

Analyzing Rates of Seriously Delinquent Mortgages in Asian Census Tracts in the United States

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Abstract

Although race and ethnicity have been analyzed and discussed in the context of the national foreclosure crisis, there has been little work on neighborhoods in which different Asian subgroups reside, which is surprising given the relatively large demographic, economic, and social differences. Based on NSP 3 data, provided by the U.S. Department of Housing and Urban Development (HUD), and 2005/2009 American Community Survey (ACS) data, provided by the U.S. Bureau of the Census, this article utilizes descriptive statistics and weighted least squares (WLS) regressions to analyze rates of seriously delinquent mortgages for Census tracts in all Metropolitan Statistical Areas (MSAs), differentiating among different Asian subgroups. Findings show that neighborhoods with Hmong, Laotian, and Cambodian households had relatively high rates of seriously delinquent mortgages, whereas neighborhoods with Chinese, Japanese, and Pakistani households had relatively low rates of seriously delinquent mortgages.

Keywords

foreclosure, neighborhoods, race, Asian, Asian subgroups

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Introduction

The impact of the U.S. foreclosure crisis, which began in early 2007 and gradually declined in the early 2010s, has had enormous consequences for the nation, states, regions, cities, neighborhoods, households, and individuals, especially for neighborhoods, households, and individuals of color (Barofsky 2012; Blinder 2014; Engel and McCoy 2011; Geithner 2014; Gottesdiener 2013; Johnson and Kwak 2010; Lucy 2010; McLean and Nocera 2011; Paulson 2013; Rajan 2010; Rascoff and Humphries 2015; Roubini and Mihm 2011; Taub 2014). An example of this impact is the total equity lost by U.S. individuals and households with recently foreclosed properties, which was estimated at more than \$7 trillion (Raskin 2012). Another example is the average monetized loss of almost \$90,000 per household, along with decreased savings and credit ratings (Bowdler, Quercia, and Smith 2010; Kingsley, Smith, and Price 2009). Other impacts have been displacement; doubling or tripling up with family or friends; changes in a student's performance and behavior at school; changes in relationships between partners or spouses, among parents and children, and among extended family and social networks; increases in stress levels that might affect well-being; and uncertainty and changes in mid- and long-term plans (Bowdler, Quercia, and Smith 2010; Kingsley, Smith, and Price 2009).

In U.S. neighborhoods, according to an estimate from 2009, \$509 billion in property value was lost due to nearby foreclosures (Center for Responsible Lending, n.d., based on CRL, Credit Suisse, Moody's Economics.com, MBA). Many communities, and especially communities of color, have experienced undermaintenance, vandalization, vacancies of foreclosed properties, squatting, arson, and crime (Kingsley, Smith, and Price 2009). Thus, many municipalities have had to intervene and provide assistance to address the safety and security of these neighborhoods (Kingsley, Smith, and Price 2009).

With regard to the impact of the foreclosure crisis and the Great Recession on wealth, there have been differences among racial and ethnic groups, according to the Survey of Consumer Finances (Kochhar and Fry 2014). For example, non-Hispanic White households had a median net worth of \$192,500 in 2007, \$138,600 in 2010, and \$141,900 in 2013 (an overall decrease of 26.29%); Black/African American households had a median net worth of \$19,200 in 2007, \$16,600 in 2010, and \$11,000 in 2013 (a decrease of 42.71%); and Hispanic/Latino households had a median net worth of \$23,600 in 2007, \$16,000 in 2010, and \$13,700 in 2013 (a decrease of 41.95%). In sum, the median net worth of non-Hispanic White households slightly increased from 2010 to 2013, while the net worth of the other two racial and ethnic groups continued to decline, indicating different trajectories of

recovery from the foreclosure crisis and the Great Recession. The differences in net worth are even more pronounced for different wealth percentile categories (Kochhar 2015).

Many researchers and policy analysts have pointed out that there are vast socioeconomic and geographic differences among Asian subgroups (Frey 2015; Painter, Yang, and Yu 2003; Pfeiffer et al. 2017). Interestingly, little is known about rates of seriously delinquent mortgages among neighborhoods in which different Asian subgroups reside. This dearth of knowledge is not surprising, as mortgage application forms and the vast majority of surveys that focus on homeownership, borrowing, and wealth do not ask for an Asian racial breakdown. Thus, the vast majority of databases typically utilized for analyses of rates of seriously delinquent mortgages do not differentiate among Asian subgroups.

