Housing Market Distress and Voter Participation

W. Ben McCartney*

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Abstract

How does household finance affect the political process? I merge deeds records with voter rolls to create a novel panel dataset and identify a negative relationship between housing market distress and voter participation. Using a difference-in-differences design that compares initially highly leveraged homeowners to their equity rich neighbors and exploits variation in house price declines during the recession, I find that a ten percent decline in local house prices decreases voter participation two percentage points more for initially highly leveraged households than their equity-rich neighbors. The effects of financial distress are particularly severe for homeowners that live more than one mile from their polling place, consistent with a resource constraints channel. Back of the envelope calculations suggest that mortgage distress can explain approximately 500,000 abstentions in the 2012 general election.

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*Purdue University, Krannert School of Management. Email: wmccartn@purdue.edu. I am incredibly grateful to my committee: Manju Puri (chair), Manuel Adelino, Ronnie Chatterji, John Graham, and David Robinson for their feedback and support. The paper also benefited from comments and suggestions from Alon Brav, Anna Cieslak, Sergio Correia, Simon Gervais, Jillian Grennan, David Kaczan, Cam Harvey, Song Ma, Adriano Rampini, Basil Williams, Ming Yang, and seminar participants at the Fuqua Finance Brownbag, Rice University (Jones), Syracuse University (Whitman), the College of William & Mary (Mason), Baruch College (Newman), the Federal Reserve Board, the Federal Reserve Bank of Philadelphia, Purdue University (Krannert), Indiana University (Kelley), and the NYU Conference on Household Finance. All errors are my own.

1 Introduction

Policymakers write and implement policies and create institutions – the mortgage interest deduction, the conforming loan limit, the CFPB (or BCFP) – that have meaningful economic consequences for households. In the United States, these policymakers are not randomly assigned. In this paper, I close the loop that relates policymakers to households and ask how household finance feeds back into the political process. Specifically, I explore a turnout mechanism, especially important in democracies, and test if voters experiencing housing market distress are more or less likely to vote in elections.

The theoretical predictions are ambiguous (Rosenstone, 1982). On the one hand, financial distress might increase participation. Voters experiencing distress might seek to effect change or to punish incumbents and use their vote as a tool for doing so, a hypothesis known as the "angry voter hypothesis." Newly distressed households might now believe they have more to gain from their preferred candidate being elected. Or, knowing their high debt levels preclude moving, distressed households engage in an effort to make the best of a bad situation. On the other hand, financially distressed households might be less likely to participate. Financial distress could cause psychological distress or depression. Households negatively affected by an economic shock might lose faith in the system and therefore refuse to participate. Finally, financially distressed households, because they face tighter time and wealth constraints and because voting is not costless, might be less likely to participate.

Using a novel individual-level dataset and a difference-in-differences style design, I find that financial distress decreases participation. For highly leveraged households, a ten percent drop in house prices causes a two percentage point decrease in participation compared to their equity rich zip code neighbors. I demonstrate the robustness of this finding by taking advantage of the richness of the dataset and including an individual-voter fixed effect. Furthermore, I find that households that live far from their polling places are especially affected by financial distress, consistent with a resource constraint story.

I use the publicly available North Carolina voter file, an individual level dataset that details, for each of the more than six million registered voters in the state, their party affiliation and all of the elections they participated in between 2008 and 2016. Also included are some demographic variables including their age, race, and gender. Finally, I know their full names and addresses. I use these two identifying pieces of information to merge in data from the county deeds registries. These datasets include a list of every property in the county along with whe owns it, when it was purchased, how much it was purchased for, and how the purchase was financed. Furthermore, I also know of any refinances that have taken place since and the terms of those loans. Finally, to measure changes in local house prices and construct expected equity positions, I merge in monthly median zip-code home values from Zillow. With this dataset, I know the name and address of every registered voter in the state, if they voted, whether they rented or owned and, if they owned, the details of their outstanding mortgage. I define financial distress as occurring when a household was both initially highly leveraged and then experienced a severe, negative house price shock.

To identify the effects of financial distress I use a difference-in-differences strategy. For the first difference, I exploit the varied timing and magnitude of house price declines across zip codes within counties on the sample of already highly leveraged homeowners (households with loan-to-value ratios above 90% two years prior to the election). Along with this first difference, I include a battery of control variables and fixed effects. Specifically, I compare homeowners in the same county, affiliated with the same party, voting in the same election, whose houses had similar initial values, who moved in during the same year, who made the same participation choices in the 2008 midterm and general elections, and who are of the same race, age, and gender. However, the concern is that households living in zip codes where house prices were severe are different, in meaningful and unobservable ways, from households where house price declines were mild.

To solve this problem, I include a second difference, initial equity position. That is, I compare initially highly leveraged homeowners to those that were initially equity rich homeowners. These households share many of those unobservable characteristics that caused them to make the same location decision. They also share exposure to local macroeconomic conditions like changes in demand, industry shifts, and political advertisement spending. With more equity to cushion the fall in house prices, equity rich homeowners serve as a compelling placebo group. For example, when highly leveraged households are hit with negative house price shocks they become unable to cash out refinance, a project they might have been expecting to undertake to supplement their income. They also, because they are now underwater, become more at risk of foreclosure. Neither of these conditions are as true for households that were initially equity rich.

A final concern is that location and loan-to-value (LTV) ratio at origination might be both jointly determined and endogenous to participation responses to home value declines. That is, participation decisions in the 2008 midterm and 2008 general elections, might not fully control for differences across homeowners. To solve this remaining issue, I include individual person fixed effects. This fixed effect absorbs all time-invariant characteristics, even those that are unobservable, driving the location and initial LTV decisions. Using this strategy means that identification comes just from differences in recent house price declines. I confirm the main findings. Specifically, the average highly leveraged homeowner is 4 percentage points less likely to vote after her house price has declined by twenty percent. This key finding supports the hypothesis that financial distress decreases voter participation.

Next, I explore the economic importance of my findings. Financial distress explains approximately 15,000 abstentions in the 2010 general election in North Carolina. In other words, had house prices not declined, voter participation would have increased by about 1 percentage point through the closing of the distress channel.

In North Carolina, the share of voters treated – by having had initially high LTVs followed by large negative house price shocks – is similar between Democrats, Republicans, and independent voters. The similar exposure to the treatment across parties combined with my findings that the effects of house price shocks are similar across voters in both parties means that election results should not be affected. I confirm this result finding that, while the effects of decreased house prices on county-level participation are significant, the share of votes received by each party in North Carolina is unchanged.

Similar effect sizes across the country would mean that more than 500,000 abstentions in the 2012 election and almost 200,000 abstentions in the 2016 election can be explained by household financial distress. What this might mean for election results depends entirely on which candidates the financially distressed abstainers would have voted for. In North Carolina, for example, abstentions due to financial distress were evenly split between Democratic voters and Republican voters. Further data collection at the voter level will be necessary to find if this is also the case in the rest of the country or if, in some states, one candidate's would-be voters were especially affected. That said, in preliminary county-level analysis, I find that Democratic counties (counties where Obama received more than 50% of the vote in 2008) saw an average house price decline of 15.6% between the presidential elections of 2008 and 2012 versus 11.6% in Republican counties. By 2016, Republican counties had fully recovered with 2008 to 2016 house price growth of 2.3% while Democratic counties 2016 house prices were still 0.7% below their 2008 levels. At the same time, participation in Democratic counties was 3.7% lower in 2012 than in 2008 and only 1.6% lower in Republican counties. In 2016, Republican county turnout was .45% higher than in 2008 but 6.6% lower in Democratic counties. Clearly, these correlations are consistent with many economic and political stories. But viewed through the lens of this paper's findings, they are certainly suggestive.

Finally, I consider the potential channels through which mortgage distress might lower participation. Importantly, the careful identification means we do not have to consider the channels through which financial distress might increase voter participation since, at least for mortgage distress caused by unexpected declines in house prices, financial distress decreases participation. I consider three channels: one, a time and wealth constraints channel wherein voters have too few resources to provide for their families, satisfy their job requirements, and vote (Rosenstone, 1982); two, a psychological distress channel that causes voters to feel overwhelmed and abandon projects with high real or perceived cognitive costs (Mani et al., 2013); and, three, a cynicism channel where financial distress decreases the sense of duty people feel to participate in the democratic process (Riker and Ordeshook, 1968).

To shed some light on the potential mechanism, I test if financial distress has different effects on households who live near their polling places. I find that highly leveraged households within 1 mile of their nearest polling place are especially affected by falls in house prices. The idea that psychological costs or cynicism would be different for households living near versus far from their polling place is less intuitive than the idea that financial distress is relatively worse for households who must drive, park, and stand in a line of unknown length than for households who can walk to their polling place. Furthermore, surveys from the US Census find that, in the general elections of 2010, 2012, and 2014 "too busy, conflicting schedule" was the most common answer given by abstainers when asked why they did not vote[1]. Overall, a time and wealth constraints channel, where, for example, financially distressed voters must choose between voting and being late for their hourly-paid job or voting and not having to pay for childcare that day is the most consistent with the evidence. However, all channels likely play a role and more work will be necessary to uncover their relative importance.

This paper contributes to the literature examining the role of negative shocks to real estate values on households. Mian et al. (2013) highlight the role of debt and the importance of household equity in consumption and Baker (2017) further shows that negative income shocks are particularly harmful to households with high debt to asset ratios. Bernstein (2015) finds that the implicit tax on underwater households, households who owe more on their mortgage than their home is worth, results in significant decreases to household labor supply. Those households that continue to work do so for lower wages (Cunningham and Reed, 2013) because they are less likely to be able to relocate to higher paying jobs (Brown and Matsa, 2016) and, more broadly, to avoid the double punch of being both underwater and unemployed (Foote et al., 2008). The effects on the broader economy are also severe, as highly leveraged households are less likely to start firms (Schmalz et al., 2017) and less likely to successfully pursue innovation projects (Bernstein et al., 2017). Melzer (2017), again because of the implicit taxes of debt overhang, documents that underwater households cut back on home improvements. And finally, the health and wellbeing of homeowners also deteriorates because of mortgage distress (Currie and Tekin, 2015; Deaton, 2012). I contribute evidence that household financial distress also affects voter participation, a critically important activity for a well-functioning democracy.

I also add to the literature from political science that asks how economic adversity affects voter participation. These papers focus primarily on unemployment and foreclosure and have yet to reach a consensus on whether distress increases or decreases voter participation (see, e.g, Burden and Wichowsky, 2014; Cebula, 2017; Estrada-Correa and Johnson, 2012; Hall et al., 2017). Using a novel measure of economic adversity, high leverage coupled with house price declines, I add convincing evidence in support of the withdrawal hypothesis. My work also contributes to the huge body of work trying to understand why people vote at all and what affects participation at the margin (for an introduction to this literature see Blais, 2000, 2006; Cancela and Geys, 2016; Smets and Van Ham, 2013).

The implications of my results for policy are as follows. First, policy makers citing the benefits of the homeownership society (see, e.g, Sodini et al., 2016) should keep in mind that homeownership at any expense

[1] See, e.g., https://www.census.gov/data/tables/2012/demo/voting-and-registration/p20-568.html

might adversely affect the very outcomes they hope to encourage – voter participation and, more broadly, civic engagement (Ekman and Amnå, 2012). Similarly, policies limiting LTV ratios might lead to higher voter participation rates in market downturns (see Cerutti et al. (2017) and DeFusco et al. (2017) for recent papers discussing these types of policies). Finally, this paper presents a reason to help underwater households modify their mortgages. Agarwal et al. (2017) show that the Home Affordable Modification Program (HAMP) was associated with lower rates of foreclosure, milder house price declines, and increases in durable spending. To their findings, I add novel evidence that HAMP, and programs like it, might also serve to strengthen communities by halting the declines in voter participation and civic engagement that come with distressed mortgages.

