How the Source of Financing Discrimination Affects Housing Opportunities for FHA Buyers*

Brent W. Ambrose[†], James N. Conklin[‡], Sonia Gilbukh[§], and Luis A. Lopez[¶]

October 16, 2024

Abstract

In this paper we ask whether and why home buyers who use Federal Housing Administration (FHA) loans are excluded from a part of the housing market. Using proprietary data on for-sale real estate listings, we find that 42% of for-sale listings of FHA eligible homes state that FHA offers are not acceptable for the seller. We thus find that the FHA program rules and regulations, while intended to help low income families become homeowners, significantly limit the choice set of properties for these borrowers. We find that while location and time accounts for only about 10% of the variation in whether the FHA offers are acceptable, real estate agents explain over 40% of the variation. We further find that having participated in an FHA transaction (either as a buyer or a selling agent), agents are more likely to have their subsequent listings open to FHA borrowers. We thus conclude that agents play a large role in market access for FHA borrowers, in part because they expect the program to be difficult to navigate.

*We thank the Steven L. Newman Real Estate Institute for the generous support.

[†]Smeal College of Business, The Pennsylvania State University, University Park, PA
[‡]Terry College of Business, University of Georgia, Athens, GA
[§]Zicklin School of Business, Baruch College, CUNY, New York, NY
[¶]College of Business Administration, University of Illinois at Chicago, Chicago, IL

1. Introduction

Prospective home buyers in the US have a wide menu of financial contracts (known as mortgages) available to assist them with their house purchase. These various mortgage products are originated through different institutions or agencies, and provide lenders with varying levels of credit enhancements and liquidity. The heterogeneity in financing alternatives introduces risks for sellers and their advisors (such as agents) regarding the completion of the sales transaction, which thus necessitates evaluating borrower offers in light of the differential financing terms. These risks, such as potential delays and uncertainties commonly associated with mortgage credit (Han and Hong, 2024), enable financing to impact the price and liquidity of residential property.[1]

The risks associated with this financing complexity arise, in part, from differences between conventional mortgages and loans that are originated under the Federal Housing Administration (FHA) mortgage insurance program. In particular, the FHA program is targeted towards liquidity constrained individuals due to it's low down payment requirements, and unique qualification requirements for both the transacting property and the borrower. As a result, FHA offers are often associated with higher "financial risk." In contrast, conventional financing refers to a loan that is not insured or guaranteed by a government agency (e.g. the FHA, Department of Veterans Affairs (VA), or the Department of Agriculture.) While a substantial literature provides theoretical models and empirical evidence that focus on borrower characteristics and competition between lenders to explain borrower choices regarding these mortgage financing alternatives (Courchane, Darolia, and Zorn, 2014; Pennington-Cross and Nichols, 2000; Hendershott, LaFayette, and Haurin, 1997; Davis et al., 2020; Karikari, Voicu, and Fang, 2011), we focus on how the risks associated with different financing alternatives affect buyer and seller experience in the housing market. Specifically, we examine the motivations and consequences of "between agent communications" in signaling

[1] Reher and Valkanov (2022) use survey evidence to show that behavioral bias also explains the price premium on mortgage-financed properties.

the willingness to entertain purchase offers contingent on various financing programs.

According to the National Association of Realtors (NAR), 86% of home sellers are assisted by a real estate listing agent, with one of the largest benefits of this assistance being the agent's access to a multiple listing service (MLS).[2] The MLS is a computerized platform that provides a mechanism for real estate agents to efficiently communicate to each other information about the seller's house and the seller's motivation. Before the home is listed on the MLS, the seller and listing agent enter into a contract that outlines the terms and conditions under which the agent will represent the seller. The listing agreement typically includes the listing price, an exclusive right to sell provision, specifics on the responsibilities and duties of the agent, the duration of the listing, and the agent's fee or commission rate. After the listing agreement is signed, the agent enters this information into an MLS system to generate a residential property listing. This listing is one of the primary tools that other real estate agents use to help prospective buyers screen houses to view.

In addition to the items outlined above, the listing agreement may state the types of financing that the seller prefers a potential buyer to use. For example, Figure 1 shows an excerpt from a listing agreement in North Carolina. With advice from the listing agent, the seller can indicate in Item 6 whether Cash, FHA, VA, USDA[3], Loan Assumption[4], or Other types of financing (used by the buyer) are acceptable. Notice that multiple boxes can be selected. Figure 2 presents an example of a Texas listing agreement that includes two additional financing types (Texas Veterans Land Program and Owner Financing).[5] In essence, the MLS platform provides the listing agent with a mechanism for communicating to other agents the type of offer they (and the seller) are willing to entertain. Once this information enters the MLS, buyer agents may consider financing type accepted when advising their clients on properties they should consider and on bids that are

[2] https://www.nar.realtor/research-and-statistics/quick-real-estate-statistics.

[3] Created to support mortgage financing in rural communities, the USDA loans are only available in designated areas.

[4] Assumable loans allow the buyer to take over the mortgage of the seller, usually with approval of the lender. While this option is very attractive in a market with rising interest rates, it is not as relevant in our sample period.

[5] Throughout the paper we will refer to these stated preferences as "acceptable financing."

likely to be accepted. This may effectively reduce the choice set for FHA buyers.

The acceptable financing types mentioned in the listing are not binding; a buyer can submit, and a seller can accept, an offer with financing that falls outside of the indicated categories. The non-binding aspect of the listing agreement raises a number of interesting questions: Why would the seller or listing agent indicate a financing preference? Are the properties where the listing agent communicates an FHA financing restriction different from other properties? Are ultimate sales transaction outcomes different depending on the communication about acceptable financing contingencies?

In addition to seller outcomes, we are interested in examining how this between agent communication affects buyers. FHA-insured loans are often used by low-to-moderate income first-time homebuyers, so limiting the ability of buyers to use FHA financing may have implications for equity and access to homeownership if acceptable financing impacts the types of offers received, and ultimately the type of financing used to purchase the property (Goodman and Nichols, 1997; Ambrose and Pennington-Cross, 2000; An and Bostic, 2008; Spader and Quercia, 2012; Caplin, Cororaton, and Tracy, 2015; Davis et al., 2020). In our data, approximately one third of listings that mention acceptable mortgage financing exclude FHA, and we show that there is indeed a strong correlation between the acceptable financing types mentioned in the listing and the actual financing that a buyer uses to purchase the property. For listings that exclude FHA as an acceptable form of financing and ultimately sell, only 10% are purchased with FHA financing. In contrast, for listings that explicitly mention FHA as acceptable, 28% are financed with an FHA-insured loan. Thus, the acceptable financing field is not simply "cheap talk" (Schmidt, 2020).

To focus our analysis on the role of financing in the listing process, we restrict our empirical analysis to properties that are likely eligible for FHA mortgages. As discussed in greater detail below in Section 2, the FHA created a number of criteria that determine whether a property is eligible for financing via an FHA mortgage. Crucially, it is the interaction of FHA's minimum downpayment requirement and loan size limit (the FHA loan limit) that determines the maximum

property value that would likely be eligible for an FHA mortgage. The FHA loan limit is adjusted each year based on changes in property prices over the previous year. While the GSEs also have minimum downpayment requirements and loan size limits, these are less restrictive than the FHA requirements. Thus, by focusing our attention on properties that are clearly eligible to be financed via an FHA mortgage, we ensure that both FHA and conventional financing options are viable.

