Title: Other People's Houses: The Social Life of Mortgage Delinquency and Default

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Abstract: While falling behind on a mortgage loan has significant personal consequences, we know little about whether the experience of delinquency or default influences the housing market behavior of other people in the defaulter's social networks. In this paper, I ask how exposure to mortgage default through social networks affects perceptions of the housing market, judgements about the strategic default behavior of other households and expectations for homeownership. Although individuals purposively draw on information from their social networks to aid in their housing search, theories of social influence have yet to be applied to the negative experience of mortgage delinquency or default. Drawing on the National Housing Survey, I find that individuals exposed to mortgage delinquency through their social networks express more negative expectations for the housing market and hold a more permissive opinion about strategic default. Homeowners reporting network exposure to mortgage strain are more likely to prefer rental housing when they next move. These results are strongest when individuals are connected to someone who has fallen behind on a mortgage payment in the previous three months.

Introduction

The experience of mortgage strain is a deeply personal one.¹ Falling behind on mortgage payments or defaulting on a loan deepens financial hardship and leads to negative health outcomes, including increased stress and hospitalization (Alley et al. 2011; Keene, Cowan and Baker 2015). After a default, households are often forced to relocate as lending institutions foreclose on their property. The resulting housing instability upends social connections, disrupts children's peer networks and worsens the already precarious economic position of these households (Pribesh and Downey 1999; Been, Ellen, Schwartz, Stiefel and Weinstein 2011).

While the personal consequences of mortgage strain are substantial, the impact of delinquency and default may not be limited exclusively to the household experiencing the event. If this information spreads across social ties, then the personal experience of mortgage strain could affect other individuals within a social network. Exposure to this event may impact how other people in the network evaluate the housing market or approach their own housing choices. While theories of social influence have been used to explain many social behaviors, including peer effects in schools (Sacerdote 2001), the spread of political attitudes (Huckfeldt and Sprague 1995) and the contagion of various health behaviors (Cohen and Prinstein 2006), they have not previously been applied to the negative experience of mortgage strain. This omission is particularly noteworthy because individuals regularly rely on their social networks when making housing decisions. They purposively draw on others in their network, including friends, realtors and neighbors, to learn about community resources (e.g., schools) and gather information about local amenities when picking a neighborhood (Besbris 2016; Lareau and Goyette 2014; Weininger and Lareau 2014).

¹ In this paper, I use the term *mortgage strain* as shorthand for the experience of mortgage delinquency and default (Keene, Cowan and Baker 2015). Elsewhere, the terminology of *mortgage strain* is sometimes used to describe households paying more than 30 percent of their income on their mortgage costs.

In this paper, I test a series of hypotheses about the social influence of mortgage strain using data from the National Housing Survey. Specifically, I ask how exposure to mortgage default through social networks affects perceptions of the housing market, judgements about the strategic default behavior of other households and expectations for homeownership. Bringing studies of social influence into the realm of the housing market, I consider two categories of influencing events – network ties to people who missed a mortgage payment in the previous three months and more distant social connections to people who experienced mortgage strain more than three months ago. By simultaneously investigating exposure to both recent and distant defaults, I evaluate whether temporal proximity to the experience of mortgage strain is associated with market expectations and attitudes.

The choice of the housing market as a site to study the influencing role of information shared across embedded networks is strategic. Increasingly, sociological studies of economic decision-making highlight the importance of social norms, networks and conventions to understanding financial transactions, but their application to housing and home-buying decisions has gone largely unexplored (DiMaggio and Louch 1998; Besbris 2016). Instead, most research on the transition to homeownership – including where, whether and when to buy a home – models the decision as a function of household characteristics or life-course attributes (Hilber and Liu 2008; Painter, Gabriel and Myers 2001; Gabriel and Stuart 2003). Building from these studies, my analysis contributes to a growing literature on the sociology of housing that considers home buying behaviors (and other housing choices) within the social context in which they occur (Pattillo 2013; Zavisca and Gerber 2016; McCabe 2016; Manturuk, Lindblad and Quercia 2017).

In this paper, I begin by reviewing research on the personal consequences of mortgage delinquency and default. While this research highlights the negative impact of mortgage strain on individual financial and health outcomes, it has little to say about the social influence of these experiences. Next, I introduce social network theories to explain how information spreads across social ties. Although there is ample evidence pointing to network effects on economic behavior, there has been no effort to understand whether the experience of mortgage strain spreads across network ties to influence others' housing market decisions. After briefly discussing the importance of social networks in the housing search, I use the National Housing Survey to test four hypotheses. In the findings section, I report that respondents exposed to mortgage strain through their social networks offer weaker assessments of the housing market and express more leniency toward the strategic default behaviors of other households. Homeowners exposed to mortgage strain are less likely to anticipate buying a home in the future. Although I cannot make strong causal claims from the observational data in the National Housing Survey, I note that my findings are consistent across model specifications. In the conclusion, I contextualize these findings within broader research on social networks, economic decision-making and the housing market. Although processes of stigmatization often keep individuals from directly sharing their experiences of mortgage strain within their social network, I argue that this information still has a social life.

The Personal Impact of Mortgage Delinquency and Default

Each year, millions of Americans are delinquent on their monthly payments or default on their mortgage loan. In the run-up to the 2007 housing crisis, the expansion of exotic mortgage instruments, including interest-only loans and adjustable rate mortgages, combined with rising

unemployment led to a sharp jump in mortgage delinquency. According to the Federal Reserve Bank of Chicago, nearly five percent of prime borrowers experienced default on their mortgage loan in 2007 – nearly double the share from just two years earlier (Amromin and Paulson 2010).² More than twenty percent of sub-prime borrowers were in default, although they accounted for a substantially smaller share of borrowers in the housing market (Amromin and Paulson 2010). In 2010, the delinquency rate for loans on single-family homes peaked above eleven percent before steadily declining to four percent by 2016.³ Heightened rates of mortgage strain resulted in increased foreclosure rates across the United States, creating new social and economic challenges for households that had fallen behind on their mortgage payments.

While mortgage strain is viewed primarily as an economic hardship, the personal experiences of delinquency and default extend beyond these financial challenges. When homeowners have trouble paying their mortgages or default on their loans, they often experience negative physical and mental health outcomes (Nettleton and Burrows 2000; Alley et al. 2010; Osypuk et al. 2012; Burgard et al. 2012; Cannuscio et al. 2012). Faced with increased stigmatization, mortgage default (and the resulting process of foreclosure) can result in depression and anxiety as households work to hide their mortgage strain from their social networks (Keene, Cowan and Baker 2015). Among elderly households experiencing mortgage delinquency, Alley et al. (2011) reports declines in self-reported health behavior. Mortgage delinquency and foreclosure have also been linked to a spike in the suicide rate (Houle and Light 2014; Fowler et al. 2015).⁴

² The Federal Reserve Bank of Chicago defines a default as a borrower who is 60 days or more overdue on a payment 12 months after being issued the loan.

³ “Delinquency Rate on Single-Family Residential Mortgages.” Federal Reserve Bank of St. Louis. <https://fred.stlouisfed.org/series/DRSFRMACBS>.

⁴ While the experience of mortgage strain leads to negative health outcomes, poor health conditions may also increase the likelihood of mortgage default (Houle and Keene 2014).