Finally, my results motivate further work that tries to understand the complex relationships between household finance, housing policy, election outcomes, inequality, and political institutions. Choices made by governments have important effects on the real economy and the social welfare of their countries (Atkinson and Stiglitz, 2015). Citizens have heterogeneous preferences and so democracies hold elections where people can freely vote for their preferred candidates and policies. If, however, certain groups are less able to participate, then policy making will fail to reflect the preferences of those unable to vote (Cascio and Washington, 2013; Chattopadhyay and Duflo, 2004). This paper therefore presents suggestive evidence of a feedback loop between household financial distress and the growing inequality in the United States – decreased voter participation.

2 Data, Sample Construction, and Summary Statistics

Extant work has used aggregate measures to reach conclusions about the effects of various phenomena on voter participation and about the effects of financial distress on various outcomes. This strategy is appropriate if the goal is to determine global drivers of global turnout, but is, except under very special circumstances, inappropriate for identifying causal, person-level economic relationships. Since at least 1950, social science has known that ecological correlations cannot be used as substitutes for individual correlations (Robinson, 2009). For example, that areas with more unemployment have lower voter turnout does not mean that becoming unemployed necessarily decreases an individual's likelihood of voting. Statistically, this is because the average within-area individual correlations are not identical to the total individual correlation, as correlations between independent and dependent variables of interest are generally smaller for relatively homogenous sub-groups than for the population at large. The conclusion, then, is that making correct inferences about individual causal effects based on observed aggregate correlations is infeasible. For more theory see King (2013) and for discussions in an empirical setting see, e.g., Arceneaux (2003) and Adelino et al. (2016). In short, counties do not vote, voters do; and the dataset needs to reflect this.

2.1 Data Sources

The first dataset I use is the North Carolina voter file which covers all registered voters in the state. Made publicly available by the North Carolina State Board of Elections are lists of all people registered to vote in every major election. The voter rolls include the name and address, party affiliation, polling place, age, race, sex, and birth state of each voter. Importantly, I also know if they voted in every local, state, and national election. I focus on the 2008, 2010, and 2012 general elections and their primaries, to ensure common eligibility and uniform tops of the ballot for all voters in the state, for a total of six national elections. North Carolina has a semi-open primary system in which voters registered with a party can vote only in that party's primary. Voters who are unaffiliated with a party can vote in either party's primary. This leads to a high number of unaffiliated voters in North Carolina relative to the rest of the country. To mitigate this issue, I assume that voters who always participate in only one party's primaries are affiliated with that party. I merge these three datasets together to create a novel panel dataset. With this dataset I know, for every resident of those counties covered by DataQuick, whether they rented or owned, and, if they owned, how underwater they found themselves as housing prices fell. I also know, for those homeowners registered to vote, whether or not they voted.

The second dataset I use sources data from county recorders' offices related to sale and loan transactions. These data are also publicly available, but cleaned and published formerly by DataQuick and now by CoreLogic. This dataset covers the near universe of mortgage loans made in North Carolina between 2000 and 2012 and includes information about the borrowers, the lenders, the mortgage, and the securitizing property. Some counties have no information and the sample is incomplete in early years. But from 2004, all purchase loans are recorded; and, from 2006 on, all purchase and refinance loans are covered in the most populous counties, covering about 68% of the state's population. The third dataset, also from DataQuick, derives its data from county assessor's offices and publishes the assessed value, geolocation, street address, and names of owners for all properties covered in the sample[2]. To measure local housing market conditions, I use the historical monthly zip code median home price from Zillow.

North Carolina is a state particularly well suited for this study. The state has ten million citizens and, with a GDP of approximately $500 billion, an economy just smaller than Norway's and larger than Venezuela's. Also, as shown in Table 1, North Carolina is a remarkably representative state. North Carolina and the United States are both 61% white. North Carolina has a higher homeownership rate (65.7% versus 63.4%), lower unemployment rate (4.7% versus 5.0%), and lower median income (54k versus 59k) than the country.

[2]For examples of the raw data, visit the Durham county records search, http://property.spatialest.com/nc/durham/, the Wake county real estate property search, http://services.wakegov.com/realestate/, and the Wake county register of deeds, http://services.wakegov.com/booksweb/genextsearch.aspx

Politically, North Carolina had higher participation in the 2016 general election (64.8% versus 59.3%) and voted more for Trump (49.8% versus 46.1%). These differences are all slight, though, making North Carolina an ideal state to use for testing and calibrating the model.

Even in its own right, separately from how it compares to the rest of the country, North Carolina is incredibly important. It has been a battleground state since at least the 2008 presidential election when Obama received just 14,177 more votes than McCain out of 4,310,789 votes cast. Midterm elections, too, are competitive. In the 2014 senatorial race, the Republican Thom Tillis received 45,608 more votes than the incumbent Democrat Kay Hagan. Most recently, the 2016 governor's race was decided by just 10,277 votes when Roy Cooper (D) defeated the incumbent Pat McCrory (R) despite the state voting for Trump.

2.2 Defining Financial Distress

To define financial distress, I start by estimating each household's monthly loan-to-value (LTV) ratio. To estimate the outstanding loan balance, I assume homeowners pay off their principal in equal monthly payments over 30 years. I set the value of the home equal to the sale price in the quarter that the sale took place and then assume it appreciates the same as the median home value in its zip code. The LTV ratio is the quotient of the two. Then I consider negative shocks to house prices. Finally, I say that highly leveraged homeowners hit with negative shocks are financially distressed. So, to determine the effects of financial distress I ask what happens as already highly leveraged households see their home values decline.

I assume that households with low leverage are not likely, or are at least less likely, to be financially distressed as a result of house price declines. Foote et al. (2008) and Foote et al. (2010) find that falling house prices and some second negative shock are the key drivers of foreclosure. A decline in house prices that pushes households underwater is a necessary condition for default. Therefore, households whose home prices decline become more financially distressed since their risk of default increases. Furthermore, negative equity might also be financially distressing to households that use their homes as sources of income. When these households, who were expecting to cash out refinance in the future, learn that they cannot because their home's value has declined, they are more at risk of experiencing financial distress.

Motivated by the mortgage distress many households experienced during the recession, the Panel Study of Income Dynamics (PSID) survey added questions A27F6 and A27G that asked households how likely they are to fall behind on their mortgage. I use survey responses to questions A20 and A24 to determine if households are underwater. Of PSID respondents, 37% of underwater homeowners in the 2009 survey say they are worried about falling behind compared to only 11% of homeowners who are not underwater. In 2011, 32% and 8%, respectively, are concerned. Furthermore, within households over time, being underwater is correlated with a

.6 point increase in K-6 non-specific psychological distress scale, a score out of 24, and a 21 percent increase in receiving financial help from family and friends (G44). These results are not conclusive evidence, but do support calling highly leveraged households experiencing negative house price shocks financially distressed.

2.3 Sample Creation

The primary sample creation process is as follows. I start with the North Carolina voter sample which includes, over the period 2008 to 2012, 8.2 million unique voter-by-address individuals. Given the non-uniqueness of names (for example, there are six William McCartneys currently registered to vote in North Carolina) I cannot follow voters as they move across the state, so I use voter-by-address as my panel variable. From the initial raw dataset, I drop voters living in census tracts not covered by DataQuick, which brings the number of voters to 5.6 million. I then match voters based on their names and addresses to property owners in the assessor files and find a match for 59.1% of voters.

I further trim this sample for the regressions by including only those homeowners who were registered to vote in the 2008 elections. I use their participation in the 2008 midterm and presidential elections as a baseline off of which to compare their later participation. Because the data quality is questionable pre-2004, I focus on those properties with observed sales prices between 2004 and 2012. This includes 1.5 million transactions at just over one million unique properties, or 24% of the properties in the sample. Further, to remove concerns about incorrectly measured LTV ratios I drop households whose predicted 2011 home value is more than 50% different than its assessed value or who have an outstanding HELOC. Finally, for each election, I drop homeowners who have refinanced in the previous two years as their LTV is then a function of their refinancing decision and not the house price shock.

2.4 Summary Statistics

[TABLE 2 HERE]

In table 2, I describe in detail the demographics of the sample of voters registered to vote in the general elections of 2008, 2010, and 2012. The sample is approximately 45% Democrat and 35% Republican. The remaining 20% are largely unaffiliated voters, who, because of the semi-open primary in North Carolina, can vote in either party's primary. Very close election results suggest that the state is evenly split between households voting Democrat and households voting Republican. The age, race, and sex variables are largely unsurprising. Interestingly, only 37% of the registered voters in North Carolina were born in the state. This is due to the large influx of out-of-state immigrants North Carolina has received over the last several decades. Approximately 60% of the sample are homeowners; the remaining 40% rent. The census estimates that 65% of

North Carolina are owner-occupying homeowners suggesting that my match between the real estate data and the voter records is working well. Approximately 25% of homeowners in the state live in homes with values above $300,000. And just under 30% of registered voters live more than one mile away from their nearest polling place.

[TABLE 3 HERE]

Table 3 looks at the participation rates of registered voters. Democrats and Republicans are far more likely to vote than unaffiliated voters. Older voters vote more than young voters; homeowners vote more than renters; and voters who own more expensive homes are more likely to vote. Interestingly, voters that live near their polling place are not, unconditionally, any less likely to participate in elections with the exception of the 2008 primary.

[FIGURE 1 HERE]

Between 2008 and 2012, house prices fell substantially across the state of North Carolina. Figure 1 illustrates the house price falls between the 2008 and 2010 general election in zip codes in Mecklenburg County, home of Charlotte, North Carolina. In 2008, house prices had been rising almost everywhere for the previous two years. But by 2010 the trend in the state had reversed and zip codes experienced large, but varied, house price declines.

[FIGURE 2 HERE]

Figure 2 presents the same zip codes but at four different points in time, May and November of 2010 and 2012, which correspond to the four national elections that took place during my sample period. Immediately obvious is the two year span leading up to the 2010 elections saw more severe house prices than the two years leading up to the 2012 elections. And not only did the declines vary in magnitude across zip codes, but also within zip codes over time. It is this varied magnitude and timing of the falls in house prices that I exploit in my identification strategy.

[TABLE 4 HERE]

Tables 4 and 5 focus on the mortgage distress variables that will be used in this paper as the key explanatory variables of interest. Table 4 documents that the number of highly leveraged households increases from 23.32% of homeowners to 30.94% of homeowners between the 2008 and 2010 elections. This is caused by the large house price declines that rocked the state during that time. Between 2008 and 2010, 51% of voters experienced local house price declines of more than 5%, and 23% experienced declines of more than 10%. The third panel groups households into one of six types depending on their initial LTV ratio and the house price drop they just experienced. For example, at the 2010 election, 5.74% of households had 2008-LTV ratios above 90% and had just experienced a local house price drop of more than 10% in the two years leading up to the election.

[TABLE 5 HERE]

As a first look at the findings of this paper, simple tabulations find that, in all elections, more leveraged borrowers are less likely they are to vote. These differences are meaningful, with households with LTVs over 90% being 3 to 12 percentage points less likely to vote than households with LTVs below 90%. Voters living in zip codes where house price declines had been severe are less likely to participate. And finally, households with high initial LTV ratios and large declines in home value are less likely to vote – both compared to households with high initial LTV ratios who did not experience such large house price declines and compared to households who experienced a similar house price shock.

3 Identification Strategy

The objective of this paper is to uncover the causal relationship between financial distress and voter participation. A simple documentation that the participation of households underwater on their mortgages is lower than households not underwater is intriguing, but nothing more than suggestive. Registered voters who choose high LTV ratios might be endogenously choosing high LTV ratios and abstention. For example, younger voters, households with less education, and households with low incomes might all choose more aggressively financed homeownership and value their vote less or face higher costs to voting than their older, more educated, or wealthier peers. As another example, homeowners who travel more for work may be both less able to find time to vote and also have higher LTV ratios because their job means that they relocate often so have had less time to build equity in their homes. Identifying an effect of financial distress on voter participation therefore requires some exogenous shock to distress.