We begin our analysis by using a large database of MLS listings from 2001 to 2021 provided by CoreLogic to show significant variation over time in the share of listings that exclude (include) FHA as an acceptable form of financing. We restrict the analysis to those properties that have listing prices that fall below the maximum price that would qualify for an FHA mortgage in the listing year. During the housing boom approximately half of listings exclude FHA. In the subsequent housing bust and beyond, the share of FHA acceptable listings climbs to 80%. These listing patterns appear correlated with broader mortgage market lending trends documented elsewhere (e.g., Frame, Gerardi, and Sexton (2021)). Note, though, that even in the post-boom period, when FHA *lending* regained market share, a large share (20%) of listings excluded FHA as acceptable form of financing.

We then discuss the role of real estate agents in facilitating the house sale transaction and show evidence indicating that agents play a significant role in determining whether the listing indicates that FHA financing is acceptable. We note that the distribution of agents categorized by financing contingencies is somewhat bimodal, with 23 percent of listings being with an agent that never indicated FHA financing acceptable while 29 percent always communicated that FHA financing was acceptable. We also document that agent experience with FHA in a prior transaction plays a significant role in determining whether the between agent communication indicates that FHA financing is acceptable. We show that agents with FHA experience in previous years are more likely to communicate that FHA financing is acceptable.

Next, we confirm that the communication between agents via listings impacts the type of financing used in the sales transaction. That is, listings indicating that FHA financing is acceptable

are much more likely to transact with an FHA-insured loan. To account for potential selection bias, we employ a quasi-experimental instrumental variable (IV) strategy that makes use of our previous result that real estate agents often set the same financing preferences from one transaction to the next, and that homeowners commonly hire agents who they have worked with in the past. Our instrument is the likelihood that the seller's agent will signal that FHA financing is allowed, which we define as the product between (i) the share of listings allowing for FHA financing in the portfolio of the real estate agent who represented the property owner as the buying agent during the property's previous transaction, and (ii) a dummy variable for whether this agent is still active in the housing market at the time of the property's current listing. To illustrate our approach, consider two sellers, A and B, who purchased their property with buying agents that always include FHA on their listings. If the agent who assisted seller A is still active, then seller A can hire this agent to now act as the selling agent, and thus is likely to include FHA as acceptable financing. In contrast, assuming seller B's agent is no longer available to work, then seller B will end up with an average chance of including FHA on their listing and thus experience a negative shock to the likelihood that FHA financing is allowed. On the other hand, if the original buyer agents had the strategy of never including FHA, then seller B would experience a positive shock to the likelihood that FHA financing is allowed.

Next, we explore validity for several reasons for why an agent would communicate a preference against offers contingent on FHA financing. As FHA financing may involve additional underwriting-related risks over and above those associated with conventional mortgages, we focus on typical "complaints" offered by brokers for why they would prefer not to entertain an FHA contingent offer. First, we examine the risk that an FHA contingent offer will fall through, necessitating finding a new buyer. Reflecting this concern, we show that FHA mortgages are 3.3 percentage points more likely to be rejected than similar conventional mortgages over the period from 2009-2021. Thus, in reaction to the increased rejection rate for FHA financing following the GFC, brokers may seek to avoid this additional risk by communicating that FHA contingent offers

are not acceptable.

Second, we consider the listing agent's concern about compensation should an FHA contingent offer fail. To do so, we look at the relation between the probability of sale and FHA contingent offers. We find that listings indicating that FHA financing is acceptable have a 1.7% lower probability of sale. This is consistent with the view that FHA financing imposes additional potential costs as FHA has more stringent appraisal regulations to ensure that the property meets certain levels of habitability and structural integrity. Thus, sellers may face uncertainty regarding costs to repair or renegotiation of the sales price if the FHA appraiser uncovers property defects, which would derail the sales transaction.

Third, we examine the role of broker effort in facilitating the sales transaction. This complaint centers on the concern that the FHA program is not as efficient as conventional financing, and thus FHA contingent offers may take a long time to close. Supporting this concern, we show that listings indicating FHA financing is acceptable take approximately 5 days longer to sell versus other transactions. However, given that the typical time-to-sale is 100 days, we note that this increased time-to-close is not material.

Finally, we focus on the complaint that the bureaucratic process and greater risks associated with FHA financing limit the incentive for the listing agent to expend effort on an FHA contingent offer. Consistent with the notion that buyers demand compensation for the additional closing risks, we find that FHA contingent offers do sell at a 1.23% higher price relative to other offers.[6] However, after factoring the average sales price and typical broker commission, we find that the marginal benefit to the listing agent of considering an FHA contingent offer is about $40, whereas the marginal costs associated with these offers is approximately $54. Thus, we find that the marginal costs outweigh the marginal benefits.

The remainder of the paper is organized as follows. Section 2 discusses the FHA program

[6]The price premium associated with FHA transaction is consistent with findings in the literature (Asabere and Huffman, 2008).

and Section 3 describes the CoreLogic listing data and the supplemental data sources used in our paper. In this section we also describe the patterns of acceptable financing in our sample. Section 4 discusses the role of listing agents and their prior experience in the communication of acceptable financing contingencies. Section 5 documents how between agent communication regarding acceptable financing impacts the ultimate housing transaction. In Section 6, we explore potential reasons why agents may restrict financing contingencies. These include the potential that the transaction may fail (Section 6.1), concerns about compensation (Section 6.2), concerns about time-on-the-market (Section 6.3), and agent effort (Section 6.4). Finally, Section 8 concludes.

2. FHA Background

The Federal Housing Administration (FHA) was created in 1934 to stabilize the US housing market and promote the federal government's homeownership goals via the creation of a mortgage insurance program that protects lenders in the event of borrower default. Mortgages that are insured under the FHA's Mutual Mortgage Insurance (MMI) program are referred to as "FHA mortgages".[7]

As a product of a government run insurance program, the FHA mortgage program targets mostly middle and lower-income home buyers and, in particular, first-time home buyers. In order to accomplish this goal, the FHA created a set of criteria to determine loan amounts and borrower qualifications. For example, the 2024 FHA guidelines require a 3.5% downpayment for borrowers with credit (FICO) scores above 580 and a debt-to-income ratio less than 43%. Furthermore, the borrower must use the house as their primary residence. FHA also limits the size of the mortgage loan (called the FHA loan limit), which varies based on local market conditions. For example, the national single-family loan limit in 2024 is $420,680 and increases to $970,800 in high-cost areas. In contrast, the Fannie Mae and Freddie Mac purchase mortgage underwriting guidelines (i.e., the conventional-conforming mortgage) are less generous for borrowers with lower incomes

[7] See Weicher (1992) and Van Order and Yezer (2014) for a detailed discussion of the development of the FHA mortgage program.

and savings: a maximum loan-to-value ratio of 95%, debt-to-income ratio less than or equal to 36% if the borrower's credit score is greater than 680, and a loan amount equal to or less than $766,550 (or $1,1149,825 in high-cost areas).[8]

In addition to borrower underwriting requirements, FHA policy sets requirements concerning the house that sellers must meet before the FHA mortgage is approved. For example, FHA appraisal standards are more stringent than those followed by conventional lenders and require that the appraiser look for structural issues that may affect the health and safety of the occupant or the property's structural integrity (**?**). Thus, if an appraiser determines that the house does not meet these standards, then the seller would be required to make costly repairs before the financing contract is approved. In some cases, structural issues identified by the appraiser could effectively terminate the sales contract. FHA regulations also allow for sellers to pay up to 6% of the purchase price in the form of "concessions" to help the buyer cover their mortgage closing costs, and several studies have documented that sales prices adjust to reflect the use of concessions (Zerbst and Brueggeman, 1977; Smith and Sirmans, 1984).