Knowing more about rates of seriously delinquent mortgages among neighborhoods in which different Asian subgroups reside is important, as there may be three types of differences among these groups. First, there are demographic differences, including (a) race, (b) ethnicity, (c) nativity, (d) year of entry to the United States, and (e) household composition. Second, there are economic differences, including (f) household incomes, (g) rates of self-employment, (h) mortgage amounts, and (i) down payment ratios. Third, there are social differences, including (j) level of English language proficiency, (k) discrimination, and (l) access to housing counseling and foreclosure relief (Rugh 2015a, 2015b). In the context of neighborhoods in which different Asian subgroups reside, this article asks the following two research questions, based on all MSAs in the United States.

Research Question 1: What factors determine the rate of seriously delinquent mortgages among Census tracts in which different Asian subgroups reside, holding demographic, socioeconomic, and housing characteristics constant?

Research Question 2: What are the differences in the association between the rate of seriously delinquent mortgages and Census tracts in which different Asian subgroups reside, holding demographic, socioeconomic, and housing characteristics constant?

This article focuses on the Census tract level as the respective unit of analysis instead of the individual or household level. The geography is all Metropolitan Statistical Areas (MSAs) in the United States.

This article is structured as follows: The Introduction is followed by a Literature Review that is based on spatial assimilation, which may occur through homeownership, and then discusses differences in foreclosure rates

among borrowers and among neighborhoods, followed by the emerging literature on foreclosure rates for different Asian subgroups. The section Data and Method deals with the data sets and methods used in this research. These sections are followed by a discussion of Results and a Conclusion with suggestions for future research.

Literature Review

Spatial assimilation has been discussed through spatial assimilation theory (Alba, Logan, and Stults 2000; Alba and Nee 1997; Portes 1997; Rumbaut 1997), place stratification theory (Friedman et al. 2005; Iceland and Scopilliti 2008; Logan 1978), and segmented assimilation theory (Portes and Zhou 1993; Zhou 1999). Spatial assimilation theory focuses on the convergence of social, economic, and cultural patterns among distinct groups (Iceland and Scopilliti 2008). In the recent past, most new in-migrating groups typically settled in homogeneous, sometimes disadvantaged inner-city enclaves, possibly experienced social mobility and acculturation, and then moved to suburbs that often had better amenities. Place stratification theory, sometimes called the ethnic disadvantage model, posits that increasing assimilation might not necessarily occur. Lingering prejudice and discrimination by the dominant group hampers increasing knowledge of the language, culture, and customs of and in the new country.

Spatial assimilation may be driven by assimilation itself (i.e., the gradual acquisition of the language, values, and manners of the host society) or by socioeconomic and residential mobility (Alba and Nee 1997; Massey 1985; South, Crowder, and Chavez 2005a, 2005b). The latter phenomenon may be experienced by moving to suburbs, as discussed in the literature on racial and ethnic diversity in U.S. suburbs (Archer, Sandul, and Solomonson 2015; Boyles 2015; Cheng 2013; Heiman 2015; Lacy 2007; Nicolaidis 2002; Straus 2014; Wiese 2004), and by buying a home, as discussed in the literature on social mobility through homeownership (Belsky, Herbert, and Molinsky 2014; Quercia, Freement, and Ratcliffe 2011; Rohe and Watson 2007; Singer, Hardwick, and Brettell 2008).

However, socioeconomic and residential mobility were affected by the somewhat recent foreclosure crisis, especially for borrowers of color. While the majority of affected borrowers has been non-Hispanic White, 6% of non-Hispanic White borrowers have lost their home to foreclosure, compared with 11% of Black/African American, 8% of Asian, and 14% of Hispanic/Latino borrowers, although there are differences by household income within these racial and ethnic groups (Bocian 2012; see also Allen 2011; Aughinbaugh 2013; Bocian, Ernst, and Li 2006; Bocian, Li, and Quercia 2011; Lacy 2012;

Martin and Niedt 2015; Pfeiffer et al. 2017; Rugh 2015a, 2015b; Rugh and Massey 2010). These proportions are inconsistent, however, with relatively high and low shares of originations made to non-Hispanic White borrowers and to borrowers of color, respectively (Bocian, Li, and Ernst 2010). For example, non-Hispanic Whites had a share of originations of 65.9% and a share of completed foreclosures of 56.1%, resulting in a disparity ratio of 1.0, the benchmark for the comparison.¹ By contrast, Blacks/African Americans had a share of originations of 7.8% and a share of completed foreclosures of 11.6%, resulting in a disparity ratio of 1.76.² Asians had a share of originations of 3.9% and a share of completed foreclosures of 3.3%, resulting in a disparity ratio of 1.02.³ Hispanics/Latinos had a share of originations of 11.2% and a share of completed foreclosures of 16.2%, resulting in a disparity ratio of 1.71⁴ (Bocian, Li, and Ernst 2010).