Social networks serve as an important resource for households navigating the experience of mortgage delinquency and default. In her ethnographic account of the mortgage modification experiences of Californian homeowners, Owens (2014) reveals that working-class homeowners are more likely to activate their social networks to find information to guide them through the mortgage modification process. Willing to share their experiences of default with people in their network, these homeowners learn to avoid modification scams and temper their expectations for modification workouts. Notably, only by sharing their experiences within their networks are working-class homeowners able to find information that helps them through the modification process. By contrast, Owens (2014) reports that middle-class homeowners rarely share their experience of mortgage strain, owing at least partly to feelings of shame or anxiety. By keeping their experiences private, middle-class homeowners rarely benefit from information shared through network ties about the modification process.

The reluctance of middle-class homeowners to share their experiences of mortgage strain reflects the continued stigmatization associated with mortgage delinquency. Since buying a home remains a marker of social mobility and good citizenship for millions of households, losing that home to foreclosure brings a loss of social status (McCabe 2016; Dickerson 2015). Reflecting the social value of ownership, research on strategic default – the decision to intentionally default on a mortgage loan – points to the morally complex nature of housing transactions (White 2010). Although households that strategically default are often financially capable of making their monthly payments, they decide not to do so when the value of their outstanding mortgage loan is worth more than the market value of their home. When households contemplate strategic default, they weigh their own ethical assessment of default alongside their future expectations of housing price appreciation (Seiler, Seiler, Lane and Harrison 2012). Homeowners with weaker

emotional attachment to their homes or a larger equity shortfall are more likely to contemplate strategic default (Guiso, Sapienza and Zingales 2013).

Information Exposure Through Social Networks

Personal information, like the experience of mortgage default, spreads across social connections as individuals share their own life events – or share information about others they know – with people in their networks. Information flows across social ties in several ways. Often, people purposively gather information from individuals they know to inform their own choices. They reach into their networks to learn about political candidates (Huckfeldt and Sprague 1995), select among consumer products (Brown and Reingen 1987) or locate service providers (Small 2009). Information is often shared selectively with certain people in a network through a process of selective disclosure, as in the case of abortion secrets (Cowan 2014) or political opinions (Cowan and Baldassari 2018). However, individuals may also unintentionally receive influential information through their social networks. Gossip and rumors spread unsolicited information from one person to another across network ties. While on-line technologies have magnified and reshaped the contours of these networks, social learning and information sharing continues to occur through old-fashioned, person-to-person connections that center largely around geographic neighborhoods.

As information spreads through social networks, it influences individual attitudes and shapes personal behaviors. Across the social sciences, but particularly in the discipline of sociology, studies of social influence identify countless examples of the way influential information shared across network ties impacts behaviors and attitudes. Sacerdote (2001) exploits the random assignment of college roommates to show peer effects in academic

performance and participation in extracurricular groups, like fraternities. Information spread across social networks influences smoking behavior (Christakis and Fowler 2008), adolescent health outcomes (Cohen and Prinstein 2006), suicidality (Bearman and Moody 2004), alcohol and drug use (Bauman and Ennett 1996) and personal happiness (Fowler and Christakis 2008). Together, this growing body of research confirms that many social phenomena are influenced the information spread across network ties.

There are multiple mechanisms by which information spread through social networks influences social behaviors or attitudes. On one hand, networks simply *expose* people to influential information. Individuals gain access to resources that were previously unavailable to them as information migrates from one person to another. This type of exposure is critical to the work of social capital theorists, who point to the importance of network connections as a vehicle to gain advantages in the social world (Coleman 1988). These networks also reinforce specific norms and behaviors among in-group members. In networks composed of dense social ties, individuals may feel pressure to conform or ‘fit in’ with the expectations of others in their networks. Information spread across social networks may also strengthen emotional or affective ties. Especially in homophilous social networks, where individuals already share common personal traits and characteristics, information learned about others within a social network may deepen feelings of interconnectedness or create opportunities for social support (McPherson, Smith-Lovin and Cook 2001). In the case of mortgage default, it may be homeowners – or specifically, homeowners with a mortgage – who are most susceptible to the influencing experiences of others’ default.

While social networks can serve to spread information, reinforce in-group behavior and generate emotional support, the power of these network connections often depends on the

strength, density and characteristics of the underlying dyadic ties (Latane 1981). In the case of mortgage strain, we may expect that geographically-based social connections – for example, network ties to people living in the same community – serve as the primary conduit through which this information flows. Beyond the underlying strength or geographic proximity of social connections, the importance of information spread across network ties may depend on the *timing* of the influencing event. Information that was recently learned – or connections to events that happened more recently – may be more consequential for shaping social behaviors than events that occurred in the more distant past. Since individuals are more likely to recall recent events when making decisions, the power of influential events may diminish over time.

Housing, Networks and Exposure to Mortgage Strain

Individuals often utilize information from their social networks as they make decisions about their housing choices. When selecting a neighborhood to live, they purposively draw on people they know to learn about local schools and gather information about community resources (Holme 2002; Weininger and Lareau 2014; Lareau and Goyette 2014). In interviews collected with both urban and suburban families, Weininger and Lareau (2014) show how social networks steer families in the process of neighborhood selection. Specifically, in choosing between multiple neighborhoods, people rely heavily on the experiences of others in their social networks, rather than conducting other forms of research. They ask people they already trust to relay their experiences of communities and neighborhoods, using that information in making their own housing choices.

Social networks are particularly important for low-income households making housing decisions in the Housing Choice Voucher program. Voucher recipients often have more

flexibility in selecting neighborhoods than other low-income households because their vouchers enable them to access a wider range of units. Still, these households lean heavily on their networks to decide where to move in a city, leading them to select communities where their friends and social contacts already live (Boyd 2008; Boyd, Edin, Clampet-Lundquist and Duncan 2010; Kleit and Galvez 2011). For example, in a study of Seattle households displaced by redevelopment through the HOPE VI program, Kleit and Galvez (2011) report that information about neighborhoods gathered through network ties leads displaced families to move into high-poverty neighborhoods. Likewise, in a recent study of the residential decision-making process of immigrant families in the Housing Choice Voucher (HCV) program, Basolo and Nguyen (2009) report that immigrants rely heavily on friends and families in their housing search, leading them to neighborhoods with higher concentrations of immigrants. This reliance on network connections contributes to the reproduction of neighborhood inequality and reinforces patterns of residential segregation because low-income families select high-poverty neighborhoods populated by others within their social network (Carrillo et al. 2016; Sharkey 2013; Owens and Clampet-Lundquist 2016; Krysan and Crowder 2017). Additionally, once low-income families select into a neighborhood, they continue to gather information, find support and learn about local resources from people within their existing network, contributing to concerns about micro-segregation within diverse neighborhoods (Gaumer, Jacobowitz and Brooks-Gunn 2014; Tach 2014; Chaskin and Joseph 2015).

While the research on housing and social networks primarily investigates the purposeful extraction of information in the neighborhood selection process, it tells us little about other types of information flows within social networks that influence housing choices. Specifically, we know little about the way that information which has not been explicitly solicited, but is still known to

individuals, shapes activities in the housing market. While information gathered intentionally is a critical resource in the housing search, I hypothesize that other types of information learned through network interactions affects housing market expectations and behaviors.

