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Estimating the Effects of Foreclosure Counseling for Troubled Borrowers

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Abstract

Starting in 2008, the number of homeowners losing their homes to foreclosure began increasing dramatically. Given that troubled borrowers may not fully understand their options for modifying their mortgage, lenders and policymakers have reacted to rising foreclosure filings by increasing the use of third-party default counseling programs. However, the existing literature on mortgage default counseling provides little convincing evidence on the effectiveness of counseling on borrower outcomes. This study employs multiple identification strategies to assess the impacts of counseling on receipt of loan modifications and keeping one's home. We find evidence of negative selection into counseling; however, once this negative selection is controlled for, counseling is consistently found to increase the probability that borrowers will receive a modification. We also find some evidence that counseling reduces the probability that a borrower will lose his or her home to foreclosure. Moreover, among borrowers who received a loan modification, those who were counseled were less likely to subsequently default. Lastly, we consistently find that when a homeowner receives counseling is an important determinant of his or her final outcome: those who receive counseling when current or in the early stages of default are much more likely to receive a modification or keep their homes than those who receive counseling when seriously delinquent.

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1. Introduction

The recession that began in December of 2007 was largely precipitated by a housing crisis whereby a nationwide decline in housing values and seizing up of the mortgage market nearly crippled the nation's financial institutions. Problems in the housing market have been linked to a decline in (or absence of) underwriting standards for mortgages, increased mortgage lending to borrowers with poor credit histories, and speculative purchases. As mortgage borrowers finance the entire value of their homes, as housing values decline many borrowers owe more than their homes are worth and unable to sell their properties. This, compounded by rising unemployment, increasing mortgage payments due to resetting interest rates, and an inability to refinance loans, has resulted in record numbers of homeowners in default and foreclosure.

As the housing crisis escalated in the late 2000s, one solution proposed by policy makers and lenders alike was the provision of mortgage default counseling. The federal government allocated over $400 million for mortgage default counseling under the National Foreclosure Mitigation Counseling (NFMC) Program. This is the largest ever investment in mortgage default counseling attempted in the U.S.; however, there exists surprisingly little evidence as to the effectiveness of counseling at helping borrowers in distress.

There are several rationales for providing counseling as a means of preventing foreclosure, especially for mortgage borrowers unfamiliar with the mortgage market or those facing severe resource constraints. Counseling has the potential to connect borrowers to public services as well as to lender-provided alternatives to foreclosure of which consumers may be unaware. Counselors can assist homeowners in navigating the bureaucratic requirements of the different public programs designed to assist distressed homeowners. Counseling may also

provide an external review of a consumer's budget to aid in the development of cash flow for servicing mortgage debt. Nonetheless, there is currently little evidence that mortgage default counseling has yielded the promised effect of reducing mortgage delinquency. In practice, establishing a causal link between counseling services and mortgage outcomes is difficult given the extensive negative selection of consumers into counseling. Consumers who seek counseling have historically been the most disadvantaged borrowers, with the least ability to cure their delinquency. Moreover, many consumers do not seek counseling until well into the foreclosure process, limiting the ability of counselors to effectively intervene.

Previous studies on this topic have been plagued by limited data on counseling and borrower outcomes, and a lack of credible identification strategies to address the bias created by the selection into counseling, This study seeks to provide improved estimates of the effect of mortgage default counseling on mortgage outcomes by pursuing a variety of different identification strategies.

First, this study exploits variations in the timing and intensity of a targeted outreach and marketing program for mortgage default counseling to various neighborhoods by Neighborhood Housing Services (NHS) of Chicago, large non-profit homeownership counseling agency. Data for this study were drawn from a database on subprime home mortgages that are administered by Wells Fargo Bank, N.A. Corporate Trust Services (CTS). Using a difference-in-difference estimation strategy that exploits zip code level variation in the intensity of NHS' outreach to at-risk borrowers in the Chicago area to address the selection of borrowers into counseling, we test if the effect of this outreach campaign increases the incidence of loan modifications or decreases the probability of the home being foreclose and repossessed by the lender.

Second, we extend our analysis to the entire nation by matching loans from the Wells Fargo Bank, N.A. CTS dataset to individuals who received counseling by calling a hotline. The matching of these two datasets yields an individual panel dataset on mortgage status and receipt of counseling spanning June 2007 through December 2009. Using an individual fixed-effects identification strategy we find that counseling increases the likelihood of receiving a permanent mortgage modification, and reduces the probability of the home being lost to foreclosure. However, the effectiveness of counseling varies based on when the borrower sought counseling, with borrowers seeking counseling at 30 or 60 days past due performing better than those seeking counseling at 90 days delinquent or when still current.

This paper has five distinct parts. The second section discusses the foreclosure process and the role of counseling. The third section describes the data used in this analysis, while the fourth section describes the empirical methods. The fifth section presents results on the impact of mortgage counseling on homeowner outcomes, followed by a conclusion.

2. Mortgage Default, Mortgage Counseling, and Homeowner Outcomes

2.1. The Problem of Mortgage Default

Over the past decade, the "American Dream" of homeownership was extended to persons and groups for whom this dream had been elusive in previous decades. Innovations in the credit market, the relaxation of lending standards, and booming housing values spurred record numbers of home sales in almost every region of the nation. However, as housing values decreased and employment markets declined in 2007, the "American Dream" turned sour. According to the Mortgage Bankers Association's National Delinquency Survey (NDS), the share of single-family owner-occupied first-lien mortgages starting foreclosure reached a new record in the second

quarter of 2009. The NDS data show that approximately 3.6 million mortgages out of 44.7 million outstanding loans were seriously delinquent, and 1.9 million loans were in the formal foreclosure process.

Homeownership, and the extensive public investment in its promotion, has been justified through a range of policy rationales [1]. While homes offer the opportunity for families to buy into a leveraged investment using a mortgage, recent events suggest that a portion of mortgage borrowers have experienced the negative effects of this leverage and will own fewer net assets after trying to own a home. Moreover, local neighborhoods may suffer depressed property values as a result of increasing foreclosure sales [2]. Lin, Rosenblatt, and Yao [3] examined foreclosure and home sales data from 13 states, finding a negative effect on home values within a 300-foot radius of the foreclosed home and smaller effects out to a 600-foot radius. Similar effects have been found regarding the incidence of crime in areas with relatively high foreclosure rates [4]. As foreclosures continue to surpass record levels with each subsequent quarter, approaches to preserving homeownership are becoming increasingly important to understand. Default counseling is central to the current approaches for addressing the rise in foreclosures [5].

An overview of the foreclosure process and its alternatives helps place the role of default counseling in perspective. Mortgages are legal contracts in which the borrower (mortgagor) receives a sum of money from a lender (mortgagee) under specified repayment terms. These terms include a publically filed lien on the home, which gives the mortgagee rights to use the home to payoff an unpaid balance. Any violation of the contract could result in a default in the contract on behalf of the borrower. Most commonly, a default results after a borrower's failure to make payments on the specified schedule. Lenders have some discretion over when to rule a mortgage is in default and to exercise their right to repossess the home through the legal

foreclosure process. To avoid foreclosure proceedings, lenders might offer borrowers short-term reductions (less than 24 months) in interest or principal payments, often deferring past due payments into principal. Lenders might also offer to formally modify the legal mortgage contract and reduce interest and/or principal. Such options may benefit the borrower if they allow the borrower to overcome a short-term financial shortfall. Counseling is often viewed as a mechanism for assisting borrowers and lenders in the pursuit of alternatives to foreclosure.

