed between month i and month 89. Then the probability of foreclosure after month i is given by

$$q_i = b_i / a_i$$

which is, in other words, the probability that a loan that has obtained a given month will be foreclosed by the 89th month.

The life table itself contains 5 columns. The first column is the age of the loan observed. The second column is the average housing appreciation associated with loans in our sample that obtained that age before foreclosing, measured at origination through the earlier of termination or May 2005. The third column presents the average proportion of original principal balance of loans in our sample that had obtained a given age by May 2005. The fourth column is the average age at foreclosure among loans that had foreclosed by May 2005 for loans that had obtained a given age in our sample. The fifth column is the probability that loans that have obtained that age will foreclose by month 89, as discussed above.

1 Projections are made through the 89th month of the loan life. At this point, the vast majority of subprime loans have typically terminated, though some small additional number of foreclosures are always possible. See e.g., Fitch Ratings Agency, *U.S. R.M.B.S. Intex-Based Cash Flow Model*, 2006 (available at http://www.fitchratings.com/corporate/reports/report_frame.cfm:rpt_id=282286) (showing subprime loss timing assumptions that 97.46% of losses have been occurred by month 89).

Loan Age (months)	HPA	Original Principal Balance Remaining (%)	Average Age at Foreclosure (in Months)	Probability of Foreclosure
1	8.7	0.985	43	0.114
2	8.7	0.985	43	0.114
3	8.7	0.985	43	0.114
4	8.7	0.985	43	0.114
5	8.7	0.985	43	0.114
6	8.7	0.985	43	0.115
7	8.7	0.985	43	0.115
8	8.7	0.985	43	0.116
9	8.7	0.985	43	0.117
10	8.7	0.985	43	0.117
11	8.7	0.985	43	0.118
12	8.7	0.985	43	0.119
13	8.7	0.985	43	0.120
14	8.7	0.985	43	0.121
15	8.7	0.985	43	0.123
16	8.7	0.985	43	0.124
17	8.7	0.985	43	0.126
18	8.7	0.985	44	0.127
19	8.7	0.985	44	0.128
20	8.7	0.984	44	0.128
21	8.7	0.984	44	0.129
22	8.7	0.984	45	0.129
23	8.7	0.984	45	0.130
24	8.7	0.984	45	0.130
25	8.7	0.983	46	0.130
26	8.6	0.983	46	0.131
27	8.5	0.983	47	0.132
28	8.3	0.983	47	0.134
29	8.3	0.982	48	0.135
30	8.2	0.982	48	0.135
31	8.2	0.982	49	0.135
32	8.1	0.982	49	0.135
33	8.1	0.981	50	0.135
34	8.0	0.981	50	0.135
35	7.9	0.981	51	0.134
36	7.9	0.980	51	0.134
37	7.9	0.980	52	0.133
38	7.9	0.980	52	0.133
39	7.7	0.979	53	0.132
40	7.7	0.979	54	0.132
41	7.6	0.978	54	0.131
42	7.5	0.978	55	0.130
43	7.5	0.977	55	0.129
44	7.4	0.977	56	0.127
45	7.3	0.977	57	0.125

Loan Age (months)	HPA	Original Principal Balance Remaining (%)	Average Age at Foreclosure (in Months)	Probability of Foreclosure
46	7.2	0.976	57	0.124
47	7.1	0.976	58	0.122
48	7.1	0.975	58	0.120
49	7.0	0.975	59	0.117
50	6.8	0.974	59	0.115
51	6.7	0.974	60	0.112
52	6.7	0.973	61	0.109
53	6.6	0.973	61	0.106
54	6.6	0.972	62	0.103
55	6.5	0.972	62	0.099
56	6.5	0.971	63	0.096
57	6.4	0.971	64	0.093
58	6.3	0.970	65	0.088
59	6.3	0.970	65	0.084
60	6.3	0.969	66	0.079
61	6.2	0.968	67	0.075
62	6.2	0.968	68	0.072
63	6.2	0.967	68	0.070
64	6.2	0.966	69	0.067
65	6.2	0.966	70	0.065
66	6.2	0.965	71	0.062
67	6.2	0.964	71	0.059
68	6.2	0.963	72	0.056
69	6.2	0.962	73	0.053
70	6.2	0.962	73	0.051
71	6.2	0.961	74	0.048
72	6.2	0.960	75	0.045
73	6.2	0.960	76	0.041
74	6.2	0.959	77	0.037
75	6.2	0.958	78	0.034
76	6.2	0.957	79	0.032
77	6.2	0.957	79	0.030
78	6.2	0.955	80	0.027
79	6.2	0.955	81	0.025
80	6.2	0.954	82	0.023
81	6.3	0.953	83	0.020
82	6.3	0.953	83	0.017
83	6.3	0.952	84	0.015
84	6.3	0.951	85	0.012
85	6.3	0.952	86	0.010
86	6.3	0.953	86	0.008
87	6.3	0.954	87	0.004
88	6.1	0.959	88	0.002
89	6.1	0.959	89	0.000

Next, to apply the life table, we modified it to take into account the change in foreclosure rates that would be expected for differing housing price appreciation rates associated with annual cohort as follows:

Let Y_i be the projected probability of foreclosure for loans with age of month i , X_i be the observed odds of foreclosure for loans with age of month i , then,

$$Y_i = \frac{\text{EXP}(\beta \times \Delta\text{HPA}_i) \times X_i}{1 + \text{EXP}(\beta \times \Delta\text{HPA}_i) \times X_i},$$

where

$$\Delta\text{HPA}_i = \frac{\text{HPA}_{i\text{projected}} - \text{HPA}_{i\text{observed}}}{\text{HPA}_{i\text{observed}}},$$

and β is the coefficient obtained from our robust regression model for the year 2000 cohort.

Expectations for housing price appreciation used to modify the life table are drawn first from the Office of Federal Housing Enterprise Oversight (OFHEO) housing price index and then pegged to the average annual housing price appreciation based on a five-year MSA-level forecast from Moody's Economy.Com in its report "Housing at the Tipping Point" (October 2006). Loans outside of MSA were assigned a housing price appreciation equal to the average of appreciation in the state's MSAs. Projections for 2005 and 2006 also assume that the proportion of loans within each state's MSA and non-MSA areas remained constant from 2004 to 2006.

The modified life table was then applied to the loans not prepaid or foreclosed as of May 2005 to project future totals at the loan level. We then sum the observed foreclosures and projected foreclosures derived from the life table at the loan level to the geography of interest (e.g., MSA, state, or national level).

