Mandatory Mediation Laws and the Renegotiation of Mortgage Contracts

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Abstract

Scholars have studied mediation—that is a third-party to facilitate the settlement of a dispute—in a variety of settings. The theoretical literature asserts that mediated negotiation weakly dominates unmediated negotiation, increasing the flow of information between the principal and the agent. This paper tests these predictions using mandatory mediation policies for mortgage contracts in default as a mechanism to overcome information asymmetry problems. Based on a difference-in-differences analysis of loans in four metropolitan statistical areas before and after at least one sub-jurisdiction imposed mandatory mediation and one did not, mediation policies appear to increase the rate of mortgage loan contract modifications. This is suggestive that information problems exist in the mortgage market and that mediation partially addresses these problems.

Keywords: Mortgage Foreclosure; Mediation

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1 Introduction

In the aftermath of the housing boom of the 2000s, the subsequent housing and labor market recession has resulted in millions of households in the US entering into bankruptcy and foreclosure (Brown et al. 2010; Foote et al. 2008b). A residential mortgage that enters into foreclosure can prove costly for lenders (Gerardi and Li 2010; White 2009). Maintaining and re-selling a non-cash flowing property consumes time, as legal fees and administrative costs mount. Consistent with Ambrose and Capone (1997); Lauria et al. (2004); Phillips and VanderHoff (2004), it would seem likely lenders would be willing to negotiate with borrowers for new repayment terms to avoid foreclosure. Yet the rate at which lenders are modifying defaulted mortgage contracts appears to be low (Adelino et al. 2009; Agarwal et al. 2011b, 2010). Consumers frequently fail to take any action to avoid the repossession of their home when faced with an imminent foreclosure (Cutts and Merrill 2008). Those borrowers who do make contact with lenders have incentives to overstate their ability to repay the loan with new (cheaper) terms. Lenders may be unable to assess a borrower's financial condition, or willingness to pay in the future. This information asymmetry could be a partial explanation for the low rate of formal loan mortgage contract modifications.

One potential mechanism to address this information problem is the policy of an automatically scheduled third-party out-of-court mediation session. Mediation sessions could provide the lender with clearer information on the borrowers ability to pay. With information each party can more accurately compute the expected payoff from a modified mortgage contract. This should result in an increase in the number of mortgage contract modifications compared to the case of no mediation (where less, no, or inaccurate information is conveyed).

We draw upon and test conclusions from the theoretical literature studying mediation generally, where mediated negotiation weakly dominates unmediated negotiation (Mitusch and Strausz 2005; Goltsman et al. 2009). This applies in cases where the principal (lender) has decision-making power and is uninformed, and the informed agent (borrower) has no power in the decision, in our example for a modification in contract terms offered by the lender. The benefits of mediation depend on the ex-ante probability of conflict between the borrower and the lender, and we find that on the extensive margin, mediation increases the probability of a formal change in the terms of the mortgage contract.

To test these predictions, this paper exploits a natural experiment where judicial courts administering foreclosures implemented mandatory mediation legislation, while other courts in the same MSA did not. This provides a unique environment to study the ability of mediation to reduce the information asymmetry between borrowers and lenders, potentially resulting in more loan modifications. Three courts in Florida, as well as one in Pennsylvania, implemented a mandatory mediation policy where mediation sessions were automatically scheduled with the initial mailing of the intent to foreclose notice. In certain areas borrowers could receive out-of-court mediation from trained mediators. This provides us with a fortuitous opportunity —as far as we know for the first time in the law and economics literature—to empirically test mediation in a market with asymmetric information.[1]

This analysis is unique in that there is an exogenous change in the local procedures of the courts, allowing us to observe loans before and after being subject to a mediation referral policy, as well as similar loans not subject to mediation policies in the same housing market.[2] To empirically test the possibility that asymmetric information limits the amount of renegotiated loan contracts, we use a difference-in-differences strategy, comparing loans within court districts that implemented mandatory mediation to loans in the same MSA for which courts did not implement mandatory mediation legislation both pre and post the initiation of the policy.

Using monthly loan performance data, we show that mandatory mediation policies increased the probability of lenders modifying mortgage contracts. These results are robust to a variety of tests. The finding supports the prospect that information asymmetry between borrowers and lenders is at least partially responsible for low rates of formal loan modifications and that mediation may ameliorate information problems.

This remainder of the paper is organized into four sections. The following section describes the potential role of mortgage mediation, where we review the theoretical implications of mediation in other contexts. This section also explains how we exploit variation in mediation policies to test the theoretical implications found in previous literature, as well as discusses the institutional setup of the programs studied. Section 3 offers an overview of the data, and Section 4

[1]See Kydd (2006), Wall et al. (2001), Wall and Lynn (1993), Carnevale and Pruitt (1992), Bercovitch and Jackson (2001), Umbreit (1993), Smith (1995) for examples of applied work in other fields that have studied mediated negotiations in other contexts. Brown and Ayres (1994) also study the role of mediators in controlling the flow of information in alternative dispute resolutions.

[2]Voluntary mediation policies have a selection problem where borrowers who choose to work with a mediator are different in unobservable ways.

discusses the empirical methods used, along with the findings and robustness checks. Section 5 provides discusses implications, cautions and ideas for future research.

2 Background

The theoretical literature shows that mediation, in certain contexts, improves information transmission. We suggest an application of this literature to the mortgage market, where we examine the probability of a renegotiation of mortgage contracts. The imposition of mediation policies by courts in Florida and Pennsylvania present natural experiments we exploit for our analysis.

2.1 The Role of Mediation

In a legal review Levitin (2009) describes mediation as a form of 'procedural requirement to encourage consensual workouts.'[3] Mediation involves each party in a case meeting with a neutral third party appointed by the court in an attempt to resolve a dispute.[4] The goal of the mediator is to find a mutually agreeable solution for the parties.

Two recent theoretical papers provide insight on the role of mediation. These papers describe a setting which is directly comparable to the setting exposited in the mortgage market. Both Goltsman et al. (2009) and Mitusch and Strausz (2005) use an asymmetric information framework, where the principal (lender) ultimately has the power in the final decision, but also has limited information; in our setting, this information is the borrower's ability to pay—or why the borrower missed payments. The agent (borrower) has this information, but ultimately has no power in the final decision about the terms of a new mortgage contract offered by the lender (the borrower is essentially a price taker). The mediator helps the agent (borrower) to reveal the proper amount of information in order to reach an agreement (Mitusch and Strausz 2005). These papers find that mediators help parties disseminate information that would not be revealed in their absence, but also show that the ex ante probability affects the outcome. More specifically:

[3]Mediation is common as a form of alternative dispute resolution, but not commonly used for home mortgages. The concept of mediation for mortgages dates back at least to the 1980s, where courts in Iowa and Minnesota required debtors and lenders to conduct an out-of-court settlement meeting before formal foreclosure proceedings could enter the court.

[4]Mediation differs from arbitration in that the solution proposed by the mediator is non-binding.

1. If the level of conflict between the principal and agent is low, information dissemination increases slightly with a mediator (Mitusch and Strausz 2005), but the outcomes from mediation and unmediated negotiation are similar (Goltsman et al. 2009).

2. If there is a moderate level of conflict between the principal and agent, without a mediator, the principal cannot get the agent to reveal pertinent information. However, with a mediator, revelation is feasible and mutually desirable, resulting in higher rates of renegotiation (Mitusch and Strausz 2005).

3. If the conflict between the two parties is high, the mediator has no value and provides no additional information as compared to unmediated negotiation and as such the outcomes from mediation and unmediated negotiation are similar (Mitusch and Strausz 2005).

If we again apply these principles to the mortgage market, we expect in situations of high and low conflict mediation policies will provide no difference when comparing mortgage modifications before and after mandatory mediation is initiated. Borrowers seeking a modification have incentives to mislead lenders or engage in 'cheap' talk regarding their willingness and ability to pay (Herzenstein et al. 2011; Farrell and Rabin 1996). The borrower's goal is to convince the lender to reduce his/her payments as low as possible, but still signal they will follow through on payments. For example, while lenders can observe past tax returns and paystubs, a borrower's future income is largely based on knowledge only the borrower has and the lender cannot easily verify. Lenders always rely on 'soft information' beyond loan documents (Agarwal et al. 2011a). The imposition of mediation in a jurisdiction is likely to change the quality and quantity of soft information. While we do not observe the ex-ante level of conflict between the borrower and lender, if a non-negative number of loans fall within this "moderate conflict" range, we expect there to be an increase (although not very large in magnitude) in the probability of a formal modification of contract terms in areas after mandatory mediation legislation is implemented relative to nearby areas not subject to mediation.