Neighborhoods of color have also been disproportionately affected by the foreclosure crisis. For example, 8.7% of mortgages in neighborhoods with the highest proportion of residents of color went into foreclosure, compared with 5% of mortgages in neighborhoods with the lowest proportion of residents of color (Bocian, Li, and Quercia 2011; see also Anacker and Carr 2011; Anacker, Carr, and Pradhan 2012; Anacker and Crossney 2016; Faber 2013; Gerardi and Willen 2009; Immergluck 2009a, 2009b; Laderman and Reid 2008, 2009; Pfeiffer and Molina 2013; Vesselinov and Beveridge 2011). Many studies have focused on foreclosure in neighborhoods, differentiating among the different racial and ethnic groups (Allen 2011; Pfeiffer et al. 2017; Rugh 2015a, 2015b; Rugh and Massey 2010, among many others).

Only some studies, all of them case studies, have focused on the differences among neighborhoods in which different Asian subgroups reside. For example, Chhaya Community Development Corporation (CDC 2009) found that “in some zip codes of Queens, South Asians⁵ made up as much as 50% of owners who received default notices” (Chhaya CDC 2009, p. 1). The National Coalition for Asian Pacific American Community Development (CAPACD 2011) found that Southeast Asian American⁶ homeowners and renters in California’s Central Valley reside in neighborhoods that have a high concentration of receipt of notice of default.

This article focuses on Census tracts in which different Asian subgroups reside, based on all MSAs in the United States. As of 2013, the proportion of Asians was 5.07% in the entire United States, compared with 62.44% for non-Hispanic Whites, 12.63% for Blacks/African Americans, and 17.08% for Hispanics/Latinos, respectively (U.S. Bureau of the Census, n.d.). The Asian homeownership rate during the same period was 57.78% in the entire United States, compared with 71.14% for non-Hispanic Whites, 41.92% for Blacks/African Americans, and 45.16% for Hispanics/Latinos, respectively (U.S.

Bureau of the Census, n.d.). The U.S. Bureau of the Census differentiates among the following Asian subgroups: Asian Indian, Bangladeshi, Cambodian, Chinese (excluding Taiwanese), Filipino, Hmong, Indonesian, Japanese, Korean, Laotian, Malaysian, Pakistani, Sri Lankan, Taiwanese, Thai, Vietnamese, Other Asian, and Other Asian, not specified. Most researchers have focused on select larger Asian subgroups (i.e., Asian Indians, the Chinese, Filipinos, the Japanese, Koreans, and the Vietnamese; Freddie Mac 2005; Patraporn, Ong, and Houston 2009).

Most recently, Rugh (2015a, 2015b) has studied foreclosure rates among Asian American subgroups based on surname imputation and matching methods for the cases of Orlando, Florida, and Phoenix, Arizona. Based on regression analyses, he finds that Korean American and Vietnamese American borrowers experience foreclosure rates far higher than other Asian American subgroups, higher than White and Black/African American borrowers, and nearly as high as Hispanics/Latinos, pointing out much need for further research in these two study communities as well as at a larger scale.

Data and Method

This article uses the 2010 Neighborhood Stabilization Program (NSP) 3 (U.S. Department of Housing and Urban Development n.d.) and the 2005/2009 American Community Survey (ACS; U.S. Bureau of the Census n.d.) data to answer two research questions, based on all MSAs in the United States. First, what factors determine the rate of seriously delinquent mortgages among Census tracts in which different Asian subgroups reside, holding demographic, socioeconomic, and housing characteristics constant? Second, what are the differences in the association between the rate of seriously delinquent mortgages and Census tracts in which different Asian subgroups reside, holding demographic, socioeconomic, and housing characteristics constant? Both data sets have consistent Census tract boundaries for 2000 and were merged according to geographic identifiers for their respective Census tracts. To the author's knowledge, only these two publicly available databases provide information at the Census tract level.

Based on the NSP 3 and ACS data, a database was created as follows: first, a list of all MSAs in the United States was obtained from the Office of Management and Budget (OMB; Executive Office of the President, Office of Management and Budget 2013). Second, a data set was created containing all Census tracts within all MSAs in the United States, the geography of this article. Third, all Census tracts, the unit of observation, were utilized for the analysis.