2.2. The Role of Default Counseling

At its broadest, default counseling is part of a continuum of services that provide information, advice, and guidance on how to deal with debt problems [6]. Counseling can include services provided by for-profit and not-for-profit organizations, but is generally provided by the latter free of charge to the client. Counseling may be based on a variety of delivery models including self-help approaches, telephone support, or face-to-face counseling. In recent years telephone counseling has become more common as providers have sought to increase capacity and make counseling more convenient for clients. Consumers may enter the counseling process based on a referral from their lender or loan servicer, or in response to local outreach or advertising efforts.

Regardless of the delivery mode of counseling, most counseling programs focus on a few key tasks: (1) diagnosing the problem, (2) reviewing all income and expenditures in order to reduce budgeted spending items and identify income available for debt repayment, (3) prioritizing the order of payment of non-mortgage debts, (4) maximizing potential income through public programs and benefits, and (5) developing a strategy for mortgage loan repayment including alternatives such as seeking a loan modification or selling the home.

Interviews with foreclosure counseling professionals suggest that an important role of the counselor is to give consumers an opportunity to "tell their story." Counselors describe a process in which borrowers spend 15 to 30 minutes simply describing the circumstances of obtaining a mortgage, the "trigger event" that caused a payment disruption, and the borrower's self-admitted mistakes or regrets. Borrowers also relay their frustrations with their circumstances during this time, including the often complex family situations that may impede earning sufficient income or changing housing. Borrowers commonly share their experiences of dealing with their lender or loan servicer, during which time they frequently demonstrate confusion about loan terms and appropriate next steps. Experienced counselors plan to allow time for these discussions before launching into budgeting or repayment options. The length of a counseling session varies, but the initial session typically lasts one hour. After the initial session, clients may attend one or more additional sessions. Telephone-based counseling sessions tend to be shorter, and face-to-face sessions tend to run longer [7].

The US Federal government provided $50 million for all types of housing counseling in 2008 through the US Department of Housing and Urban Development's (HUD) housing counseling program. This amount represents an increase of $30 million since 2001 [8]. Approximately 1,800 non-profit agencies receive these funds to support their counseling programs, which served over 1.7 million individuals in 2007. Only 16 percent of these agencies' clients sought default counseling, although the number of foreclosure clients increased by nearly 50 percent from 2006 to 2007 [8].[1] In 2008 and 2009, the US Congress allocated $410 million in additional funds to specifically address foreclosure issues through the National Foreclosure Mitigation Counseling (NFMC) program. This sum represents a significant public investment in default counseling nationally. HUD has proposed that the NFMC program be funded into 2010

[1] http://www.huduser.org/Publications/PDF/hsg_counsel.pdf

and 2011 at elevated levels. Aside from publicly subsidized counseling, lenders, servicers, and mortgage loan investors provide financial support for default counseling and default counseling agencies.[2]

2.3. Rationales for Default Counseling

There are a range of rationales for offering publicly-funded default counseling. A common policy rationale for providing default counseling is that because mortgages are complicated financial contracts, many consumers may struggle to comprehend their rights and obligations. Some consumers, particularly those who lack experience with or knowledge of financial issues, may not know what steps to take when facing mortgage default and may therefore need help before they can move forward. Bucks and Pence [9] show that low-income mortgage borrowers are most likely to underestimate how much the interest rate on their loan could change relative to their actual contract. Minority borrowers are 30 percent less likely to know their interest rate, and low-income borrowers are 28 percent less likely to know their interest rate. Similar effects are documented for less educated borrowers. Low-income consumers with less than a college degree are among the least informed about their mortgage terms. In a study of investment knowledge and hypothetical retirement plan choices, Agnew and Szykman [10] find consumers with lower levels of financial knowledge are less likely to use provided information and more likely to demonstrate signs of information overload. These studies suggest that consumers with lower incomes, with less education, and of minority races may exhibit differential behavior during default and may be less likely to seek out alternatives to foreclosure. To the extent counseling is targeted to these populations, and is then effective in

[2] http://www.hopenow.com/media/press_release

improving decision-making, default counseling may play an important role in providing technical explanations and advice.

A second rationale for default counseling is that consumers in distress may not know what public programs are available to them. The counselor has repeated experiences with clients and familiarity with the array of programs available. The role of information on individuals' take-up of social programs has been examined in a number of contexts [11; 12]. Any program that requires an affirmative opt-in provision will result in the failure of otherwise eligible people to apply. Currently, the primary federal policy tool focused on consumer mortgage default is the Making Home Affordable (MHA) program. This new initiative was launched with $75 Billion allocated to support an estimated nine million loan modifications before the program expires in December 2012. Borrowers must opt-in to the program by completing application forms much like those used in underwriting a new mortgage loan. The lender then rejects or accepts the application based on whether the borrower meets the program guidelines regarding a documented hardship and stable income. The terms of the program subsidize lenders and servicers that reduce monthly payments to 31 percent of the borrowers' verified income during the last five years. Given that loan modifications are negotiated by private lenders with individual borrowers, there could be challenges for historically underserved borrowers, lower-income and minority borrowers in particular, in obtaining loan modifications due to their lack of experience with and knowledge about lending institutions. Furthermore, many borrowers likely received their loans from a third-party mortgage broker and have no direct connection to a lender. This lack of knowledge may result in a failure to apply for the MHA program or an increased likelihood of submitting an incomplete application. Thus, default counseling may help

borrowers overcome information failures and access programs designed to assist individuals with financial problems.

A third rationale for default counseling is to aid people at a time of intense emotional distress. Mortgage borrowers facing financial distress often exhibit anxiety from being unable to pay bills, as well as from the trigger event(s) that caused the disruption in payments (job loss, health emergency, etc.). Such a psychological state creates a tendency to focus on immediate issues and ignore other information. The literature suggests that anxiety leads people to process information less systematically and effectively [13; 14; 15; 16]. Data from mortgage lenders indicate that as many as one-half of borrowers have no contact with their lender by the time of the foreclosure proceeding, despite vigorous outreach efforts by lenders and servicers during the default period [7; 17]. Focus groups of low- and moderate-income borrowers in default in Chicago provide illustrations of this phenomenon [18]. Borrowers described no longer answering telephone calls, avoiding answering the door, and "sticking all my mail (unopened) in the couch." Borrowers described being "paralyzed" and simply "waiting to be kicked out." They either did not notice their lenders' attempts to make contact, or they became so anxious about what might happen that all contact was avoided. If the borrower can connect to a default counselor, the counselor can relay the importance of paying attention to the situation and taking action. Consequently, counseling can help connect borrowers to their lenders and help them begin to implement a strategy for repayment or another alternative, rather than simply waiting for the foreclosure auction.

A final rationale for the provision of default counseling is that the counselor may play an important role as a trusted advisor at a time when the borrower is unsure of who to trust. Particularly in the case of a nonprofit, third-party counseling agency, the consumer may view the

counselor as more objective and trustworthy than a lender or another entity. Borrowers may be more willing to divulge information to a counselor about their economic situations than to a lender. Compared to a lender, counselors may be able to explore more sources of income, as well as a wider range of spending reductions. Therefore, third-party counseling could result in borrowers being able to free up more cash flow for repayment. For borrowers who are unlikely to have the ability to repay the loan, the counselor may provide an unbiased assessment, as well as guidance on trying to sell the home. In interviews, counselors frequently mentioned that an important question in every session is, "Do you really want to keep this house?" As opposed to a lender or real estate professional that may benefit from the borrower's next steps, the counselor could be viewed as an unbiased source of information regarding the decision to repay, sell, foreclose, or seek another alternative.

