

Foreclosure Depresses Voter Turnout: Neighborhood Disruption and the 2008 Presidential Election in California*

Vanessa Estrada-Correa, *University of California, Riverside*

Martin Johnson, *University of California, Riverside*

Objective. We investigate whether voters in communities with high rates of foreclosure will find it more difficult to participate in elections, given social disruptions associated with home loss in their neighborhoods. *Methods.* We estimate the community-level effects of foreclosure on turnout rates in California ZIP Codes during the 2008 presidential election and an individual-level turnout model using housing data merged with California voter data. *Results.* Foreclosure rates are associated with reduced participation independent of local economic conditions, rates of education, ethnic composition, or individual partisanship, age, and habitual participation. *Conclusion.* Given the relationship between the foreclosure crisis and political participation, this research suggests the need for further investigation. We are especially interested in the potential that housing foreclosure further exacerbates ethnic and economic inequality due to the preponderance of subprime loans, distressed mortgages, and foreclosures in communities of color and lower socioeconomic status.

As the housing crisis escalated since late 2006, America experienced record high levels of housing foreclosure and property turnover. Nationally, more than 3.5 million families were dislocated by foreclosures in 2008 (Squires and Hyra, 2010). Social scientists have begun to explore the effects of the foreclosure crisis on the wealth of communities (Immergluck and Smith, 2006; Lin, Rosenblatt, and Yao, 2009), social inequality (Dymski, Hernandez, and Mohanty, 2011), and health outcomes (Currie and Tekin, 2011). Very little research has investigated the political ramifications of the downturn of the housing market and home loss in particular. We begin to address this by

*Direct correspondence to Vanessa Estrada-Correa, Department of Sociology, University of California, 1222 Watkins Hall, Riverside, CA 92521-0419 (vanesa.estrada@ucr.edu). The authors are willing to share replication materials for the ecological models reported and coding and information about analysis procedures for the individual-level model using the CalVoter file available from the California Secretary of State Elections Division. This research was supported in part by the University of California, Riverside, College of Humanities, Arts, and Social Science Chancellor's Strategic Investment Fund. The authors thank D. Xavier Medina Vidal for his help with mapping in ArcGIS, David Crow, Gary Dymski, Ken Fernandez, Jackie Filla, Ellen Reese, Jaime Settle, and Jan Stets for helpful conversations about the project, and Young Lee, Israel Landa, and Adriana Aboulwafa for their research assistance.

considering the role community disruption associated with foreclosure plays in affecting political participation.

One of the fundamental procedures of American democratic politics requires U.S. citizens to register themselves to exercise their voting rights by declaring a durable attachment to geographical location. Most people register to vote declaring a residence at an address—a domicile located within a community.¹ These are nested within counties, states, and other germane political geographies. The United States has a system of geographic representation linking constituents to representatives via spatially bounded electoral districts. While convenience voting opportunities such as Election Day Vote Centers—which allow voters to cast ballots at less-restrictive places and times—are increasingly popular, most people also still vote in polling places located closer to home and on Election Day itself (Stein and Vonnahme, 2011). Voting is inherently associated with social geography, drawing upon and affecting the strength of the communities that provide the context for electoral participation (Pomper and Sernekos, 1986; Putnam, 2000).

We argue that foreclosure will affect political participation in at least two important ways: depressing voter turnout in communities and at the individual level. Specifically, we anticipate that when communities experience high rates of foreclosure, this will disrupt community life, weakening the social ties and interpersonal trust (Ross and Squires, 2011), reducing social capital in the neighborhood and thus political participation. In addition, but outside the scope of this article, we expect direct experience with foreclosure to depress individual voting. When people lose their home to foreclosure, they face challenges to be certain their vote counts, including the need to reregister, but this is one of many bureaucratic and logistical hurdles they could face. Maria Foscarinis, Executive Director of the National Law Center on Homelessness and Poverty explains:

Courts have ruled that you don't need a permanent address to vote—even a park bench can serve as your lawful address for voter registration. But as a practical matter, registering, holding on to your documents and even focusing on your civic rights and duties may be impossible when basic survival needs are at stake.²

Our analysis offers the first attempt of which we are aware to rigorously assess the effect of foreclosure on political participation. We examine the effects of neighborhood-level foreclosure rates on neighborhood voter turnout in the 2008 presidential election. We find that after controlling for a community's past levels of political participation, areas that experienced higher levels of foreclosure had lower levels of voter turnout. We also show that is not only an aggregate effect, potentially subject to ecological fallacy. Individuals who live

¹People who do not have an address also specify a physical location they consider to be a home base by drawing a map in Section C of the National Mail Voter Registration Form (U.S. Election Assistance Commission, 2006).

²Quoted in Roberts (2008).

in communities disrupted by high rates of foreclosure are less likely to vote than individuals who live in more stable communities.

Housing, Communities, and Political Participation

Homeowners are more likely to vote than people who do not own their home. For example, Timpone (1998) estimates that the probability a homeowner votes is 0.10 higher than the probability a nonhomeowner will vote, translating into a 10 percent boost in turnout for homeowners. Similarly, political participation is correlated with housing tenure. People with long-time residential stability are more likely to vote than people who have moved more recently or more frequently. Highton (2000) estimates that people who have lived in their homes for more than 10 years have a 19 percent higher turnout rate than people who have lived in their current residence less than two years (Squire, Wolfinger, and Glass, 1987 have similar findings). Homeownership appears to promote political participation among the residents of high- and low-income neighborhoods (Manturuk, Lindblad, and Quercia, 2009).