Losses were estimated at the loan level by multiplying the probability of default for each loan by the expected loss on foreclosure. The expected loss on foreclosure was based on three factors: the cost to dispose of the property, transaction costs, and a discount to the property's fair market value occasioned by the general desire to prioritize reselling a foreclosed loan quickly. Following Calem and LaCour-Little,² it is assumed that it costs 10 percent of unpaid balance to dispose the property and 5 percent of unpaid balance for foreclosure transaction costs. According to Christopher L. Cagan, "Foreclosing lenders do not want to incur extended additional costs of insurance, taxes, and maintenance for their foreclosed properties. They want to resell these properties quickly and recoup some money through the resale. Thus, lenders typically accept sale prices reduced by a percentage that will be called the 'foreclosure discount.'"³ In our study, foreclosure discount is estimated by using a regression model developed by Pennington-Cross.⁴ We applied the findings from those authors' models in our estimation, and all independent variables are standardized to a zero-mean. The average of the estimated foreclosure discount for our data is higher than the average reported by Pennington-Cross, because our loans are all subprime, while his loans are prime loans oversampled toward higher interest loans. Pennington-Cross reported an average of 22 percent for a foreclosure discount. We standardized our estimate to this average. For all the loans observed foreclosed, equity loss is calculated directly. For loans projected to foreclose, we use the average age at foreclosure and associated balance at that age in the life table to project losses.

2 Paul S Calem and Michael LaCour-Little, Risk-Based Capital Requirements for Mortgage Loans, FEDS working paper 2001-60 (November 2001).

3 Christopher Cagan, *A Ripple Not a Tidal Wave: Foreclosure Prevalence and Foreclosure Discount*, First American Real Estate Solutions (November 16, 2006).

4 Anthony Pennington-Cross, *The Value of Foreclosed Property*, The Journal of Real Estate Research (April-June 2006).

The life table constructed here has limitations worth noting. Since only loans with more than 60 months' history are included in the life table and our observation data set ended in May 2005, only loans from 1998, 1999, and 2000 are included in the life table. Yet these cohorts are not identical to later years. For example, they have markedly fewer ARM and interest-only loans. Consequently, the life table constructed here will not fully capture the elevated risk posed by increased proportions of ARM loans, loans with an interest only feature, or by the growing acceptance on low and no documentation of income loans. We believe, based in part on Finding B and the descriptive statistics in Appendix 3, that these omissions tend to make our life tables conservative in that they tend to predict foreclosures based on a set of loans with features associated with lower risk of foreclosure.

We also note some limitations on the estimated losses associated with foreclosures. Our dataset does not provide a combined loan-to-value ratio that measures the total amount of debt on the secured property when borrowers hold both a first-lien mortgage and a subordinate lien. As a result, we cannot provide direct estimates of how much equity borrowers hold at the time their loans are terminated. This means that some unknown portion of the losses associated with foreclosures may exceed borrowers' net equity (down payment plus principal payments plus appreciation) at the time of foreclosure. In a number of jurisdictions, lenders who foreclose can pursue a deficiency judgment against borrowers to attempt to recover the amount of losses that exceed the available equity. However, we have no direct measurement of the proportion of foreclosures in which lenders pursue such judgments, and, consequently, throughout the report we qualify our loss estimates.

Finding A5.

The findings presented in Table 7 and Table 8 are straightforward attempts to develop expectations for cumulative foreclosure rates for borrowers who experience multiple subprime loan cycles. As detailed in the text and the referenced source, the assumptions underlying Table 7 are that (1) 60 percent of borrowers who refinance a subprime loan will receive another subprime loan; (2) using the 2005-2006 cumulative projected foreclosure rate 19.4 percent of loans are foreclosed; and (3) that these probabilities are constant for borrowers across multiple loans.

Finding B.

These MSA projections were made using the modified life table methodology discussed above for finding A4.

Finding C.

The findings presented in Table 9 are based on a series of proportional hazard models. In each model, our independent variables are a variable of interest (e.g., less than full documentation of income) and the borrower's credit score. The models are then developed as follows:

For a sample of n subprime loans, for each individual loan i , let t_i be the time of foreclosed or the time of censoring due to either prepaid or still outstanding as of May 2005, C_i be an indicator variable with a value of 1 if it is uncensored or a value of 0 if it is censored at t_i , x_i be a vector of k covariate values, and β be a vector of coefficients.

The ratio of the hazard of foreclosure for two loans i and j , is given by

$$\frac{h_i(t)}{h_j(t)} = \exp[\beta_1(x_{i1} - x_{j1}) + \dots + \beta_k(x_{ik} - x_{jk})]$$

The coefficients are estimated by maximizing the partial log likelihood, which is given by

$$\log PL = \sum_{i=1}^n C_i \left[\beta x_i - \log \left(\sum_{j=1}^n y_{ij} \exp(\beta x_j) \right) \right]$$

where

$$y_{ij} = \begin{cases} 1, & \text{if } t_j \geq t_i \\ 0, & \text{if } t_j < t_i \end{cases}$$

Appendix 3: Summary Statistics. Distribution of owner-occupied and 1st lien loans by year of origination in the proprietary dataset

(All figures are percentages except for last row in table.)