Despite these potential roles for default counseling, default counseling remains subject to several critiques. A common complaint is that counseling is not offered widely enough and that counselors are of inconsistent quality [19]. Another critique is that counselors generally lack legal expertise and may not recognize when borrowers could or should take legal actions [20]. Counselors may also lack knowledge of the borrowers' local context and may thereby fail to make referrals to other service providers or programs that may be helpful to the borrower. Further critiques suggest that counseling becomes a distraction from more significant policy issues. While counseling may not be harmful, some scholars argue it is more important to focus on stiffer legal protections [21]. Indeed, expectations for default counseling should be tempered. For borrowers with a drastically reduced income or a chronic health problem, especially when combined with a mortgage balance that is much greater than their home's value, counseling will not enable borrowers to overcome their problems without significant subsidy. Clearly,

intervening early may provide more potential options since borrowers are not as far behind and can still take action to prevent further decline. In the end, some borrowers will lose the home to foreclosure regardless of counseling efforts.

2.4. Impacts of Default Counseling on Mortgage Outcomes

Despite the expansion of default counseling, there is little research into the impact of counseling. In the US, there is a general literature on mortgage counseling that dates back to the late 1960s, during which time the Federal Housing Administration mortgage insurance program struggled to manage its troubled Section 235 program [22]. Nevertheless, little attention has been devoted to the post-purchase segment of housing counseling programs until recent years. Cutts and Merrill [23] provide a general overview of how the current incarnation of mortgage default counseling is delivered, especially telephone-based counseling services offered to borrowers who are delinquent on their mortgages. Despite the relative dearth of research on default counseling, several studies have been published in the past few years that examine the impact of default counseling on mortgage outcomes.

Collins [7] analyzes financial counseling for mortgage borrowers in default. The dataset includes a small sample of 299 clients who received face-to-face and/or telephone-based counseling. The author consulted public records to determine foreclosure outcomes six to nine months after counseling. The analysis indicates that each additional hour of counseling reduced the probability of negative foreclosure outcomes by 3.5%. The study also compares the effects of telephone and in-person counseling, finding that in-person sessions generally tended to be longer in duration. Controlling for the additional time involved, neither method proved superior in terms of foreclosure outcomes or client ratings. However, many clients in the study opted for

telephone counseling. The telephone-based approach may be popular in part because of its convenience for dealing with critical issues at almost any time without requiring transportation, and because it provides greater anonymity [8]. Collins [7] notes that the study's follow-up period was short and the model's statistical significance of 0.10 weak, but the results suggest that each additional hour of counseling reduces the probability of foreclosure.

Ding, Quercia, and Ratcliffe [24] evaluate counseling delivered via the telephone for delinquent mortgage borrowers. In this program, default counseling was offered to borrowers directly and in response to late payments, rather than based on clients seeking out a counselor. The study includes lower-income borrowers who were 45-days delinquent on their mortgages. A total of 924 borrowers were offered telephone-based counseling, and 350 borrowers accepted and received at least one counseling session. Using a two-stage selection model to address the problem that more motivated borrowers would also be more likely to accept the offer of counseling, the authors estimate the odds of curing the defaulted loan (i.e. getting caught up on payments) were 50 percent higher for borrowers who accepted and received counseling than for non-counseled borrowers. Note that this study examines the effects of counseling offered proactively and earlier in the default timeline, and finds stronger effects, than those reported in the previous study by Collins [7].

Quercia and Cowan [24] examine the Mortgage Foreclosure Prevention Program (MFPP) in Minneapolis. The MFPP provides case management, post-purchase counseling, and/or assistance loans to its clients. The dataset includes 4,274 households who received intensive services from the program, including financial assistance and counseling services. For each additional hour the program spent on a client’s case, the client’s odds of avoiding foreclosure increased by 10%. A client receiving eight hours of services had more than double the odds of

avoiding foreclosure than clients who received less than one hour of services. This study did not control for clients selecting into services by number of hours, however. In addition, clients received more than counseling services, which may in large part account for the positive findings.

Collins, Herbert, and Lam [25] analyze the offer of telephone counseling by one national lender to delinquent borrowers. The offer of counseling from the non-profit agency had modest positive effects on the number of days borrowers were delinquent on their loans. The authors suggest this finding could be related to an increased use of payment plans as borrowers engaged in a budgeting exercise with a counselor and were then connected to their lender. Other outcomes, including loan cures and borrower-lender contact rates, were not impacted by the counseling offer, at least during the relatively short 15-month period analyzed.

Orton's [26] qualitative research in the UK provides insights from the first stages of a longitudinal study. The author conducted in-depth interviews with 59 people who received face-to-face or telephone counseling from one of six nonprofit providers. Interviewees were near unanimous in being positive about their counseling experiences. Interviewees identified three key themes as particularly important: having someone to talk to, obtaining information and options, and being better able to deal with lenders. This study highlights the fact that having a debt problem is a highly distressing and isolating experience for the borrower. Having someone to talk to who listened and was understanding, non-judgemental, and sympathetic was seen by interviewees as positive in itself. This led to reassurance, with clients immediately benefiting from the knowledge that there was an organization available that could help them. In some cases, clients had reached an impasse in negotiations with lenders and needed the counselor's

help. Clients reported increased confidence, based on practical elements such as being given examples of letters to use, or being better informed about the alternatives available.

Mayer, Tatian, Tempkin, and Calhoun [27] analyze the federally funded NFMC program. They find the program somewhat reduces the likelihood that counseled homeowners end up in foreclosure compared to a non-random control group. More than one-third of NFMC clients entered counseling already in foreclosure (22 percent), or entered foreclosure soon after starting counseling (11 percent). The authors estimate that counseled homeowners were 1.6 times more likely to cure a foreclosure or avoid losing their home if still in foreclosure than a non-counseled pool of borrowers. The authors also find counseled clients who received a loan modification had lower mortgage payments than a comparison group of borrowers with loan modifications. The finding that borrowers facing foreclosure are 60% more likely to keep their homes if they receive counseling is consistent with the results of the earlier study by Ding et al. [24].

While the literature on default counseling is still emerging, these studies generally suggest that default counseling has positive effects. The counseling interventions appear to be stronger when offered early in the default process, when offered for a longer period of time, and when offered in combination with other services and programs.

3. Data

3.1. NHS Chicago

One leading provider of default counseling is Neighborhood Housing Services (NHS) of Chicago, Inc. This agency has provided housing counseling for over two decades and has been a leader in default counseling and mortgage foreclosure mitigation since 2003. In early 2008, NHS received funding from the MacArthur Foundation to undertake a concerted effort to promote

mortgage counseling services to at-risk mortgage holders in the Chicago metropolitan area. Their efforts included numerous mailings on foreclosure prevention and mortgage counseling, as well as advertisements in local newspapers, on local radio stations, and on television stations. NHS maintained detailed records of their outreach and promotional activities in an administrative dataset that was provided for this study. With support from the MacArthur Foundation, NHS purchased mailing lists totaling 52,000 homeowners in areas of Chicago targeted for residents with adjustable rate mortgages and high interest rate mortgages (defined as an 8% APR and higher). From January 2008 through March 2009, NHS mailed letters, newsletters, postcards, and flyers to homeowners. In addition to the mailings, NHS hired a telemarketing company to call over 2,000 homeowners who had a landline. In neighborhoods where NHS had an established office, staff provided community outreach, events, and workshops with other local organizations to promote awareness of NHS default counseling services. Figure 1 demonstrates the strength of the relationship between the outreach and marketing efforts undertaken by NHS and the intake of new clients for counseling. In general, an increase in mail outreach is followed a month later by a significant uptake in new clients, while radio, television, and newspaper marketing efforts result in an increase in new clients more quickly. Figure 2 shows the rate of loans in the CTS receiving a permanent loan modification, with the rate of loan modifications in targeted neighborhoods growing at faster rate in the period after the marketing effort.