At least three factors affect these relationships between voting and homeownership or tenure. First, homeowners and long-time residents are more likely to have cleared the institutional hurdle of making and maintaining a valid voter registration (Highton, 2000; Timpone, 1998). Our empirical work below focuses on registered voters in California, so we will refer to this state's registration procedures as an example. To vote in California, a person must be registered to vote on or before the 15th day before the election in which he or she intends to participate (California Elections Code §2102(a)). Recent movers and those who have been removed from voter registration lists may find it difficult to register within the registration closing period at their new addresses.

Second, voting researchers anticipate that homeowners have more stakes in the political system—a vested interest in public affairs and the outcomes of elections (Wolfinger and Rosenstone, 1980). In fact, this normative association between holding legitimate political interests and homeownership informed electoral institutions that attached to suffrage both property requirements (Keyssar, 2000) and other forms of wealth (Key, [1949]1996). New York, Arizona, and Louisiana, for example, maintained property ownership requirements for a limited number of elections (e.g., school district and municipal bond elections) as late as 1970 (Dudley and Gitelson, 2002). While U.S. electoral institutions no longer require property ownership as a condition for voting rights, behaviorally, homeownership and residential stability promote participation by encouraging stronger economic and social stakes in a community (Rotolo, Wilson, and Hughes, 2010).

Third, homeownership and residential stability promote the accumulation of social capital. Social capital “refers to connections among individuals—social networks and norms of reciprocity and trustworthiness that arise from

them” (Putnam, 2000:19). People who live in communities longer have more time to accumulate these social ties and homeownership promotes the development of social connections (DiPasquale and Glaeser, 1999). In turn, social connectedness promotes political participation directly (Brians, 1997; La Due Lake and Huckfeldt, 1998) and indirectly via voter registration, as people with social ties are more likely to be registered as well (Timpone, 1998). Interpersonal trust also promotes civic engagement (Almond and Verba, 1963; Putnam, Leonardi, and Nanetti, 1993) and political participation (Uslaner and Brown, 2005).

Thus, for a variety of reasons, an extensive body of research associates homeownership and residential stability with voting and civic engagement. Much of this research shows support for the converse as well, people who move from one place of residence to another are less likely to participate in politics (Highton, 2000; Squire, Wolfinger, and Glass, 1987). Importantly, this past research focuses on people who choose to move. One of the critical differences between the residential relocations envisioned by much voting research and the residential dislocation represented by foreclosure is that the latter involves forced moves that produce much more stress, frustration, and rending of the social fabric (Ross and Squires, 2011).

Expectations

We expect foreclosure to affect communities beyond the families that experience it directly. Neighborhoods affect the political participation of their residents. Other things equal, individuals are more likely to vote when they live in places where neighbors vigorously participate in politics, while individuals are less likely to vote when their neighbors are less civically active (Burbank, 1997; Cho, Gimpel, and Dyck, 2006; Huckfeldt and Sprague, 1995; Knack and Kropf, 1998). Given that foreclosure creates instability in communities, we expect that areas that experience higher levels of foreclosure have lower voter turnout.

The mechanism we anticipate connects foreclosures and turnout is reasonably straightforward. Foreclosure disrupts neighborhoods both by removing invested members of the community, as well as exposing others who remain in the neighborhood to economic anxieties. These anxieties take the form of feelings of direct, personal exposure to foreclosure, as well as uncertainties about housing values in the neighborhood, which fall as homes empty and the loans supporting them revert to financial institutions and other lenders. The process depreciates trust. Ross and Squires (2011:151) interview 22 borrowers with subprime loans exposed to the housing crisis. One study participant with a ballooning interest rate told them, “I always tell my kids, you know, trust no one. No one out there, no one’s your friend, and I’m learning that more and more each day.”

As more families leave a person's neighborhood due to foreclosure, we expect they will lose interpersonal connections, social trust, and attendant social capital. This should, in turn, affect their political engagement, reducing electoral participation, among other potential indicators. We expect to observe both neighborhood effects, a reduction in community-level turnout, and individual effects associated with foreclosure in neighborhoods. Consequently, we propose two hypotheses.

H₁: Communities disrupted by high rates of foreclosure will have lower turnout than communities with lower levels of foreclosure, ceteris paribus.

H₂: Individuals who live in communities disrupted by high rates of foreclosure will be less likely to vote than individuals who live in communities with lower rates of foreclosure, ceteris paribus.

Research Design

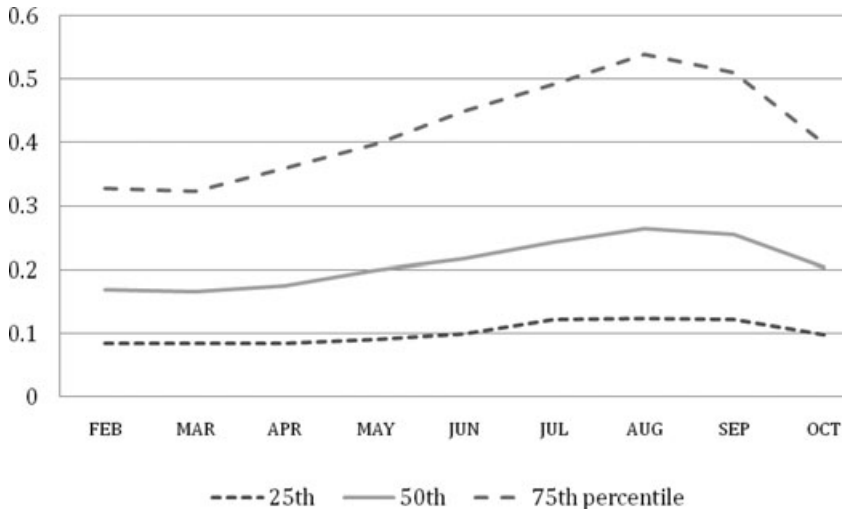
California is an exemplar of the foreclosure and subprime crisis. According to advisories released by housing market industry data service DataQuick, between the first quarter of 2008 and the first quarter of 2011, more than 1.2 million Californians have received a notice of default on their home, the first step in the foreclosure process.³ This is a dire situation. DataQuick reports that of these, 640,977 resulted in a trustee's deed recorded, indicating the home was lost to foreclosure, with the residents forced to find a new place to live.

