The Foreclosure Crisis: Did Wall Street Practice Predatory Lending or Did Households Overreach?

Kathy Fogel
KFogel@walton.uark.edu

Liping Ma
LMa@walton.uark.edu

Wayne Y. Lee
WLee@walton.uark.edu

Deena Rorie
DRorie@walton.uark.edu

Timothy J. Yeager*
TYeager@walton.uark.edu

April 2010

*Corresponding author. All authors are with the Department of Finance, Sam M. Walton College of Business, University of Arkansas. We are grateful to Acxiom Corporation for providing us with the household datasets, to The Gadberry Group for assistance in delivering the data in a manageable format, and to RealtyTrac for providing their foreclosure database. Finally, we thank our Tech Center, especially Sandy Kizer, Will Allred, and Rhys Dixon for their diligent efforts in managing these large databases.

I. Introduction and Executive Summary

A myriad of government programs, low interest rates, and a strong economy helped boost the homeownership rate in the United States from 65.7% in 1997 to a peak of 69% in 2005.[1] Over this same time period, home prices rose sharply throughout much of the country. The Federal Housing Finance Agency (FHFA) Price Index and the S&P/Case-Shiller 10-City Price Index exhibit rapid price appreciation between 1997 and 2007.[2] The FHFA index, which includes prime mortgages securitized by Fannie Mae and Freddie Mac, increased by 86% over the decade, or 6.4% annually. The Case-Shiller index, which includes subprime mortgages as well, increased 156% over the decade, or 9.8% annually.

Millions of homes were financed with subprime mortgages to high-risk borrowers. With rising home prices, borrowers who fell behind in payments could either refinance or sell their homes at a profit and pay the lender in full. When home prices peaked in 2006, the strategy of relying on home price appreciation to obscure the weak creditworthiness of borrowers failed. Households began to default in large numbers in 2007. More than two million homes entered foreclosure in 2007 and 2008. These foreclosures damaged not only the households themselves but also Wall Street financial institutions that originated and packaged the loans. The events triggered the most serious financial crisis since the Great Depression with unemployment rates surpassing 10% by late 2009.

We advance two hypotheses for the large number of mortgage foreclosures in 2008. In the "predatory lending" hypothesis, unscrupulous brokers and greedy Wall Street banks took advantage of the most vulnerable households. Targeted households did not understand the risks imbedded in complex mortgage products. Once the mortgage was booked and sold, Wall Street banks retained the profits and risks were transferred to third parties through asset securitizations.

[1]U.S. Census Bureau, Housing Vacancies and Homeownership historical tables. See http://www.census.gov/hhes/www/housing/hvs/hvs.html.
[2]See http://www.fhfa.gov and http://www.standardandpoors.com.

In the "overreaching" hypothesis, households simply went too far in purchasing homes they could not afford. As home prices continued to rise rapidly each year, many potential homeowners worried that they may never be able to afford a home if they did not purchase one soon. Others wanted a nice home, but given the inflation in home prices, could no longer afford homes of the quality they came to expect. Wall Street offered a creative solution: households with marginal creditworthiness could purchase a (larger) home by qualifying for payments with low fixed teaser rates and little or no down payment. The overreaching hypothesis does not vindicate Wall Street banks. Rather, it simply argues that banks made high-risk home loans to many types of households without explicitly targeting the most vulnerable.

These competing hypotheses are, of course, not mutually exclusive. Households can overreach, and at the same time, be victims of predatory lending by banks. But household motives are nearly impossible to discern. Even an ex-post survey of household perceptions of the mortgage contract is problematic because households have incentives to claim deceitful practices by lenders after the fact.

Instead, we analyze the household characteristics and geographic patterns of mortgage forecolosures to distinguish between the predatory lending and overreaching hypotheses. On the one hand, borrowers' understanding of the contract terms at the time of origination is critical to the predatory lending hypothesis. We expect households with lower incomes and education levels to be the most vulnerable. If so, the predatory lending hypothesis predicts that bankers will seek out households with lower incomes and education levels regardless of household location. The geographic distribution of mortgage foreclosures will, as a result, simply reflect the spatial distribution of low-income households. On the other hand, the overreaching hypothesis predicts that households most susceptible to overreaching are families that have high economic aspirations relative to their current income and net worth. We expect the heads of households will tend to be

relatively young, upwardly mobile, single or dual career track professionals who are better educated and relatively affluent but not necessarily high net worth. These households will also tend to have no or few children and live in comparatively dense urban neighborhoods. For these households, the geographic distribution of mortgage foreclosures will more likely cluster in "hot spots" where home prices are spiraling out of reach and a high concentration of these households invites "keeping up with the Joneses" contagious behavior.

The data used in our analysis come from two sources. RealtyTrac compiles nationwide data on homes in foreclosure. Acxiom compiles data on millions of U.S. households and segments households based on economic, demographic, and consumption patterns. We use Acxiom's PersonicX classification scheme, which segments U.S. households into 21 Life Stage Groups, to examine the characteristics of households in default during the third quarter of 2008.

Although we do find evidence that low-income households have a higher statistical likelihood of foreclosure, most households in foreclosure are relatively affluent and well educated. Moreover, household defaults are strongly clustered in certain states. In sum, although both hypotheses have merit, the overreaching hypothesis is a more important explanation than the predatory lending hypothesis for the mortgage crisis.

Our findings have important policy implications. Strong consumer protection laws will help prevent Wall Street bankers from making high-risk loans that low-income borrowers cannot possibly afford. Unfortunately, such laws will not prevent another financial crisis like the one the U.S. economy experienced in 2007 and 2008 because most foreclosed households were not victims of predatory lending. Rather, foreclosed households were caught up in a housing price bubble. Preventing the recurrence of a housing price bubble is a much more complex policy problem to address than protecting consumers. A return to high home price appreciation can again set off dynamics where even borrowers with decent credit will overreach and end up in homes they

ultimately cannot afford. The only comprehensive solution may be to pop housing price bubbles, a solution that requires the central bank to recognize and limit asset price bubbles.

II. Foreclosures and PersonicX Groups

To examine the profiles of homeowners in foreclosure, we combine three datasets. The first is a foreclosure dataset from RealtyTrac. Founded in 1996, RealtyTrac compiles a comprehensive U.S. database with continuously updated additions of homes in all three stages of foreclosure: default, auction, and bank-owned. In the first stage, the homeowner is notified by the lender that the mortgage is in default (also called a *lis penden* in judicial proceedings). The homeowner must make restitution or otherwise modify the terms of the mortgage to reestablish good standing. In the second stage, the mortgage remains in default and the lender issues a notice of sale. The notification includes the time, place, and date that the home will be sold. In the third and last stage, the home is auctioned. Should the bank end up with the winning (or only) bid, the property is held as real estate owned (REO). For our purposes, we restrict mortgage foreclosures to households served with notices of default or sale.

The second and third, Real Property and Consumer datasets, are from Acxiom Corporation. These datasets contain quarterly data on millions of U.S. residential properties and consumers. The key identifiers are property address and the head of household's first and last name. Key home attributes include loan value, interest rate type, square footage, year built, and estimated market value of the home. Key head-of-household attributes include marital status, education, age, number of children, net worth, and estimated income. These datasets are extremely large. For example, the 2008 3rd quarter Real Property and Consumer data contain 59.5 million and 191 million observations, respectively.

PersonicX Life Stage Segmentation is an Acxiom classification scheme that groups households into

21 life stages based on marital status, number of children in the household, employment status, and other socio-economic characteristics. A character at the end of 21 life stage groups approximately describes the group's cultural generation. For example, groups ending in 'B' represent the Baby Boomers. 'X' and 'Y' represent Generation X and Generation Y, respectively. 'M' represents the Mature generation, mostly those in their 50s and 60s, and 'S' represents Seniors mostly in retirement. A brief description of each PersonicX code is listed in Appendix 1.[3]

For each quarter, we used address as the primary variable for merging homeowner default addresses in RealtyTrac with homeowner addresses in Real Property. Address fields in the two datasets were standardized using a program we developed to parse each address string into six fields: street number, street pre-direction, street name, street type, unit type and unit number. The two datasets were then merged by matching parsed addresses and zipcodes. The final combination of the merged RealtyTrac-Real Property and Acxiom Consumer database utilized several additional variables as cross-checks: first name, last name, mailing address, and zip code. For the third quarter of 2008, there were 44 million observations in the final three-way merged datasets and the number of foreclosures was 217,088.