Descriptive statistics and a weighted least squares (WLS) regression were conducted to answer the two research questions. WLS regressions are utilized whenever there is heteroskedasticity, an undesirable statistical situation (Hamilton 1992). To address heteroskedasticity, a WLS estimation is conducted, satisfying all the assumptions of a classical linear regression model (Nielsen n.d.). The functional form chosen for the model that explains the risk of foreclosure was the log-linear form, which is typically chosen when the dependent variable has a wide spread—as is the case here, since Census tracts in all MSAs in the United States were included in this analysis—and when several independent variables have a concave distribution (Cannaday and Sunderman 1986).

The basic form of the WLS regression is as follows:

Census tract rate of seriously delinquent mortgages = f (Census tract demographic characteristics, Census tract socioeconomic characteristics, and Census tract housing characteristics).

In this case, the dependent variable was the rate of seriously delinquent mortgages (SDQ_RATE; that is, 90 or more days delinquent or in foreclosure in June 2010) at the Census tract level, as estimated by the U.S. Department of Housing and Urban Development (HUD).⁷ In 2010, the national rate of mortgages in default, undergoing auction, or being real estate owned (REO) was at peak (RealtyTrac 2013).

The independent variables fell into three groups: Census tract demographic characteristics, Census tract socioeconomic characteristics, and Census tract housing characteristics. The independent variables utilized in the regression model are based on the ACS and enumerated in Table 3.

Results

Descriptive Statistics

Table 1 shows that the Census tracts in all MSAs have an average proportion of Asians of 5.50% (i.e., the proportion of Asians in each Census tract divided by the entire population in each Census tract of all MSAs; see also U.S. Bureau of the Census, n.d.). Census tracts have an average proportion of Chinese (excluding the Taiwanese) of 1.38% (i.e., the proportion of Chinese [excluding the Taiwanese] divided by the entire population in each Census tract), followed by Asian Indians (1.03%) and Filipinos (0.90%). Table 1 also shows that the Census tract rate of seriously delinquent mortgages is 9.16% for all Census tracts in all MSAs, about twice as high as the rate of completed

Table 1. Descriptive Statistics ($n = 40,819$).

Variable (by Census Tract)	<i>M</i>	<i>SD</i>	Minimum	Maximum
SDQ rate	9.15%	5.59%	0%	58.13%
Demographic characteristics				
% non-Hispanic White	58.85%	31.78	0	100.00%
% Black/African American	16.54%	25.61	0	100.00%
% Asian	5.50%	9.59	0	100.00%
% Hispanic/Latino	16.62%	22.05	0	100.00%
% Asian Indian	1.03%	2.76	0	100.00%
% Bangladeshi	0.00%	0.00	0	36.32%
% Cambodian	0.00%	0.00	0	47.97%
% Chinese excl. Taiwanese	1.38%	4.48	0	88.49%
% Filipino	0.90%	2.78	0	76.12%
% Hmong	0.00%	0.00	0	35.99%
% Indonesian	0.00%	0.00	0	7.71%
% Japanese	0.00%	1.18	0	58.52%
% Korean	0.53%	1.89	0	52.29%
% Laotian	0.00%	0.00	0	55.47%
% Malaysian	0.00%	0.00	0	5.45%
% Pakistani	0.00%	0.00	0	20.91%
% Sri Lankan	0.00%	0.00	0	8.18%
% Taiwanese	0.00%	0.00	0	13.72%
% Thai	0.00%	0.00	0	33.44%
% Vietnamese	0.00%	2.07	0	64.46%
% Other Asian	0.00%	0.01	0	30.61%
% Other Asian not specified	0.00%	0.00	0	18.00%
Socioeconomic characteristics				
Median household income	\$59,210	29,199	\$2,500	\$250,000
Housing characteristics				
Homeownership rate	64.77%	24.64	0	100.00%
% of HU non-occupied	9.80%	8.92	0	100.00%
Median year HU built	1966	17.53	1939	2005
Median value HU	\$290,283	205,252	\$6,200	\$1,000,000

Source. Author, based on 2010 NSP 3 and 2005/2009 ACS data.

Note. Unit of observation: Census tract. SDQ = seriously delinquent; NSP = Neighborhood Stabilization Program; ACS = American Community Survey; HU = Housing Unit/s.

foreclosures (Grover and Lehnert 2008; Kaplan and Sommers 2009; Lucy 2010; Martin and Niedt 2015; Niedt and Martin 2013; Reid 2010), although only about 50% of delinquent mortgages complete the foreclosure process (Cordell et al. 2008).

Table 2 breaks down the rate of seriously delinquent mortgages at the neighborhood level in all MSAs among the different Asian subgroups above the 10%, 20%, and 30% thresholds. The literature on tipping points (Conley 1999; Frey 2001; Jargowsky 1997; Schelling 1978) suggests that there should be a proportion of 70% or more non-Hispanic Whites to call a neighborhood a non-Hispanic White neighborhood. Thus, a threshold of 30% or more of people of color would constitute a neighborhood of color. As the focus of this study is neighborhoods where Asian subgroups reside, the 30% threshold is quite high, reducing the number of subgroups. Therefore, Table 2 contains different thresholds.