That said, California residents have varied experience with foreclosure, with very high rates of foreclosure observed in inland communities such as Perris, in southern California, as well as in the towns surrounding Sacramento and Merced, in the agricultural central valley of the state. Other communities have experienced little of the effects of foreclosure with relatively stable housing values and less turnover. We obtained monthly data on foreclosure rates at the ZIP Code level from <http://www.zillow.com>. Figure 1 graphs the distribution of foreclosure rates across California ZIP Codes by month in 2008. Foreclosure rates increased throughout 2008, peaking in August. As foreclosure rates increased, the distribution also widened, particularly with more outliers at the top of the distribution skewing the 75th percentile upward. While the 75th percentile ranges from about 0.3 percent and to 0.5 percent during this period, foreclosure rates in the top 1 percent of ZIP Codes ranged from about 2 percent to 3 percent with outliers as high as 15 percent. Even as an outlier, this is a staggering statistic: in a single month, September

³These figures sum released data at the DataQuick website <http://www.dqnews.com> (accessed April 26, 2011), for example, "California Mortgage Defaults Drop Again; Foreclosures Up." April 19, 2011, <http://www.dqnews.com/Articles/2011/News/California/CA-Foreclosures/RRFor110419.aspx>.

FIGURE 1

Distribution of Foreclosure Rates Across California ZIP Codes, 2008



2008, one in seven homes in a particular California ZIP Code experienced foreclosure.

Data on Foreclosure and Turnout

In order to test our expectations about rates of foreclosure and turnout, we combine this foreclosure information with data from the California voter registration and participation history file, obtained from the California Secretary of State. This individual-level file identifies all persons registered to vote in 2008, their addresses, and whether they voted in the 2008 primary or general election. Voter turnout rates in 2008 were especially high due to the popular presidential campaign. In the February 5, 2008 primary, 58 percent of registered California voters turned out to vote, representing 40 percent of the eligible voting population (California Secretary of State, 2008a). In the November 4, 2008 general election, 79 percent of registered California voters cast ballots, representing 59 percent of the eligible voting population (California Secretary of State, 2008b). If anything, this makes the test of our expectations more conservative because of the higher overall level of turnout. It might be easier to detect decreases in turnout in a low-information, less-engaging election.

We examine the effects of foreclosure on voting with an ecological model of the relationship between rates of foreclosure and rates of turnout in California

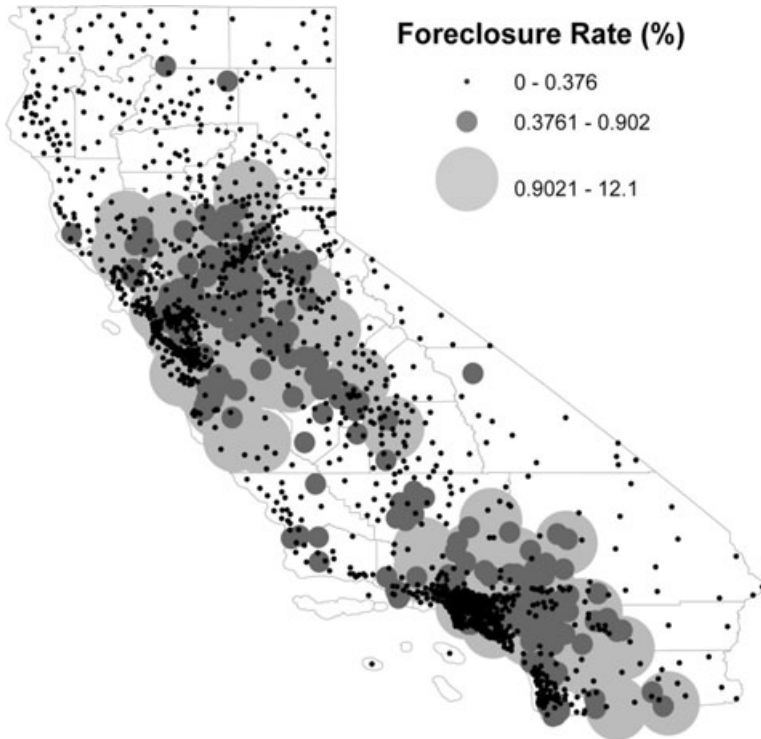
neighborhoods, as well as a contextual model of the effects of foreclosure on individual-level voting. Using both strategies provides a rich set of inferences about the social and individual impacts of the foreclosure crisis among California's registered voters. For both of these types of models, our main independent variable is a measure of ZIP Code foreclosure rates based on Zillow.com reports. We averaged foreclosure rates over the three-month period from August to October 2008 to represent neighborhood change just prior to the general election. As we note, some of these ZIP Code months are dramatic outliers. After removing ZIP Codes with missing data in one of the three months, we are left with an effective sample of 1,223 ZIP Codes, approximately 64 percent of California's ZIP Codes. The average neighborhood foreclosure rate in this period was 0.38 percent, with a standard deviation of 0.53.

