



Pathways to Foreclosure:

A Longitudinal Study of
Mortgage Loans, Cleveland and
Cuyahoga County, 2005-2008

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The Study

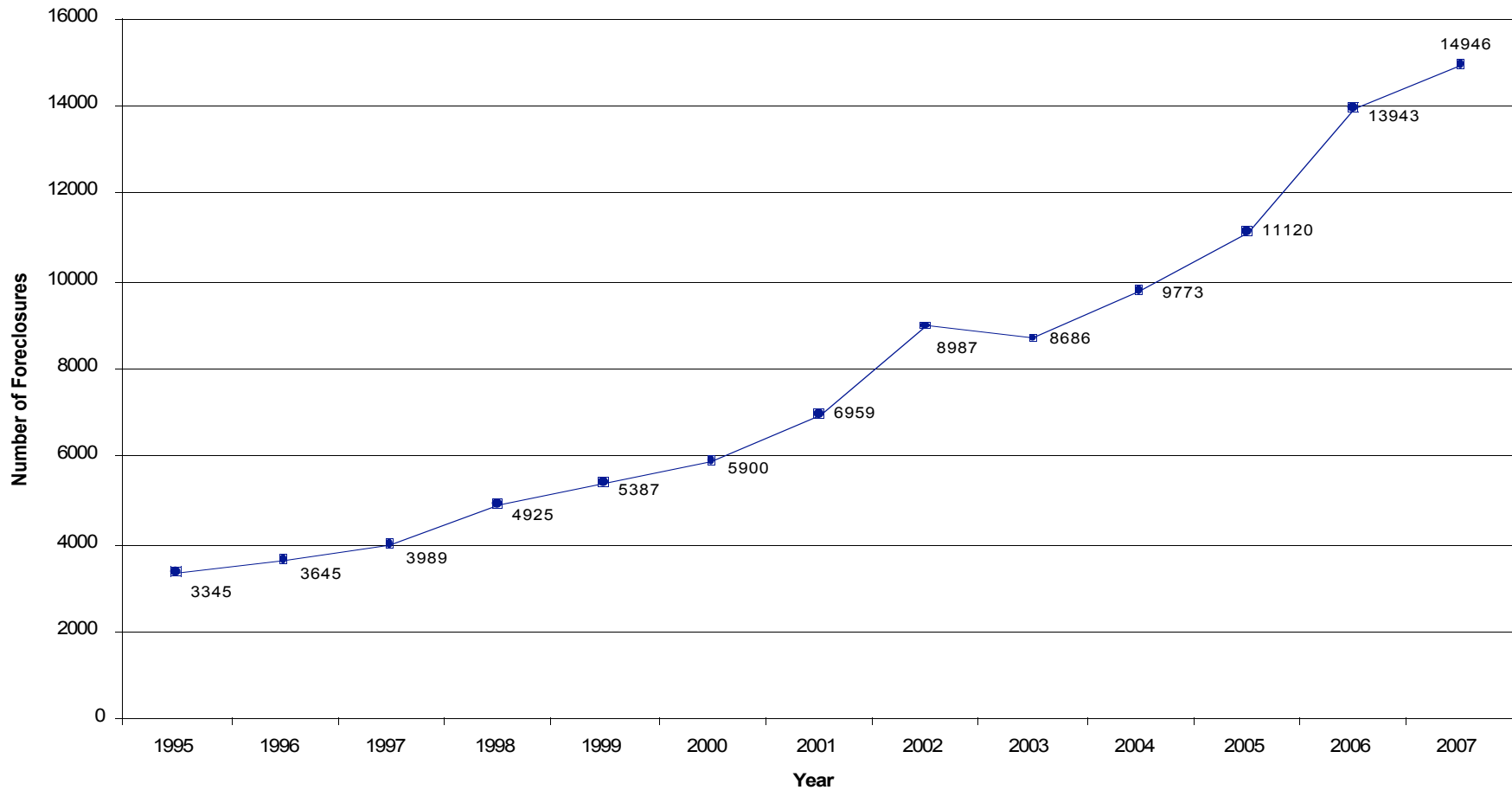
- Purpose: Determine the origins of the foreclosure crisis in Cuyahoga County.
- Focus: Mortgage loans originated in Cuyahoga County between 2005 and 2006; foreclosed between 2005 and early 2008.
- Data: Home Mortgage Disclosure Act data matched with locally recorded mortgage, foreclosure filings and deed transfer data.
- Modeling: Survival (proportional hazards) model, spatial process.



Data preparation

- Sample data from the 2005 and 2006 Home Mortgage Disclosure Act files were matched with Cuyahoga County Recorder loan documents.
 - 68% of HMDA files were matched.
 - There are no statistically significant differences between matched and unmatched loans.
- Matched data was checked for foreclosure using Cuyahoga County Clerk of Courts records.
- Assessed market value and sales price of properties at the time of loan origination was checked using Cuyahoga County Auditor data.
- Sheriff's deeds and next sales (after REO) from County Recorder.

Foreclosure Filings, Cuyahoga County





Risk Factors for Foreclosure

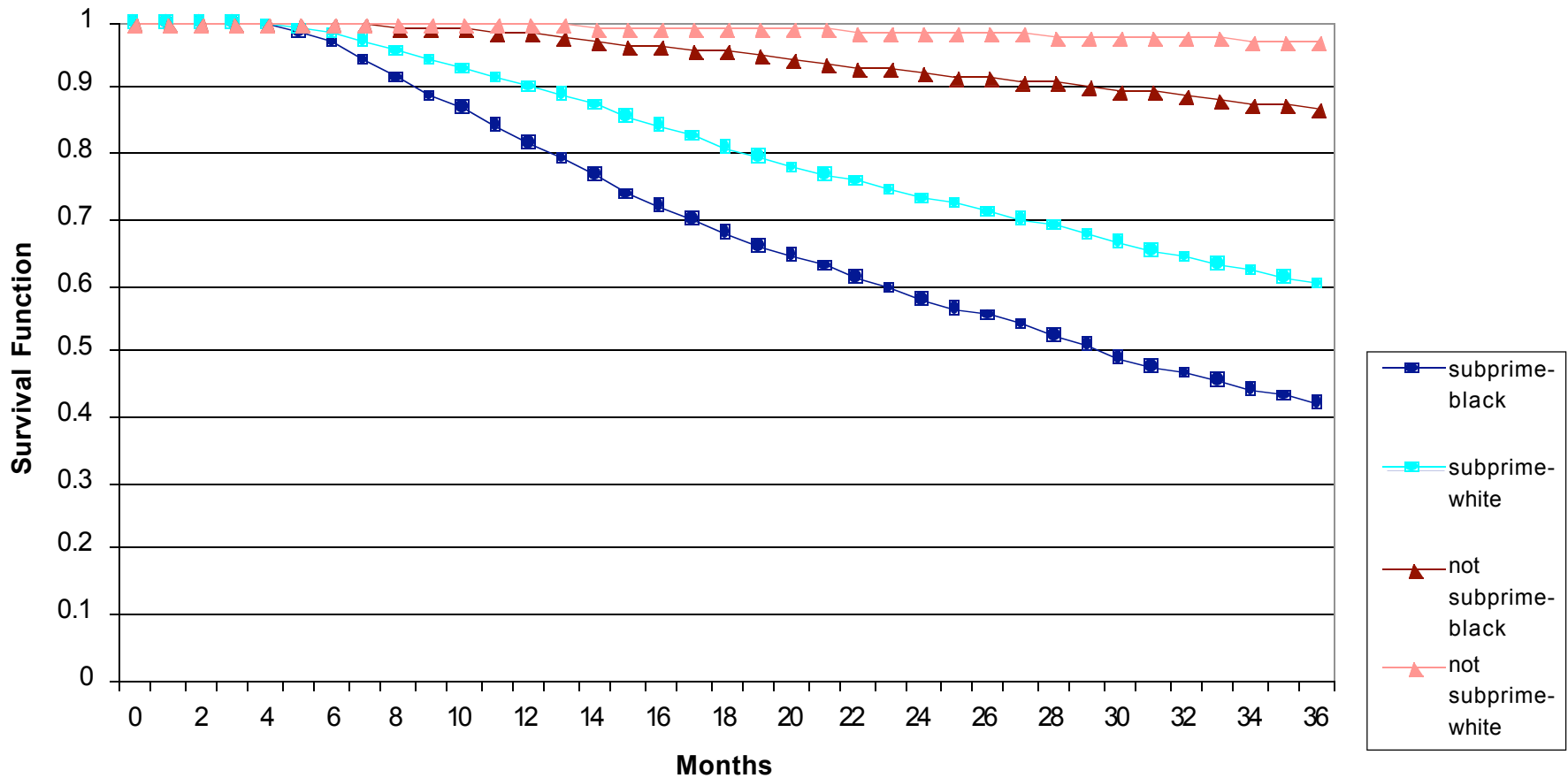
- High cost subprime loans account for 84% of all foreclosures in this sample study. (HR 6.6).
- Additional factors influencing foreclosure:
 - Non-owner occupancy
 - Having a junior or piggy back loan
 - Having low equity (high loan to value ratio)
 - Origination by non-local bank
 - Racial characteristics of borrower (African American)
 - Income of borrower (low income)
 - African American neighborhoods
 - High poverty neighborhoods
 - Proximity to foreclosed house (LT 500 feet)