In this paper, we test the implications of the theoretical literature, where we expect to see an increase in modifications on the margin once mandatory mediation laws are implemented. The following section describes the specifics of the foreclosure process and the mediation legislation implemented within two states.

2.2 Modification Efforts and Information Barriers

The renegotiation of distressed loan contracts is not uncommon in commercial and other forms of lending. Indeed, there is some history of lenders negotiating with mortgage borrowers dating at least to the Great Depression (Ghent 2011). The issue of mortgage renegotiation had been of little policy or industry concern until the precipitous drop in home values in the 2000s and rapid increase in mortgage defaults. But even in a context of record levels of foreclosures, Agarwal and colleagues (2010) find that only 15 percent of seriously troubled mortgages enter into any formal modification or informal loss mitigation program within six months of becoming delinquent. Cordell and colleagues (2009) also present evidence that modifications are not occurring at rates which might be predicted given the extent of defaults and the potential losses to lenders and borrowers from foreclosures.

There is a high degree of heterogeneity in mortgage default by geographic location, initial purchase price and timing, loan terms and home equity, and unemployment trends (Foote et al. 2008b). It is difficult for lenders to gauge which borrowers are likely to self-cure versus those requiring more intensive interventions (Adelino et al. 2009). There also appears to be wide variation in the rate of mortgage modifications across loan servicers, even controlling for observable differences in risk factors (Agarwal et al. 2011b; Eggert 2007). This suggests institutions may use different calculations for the net value of foreclosures versus modifications, perhaps even implying some firms leave potential economic gains on the table. One potential cause of this inefficiency cited in prior papers is information asymmetry such that the lender cannot observe the borrower's repayment probabilities (Foote et al. 2008a; Gerardi et al. 2013). The mortgage market is peculiar in this regard relative to other markets with loan contracts in default. Benmelech and Bergman (2008) describes the airline industry and suggests that the default is sufficient such that lenders perceive the expected value of a workout to be preferable to the greater losses of default. Information is far more transparent for publicly traded firms releasing regular reports than individual mortgage borrowers. Mortgage debtors have private information on their ability to pay and future prospects that lenders cannot easily observe.

2.3 Implementation

This study is based on mandatory mediation programs in Florida and Pennsylvania, two judicial foreclosure states.[5] In each area, one court has implemented a policy whereby an administrator schedules a third-party mediation upon the initiation of foreclosure—and the lender cannot proceed with the foreclosure suit unless the borrower fails to accept the offer to participate in the out-of-court mediated session.

As of 2011, 11 states and the District of Columbia had some form of statewide foreclosure mediation, and at least 6 local court-districts had some form of mediation program. We found only four programs that required mediation by 2010, with the vast majority offering a mediation option only upon borrower request (Rao et al. 2010, 3d ed., 2011 Supplement).[6] According to a report from the Center for American Progress (2010), areas with automatic programs have participation rates of about 75% of eligible homeowners. In other areas with opt-in programs, where courts only inform homeowners that mediation is available but do not require it, participation is only about 21%.[7]

Florida started a mandatory mediation program in only three areas: the 1st Judicial Circuit (Okaloosa), the 11th Judicial Circuit (Miami-Dade),[8] and the 19th Judicial Circuit (Okechobee) in response to a recommendation from a foreclosure task force. With the help of the Collins Center for Public Policy, a nonprofit organization, this pilot program began in May 2009. One hundred mediators were trained by the Collins Center in standard mediation procedures. The court automatically set mediation dates and informed the borrower about mediation when the foreclosure was filed by the lender. The court allowed the mediator to charge the lender a

[5] A judicial foreclosure is a foreclosure supervised by the court. The lender commences foreclosure by a lawsuit against a borrower who defaults on their mortgage contract (Black and Garner 1999). Just like any other lawsuit, the lender must file a complaint and give notice to the borrower. After the borrower receives notice that a lawsuit has been commenced against them, they must file an answer detailing why the foreclosure should not be ordered. The court sets a hearing date, and ideally, both parties appear before the court to argue their position. If the court rules in favor of the lender, then the court issues an order that allows the lender to sell the mortgaged property.

[6] We explored other states with mandatory mediation, including New York, Connecticut and Providence, RI. The New York program began on September 1, 2008, but only for 'high cost' loans, and expanded to all loans January 1, 2010. However, it is hard to identify effects given the late time frame of the expanded mediation. Connecticut has mandatory mediation statewide, but there are no obvious MSA boundaries to define a useful comparison area. Finally, the city of Providence mandated mediation, but the program was challenged in court and only recently implemented. Thus, all three of these potential areas are omitted from our study.

[7] See Cohen and Jakabovics (2010) for more on the state specific policies.

[8] The 11th Circuit Court (part of the Miami MSA) put its program into action on May 1, 2009 ("Establishment of 11th Circuit Homestead Access to Mediation Program 'Champ' For Case Management of Residential Foreclosure Cases in the Eleventh Judicial Circuit Court of Florida," Case. No. 09-1, Administrative Order No. 09-08, Fla. 11th Jud. Cir. Apr. 9, 2009).

mediation fee of (up to) $750 (the fee can be recouped as a financial judgment on the borrower if there is a re-default on the loan, however).

Three of Florida's courts had mandatory mediation programs in May 2009.[9] Courts are generally designed to serve a county; thus any metropolitan statistical area (MSA) with more than one county will have multiple courts represented. Each of the courts in Florida implementing mediation were located in MSAs with counties not subject to mandatory mediation, which gives us a suitable comparison group. For example, though Miami-Dade county had mandatory mediation starting May 2009, the remainder of the Miami MSA (Broward and Palm Beach Counties) is outside of the 11th Circuit Court and not subject to mediation. A map depicting the location of mediation and comparison areas can be found in Figure 1. The three Florida county comparisons by MSA are described below:

1. Pensacola-Ferry Pass-Brent, FL MSA:

   Treatment 1st Legislature: Escambia, Okaloosa, Santa Rosa, Walton Counties
   Control Holmes, Washington, Bay, Calhoun, Gulf Counties

2. Miami-Fort Lauderdale-Miami Beach, FL MSA:

   Treatment 11th Legislature: Miami-Dade County
   Control Broward, Palm Beach Counties

3. Deltona-Daytona Beach-Ormond Beach, FL MSA:

   Treatment 19th Legislature: Indian River, Martin, Okeechobee, St. Lucie Counties
   Control Seminole, Volusia, Brevard Counties

To verify that our findings are not specific to Florida, we examine an additional program with a similar natural experiment in Pennsylvania. The Philadelphia Metropolitan Division of the Philadelphia-Camden-Wilmington MSA includes six counties in the state of Pennsylvania (Philadelphia, Berks, Bucks, Delaware, Chester and Montgomery), two of which implemented foreclosure mediation. On April 16, 2008, The 1st District Court of Philadelphia County issued a mediation order ("Residential Mortgage Foreclosure Diversion Pilot Program," No. 2008-01, 2008). Mediation is mandatory, scheduled automatically once the foreclosure is filed. However, in Philadelphia, the city had a moratorium on foreclosure filings in April-March of 2008, just before mandatory mediation came into action, which complicates the analysis. This month

[9]These areas were chosen based on the location of the Collins Center, not by demand of the service.

long moratorium had many exceptions, applied only to certain lenders and did not showcase a distinguishable change in filings. Figure 4 shows the number of filings over the time period by servicers that were bound by the moratorium and those that were not. In this graph, we point out the following observations: 1) there are more filings for the moratorium bound servicers than those not restricted by the moratorium 2) there is an increase in filings both before and after the moratorium for the servicers bound by the policy and 3) there appears to be an increase in filings for both groups even during the moratorium. Thus, while we do not think this other policy is an issue in our results, we rely on Florida for our main effects, and use Philadelphia to ensure that the results in Florida are not an anomaly.