We map these average rates of foreclosure in Figure 2. To ease in the presentation of the foreclosure rates, we group the data into three categories, representing rates of foreclosure less than the mean, 0.38 percent of the homes in a ZIP Code, places with foreclosure rates between 0.38 percent and 0.90 percent (these ZIP Codes have rates of foreclosure falling between the mean rate and one standard deviation over the mean), and those with more than 0.90 percent (i.e., a rate greater than one standard deviation over the mean). The map illustrates a few important patterns in California's experience with foreclosures. First, we see substantial foreclosure all over the state, but clusters of substantially higher rates of foreclosure in ZIP Codes in the inland counties of southern California (western Riverside and San Bernardino Counties, eastern Kern County) and the central valley of the state, especially in Merced, Sacramento, San Joaquin, and Stanislaus Counties. These inland areas of the state, not far from the largest coastal cities of the state (e.g., Los Angeles and San Francisco) saw substantial housing development during the early 2000s, attracting a great deal of subprime lending and subsequent foreclosure (Estrada, 2009).

In both the ecological and individual models, we include control variables aimed at capturing the social and economic characteristics of the neighborhoods we study. In particular, we are interested in examining the influence of foreclosure independent of both community economics and racial and ethnic composition. Persons of color (Allen, 2011) and low-income homeowners (Li, 2011) have been more likely to experience foreclosure. While we do not have access to individual-level socioeconomic data for California voters, we are able to consider aggregate demographics for these neighborhoods using ZIP-Code-level estimates from the American Community Survey (ACS) 2005–2009 five-year estimates for California, which pools data collected between January 1, 2005 and December 31, 2009, encompassing the 2008 time frame of our election data. The Census Bureau collects ACS data annually from a sample of the population in the United States. Pooled data allow for more reliable estimates and analysis of smaller levels of geography compared to single-year estimates due to their larger sample size. We include neighborhood

FIGURE 2

Map of Average Foreclosure Rate August to October 2008 by ZIP Code



SOURCE: *Zillow.com*. This map shows county lines rather than the ZIP Code boundaries themselves and the ZIP Code units used here are approximate, based on the ZIP Code Tabulation Area geographic data provided by the U.S. Census Bureau rather than actual U.S. Postal Service boundaries. The map includes only ZIP Codes for which we had foreclosure data for at least two of the three full months preceding the 2008 general election.

racial composition, the proportion of residents experiencing poverty, and the proportion with a four-year college degree as covariates in this analysis. To provide a better sense of both the ZIP-Code-level and individual-level data, we provide the means and standard deviations of all relevant covariates, at both levels of analysis, in Table 1.

Ecological Results

We show four WLS regression models of aggregate turnout in Table 2. These models are weighted for the total population of each ZIP Code.⁴ Models 1

⁴We estimated unweighted OLS models and WLS models weighted by population density. Each of these specifications is substantively similar in the inferences they inform.

TABLE 1

Means and Standard Deviations of Neighborhood and Individual Characteristics, California 2008

Variable	Mean	Standard Deviation
ZIP-Code-level characteristics		
Foreclosure rate	0.376	0.526
Percent voting, 2008 general	77.157	9.784
Percent voting, 2008 primary	51.016	9.784
Proportion with college education	0.125	0.077
Proportion in poverty	0.122	0.073
Proportion white	0.498	0.238
Proportion black	0.052	0.078
Proportion Latino	0.309	0.208
ZIP Code <i>N</i>	1,186	
Individual-level characteristics		
Voted in 2008 general	0.774	0.418
Voted in 2008 primary	0.505	0.500
Democrat registration	0.446	0.497
Republican registration	0.310	0.462
Age	47.122	18.016
2008 registered voter <i>N</i>	15,685,489	

TABLE 2

Predicting 2008 General Election Neighborhood Turnout (WLS Regression)

	Model 1 β (SE)	Model 2 β (SE)	Model 3 β (SE)	Model 4 β (SE)
Foreclosure rate		-0.735*** (0.356)		-1.418*** (0.427)
Primary turnout	0.734*** (0.019)	0.726*** (0.019)		
College education			15.471*** (3.482)	13.697*** (3.517)
Proportion in poverty			-25.803*** (3.473)	-26.652*** (3.465)
proportion white			14.203*** (2.020)	14.713*** (2.022)
Proportion black			12.306*** (3.671)	13.422*** (3.671)
Proportion Latino			-6.993** (2.327)	-6.165** (2.333)
Constant	39.670*** (0.979)	40.316*** (1.029)	72.747*** (1.957)	73.039*** (1.956)
Adjusted R^2	0.56	0.56	0.38	0.39
<i>N</i>	1,186	1,186	1,186	1,186

NOTE: ** $p < 0.01$; *** $p < 0.001$. Each model is weighted for the total population residing in each ZIP Code. The results are substantively similar with specifications either unweighted or weighted for population density.

and 2 consider the relationship between foreclosure and turnout in the general election, controlling for turnout in the 2008 primary election. Primary voting provides a useful baseline against which to judge the influence of foreclosure. Not surprisingly, primary voting rates are robustly associated with general election voting. Model 2 demonstrates, however, that foreclosure rates are also associated with general election voting, controlling for the previous level of participation in these California communities. Even in neighborhoods with otherwise comparable levels of political participation, there is a negative impact of foreclosure on collective neighborhood turnout.