III. Profiles of U.S. Households in Foreclosure

To obtain a broad overview of households in foreclosure compared to households not in foreclosure, we present summary statistics for key loan and household characteristics in Table 1. Loan characteristics are shown in the top panel. Defaulted homes are more expensive. The median market value of homes in foreclosure is $242,400 versus $199,129 for homes not in foreclosure. An important contributing factor is the large proportion of defaulted mortgages originated in the last decade in areas where home prices appreciated rapidly. As expected, the median loan-to-value ratio

[3]Each PersonicX group contains two or more "clusters" of more narrowly defined households.

is much higher on defaulted properties at 96%, more than 30% points higher than on non-defaulted properties. Homes in foreclosure are also slightly newer and smaller in terms of square footage.

Table 1: U.S. Household and Property Characteristics by Foreclosure Status

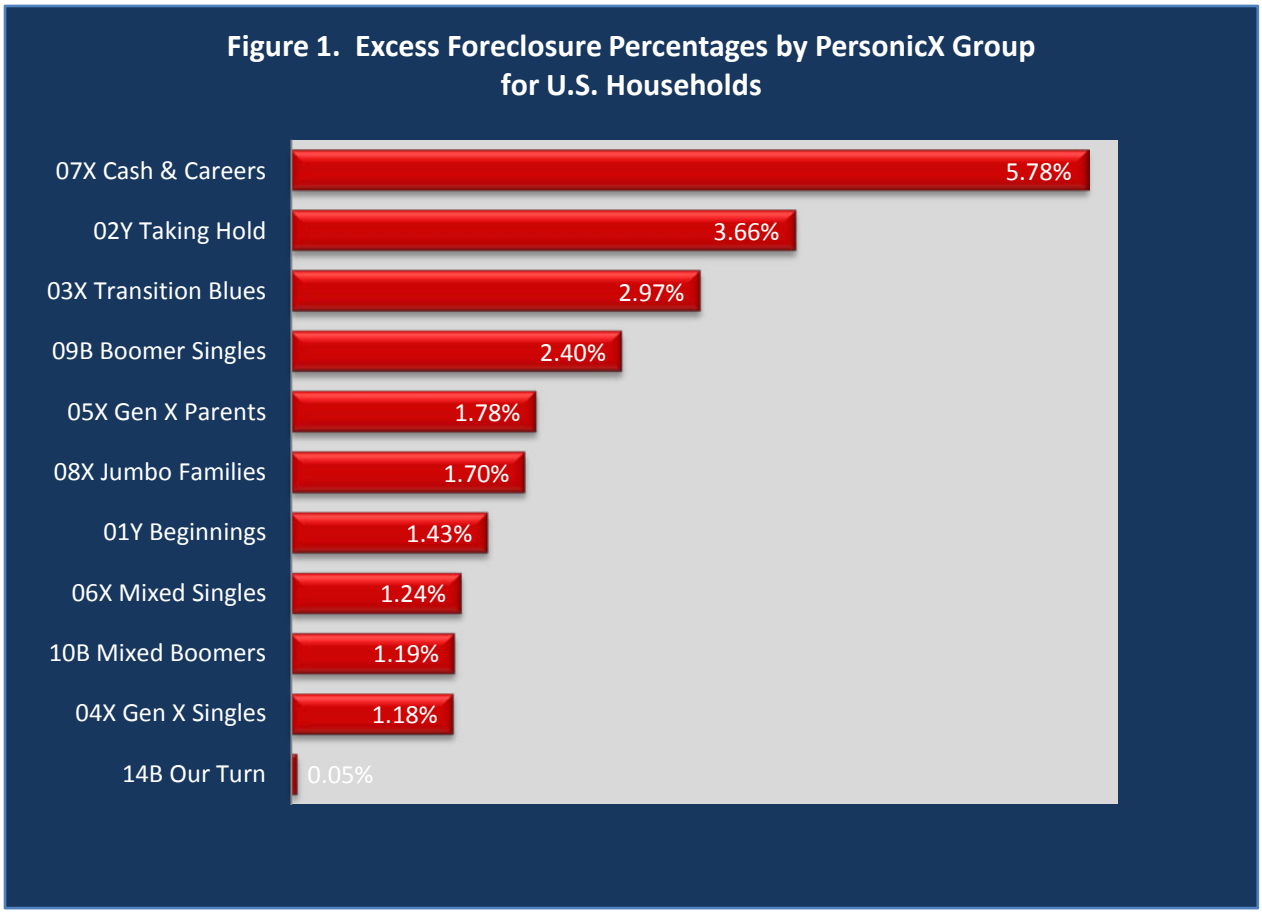
	Not in Foreclosure		*In Foreclosure*	
	Mean	**Median**	**Mean**	**Median**
Property Characteristics				
Home Market Value	$278,115	$199,129	$290,653	$242,400
Home Purchase Amount	$198,598	$140,000	$253,650	$199,950
Loan To Value	64.6%	65.0%	90.7%	96.0%
Year Home Built	1969	1974	1972	1978
Home Size (sq ft)	2,376	1,907	1,554	1,526
Household Characteristics				
Household Size	3.3	3.0	2.9	2.0
Annual Income	$55,700	$51,500	$51,241	$48,800
Net Worth	6.9	7.0	6.4	7.0
Years Of Education	14.8	16.0	14.1	12.0
Age	53.1	52.0	45.1	44.0
Length Of Residence	9.1	9.0	5.3	4.0
Number Of Children	1.4	1.0	1.5	1.0
Married	70.7%		56.2%	
Single	25.7%		36.9%	

Note: Net worth is the difference between the value of all assets and the value of all liabilities. Net worth takes values from 1 to 12. Each numerical value represents a range of net worth as the following: 1=Less than or equal to $0; 2=$1-$4,999; 3=$5,000-$9,999; 4=$10,000-$24,999; 5= $25,000-$49,999; 6=$50,000-$99,999; 7=$100,000-$249,999; 8=$250,000-$499,999; 9=$500,000-$999,999; 10=$1,000,000-$1,999,999; 11=$2,000,000+.

Household characteristics are shown in the bottom panel. Households in foreclosure have slightly fewer members and are significantly younger. The median head-of-household age for a foreclosed household is 44, 8 years younger than the median for households not in foreclosure. Heads of households in foreclosed properties are less likely to be married and more likely to be single. They have lower incomes and the median length of residence in the home is only 4 years relative to 9 years for households not in foreclosure. Although mean years of education is similar at

just over 14 years, households in foreclosure have a median 12 years of education compared to a median of 16 years for households not in foreclosure.

To see which of the 21 PersonicX groups contribute most to the large *numbers* of foreclosures, we calculate the share of total foreclosures represented by each group and the share of all households represented by each group. We subtract the household share from the foreclosure share to derive the "excess foreclosure shares" of each group. Group 7X, for example, accounts for 5.52% of all households but 11.3% percent of all foreclosures. The excess share of foreclosures is the difference of these two ratios, or 5.78% points.[4] Figure 1 plots the PersonicX Groups with excess foreclosures, sorted from the highest to the lowest excess foreclosure share. (See Table A1 of



[4]Define the number of foreclosures by each group i as F_i and the number of households as H_i. Because we calculate the excess foreclosure share for each group as $(F_i/F) - (H_i/H)$, we can convert this share into the absolute number of excess foreclosures by multiplying each term by F such that $F_i - (H_i/H)F$ equals the absolute number of excess foreclosures by group. Excess foreclosure share and excess number of foreclosures have the same cardinal ranking.

Appendix 2 for the full list.)

Figure 1 shows that the large numbers of foreclosures are determined by younger, relatively afluent households. In particular, the group with the largest number of excess foreclosures is 7X, *Cash & Careers*. This Generation X group is the most prosperous of the generation of adults born in the mid-1960s and early 1970s. As Table 2 illustrates, out of the first 10 PersonicX groups with excess foreclosures, *Cash & Careers* members rank first in average household income ($59,500), net worth, and years of education (14.8). They can be single or married but have no children. The second most overrepresented group is 2Y, *Taking Hold*. These are Generation Y households with an average age of 27.8 years, second highest average income ($55,500), third highest net worth, and fifth highest education level (14.1 years). This group is mostly married with an average of 1.2 children. The two groups are consistent with a priori expectations of household profiles that are most likely to overreach.

The two groups most likely to be victims of predatory lending are Group 1Y, *Beginnings* and Group 6X, *Mixed Singles*. These groups rank 9th or 10th in income, net worth, and education. Yet these groups rank 7th and 8th, respectively, in share of excess foreclosures, and jointly, account for just 2.67% of excess foreclosures relative to 9.44% for groups 7X and 2Y.

Generations X and Y account for the vast majority of excess foreclosures. Baby boomers are also present but tend to be lower on the list. Three of the six boomer groups (those ending in 'B') have excess foreclosures. Two of these groups, *9B* and *10B*, are single households with few or no children. The Mature and Senior generations that dominate the bottom of the list have foreclosure rates that are less than their share of households. Last but not least, note that the most underrepresented of the 21 PersonicX groups are *Boomer Barons* – wealthy baby boomers aged 36 to 65 who are married with children. This group has the highest average income of all the 21 PersonicX groups and the second highest education level.