VARIABLE	Value	1998	1999	2000	2001	2002	2003	2004
PURPOSE	Purchase	30.45	31.55	38.47	35.21	32.84	32.09	39.50
	Refi (Cash Out)	47.03	51.85	49.65	52.06	52.55	53.70	50.80
	Refi (No Cash Out)	20.12	15.06	11.75	12.71	14.61	14.20	9.68
	Other	2.39	1.54	0.12	0.03	0.01	0.01	0.02
PROP_TYPE	SFR	84.15	84.95	82.18	81.74	80.05	78.86	76.12
	CONDO/Townhouse	4.46	4.30	4.66	4.82	5.40	5.97	6.89
	Else	0.94	0.38	0.27	0.31	0.13	0.07	0.06
	2+Units	3.69	3.83	4.10	3.76	4.45	4.54	4.39
	PUD	5.36	4.39	5.99	7.23	8.52	9.65	11.72
	Manufactured Hsng	1.40	2.15	2.81	2.14	1.45	0.91	0.83
PROD_TYPE	Fixed	59.64	46.61	39.91	42.08	37.61	39.35	25.29
	IO	0.02	0.05	0.32	0.30	1.66	5.74	19.64
	ARM	32.28	41.97	52.73	52.52	58.60	54.15	54.93
	Balloon	8.04	11.27	6.95	5.08	2.14	0.75	0.14
DOCUMENT	Full	67.04	75.08	74.06	69.91	65.58	61.92	59.04
	Else	32.96	24.92	25.94	30.09	34.42	38.08	40.96
PP_PEN	No	45.63	33.92	31.37	31.59	28.30	31.26	34.77
	Yes	54.37	66.08	68.63	68.41	71.70	68.74	65.23
PMI	No PMI	89.28	80.99	73.25	65.56	69.35	76.62	86.66
	PMI	10.72	19.01	26.75	34.44	30.65	23.38	13.34
JUMBO	Below	90.56	93.55	91.27	85.79	86.89	88.13	85.96
	Above	9.44	6.45	8.73	14.21	13.11	11.87	14.04
STEER	Else	86.11	88.30	90.09	87.26	86.40	85.17	84.61
	FICO>=660 and Full Doc	13.89	11.70	9.91	12.74	13.60	14.83	15.39
LTV	<65	14.70	12.71	11.27	10.72	11.11	12.16	10.72
	65-70	10.11	9.48	8.88	7.52	7.17	6.99	6.62
	71-75	13.94	12.65	11.25	9.82	9.25	8.50	8.16
	76-80	29.72	29.55	28.08	27.86	29.58	29.14	38.62
	81-85	12.67	14.78	13.84	13.96	12.47	10.28	8.74
	86-90	11.97	14.04	15.65	17.19	16.73	16.01	13.69
	91-95	2.53	2.97	4.84	6.85	7.75	9.06	7.93
	96-100	2.60	2.46	3.43	4.13	4.12	6.67	5.15
	>100	1.19	1.13	1.46	1.90	1.83	1.18	0.38
FICO	300-499	3.00	3.20	3.67	2.06	1.18	0.35	0.08
	500-549	13.78	17.10	19.85	16.46	14.77	12.25	11.48
	550-599	21.94	26.55	27.92	24.41	22.75	20.30	19.07
	600-649	22.03	25.37	24.85	26.24	26.82	27.52	26.74
	650-699	18.52	16.57	13.65	16.70	18.24	21.09	22.48
	700-850	20.51	11.21	10.07	14.13	16.23	18.48	20.15
REGION	FWST	21.65	17.86	18.22	22.82	26.88	29.59	31.38
	GLAK	17.10	19.63	19.04	17.41	15.44	13.81	12.75
	MEST	12.75	12.36	11.41	10.63	11.66	12.40	12.11
	NENG	3.90	4.41	4.42	4.57	5.03	5.55	4.96
	PLNS	5.23	5.62	6.02	5.98	5.88	5.24	4.66
	RKMT	5.99	4.73	4.44	4.67	4.38	3.77	3.88
	SEST	23.57	25.02	25.22	23.57	21.11	20.55	20.91
	SWST	9.80	10.38	11.24	10.36	9.63	9.09	9.35
TOTAL	Counts	429,025	513,434	449,401	587,942	866,019	1,405,931	2,172,465

Appendix 4: Projected Lifetime Foreclosure Rates by State for Subprime Loans Originated in 1998-2001 and 2006

State	Cumulative Projected Foreclosure Rate (%)	
	1998-2001	2006
Alaska	10.8	17.1
Alabama	16.2	16.5
Arkansas	16.4	18.8
Arizona	10.5	21.1
California	4.5	21.4
Colorado	13.2	19.6
Connecticut	8.2	13.9
District of Columbia	6.8	22.8
Delaware	9.2	14.5
Florida	10.1	16.9
Georgia	17.9	20.3
Hawaii	5.0	20.6
Iowa	16.5	18.5
Idaho	15.8	18.3
Illinois	13.3	19.2
Indiana	19.0	17.9
Kansas	15.3	19.9
Kentucky	16.4	18.9
Louisiana*	15.1	19.6
Massachusetts	5.6	17.6
Maryland	7.8	20.6
Maine	8.5	16.4
Michigan	14.4	18.1
Minnesota	10.0	20.0
Missouri	17.1	18.5
Mississippi*	18.6	18.3
Montana	12.5	18.3
North Carolina	15.5	17.5
North Dakota	15.4	17.8
Nebraska	16.2	18.3
New Hampshire	5.4	14.9
New Jersey	7.6	19.6
New Mexico	13.4	17.3
Nevada	11.5	23.7
New York	9.7	20.9
Ohio	16.2	18.1
Oklahoma	19.5	17.8
Oregon	14.3	19.6
Pennsylvania	11.2	17.1
Rhode Island	4.8	19.5
South Carolina	15.0	17.4
South Dakota	10.2	18.7
Tennessee	17.7	17.6
Texas	14.4	17.3
Utah	20.7	19.7
Virginia	8.3	20.9
Vermont	9.8	20.7
Washington	13.0	16.8
Wisconsin	12.6	19.6
West Virginia	14.3	19.2
Wyoming	10.1	17.5

* Our models do not account for the potential impact of Hurricane Katrina on foreclosure rates.

Appendix 5: Projected Lifetime Foreclosure Rates for 378 MSAs (Comparing 1998-2001 and 2006 Subprime Loans)

State	MSA	1998-2001 Loans	2006 Loans	Rank 2006	Change 1998-2001 to 2006	Rank by Change from 1998-2001 to 2006
Alabama	Anniston-Oxford, AL	12.5%	15.8%	299	27.1%	169
	Auburn-Opelika, AL	18.3%	17.6%	152	-3.7%	308
	Birmingham-Hoover, AL	15.2%	16.5%	258	8.8%	243
	Columbus, GA-AL	14.8%	17.0%	222	14.9%	210
	Decatur, AL	17.2%	14.9%	337	-13.3%	338
	Dothan, AL	21.2%	15.4%	321	-27.3%	371
	Florence-Muscle Shoals, AL	19.0%	14.0%	354	-26.3%	368
	Gadsden, AL	14.1%	15.8%	299	12.5%	224
	Huntsville, AL	15.4%	16.0%	293	3.5%	268
	Mobile, AL	15.4%	17.6%	152	14.4%	212
	Montgomery, AL	19.6%	16.9%	230	-13.6%	340
	Tuscaloosa, AL	13.9%	15.5%	315	11.3%	230
Alaska	Anchorage, AK	10.9%	17.1%	205	57.0%	103
	Fairbanks, AK	15.2%	16.7%	250	9.9%	236
Arizona	Flagstaff, AZ	6.9%	12.0%	368	75.4%	71
	Phoenix-Mesa-Scottsdale, AZ	9.9%	21.1%	26	113.5%	53
	Prescott, AZ	8.7%	19.6%	51	124.1%	48
	Tucson, AZ	9.3%	21.6%	19	132.4%	45
	Yuma, AZ	9.3%	16.7%	250	79.8%	68
Arkansas	Fayetteville-Springdale-Rogers, AR-MO	14.5%	18.4%	97	27.0%	170
	Fort Smith, AR-OK	21.5%	15.8%	299	-26.2%	367
	Hot Springs, AR	12.8%	17.1%	205	33.5%	150
	Jonesboro, AR	18.5%	15.2%	329	-18.2%	350
	Little Rock-North Little Rock, AR	15.4%	17.4%	182	12.9%	223
	Memphis, TN-MS-AR	18.9%	17.9%	129	-5.1%	312
	Pine Bluff, AR	15.0%	15.8%	299	5.7%	260
	Texarkana, TX-Texarkana, AR	19.6%	14.8%	339	-24.4%	364
California	Bakersfield, CA	9.3%	24.2%	2	159.8%	39
	Chico, CA	6.0%	20.2%	40	238.1%	25
	El Centro, CA	6.9%	13.5%	360	96.2%	62
	Fresno, CA	8.3%	23.5%	5	185.0%	36
	Hanford-Corcoran, CA	8.9%	17.6%	152	98.4%	61
	Los Angeles-Long Beach-Glendale, CA	6.0%	22.0%	15	268.5%	22
	Madera, CA	6.4%	20.9%	29	227.0%	28
	Merced, CA	6.4%	25.0%	1	288.6%	20
	Modesto, CA	5.9%	17.1%	205	189.4%	35
	Napa, CA	2.6%	16.4%	267	526.5%	5
	Oakland-Fremont-Hayward, CA	4.6%	21.3%	24	358.9%	11
	Oxnard-Thousand Oaks-Ventura, CA	3.2%	17.6%	152	453.1%	7
	Redding, CA	8.7%	19.7%	47	127.4%	46
	Riverside-San Bernardino-Ontario, CA	7.0%	22.6%	11	224.0%	29
	Sacramento-Arden-Arcade-Roseville, CA	4.8%	21.0%	28	338.5%	14
	Salinas, CA	4.0%	20.4%	34	413.1%	9
	San Diego-Carlsbad-San Marcos, CA	3.2%	21.4%	21	567.4%	3
	San Francisco-San Mateo-Redwood City, CA	3.0%	16.7%	250	462.1%	6
	San Jose-Sunnyvale-Santa Clara, CA	4.3%	19.3%	60	352.3%	13
	San Luis Obispo-Paso Robles, CA	2.6%	13.6%	359	415.6%	8
	Santa Ana-Anaheim-Irvine, CA	3.0%	22.8%	9	668.3%	1