3. Data

3.1. Data Sources

We use CoreLogic's Multiple Listing Services (MLS) data on listing sheets of single-family residences in Houston, TX, Detroit, MI, and Charlotte, NC from 2000 to 2020. CoreLogic obtained these data from several MLS platforms, which real estate agents use to "list" (i.e., advertise) properties for sale. A typical listing sheet includes detailed information about the property's location, structural characteristics (e.g., number of bedrooms; number of bathrooms; gross living area

[8] See `chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://singlefamily.fanniemae.com/media/20786/display` and `https://singlefamily.fanniemae.com/originating-underwriting/loan-limits` for Fannie Mae's 2024 underwriting guidelines and loan limits.

square-footage; age of structure; etc.), and the seller's asking price. The information on these sheets is considered accurate, as the structural characteristics are populated automatically from local tax assessor records and listing agents must validate the information on these sheets, as required by their association's code of ethics. Real estate listing agents may be fined for entering incorrect information into an MLS platform.

While a listing sheet includes substantial information that is made public, it also hosts details that are kept private (among MLS users). For example, the listing contains private fields indicating the financing type that is acceptable to the seller ("acceptable financing"), and the financing type used by the buyer if the property is sold ("financing used"). We focus on these financing details in our study. Because the acceptable financing variable is a free-form text field, we parse the text and standardize the field, as will be discussed below. The acceptable financing types mentioned are not binding; a buyer can submit, and a seller can accept, an offer with financing that falls outside of the indicated categories. In contrast to the acceptable financing variable, which is input by the selling agent at the time of listing, the financing used field is entered by the listing agent after the sale closes.

As mentioned above, the acceptable financing field is not standardized across MLS platforms and exists as a free-form text field in our data. Most of the listings have some combination of cash, conventional, FHA, and VA financing listed as acceptable. Because the other financing types (e.g., USDA, FmHA) appear in a neglible share of listings, we focus our attention on the four main categories (conventional, cash, FHA, and VA).

We create acceptable financing categories using a hierarchy system. An agent or seller may prefer to consider cash offers exclusively if she wishes to avoid "financing risk" – potential delays and uncertainties commonly associated with mortgage financing (Han and Hong, 2024). Therefore, if cash is the only term referenced in the financing field, then we classify the observation as "Cash Only." If conventional financing is listed (by itself or with cash), we classify it as "Conventional," assuming that any seller that is willing to accept an offer with conventional mortgage financing is

also willing to accept cash, which seems reasonable. Lastly, we construct a category to encompass listings mentioning government-insured financing, either FHA or VA, and denote these collectively as 'FHA' for clarity and ease of reference in our discussion. Relative to conventional mortgages, the loan approval process on government-insured loans has additional hurdles that likely increase the seller's financing risk on FHA and VA offers.[9,10] We implicitly assume that when FHA or VA is listed as acceptable financing, cash or conventional offers would also be acceptable.

For listings that end in a sale, the listing agent will update the listing sheet to include the closing date and sales price, and the financing type used by the buyer to acquire the property.[11] Figure 5 plots the share of these sales with different forms of buyer financing over time. During the housing boom of the early-to-mid 2000s, a large share of buyers used conventional mortgage financing. However, the conventional mortgage share declined dramatically during the housing bust as the private label securitization (PLS) market disappeared. The FHA-insured share, on the other hand, was low during the boom years, but saw a marked increase during the global financial crisis. As credit conditions tightened, buyers became much more reliant on FHA-insured loans. Similarly, the cash purchase share also increased as financing conditions tightened.

Much of our analysis will focus on whether FHA is mentioned as an acceptable form of financing in the listing. But, FHA financing may not be suitable for many properties, particularly those on the higher end of the price distribution because FHA borrowers typically make small down payments, and FHA loans have maximum loan amount limits. We illustrate this point with the following example. Imagine two homes, A and B, both listed for sale in Detroit, MI in 2018. At

[9]For example, the appraisal process is generally viewed as more burdensome for FHA loans; the appraiser needs to be FHA-approved, and the appraisal itself requires additional documentation over and above a traditional appraisal. In particular, the appraiser must identify defective conditions of the property and those that require repair to ensure that the property complies with HUD's minimum property requirements. Deficiencies noted by the appraiser may need to be addressed before the loan can be approved, which can add to the burden of the appraisal process.

[10]FHA's Single Family Housing Policy Handbook is available at `https://www.hud.gov/program_offices/housing/sfh/handbook_4000-1`.

[11]After the property sells, the listing agent can indicate the type of financing used by the buyer. The buyer financing field is not standardized. Similar to the way we created our acceptable financing categories, we parse the financing used text and create financing used categories.

that time, the maximum FHA loan size for one-unit properties in Detroit was $294,515.[12] Suppose home A is listed for $175,000, and a potential buyer wishes to finance the purchase with a 96.5% LTV FHA loan, the maximum LTV allowed for FHA-insured loans. The loan amount would be $168,875, well below the maximum FHA loan limit, and the downpayment would be $6,125. Hence, Property A is a good candidate for FHA financing. In contrast, Property B is listed for $400,000. A buyer cannot use a 96.5% LTV FHA loan to purchase Property B because the loan amount ($386,000) exceeds the $294,515 FHA loan limit. Property B could be purchased with an FHA loan amount at the loan size limit ($294,515), which equates to a 74% LTV loan requiring a large down payment of $105,485. Given that borrowers using FHA financing generally lack large cash savings, the FHA loan is not the best option for borrowers making substantial down payments, and thus property B is not an ideal candidate for FHA financing. Knowing this, the agent or seller of home B may opt to exclude FHA as an acceptable form of financing in the MLS listing.

To address the issue that a seller may exclude FHA as an acceptable form of financing because the property is too expensive to be a good candidate for an FHA loan, we define a property as "FHA-eligible" if List Price$_{it} \leq \frac{\text{FHA Loan Limit}_{ct}}{0.965}$ where i, c, and t index property, county, and year, respectively. The right hand side of the equation is the maximum price a buyer could pay for a property (in county c, year t) using a 96.5% LTV FHA loan. Properties priced above this limit are unlikely candidates for FHA financing because most FHA borrowers use 96.5% LTV loans.[13] Time-varying county-level FHA loan limits, which we use to define "FHA-eligible" properties, are obtained from the Federal Housing Finance Agency. Throughout the remainder of the paper we focus on the sample of "FHA-eligible" properties.[14]

[12]Loan limits are defined at the county-level. Most of Detroit is located in Wayne County, so we use Wayne County loan limits in this example.

[13]The maximum loan-to-value ratio (LTV) on an FHA insured loan is 96.5%. The average LTV on FHA home purchase loans is 96%, which implies that most FHA borrowers approach the maximum LTV limit. `https://www.hud.gov/sites/dfiles/Housing/documents/FHAOT_Jul2019.pdf`.

[14]Properties in disrepair are also likely to be ill-suited for FHA-insured mortgages, as the FHA imposes a set of minimum property standards on FHA financed properties. Basically the property has to be in good condition and should not require any major repairs. We cannot observe whether a listed property meets those requirements, however, recently constructed properties likely do. Appendix Section we repeat our analysis using only listings for properties

We exclude properties listed for less than $10,000, as well as those listed as short sales, where the current mortgage lender agrees to receive less than the outstanding mortgage balance when the property is sold. We also drop listings where the acceptable financing field is missing. Our sample contains 6,296,565 observations (of which 1,145,045 are from Charlotte, 1,934,899 are from Houston, and 3,216,631 are from Detroit).