To understand the social influence of mortgage strain, I outline four hypotheses. First, I consider whether knowledge of others' mortgage delinquency or default is associated with perceptions about the health or strength of the housing market, including expectations regarding the direction of housing prices. Households have many ways to gather information and make predictions about the market. They rely on the expertise of realtors (Besbris 2016) and lean on the experiences of friends and family (Laureau and Goyette 2014). Households may generalize from their personal experiences of buying (or renting) a home or rely on publicly-available information about interest rates, housing starts or sales prices. But just as households rely on their social networks to learn about neighborhood schools or create narratives of local communities (Rosen 2016), they may also rely on these network ties to inform their understanding of the market. If so, then knowing about others' experience of mortgage delinquency is likely to sour expectations for home prices and heighten concerns about market instability. As a result, I hypothesize (H_1) that exposure to mortgage strain through social connections will be associated with more negative assessments of the state of the housing market.

Second, I evaluate whether exposure to mortgage strain is associated with more permissive attitudes about strategic default behaviors. In the wake of the housing crisis, millions of households were delinquent on their mortgage payments as they struggled financially. For underwater homeowners – those who owed more on their homes than those homes were worth – financial struggles often led them to consider strategically defaulting on their mortgage

payments, rather than continuing to pay off a loan that exceeded the value of their house.

Recognizing the way information shared across networks can deepen emotional and affective ties, social connections to the experience of mortgage delinquency may elicit greater sympathy toward the plight of struggling homeowners. Knowledge of others' financial struggles may lead individuals to recognize the serious financial challenges that lead to mortgage nonpayment.

Therefore, I hypothesize (H₂) that exposure to mortgage strain through social networks will be associated with more lenient judgements about the default behavior of underwater homeowners and those experiencing financial hardship.

Notably, the directionality of this claim is difficult to determine. It may be that exposure to default through social networks generates empathy toward the situation of struggling homeowners. If so, then these network connections could help to humanize or personalize the experience of default, leading to more permissive attitudes. However, people who default on their mortgage payments may simply be more likely to selectively disclose their experiences to others who already hold permissive attitudes (Cowan 2014; Cowan and Baldassari, 2018). Since the experience of mortgage default is often shared only selectively within a network (Owens 2014), defaulters may simply tell this secret to others who already hold a sympathetic position.

Finally, I consider whether exposure to mortgage strain through social networks is associated with expectations for future homeownership decisions. The preference for homeownership remains one of the most enduring commitments for most Americans (McCabe 2016). Two-thirds of Americans own their own homes and most Americans – both homeowners and renters – expect to own a home at some point the future (Pew Research Center 2011). However, if households internalize the risks experienced by others in their social networks, then network exposure to mortgage default may reshape their own housing choices. Social proximity

to defaulters may deepen risk aversion. Households may second-guess the importance of homeownership when they hold close knowledge of others' mortgage default. This may generate a more cautious approach to homeownership or temper expectations about the promise of buying a home. As a result, I hypothesize (H_3) that exposure to mortgage strain through social networks will be associated with muted expectations about buying a home in the future.

While these hypotheses offer general expectations about the social influence of mortgage delinquency, this influence may vary systematically by homeownership status. My fourth hypothesis (H_4) posits that, across outcomes, homeowners will be more sensitive to network exposure to mortgage delinquency than renters. Since renters cannot experience default on a mortgage (as they do not, by definition, have a mortgage), their exposure to these negative experiences may be less influential in explaining their own preferences or behaviors in the housing market.

Data and Methods

To test these hypotheses, I draw on multiple waves of the National Housing Survey (NHS). The NHS is a nationally-representative, repeated cross-sectional survey of American adults conducted monthly since July 2010. Each wave of the NHS includes approximately 1,000 respondents. The survey asks respondents about a range of housing attitudes, beliefs and behaviors, including questions about their preference for homeownership, their expectations about the housing market, and their experience of buying a home. To test the hypotheses outlined in the previous section, I draw on 30 consecutive, monthly cross-sections of the National Housing Survey between January 2011 and June 2013 – several years after the collapse of the housing market. Despite the rich battery of items in the survey, the dataset has rarely been

used by sociologists (or other social scientists) to study the way Americans evaluate the market and make housing choices (Drew and Herbert 2013; McCabe 2018).

I utilize a series of questions from the National Housing Survey asking respondents about their expectations for the housing market, their attitudes toward the default behavior of others, and their own preferences for ownership. To test the first hypothesis, I utilize two questions about general expectations for the housing market. The first question reads, “In general, do you think this is a very good time to sell a house, a somewhat good time, a somewhat bad time, or a very bad time to sell a house?” I recode the measure into a dichotomous outcome identifying whether respondents believe it is a good (either very or somewhat) or bad (either very or somewhat) time to buy a house. The second question asks, “During the next 12 months, do you think home prices in general will go up, go down, or stay the same as where they are now?” Again, I recode the measure into a dichotomous outcome identifying whether respondents believe housing prices will go up or not (either stay the same *or* go down). The measures are identified as *Good Time to Buy* and *Prices Will Go Up* in the tables below.⁵

The second hypothesis concerns the permissiveness of attitudes toward homeowners struggling to make their mortgage payments. To test this hypothesis, I utilize two questions in the National Housing Survey. The first question asks, “If a person's home is now worth less than what they owe on it, do you think it's okay for them to stop paying their mortgage?” The second question asks, “If a person is facing financial distress, do you think it's okay for them to stop paying their mortgage?” In the tables below, the measures are identified as *Default: Underwater* and *Default: Financial Distress*. Both questions offer a dichotomous choice set measuring permissiveness of attitudes toward default behaviors.

⁵ While these measures are modeled as dichotomous outcomes in this paper, separate analyses available from the author report similar results when both measures are modeled using an ordered logistic regression.

The final measure, which is used to test the third hypothesis, asks respondents about their own housing choices. It reads, “If you were going to move, would you be more likely to rent or buy?” Rather than capturing a broad assessment of the housing market, this measure captures personal plans for buying a home. It is recoded to identify whether respondents would be more likely to buy a home when they next move. It is labelled as *Likely to Buy* in the tables below.

In Table 1, I report the responses to these five measures, including the responses for homeowners and renters separately. Respondents in the National Housing Survey were generally lukewarm about housing prices and the timing of home buying decisions during the 30-month study period. On average, 17 percent of respondents reported that it was a good time to buy a home and 35 percent of respondents expected prices to go up. Renters are slightly more optimistic than homeowners. However, responses to both questions changed substantially between January 2011 and June 2013. In Figure 1, I plot market expectations during the 30-month period this study. Between January 2011 through June 2013, a growing share of Americans reported that it was a good time to buy a home as expectations for housing prices climbed.

<< Insert Figure 1 here >>

Asked about default behavior, nearly 11 percent of respondents reported that it was acceptable for underwater homeowners to strategically default on their mortgage payments. Overall, 19 percent of respondents reported that it was acceptable for financially distressed homeowners to default. For both of these questions, renters hold slightly more permissive attitudes than homeowners, as reported in Table 1.