Survival Function

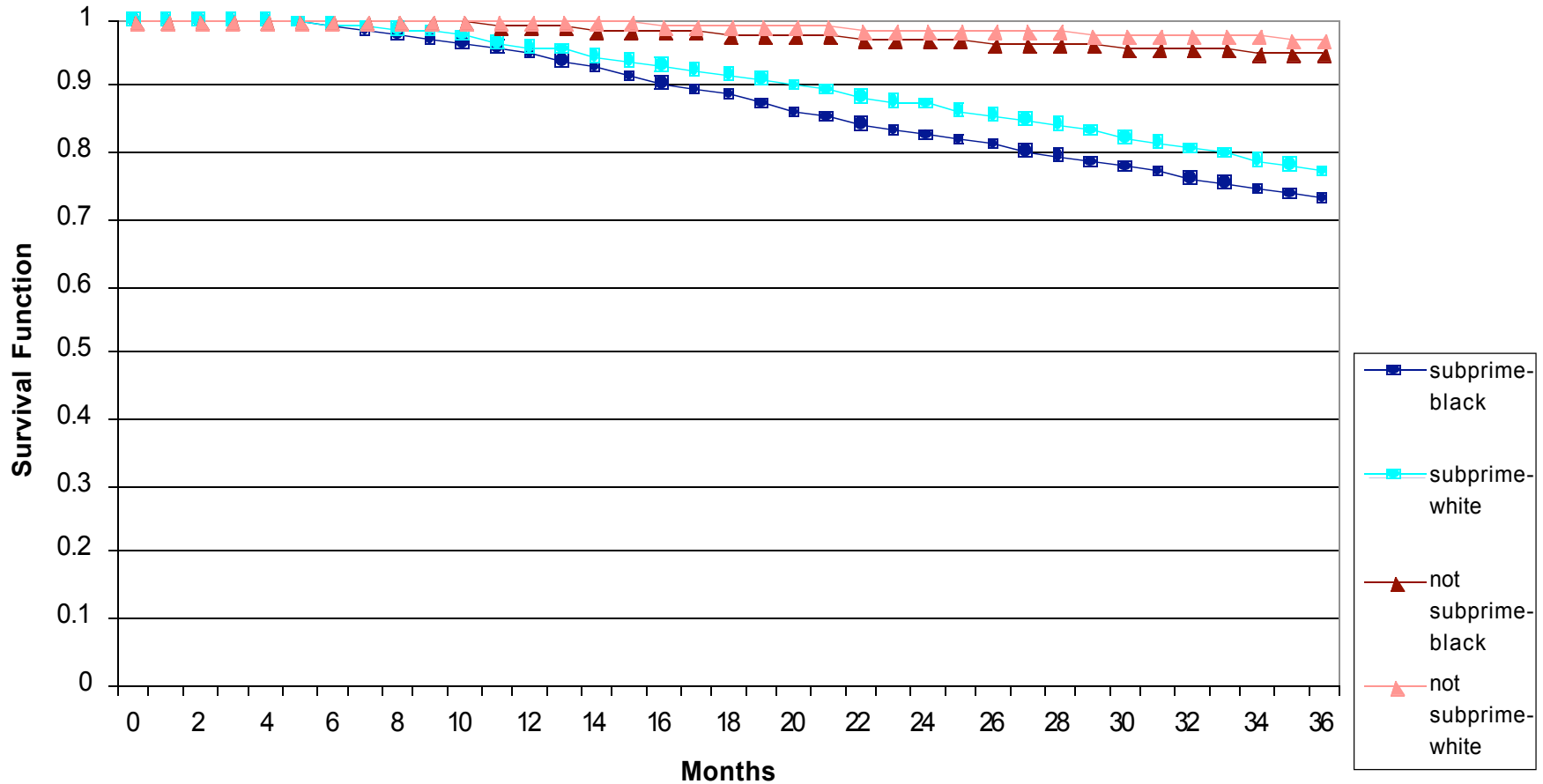
- Shows the estimated survival period of a loan—death defined as foreclosure filing.

Home Purchase Loans: Time from Origination to Foreclosure



Source: Loan Origination and Foreclosure Matched Data File, Center on Urban Poverty and Community Development, Mandel School of Applied Social Sciences, Case Western Reserve University

Home Refinance Loans: Time from Origination to Foreclosure



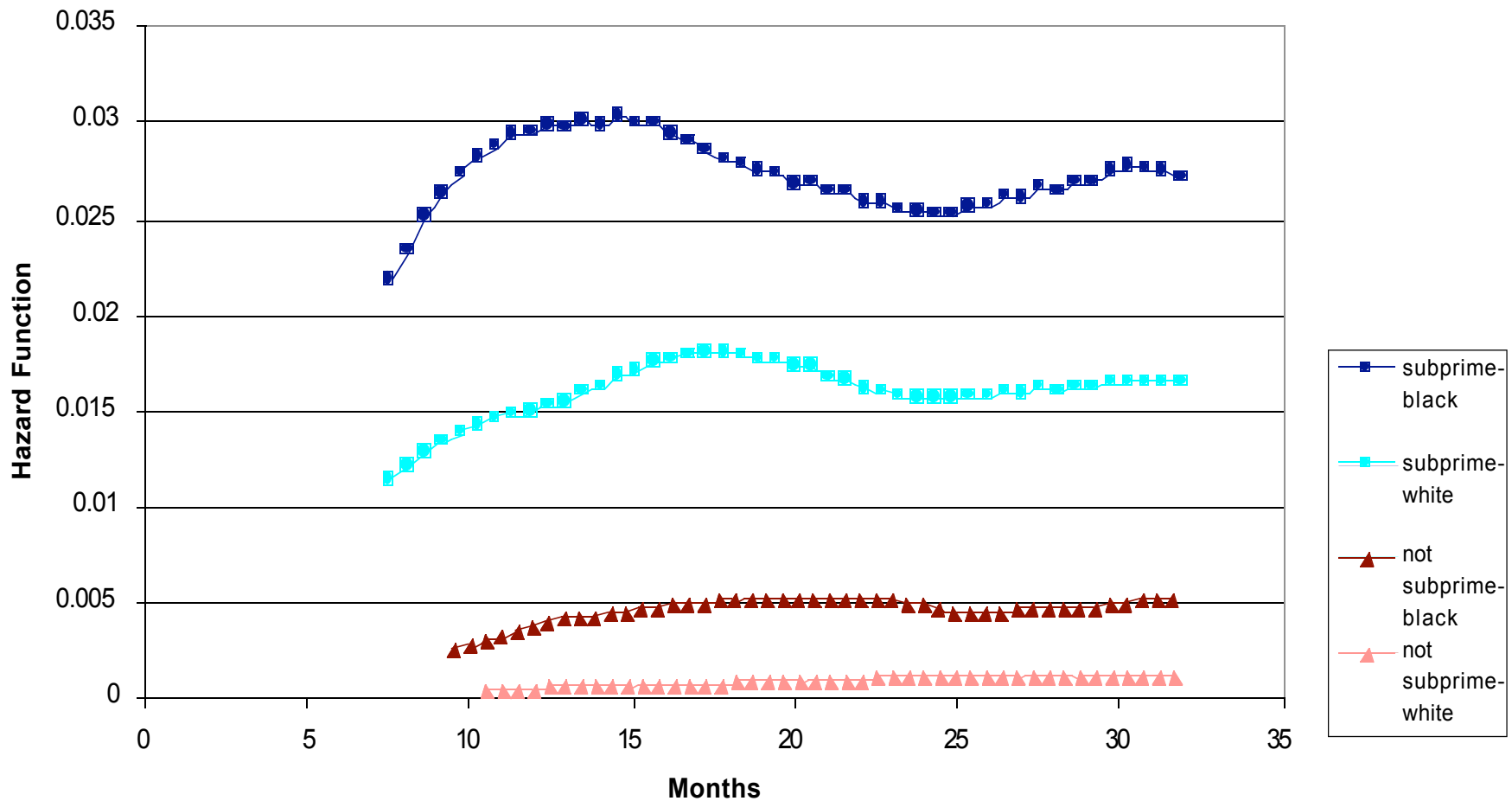
Source: Loan Origination and Foreclosure Matched Data File, Center on Urban Poverty and Community Development, Mandel School of Applied Social Sciences, Case Western Reserve University