In Section 6.1, we discuss potential drawbacks of accepting FHA-contingent offers, such as the risk of transaction failure due to mortgage application rejection. We obtain county-level loan rejection rates by financing type from the Home Mortgage Disclosure Act (HMDA) loan application registrar data. HMDA has comprehensive coverage ($\approx$90%) of mortgage lending application activity in the United States.

3.2. Descriptive Statistics for Acceptable Financing

Figure 3 plots the share of listings that exclude and include FHA as an acceptable form of financing (conditional on the listing mentioning mortgage financing) across the three MLS platforms in our sample.[15] The sample here includes only FHA-eligible listings, as defined above.[16,17] We first focus on Houston, TX in Panel A. In the housing boom of the early-to-mid 2000s, FHA is included in approximately 50% of the listings. In the subsequent bust, however, there is a dramatic change in

that are "FHA-eligible" based on price *and* were built less than five years before the listing. Results in this alternative "FHA-eligible" subsample look similar to results when we define "FHA-eligible" based solely on listing price.

[15]From this point forward, we exclude Cash-Only listings from our analysis for two reasons. First, these listings appear to be very different from properties that mention mortgage financing. Many seem to be properties targeted to investors that require significant repairs, and likely would not qualify for mortgage financing. The listing prices for the cash-only properties tend to be substantially lower than predicted listing prices from a hedonic regression model, again suggesting that they are lower quality than the conventional and FHA listings. Second, one of our primary goals is to examine why someone would list mortgage financing as acceptable, but exclude FHA in the listing. Cash-only listings are not relevant for this analysis.

[16]Appendix Figure A.1 shows the corresponding shares when we include both FHA-eligible and ineligible properties, as well as the share of observations where the acceptable financing field is missing. We note that in Panel A that there is a sharp increase in the share of observations where acceptable financing is missing in 2010. In unreported analysis we show that this increase is not explained by brokerage or agent entry and exits; nor is it explained the types of properties being listed (observable characteristics).

[17]Appendix Table A.1 shows that in 2010 properties listed in Houston with missing acceptable financing are similar to those with acceptable financing. The missing acceptable financing shock appears to be randomly distributed to the entire market.

shares across these two categories. The share of listings that accept FHA rises sharply to roughly 80% and remains elevated throughout the remaining years in our sample.

Panels B and C display the corresponding figures for Charlotte and Detroit, respectively. Although the patterns in these cities are similar to those in Houston, there is one notable exception. Initially in both Charlotte and Detroit the majority of listings mentioned FHA, however, the share declined towards 50% as the housing boom progressed. But, as in Houston, the FHA share surged quickly and stayed high in the post-boom period in these two cities.

Taken together, the three panels of Figure 3 show that the acceptable financing field evolves in a manner similar to trends in the mortgage market. In the housing boom of the early-to-mid 2000s, when FHA market share was declining due to private label securitization growth, FHA is included as an acceptable form of financing in approximately 50% the listings. However, after the bust, when the private label securitization (PLS) market disappeared and FHA became a dominant form of financing for home purchases, the share of listings that explicitly mention FHA as acceptable climbs to roughly 80%. Thus, decisions regarding acceptable financing types at the time of listing likely reflect, at least to some degree, broad trends in mortgage markets. However, it is important to note that FHA is excluded as an acceptable form of financing in a sizable share of listings throughout our entire sample period.

Inclusion of FHA as an acceptable form of financing in the listing may correlate with property characteristics, particularly if certain types of properties are better candidates for FHA financing. Table 1 reports descriptive statistics for property attributes broken out by whether FHA was mentioned in the listing. FHA listings tend to be larger and are valued 20% higher, on average, than listings that exclude FHA, whether measured by listing or sale price. In terms of other sales outcomes, days on market and the likelihood of sale are quite similar across the two columns. Thus, there do appear to be systematic differences between properties that do and do not mention FHA as an acceptable form of financing.

4. Role of Agents and Experience

What drives the decision to include FHA as an acceptable form of financing in a listing? As a first step in answering this question, we regress a binary variable indicating whether FHA is listed as acceptable (FHA Included) on time, location, and real estate agent fixed effects. Table 2 reports the results. In column 1 we control for the list month only, which accounts for 9 percent of the variation in FHA Included. The addition of listing agent fixed effects in column 2 results in a large increase in explanatory power to 35 percent, suggesting that listing agents play a key role in the acceptable financing field. One concern with this interpretation is that this increase may be driven by the large number of agents in our data. At the extreme, if each agent only worked with one listing, then all of the variation would be absorbed by the agent fixed effects. To investigate this possibility, we run a placebo regression where we take all listings for each year and randomly reshuffle agents across listings. After reshuffling, the number of agents represented in the sample is unchanged, and so is the number of listings per agent. But, the "placebo agent" associated with a listing is not the actual listing agent.[18] Column 3 reports a low adjusted R^2 of .07. Taken together, the results in columns 2 and 3 indicate that individual agents (not simply the large number of agents in our sample) play a key role in whether a property is advertised to FHA. In Column 4 we test for the role of location by including zip code and list month fixed effects. We find that the adjusted R^2 improves marginally relative to column 1, but is well below the specification that includes agent fixed effects. In Column 5 we include agent by listing zip code fixed effects. Because many agents only list a few properties, and agents tend to concentrate their business spatially, a large number of singletons drop from the sample. We find an R^2 of 42 percent. A placebo version of this regression where agent by zip code effect is randomized again leads to a small R^2, even lower than in column 1. Again, this indicates that agents play an important role in whether FHA financing is excluded

[18] After reshuffling it is possible, although highly unlikely, that the "placebo agent" for a listing will be the same as the actual agent. Because the reshuffling is random, this would not present a problem for our placebo test.

from the listing.

To further investigate the role of agents, we build a panel data set from the MLS data of housing transactions where each observation is identified by an agent / year pair. We compute for each agent-year the fraction of the agent's FHA-eligible listings where the agent communicated that FHA financing is acceptable or allowed. We plot the distribution of agents based on their percentage of FHA allowed listings in Figure 4. Notably, for 23 percent of the observations the agent never indicates that FHA financing is allowed. Conversely, in 29 percent of the cases, agents communicated that all of their qualified listings were available for FHA financing. Thus, 52 percent of agents adopt the same communication strategy across all their qualified listings in a given year, regardless seller or property heterogeneity across listings.

One concern we have is that this observation results from agents who work with very few listings each year. For example, at the extreme, if every agent only listed one property, then we would observe a bimodal distribution since the listing is either FHA allowed or not, leading to all observations being either 0 or 1. To address this concern, we restrict the sample to observations where agents have at least five qualified listings over the sample period. Panel B shows the distribution for this sample, and clearly indicates that the distribution is still bi-modal, with 17 percent of agents having FHA never allowed and 17 percent always allowing FHA financing contingent offers.

Interestingly, the results change over the years. Panels C and D show the distribution for years 2003 and 2019, respectively. Both Panels C and D only include observations where an agent had five of more qualified listings in the corresponding year. We can clearly see that the number of agents who never list properties with FHA allowed went down from 15 percent in 2003 to about 7 percent in 2019. In contrast, the fraction of agents who always indicate that FHA financing is allowed remained about the same, only modestly changing from 15 percent in 2003 to 13 percent in 2019.

As noted above, agents have become more accepting of FHA financing over time (compare Panels (c) and (d) in Figure 4. One reason for the increased willingness to work with potential

FHA buyers is that the FHA program has increased market share significantly since the housing crisis of 2007, and thus more agents may have experience working on an FHA transaction. Furthermore, assisting in an FHA transaction allows agents to build institutional knowledge that makes subsequent FHA transactions less costly or inconvenient.