To achieve this I use the varied timing and magnitude of house price declines across the state of North Carolina as a source of exogenous variation to household's financial distress. I first compare initially highly leveraged households who experienced large house price declines to other highly leveraged households who experienced more mild declines in house prices. Then, since households might be non-randomly choosing neighborhoods such that those in zip codes where house prices fell dramatically might be different in unobservable ways from households in zip codes where the recession was mild, I add a second difference to the model. Households with low initial leverage ratios are less likely to become financially distressed when house prices decline, but have endogenously sorted in to the same neighborhoods and experience the same local macroeconemic conditions as their highly leveraged neighbors, and thus make a convincing control group. Specifically, I consider difference-in-differences models of the following form:

$$Participated_{ij} = \gamma \times HP\ Fall_{ij} \times High\ Lev_i + \mu \times HP\ Fall_{ij} + \theta \times High\ Lev_i + Controls_i + Election_j \quad (1)$$

where i indexes voters and j indexes elections. *Participated* is a dummy equal to 100 if the voter participated and zero otherwise. I use 100 as the outcome so the slope estimates can be easily interpreted in percentage point terms. The variable of interest, *HP Fall*, is the percent decrease in zip code house prices over the two years leading up to the election and $High\ Lev_i$ is a dummy variable equal to 1 if household i was highly leveraged two years prior to the election. The model includes demographic controls about the voter including his race, sex, age, and birth state; controls for the year he moved in, the value of the home two years prior, and the percent increase in home prices between the start of 2004 and the end of 2007. Finally, to control for differences in each individual's baseline voting participation, I include two indicator variables, the first equal to 1 if the voter voted in the 2008 midterm election and the second equal to 1 if if he voted in the 2008 presidential election. These participation control variables are important because, if households who chose to live in areas that experienced house price declines are less likely to participate then this will be controlled for in the model. The inclusion of election fixed effects, one for each of the 2010 midterm, 2010 general, 2012 midterm, and 2012 general elections, absorbs differences across elections that might be correlated with voter turnout.

I can further add to the model party affiliation by election fixed effects. This absorbs any differences in common drivers of voters of different parties to participate in each election. For example, it might be that voters affiliated with the party out of power are more likely to participate in the midterm elections. If they also live in zip codes where house price declines were different than zip codes where voters of the other party live, then the results would be biased. I also include county by election fixed effects to absorb differences in participation rates across the state and initial house price level by election fixed effects to control for the concern that voters in wealthier or poorer neighborhoods might have different baseline participation rates or might be differentially affected by the drop in median local house price. All together then[3], this first model tests for differences between voters experiencing different house price declines but living in the same county, affiliated with the same party, voting in the same election, living in houses of similar initial value, who made the same participation choices in the 2008 midterm and general election, and of the same race, age, gender, and years since they moved to their home.

A concern, though, is that important unobservable variables might affect both location and participation

[3] The estimation of models with a high dimensional fixed effects is made possible by Correia (2017).

decisions. If households choose counties, but not zip codes, zip code level house price changes are randomly assigned. But to the extent that this is not true, my results will be biased. My first solution to this problem is to force the identification to come from differences between highly leveraged and low leveraged households in the same zip code. I do this by estimating model 1 and also including a zip code by election fixed effect. Since my variation is at the zip code level, the inclusion of this fixed effect naturally means I can no longer identify the main effect of the house price decline, but I can identify the interaction term between house price falls and high initial leverage. The assumption is that many of the unobservable characteristics that lead households to choose the zip codes they did will be shared between high-LTV and low-LTV households. Furthermore, these households all share exposure to local macroeconomic shocks. The only difference, then, is their initial LTV ratio and, consequently, how financially distressing a given fall in house prices is. I adjust the strategy further by including a third group of registered voters, renters. Renters have little exposure to the real estate market, and are therefore, of the three groups, the least likely to experience financial distress following declines in house prices.

My second solution acknowledges that households who choose low LTV ratios at origination might be different than households who put little money down at the time of purchase. Much of this difference will be absorbed by the participation decisions in the two 2008 elections and the battery of control variables, but unobserved differences may remain. This is especially true if households make their location and initial leverage decisions jointly. To fix this issue, I take model 1 and then more fully utilize the panel nature of the dataset by including a voter fixed effect as follows:

$$Participated_{ij} = \beta \times \textit{HP Fall}_{ij} \times \textit{High Lev}_i + \rho \times \textit{HP Fall}_{ij} + \eta \times \textit{High Lev}_i + Person_i + Election_j \tag{2}$$

where all variable are as before and $Person_i$ is a person fixed effect. This fixed effect absorbs all time-invariant characteristics, even those that are unobservable, driving the location and origination LTV decisions. In other words, all the unobserved variables that affect both location decisions and participation decisions that are not absorbed by the participation decisions in the 2008 elections are absorbed by the person fixed effect. Each voter has six participation decisions to make, one for each of the national elections occurring during the sample period. In this model, then, I identify just off of different house price changes the same highly leveraged homeowner experiences over the years 2006 to 2012. As before, I also include party by election and county by election fixed effects.

4 Results

4.1 The Effects of Financial Distress

[TABLE 6 HERE]

The main results of this paper are presented in tables 6 through 8. In the first specification of table 6, I find that drops in house prices have no significant effect on households that were not initially highly leveraged. This finding is consistent with the idea that a decline in house prices does not cause equity rich households to be financially distressed. For households that were initially highly leveraged, on the other hand, a twenty percent decline in house price decreases voter participation by 3.1 percentage points. With an average participation rate over the four national elections in 2010 and 2012 of 45 percent for voters in the regression sample, this decrease is equivalent to a decrease in participation of more than 6 percent. The first specification includes a battery of control variables for each voter including their race, sex, age, and birth state; controls for the year they moved in, the value of their home two years prior, and the percent increase in their zip code's home values between the start of 2004 and the end of 2007. To control for differences in individual's baseline voting participation, I include two indicator variables, the first equal to 1 if the voter voted in the 2008 midterm election and the second equal to 1 if he voted in the 2008 presidential election. Specification (1) also includes an election fixed effect. As each election is different, this fixed effect is important. Midterm elections have lower participation levels than presidential elections, and primaries similarly have lower turnout. But all specifications include an election fixed effect so that correlations between house price declines and the upcoming election do not affect the results.

Specifications (2) through (5) include increasingly strict fixed effects limiting the sources of variation driving the identification. Voters affiliated with certain parties might be more inclined to vote in certain elections than voters affiliated with the opposing party. For example, voters in the minority party might be more inclined to participate in the midterms to flip the house and senate. To control for this issue, I replace the election fixed effect with a party-by-election fixed effect in specification (2). Interestingly, the slope estimates remain almost completely unchanged, suggesting that differential party participation is not occurring in any meaningful sense. In the third specification, I add a county-by-election fixed effect to absorb the fact that some counties might have different mean participation rates. This could be the case if some areas got more political spending on advertisements or had more important local or congressional races and this was correlated with smaller house price declines. The difference between this specification and the previous ones is that, while the previous specification compares people to everybody else in the state, this model uses just the variation between households in the same county. The slope estimates adjust down, consistent with the idea that households sort to counties throughout the state, but the story remains the same. Finally, because houses of different values were differentially affected by the same local house price drops, I include an initial house price level-by-election fixed effect. The results consistently point to the same story: that households hit harder by house price declines are less likely to participate and that this result is not driven by households sorting into parties or counties or expensive homes.

In the final two specifications, I include zip code fixed effects. Since variation comes at the zip code level, including the zip code precludes the identification of the main effect of a decrease in house prices. But I can still compare highly leveraged households to their zip code neighbors who were not initially highly leveraged. The interaction term estimates are nearly identical to the previous two models, which means that the negative interaction effect estimated in the previous models was not just picking up differences between people in different zip codes. In these last four specifications, I find that a twenty percent decline in house price decreases participation for highly leveraged households by about 1.5 percentage points. I present the results of this table graphically in Figure 3.

[FIGURE 3 HERE]

The chart tells the same story as the tables. The participation rates of households with high leverage ratios are unaffected if house prices stay the same or increase. And households with low initial leverage ratios are unaffected by house price declines. But an important effect is immediately obvious at the intersection of high leverage and large negative shock to house prices. Homeowners in this quadrant, those I call financially distressed, are significantly less likely to participate in elections.

[TABLE 7 HERE]

Table 7 further compares both highly leveraged homeowners and low initial LTV homeowners to their renter-neighbors. From specification (3), I find that a twenty percent decline in local house prices decreases a renter's participation likelihood by a statistically insignificant .7 percentage points. An initially highly leveraged homeowner is a further 1 percentage point less likely to participate while a low LTV homeowner is a further .68 percentage points less likely. The results from this table say that the more likely a group is to become financially distressed as a result of a negative shock to house prices, the more severe the decrease in voter participation as a result of a realized negative shock. And that for households that are financially distressed, house price declines have economically and statistically significant negative effects on participation.

[TABLE 8 HERE]

Table 8 uses a different strategy than the previous models and includes a voter fixed effect. The empirical literature in political science has included a variety of individual-level factors that might affect turnout (Smets and Van Ham, 2013). By including a voter fixed effect, I control for all of these factors that are time invariant. The fixed effect also controls for those factors, like career choice and education, that may affect both location and participation decisions. Including voter fixed effects means that the identification of the estimates comes just from individual voters whose home value growth changes between elections. That is, there is no concern that the types of households who were hit hard are also the types of households who do not participate and that this is driving the results.

I find that, as expected, having a high initial leverage ratio is correlated with lower participation. It is important to note that this relationship is not causal, as I have no exogenous shock or instrument for initial leverage ratio. Beyond that, shocks to house prices have dramatic effects on voter turnout, but, again, only on voters that were initially highly leveraged. The estimated effects of a twenty percent decline in house prices range from 3.6 to 6.5 percentage points. The fixed effects are included in the same progression as in table 6. Taken together, the results of these three tables say that financial distress, defined as highly leveraged homeowners experiencing declines in house prices, causes a decline in voter participation.

4.2 Homogeneity of Effects Across Parties

[TABLE 9 HERE]

In table 9 I split households into three types: Democrats, Republicans, and those unaffiliated with any political party. I then estimate the same models as in table 6 but include another set of interactions. I interact party affiliation with the financial distress variables and test to see if financial distress has a particularly strong effect on one party. I find that this is not the case. Between the three political party groups, the effect of financial distress on participation is statistically indistinguishable.

4.3 Current LTV as a Sufficient Statistic

To further demonstrate the robustness of the findings is to use the current LTV homeowner's LTV ratio. So far, I have used previous loan-to-value rations and shocks to house prices as the variables of interest in the models. But one can instead think of those shocks to house prices as instruments for today's LTV ratio. I can then run reduced form regressions using this strategy. Throughout the paper, since I drop from the sample households who have recently refinanced, changes to household's LTV ratios are come almost exclusively from changes to house prices so the two strategies should yield similar results.

[TABLE 10 HERE]

All models include individual voter fixed effects so all identification is coming just off of differences in a voter's LTV ratio over time. I choose 80% and 100% as cutoffs since they are often used in industry. Households with LTV ratios above 100% are called underwater and households with LTV ratios between 80% and 100% are said to have low equity. Some of the negative effects of having low equity are likely endogenous – households non-randomly choose LTVs ratios at 90% or even 95%. However, it is fair to say that homeowners with LTV ratios above 100% are financially distressed. Only because of some unexpected, negative shock to home value can a household become underwater, otherwise the loan would not have been originated. Using the same fixed effects as in previous tables, I find that, within voters, having low equity makes voters between 1.5 and 2.3 percentage points less likely to participate, and being underwater decreases participation likelihood by a further 1.3 to 2.6 percentage points. The magnitude of these results are similar to those arrived at using house price shocks as the explicit source of exogenous variation.

5 The Economic Importance of Distressed Abstentions

In this section, I perform some back of the envelope calculations to show how voter participation is affected by financial distress. Whether election results are altered depends entirely on which candidates the financially distressed non-participants would have voted for. I demonstrate that, in North Carolina, would-be Democratic voters and would-be Republican voters are equally exposed to financial distress. For this reason, election results are not meaningfully altered in North Carolina. However, I use some county-level data from across the country to demonstrate that financial distress might play an important role in explaining the 2016 US Presidential election.