Table 2 shows that there are large differences in the rate of seriously delinquent mortgages at the neighborhood level among the different Asian subgroups. For example, neighborhoods with Hmong households have the highest rate of seriously delinquent mortgages (16.30% at the 10% threshold, 15.74% at the 20% threshold, and 15.31% at the 30% threshold). Similarly, neighborhoods with Laotian households have a relatively high rate of seriously delinquent mortgages (15.01% at the 10% threshold, 10.09% at the 20% threshold, and 5.51% at the 30% threshold). Along the same lines, neighborhoods with Cambodian households also have a high rate of seriously delinquent mortgages (14.58% at the 10% threshold, 12.95% at the 20% threshold, and 13.14% at the 30% threshold).

By contrast, neighborhoods with Japanese households have the lowest rate of seriously delinquent mortgages (3.44% at the 10% threshold, 1.84% at the 20% threshold, and 1.57% at the 30% threshold). Similarly, neighborhoods with Chinese households have a relatively low rate of seriously delinquent mortgages (4.73% at the 10% threshold, 4.24% at the 20% threshold, and 3.85% at the 30% threshold). Finally, neighborhoods with Other Asian households have a relatively low rate of seriously delinquent mortgages (5.28% at the 10% threshold).

Regression Analysis

Table 3 presents a log-linear WLS regression model. Only those coefficients that are significant at the 5% significance level are discussed below. The regression model explains 62.06% of the total variation in the rates of seriously delinquent mortgages for all analyzed Census tracts. Sixteen out of 19 independent variables are significant at the 5% level. Almost all signs are consistent with the literature (for some demographic characteristics and all socioeconomic and housing characteristics) and expectations (for most Asian subgroups and neighborhoods with a certain proportion of Asian subgroups where there is currently a dearth of literature).

Table 2. Rates of Seriously Delinquent Mortgages for Census Tracts, by Asian Subgroup.

Variable (by Census Tract)	N		SDQ rate	SD	Minimum	Maximum
	30% Threshold	20% Threshold				
% Asian Indian	53		8.21%	4.2784	1.10%	21.08%
	164		8.14%	4.7555	0.00%	27.01%
	632		7.48%	4.5855	0.00%	29.65%
% Bangladeshi	1		1.30%	N/A	1.30%	1.30%
	2		4.02%	3.8396	1.30%	6.73%
	19		10.19%	5.4928	0.00%	20.10%
% Cambodian	4		13.14%	2.2357	10.47%	15.94%
	10		12.95%	3.7554	6.62%	18.42%
	43		14.58%	5.7497	5.22%	26.72%
% Chinese excl. Taiwanese	255		3.85%	3.3108	0.00%	22.09%
	485		4.24%	3.4620	0.00%	22.09%
% Filipino	1,113		4.73%	3.8873	0.00%	26.69%
	63		8.74%	5.1009	0.00%	27.76%
	151		9.16%	5.1063	0.00%	27.76%
% Hmong	560		9.60%	5.5276	0.00%	28.61%
	4		15.31%	3.0991	11.07%	18.35%
	18		15.74%	4.7433	4.92%	24.93%
% Indonesian	79		16.30%	4.2820	4.92%	25.34%
	0		N/A	N/A	N/A	N/A
	0		N/A	N/A	N/A	N/A
% Japanese	0		N/A	N/A	N/A	N/A
	38		1.57%	2.3439	0.00%	9.66%
	97		1.84%	2.7177	0.00%	12.03%
% Korean	185		3.44%	3.8261	0.00%	20.74%
	27		8.57%	4.5178	1.09%	
	81		6.40%	4.1866	0.00%	
% Laotian	262		6.64%	4.1858	0.00%	
	1		5.51%	N/A	5.51%	5.51%
	3		10.09%	4.2450	5.51%	13.89%
% Malaysian	18		15.01%	6.3896	5.51%	27.44%
	0		N/A	N/A	N/A	N/A
	0		N/A	N/A	N/A	N/A
% Pakistani	0		N/A	N/A	N/A	N/A
	0		N/A	N/A	N/A	N/A
	1		6.98%	N/A	6.98%	6.98%
	16		5.50%	2.9832	0.00%	9.86%

(continued)

Table 2. (continued)