Hazard Rate Function

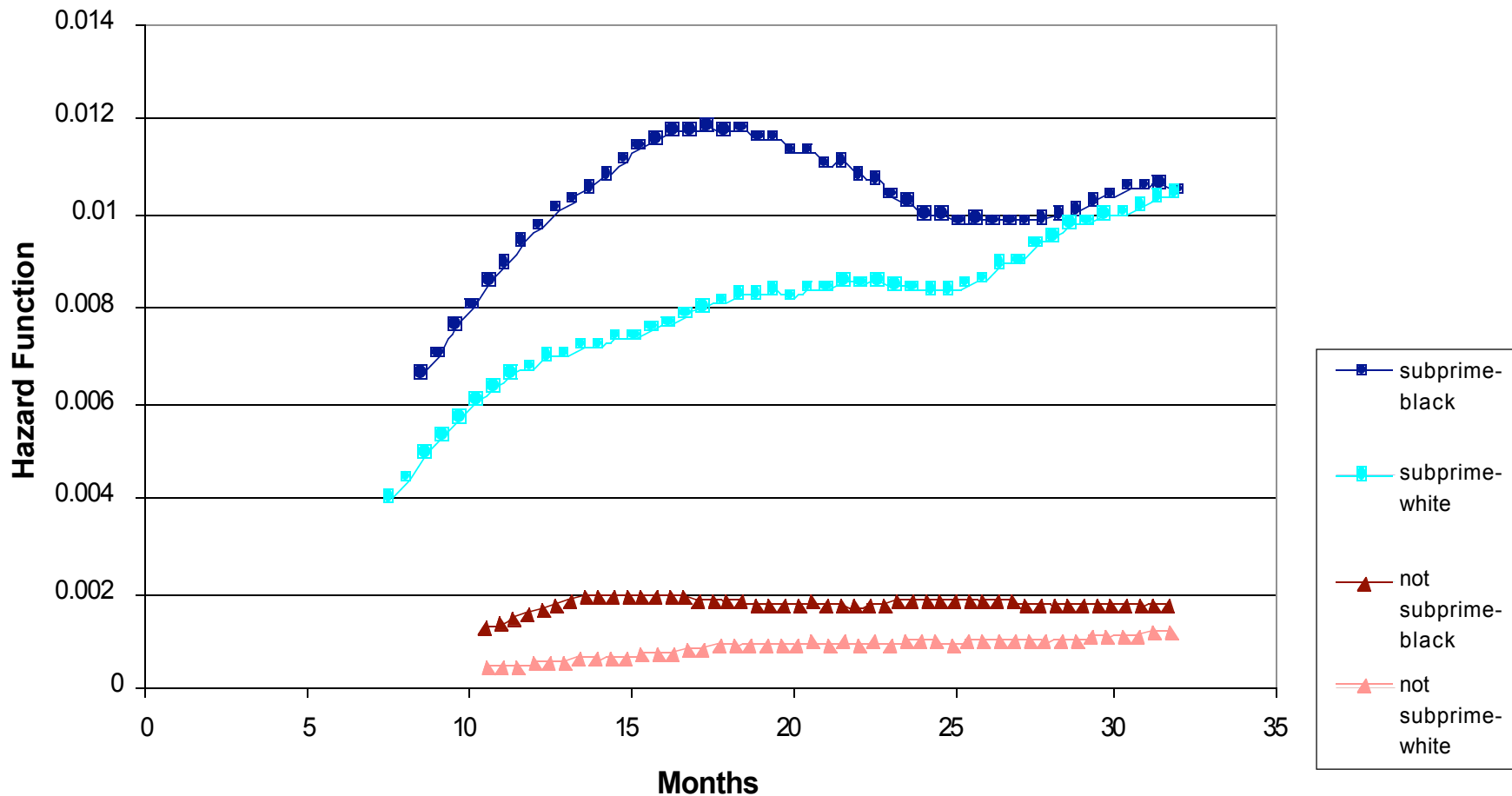
- Shows the average risk/probability of foreclosure over time by race of borrower and subprime status of the loan.