To understand the impact of agent experience on the use of financing in housing transactions, we construct a measure of FHA experience, which combines the listing and the buyer agent activity. For each agent we count how many FHA buyers they represented in a particular year, and how many of their listings closed with FHA financing. We then construct an indicator for whether an agent has prior FHA experience if they participated in an FHA transaction at any previous point during the sample period. We then regress the share of qualified listings where the agent indicates that FHA financing is allowed on our measure of prior FHA experience. Table 3, column 1 reports results for this regression with no additional controls. On average, agents with FHA experience in previous years have 9.4 percent more of their listings specifically allowing FHA buyers. In column 2 we control for year fixed effects, and still find an effect of 7.7 percent. Column 3 additionally controls for the agent effect. The results indicate that after gaining FHA experience, an agent is 1.1 percent more likely to allow FHA financing on their future listings.

5. FHA Inclusion and Listing Outcomes

We now examine whether between agent communication regarding acceptable financing for offers presented to sellers impacts the ultimate housing transaction. Specifically, we're interested in the probability of selling to an FHA buyers, the overall probability of sale, and the associated close price conditional on the sale.

We begin by examining whether agent communication about FHA inclusion results in a more likely FHA sale. Figure 6 shows the share of listings that sold to FHA borrowers over time broken

out by whether the agent indicated that FHA financing was acceptable.[19] Over the sample period, listings that include FHA are more likely to be purchased with FHA-insured loans. The gap widens in the post-boom period, with inclusive listings being approximately 10-15 percentage points more likely to sell to FHA buyers. Clearly a strong relationship exists between acceptable financing type communicated in the listing and the actual buyer financing used to acquire the property.

We run the following regression specification to formally test for this relationship:

$$y_{i,t} = \beta incl FHA_{i,t} + \delta_3 W_{i,t} + \alpha_{i,t} + \epsilon_{i,t} \tag{1}$$

Here $y_{i,t}$ is the outcome of the listing and $incl FHA_{i,t}$ is the indicator variable for whether the listing included FHA as a form of acceptable financing. We additionally control for listing characteristics $W_{i,t}$: number of bedrooms, bathrooms, log of the living area in square feet, whether there is a garage or no. $W_{i,t}$ also includes the listing agent's experience as measured by the number of clients (buyers or listings) they had in the previous year. We include zip code by year fixed effects $\alpha_{i,t}$ and the error term $\epsilon_{i,t}$.

Although the evidence suggests that stated financing preferences are consequential, a simple OLS regression is subject to property selection concerns. Some properties, while within the conforming loan limits, might be unlikely to qualify for FHA financing because of their poor condition and seller's unwillingness to fix them up before sale. Thus, the pool of listings that indicate FHA as acceptable financing might have more FHA eligible properties relative to the pool of listings that exclude FHA. To account for this selection, we use an instrumental variables (IV) strategy that relies on our previous result that agents play a large role in the financing preference selection.

Our IV strategy is possible due to three features of the market. First, when homeowners decide to sell their house, they are very likely to hire an agent they have worked with in the past (inertia): namely, the buyer's agent who assisted them with the purchase of the property. Out of all the

[19]The denominator in calculating the FHA buyer share in Figure 6 includes listings that do not result in a sale.

listings where a previous sale is observed in our data, a seller is represented by their former buying agent 15.4% of the time if that agent is still active. Second, if that former buyer's agent has exited the market and is no longer available, the seller makes a new "draw" and ends up with an intermediary that is representative of the average population of agents in terms of FHA inclusion (mean reversion). Third, an agent's strategy of including or excluding FHA as a form of acceptable financing is very persistent and does not relate to other observable characteristics of the agent that plausibly influences a listing's outcome (persistence).[20]

Figure 8(a) captures the inertia, mean reversion, and persistence in our quasi-experimental IV design. The sample here includes only listings for properties that have a previously recorded sale. To simplify the description, we will refer to an agent's "listing strategy" as the agent's propensity to include FHA as acceptable financing in their listings when acting as a seller's agent. For each listing, the x-axis marks the listing strategy of the buyer's agent of the initial sale[21] and the y-axis is the listing strategy for the listing agent of the subsequent listing. The two lines represent the relationship between the two values in two sub-samples: one, where the buyer's agent in the initial sale is still in active in the market at the time of the subsequent listing, and the other, where the initial buyer's agent has exited the market by the time of the subsequent listing. Thus, in the sample represented by the blue line, some of the observations are likely to reflect the same agent on both the x-axis and the y-axis (at the extreme, if every seller used their previous buyer's agent, the blue dots would line up exactly at the 45 degree line). Indeed, we see a strong positive relationship between the two values.

On the other hand, in the sample represented with orange, the buyer's agents in the x-axis cannot be the same as the ones represented on the y-axis, because they are no longer available at the time of the listing – sellers have to select a new agent to represent them. In this sample, there

[20]This approach has been originally introduced by Abaluck et al. (2021) in application to health insurance. Gilbukh and Goldsmith-Pinkham (2024) apply this strategy to evaluate the role of real estate agent experience on listing outcomes.

[21]For those buyer agents that exit the market before the subsequent listing, we record the listing strategy in the year before exit.

is little, if any, relationship between the listing strategy of the buyer's agent the seller used when purchasing the property and the new listing agent chosen for the subsequent sale. This exercise confirms that agents' financing preferences are not merely reflecting selecting on properties. If that was the case, an exogenous change of an agent would not be predictive of a change in the subsequent listing strategy.

The IV approach relies on the differences in the slopes of the blue and orange line in Figure 8(a). Our instrument, $Z_{i,t} = X_{i,t} \times T_{i,t}$, is the interaction of buyer agent's listing strategy in the most recently observed period (the fraction of their FHA-eligible listings that stated FHA as a form of acceptable financing, $X_{i,t}$) and the indicator of whether that agent is still actively working in the market at the time of listing ($T_{i,t}$). In the IV regressions we control for the direct effect of the initial buyer's agent exit ($T_{i,t}$) and the initial buyer's agent listing strategy ($X_{i,t}$), as well as the purchase year interacted with sale year. This approach is analogous to the difference-in-differences approach driven by the interaction of two effects after controlling for the baseline marginal effects.

To illustrate our approach, consider two households, H^A and H^B, who both purchased their homes in 2010 and used buyer's agents A and B, respectively. Both agent A and agent B act as selling agents for other clients and their listings always include FHA as acceptable financing. Now, in 2018, both households decide to sell their home. Agent A is still an active agent in the market, however, agent B is no longer in the industry. H^A is likely to work with agent A as their selling agent and to follow A's usual strategy of including FHA as acceptable financing. On the other hand, H^B cannot use agent B as a listing agent because B has exited the market. H^B will hire a different agent who, in expectation, has an average propensity to include FHA as acceptable financing. Thus, household H^B will experience a negative shock in the likelihood of listing FHA as acceptable financing. If, on the flip side, agents A and B never included FHA, then choosing a new agent would deliver a positive shock in FHA inclusion for household H^B.

Formally, we run the following specification:

$$inclFHA_{i,t} = \tilde{\beta} Z_{i,t} + \tilde{\delta_1} X_{i,t} + \tilde{\delta_2} T_{i,t} + \tilde{\delta_3} W_{i,t} + \tilde{\alpha}_{i,t} + u_{i,t} \tag{2}$$

$$y_{i,t} = \beta \widehat{inclFHA}_{i,t} + \delta_1 X_{i,t} + \delta_2 T_{i,t} + \delta_3 W_{i,t} + \alpha_{i,t} + \epsilon_{i,t} \tag{3}$$

This specification directly controls for agent exit ($T_{i,t}$) and the buyer agent listing strategy ($X_{i,t}$). We additionally include controls for listing and listing agent characteristics $W_{i,t}$ as in the OLS regression. We also include zip code fixed affects and the purchase-year-by-listing-year-by-fips-code fixed effects, so that we are comparing two sellers that bought their home and subsequently listed it for sale in the same years in comparable neighborhoods.