In contrast to mandated mediation, Bucks County, also located in the Philadelphia MSA, implemented a voluntary foreclosure mediation program on August 1, 2009 ("In Re: Mortgage Foreclosure Diversion Program;" Admin. Order No. 55, 39 Pa. B. 3321, 2009). When the notice of foreclosure is sent to the borrower it also includes a notice that the borrower is entitled to mediation. To initiate mediation the borrower must call a phone number designated by the court for assistance. If mediation is scheduled, then a borrower is required to meet with a housing counselor before the conference to ensure he or she has the required documents and paperwork.[10] If the borrower does not opt in, the foreclosure moves forward as usual. Since this optional mediation program is likely to result in lower rates of mediations, we omit Bucks County from our analysis.

A map depicting mediation and comparison areas can be found in Figure 2. The list below describes the treatment and control areas:

- Philadelphia

  Treatment Philadelphia County
  Control Berks, Delaware, Chester and Montgomery Counties

3 Data

The data for this study were drawn from a nationwide database on home mortgage loans administered by Corporate Trust Services (CTS). The data is comprised of individual monthly loan payments for mortgages initially made by more than 100 different lenders. These lenders

[10]The cost of mediation is capped at $400 in Philadelphia, split between the borrower and lender.

sold each mortgage contract to investors as part of mortgage backed securities. The CTS is a report to investors on the payments of principal and interest on each loan underlying these securities. The CTS only captures loans that are privately securitized, meaning they were not backed by government sponsored agencies such as Freddie Mac and Fannie Mae (or Ginnie Mae). A majority of the loans in the CTS have characteristics consistent with industry standards for subprime mortgages such as lower relative credit scores and a higher proportion of Adjustable Rate Mortgages (ARMs). The data are made up of monthly remittance reports from more than 80 different loan servicers, including the loan number, payment history, zip code, original and current loan balance, and information on whether the loan contract has been permanently modified.[11]

White (2009) offers some analysis of the quality of these data, showing that these data include loans from seven of the top ten subprime mortgage lenders at the peak of that market in 2006. Quercia et al. (2009) also assess the CTS data quality, suggesting that the lenders/servicers of loans in the CTS data may have different incentives than lenders who did not sell loans into the secondary market–namely that these firms have 'no skin in the game.' This might result in less aggressive efforts to modify loans. These data do not observe all loans each borrower or property may have. Thus, borrowers may have gotten modifications designated for a loan outside the CTS dataset.

Two states are used in this analysis: Pennsylvania and Florida. Within each state, the counties in the four relevant MSAs (Miami, Pensacola, Daytona, and Philadelphia) are selected. Only owner occupied, single family homes where the mortgage is the primary or first position lien are included.[12] Loans that are prepaid, modified or taken through foreclosure in the first period of observation (one year prior to the policy initiation) are also excluded. We also drop all loans where the original balance is greater than or equal to $ 1 million, as some of these may actually be mis-coded by servicers and include one too many digits. In order to account for demographic characteristics of borrowers in some specifications, we have matched these data to the Home Mortgage Disclosure Act (HMDA) to provide borrower race and reported income

[11]Servicers flag loans with a modification indicator signifying a formal permanent contract change, rather than a temporary or trial modification or some other form of forbearance. This is an advantage over other datasets on loan payments where modifications are only observed through changes in payments, term or interest rate.

[12]Piskorski, Seru, and Vig (2010) find that securitized mortgages are less likely to be modified, as are second lien loans.

when the loan was first underwritten. We are able to match approximately 82 percent of records, and thus we use this data only as a robustness check as it limits our sample size.[13]

In order to control for the value of the home in each given month, we collect zip code level house price data from Zillow. Zillow uses data on market transactions to estimate prevailing average market values for each month. These estimates are not seasonally corrected, but offer a reasonable estimate of house price trends from the date the loan was taken out to the final date of observation.We estimate the value of the home at time t using the following equation: $\text{Value}_t = \frac{\text{Balance}_{t_0}}{\text{LTV}_{t_0}} \times \Delta P_{t-t_0}$, where ΔP_{t-t_0} is the difference in average zip code level prices between the month of the loan's origin and the current month. Thus, we approximate the home's value in each time period to control for changes in house prices based on the possibility that treated areas may benefit from higher rates of modifications, lower rates of foreclosure, and hence, higher home values.[14,15]

The data are organized as a monthly panel with 25 periods, including observations from one year before and one year after the policy change. We argue that limiting the sample allows us to better isolate the effect of the specific policy. Each observation is coded as being located in a county that offers mediation using a dichotomous indicator, and is also an indicator coded for each month beginning the month after mediation was implemented in that MSA. Our primary dependent variable is a formal change in the term, balance or rate of the loan contract. This indicator is zero for all periods until the modification and one for all periods after as long as the modified contract is in place. We define modifications as formal, permanent legal changes to the mortgage contract. Modifications are recorded by the servicer only after any trial periods are completed and the terms are finalized. All observations are unmodified and not in foreclosure as of the first period.

Table 1 presents summary statistics for the areas we study, where we first look at all of the areas in Florida we study, and then separately study Miami (the largest area) versus Pensacola and Daytona. Finally, Column (4) looks at the descriptives statistics in Philadelphia. The baseline rate of modifications is approximately 7-8 percent in Florida, and even lower, about 2

[13]The loans that match and do not match to the HMDA data, or the ones that have missing observations in the HMDA data, do not systematically differ in any observable ways.

[14]See Frame (2010) and citations therein for a review on the literature stating that foreclosures have an impact on neighboring house values.

[15]See Section 4.4 for more on the effects of this mediation policy on foreclosures.

percent in Philadelphia. The foreclosure rate is quite high, between 11 and 15% in Florida, while it remains close to 2% in Philadelphia.[16] Delinquency is quite common, especially in Florida, where between 25 and 30 percent of loans have been delinquent within the last six months. We log income and home value when we include them in our specifications, as the means are quite larger than the median values, with the median values closer to $80,000 and $170,000, respectively in Florida. A similar trend exists in Philadelphia, with median incomes ($70,000) and home values ($200) falling well below the respective mean values. The average FICO scores are near 680, the cutoff for subprime loans in the mid-2000s. Both samples show high shares of racial minorities, with the highest concentration in Miami.

4 Empirical Strategy

Mandated mediation may reduce the uncertainty for the lender in terms of the borrower's willingness and ability to pay. Mediation also allows borrowers to improve and filter the information they transfer to the lender. In cases where there is a moderate amount of conflict between the borrower and the lender ex-ante, this improves the probability of coming to a resolution in terms of a formal modification of the interest rate, current balance, or term structure of the mortgage contract. As uncertainty is reduced in some courts by the prevalence of mediation, lenders will be more likely to approve modifications. We predict higher rates of modifications occurring in counties with mandatory mediation after the program began relative to neighboring counties in the same MSA.

The opportunities for lender or borrower strategic responses prior to the imposition of this policy seem to be a minor issue. Lenders may have been knowledgeable about the start of automatic mediation, and had incentives to file and foreclose before mediation programs began. Empirically, however, we do not see a spike in filing notifications before mediation began for the treatment or control areas, as is demonstrated in Figure 3. Additionally, it seems unlikely borrowers were compelled to default in anticipation of this mediation program. A borrower eligible for mediation prior to his foreclosure filing had defaulted months earlier, before the announcement of the program. It also seems unlikely a borrower would miss payments simply

[16]Recall that Philadelphia includes an earlier sample in 2007-2009, whereas Florida's policy occurred after foreclosures began to rise from 2009-2011.

for the opportunity to have a mediation session prior to a foreclosure hearing. Borrowers can always decide not to show up for mediation if the costs of mediation are perceived as excessive. The timing of a foreclosure filing is ultimately up to a lender in any case.