We also consider a wider range of demographic controls in Models 3 and 4 included in Table 2. We control here for the proportions of neighborhood residents with a four-year college education, living in poverty, and with white, black, or Latino ethnicity. Each of these community-level indicators is a significant correlate of participation rates for the general election. We show in Model 4 that foreclosure rate is a significant correlate of turnout in the general election as well, controlling for these other covariates. Optimally, we would want to include primary voting and the demographic variables in the same model. However, we are unable to do so because of a high level of multicollinearity between primary voting rates and the ACS variables.⁵

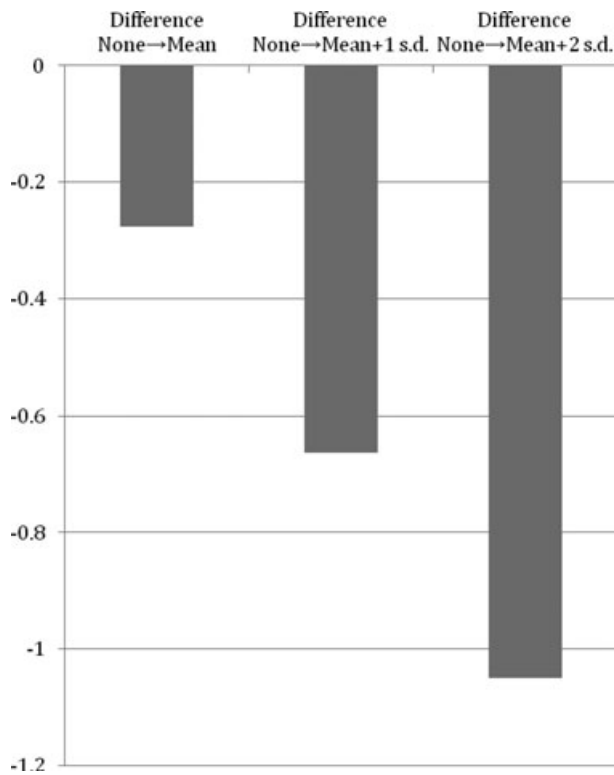
Using the coefficients from Model 2 in Table 2, which had the best fit of the models we examined, we estimate predicted rates of general election participation by rates of foreclosure. Specifically, we use the model to estimate turnout in communities experiencing no foreclosures in August to October 2008, as well as those experiencing an average rate of foreclosure (0.38 percent), and rates of foreclosure one standard deviation greater than the mean (0.90 percent) and two standard deviations greater than the mean (1.43 percent). We compute the differences in predicted turnout rates between ZIP Codes with no foreclosures and those with mean and one or two standard deviations greater than the mean. Figure 3 displays these differences. Communities experiencing an average foreclosure rate turned out at a rate 0.27 percent less than communities experiencing no foreclosures. Communities with a rate of foreclosure one standard deviation greater than the mean turned out at a rate 0.66 percent less than those with no foreclosures. In ZIP Codes with foreclosure rates two standard deviations greater than the mean, voters turned out at a rate 1.05 percent less than ZIP Codes with no foreclosures.

Individual-Level Model and Results

The ecological models suggest neighborhood foreclosures are associated with neighborhood turnout, but in order to more clearly assess individual

⁵We modeled primary voting as a function of these socioeconomic controls (proportion with college degree, in poverty, white, black, and Latino) and found that they explain even more of the variance in neighborhood primary voting rates (adjusted $R^2 = 0.43$, $N = 1,186$) than general election voting (adjusted $R^2 = 0.38$, $N = 1,186$).

FIGURE 3
Predicted Neighborhood Turnout by Foreclosure Rate



effects, we report an individual-level model in Table 3. This model investigates the voting behavior of residents in the ZIP Codes we analyze in the ecological model. The model includes individual correlates of voting available in the voter file: whether or not the person participated in the February 5 primary,⁶ party registration (Democrat or Republican), and age. We use the same neighborhood characteristics in the ecological model: foreclosure rate, the proportion of residents with a four-year college education, in poverty, white, black, and Latino.

Given that we estimate this model using the entire California voter file, it is no surprise that each of these covariates is reliably associated with individual voting. Primary voters, partisans, and older California residents were

⁶We are able to include individual-level primary voting in this model because it does not offer the magnitude of multicollinearity we found in the ecological model. Using OLS, we find these socioeconomic controls (proportion with college degree, in poverty, white, black, and Latino, are reliable correlates of individual-level primary voting but explain much less of the variance available in the voter file (adjusted $R^2 = 0.01$, $N = 15,737,323$).

TABLE 3
Predicting 2008 General Election Turnout Among Registered Voters
(Logit Regression)