The necessary assumptions for the IV regression to provide unbiased results are relevance and exclusion. Figure 8(a) shows that the relevance assumption is satisfied. The exclusion restriction states that the instrument is correlated with the outcome only through the propensity of the listing agent to include FHA as acceptable financing. This could be violated if, for example, there were other characteristics of a real estate agent that correlate with the listing strategy as well as the subsequent listing outcomes. Alternatively, it could be that listing characteristics correlate with the instrument so that there is selection in terms of which properties experience a positive or negative shock to their propensity of being listed with FHA included as an acceptable form of financing. Although the exclusion assumption is fundamentally not testable, we provide evidence that the assumption holds by examining whether the observable characteristics of the listing and the listing agent correlate with the instrument. In Figure 8(b) we first regress the listing agent's listing strategy on the observable characteristics of the property and the listing agent's experience. We then use the regression to compute fitted values of the listing agent's listing strategy. Finally, we replicate the exercise in Figure 8(a) by using these fitted values on the y-axis rather than the realized listing strategy. If there were systematic differences between our instrument and the fitted values, we would find differences between the blue and orange lines. Instead, the instrument does not seem

to be correlated with the predictable components of the outcome variables.

Table 4 reports the results. We first use the ordinary least square (OLS) method and regress the outcome of selling to an FHA buyer on whether the FHA financing was included in the list of acceptable financing. Column (1) reports the results with list-month-by-zip code fixed effects. In column (2) we report results with additional controls for property characteristics and the hedonic residual (to account for unobservables that are correlated with list price). Column (3) reports the results from the IV regression and column (4) repeats the OLS specification on the IV sample for comparison. Indeed, an FHA sale is much more likely in listings that include FHA as a form of acceptable financing. The difference in probabilities range from 5.9% to 7.9% higher likelihood and our preferred, IV specification, estimated a 7.6% increase in probability of being sold to an FHA buyer.

Tables 5, 6, and 7 report results for the effect on sale probability, days to sale, and sale price. We find that including FHA leads to over 4pp increase in probability of sale within a year. This is a significant increase from the average probability of sale of 65% in our data. We find that conditional on sale, listings that included FHA tend to spend more time on the market. About 7.8 days in the sample of the repeat sales. However we find that sellers who choose to include FHA are able to get a significant price premium of 9.4 log points.

6. What are the incentives to include or exclude FHA?

What are the incentives for sellers and their agents to exclude (or include) FHA as a form of acceptable financing on the listing? FHA financing may entail additional underwriting-related risks over and above that of cash or conventional financing offers.[22] For example, strict FHA underwriting requirements may increase the likelihood that an accepted FHA offer fails to materialize into a

[22] Araj (2023) notes that when FHA financing is used to purchase a home, "the home must meet the government's livability standards. That means the FHA appraisal process can create problems and delays. For this reason, given a choice of offers, many sellers will go with a conventional mortgage or – better still – an all-cash offer."

closed transaction or causes a delay in the closing date. On the other hand, if advertising to FHA increases foot-traffic at listings, mentioning that FHA is allowed could increase the likelihood of sale and potentially trigger competition among bidders.[23] In this section, we examine agent incentives to include and exclude FHA as an acceptable form of financing in the listing. We focus on four common "complaints" brokers often report regarding buyer use of FHA financing and present evidence to support or reject their validity.

6.1. Complaint: "I will have to find another buyer."

Relative to cash or conventional financing, the additional hurdles associated with FHA underwriting may increase the effort that the listing agent must engage to complete a transaction and obtain a commission. For example, FHA borrowers may not be able to complete the transaction if the appraised value arrives substantially below the agreed contract price, as FHA borrowers typically rely on the program's low down-payment requirements (3.5%) to purchase the property.[24] In another scenario, the appraiser may discover an unanticipated reason that the property does not meet the FHA's minimum property standards and the seller is unwilling to pay for the necessary improvements. In either case, if an offer contingent on FHA financing is accepted and the sales transaction falls through, the listing agent would incur additional costs to find an alternative buyer.

While we do not observe financing for failed transactions, we can calculate rejection rates by financing type for home purchase loan applications using 2000 to 2021 HMDA data. Figure 8 Panel A plots county-level rejection rates for FHA, VA, and conventional mortgage applications. We weight each county by the number of observations in our data. It shows that FHA and VA applications are indeed more likely to be rejected in the period following the housing bust. While

[23] While we can see if a listing sells, unfortunately we cannot observe the number of potential buyers that visit a property or reasons that a listing does not result in sale.

[24] This situation is not ideal for the seller, who may need to engage in negotiations to lower the sales price. If the seller refuses to negotiate, the buyer might have to increase their downpayment to bridge the financing gap (keeping LTV constant). Notably, borrowers often opt for FHA financing due to limited downpayment funds, making it difficult to cover the larger downpayment and potentially leading to a failed sale.

on average, the FHA loans are 0.5pp more likely to be rejected, in the period of 2009-2021 the difference in rejection rates is 3.3pp. Similarly, VA loans are 3.1pp more likely to be rejected than conventional loans between 2009-2021, but are in fact 1.2pp more likely to be accepted on average over the entire period. Panel A of Figure 8 thus provides suggestive evidence that FHA offers carry additional financing risk due to a lower likelihood of loan approval. Hence, a listing agent could avoid the additional risk by advising the seller to not consider FHA offers.

6.2. Complaint: "I might not get paid"

A related concern for the listing agent is that they may not be compensated if the transaction fails and the seller decides to permanently withdraw the property from the market. To test the compensation risk conjecture, we examine the relation between the likelihood of sale and whether the listing agent mentions that FHA financing is allowed. Table 5 presents estimates from linear probability models where the dependent variable is an indicator for whether the listing ends in a sale. Column 1 indicates that a listing is 4.14pp less likely to result in a sale if the listing agent signals FHA financing as acceptable. The effect is statistically significant at the 1% level and accounts for housing characteristics and unobserved neighborhood trends, captured by time-ZIP fixed effects. Controlling for hedonic residuals and agent experience in column 2, the association between mentioning that FHA financing is accepted and the sale likelihood is estimated to be -1.73pp. In column 3, where the sample is set to property listings that have a predicted price falling within 5% of the list price to remove properties with extremely high or low unobservable quality, the negative relation shown between mentioning FHA acceptance and the sale likelihood remains statistically significant at the 1% level.

Of course, the decision to include FHA as an acceptable form of financing in the listings is likely endogenous. In column 4 we implement our instrumental variable strategy (discussed in Section 5) to identify the effect of FHA inclusion on the likelihood of sale. Recall that our IV

approach relies on properties that sell more than once, so there is a large decline in the number of observations in column 4. Given the reduced sample size, it is not feasible to include time-by-Zip fixed effects in this specification. Rather, we include Zip Code fixed effects and time-by-CBSA fixed effects. Mentioning FHA as an acceptable form of financing decreases the likelihood of sale by 4pp. Because both the sample and fixed effects change in column 4, it is difficult to compare the coefficient estimate to the OLS estimate in column 3. To facilitate comparison, we report OLS estimates on the IV sample using the same fixed effects in column 5. The IV and OLS estimates in columns 4 and 5 are similar.

Combined, the results in Table 5 suggest that agents may face increased compensation risk (due to a lower probability of sale) when including FHA as an acceptable form of financing in the listing.