<< Insert Table 1 >>

Finally, respondents in the National Housing Survey overwhelmingly expected to buy a home when they next moved. More than 70 percent of respondents said they were likely to buy a home, compared to less than 30 percent that expected to rent one. Here, the differences by ownership status were stark. Over 82 percent of homeowners expected to move into a home that they own in the future compared to only 42 percent of renters.

To understand network exposure to mortgage strain, I draw on a series of questions from the National Housing Survey that asked respondents to identify the presence of people in their networks who experienced mortgage delinquency or default. First, every respondent in the NHS waves between January 2011 and June 2013 was asked, “Do you know of people in your area or neighborhood who have defaulted on their mortgage?” Respondents who answered yes – in other words, those who affirmatively reported that they knew of people who had defaulted on their mortgage – were then asked, “Do you know anyone who has stopped making their mortgage payments within the last 3 months?” While the question wording is imprecise across items – the first asking whether respondents *know of people* and the second asking whether respondents *know anyone* – their sequential structure creates an opportunity to evaluate respondents’ proximity to the experience of default through their social networks.

I use these two measures – whether respondents know of people who have defaulted in their neighborhoods and whether respondents know anyone who stopped paying their loans in the previous three months – to evaluate network exposure to mortgage strain. Combining these survey items, I construct a categorical variable identifying whether respondents have knowledge

of mortgage delinquency within their social networks. Each respondent is classified into one of three mutually-exclusive categories: they do not know of people who have defaulted on their mortgage loan; they know of people in their neighborhood who previously defaulted, but they do not know anyone who was delinquent in the past three months; or they know someone who was delinquent on their payments in the previous three months. Throughout the paper, I refer to respondents who know of people in their neighborhood that defaulted on a mortgage loan, but who do not know anyone that did so in the previous three months, as holding a *distant* connection to the experience of default. I refer to respondents who report knowing someone that stopped making their payments in the previous three months as holding a *recent* connection to the experience of default.

In Table 2, I report that 12 percent of respondents know someone who has stopped paying their loan in the previous three months. Another 29 percent report knowing of people in their neighborhood who defaulted on their mortgage loans, but not in the previous three months. Nearly 59 percent of respondents report not knowing anyone who experienced mortgage strain. Although homeowners and renters appear to be equally likely to report exposure to the recent experience of default – 12.0 percent of homeowners compared to 12.3 percent of renters – homeowners are about 7 percentage points more likely to report exposure to the distant experience of default, as reported in Table 2.

<< Insert Table 2 >>

In Table 2, I also report descriptive statistics for the other variables in the analysis, including the basic demographic characteristics of survey respondents. In total, 54 percent of the

sample is female and 13 percent report being born outside of the United States. Respondents with a high school education comprise nearly 22 percent of the sample and those with at least a college degree account for 46 percent of respondents. Two-thirds of respondents are white and almost 13 percent are black. Nearly 71 percent of respondents own their own home (and about 45 percent of respondents hold a mortgage on the home they own). The remaining 29 percent of respondents rent their homes. These descriptive statistics are presented separately for homeowners and renters in Table 2.

Homeowners were asked an additional set of questions about their housing market experiences. They were asked about the change in their home values since they bought their homes. The item read, “Thinking about the value of your home today compared to what you paid for the home, would you say your home is worth ...” In Table 2, I list five response options reflecting homeowners’ personal experiences in the housing market. The plurality of homeowners reported price appreciation greater than 20 percent since purchasing their homes. Overall, about 19 percent of homeowners reported that their home was worth *less* than they paid for it. Additionally, homeowners who reported holding a mortgage on their homes were also asked about their experience of mortgage modification. The item read, “Have the terms of your mortgage, such as the rate, term, payment, or principal, ever been modified because you were behind on or defaulted on your mortgage?” While this measure may not capture all forms of mortgage delinquency, it does offer a partial coverage for households who experience mortgage modification. During the study period, only 6 percent of homeowners holding a mortgage reported personal experiences with mortgage modification.

The analysis begins with a sample of 29,084 respondents in the National Housing Survey from January 2011 to June 2013. I select this range of dates because the items about network

connections were only included in the survey during these waves. This period represents a unique moment in the American housing market when confidence in the market was beginning to rebound from the crisis several years earlier (as shown in Figure 1). For observations with missing data on the variables in Table 2, I create a categorical indicator to identify observations with missing data.⁶ Doing so allows me to utilize the full set of cases in the National Housing Survey without losing respondents to list-wise deletion. Still, the number of respondents in the sample varies slightly across models due to missing values on the dependent variables.⁷

For each outcome in Table 1, I estimate a series of logistic regressions focusing on whether respondents report exposure through their social networks to either the *recent* or *distant* experience of mortgage strain. Each model controls for the month the survey was fielded to account for changing housing market conditions during the 30-month period of the study. I utilize sample weights provided in the National Housing Survey.⁸ In the first set of models, I control for the demographic characteristics in Table 2 to isolate the social connectedness to default. In the second set of models, I include an interaction term to test for heterogeneity in the effect of network exposure by homeownership status (H₄). Since theories of social influence suggest that influencing event may be more consequential for individuals who share common traits, we may expect larger effects of exposure among homeowners. In the third set of models, I limit the sample to homeowners who hold a mortgage in order to account for the personal experience of mortgage modification and price appreciation. Since the item on mortgage

⁶ The initial sample for this 30-month period is 30,061 respondents. However, I exclude 977 respondents with missing data on the key variable identifying social connectedness to the experience of mortgage default. More than 84 percent of respondents report no missing data on the variables in Table 2. About 12 percent are missing data on only one variable. The remaining four percent of observations are missing data on at least two variables in the analysis.

⁷ Each of the five dependent variables is missing data on 3 – 5 percent of cases, leading to final sample sizes between 27,632 and 28,105.

⁸ An alternative specification accounts for neighborhoods where respondents live by using zip code fixed effects. It yields substantively similar findings.

modification was asked only during a 17-month period between February 2012 to June 2013, the initial sample size for these models restricted only to *homeowners with a mortgage* is reduced to 7,435 observations.

The primary methodological challenge in identifying the causal effect of network exposure to mortgage default is to untangle social networks effects from the effects of neighborhood-level housing markets. People living in neighborhoods with depressed housing markets, or places with a higher incidence of default, may be more likely to report network exposure to mortgage default simply because its incidence is higher. As a result, any observed relationship between network exposure and negative assessments of the housing market could be driven by neighborhood-level housing markets. To test whether the observed associations are spuriously driven by neighborhood characteristics, I report a final set of models in the Appendix that includes several zip-code level covariates. Specifically, I control for the homeownership rate from the 2010 Census and the median neighborhood income from the 2011 American Community Survey. Additionally, I include two variables from the realty website Zillow.com to account for housing market conditions - the median estimated home value (the Zillow Home Value Index) for all homes in a zip code and the percent of homes that have decreased in value in the previous year.⁹ Survey respondents in the National Housing Survey are matched to their zip code-level Zillow data in the month the survey was fielded (i.e., a respondent who completed the NHS in January 2012 is matched with Zillow's housing market data for January 2012). I report the findings from these analyses in the Appendix.