Variable (by Census Tract)	N		SDQ rate	SD	Minimum	Maximum
	30% Threshold	20% Threshold				
% Sri Lankan	0		N/A	N/A	N/A	N/A
	0		N/A	N/A	N/A	N/A
	0		N/A	N/A	N/A	N/A
% Taiwanese	0		N/A	N/A	N/A	N/A
	0		N/A	N/A	N/A	N/A
	0		N/A	N/A	N/A	N/A
% Thai	0		N/A	N/A	N/A	N/A
	0		N/A	N/A	N/A	N/A
	0		N/A	N/A	N/A	N/A
% Vietnamese	34		9.17%	2.3907	5.12%	15.94%
	84		8.41%	2.9926	2.58%	18.15%
	291		8.36%	3.7109	0.00%	23.76%
% Other Asian	1		0.00%	N/A	0.00%	0.00%
	1		0.00%	N/A	0.00%	0.00%
	11		5.28%	4.8525	0.00%	12.98%
% Other Asian not specified	0		N/A	N/A	N/A	N/A
	0		N/A	N/A	N/A	N/A
	5		7.72%	8.7495	0.00%	22.08%

Source. Author, based on 2010 NSP 3 and 2005/2009 ACS data.

Note. Unit of observation: Census tract. SDQ = seriously delinquent; NSP = Neighborhood Stabilization Program; ACS = American Community Survey.

In terms of *Census tract demographic characteristics* and the Proportion of Blacks/African Americans and the Proportion of Hispanics/Latinos, the signs of many coefficients are positive, consistent with the literature, which finds that Black/African American and Hispanic/Latino borrowers and neighborhoods have higher rates of seriously delinquent and foreclosed mortgages than non-Hispanic White and Asian borrowers and neighborhoods (Anacker and Carr 2011; Bocian, Li, and Ernst 2010; Gerardi, Shapiro, and Willen 2007; Immergluck and Smith 2005), although their magnitude is slightly different (coefficient 12.52 for Proportion of Blacks/African Americans and 11.07 for Proportion of Hispanics/Latinos⁸). With regard to the neighborhoods with a certain proportion of Asian households, the signs of the coefficients are positive for neighborhoods with Asian Indian (coefficient: 1.36), Bangladeshi (14.04), Cambodian (22.02), Filipino (7.08), Hmong (26.98), Korean (2.57), Laotian (37.67), and Vietnamese (3.73) households. The signs

Table 3. Results: Weighted Least Squares Regression (10% Threshold, $n = 2,458$).

Variable (by Census Tract)	Parameter estimate	SE	T Value	Pr > t
Intercept	-66.6450	8.8341	-7.54	<.0001
Demographic characteristics				
% Black/African American ^a	12.5234	0.8933	14.02	<.0001
% Hispanic/Latino	11.0729	0.5215	21.23	<.0001
% Asian Indian	1.3649	0.8093	1.69	0.0918
% Bangladeshi	14.0404	8.0482	1.74	0.0812
% Cambodian	22.0176	3.8231	5.76	<.0001
% Chinese excl. Taiwanese	-2.6040	0.4267	-6.10	<.0001
% Filipino	7.0821	0.8392	8.44	<.0001
% Hmong	26.9793	2.5023	10.78	<.0001
% Japanese	-6.1215	0.8814	-6.95	<.0001
% Korean	2.5738	0.8901	2.89	0.0039
% Laotian	37.6722	8.5911	4.39	<.0001
% Pakistani	-8.6539	3.2224	-2.69	0.0073
% Vietnamese	3.7323	0.7571	4.93	<.0001
% Other Asian	-26.2909	4.5390	-5.79	<.0001
Socioeconomic characteristics				
Median household income	-0.0000	0.0000	-1.54	0.1240
Housing characteristics				
Homeownership rate	1.9681	0.3609	5.45	<.0001
% of HU non-occupied	5.3657	1.2270	4.37	<.0001
Median year HU built	0.0363	0.0046	7.99	<.0001
Median value HU	-0.0000	0.0000	-10.16	<.0001

Source. Author, based on 2010 NSP 3 and 2005/2009 ACS data.

Note. Unit of observation: Census tract. NSP = Neighborhood Stabilization Program; ACS = American Community Survey; HU = Housing Unit/s.

a. Base case: non-Hispanic White.

of the coefficients are negative for neighborhoods with Chinese (excluding Taiwanese; coefficient: -2.60), Japanese (-6.12), Pakistani (-8.65), and Other Asian households (-26.29).