We employ a difference-in-differences model along the lines of Mayer and colleagues (2011) in their analysis of the Countrywide settlement. We use an OLS linear probability model with interactions. Linear probability models (LPM) can generate unrealistic fitted values for binary outcomes. However, LPM performs reasonably well for estimating marginal policy effects such as the goal of this study (Angrist and Pischke 2008) and also produce interaction terms that are easier to interpret (Ai and Norton 2003). According to Wooldridge (2002), the linear probability model differs from the logit and probit specifications in that it assumes constant marginal effects, while the logit and probit models imply diminishing marginal returns in covariates [pg. 469]. Wooldridge (2002) further asserts that probit models can also be used to estimate the effects of policies, including aggregate time effects, as we do in this study. While we present the LPM estimates, the results are highly similar to the marginal effects from comparable probit specifications. The marginal effects from a probit model are provided in the Appendix. We are also careful to cluster our standard errors at the month level, as well as provide robust standard errors in order to control for heteroskedasticity in all of our linear probability models (Haughwout et al. 2008).

Equation 1 displays the specific empirical model we estimate. We compare the differences pre and post mediation for counties in MSAs with mediation programs to counties without mediation programs within the same MSA, including county level fixed effects γ_c. Assuming that the unobserved changes in the housing market before ($\text{Post}_{i,t} = 0$) and after ($\text{Post}_{i,t} = 1$) the policy change follow the same pattern for loans in the treatment and control areas, and the coefficient of interest for the diff-in-diff will be β_2, which captures the increase in modifications from being in a mandatory mediation county post mediation, compared to the average modifications in the absence of the program.[17] This specification also includes month fixed effects to control for time variant unobservables, or a rise in the trend towards modifications over time, and we are careful to look separately at Miami and the remainder of Florida to ensure that there are no peculiarities to those areas. We finally estimate and include the value of the home based

[17] As Puhani (2008) describes, this treatment effect is the conditional expectation of the observed outcome minus the cross difference of the conditional expectation of the potential outcome without treatment.

on the loan-to-value ratio at the origin of the loan, the original amount of the loan, and the change in zip code level house prices between the two time periods in our primary specification. In alternate specifications, we include controls for demographics and specifics of the loan in $\boldsymbol{Z}_{i,t}$, though we do this only in a few specifications since it limits our sample to those loans that could be matched to data from the Home Mortgage Disclosure Act (HMDA). In this, we control for applicant characteristics such as minority status, the natural log of income at the time of application, FICO score at origination as well as loan characteristics such as dummies for delinquency in the last 6 months, the loan-to-value ratio at origination and an adjustable rate mortgage indicator (ARM).

$$Y_{i,t} = \beta_0 + \beta_1 \text{Post}_{i,t} + \beta_2 \text{Treatment}_{i,t} + \beta_3 \text{Value}_{i,t} + \gamma_c + \delta_t + \boldsymbol{\phi} \boldsymbol{Z}_{i,t} + \eta_{i,t} \tag{1}$$

Table 2 displays the results from the initial diff-in-diff, where we find that in all areas, the rate of modifications increases after the imposition of mandatory mediation laws, when compared to the modification rate in the same MSA that was not exposed to these laws. Consistent with the predictions from the theoretical literature, we find that on the margin, there is a small increase in the rate of formal loan modifications, as we expect that when the rate of conflict between the borrower and lender is moderate. Column (1) shows that throughout Florida, there is approximately a 0.87 percentage point increase in the rate of modifications, which is a modest effect size but relatively large when compared to the mean modification rate, 7.6%. To be sure that Miami is not driving this result, as it is the largest MSA of the three in the sample, we re-estimate this effect using only Miami in Column (2) and find a similar effect, a 0.9 percentage point increase off of a mean modification rate of 7.4%. In Column (3), we find that dropping Miami yields a similar increase in the rate of modification of about 0.87 percentage points but from a slightly higher mean modification rate of 8.4%. Columns (4)-(6) show that when we control for individual variables at the time of application as well as loan characteristics, we obtain a similar effect. The sample is reduced in these specifications, as the controls rely on an imperfect merge with HMDA.

Bertrand, Duflo and Mullainathan (2004) warn that using diff-in-diff over long panels to measure serially correlated outcomes will result in a false reduction in variance and result in

increased statistical power. This increased statistical power will bias towards statistically significant findings even in the absence of true effects. Our analysis avoids this issue to some extent by using simple pre-post mediation periods as an identification strategy rather than multiple event dates in the same model. In addition, we truncate our period to one year before and after the policy was implemented and include robustness checks limiting the pre and post periods to 6 months.[18]

When we reduce the sample to 6 months pre and post policy implementation (Table 3), our results remain similar, though the point estimates are slightly smaller in magnitude, and the standard errors are larger. This is especially true in Columns (4)-(6) in Table 3, where we include additional controls, which further reduces the sample to loans that merge with the HMDA data (and that do not have missing observations in the HMDA data). Since the baseline modification rates are low to start with and the sample reduction reduces the power of our estimates, we expect the larger confidence intervals. However, the similar magnitude of point estimates shows that the effect is robust to using smaller samples.

4.1 HAMP

In March 2009, the federal Making Home Affordable Program (HAMP) was launched. The goal of the program was to stimulate servicers and lenders to offer more loan modifications (Mayer et al. 2009). Servicers who modify eligible mortgages for borrowers in default or that are at-risk of default can receive financial payments from the government.[19] Under the program the servicer reduces monthly payments to 38 percent of income, and then receives subsidies from the HAMP to reduce payments to 31 percent. The servicer analyses the net present value of the expected costs of loan modification versus a foreclosure. The timing of HAMP and the mediation policies might be problematic in that both were launched around the same time. HAMP required lenders to use more standardized procedures for loan modifications and may have reduced uncertainty around "hard' information lenders use in evaluating modifications. There is no direct identification that a modification resulted from the HAMP program in our data. We think it is unlikely HAMP changed the incentives for borrowers to engage in "cheap

[18]Cameron et al. (2008) pose the same concern for short panels, and thus we check that our results are robust to calculating standard errors with the bootstrapping method they propose. We do not present the bootstrap results but the results are nearly identical to the tables presented.

[19]HAMP loans are first-lien loans on owner-occupied properties only.

talk" or changed the level of conflict between lenders and servicers enough to shift from the context of mediated settlements under moderate conflict. Also, HAMP was national in scope and would impact counties with mandatory mediation and comparison counties in similar ways. If we flag potential HAMP modifications using the program rules and drop all potential HAMP modifications, our results remain robust.[20,21]

4.2 Heterogeneity in Results by Zip Code Demographics

Next, we consider potential heterogeneity in mediation, where we look precisely at areas where we expect to find the greatest and smallest effects due to mediation—neighborhoods (zip codes) with higher shares of minorities, low-income and lower education levels. Prior studies show that these borrowers may be less aware of mortgage terms and conditions (Bucks and Pence 2008) and therefore may differentially be affected by mediation policies. We examine differential effects by area proportion of minority (non-white) households, the share that are higher income, and the share that are relatively higher educated.

Table 11 shows these differential results based on zip-code level characteristics by race and income.[22] We first display the baseline effects, using the full sample including all MSAs in the previous analysis. The left and right panel replicate the previous results with and without loan-level controls respectively, where in each case the first category is the complement of the second. Areas with fewer minorities (< 25%) tend to exhibit a smaller and statistically different effect of mediation, but only when we do not restrict the sample to include controls for individual level demographics. Areas with a higher relative concentration of educated residents (>25% of population with a college degree) show larger effects of mediation than those areas with fewer college graduates, though these are not statistically different from one another until we add in individual level covariates. Regarding area income level, we find that loans in low income (the bottom quartile, or < $35,000 median household income) zip codes have little response to mediation, while those in higher income areas have a statistically different and larger response.[23]

[20]Potential HAMP loans are flagged based on the following criteria: (1) they have a current balance under $729,750 (2) are modified in April, 2009 or later and (3) have an interest rate less than or equal to 2. With this calculation, we flag less than 2% of observations (or 729 loans) as possible HAMP modifications.

[21]These results are available upon request.

[22]These zip code level demographic variables come from the 2000 Decennial Census.

[23]When using a probit specification to replicate these results in Table 11, the magnitudes are similar. However, the coefficients on education are the only ones that remain statistically different from each other.

These findings corroborate the predictions from the theoretical mediation literature, where only marginal loans amongst people who can pay and show up should and do see a response to mediated negotiation. These high-educated, higher income areas contain loans where the information provided in mediation allows lenders to comfortably modify the formal terms of loan contracts, when in the absence of mediated negotiation, this would not be the case.