State	MSA	1998-2001 Loans	2006 Loans	Rank 2006	Change 1998-2001 to 2006	Rank by Change from 1998- 2001 to 2006
	Santa Barbara-Santa Maria, CA	2.8%	19.6%	51	595.5%	2
	Santa Cruz-Watsonville, CA	3.2%	14.5%	347	356.3%	12
	Santa Rosa-Petaluma, CA	3.4%	21.1%	26	526.9%	4
	Stockton, CA	6.7%	23.4%	7	249.8%	24
	Vallejo-Fairfield, CA	4.7%	23.8%	3	404.9%	10
	Visalia-Porterville, CA	10.8%	22.2%	13	105.9%	55
	Yuba City, CA	8.0%	17.6%	152	120.1%	50
Colorado	Boulder, CO	6.6%	16.8%	238	153.4%	42
	Colorado Springs, CO	11.4%	18.4%	97	61.5%	98
	Denver-Aurora, CO	10.3%	20.6%	30	100.0%	60
	Fort Collins-Loveland, CO	7.0%	15.8%	299	127.0%	47
	Grand Junction, CO	8.9%	19.2%	63	116.7%	51
	Greeley, CO	10.4%	19.5%	57	87.7%	66
	Pueblo, CO	16.4%	17.5%	165	6.9%	255
Connecticut	Bridgeport-Stamford-Norwalk, CT	6.7%	10.5%	377	56.4%	104
	Hartford-West Hartford-East Hartford, CT	10.0%	14.2%	352	42.1%	131
	New Haven-Milford, CT	12.1%	16.0%	293	31.6%	154
	Norwich-New London, CT	10.2%	15.1%	332	47.6%	122
Delaware	Dover, DE	11.8%	17.6%	152	49.1%	118
	Wilmington, DE-MD-NJ	10.9%	14.1%	353	28.7%	165
D.C.	Washington-Arlington-Alexandria, DC-VA-MD-WV	8.2%	22.8%	9	177.9%	38
Florida	Cape Coral-Fort Myers, FL	13.3%	14.4%	349	8.3%	245
	Deltona-Daytona Beach-Ormond Beach, FL	12.4%	15.4%	321	24.1%	179
	Fort Lauderdale-Pompano Beach-Deerfield Beach, FL	9.5%	17.9%	129	88.4%	64
	Fort Walton Beach-Crestview-Destin, FL	10.8%	15.6%	310	44.5%	127
	Gainesville, FL	11.3%	18.0%	122	60.1%	99
	Jacksonville, FL	15.8%	16.1%	287	1.8%	278
	Lakeland, FL	16.8%	10.9%	375	-35.1%	375
	Miami-Miami Beach-Kendall, FL	12.0%	19.6%	51	63.5%	94
	Naples-Marco Island, FL	7.5%	13.2%	364	74.9%	73
	Ocala, FL	13.2%	17.0%	222	28.9%	164
	Orlando-Kissimmee, FL	12.2%	18.8%	80	54.6%	108
	Palm Bay-Melbourne-Titusville, FL	11.6%	16.4%	267	42.0%	132
	Panama City-Lynn Haven, FL	15.6%	9.9%	378	-36.6%	377
	Pensacola-Ferry Pass-Brent, FL	16.0%	14.0%	354	-12.8%	336
	Port St. Lucie-Fort Pierce, FL	9.8%	11.5%	373	16.9%	199
	Punta Gorda, FL	12.4%	15.3%	325	23.6%	182
	Sarasota-Bradenton-Venice, FL	8.9%	15.6%	310	75.1%	72
	Tallahassee, FL	13.4%	14.0%	354	4.1%	266
	Tampa-St. Petersburg-Clearwater, FL	12.4%	16.8%	238	35.6%	148
	West Palm Beach-Boca Raton-Boynton Beach, FL	8.5%	14.4%	349	68.8%	82
Georgia	Albany, GA	15.9%	16.1%	287	0.8%	281
	Athens-Clarke County, GA	11.8%	17.3%	192	45.8%	125
	Atlanta-Sandy Springs-Marietta, GA	15.1%	16.2%	283	7.4%	252
	Augusta-Richmond County, GA-SC	17.0%	16.7%	250	-1.9%	297
	Brunswick, GA	14.4%	16.3%	277	13.5%	218
	Chattanooga, TN-GA	17.4%	18.1%	112	4.2%	265
	Columbus, GA-AL	14.8%	17.0%	222	14.9%	210
	Dalton, GA	16.6%	18.0%	122	8.8%	244
	Gainesville, GA	11.4%	19.1%	69	67.3%	86