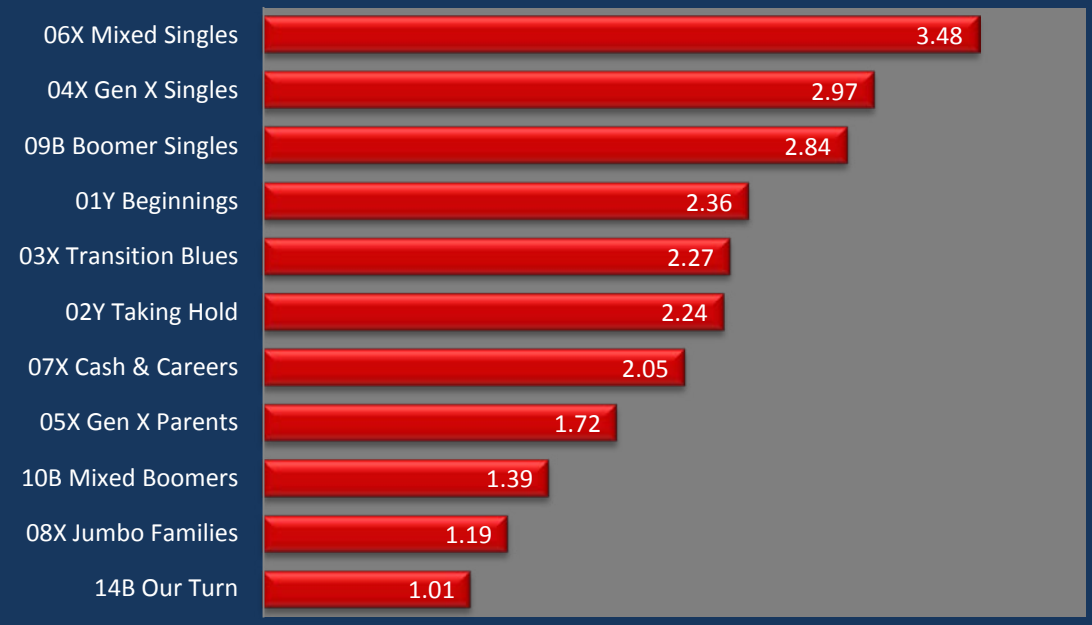
Table 2. Household Characteristics by PersonicX Group

	Beginnings	Taking Hold	Transition Blues	GenX Singles	GenX Parents	Mixed Singles	Cash & Careers	Jumbo Families	Boomer Singles	Mixed Boomers	Boomer Barons	Flush Families	True Blues	Our Turn	Mature Wealth	Aging Upscale	Modest Means	Mature Rustics	The Golden Years	Active Elders	Leisure Buffs	
PersonicX Group	01Y	02Y	03X	04X	05X	06X	07X	08X	09B	10B	11B	12B	13B	14B	15M	16M	17M	18M	19M	20S	21S	ALL
N (millions)	0.5	1.3	1.0	0.3	1.1	0.2	2.4	3.9	0.6	1.4	7.3	5.1	2.3	1.5	2.7	1.9	1.3	0.9	2.4	4.1	2.0	44.1
Mean																						
Net Worth	5.2	6.3	5.7	5.5	5.6	4.7	6.7	6.6	5.6	6.0	7.6	6.9	6.3	6.6	7.9	6.9	6.2	6.6	7.4	7.3	6.5	6.9
Income ($000s)	40.1	55.5	41.2	41.8	41.1	30.0	59.5	55.0	40.5	40.2	75.7	55.6	41.4	48.9	79.7	53.6	37.3	38.4	58.2	49.4	38.6	55.7
Years of Education	13.6	14.1	13.9	14.0	13.9	13.7	14.8	14.7	14.4	14.1	15.8	14.8	13.9	14.4	15.9	14.8	14.2	13.8	15.2	14.3	13.7	14.8
Age	26.1	27.8	36.9	32.4	38.0	36.3	38.5	41.3	40.6	47.4	50.9	52.3	53.0	51.5	56.8	55.8	55.0	65.6	63.0	75.4	77.3	53.1
Household Size	2.8	2.8	2.4	1.3	4.4	1.4	1.7	4.2	1.3	3.5	4.4	4.2	4.5	2.2	2.3	1.9	1.9	2.1	2.3	3.3	1.9	3.3
Number of Children	1.3	1.2	1.0	0.0	1.7	0.4	0.0	1.7	0.0	1.3	1.5	1.4	1.4	0.0	0.0	0.0	0.0	0.2	0.0	1.2	0.0	1.4
Length of Residence	5.2	4.8	6.2	4.1	8.4	4.7	5.2	7.6	5.6	9.2	9.6	10.0	10.8	9.1	9.2	9.2	9.7	10.1	10.1	11.4	10.9	9.1
Married	0.29	0.59	0.71	0.00	0.94	0.02	0.40	0.96	0.01	0.00	0.93	0.72	0.97	0.75	0.76	0.49	0.37	0.69	0.74	0.74	0.50	0.71
Single	0.61	0.26	0.08	0.90	0.03	0.89	0.52	0.03	0.95	0.97	0.06	0.27	0.01	0.20	0.20	0.49	0.58	0.24	0.22	0.23	0.45	0.26

Relative Rank	01Y	02Y	03X	04X	05X	06X	07X	08X	09B	10B
Net Worth	9	3	5	8	7	10	1	2	6	4
Income ($000s)	9	2	5	4	6	10	1	3	7	8
Years of Education	10	5	8	6	7	9	1	2	3	4
Household Size	5	4	6	10	1	8	7	2	9	3
Number of Children	4	5	6	8	1	7	8	2	8	3
Length of Residence	7	8	4	10	2	9	6	3	5	1
Married	6	4	3	9	2	7	5	1	8	10
Single	5	7	8	3	9	4	6	10	2	1

Now to consider which of the 21 PersonicX groups has the highest likelihood of foreclosure, we focus on *relative* default rates rather than *absolute* number of defaults. We compute the likelihood of foreclosure statistic for each group as the foreclosure share divided by the household share.[5] Group *7X*, for example, has a foreclosure share of 11.3% and a household share of 5.52%. The odds ratio of 2.05 (11.3/5.52) means that group *7X* is 2.05 times as likely to default relative to its size. Figure 2 displays the relative ratios by group sorted by the relative foreclosure likelihood. (Table A1 in Appendix 2 lists the relative ratios for all the groups.)

Figure 2. Relative Foreclosure Ratios by PersonicX Group for U.S. Households



The groups with the highest relative default rates tend to be the households with lower income and education levels. The PersonicX group with the highest relative default rate is 6X, *Mixed Singles*. This group accounts for just 0.5% of households but 1.74% of all foreclosures. These are low

[5]This ratio produces the same ordinal ranking as a logistic regression of foreclosure status regressed on PersonicX group.

income and ethnically diverse Generation Xers aged 24 to 45 with no children. Out of the top 10 PersonicX groups, these households rank last in income ($30,000) and net worth, and 9th in education (13.7 years). Next is 4X, *Gen X Singles*, a broad group of low-income Generation Xers without children. As a whole, this group ranks 6th in education (14.0) and 4th in income ($41,800). Group 9B is ranked third in relative foreclosures. This group is *Boomer Singles*, comprised of middle- and lower-income single households with no children. These households have slightly more education than Gen X Singles (14.4 years) but lower income ($40,500).

These summary statistics protray two very different foreclosure dynamics. Young relatively affluent households account for the largest *numbers* of foreclosures, consistent with the overreaching hypothesis. On the other hand, young and low-income households account for the highest *likelihood* of foreclosure, consistent with the predatory lending hypothesis. Consequently, although the evidence thus far is consistent with both hypotheses, the overreaching hypothesis explains a greater portion of foreclosures. We turn to the geographic patterns of foreclosures to better discern between the hypotheses.

IV. Geographic Patterns of Foreclosures

Recall that our hypotheses have different implications regarding the geographic distribution of foreclosures. The predatory lending hypothesis predicts that the geographic distribution of foreclosures will simply reflect the spatial distribution of low-income households because bankers will seek out households most easily deceived regardless of the household's location. In contrast, the overreaching hypothesis predicts that contagion will be an important part of foreclosure dynamics. Households (and speculators) bid against one another for homes in certain "hot spots" in attempts to purchase a (bigger) home before it becomes unaffordable.

Consequently, on the one hand, if the predatory lending hypothesis is correct, we expect that

controlling for other factors that drive foreclosures, the variance of default rates by PersonicX groups across geographic locations will be relatively low for low-income households. For example, *Group 4X*, a low-income group called *Gen X Singles* will have relatively similar foreclosure rates across states compared with the more affluent Group 7X, *Cash and Careers*. On the other hand, if the overreaching hypothesis is more important, we expect a high variance of foreclosure rates across geographic areas for all groups because price bubble dynamics inflate prices and foreclosure rates only in certain hot spots.