In terms of *Census tract housing characteristics*, the sign and the positive coefficient of the variable Homeownership Rate is consistent with the literature (1.97), indicating that Census tracts with a high homeownership rate are disproportionately affected by foreclosures (Anacker and Carr 2011; Anacker, Carr, and Pradhan 2012; Laderman and Reid 2009). Similarly, the sign and the positive coefficient of the variable Proportion of Housing Units Non-Occupied (5.37) are consistent with the literature, confirming the positive

correlation between foreclosures and vacancies (Anacker and Carr 2011; Anacker, Carr, and Pradhan 2012; Kaplan and Sommers 2009; Mallach 2010). Along the same lines, the sign and the positive coefficient of the variable Median Year Housing Unit Built (0.04) is also consistent with the literature, which finds that older neighborhoods are disproportionately affected by foreclosures (Anacker and Carr 2011; Anacker, Carr, and Pradhan 2012; Laderman and Reid 2009).

The findings show that these neighborhoods experienced a wide variation in the rate of seriously delinquent mortgages, although similar factors determine the rate of seriously delinquent mortgages among Census tracts in which different Asian subgroups reside. Keeping the threat of ecological fallacy in mind (S. W. Lee et al. 2005), the literature provides some answers for borrowers of different Asian subgroups but few for neighborhoods in which different Asian subgroups reside.

In terms of economic factors, the Hmong, Laotians, and Cambodians may be typical of many immigrants to the United States, who arrive with housing career disadvantages. First, many of them have a low level of preparedness for the move, as many are political refugees (Painter, Yang, and Yu 2003, 2004; Tseng 2000; White et al. 1993). Second, many of them have a low level of preparedness for homeownership due to relatively few financial resources and little education (Myers and Liu 2005; Painter, Yang, and Yu 2003, 2004; Tseng 2000; see Ley 2010 for an exception). Third, Laotians, Cambodians, and the Vietnamese tend to rely on brokers and agents from the same ethnic group (National CAPACD 2011). Also, Filipinos tend to feel more comfortable working with other Filipinos, as they think that they will obtain better deals from someone of the same racial subgroup, whereas the Vietnamese “appeared to be the least informed about the financing process and the most likely to rely on and trust their real estate agents and lenders during the homebuying process” (Freddie Mac 2005, p. 16).

In terms of social factors, the Chinese, Japanese, and Pakistanis have had a relatively long immigration history to the United States (Painter, Yang, and Yu 2003, 2004; Painter and Yu 2014; White et al. 1993). Thus, many people in these Asian subgroups may have family and friends who immigrated to the United States in the past and who may have had an influence on the preparation of a future migration by taking English classes, facilitating the transition as well as the homebuying process (Myers and Lee 1998; Painter, Gabriel, and Myers 2001; Painter, Yang, and Yu 2004; Painter and Yu 2014; Tseng 2000; White et al. 1993). Some Chinese, Japanese, and Pakistanis may have a high degree of English proficiency and a relatively high level of resources that seem to positively influence homeownership (Myers and Lee 1998; Painter, Gabriel, and Myers 2001; Painter, Yang, and Yu 2003, 2004; Painter

and Yu 2014). Also, many Asian subgroups may live in clusters or have extensive networks, ethnic banks, and mutual benefit societies that provide assistance for homeownership (National CAPACD 2011; Painter and Yu 2010; Pfeiffer et al. 2017; Tseng 2000; White et al. 1993; Zhu, Liu, and Painter 2014). The Chinese have a high degree of peer pressure, resulting in a relatively high homeownership rate, although many Chinese are debt averse (Freddie Mac 2005; Painter, Yang, and Yu 2003, 2004). Pfeiffer et al. (2017) find that banks serving the Chinese population offered subprime loans less often than banks serving other Asian subgroups.

Results should be interpreted with care due to several limitations. This article only analyzed the Census tracts in all MSAs in the United States and utilized NSP 3 data for June 2010 and ACS data for the five-year averages for 2005/2009. The NSP 3 dataset measures the rate of seriously delinquent mortgages at one point in time (June 2010) only.

The most ideal data set would be national, at the individual level, and contain additional information about the year of entry to the United States, level of English language proficiency, household composition, rates of self-employment, mortgage amounts, down payment ratios, discrimination, and access to housing counseling and foreclosure relief. Unfortunately, this data set does not exist. In sum, alternative data sets, methods, and time frames may generate different results.

Furthermore, a high rate of seriously delinquent mortgages at the neighborhood level may reflect the presence of residents of a particular Asian subgroup but also the presence of residents of any other racial and ethnic group, including other Asian subgroups. Future research efforts could focus on rates of seriously delinquent mortgages in neighborhoods where select Asian subgroups co-reside, possibly illustrated through interaction terms. Future research could also focus on interviews with affected borrowers, similar to the approaches undertaken by C. A. Lee, Wong, and Pfeiffer (forthcoming); Pfeiffer et al. (2017); and Reid (2010, 2016), who discuss language issues during mortgage origination, a low degree of financial literacy, and potential discrimination, among other factors.