Home Purchase Loans: Probability of Foreclosure in Time

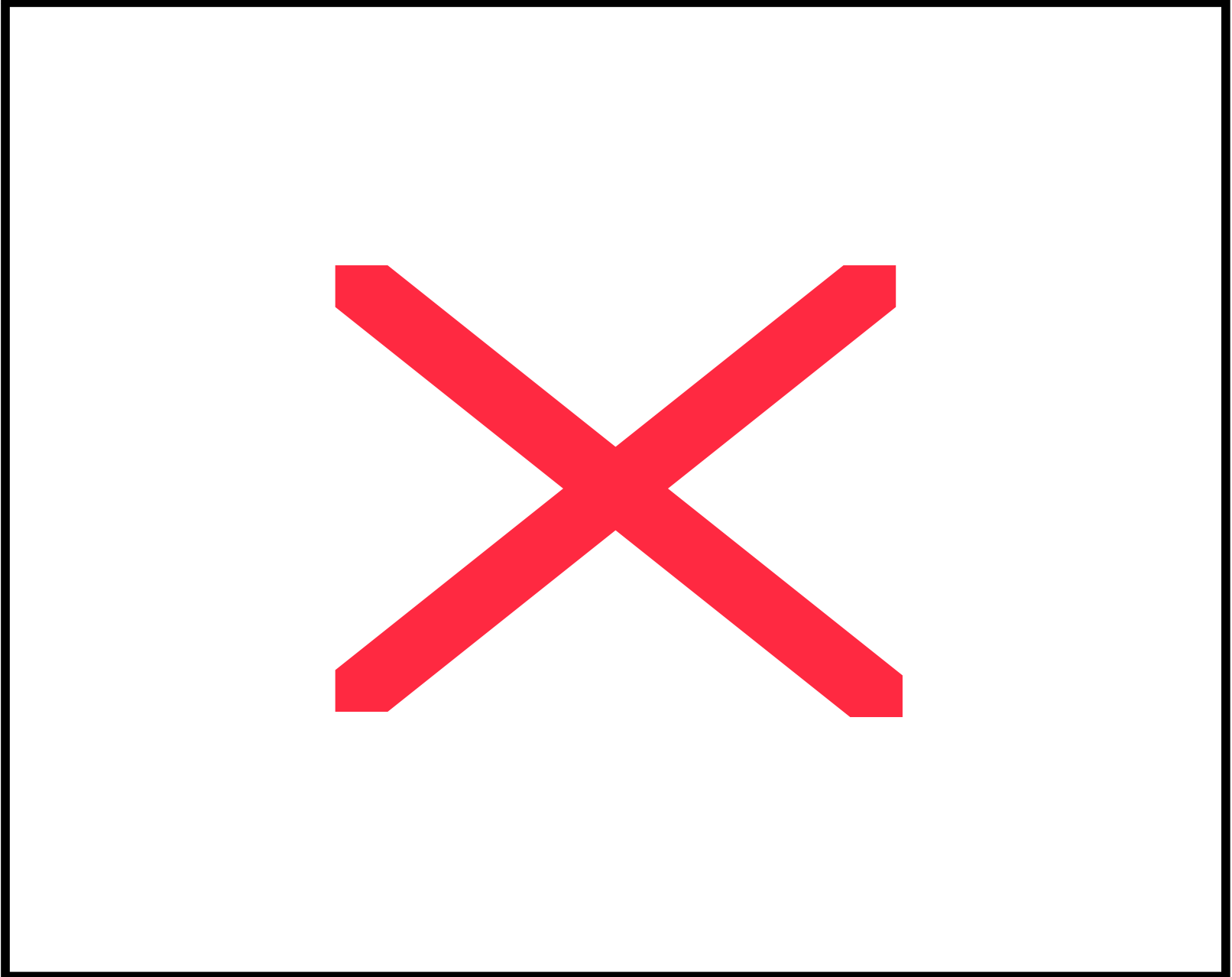


Source: Loan Origination and Foreclosure Matched Data File, Center on Urban Poverty and Community Development, Mandel School of Applied Social Sciences, Case Western Reserve University

Home Refinance Loans: Probability of Foreclosure in Time



Source: Loan Origination and Foreclosure Matched Data File, Center on Urban Poverty and Community Development, Mandel School of Applied Social Sciences, Case Western Reserve University





Spatial Influence of Foreclosures

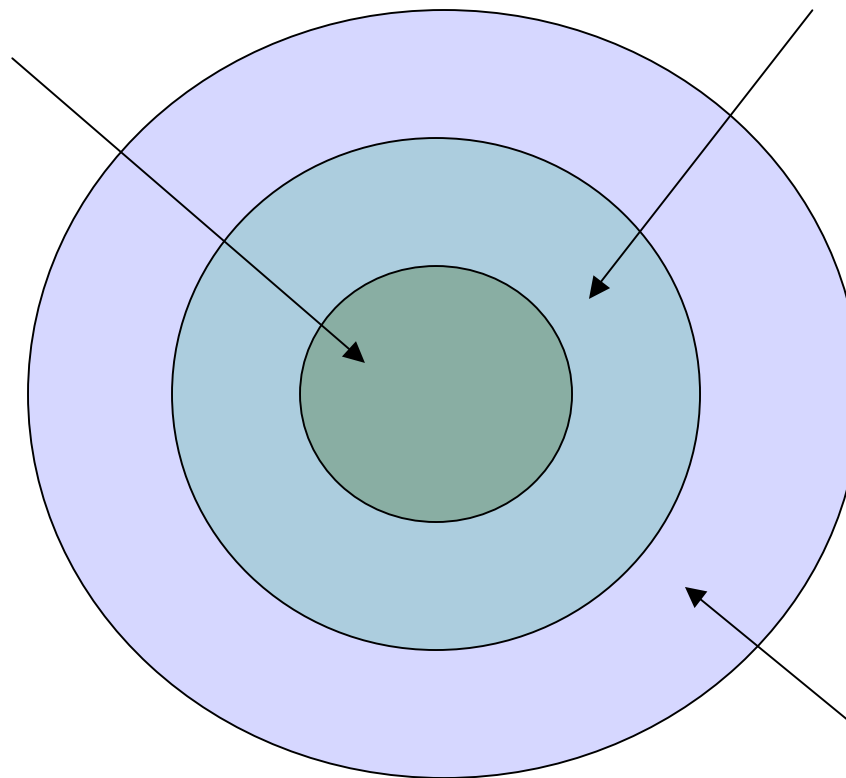
- Foreclosures negatively affect surrounding property values.
- The number of foreclosures within 500 feet of a property significantly increases rate of foreclosure in home purchase loans (from survival model).



Racial Disparities

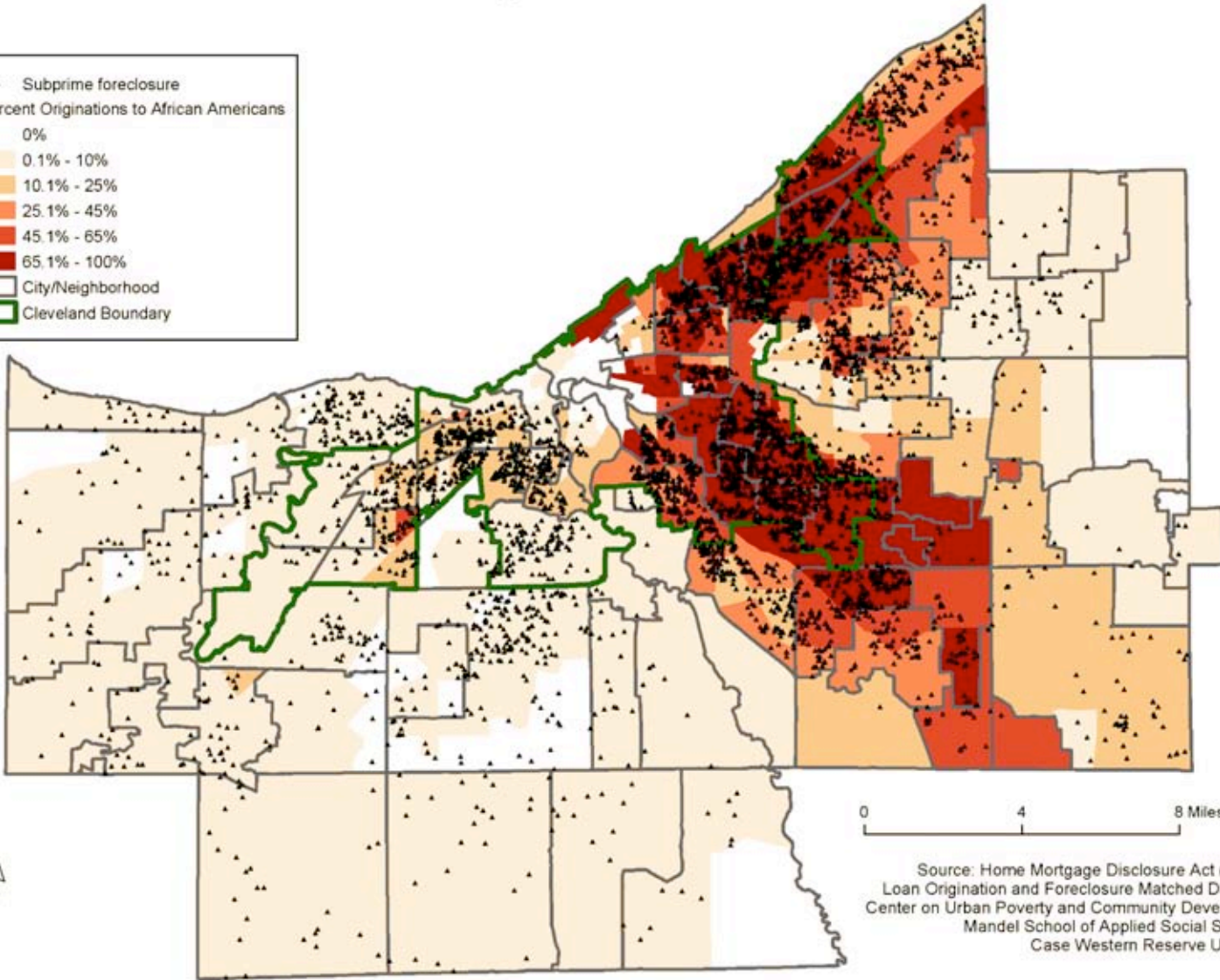
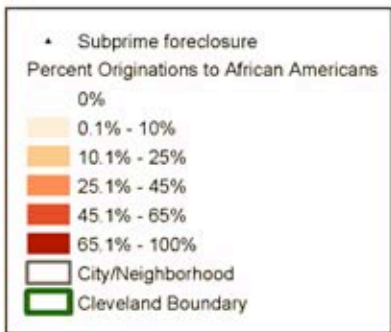
Targeted for
subprime
lending