To evaluate the differing predictions associated with predatory lending and overreaching hypotheses, we compute the Spearman's rank correlation between relative foreclosure rates by PersonicX group (see Table A1) and the standard deviation rankings of foreclosure rates by PersonicX group across states, holding constant other factors that determine foreclosure. For example, Michigan's foreclosure rate may be relatively higher than North Dakota across all PersonicX groups because of Michigan's comparatively high state unemployment.

The foreclosure rates for each PersonicX group in each state shown in Table 3 is the annualized number of households in a given group that are in foreclosure in a given state during the third quarter of 2008 divided by the total number of households in that group in that state. Specifically, this foreclosure rate is P(D|GxS), or the probability (P) of default (D) given the PersonicX Group (G) and the state (S) where the household resides. For example, the annualized foreclosure rate for PersonicX Group 1 (*Beginnings*) in Arkansas is 1.71%. That same default rate in California is 12.56%. Of course, on a per-capita basis, California had far more foreclosures than Arkansas. To control for the factors such as home price appreciation that made California households more likely to default, we divide each foreclosure rate by the overall foreclosure rate for each state to derive P(D|GxS)/P(D|S). The resulting value is the average foreclosure rate for each

Table 3. Foreclosure Rates by PersonicX Group and State

State	01Y Beginnings	02Y Taking Hold	03X Transition Blues	04X Gen X Singles	05X Gen X Parents	06X Mixed Singles	07X Cash & Careers	08X Jumbo Families	09B Boomer Singles	10B Mixed Boomers	11B Boomer Barons	12B Flush Families	13B True Blues	14B Our Turn	15M Mature Wealth	16M Aging Upscale	17M Modest Means	18M Mature Rustics	19M Golden Years	20S Active Elders	21S Leisure Buffs	P(D|S)
AK	1.44	1.15	0.00	0.00	0.00	3.42	0.57	0.44	0.00	0.45	0.21	0.81	0.29	0.47	0.00	0.14	0.34	0.00	0.46	0.14	0.00	0.42
AL	0.28	0.46	0.41	0.47	0.41	0.50	0.40	0.24	0.44	0.37	0.10	0.14	0.35	0.17	0.12	0.24	0.27	0.17	0.06	0.06	0.16	0.21
AR	1.71	1.53	1.43	0.99	1.73	2.18	1.23	1.08	1.55	1.39	0.58	0.91	0.53	0.37	0.80	0.62	0.64	0.24	0.25	0.33	0.33	0.78
AZ	12.57	10.99	12.89	16.05	6.76	16.82	6.81	5.68	13.14	5.38	2.80	3.33	3.76	4.67	2.49	2.66	3.39	3.29	2.23	1.53	2.71	4.74
CA	12.56	13.46	13.05	18.33	6.89	19.85	9.79	5.53	14.44	6.21	1.98	3.68	3.46	4.23	1.91	3.04	3.91	2.05	2.85	1.74	2.81	4.30
CO	3.81	3.05	3.26	4.17	3.39	5.81	2.53	2.32	4.29	2.43	1.01	1.65	1.71	1.75	0.80	1.30	2.10	0.53	0.73	0.80	1.08	1.71
CT	2.26	2.56	1.95	2.74	3.56	6.41	1.88	2.14	3.46	2.50	0.79	1.47	1.75	1.33	0.35	1.25	1.88	0.23	0.64	0.70	0.77	1.29
DC	2.09	4.01	3.52	2.54	2.51	3.89	1.66	1.92	1.57	3.29	0.58	2.48	2.73	1.65	0.80	1.33	2.16	0.00	1.27	0.21	1.05	1.49
DE	1.89	0.93	1.12	0.00	1.45	2.24	1.07	0.76	1.31	1.34	0.30	0.53	0.51	0.70	0.05	0.49	0.64	0.00	0.21	0.13	0.35	0.56
FL	8.33	7.27	6.90	9.44	6.33	9.23	7.12	5.01	8.78	4.85	2.42	3.42	3.05	3.59	2.35	2.82	3.32	1.34	1.98	1.08	1.77	3.53
GA	4.53	4.51	3.13	5.27	3.13	3.30	3.58	2.30	4.22	2.84	1.24	1.97	1.55	1.82	1.53	1.85	1.96	0.74	0.96	0.76	1.02	2.05
HI	0.00	0.61	0.00	0.00	0.58	0.00	0.24	0.09	0.64	0.13	0.08	0.18	0.24	0.28	0.10	0.08	0.13	0.00	0.12	0.09	0.00	0.13
IA	2.13	0.88	0.98	2.05	2.13	3.01	1.25	0.90	2.33	1.50	0.38	0.60	0.75	0.99	0.40	0.59	1.04	0.10	0.34	0.21	0.41	0.76
ID	4.27	3.89	2.90	3.41	4.16	1.77	3.94	2.55	3.75	2.04	1.83	1.47	1.29	0.91	2.08	0.50	1.57	1.35	0.45	0.49	0.96	1.93
IL	4.90	4.56	5.21	6.27	4.15	10.28	3.86	2.79	6.76	3.70	1.12	2.18	2.29	2.77	1.15	1.71	2.49	0.79	1.24	1.20	1.72	2.33
IN	5.32	4.34	5.11	8.49	5.81	9.46	5.05	4.03	6.84	4.93	1.61	2.72	2.70	2.06	1.02	2.19	3.19	1.06	1.14	0.74	1.05	2.94
KY	0.00	0.46	0.29	1.73	0.93	1.18	0.79	0.45	3.08	0.76	0.11	0.39	0.48	0.59	0.20	0.86	0.21	0.00	0.15	0.15	0.28	0.42
LA	0.66	0.45	0.31	0.88	0.35	0.00	0.33	0.27	0.66	0.35	0.09	0.09	0.06	0.11	0.04	0.13	0.27	0.00	0.04	0.07	0.08	0.18
MA	5.02	1.93	3.01	1.98	3.13	6.20	2.17	1.81	3.70	2.76	0.94	1.57	1.68	1.63	0.64	1.39	1.98	0.51	0.92	0.80	1.10	1.47
MD	3.86	4.26	2.64	3.76	2.35	2.75	3.90	1.90	3.61	2.10	0.90	1.67	1.31	1.38	0.87	1.43	1.28	0.25	1.11	0.51	0.76	1.60
MI	6.43	3.98	4.67	7.20	5.38	6.72	3.41	3.37	7.05	4.36	1.56	2.54	2.54	2.29	1.22	1.85	2.90	0.61	1.26	0.75	0.97	2.48
MN	1.78	1.13	1.23	2.80	1.15	4.77	1.12	0.52	2.20	1.29	0.30	0.57	0.73	0.45	0.36	0.48	0.85	0.00	0.36	0.18	0.57	0.63
MO	2.45	1.73	2.53	2.92	3.11	5.16	1.67	1.33	4.02	2.59	0.75	1.10	1.42	1.02	0.62	0.93	1.67	0.41	0.50	0.37	0.76	1.26
MS	0.67	0.32	0.00	0.77	0.71	1.14	0.18	0.04	0.00	0.30	0.03	0.17	0.11	0.75	0.00	0.09	0.22	0.00	0.12	0.00	0.18	0.15
MT	0.37	0.30	0.31	0.00	0.18	1.20	0.00	0.00	0.39	0.12	0.16	0.11	0.14	0.00	0.45	0.12	0.00	0.37	0.14	0.00	0.00	0.13
NC	1.01	1.10	0.63	1.25	1.05	1.27	1.13	0.67	1.14	0.84	0.29	0.65	0.39	0.46	0.26	0.45	0.59	0.07	0.15	0.12	0.16	0.50
ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.90	0.00	0.00	0.00	0.00	0.04
NE	0.25	0.00	0.00	0.00	0.44	0.00	0.08	0.06	0.00	0.25	0.03	0.00	0.00	0.14	0.13	0.17	0.00	0.34	0.00	0.04	0.00	0.07
NJ	5.26	2.90	3.98	4.79	3.86	12.72	3.24	2.65	7.48	3.49	1.26	2.14	2.10	2.91	1.12	1.77	2.12	0.91	1.52	1.08	1.20	2.02
NM	0.65	0.13	0.44	0.50	0.36	0.65	0.41	0.29	0.48	0.35	0.11	0.18	0.18	0.06	0.29	0.04	0.16	0.00	0.22	0.07	0.08	0.21
NV	20.71	20.89	19.22	27.84	13.09	20.40	18.09	10.55	22.21	9.60	7.60	8.80	7.81	8.75	6.46	6.45	8.46	5.31	5.32	3.64	4.24	10.09
NY	0.59	0.64	0.55	1.42	0.89	1.99	0.92	0.57	1.35	0.74	0.34	0.51	0.41	0.54	0.33	0.39	0.61	0.03	0.35	0.18	0.27	0.47
OH	5.62	3.66	4.07	4.89	5.72	8.24	3.14	3.41	5.48	4.83	1.39	2.34	2.89	2.39	1.23	1.71	2.69	1.36	1.03	0.83	1.15	2.43
OK	1.19	0.68	0.67	0.85	1.05	1.28	0.86	0.55	1.09	0.81	0.43	0.50	0.34	0.36	0.14	0.12	0.58	0.06	0.15	0.17	0.22	0.46
OR	1.87	1.87	1.76	2.23	2.15	2.79	1.55	1.27	1.68	1.56	0.60	0.86	0.70	0.73	0.65	0.55	0.84	0.12	0.33	0.27	0.20	0.85
PA	2.14	1.29	1.53	1.85	2.20	2.76	1.09	1.26	2.17	1.98	0.49	0.93	1.03	0.90	0.41	0.63	1.11	0.27	0.32	0.40	0.67	0.94
RI	3.93	0.88	1.60	2.31	1.66	5.54	1.48	1.21	3.68	2.17	0.47	0.84	1.22	1.04	0.49	1.10	0.97	0.00	0.29	0.38	0.48	0.94
SC	1.70	1.75	1.11	2.04	1.74	2.26	1.61	0.93	1.86	0.75	0.48	0.74	0.69	0.65	0.36	0.50	0.67	0.25	0.36	0.25	0.28	0.70
TN	1.83	2.05	1.24	1.97	1.63	2.83	1.72	0.87	2.52	1.38	0.49	0.92	0.62	0.89	0.45	0.57	1.07	0.18	0.31	0.26	0.49	0.78
TX	2.06	2.23	1.45	2.11	1.07	1.88	1.54	1.12	1.91	1.08	0.44	0.75	0.52	0.83	0.48	0.66	0.61	0.46	0.37	0.23	0.49	0.85
UT	2.37	2.00	3.18	2.57	1.51	4.00	2.27	1.32	1.97	1.20	0.92	0.87	0.85	1.24	1.18	1.27	0.81	0.71	0.41	0.23	0.26	1.18
VA	2.91	4.56	2.23	2.27	1.55	1.63	2.50	1.15	2.51	1.23	0.47	0.85	0.70	1.21	0.71	0.95	0.99	0.55	0.84	0.30	0.46	1.11
WA	2.04	2.81	1.85	2.26	1.98	1.70	2.20	1.43	2.55	1.17	0.76	1.18	0.82	1.01	0.75	1.01	0.90	0.47	0.65	0.34	0.37	1.10
WI	2.27	0.91	1.07	1.61	1.91	1.01	0.94	0.59	1.97	1.26	0.35	0.64	0.80	0.57	0.26	0.43	1.00	0.29	0.23	0.21	0.32	0.62
WV	0.00	0.07	0.05	0.00	0.14	0.00	0.11	0.04	0.00	0.05	0.04	0.03	0.02	0.03	0.07	0.05	0.06	0.00	0.02	0.03	0.02	0.04
WY	2.07	2.66	1.12	0.00	1.43	0.00	1.47	0.96	2.86	1.29	0.56	0.58	0.81	0.00	0.00	0.24	1.22	0.43	0.57	0.09	0.87	0.79
P(D|G)	4.65	4.42	4.47	5.86	3.40	6.86	4.03	2.34	5.59	2.73	1.17	1.80	1.62	2.00	1.25	1.47	1.93	0.68	1.30	0.68	1.07	