4.3 Philadelphia

Table 5 presents similar results for Philadelphia, where Column (1) shows that in Philadelphia county, when compared to the rest of the Philadelphia MSA, mediation legislation increased the rate of modifications by 1-1.5 percentage points from a 1.8% baseline.[24] This suggests a doubling in formal loan modifications after mediation was initiated in the county relative to other counties in the MSA. The effect is similar when we control for individual level and loan level characteristics in Column (3). In Columns (2) and (4) we again restrict the sample 6 months pre- and post- mediation policy. Here we find that the effects sizes are smaller in magnitude, though they remain statistically significant in all specifications.[25] This is an assuring result due to the pre-HAMP timing of mediation and the fact that the housing market in Philadelphia was under less duress than experienced in Florida's severe housing recession. The Philadelphia program was designed quite differently than in Florida. Housing counseling was more broadly integrated before and after mediation. The overall process was more institutionally intensive than that in Florida. Pro-bono lawyers would hold sessions with the borrower before the mediation session with the lender, perhaps resulting in clearer information being transfered (arguably this could also increase the borrower's knowledge of the process and the incentive to engage in cheap talk). A priori it is not clear if we would predict larger or smaller effects in Philadelphia, but the direction and magnitude are consistent with the prior results.

4.4 Foreclosure Filings by Lenders

While the primary purpose of this paper is to determine the ability of mandated mediation to result in a formal change in contractual agreements between a borrower and lender, a rele-

[24] We again show that this result is not specific to a linear probability model specification. In Table 10 in the Appendix we confirm that the marginal effects from a probit are similar to those of the linear probability model.

[25] HAMP is not binding in this sample, as it began in April 2009, one year after mediation began in Philadelphia.

vant policy question is if mandatory mediation polices also help lenders better observe which borrowers are poor risks and then rather than modify loans, accelerate the foreclosure process.[26] Mediation policies seem likely to speed up the rate of foreclosure filings for loans that do not receive a formal modification due to the information conveyed through mediation—including a borrower not showing up for the mediation session. Thus, we use a similar linear probability specification with corrected standard errors to estimate lender foreclosure filings due to imposition of mandatory mediation policies, where the effect of mediation policies will be identified as a difference-in-differences.[27,28] We start our first period with loans one year prior to the policy's initiation, where all loans are current. Specifically, we estimate:

$$F_{i,t} = \alpha + \beta_1 \text{Post}_{i,t} + \beta_2 \text{Treatment}_{i,t} + \beta_3 \text{Value}_{i,t} + \gamma_c + \delta_t + \boldsymbol{\phi} \boldsymbol{Z}_{i,t} + \eta_{i,t} \tag{2}$$

Table 12 shows that the rate of foreclosure filings are generally higher due to the policy. In the smaller sample, using only the Daytona and Pensacola MSAs, we do not see an effect statistically distinguishable from zero. We see a similar trend for Philadelphia in Table 13, where the rate of foreclosure is higher with the policy, though this not robust to the inclusion of loan-level control variables. These findings are mostly corroborated with the use of a probit specification, although again the Daytona and Pensacola MSAs (which have smaller numbers of observations) show differing, or even opposite results. The Miami and Philadelphia results are consistent with mediation aiding lenders by signaling not only good prospects for modifications but also accelerated repossession.

5 Conclusion

A lender facing a borrower in default has a limited set of options. The demands of investors are to maximize the net present value of the loan. Foreclosing can be costly, but a modification might add to those costs if not well calibrated to the borrower. The borrower has incentives to

[26] This paper does not look at long-run outcomes of modifications, since the experimental setup fails in this context. Specifically, the control counties start to adopt the mandatory mediation policy just over 15 months after the policies begin in Florida. Long-run outcomes of modifications are beyond the scope of this paper.

[27] In the data, neither modifications nor foreclosure starts are absorbing states, therefore a traditional competing hazards time to failure model is not applicable. Loans may move in and out of both modified status as well as no longer being in the foreclosure process. A failed modified loan can also experience a foreclosure filing.

[28] We additionally show the marginal effects from a probit model in Tables 12-13 of the Appendix.

offer the lender only information skewed towards obtaining the lowest possible monthly payment (and/or principal reduction) while also suggesting positive intentions to repay under new loan terms in the long run. This presents a situation where a negotiation can improve the welfare of both parties, but information asymmetry exists such that lenders cannot easily assess the borrower's level of cheap talk. Mediation by a third-party might result in better and/or more information transfer. In none of the specifications presented did we find that mediation reduces the rate of formal loan modifications, and in most models mandated mediation appears to boost modifications, in some cases significantly. There is also some evidence information conveyed under mediation—including perhaps a borrower who fails to appear—influences lender behavior.

This finding suggests that information asymmetry is at least one cause of friction in the mortgage market and hamper a lender's ability modify loan contracts. Given the revealed preference at the federal level and among the mortgage industry for loan modifications over other options (such as special bankruptcy provisions, loan forgiveness, public refinancing programs, direct borrower subsidies or income support), the fact that information problems are partially responsible might suggest a need for greater attention to strategies which reveal information, such as third-party out-of-court mediators (in judicial states) or mandated pre-foreclosure counseling (in trustee foreclosure jurisdictions).

Within a year of the start of the Florida mediation programs described here, the Florida State Supreme Court issued an administrative order to implement a statewide mediation program (Order AOSC09-54, 2009).[29] The court stated its goals and reasons for implementing mediation included "open[ing] communication and facilitat[ing] problem-solving" between borrowers and lenders. The costs of the policy are relatively low—a fee for the mediator, delays in the foreclosure process and opportunity costs of time for all parties involved. Yet the costs of foreclosure for lenders, borrowers and surrounding communities are relatively high. Borrowers potentially retain their homes, at the very least delaying the costs of default. Lenders avoid court proceedings and the costs of repossessing a home that will require maintenance until resale. The potential benefits of mediation are significant even if a small number of additional foreclosures are prevented on the margin.

These results are based on a handful of distressed housing markets, in states with judicial

[29]None enacted mandatory mediation until late 2010, and after the period of analysis in this study.

foreclosure. It remains to be seen if these results would translate into other markets, especially areas with less widespread foreclosure problems. There also could be unobserved functions of mediation in play that could impact these results. For example, mediators could face internal or external pressure to 'settle' and therefore promote modifications to both parties, even in cases where modifications are not warranted. Also, mediation may lengthen the foreclosure timeline for borrowers and this additional time may simply increase opportunities for modifications before foreclosures are pursued, as opposed to reveal additional information (we do not observe notably longer time delays between default and foreclosure start before and after the policy in our data, however). And while modifications are significant contract changes, a modification may not be evidence of preventing foreclosures entirely. Modified loans signal borrowers in greater distress and typically have high re-default rates (Comptroller of the Currency, Administrator of National Banks (2012). Regardless, as long as modifications are a goal of public policy and a preferred alternative to foreclosure for lending institutions, mediation may have a role in revealing more information between parties.

Clearly more research is needed on the payment performance of mediated modifications relative to unmediated modifications before such a conclusion can be asserted. Beyond the reduction in information asymmetry and an increase in 'soft information' to lenders, out-of-court mediation may induce reciprocity norms and increase payback (Wilkinson-Ryan 2011). There may be a basis to predict not only more contract negotiations on average in areas with mandated mediation—due to a reduction in lender uncertainty—there may be an improvement in borrower repayment rates as well. A related issue for future research is the effect of voluntary mediation—the most common form or mortgage mediation policy currently. Both the programs studied here are mandated programs. We would predict that voluntary programs will have lower take-up of mediation, lesser information revelation and weak or no effects on modification rates, however.

The application of mediation to mortgages in default appears to be well positioned in the theoretical literature. To the extent renegotiation of loan terms is a policy goal, the imposition of mandatory out-of-court mediation may be a useful strategy in the mortgage market, and perhaps could be explored in similar settings such as bankruptcy, student loan default and consumer credit markets.