5.1 Implications for North Carolina

I use the model estimates from table 10 along with counts of homeowners to perform some back of the envelope calculations. From specification (6), households treated with LTV ratios above 100% are 1.5 percentage points less likely to vote than they would have been had they not been underwater. In the 2010 general election, 9.4% of registered voters were underwater on their homes. Had they instead not been underwater, predicted participation would have increased by an estimated 8,500 voters. Furthermore, 18% of households had low equity in their homes. The model predicts that had all households with low or negative equity had LTV ratios below 80%, then 36,313 more voters would have participated. In other words, voter participation in the 2010 midterm election would have been .3 to 1.3 percentage point higher in the absence of financial distress.

These estimates are partial equilibrium results estimated with a latent variable model. To truly explain abstentions requires some sort a structural or general equilibrium model. The exercise here is meant only to illustrate the potentially important effects mortgage distress has on voter participation and election results.

To know how the election results would have differed had these non-participants voted requires knowing for whom they would have voted. This is impossible to know with certainty, but using the data to compare political affiliations of participants with election results allows me to make some good guesses. Some results are available at the precinct level, but, in almost all cases, early and absentee ballots are tabulated only at the county level. For this reason, I use county level results. I find that the share of households registered as Democrats is highly correlated with the share of the county that voted for the Democratic county across all elections.

[FIGURE 4 HERE]

Knowing that observed party affiliation is highly correlated with realized vote, at least at the aggregated county level, means that we can assume who a voter would have voted for had she participated. The next step is to uncover if Democrats or Republicans were more likely to have experienced financial distress due to high initial LTV ratios and then negative shocks to house prices.

[TABLE 11 HERE]

In table 11, I document that the share of households experiencing the double whammy of high initial leverage and large house price declines is similar between Democrats, Republicans, and Independents. In fact, the share of each party in each of the six treatment groups is remarkable similar. To provide further evidence showing that exposure to financial distress was similar across parties I present figure 5.

[FIGURE 5 HERE]

Figure 5 demonstrates that, even within counties, the share of Democrats being shocked into mortgage distress is highly correlated with the share of Republicans experiencing the same fate. In other words, it is not the case that in some counties all the Democrats were hit hard by a house price shock and the Republicans were all spared. If a certain share of the county's Democrats were affected, a similar share of the county's Republicans was as well. I also check to see if there is a relationship between how Democratic a county is and the house price declines it experienced leading up to the 2016 election. I find that the relationship is flat, meaning that house price falls did not occur just in Democratic counties or just in Republican counties. Taken together, these findings suggest what we already knew from table 11, that voters of both parties were similarly exposed to negative house price shocks and similarly at risk of financial distress as a result. Recall, importantly, that the effects of mortgage distress are similar on Democrats, Republicans, and Independents. Given the similar exposure to the shock and the similar effect of the shock across parties, the results in table 12 are exactly as expected.

[TABLE 12 HERE]

The first three models, regressing change in turnout on house price declines, confirm that voter participation goes down following declines in house prices. But, in models 4 and 5, I document that the share of the county's vote for a given party does not change. In fact, including the county FE, notably without an election fixed effect, explains almost everything there is to explain in the county's collective vote. It is important to understand that this is because, within every county, the share of Democrats affected was the same as the share of Republicans affected. In other words, if there was no financial distress, the number of voters would increase, but the share of these counterfactual distress-free voters voting Democrat would be the same as the share of voters voting Democrat in the presence of the house price drops. This is nothing mechanical, but purely a function of the locations of party members across the state of North Carolina and where house price drops occurred.

5.2 Implications for the United States

To perform the same analysis across the United States requires household level data of party affiliations. For now, though, I can use a similar methodology as before to estimate abstentions. CoreLogic's Equity Report form the fourth quarter of 2016[4] publishes that 15% of mortgaged residential properties have LTV ratios between 80% and 100% and a further 6.2% are underwater. In the United States at the time of the election, approximately 130 million homeowners had mortgages. Using these numbers along with the assumption that the estimates from table 10 are appropriate for the rest of the country, I calculate that between 117,000 and 590,000 abstentions were because of mortgage distress. Performing the same analysis in 2012 when 21.5% of homeowners were underwater and another 23% had low equity[5] I estimate financial distress caused between 407,000 and 1,400,000 abstentions. Again, I urge caution as estimates are partial equilibrium results estimated with a latent variable model. These calculations are merely meant to be illustrative.

Determining how election results in other states might have been affected in the absence of house price shocks and mortgage distress requires more data. Specifically, I would need to know, or least be confident guessing, for whom the financially distressed abstainers would have voted for had they participated. In North Carolina I know each voter's political affiliation, so I can do this. I do not yet have this information for other states. Instead, I create a simple dataset I use to present some suggestive results. For each county in the country where Zillow data is available, I know the percent change in median house price that the county experienced between the 2008 and 2016 elections. I also know the share of the county vote that went to Obama

[4] http://www.corelogic.com/research/negative-equity/equity-report-q4-2016-screen-030817.pdf
[5] http://www.corelogic.com/research/negative-equity/corelogic-q4-2012-negative-equity-report.pdf

in 2008, which I use as a measure for how Democratic the county is. I then calculate a simple correlation between how democratic a county was in 2008 and how their home values have changed since then.

I find that Democratic counties (counties where Obama received more than 50% of the vote in 2008) saw an average house price decline of 15.6% between the presidential elections of 2008 and 2012 versus 11.6% in Republican counties. By 2016, Republican counties had fully recovered with 2008 to 2016 house price growth of 2.3% while Democratic counties 2016 house prices were still 0.7% below their 2008 levels. At the same time, participation in Democratic counties was 3.7% lower in 2012 than in 2008 and only 1.6% lower in Republican counties. In 2016, Republican county turnout was .45% higher than in 2008 but 6.6% lower in Democratic counties. Clearly, these correlations are consistent with many economic and political stories. But viewed through the lens of this paper's findings, they are certainly suggestive. These results can also be presented graphically.

[FIGURE 6 HERE]

In figure 6, I present these correlations for four different states. For North Carolina, I find a gently upward sloping trend meaning that areas that were more Democratic in 2008 had larger house price growth between 2008 and 2016. The size of the point corresponds to the population of the county. The other three states I look at, Michigan, Pennsylvania, and Wisconsin, were all carried, unexpectedly, by Trump. In each state, there are large, Democratic counties where house prices are still significantly below their 2008 levels. The suggestive result then is that had these counties recovered, fewer, likely Democratic households, would have been financially distressed. Trump won Michigan, Pennsylvania, and Wisconsin by just 10,704, 44,292, and 22,748 votes, respectively. So the effects of financial distress need not have been unrealistically severe to have had a dramatic effect on the outcome.

6 Channels

6.1 The Potential Channels

In this paper, using multiple identification strategies and a carefully constructed, detailed dataset, I provide evidence in support of the hypothesis that financially distressed homeowners are less likely to participate in elections. The clean identification and unambiguous results provide an important piece of evidence in the puzzle of understanding why people vote and what affects their participation. I now consider some of the channels, discussed in previous sections, through which financial distress might decrease participation.

The first channel, and the channel most consistent with my evidence, is a financial or time constraints mechanism. This mechanism operates on households who want to participate but are too constrained to do so.

Consider a few examples. A registered voter wants to participate, but because of the decline in house prices she was not able to refinance as she had planned to do. To avoid foreclosure, she takes a second job. Between her two jobs, she does not have time to make it to the polls and therefore does not participate. In another scenario, a household had been paying for child care. But, following the house price declines and the larger threat of foreclosure, the household has adjusted their schedule to take care of their own children and can no longer find the time to participate. A third story is of a low-income voter who works an hourly job with has a boss who will not allow him to take time off or come in late. His financial constraint has no slack and he can't afford to forgo the hour of work and the increased threat in being laid off. In all cases, it is important to remember that voting is not a quick activity that occurs just on election day. Voters must register to vote, which might not be trivial especially for households without internet access, make sure they know where to vote, and then get to the polling place and potentially stand in line for hours. To a household that is operating with little slack to their budget and time constraints, this project might be too costly to undertake.

A second potential channel is the psychological distress channel. This mechanism causes the results if it is the case that households experiencing financial constraints experience a cognitive overload. If their capacity to work through complex problems is negatively affected because of their financial distress they may drop potential projects from their to-do lists. In this case, it is not that they lack the resources to undertake the project, but that the psychological stress of being financially distressed impairs their cognitive function. A third channel is that financial distress affects a household's perceived benefit of voting. Households experiencing financial distress might observe their local economy collapsing and wonder if their vote can even matter. I call this the disillusionment or cynicism channel. Many other stories, motivated by the models discussed in the appendix, can also be told.

6.2 Evidence in favor of the Constraints Channel

To speak to potential channels, I present three pieces of evidence. The first is that households are less likely to vote, not just because of house price declines, but because of house price declines when initially highly leveraged. If the disillusionment channel was the key channel, then we would expect to see that renters and households living in areas where house prices fell dramatically would be equally affected. It is unclear that a collapsing economy would increase cynicism just for households that were initially highly leveraged. I therefore rule out this channel as having first order importance.

Next, I use the voter's distance to his nearest polling place to measure his cost of voting since, all else equal, being farther away from the polling place makes it costlier to vote. If it was a case of jadedness with the system or mental anxiety, I would not expect the interaction between financial distress and distance to matter. If, however, it is especially costly to vote when time and resources become relatively more valuable, then a negative interaction effect financial distress and faraway polling place is most consistent with a time and wealth constraints channel.

[TABLE 13 HERE]

In table 13 I compare households whose nearest polling place is more than one mile away with households whose polling place is less than one mile away. I find that this triple interaction is economically and statistically significant. In other words, highly leveraged households who are also more than a mile away from their polling place are especially affected by falls in house prices. To ensure that this is not just a feature of differences between areas where there are many polling places and area with few polling places I include a polling place by election fixed effect. The results are unchanged. I interpret these results as saying that to voters for whom voting, as a function of travel time and unknown line length, is relatively costless, financial distress imposes less of a burden. If it was the case that households chose to abstain because of disillusionment or psychological distress and distraction then it should not be the case that being near to the polling place would matter in this way. That said, one might argue that households who live near to the polling place are psychologically distressed, it is just that since they can walk to their polling place the psychological distress is less relevant than for households for whom voting is a larger imposition. To provide a test that can more cleanly disentangle the financial constraints channel from the psychological distress channel I consider one final piece of evidence.

After every election, the US census polls non-participants and asks why they did not participate[6]. In the 2016 general election, the third most given reason for not participating, at 14.3 percent, was that households were too busy or had a conflicting schedule. And time constraints was the most cited reason after the 2014, 2012, and 2010 general elections at 28% 19%, and 27%, respectively. Differences across the income groups also show that for households with low incomes, transportation problems and forgetting to vote are more severe problems than for wealthier survey respondents. That so many households cite time constraints as an insurmountable hurdle suggests that time and financial constraints play a relatively larger role in financial distress decreasing participation than psychological distress. That all said, perhaps financial distress and psychological distress occur together and psychological distress causes households to feel overwhelmed and "too busy". A more refined approach will be necessary to completely disentangle the psychological and constraints channels, but I view the evidence as most consistent with the latter.

[6] https://www.census.gov/data/tables/time-series/demo/voting-and-registration/p20-580.html

7 Conclusion

The key contribution of this paper is a clean identification of the effects of household financial distress on voter participation. Voting is an activity at the epicenter of all democracies and it is consequently important to understand how households choose whether or not to participate. I find that distress significantly decreases participation. To my knowledge, this is the first paper to document this relationship. The aggregate effects are large, explaining hundreds of thousands of abstentions each election. This paper deepens our understanding of how household finance affects the political process and calls for more work to be done.

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Figure 1: Percent Drop in Charlotte, NC Zip Code House Prices

This is a map of zip codes in Mecklenburg County, NC as of November of 2010. For each zip code, I compute the change in the median house price over the previous 24 months using data from Zillow. The larger the decline in house prices, the more heavily shaded the zip code.