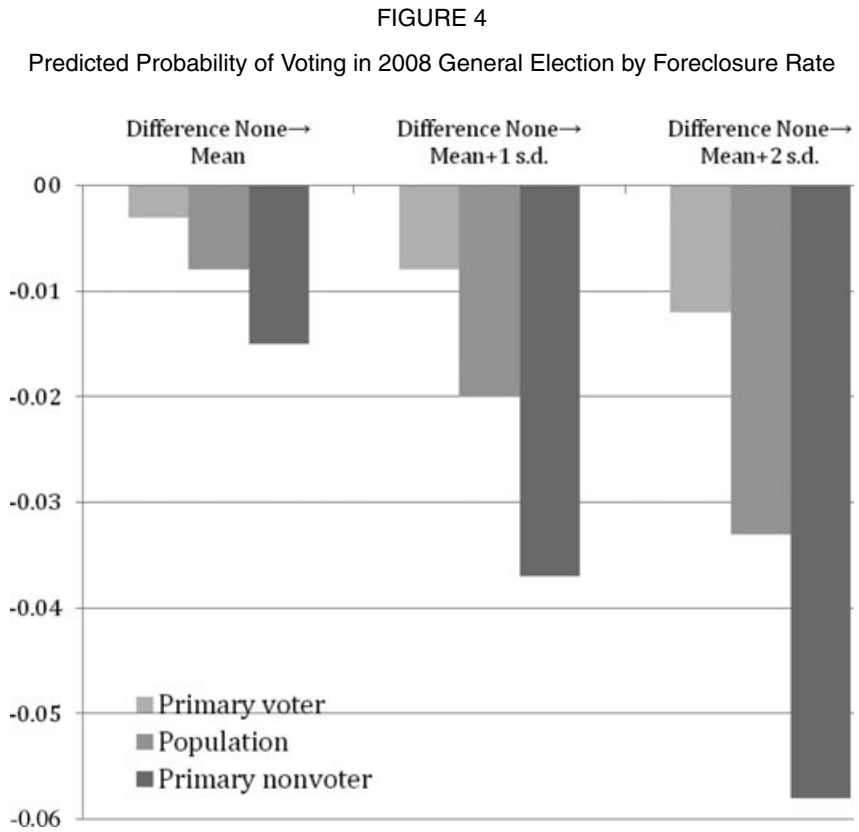
	Coefficient	(SE)
Individual characteristics		
Primary voter	2.504***	(0.002)
Democrat	0.172***	(0.002)
Republican	0.137***	(0.002)
Age	0.004***	(0.000)
ZIP-Code-level characteristics		
Foreclosure rate	−0.167***	(0.003)
College education	0.188***	(0.014)
Proportion in poverty	−1.332***	(0.012)
Proportion white	0.599***	(0.006)
Proportion black	0.585***	(0.011)
Proportion Latino	−0.202***	(0.007)
Constant	0.044***	(0.006)
Pseudo- $R^2 = 0.19$		
$\chi^2 = 3,364,386.02^{***}$		
−2LL = 13,471,811.40		
N = 15,685,489		

*** $p < 0.001$.

more likely to vote in the 2008 general election. Registered voters living in high foreclosure neighborhoods were less likely to participate in the general election than those living in neighborhoods with lower foreclosure rates. People living among better educated neighbors were more likely to vote and those living in poorer neighborhoods were less likely to vote. We also find variation in participation by the racial/ethnic composition of neighborhoods. People in neighborhoods with more whites and blacks were more likely to vote and people in neighborhoods with more Latinos were less likely to participate.

We graph predicted changes in the probability a person voted in the general election given his or her primary voting status and neighborhood foreclosure rate in Figure 4. We estimate changes in predicted probabilities of voting in the general election for people who voted in the primary election, those who did not vote in the primary election, and the typical potential voter who participated in the primary with a probability of 0.505 (indicated by the bars representing the *Population*). The graph uses a format similar to Figure 3: for each of these types of registered voters we show the difference between someone living in an area with no foreclosure and a person living in an area with the mean foreclosure rate, one standard deviation greater than the mean, and two standard deviations greater than the mean.

The marginal effect of foreclosure is greater for people who did not vote in the February primary than it was for those who did. Primary voters are

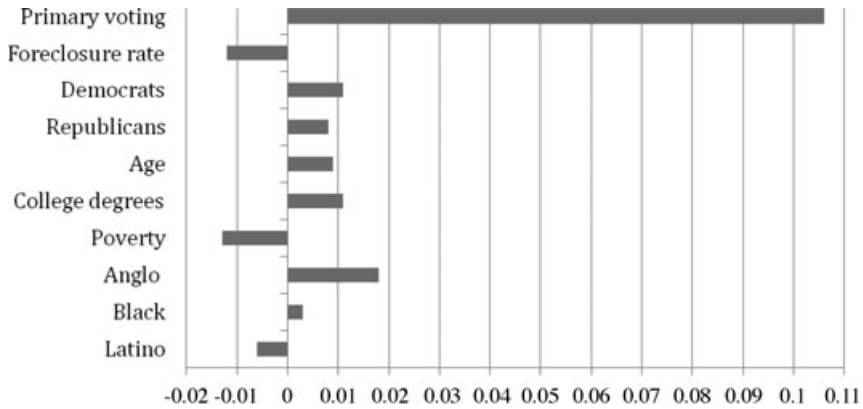


probabilistically so likely to vote in the general election that experience with foreclosure in their neighborhood has a relatively small influence. Primary voters who live in neighborhoods with rates of foreclosure two standard deviations greater than the mean experience a 0.012 reduction in the probability they will vote, compared to those who experience no local foreclosures. The effects are much greater for people who did not participate in the primary. Among these potential voters, just a shift from no foreclosure to the average rate of foreclosure reduced the probability they participate in the general election by 0.015, equivalent to a 1.5 percent drop in turnout for this group of potential voters. Primary nonvoters in somewhat extreme environments experiencing a rate of foreclosures two standard deviations greater than the mean foreclosure rate have a probability of participating 0.058 less than primary nonvoters who experienced no neighborhood foreclosures.

How does the effect associated with foreclosure compare to effects of other covariates in our model? To assess the relative effect of foreclosure, we estimate the difference in the predicted probability of voting comparing a one standard deviation change in one covariate on the probability of participation assuming

FIGURE 5

Relative Differences in Predicted Probability of Participation



NOTE: Each bar represents the change in probability of voting in the 2008 presidential election shifting from the mean of each variable in Table 3 to one standard deviation greater than the mean.

the mean score on each of these covariates. Using the means of each variable reported in Table 1, we estimate a predicted probability of voting in the general election and compare how this predicted probability of voting shifts given a one standard deviation increase in each variable. We use the ZIP-Code-level mean and standard deviation to compute this typical case where appropriate (e.g., changes in foreclosure rate, proportion of residents with a four-year college degree, proportion living in poverty, and each of the contextual ethnicity measures).