In order to examine the effect of counseling provision on mortgage outcomes, the NHS data on their outreach efforts are supplemented by data on subprime home mortgages that are administered by Wells Fargo Bank, N.A. Corporate Trust Services (CTS). CTS is a service of Wells Fargo Bank, N.A. that provides information on a variety of investment vehicles administered by the bank. The CTS data cover nearly six million securitized mortgages for

which Wells Fargo serves as the trustee. Information on the loans is released via monthly remittance reports that are then uploaded onto the CTS website (ctslink.com) by loan servicers. Each monthly loan record includes the loan number, the loan servicer, a current FICO credit score, loan-to-value ratio at origination, the last 12 month's delinquency history, the property's zip code, the type of loan, the original and current balance of the loan, information on whether or not the loan has undergone a modification, and many other variables. Data for January 2007 through September 2009 (33 months) for the Chicago metropolitan statistical area (MSA) were downloaded and used in this analysis. The CTS data are combined with the NHS administrative data for Chicago area zip codes that were targeted by NHS. The data include 361 zip codes, 10 of which are the focus of the NHS outreach and marketing efforts.

Table 1 column (1) presents summary statistics for the CTS data drawn from the Chicago MSA. Over the January 2007 through September 2009 time period examined, 1.7 percent of loans received a loan modification, while 7.3 percent of homes were lost to a REO. The average borrower had a FICO score of 658. Sixty-four percent of mortgages were ARMs, with an average loan to value ratio of 77.6 percent.

3.2. National CTS Data

In order to extend our analysis of the effect of mortgage default counseling on mortgage outcomes beyond the Chicago MSA, we take advantage of the national coverage provided by the CTS data. The CTS data described above provide a rich panel of information on mortgages and mortgage holders; however, they do not provide any information on the receipt of mortgage default counseling. To identify mortgages in the CTS data whose mortgage holders underwent

mortgage default counseling, we obtained data on counseling clients served by a large non-profit organization that offers mortgage default counseling throughout the nation.

We obtained data from a homeowner counseling hotline for the period January 2008 through October 2009. The data for this time period contain information on just over 550,000 distinct homeowners who contacted their hotline seeking mortgage counseling. These data contain the date borrowers received counseling, as well as a loan identification number and the name of the current mortgage servicer. Since loan numbers are generally unique within mortgage servicers these two pieces of information, present in both data sets, can be used to uniquely identify loans. Loan counselors have an incentive to accurately record loan numbers and servicer names since they receive payment for their counseling services based on this information. As a further check to ensure accurate matches between the CTS data and counseling data we also match the zip code where the property is located. Using the information on loan number, servicer, and zip code we are able to match 17,680 mortgage records from the counseling data to the CTS data; however, after eliminating observations with missing values for key variables we are left with 13,515 matched records. These data are supplemented with 50,284 non-counseled borrowers randomly selected from the CTS data. Using the CTS data, we add additional months both before and after the period for which we have counseling hotline data, in order to follow mortgages prior to any counseling occurring and then track mortgage outcomes for as long as possible after counseling has occurred. Our final sample period runs from June 2007 to December 2009. After dropping observations with missing values we are left with an unbalanced panel containing 1,195,231 borrower-month observations.

There are a variety of reasons why the overall match rate between the counseling data and CTS data is not higher than 17,680 observations. First, the CTS data generally contain less

than 3 million unique mortgages in any given month. Moreover, the CTS data occasionally contain errors or missing values for the servicer, loan number, or zip code. Similarly, while the counseling agency takes pains to obtain accurate loan numbers, servicers, and zip codes, this information is obtained over the phone from the client, and thus may again contain errors. However, provided that these errors in values for the servicer, loan number, or zip code in both data sets are random (and we have no reason to suspect otherwise) our sample would be unbiased.

Table 1 column (2) presents summary statistics for the national CTS sample for the entire sample period of June 2007 through December 2009. Over that time period 5 percent of mortgages received modifications and 2.6 percent of homes were lost to REOs. The average borrower had a FICO score of 660 and was 0.61 months delinquent. Sixty-five percent of all mortgages were ARMs, with a loan-to-value (LTV) ratio of 84 percent.

Table 2 then presents summary statistics for the national CTS sample by ever receiving counseling only for the observations present in both the first and last months of our analysis sample—June 2007 and December 2009—with no missing values on key variables, in order to facilitate consistent comparisons between counseled and uncounseled borrowers in both time periods. In June of 2007 none of our sample had yet received counseling. Of those counseled by December 2009, 46.1 percent were counseled when their loan was current, 13.2 percent were counseled when 30 days delinquent, 9.4 percent were counseled when 60 days delinquent, and 32.7 percent were counseled at 90+ days delinquent. In December of 2009, 3.5 percent of uncounseled borrowers had lost their home to a REO, while 4.3 percent of counseled borrowers had lost their home to REO. Few homeowners had received a loan modification in June 2007, but by September 2009 5 percent of uncounseled borrowers and 39.5 percent of counseled

borrowers had received a modification. ARMs were prevalent among both our uncounseled and counseled sample, although significantly more so amongst counseled borrowers, with 67.7 percent of loans to counseled borrowers being ARMs in June 2007 versus 54.5 percent of uncounseled borrowers' loans. Average Annual Percentage Rates (APR) for the mortgages were approximately equal across groups in June 2008, with an APR of 7.8 percentage points for uncounseled borrowers and 7.7 percentage points for counseled borrowers. However, while average APR fell for both groups by December of 2009, the APR fell significantly more for counseled borrowers than uncounseled borrowers, to 6.4 percentage points and 7.4 percentage points respectively. This likely reflects the much higher rate of loan modifications among the counseled borrowers. Counseled borrowers consistently display lower average FICO scores and slightly higher LTV ratios than uncounseled borrowers. Uncounseled borrowers had FICO scores on average 15 points higher than counseled borrowers in June 2007, and 30 points higher by December 2009. Uncounseled borrowers had LTV ratios of 83.6 percent in June 2007 versus 86 percent for counseled borrowers. Counseled borrowers also had somewhat higher payment and interest (P&I) amounts and loan balances. Counseled borrowers had average P&I of $1,510.68 in June 2007 versus $1,457.42 for uncounseled borrowers, and average original loan balances of $275,000 versus $249,000 for uncounseled borrowers. On average, both counseled and uncounseled borrowers appear to have fallen behind on their mortgage payments over the sample period, with the balance increasing from $275,000 at origination to $276,000 in June 2009 for counseled borrowers, while for uncounseled borrowers the average balance increased from $249,000 to $253,000. Overall, the summary statistics suggest that those who received counseling were at greater risk of default than those who did not given their lower FICO scores,

higher LTV ratios, higher P&I amounts, and higher loan balances. This suggests caution regarding the potential for negative selection into counseling by the riskiest borrowers.