Results

⁹ While the Census data provides full coverage of the universe of zip codes, the Zillow data provides incomplete coverage of universe of zip codes. For additional information on the data collected and reported by Zillow, visit: <https://www.zillow.com/research/data/>.

Findings from the National Housing Survey reveal a consistent association between exposure to mortgage strain and housing market expectations and attitudes. Individuals with network ties to people who have been delinquent on their loan payments are more likely to report negative expectations for the housing market. They also express more permissive attitudes toward strategic default. Homeowners with a recent connection to mortgage strain are less likely to anticipate owning a home in the future. Although the observational nature of the data limit the possibility for strong causal interpretation, the patterns are consistent across model specifications, including the models accounting for the housing market experiences of mortgaged homeowners. As I report in the Appendix, these findings are also robust to the inclusion of neighborhood-level measures.

Housing Market Expectations

The first set of regressions, reported in Table 3, examines expectations for the housing market by investigating whether respondents believe housing prices will increase and whether it is a good time to buy a house. For both measures, respondents exposed to mortgage default through their social network express substantially more negative views of the housing market. Asked whether it was a good time to buy a home, respondents with connections to both recent and distant experiences of mortgage default were less likely to believe that it is a good time to buy a home (Table 3, column 1). These effects do not vary by homeownership status (Table 3, column 2).

The findings are robust to the inclusion of two measures identifying housing market experiences of mortgaged homeowners. Homeowners who experienced positive price appreciation are substantially more optimistic about the current state of the market while those

who experienced negative price growth are more pessimistic. The personal experience of mortgage modification is not associated with expectations about the housing market (Table 3, columns 3). Even after limiting the sample to mortgaged homeowners and accounting for their own market experiences, exposure to mortgage default is strongly associated with housing market expectations.

<< Insert Table 3 >>

While respondents with network ties to mortgage default express greater caution in the current housing market, they are also more pessimistic about future housing prices. Respondents exposed to a recent default through their social networks are less likely to predict that home values will rise (Table 3, column 4). However, the effect of a distant connection is not statistically significant. While this finding confirms the significance of short-term exposure to mortgage default, it suggests that the influence of network exposure dissipates over time. In assessing housing price growth, respondents appear to be sensitive to the recent experience of mortgage default, but they are insensitive to defaults that occurred in the more distance past. Once again, these effects do not vary by homeownership status (Table 3, column 5). The coefficient associated with a recent experience of default loses its significance when the model is limited to homeowners with a mortgage.

To present these differences visually, I graph the findings from Table 3, columns 1 and 4 in Figure 2. The bars report the predicted probabilities that three categories of respondents – those without a connection to mortgage default; those with a distant network exposure to mortgage default; and those with a recent network exposure to mortgage default – will respond

affirmatively to the statements about housing prices and the timing of home purchases (holding other measures in the model at their means).

<< Insert Figure 2 >>

Attitudes about Strategic Default

In Table 4, I consider whether individuals reporting network exposure to mortgage default express more permissive attitudes towards the strategic default behavior of underwater homeowners or homeowners experiencing financial hardship. Compared to those without defaulters in their social networks, respondents reporting a distant connection to mortgage strain are 13 percent more likely to express permissive attitudes about underwater homeowners contemplating default. Those reporting network exposure to a recent default experience are 64 percent more likely to report that it is acceptable for underwater homeowners to default on their mortgage payments (Table 4, column 1). These findings suggest that network exposure to homeowners experiencing mortgage strain – and especially to homeownership who recently defaulted – is associated with more permissive social attitudes. Although homeowners are generally less lenient than renters, there is no evidence that this effect varies by homeownership status (Table 4, column 2).

<< Insert Table 4 >>

I report similar findings when I evaluate attitudes about the default behavior of households experiencing financial hardship. Respondents are 23 percent more likely to report

permissive attitudes about homeowners in financial hardship when they hold a distance connection to mortgage strain. Compared to individuals who have not been exposed to default through their social networks, those with knowledge of a recent mortgage default are 61 percent more likely to express permissive attitudes about homeowners who stop paying their mortgage loans when they experience financial distress (Table 4, column 4). Again, the importance of network ties does not vary systematically by homeownership status (Table 4, columns 5). In Figure 3, I graph the predicted probabilities from Table 4, columns 1 and 4.

<< Insert Figure 3 >>

These findings for a recent exposure to mortgage strain are robust to the inclusion of personal housing market experiences in the sub-sample of mortgaged homeowners. Homeowners who have undergone a mortgage modification are more than twice as likely to report permissive attitudes when asked about strategic default behaviors. Likewise, homeowners who themselves experienced strong, negative price appreciation in the housing market are substantially more likely to express permissive attitudes when asked about the default behavior of other homeowners experiencing financial distress. Even after accounting for their personal experiences in the housing market, mortgaged homeowners reporting network exposure to the recent experience of mortgage strain are substantially more likely to express permissive attitudes (Table 4, columns 3 and 6).

Future Homeownership Plans

In Table 5, I report that network exposure to mortgage default is not a significant predictor of future home-buying plans for the full sample of respondents (Table 5, column 1). However, these null findings mask heterogeneity between homeowners and renters in the way social connections shape expectations for homeownership. Renters with a social connection to default appear slightly more likely to anticipate buying a home when they next move compared to those without network exposure to default – a finding that suggests renters may see an opportunity to enter the housing market when they are exposed to the experience of mortgage strain. And while homeowners remain substantially more likely than renters to anticipate buying a home when they next move, the significant coefficient on the interaction term suggests that homeowners exposed to mortgage delinquency are *less likely* to prefer homeownership compared to homeowners without network exposure (Table 5, column 2).

<< Insert Table 5 >>

This negative association among homeowners is robust to the inclusion of their own housing market experiences. As expected, negative experiences in the housing market, including strong negative price appreciation and the personal experience of mortgage modification, moderate expectations about buying a home by decreasing the likelihood that homeowners will buy a home when they next move (Table 5, column 3). Still, even after accounting for their own experiences in the housing market, mortgaged homeowners with a network tie to a recent experience of mortgage strain are substantially less likely to anticipate buying a home in the future .

Discussion and Conclusion

In this paper, I investigate the relationship between network exposure to mortgage strain and perceptions about the housing market. Extending research on the housing search process, which points to the way individuals purposively gather information from their social networks to select housing and neighborhoods, I argue that individuals are often unintentionally exposed to negative information through their network ties. In this case, the negative experience of mortgage strain appears to influence attitudes, behaviors and expectations in the housing market. These findings suggest that the personal experience of mortgage strain is also an influential social event.

Although previous studies highlight the positive role of network ties in the purposive gathering of housing information from realtors, friends and neighbors, there has been little effort to understand how network exposure to others' default experiences shapes the way that people view their own housing situation. This omission is noteworthy because millions of Americans know people who have experienced mortgage strain. In fact, according to the National Housing Survey, more than forty percent of Americans know of someone in their community who has fallen behind on their mortgage payments. Between 2011 and 2013, when the data for this paper was collected, about one in eight Americans reported knowing someone who had experienced mortgage delinquency in the previous three months. Despite stigmatization that often keeps people from widely sharing their stories of mortgage strain, information about hardship in the housing market travels through social networks to influence the behaviors of other people.