group and state, normalized by the state's default rate. We then compute the standard deviation of the foreclosure rates across states for each PersonicX group and rank them from lowest to highest.

Table 4. Ranks of Relative Default Rates and Standard Deviations of Foreclosure Rates Across States

PersonicX Group	Std Deviation Rank	Relative Default Rank
06X Mixed Singles	20	1
04X Gen X Singles	17	2
09B Boomer Singles	18	3
01Y Beginnings	15	4
03X Transition Blues	11	5
02Y Taking Hold	14	6
07X Cash & Careers	8	7
05X Gen X Parents	16	8
10B Mixed Boomers	9	9
08X Jumbo Families	6	10
14B Our Turn	12	11
17M Modest Means	21	12
12B Flush Families	5	13
13B True Blues	7	14
16M Aging Upscale	19	15
19M The Golden Years	3	16
15M Mature Wealth	10	17
11B Boomer Barons	2	18
21S Leisure Buffs	4	19
20S Active Elders	1	20
18M Mature Rustics	13	21

Table 4 lists the rankings of the standard deviations of foreclosure rates across states from lowest to highest, and the rankings of the relative default rates from highest to lowest. The predatory lending hypothesis predicts that the two rankings will be positively correlated – that is, groups with the lowest standard deviations will also have the highest relative defaults. The Spearman rank correlation is -0.59 and statistically significant at the 1 percent level. PersonicX groups with high relative default rates also have *high* relative standard deviations of foreclosure rates

across states – a result contrary to the predicition of the predatory lending hypothesis.

The overreaching hypothesis implies that foreclosure rates will spike in certain "hot spots" as households bid up prices in an effort to purchase (bigger) homes. We identify those hot spots using data from the Federal Housing Finance Agency House Price Index. Figure 3 is a heat map of cumulative home price appreciation by state between the first quarters of 2000 and 2007. The darker shaded states in the west, northeast, and the state of Florida experienced the highest home price increases.

Figure 3. Heat Map of Housing Price Appreciation by State, 2000 to 2007.

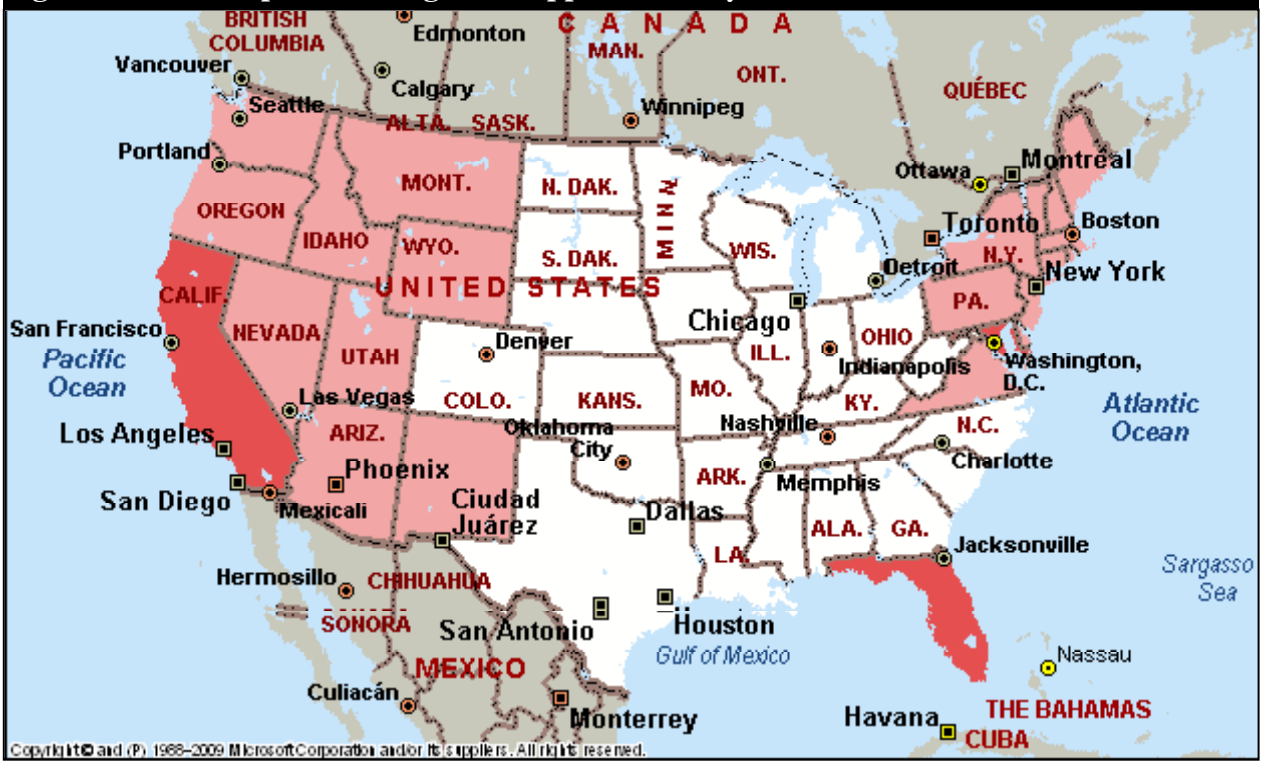


Figure 4, in turn, is a heat map of foreclosure rates by state for the third quarter of 2008. In this map, higher foreclosure rates are shaded with a darker red color. The overreaching hypothesis suggests that there should be a strong correlation between the states with the largest price increases and the states with the highest foreclosure rates. Indeed, the concentration of foreclosures in the southwest and in Forida are consistent with overreaching as a more important explanation than

predatory lending for the foreclosure crisis. The main outliers in Figure 4 are the Great Lakes states that experienced moderate home price appreciation but relatively high foreclosure rates. Foreclosures in these states are more likely to be driven by a weak economy rather than housing price bubbles.