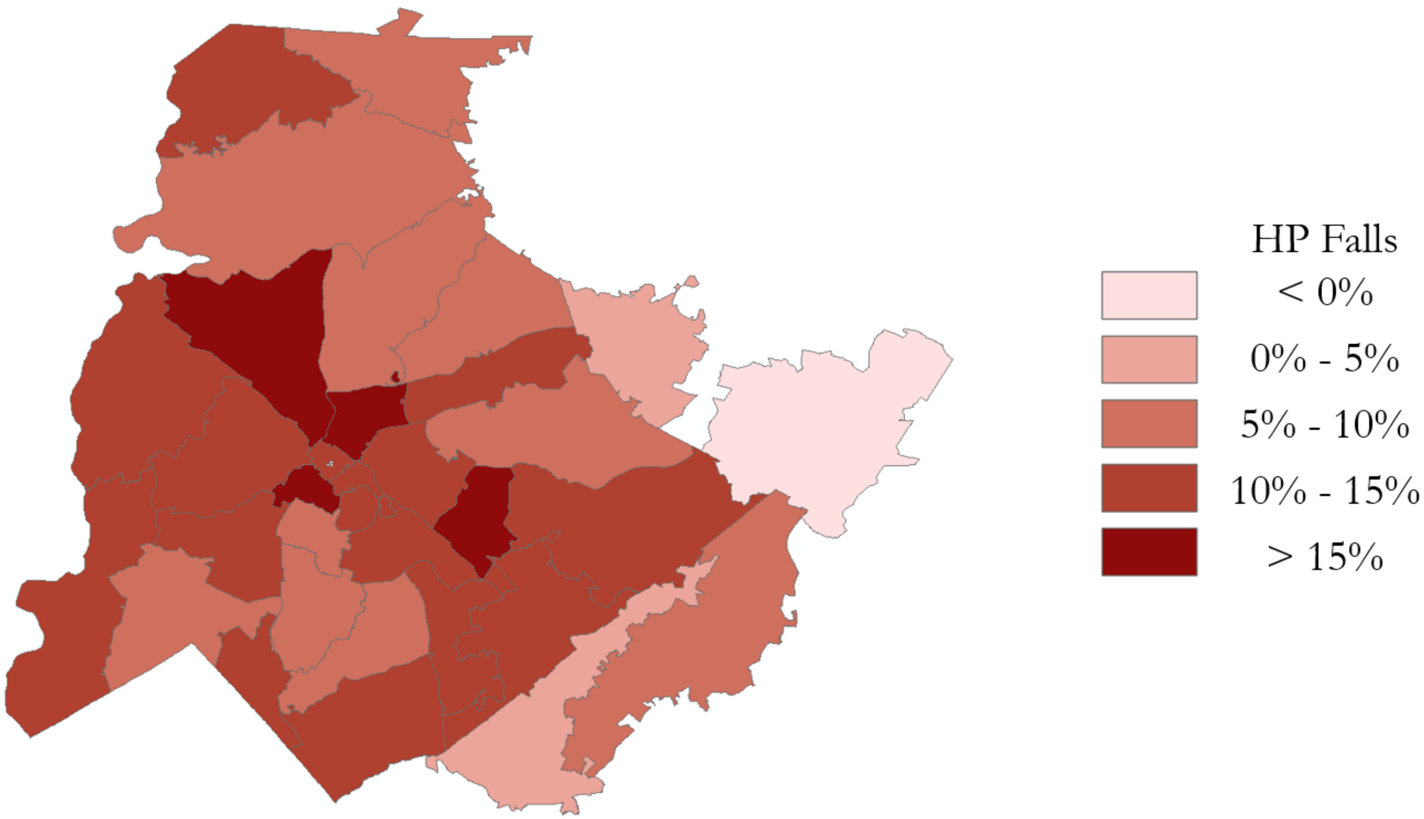

Figure 2: Percent Drop in Charlotte, NC Zip Code House Prices

This is four maps of Mecklenburg County, NC at four different points of time. The second panel is identical to figure 1. For each zip code at each election, I compute the change in the median house price over the previous 24 months using data from Zillow. The larger the decline in house prices, the more heavily shaded the zip code.

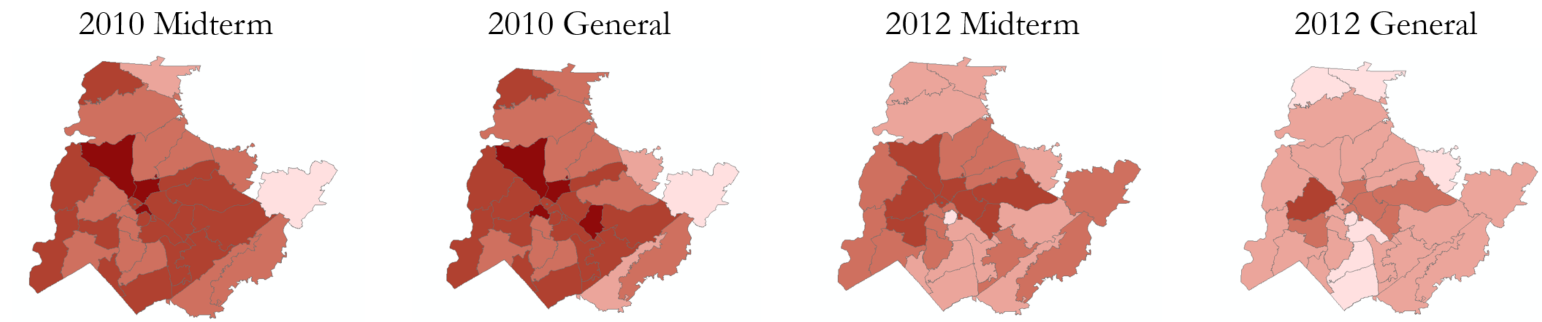

Figure 3: Percentage Point Change in Participation Likelihood as a Function of Initial LTV Ratio and Drop in House Prices

To create this figure, I first regressed the voter's participation decision on his initial LTV, the decline in house prices he experienced over the previous two years, and the interaction of these two continuous variables. Included in this figure are the controls and fixed effects corresponding to specification (3) in table 6. I then graph the marginal effects of different changes in initial LTV ratio and house price declines.

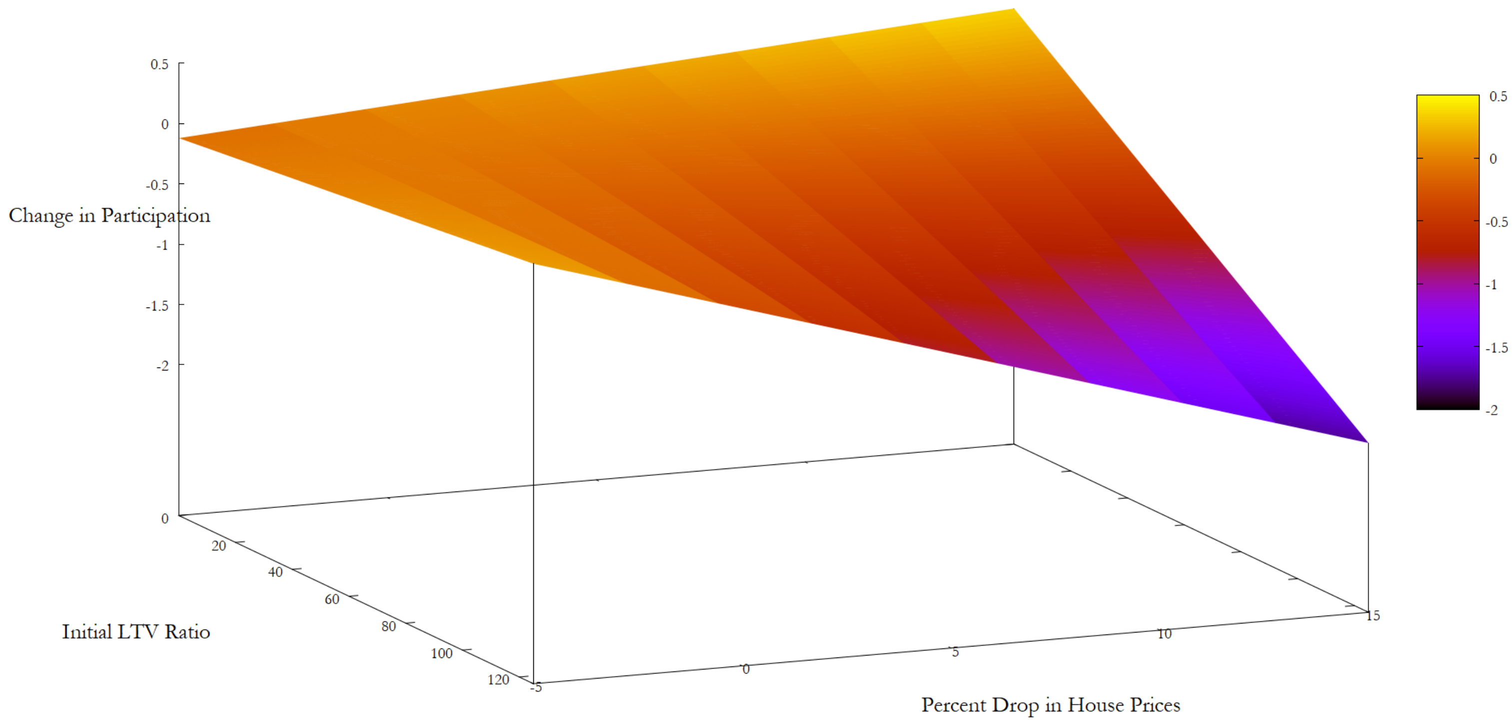

Figure 4: Votes Received by the Democratic Nominee over Democratic Voters

This chart presents county level data. For each county and each presidential election between 2008 and 2016, I calculate the share of the county's Democrat-affiliated voters that participated and the share of the counties votes that went to the Democratic nominee for president. If voters affiliated with the Democratic party vote for the Democratic nominee and Republican and independent voters vote for other nominees, then these two shares should be the same. To make the comparison easier, I also graph a 45-degree line and linear trendlines for each election.

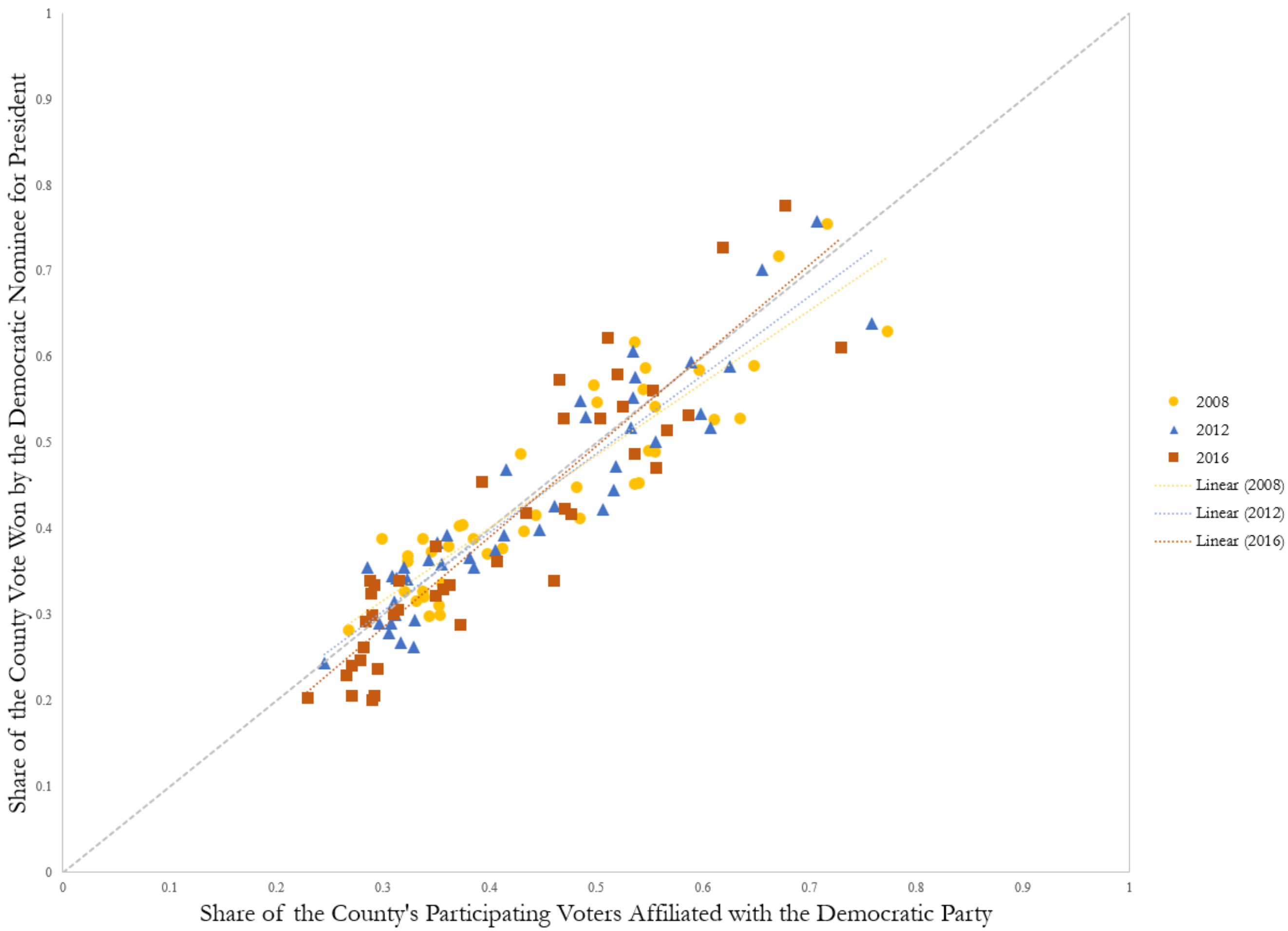

Figure 5: Percent Increase in Share of Households Underwater Between 2008 and 2012