Table 3 presents the transitions of all mortgages observed in both June 2007 and December 2009 for counseled and uncounseled borrowers separately. Counseled borrowers who were current in June 2007 were half as likely to be current as uncounseled borrowers by December 2009, almost three times more likely to be in default, and almost two times more likely to have lost their home to a REO. Of those borrowers delinquent in June 2007, counseled borrowers were less likely to have become current by December 2009 and were more likely to still be in default. However, counseled borrowers were slightly less likely to have lost their homes to REO than uncounseled borrowers. Again, the unconditionally poorer outcomes of the counseled borrowers suggest that there is negative selection into counseling.

4. Empirical Methods

4.1. Difference-in-Difference Model for the Chicago MSA

In order to estimate the effect of counseling on borrower outcomes we first use the CTS data for the Chicago MSA. As the CTS data are a panel covering before and after the implementation of NHS's outreach and targeting efforts, a simple difference-in-difference estimation strategy is used to compare borrowers in zip codes targeted for default prevention counseling and services to borrowers in other Chicago zip codes before and after the implementation of the outreach and intervention program in July of 2008. Both the probability of receiving a loan modification or losing a home to REO are modeled. Provided that the NHS outreach and targeting efforts were the only difference between NHS zip codes and other Chicago zip codes that affected the probability of receiving a loan modification in the post-

period, these results should represent unbiased estimates of the effect of offering counseling services in a given area on average borrower outcomes. The specific purpose of these models is to test the hypothesis that borrowers with loans located in targeted areas are more likely to receive a loan modification in the post-outreach period. As we cannot identify specific borrowers in the CTS data who received counseling through NHS in the Chicago MSA, these estimates represent average treatment effects, and are biased downward by the (strong) possibility that borrowers outside of the NHS targeted zip codes also received counseling.

The difference-in-difference model estimating the impact of outreach on loan performance takes the following form:

$$Y_{izt} = \alpha + + \gamma NHS_z + \delta Post_t + \theta NHS_z * Post_t + \varepsilon_{izt} \quad , \qquad (1)$$

where Y alternately indicates whether the loan i was modified or went to REO and NHS is an indicator that takes a value of one if the zip code of the mortgaged property is one of the ten NHS targeted zip codes, and a value of zero otherwise. Post is an indicator for the 21-month period from January 2008, when NHS began the targeted outreach, to September 2009 when our Chicago sample ends. The coefficient, θ, on the interaction of NHS and Post is of primary interest, as it represents the differential effect on modification or REO of being in an NHS-targeted zip code after the intervention is underway.

4.2. Individual Fixed-Effects and Instrumental Variables Models Using National Data

We next take advantage of the national coverage provided by the CTS data and the national homeowner counseling hotline, as well as the panel structure of both datasets, to examine the effect of counseling on those who actually receive counseling. As discussed above, there is significant negative selection by borrowers into counseling that previous research

examining the effect of counseling on mortgage outcomes has failed to address. We implement two strategies to address any potential selection bias. First, we employ an individual fixed-effects estimation strategy that eliminates any time-invariant unobserved heterogeneity at the individual level that may affect both mortgage outcomes and the likelihood of seeking counseling, such as borrower financial knowledge, motivation to address financial problems, or ability to manage crises by tapping social or family networks. This strategy also controls for any time-invariant individual demographics, such as education and race, which have been omitted in many previous studies.

While individual fixed-effects address any time-invariant heterogeneity that may bias the relationship between counseling and mortgage outcomes, it fails to address the greater concern of the decision to seek counseling being related to time-varying shocks that also affect mortgage outcomes, such as the loss of a job. We therefore implement an instrumental variables (IV) estimation strategy that exploits exogenous variation in receipt of counseling generated by variation in the timing and location of targeted outreach events put on by the non-profit counseling agency across the country throughout 2008 and 2009 that highlight their services to homeowners in distress. These events resulted in publicity for the agency's counseling hotline in the targeted metropolitan area that significantly increased calls to the agency's hotline from that city.

The panel nature of these data also allows us to differentiate the effect of counseling by when a borrower seeks counseling. Borrowers who seek counseling before they are even delinquent on their mortgage, or shortly after becoming delinquent, are likely different from borrowers who seek counseling later into delinquency in ways that may affect their mortgage outcome (i.e. more financially savvy and more motivated). Moreover, the options available to the

homeowner and counselor to resolve the delinquency vary depending on what stage in the default process the borrower is at.

The model to estimate the effect of mortgage default counseling receipt on mortgage outcomes takes the form:

$$Y_{ist} = \alpha + \beta X_{ist} + \delta C_{ist} + \sigma State_{st} + \tau T_t + \varepsilon_{ist}, \quad (2)$$

where Y is alternately an indicator for receipt of a loan modification or the loss of the home to a REO by borrower i in state s in month t; X is a vector of time-varying loan and borrower characteristics, including an indicator for the loan having an adjustable rate, the log of the current loan balance, the borrower's current FICO score and its square, and the current, 3-month and 6-month lag of the number of months the borrower is delinquent; C is a vector of counseling variables, including an indicator equal to one if a borrower has received counseling, and zero if they have not received counseling, as well as a set of interactions between the indicator for receipt of counseling, or, alternately, indicators for a borrower's delinquency status at the time they initiated counseling (current, 30 days delinquent, 60 days delinquent, 90 days delinquent); T is a vector including a linear and quadratic monthly time trend; and ε is an error term. The above equation is estimated using a linear probability model (LPM) with individual fixed-effects for ease of interpretation. With the inclusion of individual fixed-effects, all time invariant borrower and loan characteristics, such as race, education, borrower financial sophistication, etc., which are generally unobserved in mortgage default counseling datasets, are controlled for by the model.

To implement the IV strategy, we construct an indicator that is equal to one in the month before, during and after the date of the counseling outreach event for homeowners in the CBSA (core based statistical area) in which the event occurred, and zero otherwise. The month before

and after the event are included so as to capture the publicity of the hotline leading up to the event, and any residual publicity for the hotline following the event. We also include the number of loan servicers participating in the event as a further measure of the level of publicity the event received. These two variables are then used as our sources of exogenous variation in the first stage. We then estimate a second stage identical to Model (2), with the addition of a variable that equals one if the home is located in an MSA that was targeted by an outreach event, and zero otherwise. This controls for any potential differences between cities that were targeted by the outreach events and those that were not targeted. Unfortunately, we have insufficient exclusion restrictions to estimate each of the four interactions of receipt of counseling and a borrower's delinquency status at the time they initiated counseling. Instead, we simply estimate the average effect of counseling on homeowner outcomes, and compare the IV results to the OLS results.

4.3. Cox Proportional Hazard Models of Mortgage Outcomes

Among those who have received loan modification, we are interested in analyzing whether receipt of counseling prior to obtaining the modification has an effect on whether the mortgage subsequently ends in a REO. It is possible that counselors are better able to assess a homeowner's finances and obtain modifications that result in terms and payments the homeowner is able to meet. We therefore employ a standard Cox hazard model for the risk of a borrower losing their home to REO conditional on receipt of a loan prior modification. The model for the hazard function is:

$$h(t,x,\beta) = h_0(t)r(x,\beta) \quad (3)$$

where h_0 characterizes the hazard function as a function of survival time t, while $r(x,\beta)$ characterizes the hazard function of the covariates. The hazard ratio depends only on the function $r(x,\beta)$ and not on h_0.