6.3. Complaint: "It takes a long time to close"

We test the impact of mentioning the allowance of FHA-backed offers on the days-to-sale, which is the number of days it takes a listing agent to find an able and willing buyer for a given property and complete the transaction for sold listings. Besides failed sale attempts possibly delaying the transaction (as discussed in Section 6.2), a listing agent may incur additional time and effort to help a seller meet FHA regulatory requirements when accepting offers backed by FHA financing. For example, if the appraiser or inspector requests property improvements to ensure that the property meets the FHA's minimum property criteria, the listing agent would have to find a licensed contractor and delay the "close of escrow"—when all parties meet to sign the final paperwork—until all the required improvements are completed and approved in order to sell the property to a buyer using FHA financing. Table 6, column 1 shows that the days-to-sale is about 5 days longer for listings that mentions that FHA financing is allowed vs listings that do not. In column 2, we account for the hedonic residual and the agent's experience. Column 3, additionally restricts the sample to

property listings with a list price that is 5% of the predicted purchase price. Both columns 2 and 3 suggest that considering FHA-back offers is associated with about two more days-to-sale. Our IV estimate in column 4 indicates that FHA-inclusion increases the days to sale by 8 days. For reference, column 5 provides OLS estimates using the same sample and fixed effects as in column 4. Thus, listings that entertain offers from FHA buyers typically take longer to sell than listings that do not mention FHA financing.

6.4. Complaint: "The effort is not worth it"

Another concern a listing agent may have is that the additional effort associated with entertaining FHA-contingent offers may only be marginally compensated, if at all. As listing agents typically are paid about 3% of the sale price, we examine the relation between indicating that FHA financing is acceptable and price. Table 7 reports the price impact of the considering FHA-backed offers. We observe that the price is about 17% higher among listings that allow for FHA financing than listings that do not signal that FHA financing is acceptable. However, the price effect of allowing for FHA financing declines to about 1.23% after accounting for the hedonic residuals and agent experience. The coefficient is closer to 1.1% when limiting the sample to listings within 5% of the predicted purchase price. The IV estimate (and corresponding OLS estimate) in columns 4 and 5 are also positive, but much larger than the estimates in the first three columns. All of the OLS and IV estimates in Table 5 are statistically significant at the 1% level.

To put the results into perspective, if the average close price is $123,321 among properties that did not mention that an FHA is allowed, at a 3% commission rate the listing agent's marginal value of entertaining FHA bids for these properties is approximately $40, on average. However, the marginal cost of entertaining FHA backed-offers from the increased uncertainty of transaction failure (show in Section 6.2) and risk of not collecting the negotiated commission is approximately $54, on average.[25] Therefore, the results imply that listing agents that did not mention that FHA

[25] $\$54 = \text{Commission Rate} \times \text{Price} \times \Delta \text{ Pr(Failure)} = 3\% \times \$123{,}321 \times 1.46\%$. For simplicity, we do not discount

offer are allowed considered the marginal cost of accepting FHA offers to out-weight the marginal benefit.

7. Market Availability by Race

We have shown that buyers who rely on FHA financing face significant differences in market availability as compared to buyers using conventional financing. We will now show how this exclusion differs across races. Using HMDA data, we construct a panel of applicant counts for each zip code in our main dataset. Figure 9 Panel A plots the share of applicants of each race that rely on FHA financing. In 2007, when the subprime market dried up, we see this fraction picking up for all races, but Blacks and Hispanics continued to have a larger fraction of FHA borrowers until the end of our sample. Plotting the breakdown by race of all FHA applicants in Panel B, we show that the majority of FHA applicants are White, about 20% of applicants Black and 20% Hispanic. Asians in our sample do not seem to rely on FHA financing.

Next, we use our MLS listings level data to compute the average percent of listings that include FHA as a form of acceptable financing in each zip code for each year. We then compute the average market availability for FHA borrowers of each race, as well as the average market availability for all applicants of a particular race. Figure 10 Panel A shows the results for FHA borrowers. Here, for each year, we take the average fraction of listings that include FHA across all zip codes where there are borrowers of that race, weighted by the share of all FHA applicants of a particular race that applied in that zip code. We don't find significant differences among Blacks, Hispanics and Asians. However White FHA applicants face more restrictive markets in our time period. In Panel B we compute market availability for all applicants of each race by assuming that non-FHA applicants had access to 100% of the market. Here Asian borrowers have access to most of the market because most Asian applicants were not using FHA financing. On the other hand

these values to the present. This assumption does not materially affect back-of-the-envelope inference.

Blacks and Hispanics have a significantly lower fraction of the market available to them as they rely heavily on FHA financing. This is despite the fact that, conditional on applying for FHA financing, they tend to apply in more FHA inclusive zip codes.

8. Conclusions

In this paper we study between agent communication regarding potential buyer choice of financing for the transaction. We find that for more than half of listings that are eligible for FHA based on price, the listing specifically restricts FHA financing contingent offers. This suggests that FHA borrowers are excluded from a large portion of the market. Our paper suggests that real estate agents play a crucial role in the way the housing search markets are structured and in access to the housing market for FHA buyers.

References

Abaluck, J., M. Caceres Bravo, P. Hull, and A. Starc. 2021. Mortality effects and choice across private health insurance plans. *The quarterly journal of economics* 136:1557–610.

Ambrose, B., and A. Pennington-Cross. 2000. Local economic risk factors and the primary and secondary mortgage markets. *REGIONAL SCIENCE AND URBAN ECONOMICS* 30:683–701. doi:10.1016/S0166-0462(00)00050-8.

An, X., and R. W. Bostic. 2008. GSE activity, FHA feedback, and implications for the efficacy of the affordable housing goals. *JOURNAL OF REAL ESTATE FINANCE AND ECONOMICS* 36:207–31. ISSN 0895-5638. doi:10.1007/s11146-007-9066-2.

Araj, V. 2023. FHA home loan closing costs: How much should I expect to pay? *Rocket Mortgage.* Available at https://www.rocketmortgage.com/learn/FHA-loan-closing-costs.

Asabere, P. K., and F. Huffman. 2008. FHA/VA financing and price discounts. *JOURNAL OF REAL ESTATE RESEARCH* 30:191–205. ISSN 0896-5803.

Caplin, A., A. Cororaton, and J. Tracy. 2015. Is the FHA creating sustainable homeownership? *REAL ESTATE ECONOMICS* 43:957–92. doi:10.1111/1540-6229.12106.

Courchane, M. J., R. Darolia, and P. M. Zorn. 2014. The downs and ups of FHA lending: The government mortgage roller coaster ride. *JOURNAL OF HOUSING ECONOMICS* 24:39–56. doi:10.1016/j.jhe.2014.01.002.

Davis, M. A., S. D. Oliner, T. J. Peter, and E. J. Pinto. 2020. The impact of federal housing policy on housing demand and homeownership: Evidence from a quasi-experiment. *JOURNAL OF HOUSING ECONOMICS* 48. doi:10.1016/j.jhe.2020.101670.

Frame, W. S., K. Gerardi, and D. Sexton. 2021. Private subprime mortgages challenged FHA during 2000s housing boom. *Dallas Fed Economics available at* `https://www.dallasfed.org/research/economics/2021/0511`.

Gilbukh, S., and P. Goldsmith-Pinkham. 2024. Heterogeneous real estate agents and the housing cycle. *The Review of Financial Studies* hhae048.

Goodman, J., and J. Nichols. 1997. Does FHA increase home ownership or just accelerate it? *JOURNAL OF HOUSING ECONOMICS* 6:184–202. doi:10.1006/jhec.1997.0208.