Foreclosure
rates



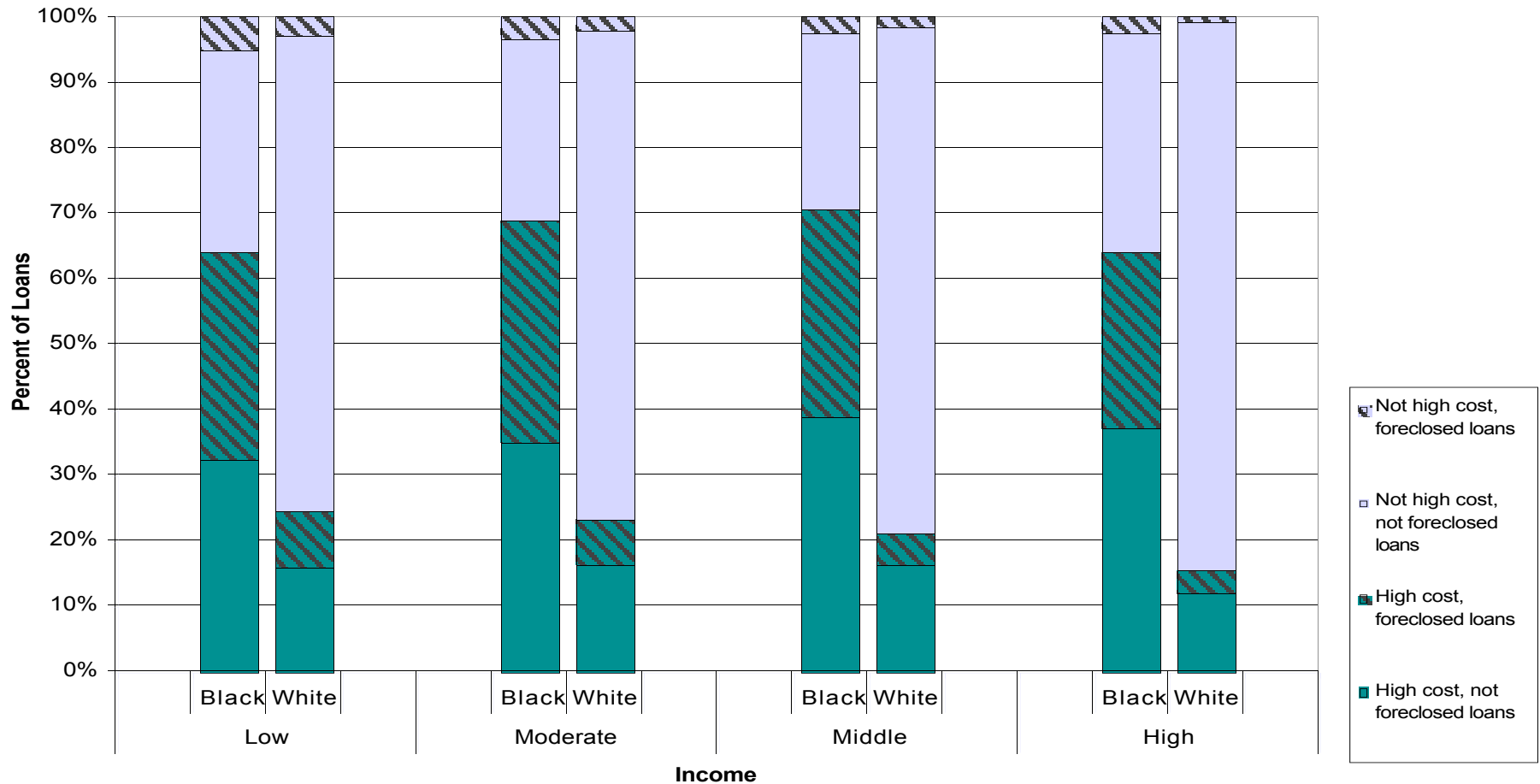
Foreclosure
impact by
neighborhood

Percent Loan Originations to African Americans



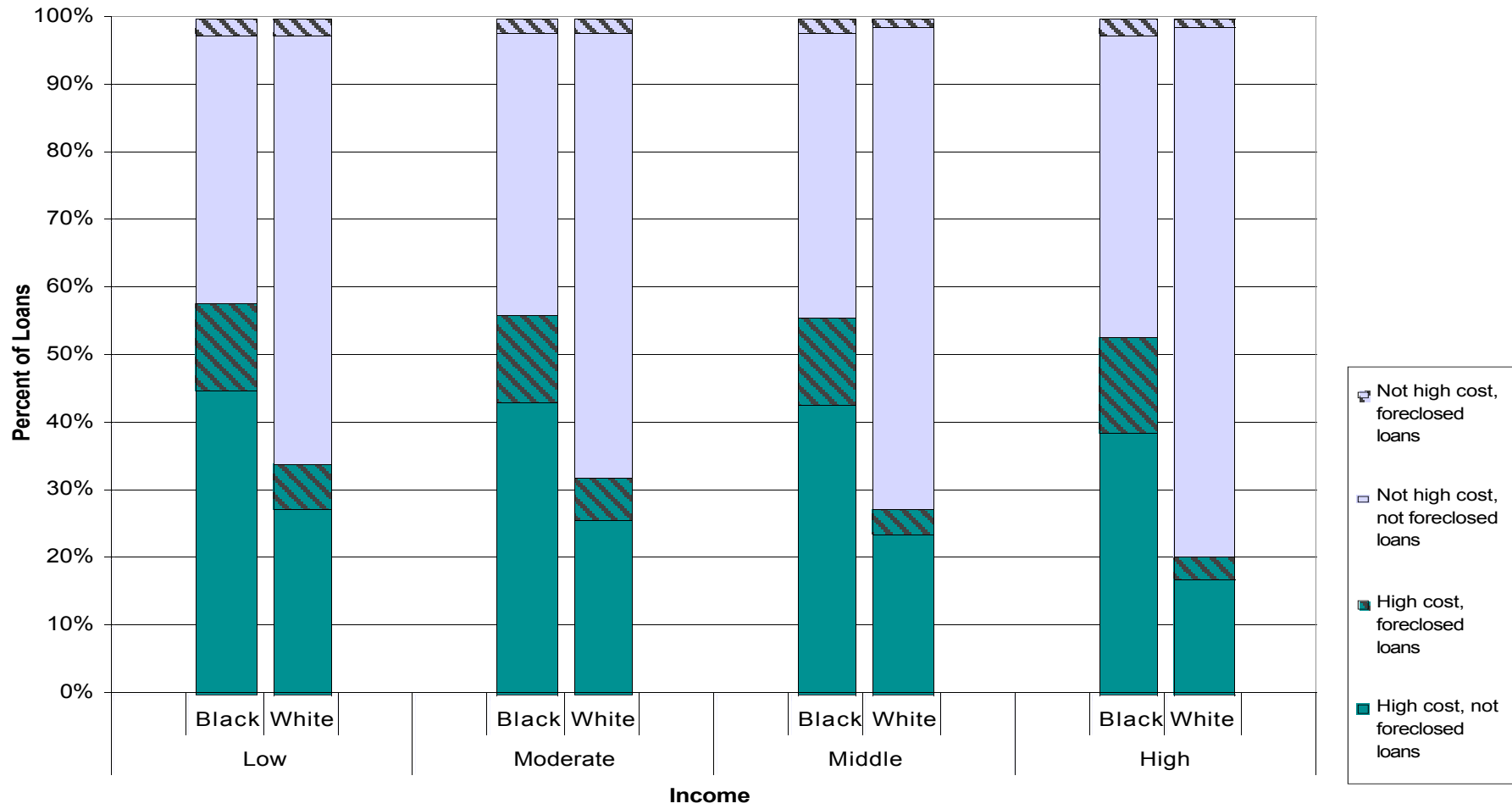
Source: Home Mortgage Disclosure Act (HMDA),
Loan Origination and Foreclosure Matched Data File,
Center on Urban Poverty and Community Development,
Mandel School of Applied Social Sciences,
Case Western Reserve University