Critically, this analysis of the National Housing Survey points to the temporal nature of mortgage strain as an influencing event. Knowledge of a recent default was strongly associated with expectations for the housing market – a finding that is consistent across outcomes in the

paper. However, exposure to an event that occurred more than three months before the survey was fielded exhibited a notably weaker influence. These results suggest that mortgage strain has strong and immediate influence on others' attitudes and expectations, but its importance dissipates over time.

While the National Housing Survey offers an important first look into the social influence of mortgage delinquency, the data has several limitations. While I am able to distinguish between recent and distant exposure to mortgage strain, the structure of the data does not allow me to consider the intensity (or strength) of social connectedness. While respondents were asked *whether* they knew someone who defaulted on their mortgage, they were not asked *how many* people they knew. To the extent that these effects are cumulative, the social impact of default should be stronger as people report more network ties to individuals who defaulted. Similarly, the survey cannot be used to evaluate the strength of those embedded ties. Network exposure to the default experience of a close friend or family member is likely to be more influential than the default experience of a more distant neighbor, even though the respondents knows both of those people. The National Housing Survey asks respondents whether they know anyone who defaulted on a mortgage payment in the previous three months, but it does not evaluate the strength of those social ties. Finally, while the survey distinguishes events that occurred in the previous three months from those that occurred more than three months ago, a more fine-grained measure of timing would enable me to identify temporal patterns. While this analysis suggests that the impact of network exposure declines as individuals gain distance from the event, the data is ill-suited for a further investigation of the half-life of mortgage strain.

Despite these limitations, my analysis highlights the way that information learned through social networks can affect attitudes and behaviors in the housing market. Although the

influence of this exposure may be short-lived, millions of Americans are connected to the experience of mortgage strain through their networks – a fact that underscores the importance of paying attention to delinquency and default as meaningful social events.

Appendix:

For each of the five outcomes measured in the National Housing Survey, I estimate an additional set of regression models accounting for neighborhood characteristics. Since the NHS includes the zip code for each respondent in the survey, I rely on neighborhood characteristics reported at the zip code level. First, I include a measure of the neighborhood homeownership rate from the 2010 Census and the median household income from the 2011 American Community Survey 5-year estimates. I was able to successfully match 91.6 percent of respondents from the National Housing Survey with these data. Next, I match respondents from the National Housing Survey with neighborhood-level measures from Zillow that identify the median estimated home value and the percent of homes that decreased in value in the previous year. The coverage of these data is substantially more limited, enabling me to match only 22,268 respondents (76.56 percent) with the price data and 19,257 respondents (66.21 percent) with the data reporting declining property values.

For each outcome, I first run a model controlling for the median neighborhood income and homeownership rate. Then, I run a second model adding in the housing market data from Zillow. These models include the full set of covariates from Table 2 (excluding those asked exclusively of mortgaged homeowners), but I only report the coefficients for network exposure to mortgage default and the zip code-level covariates in Table A1.

The findings from the main analysis are robust to the inclusion of each of these measures. The findings reported in Table A1 suggest that households living in neighborhoods with a higher share of homes declining in value are less optimistic about the housing market (Table A.1, columns 2 and 4). Respondents living in neighborhoods with high rates of homeownership are generally less permissive of the strategic default decisions of struggling homeowners (Table A.1,

columns 5-8). The neighborhood homeownership rate is positively correlated with expectations about buying a home in the future (Table A.1, columns 9-10), but negatively associated with expectations about the direction of housing prices (Table A.1, columns 3-4). Notably, the main findings about exposure to mortgage default reported throughout the paper are robust to the inclusion of these zip code-level covariates.

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Figure 1: Housing Market Expectations, January 2011 – June 2013

Figure 2: Predicted Probabilities for Housing Market Expectations, by Social Connectedness to Mortgage Default

Figure 3: Predicted Probabilities for Attitudes toward Default Behavior, by Social Connectedness to Mortgage Default

Table 1: Housing Market Expectations and Attitudes, by Homeownership Status

	Total	Renter	Homeowner
Good Time to Buy	0.173	0.198	0.163
Prices Will Go Up	0.351	0.375	0.341
Default: Underwater	0.106	0.131	0.0964
Default: Financial Distress	0.189	0.203	0.183
Likely to Buy	0.704	0.424	0.822

Note: This chart identifies the proportion of respondents that responded affirmatively to each statement in the National Housing Survey. Each of the differences between homeowners and renters is significant at the $p < 0.001$ level.

Table 2: Descriptive Statistics, by Homeownership Status

	Total	Renter	Homeowner
Default: Do not know anyone	0.585	0.634	0.565
Default: Distant Connection	0.294	0.243	0.315
Default: Recent Connection	0.121	0.123	0.120
Lives in Urban Area	0.329	0.485	0.266
Female	0.539	0.560	0.530
Education: Less than High School	0.0718	0.119	0.0524
Education: High School	0.217	0.273	0.195
Education: Some College	0.250	0.290	0.234
Education: College or Beyond	0.461	0.318	0.519
Immigrant	0.129	0.159	0.117
Age: 18-29	0.129	0.301	0.0591
Age: 30-44	0.298	0.313	0.292
Age: 45-59	0.302	0.233	0.330
Age: 60+	0.271	0.153	0.319
Race: White	0.653	0.506	0.713
Race: Black	0.128	0.203	0.0977
Race: Hispanic	0.137	0.198	0.112
Race: Other	0.0816	0.0929	0.0769
Income: 0 to 25K	0.251	0.475	0.155
Income: 25K to 50K	0.242	0.285	0.224
Income: 50K to 75K	0.183	0.124	0.208

Income: 75K to 150K	0.246	0.0943	0.312
Income: 150K or More	0.0778	0.0215	0.102
Children < 18	0.411	0.421	0.407
Homeowner	0.710		
Current Home Value: About the same			0.173
Current Home Value: Increase 20% or more			0.443
Current Home Value: Increase 5% - 20%			0.196
Current Home Value: Decrease 5% - 20%			0.103
Current Home Value: Decrease 20% or more			0.0842
Mortgage Modification			0.0603
Sample Size	29,084	8,429	20,655

Note: Descriptive statistics are reported for the full sample of respondents. For variables with missing values, the statistics are reported for the set of cases with non-missing values. The variable for mortgage modification is reported only for homeowners holding a mortgage.