We graph the relative effects sizes in Figure 5. Not surprisingly, primary participation has the strongest influence on general election voting, with a single standard deviation shift associated with a 0.106 change in the probability of general election turnout. Variation in the neighborhood proportion of whites has the next largest relative effect on differences in the predicted probability of voting: comparing residents of neighborhoods with an average proportion of white neighbors in our data (0.498) to one standard deviation above the mean (0.740) increases the probability of general election voting by 0.018. The relative influence of foreclosure is less than this but not trivial. Comparing this typical voter in a neighborhood with an average rate of foreclosure to one with a rate of foreclosure one standard deviation greater than the mean, the probability of general election participation is 0.012 less. This is comparable to the effect of one standard deviation differences in Democrat or Republican identification or the proportion of the population living in poverty or holding a bachelor's degree. It is larger than the relative effect associated with

variation in the size of ethnic minority communities at the ZIP Code level or the potential voter's age.

Discussion

The year 2008 proved to be a significant election year with high voter turnout. It also marked a year of record high rates of foreclosure as the housing crisis escalated our country into economic recession. This analysis represents a first attempt to connect these two phenomena and quantify the effect that widespread dislocations due to foreclosures had on community political power via voter participation. While the literature on voting has found that residential mobility does have a negative effect on voting behavior, the effects of foreclosure may be more deleterious to both individuals and communities more broadly.

Our results suggest communities affected by foreclosure saw a substantial loss in social capital, as residents were forced to relocate after losing their homes. In many places, these losses were significant, with as many as 12 percent of the homes in the ZIP Code lost to foreclosure on average each month, August to October 2008. Of course, the average home loss to foreclosure during these months was much lower, about 0.3 percent. We identify an effect associated with these rates of foreclosure, independent of other socioeconomic factors, and speculate a number of potential mechanisms. We primarily hypothesize that the loss of social capital, both the diminished trust in the neighborhood and social system, as well as the reduced informational resources of those lost neighbors, affect this decrease in political participation. However, we recognize the fuller causal mechanism could involve other factors as well, including the direct displacement of people included in our sample of voters at the ZIP Code level, as well as negative individual psychological reactions to politics given the extreme economic threat associated with foreclosure that may have driven people to simply disengage from politics in places with extreme housing distress.

While we find support for our expectations, there are several limitations. Zillow does provide a great wealth of data at low cost, but there are quite a lot of missing data. Hence, many California ZIP Codes and their residents are dropped from both analyses due to missing foreclosure or ACS information. In general, the ZIP Codes for which we have sufficient foreclosure data and covariates from the ACS represent parts of the state somewhat different from other parts of the state. Table 4 shows the average difference in the rates of political participation, age, and party registration of people in the sample for the individual-level analysis. In the individual-level analysis, we lose about 6.96 percent of the usable observations (1.17 million of 16.86 million registered voters). The sample we are able to examine for this analysis is less participatory, less Democrat, slightly more Republican, and six months younger on average than the voters we are not able to include due to missing data. We do not

TABLE 4

Differences Between Registered Voters Included and Excluded from Analysis

Variable	Mean for Included	Mean for Excluded	<i>t</i>
General election voter	0.772	0.805	81.71***
Primary voter	0.501	0.572	148.21***
Democrat	0.445	0.462	35.19***
Republican	0.310	0.303	17.51***
Age	47.09	47.55	24.80***
<i>N</i>	15,685,489	1,174,023	

*** $p < 0.001$.

think these differences challenge the inferences we make, but likely bias the specific coefficients we estimate.

In addition to this sample bias, we recognize other limitations to the study. ZIP Codes represent a larger-than-ideal geographic representation of a neighborhood. In future analysis, we hope to make use of more complete foreclosure records. We also intend to construct an even closer match between experience with foreclosure and voting in order to examine the *direct* effects of home loss on voting. We also intend to expand beyond the 2008 general election results to examine political engagement in other elections that occurred during the housing crisis. One could argue that effects of foreclosure may be larger in elections where turnout levels are significantly lower. California voter turnout in the November 4, 2010 elections was 60 percent, compared with 79 percent in 2008.

A remaining unexamined link is the connection between declines in voter turnout due to foreclosure and patterns of inequality in political disenfranchisement. Other research demonstrates associations among the socioeconomic status, race, and ethnicity of borrowers and their exposure to subprime lending (Bocian, Li, and Ernst, 2008; Li, 2011) and home foreclosure (Allen, 2011; Rugh and Massey, 2010). Female-headed households have also been particularly exposed (Dymski, Hernandez, and Mohanty, 2011). Consequently, foreclosure has been unequally distributed and is particularly high among populations already less likely to be politically active: young, minority, moderate-income families (Estrada, 2009). In future research, we intend to explore the extent to which foreclosure dislocations, and associated declines in political participation, may be responsible for election outcomes as well as their implications for the political representation of historically underrepresented populations.

REFERENCES

Allen, Ryan. 2011. "Who Experiences Foreclosures? The Characteristics of Households Experiencing a Foreclosure in Minneapolis, Minnesota." *Housing Studies* 26(6):845–66.