State	MSA	1998-2001 Loans	2006 Loans	Rank 2006	Change 1998-2001 to 2006	Rank by Change from 1998- 2001 to 2006
	Hinesville-Fort Stewart, GA	17.1%	18.3%	104	6.7%	256
	Macon, GA	18.8%	16.5%	258	-11.9%	330
	Rome, GA	18.3%	16.3%	277	-10.9%	327
	Savannah, GA	12.2%	18.7%	84	53.0%	110
	Valdosta, GA	22.7%	16.5%	258	-27.1%	370
	Warner Robins, GA	15.3%	17.1%	205	12.1%	225
Hawaii	Honolulu, HI	7.9%	20.6%	30	158.9%	41
Idaho	Boise City-Nampa, ID	17.2%	18.5%	90	8.0%	248
	Coeur d'Alene, ID	16.4%	17.9%	129	9.1%	240
	Idaho Falls, ID	17.1%	17.1%	205	0.5%	282
	Lewiston, ID-WA	23.3%	19.6%	51	-16.0%	347
	Logan, UT-ID	16.9%	17.1%	205	1.4%	280
	Pocatello, ID	22.6%	16.9%	230	-25.1%	366
Illinois	Bloomington-Normal, IL	13.4%	18.8%	80	40.0%	136
	Champaign-Urbana, IL	15.4%	21.3%	24	38.4%	140
	Chicago-Naperville-Joliet, IL	14.0%	19.2%	63	37.0%	144
	Danville, IL	18.1%	18.0%	122	-0.5%	288
	Davenport-Moline-Rock Island, IA-IL	16.1%	18.9%	75	17.8%	195
	Decatur, IL	22.3%	16.0%	293	-28.6%	373
	Kankakee-Bradley, IL	25.5%	20.4%	34	-19.7%	355
	Peoria, IL	21.8%	18.8%	80	-13.8%	341
	Rockford, IL	18.2%	21.4%	21	17.5%	196
	Springfield, IL	19.0%	18.7%	84	-1.8%	296
	St. Louis, MO-IL	17.4%	17.5%	165	0.5%	283
Indiana	Anderson, IN	24.1%	18.1%	112	-24.7%	365
	Bloomington, IN	16.5%	17.1%	205	3.7%	267
	Cincinnati-Middletown, OH-KY-IN	16.1%	17.4%	182	8.2%	246
	Columbus, IN	16.7%	17.1%	205	2.8%	272
	Elkhart-Goshen, IN	18.2%	18.7%	84	2.6%	274
	Evansville, IN-KY	21.0%	17.6%	152	-15.8%	346
	Fort Wayne, IN	21.7%	17.4%	182	-19.9%	357
	Gary, IN	16.6%	17.9%	129	8.0%	247
	Indianapolis-Carmel, IN	22.1%	16.9%	230	-23.6%	363
	Kokomo, IN	17.1%	19.1%	69	11.5%	229
	Lafayette, IN	17.9%	17.4%	182	-2.7%	301
	Louisville-Jefferson County, KY-IN	16.3%	18.5%	90	13.9%	215
	Michigan City-La Porte, IN	14.6%	18.5%	90	26.8%	171
	Muncie, IN	19.5%	17.9%	129	-8.0%	321
	South Bend-Mishawaka, IN-MI	20.5%	16.7%	250	-18.8%	352
	Terre Haute, IN	21.4%	17.5%	165	-18.2%	351
Iowa	Ames, IA	11.1%	17.5%	165	58.1%	101
	Cedar Rapids, IA	15.4%	17.8%	141	15.2%	207
	Davenport-Moline-Rock Island, IA-IL	16.1%	18.9%	75	17.8%	195
	Moines-West Des Moines, IA	14.6%	18.9%	75	29.9%	157
	Dubuque, IA	15.0%	16.7%	250	11.0%	231
	Iowa City, IA	15.5%	18.1%	112	17.2%	197
	Omaha-Council Bluffs, NE-IA	15.3%	17.5%	165	14.1%	213
	Waterloo-Cedar Falls, IA	18.4%	17.9%	129	-2.9%	303
Kansas	Kansas City, MO-KS	16.0%	18.7%	84	16.9%	198
	Lawrence, KS	10.7%	18.7%	84	74.9%	74

State	MSA	1998-2001 Loans	2006 Loans	Rank 2006	Change 1998-2001 to 2006	Rank by Change from 1998- 2001 to 2006
	St. Joseph, MO-KS	17.6%	18.1%	112	3.1%	270
	Topeka, KS	14.1%	18.3%	104	29.4%	161
	Wichita, KS	17.7%	17.8%	141	0.1%	286
Kentucky	Bowling Green, KY	22.3%	15.8%	299	-29.0%	374
	Cincinnati-Middletown, OH-KY-IN	16.1%	17.4%	182	8.2%	246
	Clarksville, TN-KY	20.1%	17.1%	205	-14.9%	344
	Elizabethtown, KY	15.9%	17.5%	165	10.5%	234
	Evansville, IN-KY	21.0%	17.6%	152	-15.8%	346
	Huntington-Ashland, WV-KY-OH	15.1%	16.3%	277	8.0%	249
	Lexington-Fayette, KY	13.5%	19.6%	51	44.8%	126
	Louisville-Jefferson County, KY-IN	16.3%	18.5%	90	13.9%	215
	Owensboro, KY	15.9%	16.8%	238	5.9%	259
Louisiana*	Alexandria, LA	18.8%	15.1%	332	-19.9%	356
	Baton Rouge, LA	17.4%	18.5%	90	6.4%	257
	Houma-Bayou Cane-Thibodaux, LA	16.8%	16.0%	293	-4.9%	310
	Lafayette, LA	14.9%	16.8%	238	13.0%	222
	Lake Charles, LA	16.8%	14.6%	345	-13.2%	337
	Monroe, LA	13.5%	15.4%	321	13.7%	216
	New Orleans-Metairie-Kenner, LA	14.7%	21.6%	19	47.1%	124
	Shreveport-Bossier City, LA	17.8%	17.3%	192	-3.1%	304
Maine	Bangor, ME	17.1%	13.3%	362	-22.5%	361
	Lewiston-Auburn, ME	13.6%	13.5%	360	-0.9%	291
	Portland-South Portland-Biddeford, ME	6.8%	17.8%	141	159.8%	40
Maryland	Baltimore-Towson, MD	12.8%	19.3%	60	50.5%	116
	Bethesda-Gaithersburg-Frederick, MD	5.1%	20.4%	34	297.4%	17
	Cumberland, MD-WV	12.4%	10.9%	375	-12.0%	333
	Hagerstown-Martinsburg, MD-WV	12.4%	20.6%	30	66.5%	91
	Salisbury, MD	17.7%	14.7%	343	-16.6%	349
	Wilmington, DE-MD-NJ	10.9%	14.1%	353	28.7%	165
Massachusetts	Barnstable Town, MA	4.8%	19.9%	46	313.0%	15
	Boston-Quincy, MA	5.2%	18.5%	90	257.9%	23
	Cambridge-Newton-Framingham, MA	4.2%	16.5%	258	291.0%	18
	Essex County, MA	4.3%	16.9%	230	289.1%	19
	Pittsfield, MA	12.7%	12.0%	368	-5.5%	314
	Providence-New Bedford-Fall River, RI-MA	6.7%	19.5%	57	190.8%	34
	Springfield, MA	15.1%	15.4%	321	1.6%	279
	Worcester, MA	6.1%	17.3%	192	181.1%	37
Michigan	Ann Arbor, MI	9.7%	19.6%	51	101.8%	57
	Battle Creek, MI	15.5%	19.2%	63	23.6%	181
	Bay City, MI	16.4%	18.9%	75	15.3%	206
	Detroit-Livonia-Dearborn, MI	16.9%	17.8%	141	5.4%	261
	Flint, MI	18.9%	19.7%	47	4.3%	264
	Grand Rapids-Wyoming, MI	14.2%	17.8%	141	25.5%	175
	Holland-Grand Haven, MI	11.4%	19.2%	63	67.8%	85
	Jackson, MI	15.9%	20.0%	45	25.9%	173
	Kalamazoo-Portage, MI	15.2%	17.5%	165	15.0%	209
	Lansing-East Lansing, MI	13.5%	20.6%	30	51.8%	114
	Monroe, MI	12.4%	20.2%	40	62.6%	96
	Muskegon-Norton Shores, MI	18.8%	17.4%	182	-7.4%	319
	Niles-Benton Harbor, MI	15.8%	15.7%	307	-0.7%	290