5. Results

Table 4 shows the results from the difference-in-difference model for the outcomes receipt of a loan modification and loss of home to REO estimated using the CTS dataset drawn from the Chicago MSA. These data cover nearly 68,000 loans in 361 zip codes, 10 of which were the focus of NHS marketing efforts. In the first column, which presents the results for modifications, the coefficient on the targeted area/post-NHS outreach period interaction suggests that counseling had a weakly significant effect on the rate of loan modifications. In the second column, the coefficient on the targeted area/post-NHS outreach period interaction suggests that homeowners in targeted zip codes were significantly more likely to lose their homes to a REO in the post period relative to non-targeted neighborhoods compared to the pre-outreach period. Relative to other Chicago area zip codes, the NHS targeted zip codes showed a 4.5 percentage point higher rate of REOs in the post-outreach period.

Table 5 presents estimates of the effect of counseling on receipt of loan modification and loss of home to a REO for the national sample using the CTS data matched to callers to a foreclosure counseling hotline. These estimates exploit the panel nature of the data with the inclusion of individual fixed-effects, and control for borrowers' mortgage status prior to the time of counseling initiation. As shown in column (1), the receipt of counseling significantly increases the probability of a borrower receiving a mortgage modification. On average, a borrower

receiving counseling was about 11 percentage points more likely to receive a modification than a borrower who did not receive counseling.

Given that the effectiveness of counseling may depend on the point in the default process at which a homeowner begins receiving counseling, column (2) then disaggregates the effect of counseling by number of months a borrower is delinquent at the time they first contact the counseling agency. The results do in fact demonstrate that when a borrower receives counseling affects their probability of receiving a modification. A borrower who receives counseling when their mortgage is current has a 10.1 percentage point higher probability of receiving a modification than an uncounseled borrower, while borrowers who receive counseling at 30 days and 60 days delinquent receive somewhat higher benefits from counseling with 14.9 and 14.2 percentage point increases in the probability of receiving a modification, respectively. This finding is consistent with borrowers needing to be several months delinquent before a borrower qualifies for a loan modification. In contrast, counseling is considerably less effective for borrowers who receive it at 90+ days delinquent, as they are only 6.9 percentage points more likely to receive a modification than uncounseled borrowers. All coefficient estimates are significant at the 0.1 percent level or less.

Columns (3) and (4) of Table 5 then examine the effect of counseling on the loss of a borrower's home to a REO. As shown in column (3), on average counseled borrowers were two percentage points less likely to lose their homes to a REO than uncounseled borrowers. Again, the timing of the receipt of counseling appears to significantly alter the probability of a REO. Borrowers who receive counseling when current are 2.5 percentage points less likely to lose their homes to REO. Counseling is more beneficial to borrowers who receive counseling when 30 days and 60 days delinquent, as it reduces their probability of a REO by 7.1 and 7.8 percentage

points respectively. However, as with modifications, those who receive counseling at 90+ days delinquent benefited less from the counseling, as they were only 3.5 percentage points less likely than uncounseled borrowers to lose their homes to a REO. Again, in all cases the estimates are significant at the 0.1 percent level or less.

Table 6 presents results comparing the overall effect of counseling on receipt of a loan modification and REO using a LPM and then the IV model. Columns (1) and (3) present LPM results, while columns (2) and (4) present the IV results. The LPM estimates in Table 6 differ slightly from those presented in Table 5, as the model now includes a control for cities that had a counseling outreach event. With the added control, the effect of counseling on the probability of modifications increases slightly to 12.8 percentage points from the 11.2 percentage point increase in probability of modification found in Table 5. This increase is likely the result of the targeted cities being among the hardest hit by the housing crisis. Column (2) then presents the IV estimates for the effect of counseling on modifications, where receipt of counseling is instrumented for using the location and timing of outreach events, as well as the number of participating mortgage servicers. The event IVs are quite powerful, yielding a first-stage F-statistic of 114. With the use of IVs in column 2 the effect of counseling increases to a 45.4 percentage point higher probability of receiving a loan modification than an uncounseled borrower, significant at the 1 percent level. The substantial increase in the effect of counseling on modification probability with the use of the IV is consistent with negative selection into counseling biasing the OLS estimate downward.

As for modifications, relative to the LPM estimates from Table 5, the coefficient estimate for counseling's effect on REOs in column (3) of Table 6 is now slightly larger, indicating that counseled borrowers are 2.2 percentage points less likely to lose their home to a REO than

uncounseled borrowers, compared to the previous estimate of 2 percentage points. However, with the use of the IVs in column (4), counseled borrowers are estimated to be no less likely than uncounseled borrowers to lose their home to a REO, as the coefficient becomes smaller in absolute terms and is no longer significant. Therefore, while the results of the IV analysis strongly support the finding presented in Table 5 that counseling has a positive effect on receipt of a loan modification, they suggest that the reduction in REO for counseled borrowers implied in Table 5 may be overstated or nonexistent.

Lastly, Table 7 presents results from the Cox model. Here, the outcome examined is loss of one's home to REO conditional on receipt of a previous loan modification. The Cox model estimates largely mirror the estimates from the LPM with individual fixed-effects. Column (1) shows the results for the average effect of counseling on subsequent REO. Counseled borrows are estimated to have a hazard ratio of 0.61 relative to uncounseled borrowers, significant at the 1 percent level, suggesting a lower likelihood of counseled borrowers with a modification losing the home. Column (2) then disaggregates the effect by mortgage status at time of counseling. Yet again, the timing of counseling matters. Borrowers 30 days delinquent have the lowest ratio at only 0.20. This is followed by both current and 60 day delinquent borrowers at a ratio of 0.49. In turn, borrowers who received counseling at 90+ days delinquent had a ratio of 0.52. In all cases the estimates are significant at the 0.1 percent level or less. The hazard ratios for borrowers counseled when current, 30, 60 and 90 days delinquent all suggest significantly lower likelihoods of losing their homes to REO than uncounseled borrowers.

6. Conclusions

Although default counseling has existed since the 1960s, this field has grown and changed rapidly in just the last three years. An influx of federal subsidies to address a boom in foreclosure filings has stimulated the supply of counseling at a time when a growing group of consumers may benefit from counseling. There are several compelling rationales for the provision of counseling to overcome information barriers, as well as the public subsidy of counseling to address market failures in the form of negative externalities of foreclosure. Despite the robust increases in funding for counseling, the research on the impact of default counseling is, however, relatively scant.

This study attempts to examine the effects of counseling in the current economic context. First we examine the data provided by one leading counseling provider in Chicago. We exploit marketing efforts by this agency to examine the effects of the offer of counseling on targeted zip codes compared to non-targeted zip codes in the Chicago MSA before and after the marketing effort. Here, we find weak evidence of increased rates of modifications for homeowners in targeted zip codes, and actually find an increase in homes lost to REO. These findings suggest both the potential of negative selection into counseling by borrowers and the focus of counseling efforts on riskier areas.