- Almond, Gabriel, and Sidney Verba. 1963. *The Civic Culture*. Princeton, NJ: Princeton University Press.
- Bocian, Debbie Gruenstein, Wei Li, and Keith S. Ernst. 2008. "Race, Ethnicity and Subprime Home Loan Pricing." *Journal of Economics and Business* 60(1–2):110–24.
- Brians, Craig Leonard. 1997. "Residential Mobility, Voter Registration, and Electoral Participation in Canada." *Political Research Quarterly* 50(1):215–27.
- Burbank, Matthew. 1997. "Explaining Contextual Effects on Vote Choice." *Political Behavior* 19(2):113–32.
- California Elections Code §2102(a).
- California Secretary of State. 2008a. *Statement of Vote February 5, 2008, Primary Election*. Sacramento, CA: California Secretary of State.
- . 2008b. *Statement of Vote November 4, 2008, General Election*. Sacramento, CA: California Secretary of State.
- Cho, Wendy K. Tam, James Gimpel, and Joshua Dyck. 2006. "Residential Concentration, Political Socialization and Voter Turnout" *Journal of Politics* 68(1):156–67.
- Currie, Janet, and Erdal Tekin. 2011. *Is the Foreclosure Crisis Making Us Sick?* NBER Working Paper 17310. Cambridge, MA: National Bureau of Economic Research. Available at <<http://www.nber.org/papers/w17310.pdf>>.
- DiPasquale, Denise, and Edward L. Glaeser. 1999. "Incentives and Social Capital: Are Homeowners Better Citizens?" *Journal of Urban Economics* 45:354–84.
- Dudley, Robert L., and Alan R. Gitelson. 2002. *American Elections: The Rules Matter*. Boston, MA: Addison-Wesley.
- Dymski, Gary A., Jesus Hernandez, and Lisa Mohanty. 2011. "Race, Power, and the Subprime/Foreclosure Crisis: A Meso Analysis." *Economics Working Paper Archive wp_669*. Levy Economics Institute.
- Estrada, Vanesa. 2009. "The Housing Downturn and Racial Inequality" *Policy Matters* 3(2).
- Highton, Benjamin. 2000. "Residential Mobility, Community Mobility, and Electoral Participation." *Political Behavior* 22(2):109–20.
- Huckfeldt, Robert, and John Sprague. 1995. *Citizens, Politics, and Social Communication: Information and Influence in an Election Campaign*. New York: Cambridge University Press.
- Immergluck, D., and G. Smith. 2006. "The External Costs of Foreclosure: The Impact of Single Family Mortgage Foreclosures on Property Values." *Housing Policy Debate*, 17(1):57–79.
- Key, V. O. Jr. [1949] 1996. *Southern Politics in State and Nation*. Knoxville, TN: University of Tennessee Press.
- Keyssar, Alexander. 2000. *The Right to Vote: The Contested History of Democracy in the United States*. New York: Basic Books.
- Knack, Stephen, and Martha Kropf. 1998. "For Shame! The Effect of the Community Cooperation Context on the Probability of Voting." *Political Psychology* 19:585–99.
- La Due Lake, Ronald, and Robert Huckfeldt. 1998. "Social Capital, Social Networks, and Political Participation." *Political Psychology* 19(3):567–84.
- Li, Yanmei. 2011. "Geography of Opportunity and Residential Mortgage Foreclosure: A Spatial Analysis of a U.S. Housing Market." *Journal of Urban and Regional Analysis* 3(2):195–214.

- Lin, Z., E. Rosenblatt, and V. W. Yao (2009). "Spillover Effects of Foreclosures on Neighborhood Property Values." *Journal of Real Estate Finance and Economics* 38(4):387–407.
- Manturuk, Kim, Mark Lindblad, and Robert G. Quercia. 2009. "Homeownership and Local Voting in Disadvantaged Urban Neighborhoods." *Cityscape: A Journal of Policy Development and Research* 11(3):213–30.
- Pomper, Gerald M., and Loretta Sernekos. 1986. "Bake Sales and Voting." *Society* 28(5):10–16.
- Putnam, Robert. 2000. *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon and Schuster.
- Putnam, Robert D., Robert Leonardi, and Raffaella Y. Nanetti. 1993. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, NJ: Princeton University Press.
- Roberts, Joel John. 2008. "Voting, Foreclosures, and Homelessness ... Interesting Combination." *LA's Homeless Blog*. Available at <<http://www.lahomelessblog.org/2008/10/voting-foreclosures-and-homelessness.html>>.
- Ross, Lauren M., and Gregory D. Squires. 2011. "The Personal Costs of Subprime Lending and the Foreclosure Crisis: A Matter of Trust, Insecurity, and Institutional Deception." *Social Science Quarterly* 92(1):140–63.
- Rotolo, Thomas, John Wilson, and Mary Elizabeth Hughes. 2010. "Homeownership and Volunteering: An Alternative Approach to Studying Social Inequality and Civic Engagement." *Sociological Forum* 25(3):570–87.
- Rugh, Jacob S., and Douglas S. Massey. 2010. "Racial Segregation and the American Foreclosure Crisis." *American Sociological Review* 75(5):629–51.
- Squire, Peverill, Raymond E. Wolfinger, and David P. Glass. 1987. "Residential Mobility and Voter Turnout." *American Political Science Review* 81(1):45–66.
- Squires, Gregory D., and Derek S. Hyra. 2010. "Foreclosures—Yesterday, Today, and Tomorrow." *City & Community* 9(1):50–60.
- Stein, Robert M., and Greg Vonnahme. 2011. "Voting at Non-Precinct Polling Places: A Review and Research Agenda." *Election Law Journal* 10(3):307–11.
- Timpone, Richard J. 1998. "Structure, Behavior, and Voter Turnout in the United States." *American Political Science Review* 92(1):145–58.
- U.S. Election Assistance Commission. 2006. National Mail Voter Registration Form. Available at <http://www.eac.gov/assets/1/Documents/National_Mail_Voter_Registration_Form_English_2.15.20121.pdf>.
- Uslaner, Eric M., and Mitchell Brown. 2005. "Inequality, Trust, and Civic Engagement." *American Politics Research* 33(6):868–94.
- Wolfinger, Raymond E., and Steven J. Rosenstone. 1980. *Who Votes?* New Haven, CT: Yale University Press.