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6 Tables and Figures

Figure 1: Florida, Locations of Mandatory Mediation

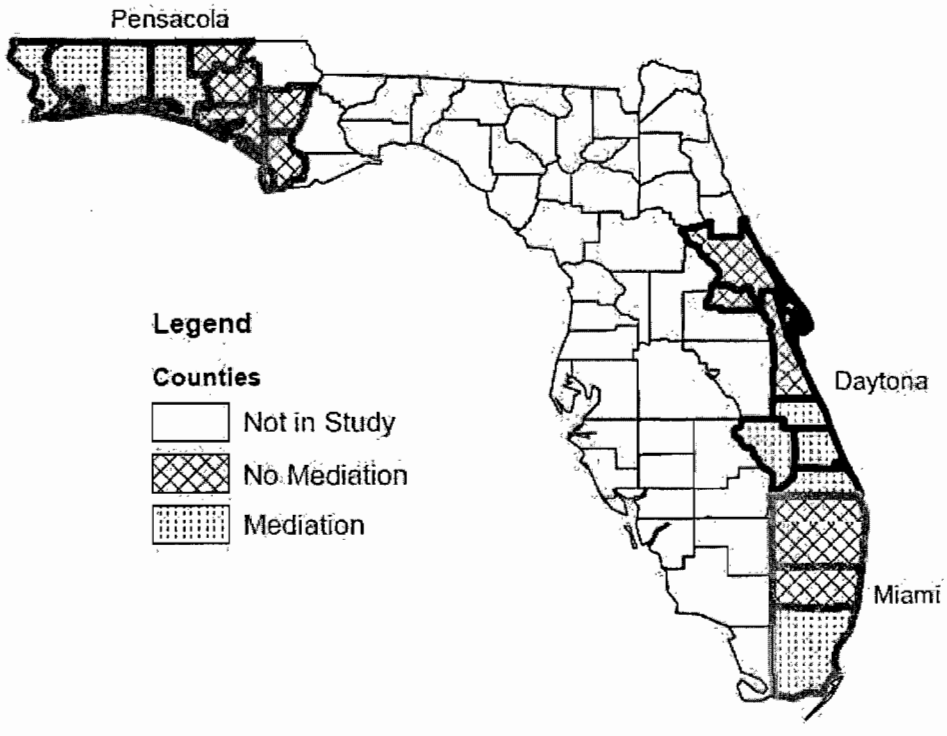

Figure 2: Philadelphia, Locations of Mandatory Mediation, 2008

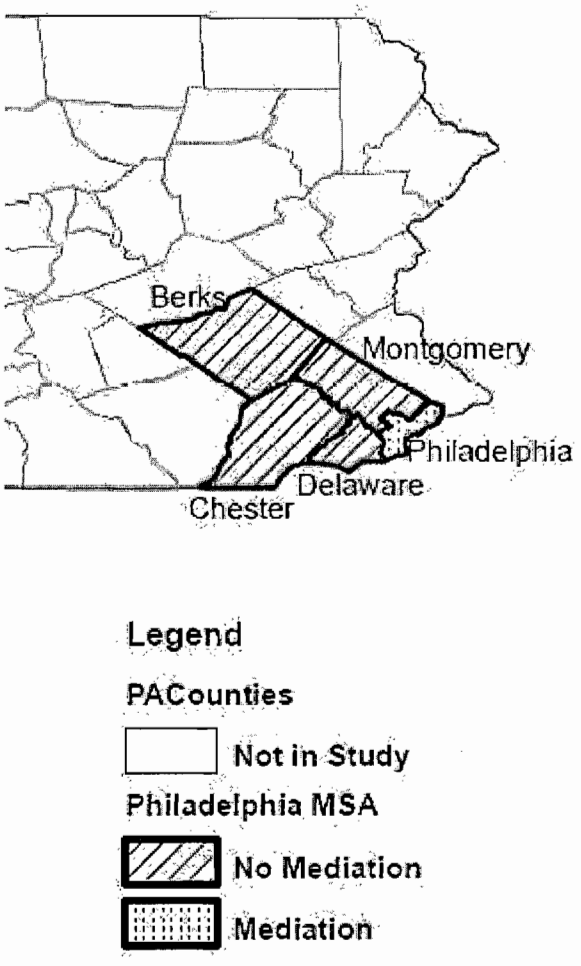

Figure 3: Florida: Change in Foreclosure Filings Do Not Differ Between Treatment and Control Before and After the Policy Change

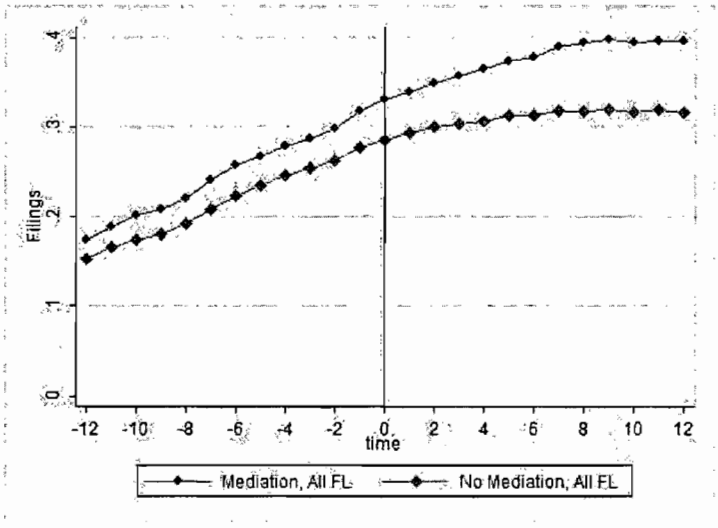

Figure 4: Philadelphia Total Filings Rising for All Servicers During Month-long "Moratorium"

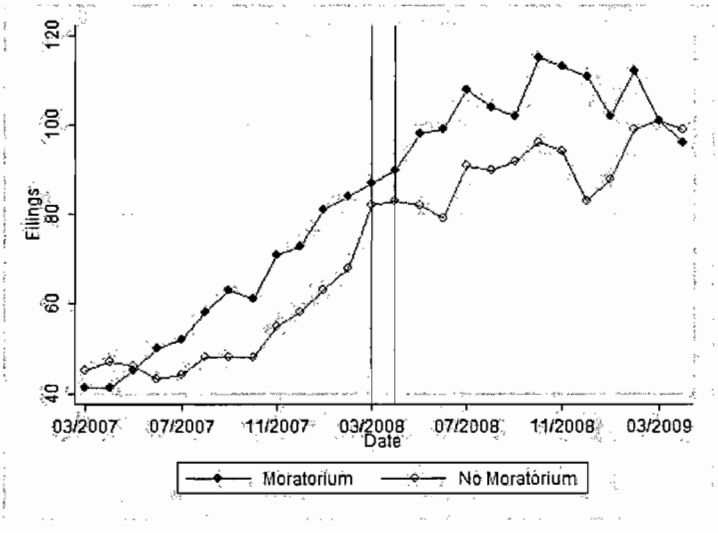

Table 1: Summary Statistics by Area

	All of FL	Miami	Rest of FL	Philadelphia
Dependent Variables				
Modification Rate	0.0759	0.0736	0.0842	0.0188
	(0.2649)	(0.2610)	(0.2778)	(0.1360)
	[490773]	[381824]	[110508]	[102987]
Foreclosure Starts	0.1411	0.1502	0.1094	0.0213
	(0.3482)	(0.3573)	(0.3121)	(0.1444)
	[490773]	[381824]	[110508]	[102987]
Loan Characteristics				
Adjustable Rate Mortgage	0.7463	0.7728	0.6537	0.6386
	(0.4351)	(0.4190)	(0.4758)	(0.4804)
	[490773]	[381824]	[108949]	[102987]
Delinquency in Last 6 Months	0.3116	0.3257	0.2624	0.1019
	(0.4632)	(0.4686)	(0.4400)	(0.3025)
	[490773]	[381798]	[108935]	[100551]
Current Home Value (thousands)	260.74	271.73	222.47	401.45
	(1206.95)	(1297.59)	(815.30)	(2662.37)
	[473665]	[367950]	[105715]	[100864]
Loan-to-Value Ratio	80.73	80.64	81.03	82.49
	(9.53)	(9.47)	(9.75)	(11.87)
	[474353]	[368463]	[105890]	[101197]
Applicant Characteristics (at time of origination)				
Income (thousands)	117.85	120.69	107.48	98.52
	(133.09)	(127.43)	(151.51)	(95.42)
	[21367]	[16771]	[4596]	[4413]
FICO Score (divided by 100)	6.77	6.79	6.75	6.73
	(0.7187)	(0.7070)	(0.7578)	(0.6771)
	[21751]	[16943]	[4808]	[4409]
Minority	0.5867	0.6653	0.3056	0.3866
	(0.4924)	(0.4719)	(0.4607)	(0.4870)
	[21452]	[16760]	[4692]	[4038]

Note: demographics from HMDA merge, data from Consumer Trust Services.