Figure 4. Heat Map of State Foreclosure Rates, 2008.

We ranked the states by home price appreciation and foreclosure rates to assess their statistical correlation using the Spearman rank correlation. For all the states, the correlation is 0.23–positive as the overreaching hypothesis suggests, but not statistically different from zero. When we exclude the Great Lake states of Michigan, Indiana and Ohio, the rank correlation rises to 0.43 and is statistically significant at the one percent level. Again, the evidence is more consistent with the overreaching hypothesis than the predatory lending hypothesis.

V. Summary of Findings

We propose two hypotheses for the large number of household foreclosures. The predatory lending hypothesis asserts that Wall Street banks targeted the most vulnerable households with relatively low incomes and education to sell them home loans that they did not understand and clearly could not afford. An implication of this strategy is that, all else equal, the foreclosure rates across states for low-income households should be similar. The overreaching hypothesis asserts that Wall Street banks were less discriminating, selling home loans to all types of households including relatively affluent households. Many households simply overreached in the housing price bubble market, buying more house than they ultimately could afford.

By combining household foreclosure data from RealtyTrac with household data from Acxiom, we are able to create a profile of households in foreclosure during the third quarter of 2008. We find that many foreclosed households are young with relatively high income and education levels. For example, PersonicX Group 7, *Cash and Careers*, which accounts for the largest share of excess foreclosures, are the most affluent of the generation of adults born in the mid-1960s and early 1970s. Moreover, the foreclosure rates across states are not any more similar among low-income households than among high-income households, but there is a positive correlation between home price appreciation and foreclosure rates. The weight of the evidence supports the overreaching hypothesis.

Our evidence suggests that banks did not systematically target vulnerable households to "trick" them into unaffordable homes. However, our evidence does not excuse the reckless subprime lending by the large Wall Street banks. Rather, we argue that there is plenty of blame to go around for the financial crisis. Banks and borrowers both appear to have overreached. Banks overreached in extending too much credit to households and households overreached by purchasing more home than they could afford.

The policy implication from our results is that strong consumer protection laws, though necessary, are not sufficient to prevent another financial crisis like the one the U.S. economy experienced in 2007 and 2008 because most foreclosed households were not "duped' into bad loans. Rather, households were caught up in a housing price bubble in which both the consumer and the lender were too aggressive. Preventing the recurrence of a housing price bubble is a much more complex policy problem to address than protecting consumers. A return to high price appreciation could again set off dynamics where even borrowers with decent credit overreach and end up in homes they ultimately cannot afford. The only comprehensive solution may be to pop housing price bubbles, a solution that requires the central bank to recognize and curb the formation of asset price bubbles.

VI. Profiles of Households in Foreclosure in Arkansas and California

In addition to analyzing foreclosures at the national level, it is interesting to examine the differences in the characteristics of foreclosed households across states. We choose California and Arkansas for comparison because these states have very different economic, demographic, and geographic characteristics.

Table 5 lists property and household characteristics of households in California (Panel A) and Arkansas (Panel B). Home market values and purchase amounts are much higher in California as are loan-to-value ratios. California households in foreclosure have a median loan to value of 100% compared to just 64% for Arkansas households. The median annual income is also somewhat higher for defaulting households in California at $50,100 compared to $40,650 for Arkansas households. Lastly, the proportions of married households in foreclosure is higher in California at 61.5% compared to only 56.2% of foreclosed households in Arkansas.

Table 5

Panel A: California Household and Property Characteristics by Foreclosure Status

	Not in Foreclosure		*In Foreclosure*	
	Mean	**Median**	**Mean**	**Median**
Property Characteristics				
Home Market Value	$540,093	$454,883	$437,954	$400,000
Home Purchase Amount	$309,707	$230,000	$370,849	$347,500
Loan to Value	61.9%	61.0%	96.9%	100.0%
Year Home Built	1968	1970	1973	1977
Home Size (sq ft)	2,034	1,580	1,698	1,496
Household Characteristics				
Household Size	3.1	3.0	2.7	2.0
Annual Income	$62,038	$57,700	$52,368	$50,100
Net Worth	7.4	7.0	6.6	7.0
Years of Education	15.0	16.0	14.2	12.0
Age	53.7	52.0	45.1	44.0
Length of Residence	9.4	10.0	4.6	3.0
Number of Children	1.3	1.0	1.4	1.0
Married	74.3%		61.5%	
Single	25.7%		38.5%	

Panel B: Arkansas Household and Property Characteristics by Foreclosure Status

	Not in Foreclosure		*In Foreclosure*	
	Mean	**Median**	**Mean**	**Median**
Property Characteristics				
Home Market Value	$124,542	$104,169	$116,236	$94,800
Home Purchase Amount	$110,088	$85,000	$172,291	$92,000
Loan to Value	59.7%	57.0%	69.1%	64.0%
Year Home Built	1978	1980	1976	1974
Home Size (sq ft)	1,849	1,586	1,592	1,472
Household Characteristics				
Household Size	3.2	3.0	3.1	3.0
Annual Income	$44,556	$42,500	$41,336	$40,650
Net Worth	6.5	7.0	6.0	6.0
Years of Education	14.6	14.0	13.9	12.0
Age	53.0	52.0	44.2	42.0
Length of Residence	8.7	9.0	6.1	4.0
Number of Children	1.4	1.0	1.4	1.0
Married	74.0%		56.2%	
Single	26.0%		36.9%	

The foreclosure profiles in California are similar to the national profiles. Figure 4 plots the excess share of households in foreclosure by PersonicX Group in California. (Full data are listed in Table A2 in Appendix 2.) Group 7, *Cash & Careers*, leads in the share of excess foreclosures by a wide margin of more than 8% points, and Group 2 (*Taking Hold*) follows with an excess share of 5.0% points. Both of these groups are comprised mainly of households with no children and above-average income and education levels. Two lower-income groups, Groups 3 (*Transition Blues*) and 9 (*Boomer Singles*), follow.

The pattern for Arkansas in Figure 5 is somewhat different in that more families with children are going through foreclosure. (Full Arkansas data are listed in Table A3 in Appendix 2.) Group 8 (*Jumbo Families*), comprised of households with children and above-average incomes and education, has the highest excess foreclosure rate of 3.9%. Note that this group is ranked 5th in California with an excess share of 2.0% points. The next highest excess foreclosure rates in Arkansas are from Group 5, *Gen X Parents*, comprised of low-income to middle-income households with children.

Figure 4. Excess Foreclosure Percentages by PersonicX Group for California Households