This is a chart where each point corresponds to each county. For each county I calculate the percent increase in the share of Democrats underwater on their mortgages and the percent increase in the share of Republicans underwater on their mortgages. If voters affiliated with the two parties were similarly affected by declines in house prices, then we would expect these two percent increases to be the same. To make the comparison easier, I also graph a 45-degree line and a linear trendline.

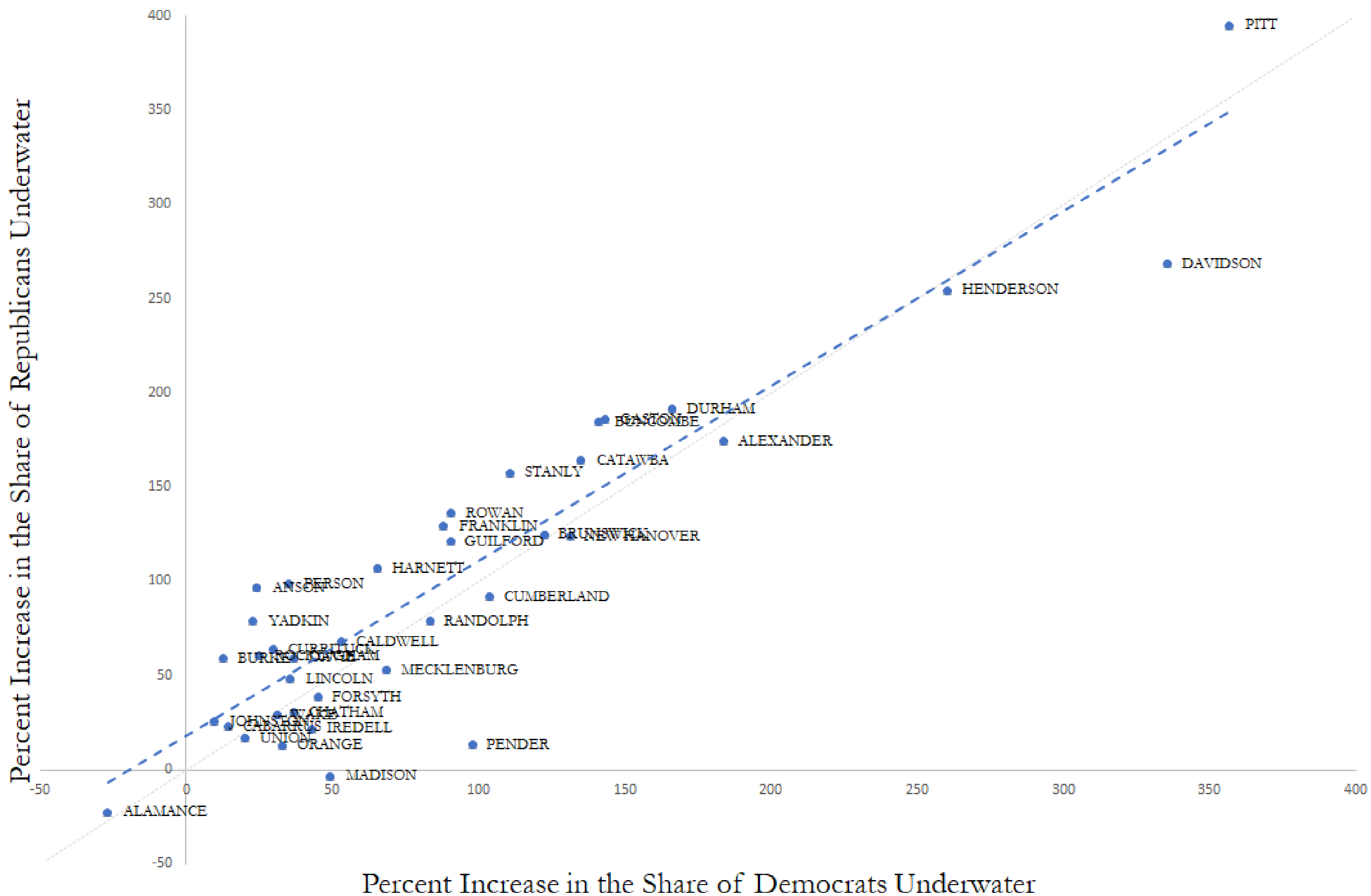

Figure 6: How House Prices Changed in Democratic Counties Across Four States

Below are four charts, one each for four different states – Michigan (MI), North Carolina (NC), Pennsylvania (PA), and Wisconsin (WI). Each circle corresponds to a county in the state and the larger the circle the bigger the population of the county. The placement of the circle on the chart is determined by two things, the share of the county that voter for Obama in 2008 and the percent change in house prices between the 2008 and 2016 general elections.

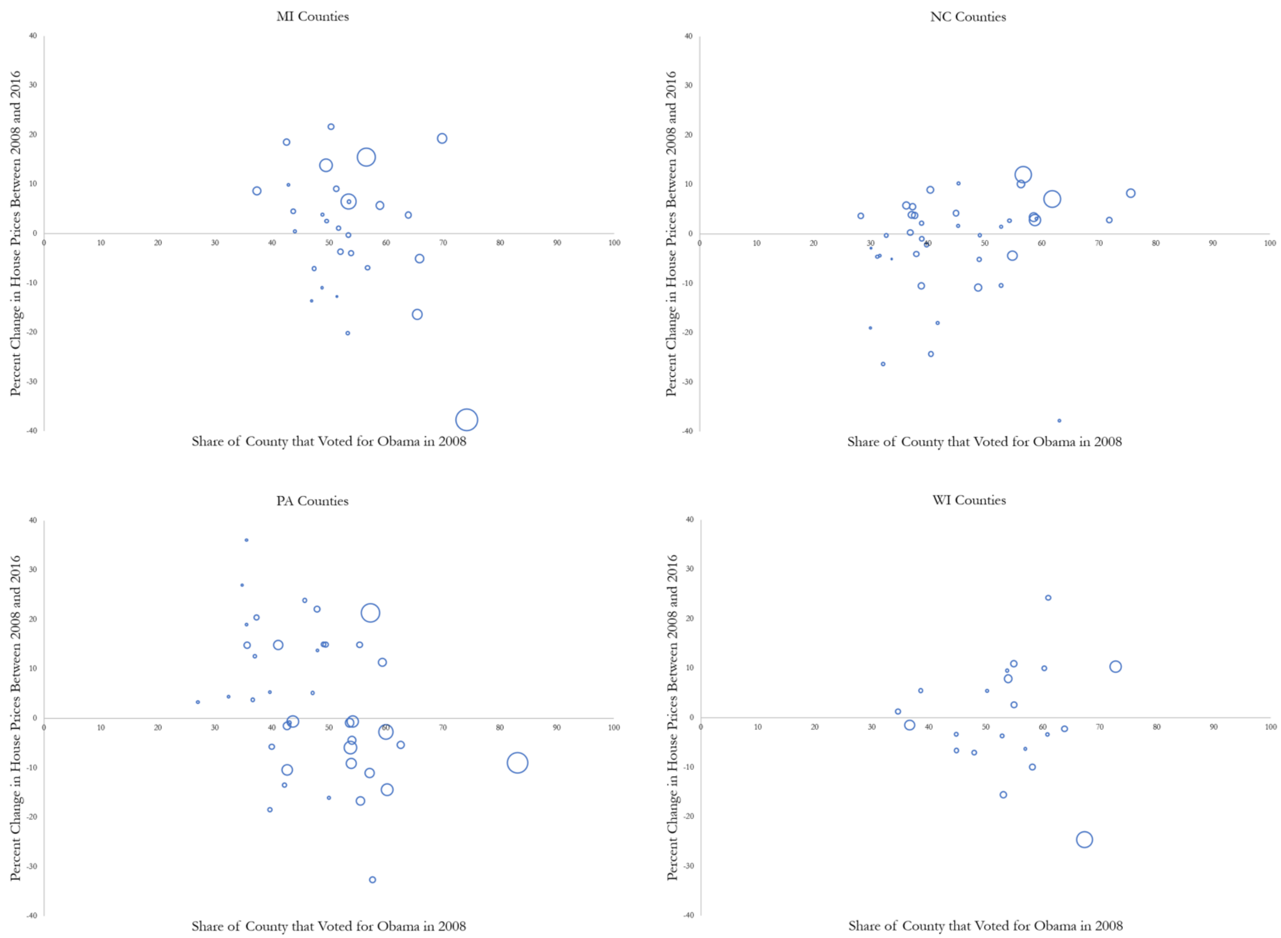

Table 1: Comparing North Carolina to the Other States

I use data from several sources, including electproject.org, the Bureau of Labor Statistics, and the US Census Current Population Survey. I rank states from highest share voting for Trump to lowest share voting for Trump. In bold are the rows for North Carolina, the sample state used in this paper, and the United States.