Next, we match data from securitized mortgages to borrowers calling a national counseling hotline. Using borrower fixed-effects for counseled and uncounseled loans we find the rate of modifications among counseled borrowers to be higher and the rate of homes lost to foreclosure to be lower relative to uncounseled borrowers. With the implementation of an IV model for receipt of counseling we find further evidence that counseling strongly increases the rate of loan modification for borrowers; however, we find that counseling may have little to no effect on the probability of REO. Finally, using a Cox proportional hazards model, we find that,

conditional on receiving a loan modification, counseled borrowers are significantly less likely to subsequently lose their home to REO. Throughout our analysis we find strong evidence that a borrower's level of delinquency at the time they seek counseling significantly affects the counseling agency's ability to help them. In general, borrowers who are current, 30 days, or 60 days delinquent at the time of counseling had the best outcomes, while borrowers who waited until they were 90+ days delinquent benefited less from the counseling.

Given weak labor and housing markets, counseling's ability to reverse foreclosures may not be as robust as in the period studied. Counseling, if offered early in the default process, shows evidence in these data of helping borrowers improve their mortgage status and retain their homes. One likely mechanism through which this effect operates is prioritizing payments if there is a regular income source available for servicing mortgage debt. As mortgage defaults shift from high interest rate loans held by employed borrowers with payment problems to prime rate loans held by borrowers with no income, the role of counseling may be diminished.

These results also suggest there may be positive impacts of the offer of counseling on the incidence of loan modifications. Given the focus on loan-by-loan modifications, counseling may become more of a mechanism for borrowers to understand and accurately complete documents for lenders in order to seek and maintain a formal mortgage modification. This might necessitate greater outreach efforts to seek borrowers not in contact with lenders or counselors, as well as forms of face-to-face services that include less intensive education and advising and more intensive document review and preparation.

It should be noted these results differ in structure from the NFMC study by Mayer et al. [27], in terms of the comparison group and the identification strategy. The level of negative selection observed in the matched CTS data is not evident in their data. The study by Ding et al.

[24] that uses data on proactive default counseling is a different form of intervention, although the authors do model for negative selection. In the absence of randomized assignment to default counseling, variations in modeling will be crucial to examine the effectiveness of counseling. Given the scale of mortgage default and public subsidies for counseling, this topic is worthy of continued study. Meanwhile, the impact of counseling must be kept in perspective; no amount of advice can overcome an inability to earn enough income to repay a loan.

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TABLE 1:
CTS Data Summary Statistics for Chicago MSA Panel and National Panel

Variable	(1) Chicago	(2) National
Modification indicator	0.0166	0.0504
	(0.1278)	(0.2188)
REO indicator	0.0727	0.0263
	(0.2597)	(0.1601)
Log of current loan balance	12.1767	12.1427
	(0.6484)	(0.8536)
Current FICO score	658.1884	660.3371
	(77.6325)	(76.1974)
Current number of months delinquent	0.4461	0.6066
	(1.0281)	(1.1423)
Adjustable rate mortgage (ARM) indicator	0.6426	0.6473
	(0.4792)	(0.4778)
Loan-to-value (LTV) ratio	77.3707	83.9713
	(13.7977)	(15.0243)
Target zip code	0.0781	
	(0.2683)	
Post-January 2008	0.7918	
	(0.4060)	
Target*post interaction	0.0621	
	(0.2413)	
Homeowner has received counseling		0.0955
		(0.2939)
Counseled when current		0.0610
		(0.2392)
Counseled at 30 days delinquent		0.0158
		(0.1247)
Counseled at 60 days delinquent		0.0117
		(0.1075)
Counseled at 90 days delinquent		0.0369
		(0.1886)
City where outreach event held		0.5593
		(0.4965)
Indicator for months of event exposure		0.0296
		(0.1694)
Number of servicers at event		0.4815
		(2.8248)
Observations	1,783,808	1,195,231

Source: CTS data for Chicago in column (1) and nationally in column (2). Standard deviations in parentheses.

TABLE 2:
Summary Statistics for CTS National Sample

Variable	(1) June 2007 Uncounselled	(2) June 2007 Counselled	(3) December 2009 Uncounselled	(4) December 2009 Counselled
Homeowner has received counselling	0	0	0	1
Counseled when current				0.4606
				(0.4985)
Counseled at 30 days delinquent				0.1317
				(0.3382)
Counseled at 60 days delinquent				0.0939
				(0.2918)
Counseled at 90 days delinquent				0.3270
				(0.4692)
REO (lost home to foreclosure)			0.0351	0.0428
			(0.1839)	(0.2023)
Received a modification	0.0006	0.0026	0.0500	0.3949
	(0.0239)	(0.0511)	(0.2179)	(0.4889)
Adjustable rate mortgage (ARM)	0.1899	0.2491	0.6895	1.8058
	(0.6715)	(0.7197)	(1.2142)	(1.3887)
Number of months delinquent	0.6457	0.7048	0.6264	0.5597
	(0.4783)	(0.4562)	(0.4838)	(0.4965)
Current loan APR	7.8448	7.7269	7.4159	6.4141
	(1.8243)	(1.5198)	(2.0809)	(1.7913)
Current FICO score	669.4643	655.2986	663.1251	633.1596
	(68.1726)	(71.6410)	(75.5355)	(85.9529)
Loan-to-value (LTV) ratio	83.6176	85.9906	83.6343	85.9283
	(15.4898)	(12.4650)	(15.4020)	(12.6643)
Current payment & interest	$1,457.42	$1,510.68	$1,511.67	$1,510.30
	(1,030.78)	(896.25)	(1,069.01)	(903.55)
Original balance	$248,523.20	$274,797.20	$254,103.90	$276,127.10
	(185,733.30)	(175,368.40)	(188,119.40)	(172,272.80)
Current loan balance	$247,740.20	$275,556.50	$252,732.40	$281,880.30
	(188,120.00)	(178,332.10)	(191,444.30)	(178,930.90)
Observations	35025	7250	35025	7250

Source: CTS national data. Standard deviations in parentheses. Summary statistics only presented for loans available in both June 2007 and December 2009 with no missing values on key variables.

TABLE 3:
Status Transitions (Roll Rates) for CTS National Mortgage Sample 2007-2009

Counseled Borrowers (June 2007 - December 2009)

2007	2009 Status									
Status	Current	%	Default	%	REO	%	Payoff	%	All	%
Current	3140	38.86	4612	57.08	328	4.06	0	0	8080	100
Default	468	21.32	1536	69.98	138	6.29	53	2.41	2195	100
Total	3608	35.11	6148	59.83	466	4.54	53	0.52	10275	100

Control Borrowers (June 2007 - December 2009)

2007	2009 Status									
Status	Current	%	Default	%	REO	%	Payoff	%	All	%
Current	32360	77.81	8292	19.94	939	2.26	0	0	41591	100
Default	1862	26.62	2541	36.33	486	6.95	2106	30.11	6995	100
Total	34222	67.2	10833	21.27	2056	4.04	3811	7.48	48586	100

TABLE 4:
Difference-In-Difference Estimates of the Probability of a Loan Modification and REO for Chicago MSA

Variable	(1) Modification	(2) REO (Lost Home)
Target zip code	-0.001	0.031
	(0.001)	(0.003)
Post-July 2008	0.0229***	0.053***
	(0.001)	(0.001)
Target*Post interaction	0.003	0.045***
	(0.002)+	(0.003)
Constant	0.003***	0.031***
	(0.001)	(0.001)
Observations	1,783,808	1,783,808

Note: Authors' calculations using Jan 2007-Sep 2009 CTS data for Chicago
Random effects GLS with robust standard errors