Mean of each variable reported with standard deviation in parentheses, and observations in brackets.

Table 2: Diff-In-Diff: Mediation Increases the Probability of Modifications in FL

Dependent Variable=1 if Loan was Modified in the Given Month						
	(1)	(2)	(3)	(4)	(5)	(6)
	All of FL	Miami Only	Rest of FL	All of FL	Miami Only	Rest of FL
Post Mediation	0.143***	0.0753***	0.0797***	0.0822***	0.0816***	0.0837***
	(0.000259)	(0.00875)	(0.00995)	(0.00921)	(0.00907)	(0.00984)
Treatment	0.00870***	0.00903***	0.00865***	0.00827***	0.00744***	0.0116***
	(0.000620)	(0.000781)	(0.000695)	(0.000712)	(0.000738)	(0.00145)
Includes						
HMDA Controls	-	-	-	X	X	X
Month Dummies	X	X	X	X	X	X
County Dummies	X	X	X	X	X	X
Home Value_t	X	X	X	X	X	X
Observations	473665	367950	105715	387548	305669	81879

Notes: Robust standard errors clustered at month level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Observations are loan months. Linear probability model.

Treatment is equal to one if the loan is in a county with mandatory mediation after the legislation was implemented.

Columns (4), (5), (6) include loan-level controls:

minority status, ln(income), ficoscore, loan to value ratio at origination,

delinquency in the last 6 months,an adjustable rate mortgage indicator, and month dummies.

Table 3: Diff-In-Diff: Mediation Still Increases the Probability of Modifications in FL when Reducing Sample Period to 6 Months pre and post

Dependent Variable=1 if Loan was Modified in the Given Month						
	(1)	(2)	(3)	(4)	(5)	(6)
	All of FL	Miami Only	Rest of FL	All of FL	Miami Only	Rest of FL
Post Mediation	0.0538***	0.0537***	0.0540***	0.0689***	0.0681***	0.0701***
	(0.000747)	(0.000771)	(0.000733)	(0.00118)	(0.00122)	(0.00137)
Treatment	0.00486***	0.00366**	0.00957***	0.00614***	0.00549***	0.00801***
	(0.00102)	(0.00118)	(0.000894)	(0.00120)	(0.00131)	(0.00161)
Includes						
HMDA Controls	-	-	-	X	X	X
Month Dummies	X	X	X	X	X	X
County Dummies	X	X	X	X	X	X
Home Value_t	X	X	X	X	X	X
Observations	194397	151088	43309	159116	125523	33593

Notes: Robust standard errors clustered at month level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Observations are loan months. Linear probability model.

Treatment is equal to one if the loan is in a county with mandatory mediation after the legislation was implemented.

Columns (4), (5), (6) include loan-level controls:

minority status, ln(income), ficoscore, loan to value ratio at origination,

delinquency in the last 6 months,an adjustable rate mortgage indicator, and month dummies.

Table 4: Diff-In-Diff: Heterogeneity in Zip Code level Characteristics in Mediation and Modifications in FL

Dependent Variable=1 if Loan was Modified in Given Month							
	(1) Baseline	(2) Minority	(3) Non-Minority	(4) Educated	(5) Lower Educated	(6) Low Income	(7) Higher Income
Treatment	0.00555***	0.00822***	0.00283**	0.00497***	0.00267**	0.00294**	0.00432***
	(0.000601)	$(0.00131)^{+++}$	(0.000775)	$(0.000947)^{+++}$	(0.000718)	$(0.00118)^{+}$	(0.000691)
Observations	473665	142167	331498	205603	268062	112426	361239

Including Loan-Level controls

	(1) Baseline	(2) Minority	(3) Non-Minority	(4) Educated	(5) Lower Educated	(6) Low Income	(7) Higher Income
Treatment	0.0101***	0.0121***	0.00688***	0.00987***	0.00572**	0.00549	0.00886***
	(0.00172)	$(0.00335)^{+++}$	(0.00198)	$(0.00216)^{+}$	(0.00251)	$(0.00371)^{+}$	(0.00197)
Observations	420226	130072	290154	180748	239478	102205	318021

Notes: Robust standard errors clustered at the month level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ $^{+}$ $p < 0.10$. Linear probability model.
$^{+}$ $p < 0.10$, $^{++}$ $p < 0.05$,$^{+++}$ $p < 0.01$ indicates coefficients are statistically different from each other. Observations are loan months.
Minority defined as zip code with 25% or higher non-white population. All models include home value, month, and county dummies.
Educated defined as zip code with 25% or higher college-educated population.
Low Income defined as lowest income quartile zip code (<$35,000 median household income)
Zip-code level demographics in Columns (3), (5) and (7) are complements of (2), (4) and (6).
Treatment is equal to one if the loan is in a county with mandatory mediation after the legislation was implemented. Loan-level controls:
minority status, ln(income), ficoscore, loan to value ratio at origination, delinquency in the last 6 months,an adjustable rate mortgage indicator.

Table 5: Diff-In-Diff: Mediation Increases the Probability of Modifications in Philadelphia

Dependent Variable=1 if Loan was Modified in Given Month				
	(1)	(2)	(3)	(4)
	1-year	6-month	1-year	6-month
Post Mediation	0.0575***	0.0180***	0.0604***	0.0220***
	(0.000771)	(0.000573)	(0.00165)	(0.000840)
Treatment	0.0152***	0.0104***	0.0121***	0.00922***
	(0.00181)	(0.00138)	(0.00183)	(0.00164)
Includes				
HMDA Controls	-	-	X	X
Time Dummies	X	X	X	X
Home Value$_t$	X	X	X	X
Observations	100864	45399	87414	40084

Notes: Robust standard errors clustered at the month level in parentheses.
Observations are loan months. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Linear probability model.
Treatment is equal to one if the loan is in a county with mandatory mediation after the legislation was implemented.
Controls include minority status, ln(income), delinquency in the last 6 months, fico score, loan to value ratio, an adjustable rate mortgage indicator.

Table 6: Diff-In-Diff: Mediation Increases the Probability of Foreclosures in FL

Dependent Variable=1 if Loan Received Notice of Foreclosure in the Given Month						
	(1)	(2)	(3)	(4)	(5)	(6)
	All of FL	Miami Only	Rest of FL	All of FL	Miami Only	Rest of FL
Post Mediation	0.109***	0.0675***	0.0384***	0.0128***	0.0151***	0.00494***
	(0.00267)	(0.00723)	(0.00547)	(0.00236)	(0.00271)	(0.00174)
Treatment	0.0342***	0.0437***	0.00205	0.0248***	0.0307***	0.00188
	(0.00574)	(0.00772)	(0.00191)	(0.00471)	(0.00616)	(0.00222)
Includes						
HMDA Controls	-	-	-	X	X	X
Month Dummies	X	X	X	X	X	X
County Dummies	X	X	X	X	X	X
Home Value$_t$	X	X	X	X	X	X
Observations	436854	340229	96625	354685	280611	74074

Notes: Robust standard errors clustered at month level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Observations are loan months. Linear probability model, excludes loans that were modified.
Treatment is equal to one if the loan is in a county with mandatory mediation after the legislation was implemented.
Columns (4), (5), (6) include loan-level controls:
minority status, ln(income), ficoscore, loan to value ratio at origination,
delinquency in the last 6 months,an adjustable rate mortgage indicator, and month dummies.