Subprime Home Purchase Loans and Foreclosure of by Race and Income



Source: Loan Origination and Foreclosure Matched Data File, Center on Urban Poverty and Community Development, Mandel School of Applied Social Sciences, Case Western Reserve University

Subprime Home Refinance Loans and Foreclosure of by Race and Income



Source: Loan Origination and Foreclosure Matched Data File, Center on Urban Poverty and Community Development, Mandel School of Applied Social Sciences, Case Western Reserve University



Who Is Involved?

- The top 20 originators of subprime loans account for 82% of the foreclosures on high cost subprime loans originated in 2005 and 2006.

Companies Originating Subprime Loans

Top 20 originators of high cost subprime foreclosed loans			
Originator	On HUD Subprime List	Percent High Cost Loans	Percent High Cost Loans, with Foreclosure
1 Argent	Yes	87.33	38.88
2 New Century Mortgage	Yes	95.42	41.34
3 Long Beach Mortgage	Yes	99.34	55.59
4 Aegis	Yes	87.17	38.28
5 Wells Fargo	Certain subsidiaries	36.73	22.30
6 BNC	Yes	94.09	40.48
7 People's Choice Financial	Yes	93.52	36.86
8 National City	Certain subsidiaries	35.51	20.26
9 Countrywide	No	24.71	20.76
10 Finance America	Yes	96.72	48.68
11 Novastar Mortgage	Yes	97.84	27.09
12 Option One Mortgage Solutions	Yes	91.69	29.27
13 Accredited Home Lenders	Yes	95.85	26.46
14 Aames Funding	Yes	92.88	34.33
15 Intervale Mortgage	No	87.23	23.41
16 Southstar Funding	Yes	84.67	25.35
17 Fremont Investment & Loan	Yes	92.16	30.64
18 Delta Funding	Yes	98.58	30.29
19 Ownit Mortgage Solutions	Yes	97.44	31.05
20 Encore Credit	Yes	95.05	30.06

Source: Loan Origination and Foreclosure Matched Data File, Center on Urban Poverty and Community Development, Mandel School of Applied Social Sciences, Case Western Reserve University



The End of the Pathway

- By the time most loans are foreclosed upon, they have been sold on the secondary market.
- The top 20 plaintiffs are responsible for 92% of high cost subprime foreclosures.



Companies Foreclosing on Loans

Top 20 plaintiffs on foreclosure filings on subprime loans. ¹	
Plaintiffs	Percent High Cost Loans, with Foreclosure
1 Deutsche Bank	30.72
2 US Bank	19.24
3 Wells Fargo ²	8.86
4 HSBC	7.68
5 Bank of New York	4.05
6 LaSalle Bank	3.80
7 MERS ³	2.36
8 Novastar Mortgage Inc	1.52
9 Wachovia Bank	1.52
10 JP Morgan Chase	1.43
11 Citi	1.18
12 Argent	1.01
13 New Century Mortgage Company	1.01
14 Avelo Mortgage	0.93
15 Indymac Bank	0.93
16 Countrywide	0.84
17 Property Asset Management Inc	0.84
18 Ameriquest	0.76
19 EMC Mortgage Company	0.76
20 Washington Mutual Bank	0.76

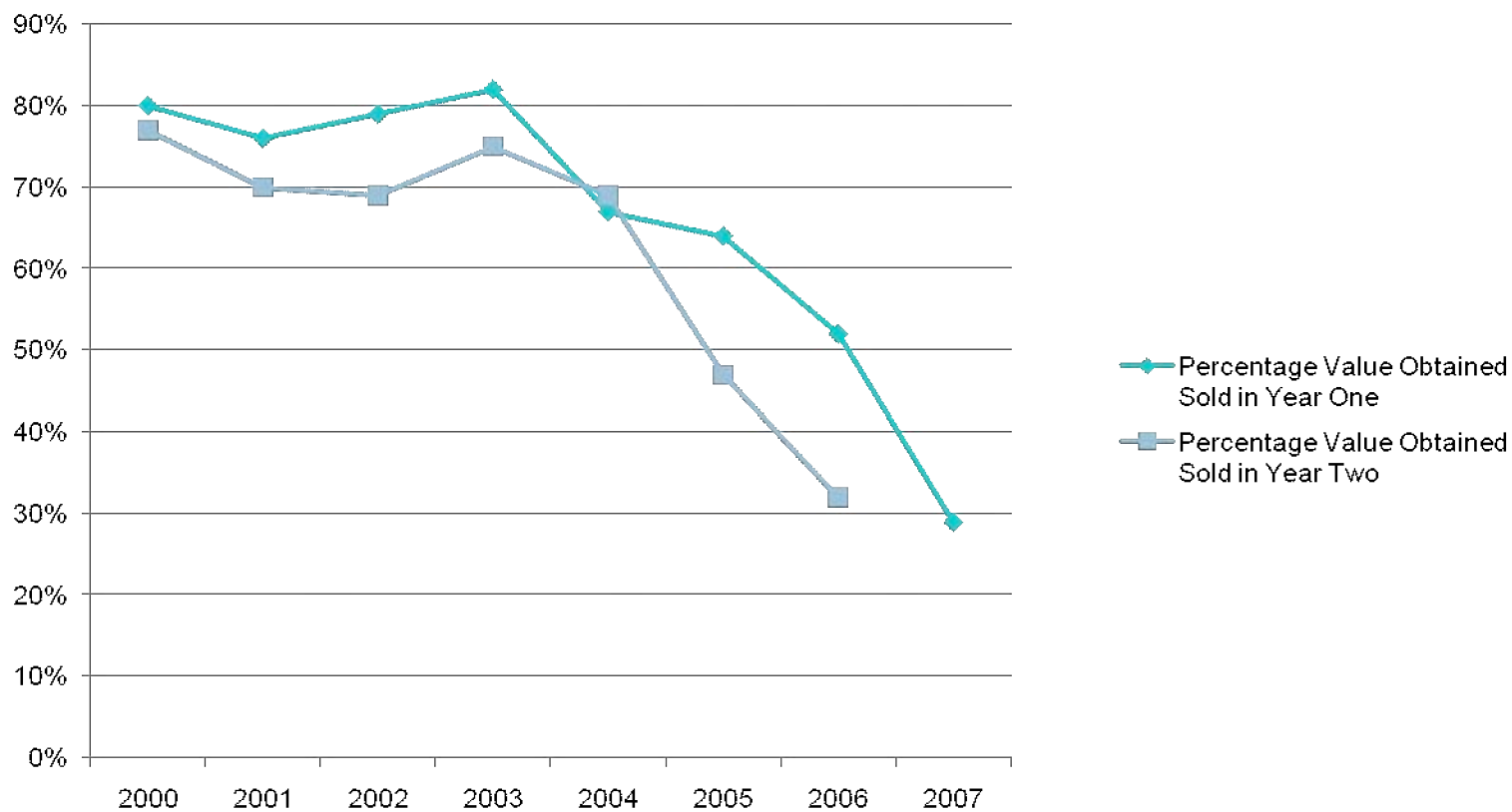
¹Based on a review of court records for a random sample of subprime foreclosures (n=1,18

²Includes Wells Fargo subsidiaries.