Table 3: Odds Ratio from Logistic Regression of Housing Market Expectations

	(1) Good Time to Buy	(2) Good Time to Buy	(3) Good Time to Buy	(4) Prices Will Go Up	(5) Prices Will Go Up	(6) Prices Will Go Up
Default: Distant Connection	0.736*** (0.00)	0.712** (0.00)	0.874 (0.10)	1.003 (0.95)	0.968 (0.68)	0.981 (0.78)
Default: Recent Connection	0.628*** (0.00)	0.677** (0.01)	0.663** (0.00)	0.881* (0.02)	0.876 (0.21)	0.856 (0.14)
Lives in Urban Area	1.207** (0.00)	1.208** (0.00)	1.262* (0.01)	1.158** (0.00)	1.158** (0.00)	1.190* (0.02)
Female	1.035 (0.45)	1.035 (0.45)	0.997 (0.97)	0.940 (0.07)	0.940 (0.07)	0.778*** (0.00)
Education: High School	1.011 (0.90)	1.011 (0.91)	1.415 (0.13)	0.884 (0.08)	0.884 (0.08)	1.044 (0.82)
Education: Some College	0.912 (0.34)	0.912 (0.33)	1.187 (0.45)	0.838* (0.01)	0.838* (0.01)	1.021 (0.91)
Education: College or Beyond	0.864 (0.13)	0.863 (0.13)	1.395 (0.14)	0.886 (0.09)	0.886 (0.10)	1.367 (0.08)
Immigrant	0.670*** (0.00)	0.669*** (0.00)	0.688* (0.01)	1.066 (0.29)	1.066 (0.29)	1.241 (0.06)
Age: 30-44	0.949 (0.48)	0.947 (0.47)	1.153 (0.39)	0.848** (0.00)	0.848** (0.00)	0.922 (0.55)

Age: 45-59	0.939 (0.40)	0.937 (0.38)	1.035 (0.84)	0.909 (0.11)	0.909 (0.11)	1.114 (0.44)
Age: 60 and Above	0.907 (0.21)	0.905 (0.21)	0.953 (0.79)	1.184** (0.01)	1.186** (0.01)	1.650** (0.00)
Race: Black	2.096*** (0.00)	2.094*** (0.00)	2.240*** (0.00)	1.348*** (0.00)	1.347*** (0.00)	1.180 (0.11)
Race: Hispanic	1.314** (0.00)	1.314** (0.00)	1.421* (0.02)	1.248** (0.00)	1.248** (0.00)	1.068 (0.59)
Race: Other	1.358** (0.00)	1.357** (0.00)	1.191 (0.25)	1.317** (0.00)	1.316** (0.00)	1.303* (0.03)
Income: 25K to 50K	0.939 (0.38)	0.939 (0.38)	0.709 (0.06)	0.860** (0.01)	0.861** (0.01)	0.858 (0.29)
Income: 50K to 75K	0.857 (0.05)	0.858 (0.06)	0.713 (0.06)	0.852** (0.01)	0.853** (0.01)	0.884 (0.40)
Income: 75K to 150K	1.063 (0.45)	1.064 (0.45)	0.979 (0.90)	0.863* (0.02)	0.863* (0.02)	0.855 (0.26)
Income: 150K or More	1.238* (0.05)	1.238* (0.05)	1.253 (0.24)	1.000 (1.00)	1.000 (1.00)	1.029 (0.86)
Children < 18	0.934 (0.21)	0.933 (0.20)	0.943 (0.50)	0.924 (0.06)	0.924 (0.06)	0.900 (0.14)
Homeowner	0.915 (0.11)	0.916 (0.18)		0.881** (0.00)	0.868** (0.01)	

Default: Distant Connection * Homeowner			1.050 (0.67)		1.054 (0.56)	
Default: Recent Connection * Homeowner			0.887 (0.48)		1.009 (0.94)	
Current Home Value: Increase 20% or more				1.495** (0.00)		1.135 (0.15)
Current Home Value: Increase 5% - 20%				1.536** (0.00)		1.153 (0.14)
Current Home Value: Decrease 5% - 20%				0.506*** (0.00)		1.046 (0.68)
Current Home Value: Decrease 20% or more				0.550** (0.00)		0.967 (0.79)
Mortgage Modification				0.947 (0.77)		1.031 (0.83)
Constant	0.149*** (0.00)	0.149*** (0.00)	0.081*** (0.00)	0.533*** (0.00)	0.538*** (0.00)	0.245*** (0.00)
Observations	28103	28103	7267	27941	27941	7212
Pseudo R^2	0.071	0.071	0.099	0.051	0.051	0.054

Note: All models include controls for the month the survey was fielded. Exponentiated coefficients; p -values in parentheses

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

Table 4: Odds Ratio from Logistic Regression of Attitudes towards Default

	(1) Default: Underwater	(2) Default: Underwater	(3) Default: Underwater	(4) Default: Financial Distress	(5) Default: Financial Distress	(6) Default: Financial Distress
Default: Distant Connection	1.132 [*] (0.05)	1.235 (0.06)	0.955 (0.70)	1.227 ^{***} (0.00)	1.351 ^{**} (0.00)	1.003 (0.97)
Default: Recent Connection	1.644 ^{***} (0.00)	1.559 ^{**} (0.00)	1.710 ^{**} (0.00)	1.612 ^{***} (0.00)	1.492 ^{**} (0.00)	1.420 ^{**} (0.00)
Lives in Urban Area	1.262 ^{***} (0.00)	1.260 ^{***} (0.00)	1.019 (0.87)	1.107 [*] (0.02)	1.106 [*] (0.03)	1.034 (0.71)
Female	0.686 ^{***} (0.00)	0.686 ^{***} (0.00)	0.589 ^{***} (0.00)	0.828 ^{***} (0.00)	0.828 ^{***} (0.00)	0.800 ^{**} (0.00)
Education: High School	0.995 (0.96)	0.998 (0.98)	0.720 (0.20)	0.961 (0.62)	0.963 (0.64)	0.807 (0.27)
Education: Some College	0.988 (0.90)	0.989 (0.91)	0.880 (0.62)	0.986 (0.86)	0.987 (0.87)	1.028 (0.89)
Education: College or Beyond	1.198 (0.07)	1.200 (0.07)	1.144 (0.60)	1.090 (0.28)	1.091 (0.28)	1.083 (0.67)
Immigrant	1.703 ^{***} (0.00)	1.706 ^{***} (0.00)	1.866 ^{**} (0.00)	1.514 ^{***} (0.00)	1.516 ^{***} (0.00)	1.620 ^{**} (0.00)
Age: 30-44	0.771 ^{**} (0.00)	0.772 ^{**} (0.00)	1.126 (0.60)	1.144 (0.06)	1.147 (0.05)	1.619 [*] (0.01)

Age: 45-59	0.945 (0.52)	0.947 (0.53)	1.364 (0.17)	1.204** (0.01)	1.207** (0.01)	1.707** (0.01)
Age: 60 and Above	1.335** (0.00)	1.336** (0.00)	1.860* (0.01)	1.338** (0.00)	1.339** (0.00)	1.983** (0.00)
Race: Black	1.086 (0.31)	1.088 (0.30)	0.922 (0.65)	1.031 (0.62)	1.033 (0.60)	0.847 (0.21)
Race: Hispanic	1.612*** (0.00)	1.612*** (0.00)	1.680** (0.00)	1.113 (0.13)	1.114 (0.13)	1.147 (0.32)
Race: Other	1.535*** (0.00)	1.537*** (0.00)	1.426 (0.07)	1.334** (0.00)	1.335** (0.00)	1.164 (0.31)
Income: 25K to 50K	0.761** (0.00)	0.760** (0.00)	0.715 (0.10)	0.919 (0.18)	0.918 (0.18)	0.876 (0.42)
Income: 50K to 75K	0.663*** (0.00)	0.662*** (0.00)	0.609* (0.02)	0.873 (0.06)	0.871 (0.06)	0.726 (0.06)
Income: 75K to 150K	0.645*** (0.00)	0.644*** (0.00)	0.480** (0.00)	1.006 (0.93)	1.006 (0.94)	0.850 (0.32)
Income: 150K or More	0.885 (0.40)	0.885 (0.40)	0.667 (0.11)	1.009 (0.92)	1.009 (0.93)	0.854 (0.39)
Children < 18	0.884 (0.06)	0.885 (0.06)	0.884 (0.33)	0.862** (0.00)	0.863** (0.00)	0.817* (0.03)
Homeowner	0.744*** (0.00)	0.761** (0.00)		0.857** (0.00)	0.875* (0.04)	