Conclusion

Asians are the second-fastest-growing group of color in the United States, and they will maintain their growth in the future (Frey 2015). Compared with non-Hispanic Whites, Asian borrowers have been disproportionately affected by the foreclosure crisis, holding all other factors constant (Bocian 2012). While the national foreclosure crisis has been studied for the most populous racial and ethnic groups, not much is known about Asian subgroups and neighborhoods

with a relatively high proportion of Asian subgroups. This article focuses on the rate of seriously delinquent mortgages among Asian subgroups in the Census tracts in all MSAs in the United States. Descriptive statistics show that there are differences in the rate of seriously delinquent mortgages among neighborhoods with a certain proportion of Asian subgroups. Whereas neighborhoods with a certain proportion of Hmong, Laotians, and Cambodian households have relatively high rates of seriously delinquent mortgages above 9%, neighborhoods with a certain proportion of Taiwanese and Pakistani households have relatively low rates of seriously delinquent mortgages at or below 7%. Regression results show that most neighborhoods with a certain proportion of Asian subgroups have a relatively high positive regression coefficient that is significant at the 5% level, and neighborhoods with a certain proportion of Chinese and Japanese households have a relatively high negative regression coefficient that is significant at the 5% level.

These quantitative findings are consistent with qualitative findings by Pfeiffer et al. (2017; see also Reid 2010, 2016). Potential strategies to address these issues could be comprehensive homeowner education and counseling, linguistically and culturally competent lending, and legislation to protect homebuyers (C. A. Lee, Wong, and Pfeiffer, forthcoming; Pfeiffer et al. 2017), regardless of race, ethnicity, and nativity. Future approaches could also encompass focus groups and in-depth interviews to investigate the relationship between foreclosure and cultural factors in a more comprehensive fashion.

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Notes

1. Completed foreclosure rate for non-Hispanic Whites (4.5%) divided by the completed foreclosure rate for non-Hispanic Whites (4.5%) = 1.00.
2. Completed foreclosure rate for Blacks/African Americans (7.9%) divided by the completed foreclosure rate for non-Hispanic Whites (4.5%) = 1.76.
3. Completed foreclosure rate for Asians (4.6%) divided by the completed foreclosure rate for non-Hispanic Whites (4.5%) = 1.02.
4. Completed foreclosure rate for Hispanics/Latinos (7.7%) divided by the completed foreclosure rate for non-Hispanic Whites (4.5%) = 1.71.
5. Chhaya Community Development Corporation (2009) did not define “South Asians” but referred to South Asian languages, “including Bangla, Hindi, Panjabi, and Urdu” (p. 2).
6. National CAPACD (2011) defined “Southeast Asian Americans” as people of the following subgroups: Cambodian, Hmong, Lao, Mien, Vietnamese, and Other Southeast Asian Americans.
7. The dependent variable (SDQ_RATE) is calculated through a regression analysis based on the following model: $SDQ_RATE = -2.211 - (0.131 * \text{percentage change in MSA OFHEO current price relative to the maximum in the past eight years}) + (0.152 * \text{proportion of total loans made between 2004 and 2006 that are high cost}) + (0.392 * \text{unemployment rate in respective county in June 2008})$. Note the differences among (a) the dependent variable based on variables utilized by HUD, as enumerated below, and (b) the independent variables utilized by the author, enumerated above. HUD used a July 2010 extract of the rate of seriously delinquent mortgages at the county level provided by McDash Analytics to develop a predictive model using publicly available data for every Census tract in the United States. The model, based on a weighted number of mortgages in each county, predicted most of the variance between counties with regard to their rate of seriously delinquent mortgages with an R^2 of 0.821. HUD’s model at the county level was as follows: 0.523 (intercept) + 0.476 Unemployment Change 03/2005 to 03/2010 (based on BLS LAUS) - 0.176 Rate of Low Cost High Leverage Loans 2004 to 2007 (based on HMDA) + 0.521 Rate of High Cost High Leverage Loans 2004 to 2007 (based on HMDA) + 0.090 Rate of High Cost Low Leverage Loans 2004 to 2007 (based on HMDA) - 0.188 Decrease in Home Values Since Peak (FHFA Metro and Non-Metro Area). HUD then applied this model at the Census tract level to calculate the rate of mortgages that were seriously delinquent. See <https://www.huduser.gov/portal/datasets/NSP3%20Methodology.pdf>.
8. Base case: non-Hispanic White.

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