Table 7: Diff-In-Diff: Mediation Increases the Probability of Foreclosures in Philadelphia

Dependent Variable=1 if Loan Received Notice of Foreclosure in the Given Month				
	(1)	(2)	(3)	(4)
	1-year	6-month	1-year	6-month
Post Mediation	0.0125***	0.00473***	0.00380***	0.00269***
	(0.000388)	(0.000206)	(0.000901)	(0.000469)
Treatment	0.00897***	0.00837***	0.00477***	0.00666***
	(0.000935)	(0.000500)	(0.00154)	(0.000955)
Includes				
HMDA Controls	-	-	X	X
Time Dummies	X	X	X	X
Home Value$_t$	X	X	X	X
Observations	98978	44852	85591	39558

Notes: Robust standard errors clustered at month level in parentheses.
Observations are loan months. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Linear probability model, excludes loans that were modified.
Treatment is equal to one if the loan is in a county with mandatory mediation after the legislation was implemented.
Controls include minority status, ln(income), delinquency in the last 6 months, fico score, loan to value ratio, an adjustable rate mortgage indicator.

Appendix

Table 8: Diff-In-Diff: Mediation Increases the Probability of Modifications in FL, using a Probit

Dependent Variable=1 if Loan was Modified in the Given Month						
	(1)	(2)	(3)	(4)	(5)	(6)
	All of FL	Miami Only	Rest of FL	All of FL	Miami Only	Rest of FL
Treatment	0.0050***	0.0045**	0.00827***	0.0084***	0.0077***	0.0110***
	(0.00160)	(0.00180)	(0.00348)	(0.00176)	(0.00196)	(0.00388)
Includes						
HMDA Controls	-	-	-	X	X	X
Month Dummies	X	X	X	X	X	X
County Dummies	X	X	X	X	X	X
Home Value$_t$	X	X	X	X	X	X
Observations	473662	367950	105712	387545	305669	81876

Notes: Marginal effects presented. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Observations are loan months. Probit model.

Treatment is equal to one if the loan is in a county with mandatory mediation after the legislation was implemented.

Columns (4), (5), (6) include loan-level controls:

minority status, ln(income), ficoscore, loan to value ratio at origination,

delinquency in the last 6 months,an adjustable rate mortgage indicator, and month dummies.

Table 9: Diff-In-Diff: Mediation Increases the Probability of Modifications in FL when Reducing Sample Period to 6 Months pre and post, using a Probit

Dependent Variable=1 if Loan was Modified in the Given Month						
	(1)	(2)	(3)	(4)	(5)	(6)
	All of FL	Miami Only	Rest of FL	All of FL	Miami Only	Rest of FL
Treatment	0.00398	0.00287	0.00882	0.0056**	0.0049	0.0081
	(0.00254)	(0.00285)	(0.00555)	(0.00280)	(0.00313)	(0.0062)
Includes						
HMDA Controls	-	-	-	X	X	X
Month Dummies	X	X	X	X	X	X
County Dummies	X	X	X	X	X	X
Home Value$_t$	X	X	X	X	X	X
Observations	194397	151088	43309	159116	125523	33593

Notes: Marginal effects presented. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Observations are loan months. Probit model.
Treatment is equal to one if the loan is in a county with mandatory mediation after the legislation was implemented.
Columns (4), (5), (6) include loan-level controls:
minority status, ln(income), ficoscore, loan to value ratio at origination,
delinquency in the last 6 months,an adjustable rate mortgage indicator, and month dummies.

Table 10: Diff-In-Diff: Mediation Increases the Probability of Modifications in Philadelphia, using a probit

Dependent Variable=1 if Loan was Modified in Given Month				
	(1)	(2)	(3)	(4)
	1-year	6-month	1-year	6-month
Treatment	0.00324***	0.00386**	0.00285***	0.00364***
	(0.000948)	(0.00124)	(0.00114)	(0.00131)
Includes				
HMDA Controls	-	-	X	X
Time Dummies	X	X	X	X
Home Value$_t$	X	X	X	X
Observations	100864	45399	76743	40084

Notes: Marginal effects presented. Standard errors in parentheses.
Observations are loan months. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Probit model.
Treatment is equal to one if the loan is in a county with mandatory
mediation after the legislation was implemented.
Controls include minority status, ln(income),
delinquency in the last 6 months, fico score, loan to value ratio,
an adjustable rate mortgage indicator.

Table 11: Diff-In-Diff: Heterogeneity in Zip Code level Characteristics in Mediation and Modifications in FL

Dependent Variable=1 if Loan was Modified in Given Month							
	(1) Baseline	(2) Minority	(3) Non-Minority	(4) Educated	(5) Lower Educated	(6) Low Income	(7) Higher Income
Treatment	0.0050***	0.00911***	0.00580**	0.00698***	0.00729**	0.00652*	0.00679***
	(0.00160)	(0.00321)	(0.00187)	$(0.000947)^{+++}$	(0.00203)	(0.00355)	(0.000691)
Observations	470474	141766	328630	203985	265964	112552	357922

Including Loan-Level controls

	(1) Baseline	(2) Minority	(3) Non-Minority	(4) Educated	(5) Lower Educated	(6) Low Income	(7) Higher Income
Treatment	0.0108***	0.0124***	0.00938***	0.00981***	0.0116**	0.0110***	0.0101***
	(0.00172)	(0.00335)	(0.00333)	$(0.00216)^{++}$	(0.00251)	(0.00370)	(0.00197)
Observations	411710	127932	283700	175186	236201	101651	310059

Notes: Marginal Effects reported. Standard errors clustered at the month level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ $^{+}$ $p < 0.10$. Probit model. $^{+}$ $p < 0.10$, $^{++}$ $p < 0.05$,$^{+++}$ $p < 0.01$ indicates coefficients are statistically different from each other. Observations are loan months.

Minority defined as zip code with 25% or higher non-white population. All models include home value, month, and county dummies.

Educated defined as zip code with 25% or higher college-educated population.

Low Income defined as lowest income quartile zip code (<$35,000 median household income)

Zip-code level demographics in Columns (3), (5) and (7) are complements of (2), (4) and (6).

Treatment is equal to one if the loan is in a county with mandatory mediation after the legislation was implemented. Loan-level controls:

minority status, ln(income), ficoscore, loan to value ratio at origination, delinquency in the last 6 months,an adjustable rate mortgage indicator.

Table 12: Diff-In-Diff: Mediation Increases the Probability of Foreclosures in FL

Dependent Variable=1 if Loan Received Notice of Foreclosure in the Given Month						
	(1)	(2)	(3)	(4)	(5)	(6)
	All of FL	Miami Only	Rest of FL	All of FL	Miami Only	Rest of FL
Treatment	0.0342***	0.0164***	- 0.00910**	0.00572***	0.0100***	-.0112***
	(0.00574)	(0.00243)	(0.00395)	(0.00193)	(0.00223)	(0.00373)
Includes						
HMDA Controls	-	-	-	X	X	X
Month Dummies	X	X	X	X	X	X
County Dummies	X	X	X	X	X	X
Home Value$_t$	X	X	X	X	X	X
Observations	436854	340229	96625	354685	280611	74074

Notes: Marginal effects presented. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Observations are loan months. Probit model, excludes loans that were modified.
Treatment is equal to one if the loan is in a county with mandatory mediation after the legislation was implemented.
Columns (4), (5), (6) include loan-level controls:
minority status, ln(income), ficoscore, loan to value ratio at origination,
delinquency in the last 6 months,an adjustable rate mortgage indicator, and month dummies.

Table 13: Diff-In-Diff: Mediation Increases the Probability of Foreclosures in Philadelphia

Dependent Variable=1 if Loan Received Notice of Foreclosure in the Given Month				
	(1)	(2)	(3)	(4)
	1-year	6-month	1-year	6-month
Treatment	0.00442***	0.00558***	0.00252**	0.00466***
	(0.00121)	(0.00168)	(0.00116)	(0.00177)
Includes				
HMDA Controls	-	-	X	X
Time Dummies	X	X	X	X
Home Value$_t$	X	X	X	X
Observations	98978	44852	85591	39558

Notes: Marginal effects presented. Standard errors in parentheses.
Observations are loan months. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Probit model, excludes loans that were modified.
Treatment is equal to one if the loan is in a county with mandatory
mediation after the legislation was implemented.
Controls include minority status, ln(income), delinquency in the last 6 months,
fico score, loan to value ratio, an adjustable rate mortgage indicator.