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	Saginaw-Saginaw Township North, MI	17.4%	22.0%	15	26.7%	172
	South Bend-Mishawaka, IN-MI	20.5%	16.7%	250	-18.8%	352
	Warren-Troy-Farmington Hills, MI	10.5%	17.5%	165	66.3%	92
Minnesota	Duluth, MN-WI	12.9%	16.2%	283	25.8%	174
	Fargo, ND-MN	10.6%	17.9%	129	68.5%	83
	Grand Forks, ND-MN	13.6%	17.5%	165	29.1%	162
	La Crosse, WI-MN	18.6%	18.9%	75	1.9%	277
	Minneapolis-St. Paul-Bloomington, MN-WI	10.0%	20.2%	40	100.6%	58
	Rochester, MN	11.2%	18.3%	104	63.1%	95
	St. Cloud, MN	12.4%	18.4%	97	48.0%	121
Mississippi*	Gulfport-Biloxi, MS	17.8%	20.2%	40	13.4%	219
	Hattiesburg, MS	15.4%	16.4%	267	6.4%	258
	Jackson, MS	19.2%	18.0%	122	-6.2%	318
	Memphis, TN-MS-AR	18.9%	17.9%	129	-5.1%	312
	Pascagoula, MS	17.2%	18.0%	122	5.1%	262
Missouri	Columbia, MO	17.6%	18.1%	112	3.2%	269
	Fayetteville-Springdale-Rogers, AR-MO	14.5%	18.4%	97	27.0%	170
	Jefferson City, MO	17.3%	16.8%	238	-3.3%	306
	Joplin, MO	21.8%	17.5%	165	-19.6%	354
	Kansas City, MO-KS	16.0%	18.7%	84	16.9%	198
	Springfield, MO	20.6%	17.1%	205	-16.6%	348
	St. Joseph, MO-KS	17.6%	18.1%	112	3.1%	270
	St. Louis, MO-IL	17.4%	17.5%	165	0.5%	283
Montana	Billings, MT	11.4%	17.4%	182	53.2%	109
	Great Falls, MT	12.9%	16.1%	287	24.7%	178
	Missoula, MT	11.0%	17.1%	205	55.9%	106
Nebraska	Lincoln, NE	14.0%	18.7%	84	33.0%	151
	Omaha-Council Bluffs, NE-IA	15.3%	17.5%	165	14.1%	213
	Sioux City, IA-NE-SD	20.2%	17.4%	182	-13.9%	342
Nevada	Carson City, NV	5.6%	22.5%	12	298.5%	16
	Las Vegas-Paradise, NV	14.2%	23.7%	4	66.7%	89
	Reno-Sparks, NV	6.1%	23.2%	8	279.8%	21
New Hampshire	Manchester-Nashua, NH	4.9%	14.3%	351	192.1%	33
	Rockingham County-Strafford County, NH	4.7%	15.6%	310	234.2%	26
New Jersey	Allentown-Bethlehem-Easton, PA-NJ	12.2%	20.4%	34	66.8%	88
	Atlantic City, NJ	10.0%	22.2%	13	122.0%	49
	Camden, NJ	9.8%	16.8%	238	71.7%	79
	Edison, NJ	6.5%	21.4%	21	230.9%	27
	White Plains-Wayne, NY-NJ	8.7%	21.7%	18	148.4%	44
	Newark-Union, NJ-PA	10.5%	18.3%	104	73.5%	77
	Ocean City, NJ	7.8%	23.5%	5	202.1%	32
	Trenton-Ewing, NJ	11.6%	15.3%	325	31.7%	153
	Vineland-Millville-Bridgeton, NJ	13.0%	15.2%	329	16.6%	200
	Wilmington, DE-MD-NJ	10.9%	14.1%	353	28.7%	165
New Mexico	Albuquerque, NM	15.2%	17.3%	192	13.3%	220
	Farmington, NM	10.9%	17.0%	222	55.6%	107
	Las Cruces, NM	10.4%	16.9%	230	61.8%	97
	Santa Fe, NM	9.7%	17.3%	192	77.4%	70
New York	Albany-Schenectady-Troy, NY	13.5%	17.4%	182	28.5%	166
	Binghamton, NY	13.1%	15.7%	307	19.7%	190