³MERS is not a lender but a network of securitizers and servicers

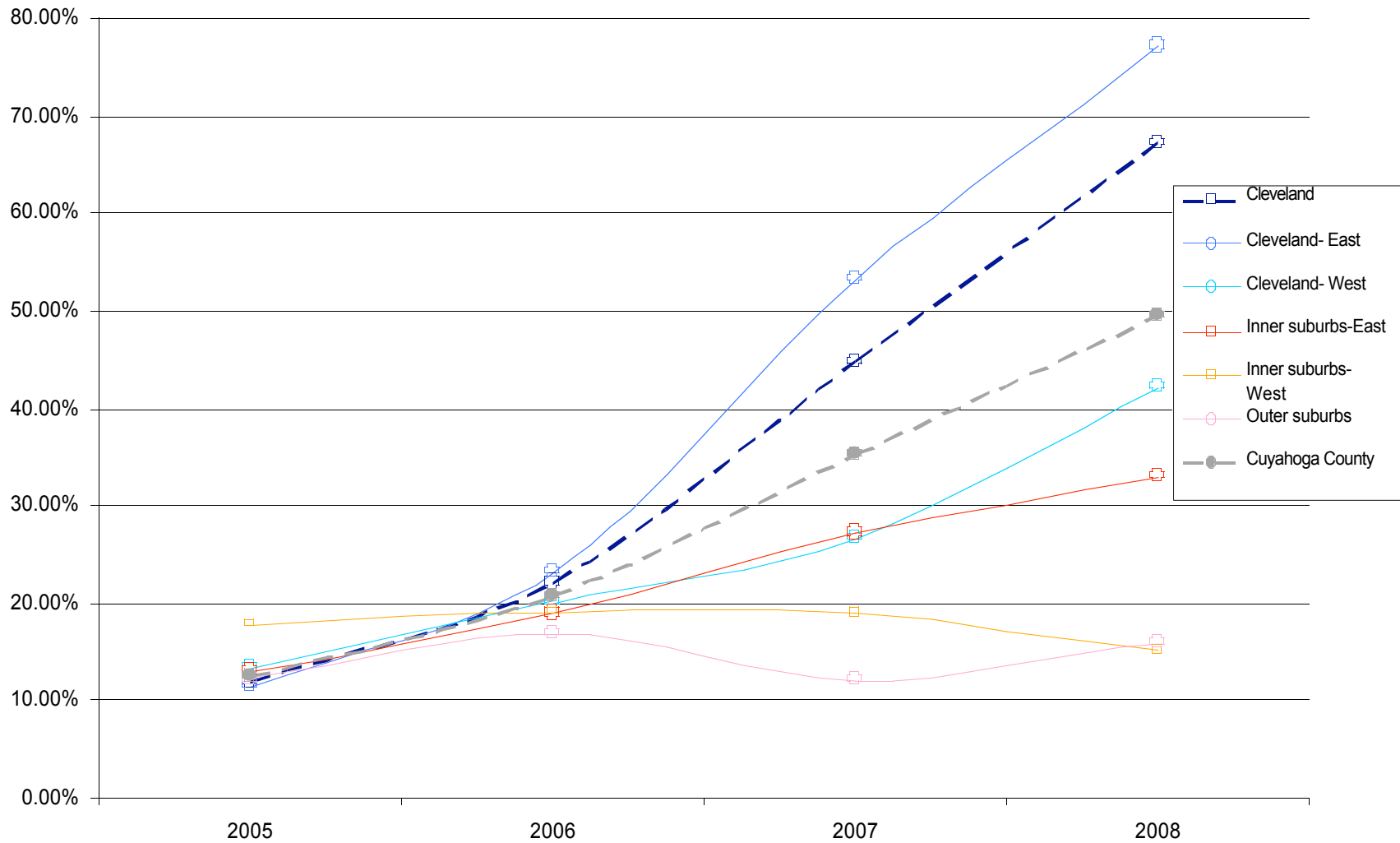
Source: Loan Origination and Foreclosure Matched Data File, Center on Urban Poverty and Community Development, Mandel School of Applied Social Sciences, Case Western Reserve University

Next Sales Price (Post REO) relative to estimated market value (2007 dollars), Cleveland





Properties sold for \$10,000 or less as a percent of all first property transfers, 2007-2008

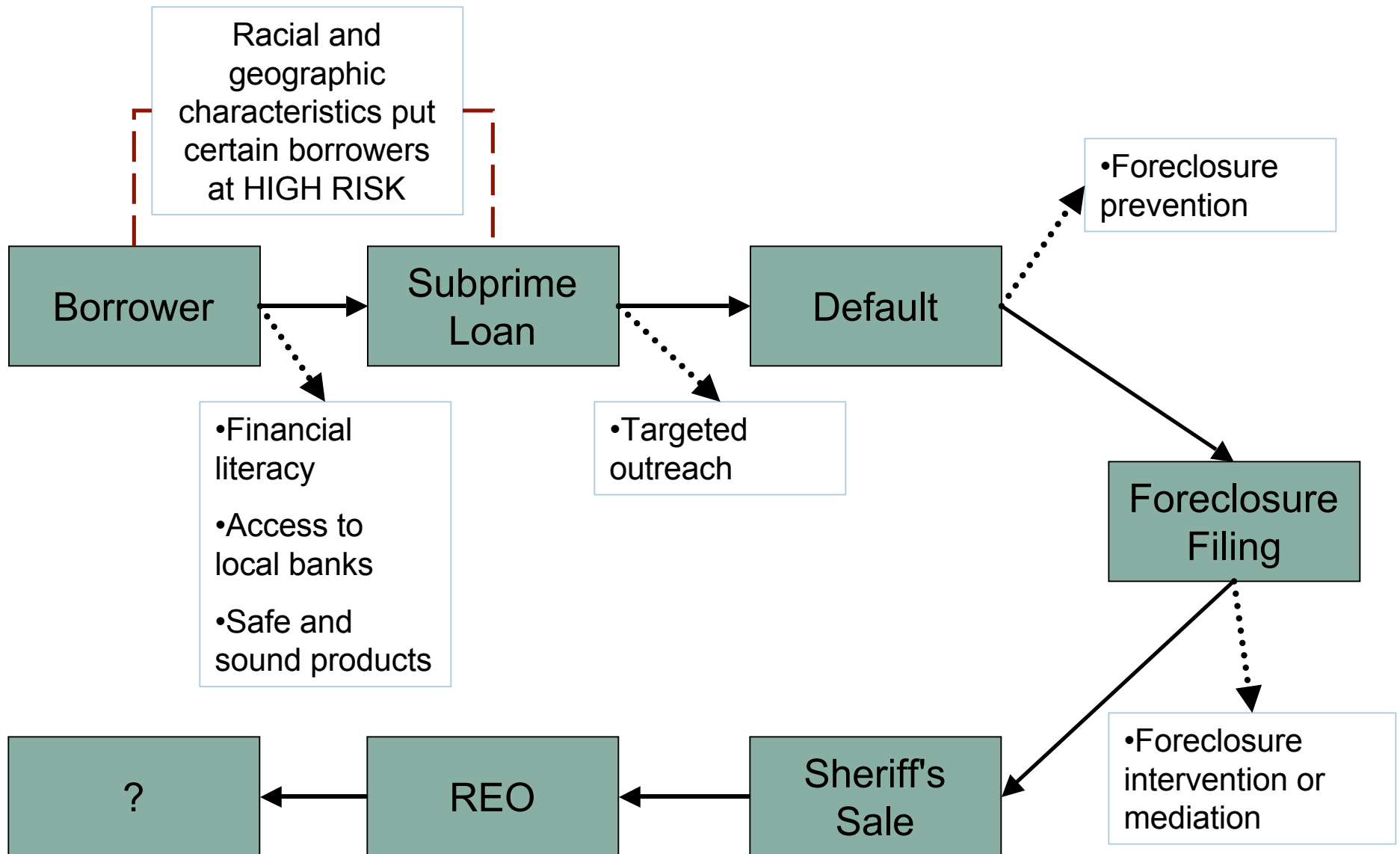




Conclusions

- Status as a high cost subprime loan is the strongest predictor of a loan foreclosing.
 - High cost home purchase loans had 816% greater chance of foreclosing.
- African American borrowers at all income levels were 2-3 times more likely to receive high cost subprime loans than white borrowers.
- A relatively short list of lenders was responsible for originating most high cost subprime loans that foreclosed.
- Without intervention, most high cost subprime foreclosed properties will proceed to sheriff's sale and vacancy, creating problems for communities.