State	Eligible Voters	2016 Participation	Share Won by Trump	Median Income	Unemployment	White	Homeownership Rate
WV	1,425,962	50.10%	68.5%	44,354	5.8%	93.0%	74.8%
WY	428,283	59.70%	67.4%	57,829	5.4%	86.0%	70.2%
OK	2,773,970	52.40%	65.3%	50,943	5.3%	64.0%	66.8%
ND	565,031	60.90%	63.0%	60,184	3.1%	85.0%	61.4%
KY	3,276,651	58.70%	62.5%	45,369	5.0%	84.0%	67.9%
AL	3,601,361	59.00%	62.1%	47,221	5.4%	66.0%	69.7%
SD	632,989	58.50%	61.5%	57,450	2.9%	82.0%	69.4%
TN	4,899,384	51.20%	60.7%	51,344	4.6%	73.0%	66.4%
AR	2,142,571	52.80%	60.6%	45,907	4.0%	72.0%	67.6%
ID	1,167,200	59.10%	59.3%	56,564	3.8%	82.0%	70.5%
NE	1,349,903	62.50%	58.8%	59,374	3.2%	78.0%	68.0%
LA	3,380,951	60.00%	58.1%	42,196	6.4%	59.0%	64.2%
MS	2,176,312	55.60%	57.9%	41,099	6.0%	58.0%	69.7%
IN	4,852,657	56.40%	56.8%	56,094	4.5%	81.0%	70.9%
MO	4,511,812	62.30%	56.8%	55,016	5.2%	79.0%	66.7%
KS	2,051,750	57.70%	56.7%	56,810	4.4%	74.0%	67.1%
MT	804,381	61.80%	56.2%	57,075	4.3%	89.0%	67.1%
SC	3,706,769	56.70%	54.9%	54,336	4.9%	65.0%	68.9%
TX	17,396,296	51.60%	52.2%	58,146	4.8%	43.0%	61.5%
OH	8,737,173	62.90%	51.7%	53,985	4.8%	78.0%	66.1%
AK	519,849	61.30%	51.3%	75,723	6.8%	60.0%	65.2%
IA	2,290,215	68.40%	51.2%	59,094	4.2%	86.0%	70.0%
GA	6,955,436	59.20%	50.8%	53,527	5.1%	52.0%	62.3%
NC	**7,318,442**	**64.80%**	**49.8%**	**53,764**	**4.7%**	**61.0%**	**65.7%**
FL	14,572,210	64.60%	49.0%	51,176	4.7%	55.0%	64.3%
AZ	4,734,313	55.00%	48.7%	57,100	5.5%	54.0%	61.9%
PA	9,701,644	63.60%	48.2%	60,979	5.7%	76.0%	68.5%
MI	7,423,233	64.70%	47.5%	57,091	4.6%	75.0%	72.8%
WI	4,288,320	69.40%	47.2%	59,817	4.1%	80.0%	67.7%
NH	1,042,102	71.40%	46.6%	76,260	2.9%	92.0%	71.8%
USA	**230,585,915**	**59.30%**	**46.1%**	**59,039**	**5.0%**	**61.0%**	**63.4%**
UT	1,995,987	56.70%	45.5%	67,481	3.4%	79.0%	71.3%
NV	1,964,097	57.30%	45.5%	55,431	5.8%	52.0%	54.5%
MN	3,966,155	74.20%	44.9%	70,218	4.0%	80.0%	72.4%
ME	1,060,905	70.50%	44.9%	50,856	4.1%	92.0%	72.6%
VA	6,027,262	66.10%	44.4%	66,451	4.0%	61.0%	66.3%
CO	3,966,297	70.10%	43.3%	70,566	3.6%	70.0%	62.4%
DE	689,125	64.40%	41.7%	58,046	4.3%	62.0%	73.0%
NJ	6,042,792	64.10%	41.0%	68,468	5.3%	58.0%	62.2%
CT	2,561,555	64.20%	40.9%	75,923	5.4%	67.0%	64.2%
NM	1,456,551	54.80%	40.0%	48,451	6.7%	37.0%	67.4%
OR	3,012,502	66.40%	39.1%	59,135	5.5%	75.0%	62.6%
RI	786,033	59.00%	38.9%	61,528	5.6%	72.0%	56.3%
IL	8,943,045	61.90%	38.8%	61,386	5.5%	61.0%	65.3%
WA	5,121,782	64.80%	36.8%	70,310	5.6%	66.0%	61.6%
NY	13,591,250	56.80%	36.5%	61,437	5.0%	57.0%	51.5%
MD	4,176,484	66.60%	33.9%	73,760	4.2%	53.0%	66.5%
MA	4,947,241	67.20%	32.8%	72,266	3.6%	72.0%	59.7%
CA	25,017,408	56.70%	31.6%	66,637	5.5%	38.0%	53.8%
VT	494,879	63.70%	30.3%	60,837	3.3%	94.0%	71.3%
HI	1,016,971	42.20%	30.0%	72,133	3.3%	19.0%	57.7%
DC	511,463	60.90%	4.1%	70,982	6.1%	38.0%	40.8%

Table 2: Demographics of the Registered NC Voters in the Sample

This table presents summary statistics on the sample of registered voters in each of the three general elections in the sample. Democrats and Republicans are defined as such if they are either registered with that party or have only voted in that party's primary and never the other party's. All other voters are classified as independents. Birth year is the year the voter was born. Born in North Carolina is a dummy variable equal to 1 if the voter was born in the state of North Carolina and 0 otherwise. Homeowners are defined as such if they are in the DataQuick sample as owners of the home they live in and this address matches their address in the voter file. I also call other registered voters who live in the same house as an owner-occupant since this group is largely spouses not on the deed. Polling place data exist for 60% of the sample and the share of voters in each bucket is out of that 60% of the sample. The demographic variables come from the voter file. The homeowner's home value is from DataQuick.

	Election		
	2008 General	2010 General	2012 General
Party Affiliation			
Independent	17.99%	18.39%	19.02%
Democrat	46.05%	45.45%	45.42%
Republican	35.96%	36.16%	35.56%
Birth Year			
1942 and Prior	13.94%	12.69%	10.83%
1943 - 1958	24.17%	24.05%	22.98%
1959 - 1974	29.85%	29.60%	28.45%
1975 - 1990	23.84%	23.56%	23.26%
1991 and Later	1.12%	2.87%	7.04%
Race, Sex, Birth Place			
White	69.82%	69.64%	67.51%
African American	18.74%	18.52%	19.45%
Hispanic or Latino	1.14%	1.28%	1.67%
Male	41.99%	41.99%	41.82%
Born in North Carolina	37.50%	37.69%	37.48%
Homeownership			
Homeowner	60.13%	59.16%	58.02%
Homeowner's Home Values			
$0 - $125,000	19.32%	22.06%	23.36%
$125,001 - $200,000	30.71%	30.98%	30.53%
$200,001 - $300,000	23.73%	22.92%	22.62%
$300,001 +	26.25%	24.04%	23.49%
Nearest Polling Place			
< 0.5 Miles Away	38.17%	37.29%	37.55%
Between 0.5 and 1 Miles Away	33.12%	33.07%	32.96%
More than 1 Mile Away	28.71%	29.64%	29.49%
Number Registered	3,877,929	3,856,036	4,048,668

Table 3: Participation Rates of Registered Voters

For each demographic group I determine the share of registered voters in the group that participated in each of the national elections between 2008 and 2012. All variables are defined as in Table 2.

	Election					
	2008 Primary	2008 General	2010 Primary	2010 General	2012 Primary	2012 General
Party Affiliation						
Independent	23.01%	57.53%	8.31%	25.01%	25.78%	59.77%
Democrat	54.03%	73.81%	11.14%	38.40%	38.34%	76.04%
Republican	26.05%	74.25%	16.10%	45.51%	46.06%	78.92%
Birth Year						
1942 and Prior	51.10%	74.59%	25.99%	57.40%	52.05%	78.69%
1943 - 1958	48.56%	80.03%	19.90%	56.27%	51.59%	83.86%
1959 - 1974	35.20%	72.46%	9.82%	39.38%	38.02%	77.10%
1975 - 1990	22.24%	56.83%	3.03%	16.56%	25.22%	62.18%
1991 and Later	28.41%	62.10%	1.18%	4.86%	19.41%	56.75%
Race, Sex, Birth Place						
White	35.19%	70.85%	14.35%	41.43%	43.17%	74.25%
African American	53.06%	72.33%	9.33%	36.52%	29.08%	75.31%
Hispanic	24.91%	58.50%	2.01%	14.51%	15.84%	58.87%
Male	36.31%	70.14%	13.51%	40.22%	38.61%	72.69%
Female	39.72%	71.69%	11.64%	37.27%	39.04%	74.89%
Born in North Carolina	39.23%	71.46%	13.77%	39.94%	39.39%	74.00%
Born Outside North Carolina	37.69%	70.79%	11.60%	37.64%	38.52%	73.95%
Homeownership						
Homeowner	44.10%	79.11%	16.84%	50.96%	47.35%	82.02%
Renter	28.65%	58.87%	5.73%	20.47%	25.73%	62.84%
Homeowner's Home Values						
\$0 - \$125,000	38.20%	73.03%	11.32%	38.38%	40.46%	78.29%
\$125,001 - \$200,000	38.59%	75.70%	9.28%	38.68%	43.09%	81.34%
\$200,001 - \$300,000	39.53%	79.50%	10.78%	43.52%	47.38%	85.39%
\$300,001 +	39.91%	82.58%	12.07%	47.35%	47.74%	88.10%
Nearest Polling Place						
< 0.5 Miles Away	40.48%	68.84%	11.26%	35.11%	38.56%	73.56%
Between 0.5 and 1 Miles Away	38.46%	70.50%	11.24%	37.35%	38.33%	74.77%
More than 1 Mile Away	34.59%	71.58%	11.98%	38.95%	38.19%	74.29%

Table 4: House Price Changes of Registered Voters

This table presents summary statistics on the sample of registered voters in each of the three general elections in the sample. The construction of the loan-to-value (LTV) ratios is described in detail in the Data section of the paper but, in short, is the ratio of the outstanding loan amount to the value of the home securing the loan. The percent drop in house prices is the drop in the zip code's median home price. Note that only homeowner's have a defined LTV Ratio and Treatment Group, but all registered voters experienced some change in median zip code house price.

	Election		
	2008 General	2010 General	2012 General
Homeowner's LTV Ratio			
LTV less than 90%	76.68%	69.06%	66.74%
LTV greater than 90%	23.32%	30.94%	33.26%
Zip Code House Price Falls			
Fall in House Prices < 5%	97.39%	48.49%	81.44%
5% < Fall in House Prices < 10%	2.25%	28.42%	16.67%
10% < Fall in House Prices	0.36%	23.09%	1.89%
Initial LTV by Fall in House Prices			
Initial LTV Ratio < 90% × Fall in House Prices < 5%	81.48%	37.36%	57.94%
Initial LTV Ratio < 90% × 5% < Fall in House Prices < 10%	2.04%	22.02%	11.37%
Initial LTV Ratio < 90% × 10% < Fall in House Prices	0.32%	17.42%	1.23%
Initial LTV Ratio > 90% × Fall in House Prices < 5%	15.90%	11.08%	23.48%
Initial LTV Ratio > 90% × 5% < Fall in House Prices < 10%	0.22%	6.39%	5.31%
Initial LTV Ratio > 90% × 10% < Fall in House Prices	0.04%	5.74%	0.67%
Number Registered	3,877,929	3,856,036	4,048,668

Table 5: Participation by Financial Distress

For each group I determine the share of registered voters in that group that participated in each of the national elections between 2008 and 2012. All variables are defined as in table 4.

	Election					
	2008 Primary	2008 General	2010 Primary	2010 General	2012 Primary	2012 General
Homeowner's LTV Ratio						
LTV less than 90%	40.43%	79.36%	12.41%	46.70%	46.50%	84.10%
LTV greater than 90%	35.88%	74.71%	7.42%	34.09%	40.76%	81.60%
Zip Code Home Price Growth						
Fall in House Prices < 5%	38.52%	71.29%	12.02%	39.70%	41.68%	75.03%
5% < Fall in House Prices < 10%	34.50%	71.27%	11.03%	37.54%	38.29%	72.13%
10% < Fall in House Prices	35.12%	69.97%	12.24%	37.25%	33.25%	71.16%
Homeowner's Treatment Group						
Initial LTV Ratio < 90% × HP Fall < 5%	40.18%	79.21%	11.71%	45.52%	47.50%	84.94%
Initial LTV Ratio < 90% × 5% < HP Fall < 10%	28.26%	75.64%	10.61%	44.13%	45.73%	82.02%
Initial LTV Ratio < 90% × 10% < HP Fall	34.31%	73.36%	11.15%	43.44%	42.07%	79.07%
Initial LTV Ratio > 90% × HP Fall < 5%	37.70%	75.37%	8.56%	38.79%	42.53%	81.67%
Initial LTV Ratio > 90% × 5% < HP Fall < 10%	28.41%	72.25%	7.07%	37.89%	38.98%	79.91%
Initial LTV Ratio > 90% × 10% < HP Fall	31.00%	67.05%	7.86%	37.01%	38.18%	80.68%