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	Buffalo-Niagara Falls, NY	17.5%	15.6%	310	-11.0%	328
	Elmira, NY	17.9%	15.5%	315	-13.4%	339
	Glens Falls, NY	12.3%	11.6%	371	-5.6%	315
	Ithaca, NY	11.6%	17.8%	141	52.8%	111
	Kingston, NY	9.2%	17.5%	165	89.6%	63
	Nassau-Suffolk, NY	7.2%	22.0%	15	204.4%	31
	New York-White Plains-Wayne, NY-NJ	8.7%	21.7%	18	148.4%	44
	Poughkeepsie-Newburgh-Middletown, NY	8.1%	17.1%	205	111.2%	54
	Rochester, NY	16.5%	16.9%	230	2.3%	275
	Syracuse, NY	15.3%	16.4%	267	7.1%	253
	Utica-Rome, NY	15.5%	14.6%	345	-5.6%	316
North Carolina	Asheville, NC	12.5%	17.6%	152	41.4%	135
	Burlington, NC	12.1%	17.1%	205	41.6%	134
	Charlotte-Gastonia-Concord, NC-SC	15.3%	18.4%	97	20.1%	188
	Durham, NC	13.2%	16.8%	238	27.3%	168
	Fayetteville, NC	17.7%	15.5%	315	-12.5%	334
	Goldsboro, NC	14.1%	15.5%	315	9.7%	238
	Greensboro-High Point, NC	14.1%	17.5%	165	23.8%	180
	Greenville, NC	13.5%	16.1%	287	18.9%	192
	Hickory-Lenoir-Morganton, NC	16.5%	17.6%	152	7.1%	254
	Jacksonville, NC	10.6%	15.7%	307	48.1%	120
	Raleigh-Cary, NC	14.1%	17.3%	192	22.8%	185
	Rocky Mount, NC	16.2%	16.3%	277	0.4%	284
	Virginia Beach-Norfolk-Newport News, VA-NC	13.0%	18.0%	122	38.8%	139
	Wilmington, NC	15.3%	16.8%	238	9.9%	235
	Winston-Salem, NC	14.8%	16.9%	230	14.0%	214
North Dakota	Bismarck, ND	11.9%	17.5%	165	47.5%	123
	Fargo, ND-MN	10.6%	17.9%	129	68.5%	83
	Grand Forks, ND-MN	13.6%	17.5%	165	29.1%	162
Ohio	Akron, OH	17.6%	17.3%	192	-1.7%	295
	Canton-Massillon, OH	17.5%	17.1%	205	-2.2%	300
	Cleveland-Elyria-Mentor, OH	15.6%	17.0%	222	9.3%	239
	Columbus, OH	15.8%	17.6%	152	11.5%	228
	Dayton, OH	18.8%	17.8%	141	-5.4%	313
	Huntington-Ashland, WV-KY-OH	15.1%	16.3%	277	8.0%	249
	Lima, OH	22.9%	17.5%	165	-23.3%	362
	Mansfield, OH	16.4%	18.4%	97	12.1%	226
	Parkersburg-Marietta-Vienna, WV-OH	13.3%	15.3%	325	15.1%	208
	Sandusky, OH	17.0%	15.3%	325	-10.1%	326
	Springfield, OH	19.8%	17.3%	192	-12.8%	335
	Toledo, OH	16.9%	18.1%	112	7.6%	251
	Weirton-Steubenville, WV-OH	14.6%	18.3%	104	24.8%	177
	Wheeling, WV-OH	16.6%	16.1%	287	-3.2%	305
	Youngstown-Warren-Boardman, OH-PA	17.6%	16.2%	283	-8.1%	322
Oklahoma	Fort Smith, AR-OK	21.5%	15.8%	299	-26.2%	367
	Lawton, OK	26.7%	16.8%	238	-37.1%	378
	Oklahoma City, OK	16.1%	18.3%	104	13.7%	217
	Tulsa, OK	18.2%	17.3%	192	-4.9%	311
Oregon	Bend, OR	8.7%	14.8%	339	71.1%	80
	Corvallis, OR	16.2%	16.2%	283	0.0%	287

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	Eugene-Springfield, OR	16.2%	18.8%	80	15.7%	204
	Medford, OR	7.6%	19.2%	63	151.0%	43
	Portland-Vancouver-Beaverton, OR-WA	14.9%	20.4%	34	36.7%	146
	Salem, OR	16.9%	18.5%	90	9.8%	237
Pennsylvania	Allentown-Bethlehem-Easton, PA-NJ	12.2%	20.4%	34	66.8%	88
	Altoona, PA	9.2%	16.0%	293	74.0%	75
	Erie, PA	9.3%	15.5%	315	67.0%	87
	Harrisburg-Carlisle, PA	12.6%	18.1%	112	43.8%	129
	Johnstown, PA	12.2%	15.1%	332	23.5%	183
	Lancaster, PA	11.1%	19.3%	60	73.6%	76
	Lebanon, PA	12.3%	17.8%	141	44.3%	128
	Newark-Union, NJ-PA	10.5%	18.3%	104	73.5%	77
	Philadelphia, PA	10.1%	16.7%	250	65.3%	93
	Pittsburgh, PA	11.8%	16.3%	277	38.4%	142
	Reading, PA	14.7%	19.1%	69	30.1%	156
	Scranton-Wilkes-Barre, PA	12.7%	16.4%	267	29.5%	159
	State College, PA	9.0%	16.8%	238	86.4%	67
	Williamsport, PA	14.7%	14.5%	347	-1.3%	293
	York-Hanover, PA	11.4%	19.1%	69	66.6%	90
	Youngstown-Warren-Boardman, OH-PA	17.6%	16.2%	283	-8.1%	322
Rhode Island	Providence-New Bedford-Fall River, RI-MA	6.7%	19.5%	57	190.8%	34
South Carolina	Anderson, SC	23.0%	17.9%	129	-22.3%	360
	Augusta-Richmond County, GA-SC	17.0%	16.7%	250	-1.9%	297
	Charleston-North Charleston, SC	10.9%	18.3%	104	68.0%	84
	Charlotte-Gastonia-Concord, NC-SC	15.3%	18.4%	97	20.1%	188
	Columbia, SC	15.1%	17.50%	165	16.2%	201
	Florence, SC	16.2%	16.7%	250	2.7%	273
	Greenville, SC	17.9%	17.8%	141	-0.6%	289
	Myrtle Beach-Conway-North Myrtle Beach, SC	12.8%	12.7%	366	-0.9%	292
	Spartanburg, SC	19.7%	18.5%	90	-5.8%	317
	Sumter, SC	19.6%	17.3%	192	-11.9%	331
South Dakota	Rapid City, SD	8.8%	18.0%	122	104.5%	56
	Sioux City, IA-NE-SD	20.2%	17.4%	182	-13.9%	342
	Sioux Falls, SD	13.6%	18.9%	75	39.0%	138
Tennessee	Chattanooga, TN-GA	17.4%	18.1%	112	4.2%	265
	Clarksville, TN-KY	20.1%	17.1%	205	-14.9%	344
	Cleveland, TN	18.6%	17.1%	205	-7.7%	320
	Jackson, TN	16.7%	16.3%	277	-2.1%	298
	Johnson City, TN	15.5%	17.5%	165	13.3%	221
	Kingsport-Bristol-Bristol, TN-VA	17.4%	17.9%	129	2.9%	271
	Knoxville, TN	16.2%	19.1%	69	17.9%	194
	Morristown, TN	17.2%	16.5%	258	-3.8%	309
	Nashville-Davidson-Murfreesboro, TN	15.4%	17.0%	222	10.6%	232
Texas	Abilene, TX	21.9%	16.0%	293	-27.0%	369
	Amarillo, TX	13.9%	17.8%	141	27.7%	167
	Austin-Round Rock, TX	10.8%	17.0%	222	58.2%	100
	Beaumont-Port Arthur, TX	17.1%	17.9%	129	4.7%	263
	Brownsville-Harlingen, TX	12.5%	12.5%	367	0.2%	285
	College Station-Bryan, TX	13.1%	15.2%	329	15.9%	202