Default: Distant Connection * Homeowner			0.868 (0.29)		0.868 (0.18)	
Default: Recent Connection * Homeowner			1.087 (0.59)		1.121 (0.38)	
Current Home Value: Increase 20% or more				1.036 (0.81)		0.809 (0.06)
Current Home Value: Increase 5% - 20%				1.051 (0.76)		0.779* (0.05)
Current Home Value: Decrease 5% - 20%				0.704 (0.09)		1.001 (1.00)
Current Home Value: Decrease 20% or more				1.382 (0.08)		1.525** (0.00)
Mortgage Modification				2.233*** (0.00)		2.160*** (0.00)
Constant	0.150*** (0.00)	0.148*** (0.00)	0.119*** (0.00)	0.226*** (0.00)	0.222*** (0.00)	0.147*** (0.00)
Observations	27989	27989	7234	27630	27630	7123
Pseudo R^2	0.051	0.051	0.082	0.018	0.018	0.042

Note: All models include controls for the month the survey was fielded. Exponentiated coefficients; p -values in parentheses

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

Table 5: Odds Ratio from Logistic Regression of Expected Homeownership Decisions

	(1) Likely to Buy	(2) Likely to Buy	(3) Likely to Buy
Default: Distant Connection	1.066 (0.17)	1.180* (0.03)	0.921 (0.40)
Default: Recent Connection	0.996 (0.95)	1.264* (0.02)	0.733* (0.02)
Lives in Urban Area	0.888** (0.01)	0.890** (0.01)	0.956 (0.66)
Female	0.851*** (0.00)	0.851*** (0.00)	0.771** (0.00)
Education: High School	1.099 (0.23)	1.094 (0.25)	0.956 (0.84)
Education: Some College	1.034 (0.67)	1.028 (0.73)	1.070 (0.76)
Education: College or Beyond	1.140 (0.10)	1.133 (0.12)	1.049 (0.82)
Immigrant	1.080 (0.29)	1.072 (0.34)	1.404* (0.05)
Age: 30-44	1.654*** (0.00)	1.646*** (0.00)	1.627* (0.01)
Age: 45-59	1.478*** (0.00)	1.468*** (0.00)	1.062 (0.76)
Age: 60 and Above	0.779** (0.00)	0.767** (0.00)	0.549** (0.00)
Race: Black	1.031 (0.61)	1.035 (0.56)	0.758* (0.04)
Race: Hispanic	1.246** (0.00)	1.245** (0.00)	0.688 (0.05)
Race: Other	0.739** (0.00)	0.740** (0.00)	0.680* (0.03)

Income: 25K to 50K	1.515 ^{***} (0.00)	1.507 ^{***} (0.00)	1.607 ^{**} (0.00)
Income: 50K to 75K	1.860 ^{***} (0.00)	1.860 ^{***} (0.00)	2.349 ^{***} (0.00)
Income: 75K to 150K	2.607 ^{***} (0.00)	2.613 ^{***} (0.00)	2.969 ^{***} (0.00)
Income: 150K or More	3.867 ^{***} (0.00)	3.861 ^{***} (0.00)	5.263 ^{***} (0.00)
Children < 18	1.437 ^{***} (0.00)	1.432 ^{***} (0.00)	1.247 [*] (0.05)
Homeowner	5.095 ^{***} (0.00)	5.688 ^{***} (0.00)	
Default: Distant Connection * Homeowner		0.829 [*] (0.05)	
Default: Recent Connection * Homeowner		0.641 ^{**} (0.00)	
Current Home Value: Increase 20% or more			1.143 (0.30)
Current Home Value: Increase 5% - 20%			1.033 (0.83)
Current Home Value: Decrease 5% - 20%			0.856 (0.31)
Current Home Value: Decrease 20% or more			0.550 ^{**} (0.00)
Mortgage Modification			0.559 ^{**} (0.00)
Constant	0.435 ^{***} (0.00)	0.418 ^{***} (0.00)	3.330 ^{**} (0.00)
Observations	27727	27727	7157
Pseudo R ²	0.186	0.187	0.095

Note: All models include controls for the month the survey was fielded. Exponentiated coefficients; *p*-values in parentheses

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

Table A.1: Odds Ratio from Logistic Regression, including Zip Code Covariates

	(1) Good Time to Buy	(2) Good Time to Buy	(3) Prices Will Go Up	(4) Prices Will Go Up	(5) Default: Underwater	(6) Default: Underwater	(7) Default: Financial Distress	(8) Default: Financial Distress	(9) Likely Buy	(10) Likely Buy
Default: Distant Connection	0.738*** (0.00)	0.755*** (0.00)	0.998 (0.97)	1.005 (0.91)	1.145* (0.04)	1.144 (0.07)	1.241*** (0.00)	1.250*** (0.00)	1.051 (0.30)	1.053 (0.36)
Default: Recent Connection	0.620*** (0.00)	0.669*** (0.00)	0.867* (0.01)	0.869* (0.04)	1.662*** (0.00)	1.628*** (0.00)	1.642*** (0.00)	1.639*** (0.00)	0.985 (0.82)	1.019 (0.81)
Percent Homeowners	0.999 (0.54)	1.001 (0.60)	0.994*** (0.00)	0.990*** (0.00)	0.993** (0.00)	0.992** (0.01)	0.992*** (0.00)	0.993** (0.00)	1.013*** (0.00)	1.012*** (0.00)
Median Neighborhood Income (\$1,000s)	1.003* (0.01)	0.999 (0.52)	1.005*** (0.00)	1.007*** (0.00)	1.007*** (0.00)	1.008** (0.00)	1.008*** (0.00)	1.005** (0.01)	0.995*** (0.00)	0.996 (0.05)
Median Estimated Home Value (\$10,000s)		1.006** (0.01)		0.997 (0.11)		0.999 (0.82)		1.003 (0.19)		1.001 (0.64)
Percent of Homes Declining in Value		0.990*** (0.00)		0.995*** (0.00)		0.996* (0.02)		0.998 (0.13)		0.999 (0.45)
Constant	0.139*** (0.00)	0.282*** (0.00)	0.665** (0.01)	0.929 (0.72)	0.164*** (0.00)	0.209*** (0.00)	0.258*** (0.00)	0.314*** (0.00)	0.237*** (0.00)	0.258*** (0.00)
Observations	26374	18506	26222	18440	26286	18413	25943	18182	26048	18319
Pseudo R^2	0.071	0.086	0.055	0.067	0.054	0.059	0.022	0.024	0.190	0.192

Note: All models include controls for the month the survey was fielded and the full set of covariates from Table 2 (excluding those asked only of mortgaged homeowners). Exponentiated coefficients; p -values in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$