Diversions from the Pathway to Foreclosure





Implications: Fair and sound lending

- Problems of fair lending have taken new forms.
 - Communities need monitoring focused on costs, quality, and terms of loan products.
- Borrowers are ill-equipped to make sound decisions about financing a home.
 - Communities need financial literacy education and technologies for comparing financial products.
- Local banks, who have lower rates of foreclosure, aren't used as frequently as other financial institutions.
 - We need to increase the visibility of these banks.



Implications: Foreclosure prevention and intervention

- Provide information to borrowers who are currently at risk of foreclosure (have subprime loans from top plaintiffs).
- Inform borrowers about filing an answer when notified of foreclosure.
- Contact borrowers before they vacate their homes.



Implications: Clean up and cost recovery

- Moving properties in REO.
- Funds for reclamation and demolition.
- Entity to hold and redevelop property.
- Compensation for harm.



Appendices

Number of records matched at each stage of the mapping process

	Matched by	Additional Variables used in Matching	2005	2006
Total Number of HMDA Loans			54239	44988
# Matched -- Pass 1	census tract, loan amount, standardized lender's name	loan purpose, owner-occupancy status	33006	28068
# Matched -- Pass 2	census tract, loan amount, simplified lender's name	loan purpose, owner-occupancy status	1702	1543
# Matched -- Pass 3	census tract, loan amount, alternate lender's name	loan purpose, owner-occupancy status	1820	602
# Matched -- Pass 4	Removing duplicates and fixing ties		323	223
Total Number of HMDA Loans and Recorder Data Records Matched			36851	30436
Percent Matched			68	68

Source: Loan Origination and Foreclosure Matched Data File, Center on Urban Poverty and Community Development, Mandel School of Applied Social Sciences, Case Western Reserve University

Comparison of characteristics between HMDA and Loan Origination and Foreclosure Matched Data File

	All HMDA Loans				L.O.F. Matched Data File			
	2005		2006		2005		2006	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
High cost loan								
Yes	16339	32.5	14490	35.6	11054	35.0	9344	36.6
No	33915	67.5	26174	64.4	20568	65.0	16219	63.5
Loan type								
Home purchase	25698	51.1	22481	55.3	15296	48.4	13399	52.4
Refinance	24556	48.9	18183	44.7	16326	51.6	12164	47.6
Owner-occupied								
Yes	43661	86.9	34667	85.3	27550	87.1	21904	85.7
No	6560	13.1	5978	14.7	4051	12.8	3649	14.3
N/A	33	0.1	19	0.1	21	0.1	10	0.0
Race								
Non-Hispanic White	32014	63.7	25678	63.2	19629	62.1	15873	62.1
Non-Hispanic Black	11218	22.3	9507	23.4	7208	22.8	6164	24.1
Hispanic	1215	2.4	1073	2.6	864	2.7	746	2.9
Other	5807	11.6	4406	10.8	3921	12.4	2780	10.9

Comparison of characteristics between HMDA and Loan Origination and Foreclosure Matched Data File (cont.)

	All HMDA Loans				L.O.F. Matched Data File			
	2005		2006		2005		2006	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Income of borrower								
Low income (<50% AMI)	5496	10.9	3835	9.4	3474	11.0	2401	9.4
Moderate income (50-80% AMI)	13418	26.7	10515	25.9	8472	26.8	6720	26.3
Middle income (81-120% AMI)	13312	26.5	10674	26.3	8422	26.6	6875	26.9
Upper income (>120% AMI)	15324	30.5	13801	33.9	9572	30.3	8482	33.2
Missing Income Information	2704	5.4	1839	4.5	1682	5.3	1085	4.2
Racial mix								
< 25% African American	37892	75.4	31071	76.4	23671	74.9	19470	76.2
25% to 49% African American	1780	3.5	1421	3.5	1149	3.6	924	3.6
50% to 74% African American	3633	7.2	2966	7.3	2381	7.5	1833	7.2
75%+ African American	6949	13.8	5206	12.8	4421	14.0	3336	13.1
Poverty rate								
< 10%	35131	69.9	29305	72.1	22088	69.9	18427	72.1
10% to 19%	6824	13.6	5206	12.8	4382	13.9	3329	13.0
20% to 39%	7052	14.0	5252	12.9	4445	14.1	3257	12.7
40%+	1247	2.5	901	2.2	707	2.2	550	2.2
Median sales price of single-family home								
< \$60,000	7358	14.6	6306	15.5	4555	14.4	3983	15.6
\$60,000 - \$119,999	14588	29.0	11483	28.2	9757	30.9	7707	30.2
\$120,000 - \$179,999	15939	31.7	12105	29.8	10264	32.5	7787	30.5
\$180,000+	12369	24.6	10770	26.5	7046	22.3	6086	23.8

¹ Loan Origination and Foreclosure Matched Data File

Source: Loan Origination and Foreclosure Matched Data File, Center on Urban Poverty and Community Development, Mandel School of Applied Social Sciences, Case Western Reserve University

Hazard model of high cost subprime home purchase loans

Independent Variable	Home Purchase			
	Model 1		Model 2	
	Coefficient	Hazard Ratio	Coefficient	Hazard Ratio
Loan Characteristics				
High cost subprime loan	2.10***	8.16	1.89***	6.63
Owner-occupied	-0.45***	0.64	-0.12**	0.89
Loan to sales price ratio > 80%	0.24***	1.27	0.20***	1.23
Lender Characteristics				
Local bank	-0.93***	0.39***	-0.81***	0.44
Borrower Characteristics				
Non-Hispanic Black	0.58***	1.78	0.37***	1.45
Borrower with low or moderate income	0.33***	1.39	0.14***	1.16
Neighborhood Characteristics				
Poverty rate > 20%			-0.03	0.97
Median sales price of single-family homes < \$60,000			0.23***	1.26
Number of foreclosures within 500 feet			0.33***	1.40
Model Fit Statistics				
Model Chi-Square		6716.01***		8044.09***

*p < 0.05, **p < 0.01, ***p < 0.001

Source: Loan Origination and Foreclosure Matched Data File, Center on Urban Poverty and Community Development, Mandel School of Applied Social Sciences, Case Western Reserve University

Table B2: Hazard model of high cost supprime home refinance loans, Cuyahoga County

Independent Variable	Refinance			
	Model 1		Model 2	
	Coefficient	Hazard Ratio	Coefficient	Hazard Ratio
Loan Characteristics				
High cost subprime loan	1.56***	4.75	1.45***	4.27
Owner-occupied	-0.70***	0.50	-0.46***	0.63
Loan to assessed market-values ratio > 110%	0.29***	1.34	0.21***	1.24
Lender Characteristics				
Local bank	-1.12***	0.33	-1.04***	0.35
Borrower Characteristics				
Non-Hispanic Black	0.24***	1.28	0.08	1.08
Borrower with low or moderate income	0.22***	1.25	0.12*	1.12
Neighborhood Characteristics				
Poverty rate > 20%			-0.18**	0.83
Median sales price of single-family homes < \$60,000			-0.22**	0.81
Number of foreclosures within 500 feet			0.44***	1.56
Model Fit Statistics				
Model Chi-Square		2716.53***		3729.01***

*p < 0.05, **p < 0.01, ***p < 0.001

Source: Loan Origination and Foreclosure Matched Data File, Center on Urban Poverty and Community Development, Mandel School of Applied Social Sciences, Case Western Reserve University