MSA linked to NHS target zip code data. + p<.1 * p<0.05; ** p<0.01; *** p<0.001

TABLE 5:
LPM Estimates of the Effect of Counseling on Receipt of a Loan Modification and Loss of Home to a REO Nationally, by Status at Delinquency Status at Counseling

	(1) Received Loan Modification	(2) Received Loan Modification	(3) REO (Lost Home)	(4) REO (Lost Home)
Homeowner has received counseling	0.112***		-0.020***	
	(0.001)		(0.001)	
Counseled when current		0.100***		-0.025***
		(0.001)		(0.001)
Counseled at 30 days delinquent		0.150***		-0.071***
		(0.002)		(0.001)
Counseled at 60 days delinquent		0.138***		-0.078***
		(0.002)		(0.002)
Counseled at 90 days delinquent		0.068***		-0.035***
		(0.001)		(0.001)
Log current loan balance $000	0.522***	0.514***	-0.010**	0.001
	(0.004)	(0.004)	(0.003)	(0.003)
Current FICO score	-0.005***	-0.005***	0.002***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)
FICO score squared	0.000***	0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Payment status t	-0.031***	-0.032***	0.030***	0.032***
	(0.000)	(0.000)	(0.000)	(0.000)
Payment status t-3	0.005***	0.005***	0.012***	0.013***
	(0.000)	(0.000)	(0.000)	(0.000)
Payment status t-6	0.011***	0.010***	0.031***	0.032***
	(0.000)	(0.000)	(0.000)	(0.000)
Adjustable rate mortgage	-0.534***	-0.543***	-0.008***	-0.011***
	(0.002)	(0.002)	(0.002)	(0.002)
Combined LTV ratio	0.000	0.000	0.000	0.000
	(0.003)	(0.003)	(0.003)	(0.003)
LTV ratio squared	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Time	-0.006***	-0.005***	0.002***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Time squared	0.000***	0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Num. obs	1195231	1195231	1195231	1195231

Note: Authors' calculations using June 2007-Dec 2009 CTS national data linked to national counseling hotline data. Estimated using a linear probability model with individual fixed-effects. Robust standard errors in parentheses.
* p<0.05; ** p<0.01; *** p<0.001

TABLE 6:
LPM Versus IV Estimates of the Effect of Counseling on Receipt of a Loan Modification and Loss of Home to a REO Nationally

	(1) Received Loan Modification	(2) Received Loan Modification (IV)	(3) REO	(4) REO (IV)
Counseled	0.128***	0.454***	-0.022***	-0.004
	(0.001)	(0.048)	(0.001)	(0.038)
Log current loan balance $000	0.101***	0.406***	-0.001	-0.016
	(0.001)	(0.017)	(0.001)	(0.013)
Current FICO score	-0.003***	-0.003***	0.000***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)
FICO score squared	0.000***	0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Payment status t	-0.033***	-0.050***	0.029***	0.029***
	(0.000)	(0.003)	(0.000)	(0.002)
Payment status t-3	0.006***	0.002***	0.012***	0.012***
	(0.000)	(0.001)	(0.000)	(0.000)
Payment status t-6	0.013***	0.010***	0.031***	0.031***
	(0.000)	(0.000)	(0.000)	(0.000)
Adjustable rate mortgage	-0.283***	-0.455***	0.004***	-0.004
	(0.001)	(0.011)	(0.001)	(0.009)
Combined LTV ratio	0.000	-0.001	-0.000	0.000
	(0.000)	(0.003)	(0.000)	(0.003)
LTV ratio squared	0.000***	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Time	-0.007***	-0.004***	0.002***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)
Time squared	0.000***	0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Event city	0.012***	0.033**	0.004***	0.004
	(0.002)	(0.010)	(0.001)	(0.008)
First-stage F-statistic		114.77		114.77
Num. obs	1195231	1195231	1195231	1195231

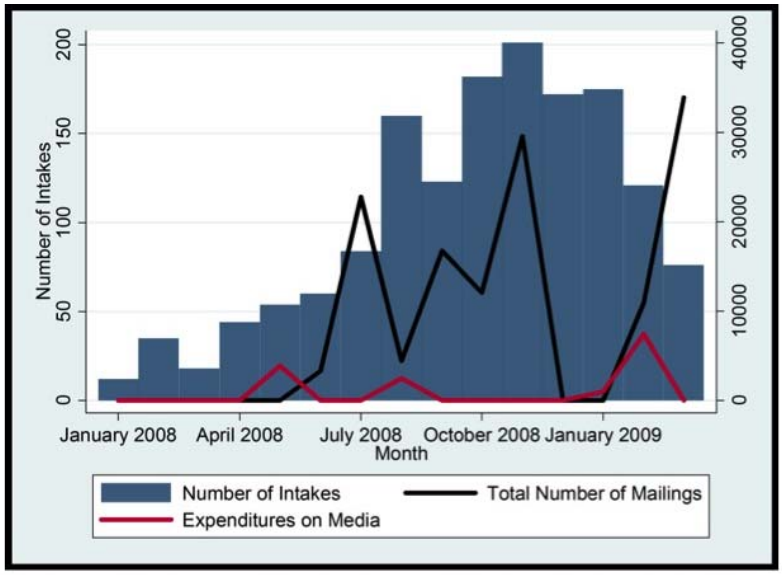
Note: Authors' calculations using June 2007-Dec 2009 CTS national data linked to national counseling hotline data. Estimated using a linear probability model with individual fixed-effects and a two-stage least squares model with individual fixed-effects where receipt of counseling is instrumented by date of outreach event and number of servicers participating in event. First-stage F-statistics exceed Stock and Yogo (2005) 10 percent critical value of 19.93. Robust standard errors in parentheses. * p<0.05; ** p<0.01; *** p<0.001

TABLE 7:
Cox Model Estimates of the Effect of Counseling on Homeownership Ending in a REO for Loans Previously Receiving a Modification

	(1) REO	(2) REO
Homeowner has received counseling	0.610***	
	(0.049)	
Counseled when current		0.492***
		(0.063)
Counseled at 30 days delinquent		0.198***
		(0.048)
Counseled at 60 days delinquent		0.491***
		(0.078)
Counseled at 90 days delinquent		0.523***
		(0.049)
Log current loan balance $000	0.833**	0.864*
	(0.054)	(0.056)
Current FICO score	0.981***	0.982***
	(0.005)	(0.005)
FICO score squared	1.000***	1.000***
	(0.000)	(0.000)
Payment status t	30.020***	29.900***
	(28.378)	(28.228)
Payment status t-3	2.735***	2.678***
	(0.363)	(0.353)
Payment status t-6	1.393***	1.390***
	(0.061)	(0.062)
Adjustable rate mortgage	1.500***	1.471***
	(0.129)	(0.127)
Combined LTV ratio	0.940***	0.944***
	(0.009)	(0.009)
LTV squared	1.000***	1.000***
	(0.000)	(0.000)
Num obs.	60755	60755

Note: Authors' calculations using June 2007-Dec 2009 CTS national data linked to national counseling hotline data. All models provide Cox hazard ratios. Standard errors in parentheses. * p<0.05; ** p<0.01; *** p<0.001

Figure 1:
NHS Chicago Client Intakes by Marketing Activity



Source: NHS of Chicago Inc, Mailing List & Intake Database, Jan 2008-Mar 2009, n=52,387

Figure 2:
Loan Modifications as a Share of All Mortgage Loans in CTS Data on Zip Codes Targeted for Marketing of Default Counseling and balance of Chicago MSA