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	Corpus Christi, TX	10.9%	16.4%	267	50.9%	115
	Dallas-Plano-Irving, TX	12.8%	16.9%	230	32.2%	152
	El Paso, TX	10.7%	15.8%	299	48.3%	119
	Fort Worth-Arlington, TX	13.6%	16.8%	238	23.2%	184
	Houston-Sugar Land-Baytown, TX	12.6%	17.6%	152	39.8%	137
	Killeen-Temple-Fort Hood, TX	13.0%	15.8%	299	21.6%	187
	Laredo, TX	11.9%	13.0%	365	8.9%	242
	Longview, TX	11.3%	14.8%	339	31.5%	155
	Lubbock, TX	10.4%	16.4%	267	57.3%	102
	McAllen-Edinburg-Mission, TX	13.7%	11.6%	371	-15.3%	345
	Midland, TX	14.2%	16.4%	267	15.9%	203
	Odessa, TX	18.1%	16.4%	267	-9.4%	324
	San Angelo, TX	19.3%	16.4%	267	-14.7%	343
	San Antonio, TX	13.5%	17.4%	182	29.0%	163
	Sherman-Denison, TX	14.3%	16.5%	258	15.4%	205
	Tyler, TX	13.2%	16.1%	287	22.1%	186
	Victoria, TX	16.4%	13.3%	362	-18.9%	353
	Waco, TX	14.3%	17.1%	205	19.8%	189
	Wichita Falls, TX	17.7%	15.6%	310	-12.0%	332
Utah	Logan, UT-ID	16.9%	17.1%	205	1.4%	280
	Ogden-Clearfield, UT	22.9%	17.9%	129	-22.0%	359
	Provo-Orem, UT	16.5%	18.4%	97	11.6%	227
	Salt Lake City, UT	19.0%	17.4%	182	-8.3%	323
	St. George, UT	20.0%	19.7%	47	-1.3%	294
Vermont	Burlington-South Burlington, VT	8.0%	15.1%	332	87.8%	65
Virginia	Blacksburg-Christiansburg-Radford, VA	12.0%	17.0%	222	42.4%	130
	Charlottesville, VA	5.6%	18.1%	112	223.1%	30
	Danville, VA	17.2%	17.5%	165	2.0%	276
	Harrisonburg, VA	13.5%	18.1%	112	34.8%	149
	Kingsport-Bristol-Bristol, TN-VA	17.4%	17.9%	129	2.9%	271
	Lynchburg, VA	12.7%	17.3%	192	35.7%	147
	Richmond, VA	11.6%	20.2%	40	73.0%	78
	Roanoke, VA	14.4%	16.5%	258	14.8%	211
	Virginia Beach-Norfolk-Newport News, VA-NC	13.0%	18.0%	122	38.8%	139
	Winchester, VA-WV	8.0%	17.1%	205	115.1%	52
Washington	Bellingham, WA	15.1%	14.7%	343	-2.2%	299
	Bremerton-Silverdale, WA	12.8%	16.5%	258	29.4%	160
	Kennewick-Richland-Pasco, WA	11.4%	14.8%	339	29.9%	158
	Lewiston, ID-WA	23.3%	19.6%	51	-16.0%	347
	Longview, WA	21.1%	13.7%	358	-35.2%	376
	Mount Vernon-Anacortes, WA	15.6%	13.9%	357	-11.1%	329
	Olympia, WA	14.2%	15.5%	315	9.1%	241
	Portland-Vancouver-Beaverton, OR-WA	14.9%	20.4%	34	36.7%	146
	Seattle-Bellevue-Everett, WA	11.0%	16.8%	238	52.0%	112
	Spokane, WA	19.1%	17.3%	192	-9.5%	325
	Tacoma, WA	17.0%	16.5%	258	-2.7%	302
	Wenatchee, WA	14.4%	11.3%	374	-21.3%	358
	Yakima, WA	16.8%	12.0%	368	-28.2%	372
West Virginia	Charleston, WV	13.9%	15.1%	332	7.90%	250
	Cumberland, MD-WV	12.4%	10.9%	375	-12.0%	333

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	Hagerstown-Martinsburg, MD-WV	12.4%	20.6%	30	66.5%	91
	Huntington-Ashland, WV-KY-OH	15.1%	16.3%	277	8.0%	249
	Morgantown, WV	15.4%	14.9%	337	-3.3%	307
	Parkersburg-Marietta-Vienna, WV-OH	13.3%	15.3%	325	15.1%	20
	Washington-Arlington-Alexandria, DC-VA-MD-WV	8.2%	22.8%	9	177.9%	38
	Weirton-Steubenville, WV-OH	14.6%	18.3%	104	24.8%	177
	Wheeling, WV-OH	16.6%	16.1%	287	-3.2%	305
	Winchester, VA-WV	8.0%	17.1%	205	115.1%	52
Wisconsin	Appleton, WI	12.9%	17.8%	141	37.3%	143
	Duluth, MN-WI	12.9%	16.2%	283	25.8%	174
	Eau Claire, WI	15.5%	18.4%	97	18.9%	193
	Fond du Lac, WI	13.3%	18.1%	112	36.9%	145
	Green Bay, WI	12.0%	17.0%	222	41.8%	133
	Janesville, WI	17.2%	19.1%	69	10.6%	233
	La Crosse, WI-MN	18.6%	18.9%	75	1.9%	277
	Lake County-Kenosha County, IL-WI	11.3%	19.2%	63	70.6%	81
	Madison, WI	12.7%	19.7%	47	55.9%	105
	Milwaukee-Waukesha-West Allis, WI	13.5%	20.4%	34	51.8%	113
	Minneapolis-St. Paul-Bloomington, MN-WI	10.0%	20.2%	40	100.6%	58
	Oshkosh-Neenah, WI	14.3%	17.9%	129	25.1%	176
	Racine, WI	14.1%	19.5%	57	38.4%	141
	Sheboygan, WI	12.2%	18.3%	104	49.8%	117
	Wausau, WI	14.8%	17.6%	152	19.0%	191
Wyoming	Casper, WY	9.6%	17.3%	192	79.3%	69
	Cheyenne, WY	8.8%	17.6%	152	100.3%	59

* Our models do not account for the potential impact of Hurricane Katrina on foreclosure rates.