Table 6: The Effects of House Price Drops on High and Low Leveraged Homeowners

The dependent variable is a dummy variable equal to 100 if the voter participated in the election. The sample consists of all homeowners registered to vote in the 2008 through 2012 general elections and their primaries who moved in or last refinanced after 2003, who were eligible to vote in the 2008 general election, whose predicted 2011 home value is not more than 50% different than its assessed value, who do not have an outstanding HELOC, and who have not refinanced in the previous 2 years. Control variables are dummies equal to 1 if they participated in the 2008 midterm election, participated in the 2008 general election, are white, are Hispanic, are male or not, and were born in North Carolina. Also in the controls are their birth year cohort, move-in year, house price value two years previously, and the percent change of the median home value between the start of 2003 and the end of 2007. All variables are defined as in tables 2 and 4. Standard errors, adjusted for clustering at the ZIP code level, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable	Voted in the Election (=100)					
	(1)	(2)	(3)	(4)	(5)	(6)
Initial LTV Ratio > 90% × % Drop in House Prices	-0.151***	-0.134***	-0.0754**	-0.0725**	-0.0760**	-0.0722**
	(0.039)	(0.037)	(0.031)	(0.031)	(0.031)	(0.031)
Initial LTV Ratio > 90%	0.144	0.0322	0.142	0.145	0.213	0.198
	(0.249)	(0.250)	(0.234)	(0.234)	(0.228)	(0.226)
% Drop in House Prices	-0.00399	-0.00972	-0.0195	-0.00959		
	(0.042)	(0.041)	(0.045)	(0.046)		
Control Variables	YES	YES	YES	YES	YES	YES
Fixed Effects						
Election	YES					
Party-by-Election		YES	YES	YES	YES	YES
County-by-Election			YES	YES		
Initial House Price Level-by-Election				YES		YES
Zip Code-by-Election					YES	YES
N	740,060	740,060	740,048	740,048	740,054	740,054
Adjusted R-Squared	0.379	0.387	0.393	0.393	0.396	0.396

Table 7: Comparing Renters, Low-LTV Homeowners, and High-LTV Homeowners

The dependent variable is a dummy variable equal to 100 if the voter participated in the election. The sample is the same as that described in table 6 except I now include renters. I consider the effects of house price declines on three groups: renters (the ommitted group), homeowners with initial LTV ratios below 90%, and homeowners with LTV ratios above 90%. Control variables are dummies equal to 1 if they participated in the 2008 midterm election, participated in the 2008 general election, are white, are Hispanic, are male or not, and were born in North Carolina. Also in the controls are their birth year cohort and the percent change of the median home value between the start of 2003 and the end of 2007. All variables are defined as in tables 2 and 4. Standard errors, adjusted for clustering at the ZIP code level, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable	Voted in the Election (=100)			
	(1)	(2)	(3)	(4)
LTV > 90% Homeowner × % Drop in House Prices	0.0086	-0.0955***	-0.0523**	-0.0522**
	(0.0318)	(0.0270)	(0.0229)	(0.0221)
LTV < 90% Homeowner × % Drop in House Prices	0.0952***	-0.0491***	-0.0341**	-0.0367**
	(0.0193)	(0.0178)	(0.0153)	(0.0151)
LTV > 90% Homeowner	5.147***	4.903***	4.828***	4.906***
	(0.1560)	(0.1520)	(0.1340)	(0.1270)
LTV < 90% Homeowner	5.415***	5.371***	5.124***	5.196***
	(0.1360)	(0.1330)	(0.1120)	(0.1010)
% Drop in House Prices	-0.0589**	-0.0378*	-0.0355	
	(0.0260)	(0.0210)	(0.0244)	
Control Variables	YES	YES	YES	YES
Fixed Effects				
Election	YES			
Party-by-Election		YES	YES	YES
County-by-Election			YES	
Zip Code-by-Election				YES
N	10,762,387	10,762,387	10,762,385	10,762,387
Adjusted R-Squared	0.445	0.459	0.463	0.465

Table 8: Individual Voter Fixed Effects

The dependent variable is a dummy variable equal to 100 if the voter participated in the election. The sample consists of all homeowners registered to vote in the 2008 through 2012 general elections and their primaries who moved in or last refinanced after 2003, who were eligible to vote in the 2008 general election, whose predicted 2011 home value is not more than 50% different than its assessed value, who do not have an outstanding HELOC, and who have not refinanced in the previous 2 years. All variables are defined as in tables 2 and 4. Standard errors, adjusted for clustering at the ZIP code level, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable	Voted in the Election (=100)					
	(1)	(2)	(3)	(4)	(5)	(6)
Initial LTV Ratio > 90% × % Drop in House Prices	-0.323***	-0.309***	-0.203***	-0.199***	-0.189***	-0.186***
	(0.050)	(0.047)	(0.038)	(0.037)	(0.037)	(0.037)
Initial LTV Ratio > 90%	-2.520***	-2.516***	-2.517***	-2.506***	-2.557***	-2.550***
	(0.474)	(0.447)	(0.417)	(0.412)	(0.411)	(0.409)
% Drop in House Prices	0.1000*	0.0774	-0.0357	-0.019		
	(0.053)	(0.053)	(0.051)	(0.054)		
Fixed Effects						
Individual Voter	YES	YES	YES	YES	YES	YES
Election	YES					
Party-by-Election		YES	YES	YES	YES	YES
County-by-Election			YES	YES		
Initial House Price Level-by-Election				YES		YES
Zip Code-by-Election					YES	YES
N	779,752	779,752	779,740	779,740	779,745	779,745
Adjusted R-Squared	0.508	0.510	0.514	0.515	0.516	0.517

Table 9: Homogeneity Across Political Party Affiliations

The dependent variable is a dummy variable equal to 100 if the voter participated in the election. The sample consists of all homeowners registered to vote in the 2008 through 2012 general elections and their primaries who moved in or last refinanced after 2003, who were eligible to vote in the 2008 general election, whose predicted 2011 home value is not more than 50% different than its assessed value, who do not have an outstanding HELOC, and who have not refinanced in the previous 2 years. Control variables are dummies equal to 1 if they participated in the 2008 midterm election, participated in the 2008 general election, are white, are Hispanic, are male or not, and were born in North Carolina. Also in the controls are their birth year cohort, move-in year, house price value two years previously, and the percent change of the median home value between the start of 2003 and the end of 2007. All variables are defined as in tables 2 and 4. Standard errors, adjusted for clustering at the ZIP code level, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable	Voted in the Election (=100)			
	(1)	(2)	(3)	(4)
LTV > 90% × % Drop HP × Democrat	0.00109	0.0345	0.0348	0.0443
	(0.0725)	(0.0721)	(0.0724)	(0.0716)
LTV > 90% × % Drop HP × Republican	0.0652	0.0590	0.0578	0.0687
	(0.0632)	(0.0645)	(0.0646)	(0.0635)
Main Effects and Interaction Effects	YES	YES	YES	YES
Control Variables	YES	YES	YES	YES
Fixed Effects				
Election	YES			
County-by-Election		YES	YES	
Initial House Price Level-by-Election			YES	
Zip Code-by-Election				YES
N	740,060	740,048	740,048	740,054
Adjusted R-Squared	0.385	0.391	0.391	0.394

Table 10: Participation Likelihood as a Function of Current LTV Ratio

The dependent variable is a dummy variable equal to 100 if the voter participated in the election. I use the homeowner's current LTV to determine if they are equity rich (LTV < 80%), have low equity (80% < LTV < 100%), or are underwater (current LTV > 100%). The sample consists of all homeowners registered to vote in the 2008 through 2012 general elections and their primaries who moved in or last refinanced after 2003, who were eligible to vote in the 2008 general election, whose predicted 2011 home value is not more than 50% different than its assessed value, who do not have an outstanding HELOC, and who have not refinanced in the previous 2 years. All variables are defined as in tables 2 and 4. Standard errors, adjusted for clustering at the ZIP code level, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable	Voted in the Election (=100)					
	(1)	(2)	(3)	(4)	(5)	(6)
Low Equity	-2.292***	-2.233***	-1.733***	-1.577***	-2.023***	-1.709***
	(0.375)	(0.371)	(0.337)	(0.330)	(0.419)	(0.346)
Underwater	-4.831***	-4.734***	-3.395***	-2.817***	-3.283***	-3.166***
	(0.593)	(0.575)	(0.500)	(0.491)	(0.636)	(0.524)
Fixed Effects						
Individual Voter	YES	YES	YES	YES	YES	YES
Election	YES					
Party-by-Election		YES	YES	YES	YES	YES
County-by-Election			YES			YES
Zip Code-by-Election				YES		
Census Block-by-Election					YES	
Initial House Price Level-by-Election						YES
N	852,658	852,658	852,642	852,600	789,382	852,642
Adjusted R-Squared	0.507	0.510	0.514	0.516	0.502	0.514

Table 11: Financial Distress Groups by Party Affiliation

For each homeowner in the sample, I determine if they have a low initial LTV ratio (LTV < 90%) or high LTV ratio (LTV > 90%). I then break them out by party affiliation and their change in house price over the previous two years. Below is the share in each of the 18 categories of party by initial leverage by change in house prices over the panel.

	Initial LTV Ratio < 90%			Initial LTV Ratio > 90%		
	< 5%	5% - 10%	> 10%	< 5%	5% - 10%	> 10%
Independent	56.16%	13.62%	6.95%	15.83%	4.92%	2.52%
Democrat	55.18%	14.30%	6.93%	15.49%	5.36%	2.73%
Republican	58.29%	13.34%	6.80%	15.08%	4.34%	2.14%

Table 12: North Carolina County Level Results

The first three models predict the participation rate of households affiliated with no party, with the Democratic party, and with the Republican party, respectively. Models 4 and 5 predict the share of the county vote that went to the the Democratic candidate for president and the share that went to the Republican candidate for president. Included in the sample are 46 counties in North Carolina at each of the 2008, 2012, and 2016 general elections. The percent drop in house prices measures the change in house price of the county's median home in the two years leading up to the election. % of County Dem and % of County Rep measure the percent of the counties registered voters that are affiliated with the Democratic party and Republican party, respectively.

Dependent Variable	Participation Rates of			County Vote Share for	
	Independents	Democrats	Republicans	Dem Candidate	Rep Candidate
% Drop in County House Prices	-0.254***	-0.130***	-0.0755*	0.0243	0.0344
	(0.058)	(0.038)	(0.040)	(0.019)	(0.021)
% of County Dem	-2.481***	-1.658***	-3.187***	0.900***	-0.0723
	(0.377)	(0.246)	(0.260)	(0.124)	(0.135)
% of County Rep	-1.025*	-0.358	-2.199***	-0.748***	1.541***
	(0.607)	(0.397)	(0.419)	(0.200)	(0.218)
County FEs	YES	YES	YES	YES	YES
N	124	124	124	124	124
Adjusted R-Squared	0.69	0.738	0.79	0.99	0.988

Table 13: Effects of Financial Distress on Homeowners Faraway from their Nearest Polling Place

The dependent variable is a dummy variable equal to 100 if the voter participated in the election. Faraway polling place is a dummy equal to 1 if the voter's closest polling place is more than one mile away from their home and zero otherwise. The sample consists of all homeowners registered to vote in the 2008 through 2012 general elections and their primaries who moved in or last refinanced after 2003, who were eligible to vote in the 2008 general election, whose predicted 2011 home value is not more than 50% different than its assessed value, who do not have an outstanding HELOC, and who have not refinanced in the previous 2 years. Control variables are dummies equal to 1 if they participated in the 2008 midterm election, participated in the 2008 general election, are white, are Hispanic, are male or not, and were born in North Carolina. Also in the controls are their birth year cohort, move-in year, house price value two years previously, and the percent change of the median home value between the start of 2003 and the end of 2007. All variables are defined as in tables 2 and 4. Standard errors, adjusted for clustering at the ZIP code level, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable	Voted in the Election (=100)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LTV > 90% × % Drop HP × Faraway Polling Place	-0.203***	-0.211***	-0.188***	-0.195***	-0.163**	-0.170**	-0.160**	-0.165**
	(0.073)	(0.071)	(0.068)	(0.068)	(0.068)	(0.068)	(0.069)	(0.069)
Main Effects and Interaction Effects	YES	YES	YES	YES	YES	YES	YES	YES
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES
Fixed Effects								
Election	YES							
Party-by-Election		YES	YES	YES	YES	YES	YES	YES
County-by-Election			YES	YES				
Initial House Price Level-by-Election				YES		YES		YES
Zip Code-by-Election					YES	YES		
Polling Place-by-Election							YES	YES
N	466,539	466,539	466,539	466,539	466,530	466,530	466,442	466,442
Adjusted R-Squared	0.384	0.392	0.397	0.397	0.400	0.401	0.403	0.404