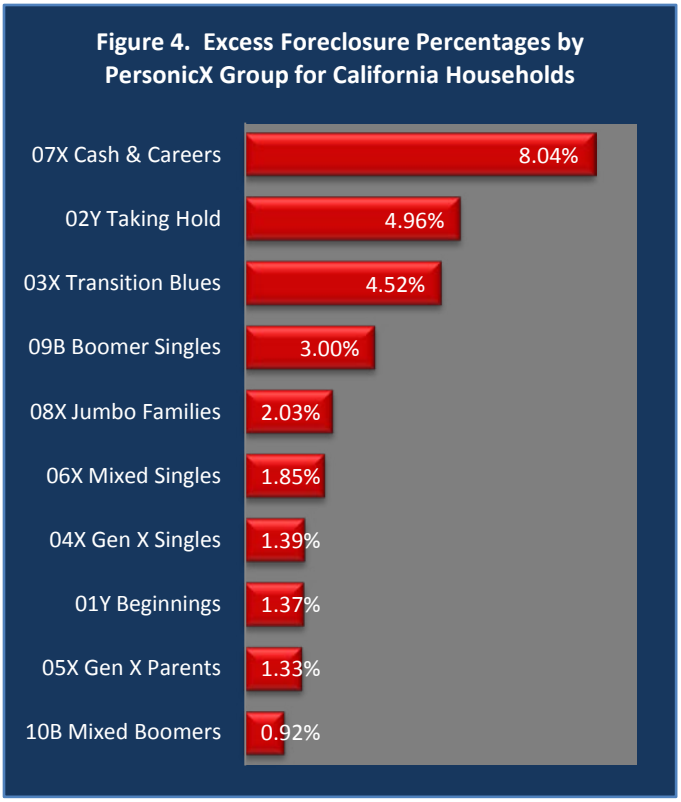
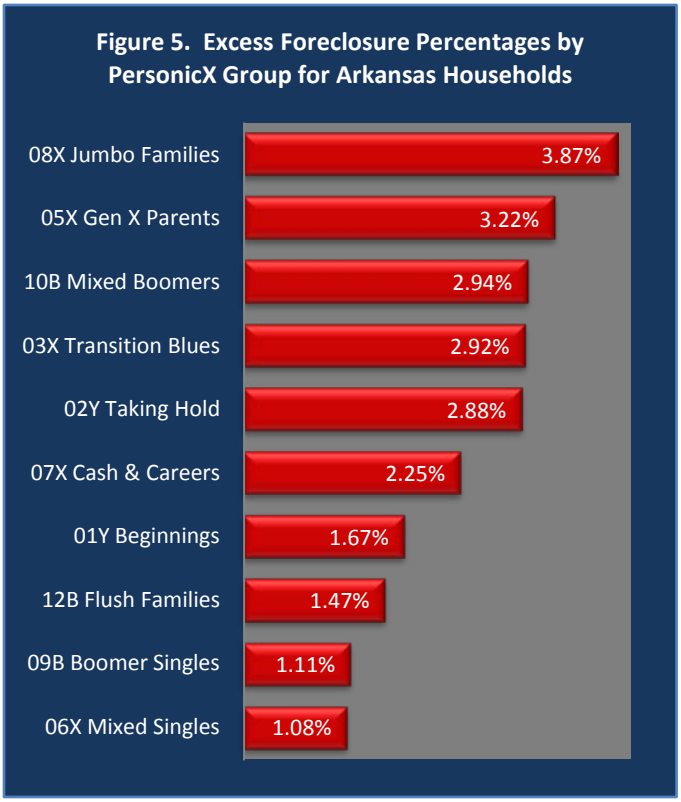


Figure 5. Excess Foreclosure Percentages by PersonicX Group for Arkansas Households



Low income and unmarried households are the most likely to end up in foreclosure in both California and Arkansas. Figures 6 and 7 chart the relative foreclosure rates for California and Arkansas, respectively. The rankings of PersonicX Groups by relative foreclosure rates are more similar than the rankings of PersonicX Groups by excess foreclosure rates. Group 6, *Mixed Singles*, is at the top of each list. These households, as we have seen, have the lowest incomes and education levels of the first 10 PersonicX groups.

In summary, the majority of excess foreclosures in California are from relatively wealthy households without children. In Arkansas, the majority of excess foreclosures are from wealthy households with children. The highest relative foreclosures in both of these states are from relatively low-income households.

Figure 6. Relative Foreclosure Ratios by PersonicX Group for California Households

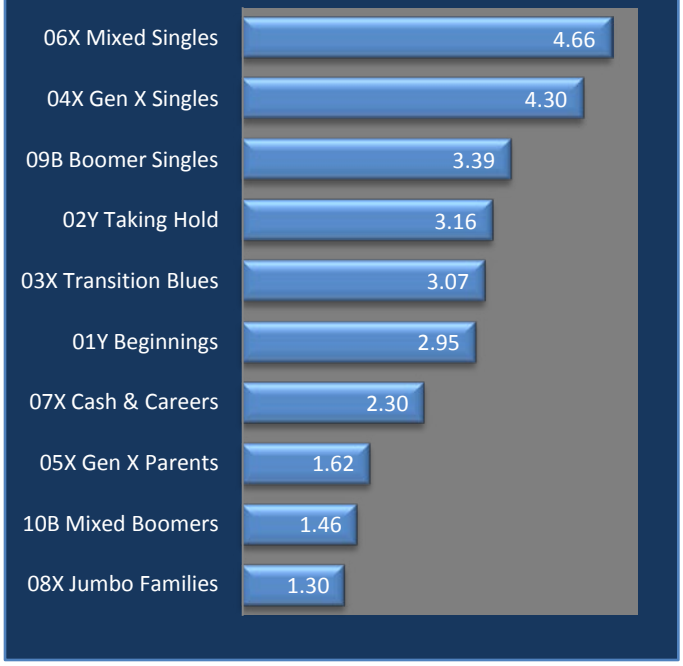
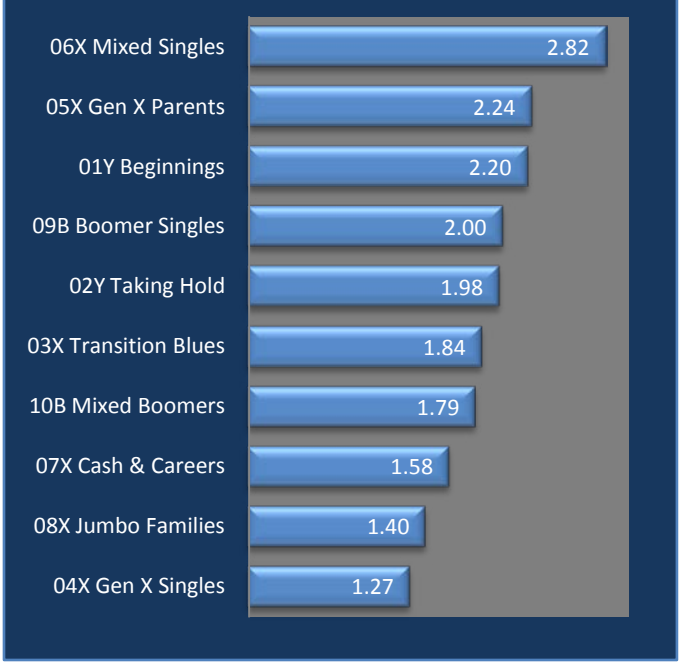


Figure 7. Relative Foreclosure Ratios by PersonicX Group for Arkansas Households



Appendix 1: PersonicX Life Stage Groups

In this Appendix, we provide a brief summary of each PersonicX group. PersonicX Life Stage Segmentation is a household classification system that focuses on the life stages of households such as single, married, parent, empty nest, and other socio-economic characteristics. There are a total of 21 groups that represent various life stages. Within each group, there are smaller segments called clusters that are based on households' specific consumer and demographic characteristics. More information can be found at http://www.acxiom.com/.

Group 01Y "Beginnings"

The clusters in this group typically contain young adults under 30. This group makes extensive use of technology such as cell phones, computers, and the Internet. The members of this group usually have low household incomes and minimal net worth, and they also are known for their short residential tenure. College students and young parents are found in this group.

Group 02Y "Taking Hold"

Three of the four clusters in this group are also under the age of 30. This group has more financial security than Group 01Y. However, the members of this group are defined more by money and not age, and they have made it into the middle and upper-middle income brackets. This group contains a mixture of single and married, as well as homeowners and renters.

Group 03X "Transition Blues"

The clusters in this group contain young adults born from 1958 to 1969. The members of this group have been defined as part of the "Me" or "Gen X" generations. The members are usually in their 30s and 40s and transitioning to a more settled lifestyle after spending most of their twenties doing menial work and going to single bars. These clusters have mid-scale household incomes, below average college educations and lower than average net worth.

Group 04X "Gen X Singles"

The clusters in this group contain members who are single households without children. This group has age ranges in their 30s and early 40s. The members of this group have low-middle to lower socio-economic levels, and they are likely to be apartment dwellers.

Group 05X "Gen X Parents"

There are two clusters in this group, and the members have children and their mean household age is under 40. One cluster contains middle-income homeowners while the other is made up of lower-income households that are mostly renters. Both clusters typically have low net worth.

Group 06X "Mixed Singles"

This group contains three clusters that represent the financially struggling segments on the socio-economic scale. This group contains one cluster of young professionals and students living in densely populated, expensive cities. Another cluster contains homeowners with the lowest incomes, and the final cluster represents an ethnically diverse group comprised of low-income renters.

Group 07X "Cash & Careers"

This group is the most affluent of the generation of adults born in the mid-1960s and early 1970s. Most members in this group show high household incomes and home values. Except for one cluster, this group has residential tenures below seven years. Many members of this group are aggressive investors.

Group 08X "Jumbo Families"

The mean ages of this group fall between 36 and 46. This group has a strong focus on children, and the members tend to share above-average college educations and above average household incomes. The members of this group tend to be homeowners.

Group 09B "Boomer Singles"

This group contains members who are from the Baby Boomer and "Me/Gen X" generations. The age ranges for these clusters are 36-45, and members tend to be unmarried or divorced. This group has middle to near the bottom in income. Members of this group typically do not have children at home, and Members of this group tend to be homeowners.

Group 10B "Mixed Boomers"

The clusters in this group have members in their early 40s and may be with or without children. Two clusters in this group are rural with the other living in dense metro area. They rank differently socio-economically, but they are mostly single and have below average net worth. This group is said to exemplify the price of divorces in America.

Group 11B "Boomer Barons"

This group is top income earner of the "Boomer" clusters and has three of the wealthiest six clusters. Members of this group are concentrated in New England, Mid-Atlantic and Pacific regions of the United States, and the members tend to live in luxury homes, have investment portfolios, and enjoy travel and leisure activities.

Group 12B "Flush Families"

The members of this group include married and single "Boomer" parents. The clusters are all similar in that they are well educated with upper-middle to affluent incomes and net worth. They have school-aged children and live in upscale, mortgaged homes.

Group 13B "True Blues"

There are two clusters in this group. The members of these clusters are older parents, and are employed in "blue collar" occupations. They have mortgages and are family oriented. The members tend to have low-middle class incomes and little savings.

Group 14B "Our Turn"

This group is made up of a cross section of those born between 1934 and 1945 and another segment born between 1946 and 1957. There are five clusters in this group, and the members tend to have mid- to upper-middle household incomes. Two of the clusters are comprised mainly of single people while the other three are made up of married members. There is a wide range in this group of net worth, as well as whether they own homes.

Group 15M "Mature Wealth"

The two clusters in this group have members with ages that range from 36 to 75, but they exhibit peak wealth. The members of this cluster are highly concentrated in the New England, Mid-Atlantic and Pacific regions.

Group 16M "Aging Upscale"

The three clusters in this group are representative of the Vietnam cohort in that as young adults, they were some of the first to be drafted. This group is also one of the last groups to marry young. They are often characterized as "empty nest." Two of the clusters are married. The educations vary as does their economic status.

Group 17M "Modest Means"

This group consists of five clusters that fall into the low-mid and lower socio-economic segment. For several of the clusters, retirement is a major factor in their modest incomes. This group has the most single members with grandchildren indicating high levels of divorce or widowing. Most members are homeowners with above-average residential tenures and equity ratios.

Group 18M "Mature Rustics"

Three clusters are found in this group. One of the groups represents members moving toward retirement, and blue-collar workers dominate the other two groups. The members of this group have old-fashioned, country values. Incomes for this group are below average. Almost all are homeowners, and they have some net worth.

Group 19M "The Golden Years"

The clusters in this group represent the members with the option for early, stress-free, healthy retirement, but of the three clusters only 30% of one is retired while the other two have members that are still employed in upscale, white-collar occupations. They have high incomes and net worth, and they own valuable real estate.

Group 20S "Active Elders"

The three clusters in this group share the advantage of the ability to have a comfortable retirement. They have good educations and solid middle income, and they are health conscious. This group has members who rank high in average ratios of available equity-to-home values. With mean ages as high as 83 years, there are large numbers of widows and widowers in this group.

Group 21S "Leisure Buffs"

There are five clusters in this group. They have half of the household income found in Group 20S and have lower education levels, but they are similar in age with the mean ages ranging from 70 to 83 years. There is also a mix of widows and widowers in this group as well. They tend to also be health conscious, but they rely more on Medicare. This group has a mix of long-time homeowners and renters.

Appendix 2

Table A1: U.S. excess foreclosure share and relative foreclosure ratio by PersonicX Group

Foreclosure share is the percentage of foreclosures represented by each group, and household share is the percentage of households represented by each group. We subtract the household share from the foreclosure share to derive the "excess share." Group 7X, for example, accounts for 5.52 percent of all households but 11.3 percent of all foreclosures. The excess share of foreclosures, then, is the difference of these two ratios, or 5.78 percentage points. The relative ratio is the foreclosure share divided by the household share. Data are sorted by excess share in descending order. During the third quarter of 2008, 217,088 out of 44,094,132 households in our sample were in foreclosure for an annualized foreclosure rate of 1.97%.

PersonicX Group	Foreclosure Share	Household Share	Excess Share	Relative Ratio
07X Cash & Careers	11.30%	5.52%	5.78%	2.05
02Y Taking Hold	6.60%	2.95%	3.66%	2.24
03X Transition Blues	5.30%	2.33%	2.97%	2.27
09B Boomer Singles	3.71%	1.31%	2.40%	2.84
05X Gen X Parents	4.25%	2.46%	1.78%	1.72
08X Jumbo Families	10.60%	8.90%	1.70%	1.19
01Y Beginnings	2.48%	1.05%	1.43%	2.36
06X Mixed Singles	1.74%	0.50%	1.24%	3.48
10B Mixed Boomers	4.27%	3.08%	1.19%	1.39
04X Gen X Singles	1.78%	0.60%	1.18%	2.97
14B Our Turn	3.37%	3.33%	0.05%	1.01
17M Modest Means	2.93%	3.00%	-0.06%	0.98
13B True Blues	4.27%	5.20%	-0.93%	0.82
12B Flush Families	10.61%	11.60%	-0.99%	0.91
16M Aging Upscale	3.15%	4.23%	-1.08%	0.74
18M Mature Rustics	0.69%	2.00%	-1.31%	0.34
19M The Golden Years	3.58%	5.42%	-1.84%	0.66
21S Leisure Buffs	2.44%	4.48%	-2.04%	0.54
15M Mature Wealth	3.90%	6.16%	-2.26%	0.63
20S Active Elders	3.26%	9.40%	-6.13%	0.35
11B Boomer Barons	9.79%	16.50%	-6.71%	0.59
Total Observations:	217,088	44,094,132		

Table A2: California excess foreclosure share and relative foreclosure ratio by PersonicX Group

PersonicX Group	Foreclosure Share	Household Share	Excess Share	Relative Ratio
07X Cash & Careers	14.24%	6.19%	8.04%	2.30
02Y Taking Hold	7.25%	2.29%	4.96%	3.16
03X Transition Blues	6.71%	2.19%	4.52%	3.07
09B Boomer Singles	4.26%	1.25%	3.00%	3.39
08X Jumbo Families	8.82%	6.79%	2.03%	1.30
06X Mixed Singles	2.35%	0.50%	1.85%	4.66
04X Gen X Singles	1.81%	0.42%	1.39%	4.30
01Y Beginnings	2.07%	0.70%	1.37%	2.95
05X Gen X Parents	3.48%	2.15%	1.33%	1.62
10B Mixed Boomers	2.93%	2.01%	0.92%	1.46
14B Our Turn	3.12%	3.14%	-0.02%	0.99
17M Modest Means	2.18%	2.38%	-0.20%	0.92
18M Mature Rustics	0.52%	1.09%	-0.57%	0.48
13B True Blues	3.64%	4.48%	-0.84%	0.81
16M Aging Upscale	2.46%	3.45%	-0.99%	0.71
21S Leisure Buffs	2.13%	3.23%	-1.10%	0.66
12B Flush Families	8.84%	10.22%	-1.38%	0.86
19M The Golden Years	5.54%	8.28%	-2.74%	0.67
20S Active Elders	2.72%	6.66%	-3.94%	0.41
15M Mature Wealth	5.17%	11.54%	-6.37%	0.45
11B Boomer Barons	9.76%	21.02%	-11.26%	0.46
Total Observations:	60,038	5,640,094		

Table A3: Arkansas excess foreclosure share and relative foreclosure ratio by PersonicX Group

PersonicX Group	Foreclosure Share	Household Share	Excess Share	Relative Ratio
08X Jumbo Families	13.61%	9.74%	3.87%	1.40
05X Gen X Parents	5.83%	2.61%	3.22%	2.24
10B Mixed Boomers	6.67%	3.72%	2.94%	1.79
03X Transition Blues	6.39%	3.47%	2.92%	1.84
02Y Taking Hold	5.83%	2.95%	2.88%	1.98
07X Cash & Careers	6.11%	3.86%	2.25%	1.58
01Y Beginnings	3.06%	1.39%	1.67%	2.20
12B Flush Families	9.72%	8.25%	1.47%	1.18
09B Boomer Singles	2.22%	1.11%	1.11%	2.00
06X Mixed Singles	1.67%	0.59%	1.08%	2.82
15M Mature Wealth	5.83%	5.62%	0.21%	1.04
04X Gen X Singles	0.83%	0.65%	0.18%	1.27
17M Modest Means	3.06%	3.70%	-0.64%	0.83
16M Aging Upscale	3.61%	4.48%	-0.87%	0.81
14B Our Turn	1.39%	2.90%	-1.52%	0.48
13B True Blues	4.17%	6.08%	-1.91%	0.69
18M Mature Rustics	1.39%	4.56%	-3.18%	0.30
21S Leisure Buffs	2.50%	5.84%	-3.34%	0.43
19M The Golden Years	1.67%	5.14%	-3.48%	0.32
11B Boomer Barons	10.56%	14.21%	-3.65%	0.74
20S Active Elders	3.89%	9.11%	-5.22%	0.43
Total Observations:	360	185,852		