Han, L., and S.-H. Hong. 2024. Cash is king? Understanding financing risk in housing markets. *Review of Finance* .

Hendershott, P., W. LaFayette, and D. Haurin. 1997. Debt usage and mortgage choice: The FHA-conventional decision. *JOURNAL OF URBAN ECONOMICS* 41:202–17. doi:10.1006/juec.1996.1094.

Karikari, J. A., I. Voicu, and I. Fang. 2011. FHA vs. subprime mortgage originations: Is FHA the answer to subprime lending? *JOURNAL OF REAL ESTATE FINANCE AND ECONOMICS* 43:441–58. doi:10.1007/s11146-009-9218-7.

Pennington-Cross, A., and J. Nichols. 2000. Credit history and the FHA-conventional choice. *REAL ESTATE ECONOMICS* 28:307–36. ISSN 1080-8620. doi:10.1111/1540-6229.00803.

Reher, M., and R. I. Valkanov. 2022. The mortgage-cash premium puzzle. *Available at SSRN 3751917* .

Schmidt, D. 2020. Stock market rumors and credibility. *REVIEW OF FINANCIAL STUDIES* 33:3804–53. ISSN 0893-9454. doi:10.1093/rfs/hhz120.

Smith, S., and G. Sirmans. 1984. The shifting of FHA discount points - actual vs expectations. *AREUEA JOURNAL-JOURNAL OF THE AMERICAN REAL ESTATE & URBAN ECONOMICS ASSOCIATION* 12:153–61. ISSN 0270-0484.

Spader, J. S., and R. G. Quercia. 2012. Cra lending in a changing context: Evidence of interaction with FHA and subprime originations. *JOURNAL OF REAL ESTATE FINANCE AND ECONOMICS* 44:505–25. doi:10.1007/s11146-010-9247-2.

Van Order, R., and A. M. Yezer. 2014. FHA: Recent history and future prospects. *HOUSING POLICY DEBATE* 24:644–50. doi:10.1080/10511482.2013.849749.

Weicher, J. C. 1992. FHA reform: Balancing public purpose and financial soundness. *Journal of Real Estate Finance and Economics* 5:133–50.

Zerbst, R., and W. Brueggeman. 1977. FHA and va mortgage discount points and housing prices. *JOURNAL OF FINANCE* 32:1766–73. ISSN 0022-1082. doi:10.2307/2326827.

Tables

Table 1. Summary Statistics

	Exclude FHA (1)	Include FHA (2)	Pct. Diff. (3)
Square Feet	1,585 (4,862)	1,658 (1,983)	.046
Total Baths	1.7 (.67)	1.8 (.68)	.068
Total Beds	3.1 (.71)	3.2 (.65)	.037
Has garage	.95 (.21)	.98 (.14)	.028
List Price (USD)	128268 (71,915)	151902 (68,415)	.18
Close Price (USD)	123297 (71,926)	152469 (69,504)	.24
Days on Market	189 (157)	187 (160)	-.0076
Sale	.6 (.49)	.58 (.49)	-.025
Observations	1,579,671	3,040,794	

Note: This table summarizes the key listing attributes broken out by accepted financing category from the listing. The sample in column 1 includes listings categorized as cash or conventional, while column 2 includes listings that mention FHA as an acceptable form of financing. Column 3 reports the percentage difference in the mean moving from column 1 to 2.

Table 2. FHA Included

	(1)	(2)	(3)	(4)	(5)	(6)
adj. R^2	0.0935	0.3496	0.0734	0.1004	0.4229	0.0760
List Month FE	Yes	Yes	Yes	Yes	Yes	Yes
Zip FE	No	No	No	Yes	-	-
Agent FE	No	Yes	No	No	-	No
P.Agent FE	No	No	Yes	No	No	-
Agent X Zip FE	No	No	No	No	Yes	No
P.Agent X Zip FE	No	No	No	No	No	Yes
N	3398953	3357069	3357069	3397100	2805407	2805407

Note: This table reports adjusted R^2 estimates of several regressions where the dependent variable is whether the listing is advertised to FHA clients and the dependent variables are a various set of explanatory factors. In column 1 we control for the list month only. Column 2 results include listing agent fixed effects together with controls for list month. Column 3 reports the same regression in column 2 except instead of the actual listing agent we assign a placebo agent. We randomize agents across listings within the list year. Column 4 reports results that include zip code and list month fixed effects. Column 5 includes list month effects as well as listing agent by zip code fixed effects. Finally, column 6 repeats the regression of column 5 with the agent by zip effects randomized within a year.

Table 3. Agent Communication Strategy and Prior FHA Experience

	(1)	(2)	(3)
Prior FHA Exp	0.0940***	0.0769***	0.0111***
	(0.0010)	(0.0010)	(0.0014)
Year FE	No	Yes	Yes
Agent FE	No	No	Yes
N	714965	714965	714965

Note: This table examines agent willingness to communicate their qualified listings to other agents and FHA buyers. In all regression specifications, the dependent variable is the fraction of qualified listings that are advertised to FHA buyers. Column 1 reports results with no controls. In column 2 we control for year fixed effects. Column 3 additionally controls for the agent effect.

Table 4. FHA Sale

	(1)	(2)	(3)	(4)
Include FHA	0.0610***	0.0591***	0.0760***	0.0791***
	(0.0003)	(0.0003)	(0.0183)	(0.0012)
Time-by-Zip FE	Yes	Yes	Yes	Yes
House Char.	Yes	Yes	Yes	Yes
Hedonic Resid	No	Yes	No	No
Agent Exp.	No	Yes	Yes	Yes
Estimation Method	OLS	OLS	IV	OLS
N	4562953	4150386	426271	426271

Note: This table reports coefficient estimates from a regressions where the dependent variable is a binary variable that takes a value of one if the listing ends in an FHA sale, and zero otherwise.

Table 5. Probability of Sale

	(1)	(2)	(3)	(4)	(5)
Include FHA	-0.0414***	-0.0173***	-0.0146***	-0.0408*	-0.0396***
	(0.0005)	(0.0006)	(0.0007)	(0.0235)	(0.0015)
Time-by-Zip FE	Yes	Yes	Yes	-	-
Time-by-CBSA FE	-	-	-	Yes	Yes
House Char.	Yes	Yes	Yes	Yes	Yes
Hedonic Resid	No	Yes	Yes	No	No
Agent Exp.	No	Yes	Yes	Yes	Yes
Sample	All	All	$+/-5\% of Hed.Price$	IV	IV
Estimation Method	OLS	OLS	OLS	IV	OLS
N	3723477	2513190	2306831	426082	426082

Note: This table reports coefficient estimates from a regressions where the dependent variable is a binary variable that takes a value of one if the listing ends in a sale, and zero otherwise.

Table 6. Days to Sale

	(1)	(2)	(3)	(4)	(5)
Include FHA	4.7780***	2.3589***	1.7910***	7.7796*	1.8780***
	(0.1235)	(0.1448)	(0.1505)	(4.4083)	(0.2674)
Time-by-Zip FE	Yes	Yes	Yes	-	-
Time-by-CBSA FE	-	-	-	Yes	Yes
House Char.	Yes	Yes	Yes	Yes	Yes
Hedonic Resid	No	Yes	Yes	No	No
Agent Exp.	No	Yes	Yes	Yes	Yes
Sample	All	All	$+/-5\% of Hed.Price$	IV	IV
Estimation Method	OLS	OLS	OLS	IV	OLS
N	2229486	1579421	1426523	305584	305584

Note: This table reports coefficient estimates from a regressions where the dependent variable is the number of days between the listing date and the sales date for listings that sell.

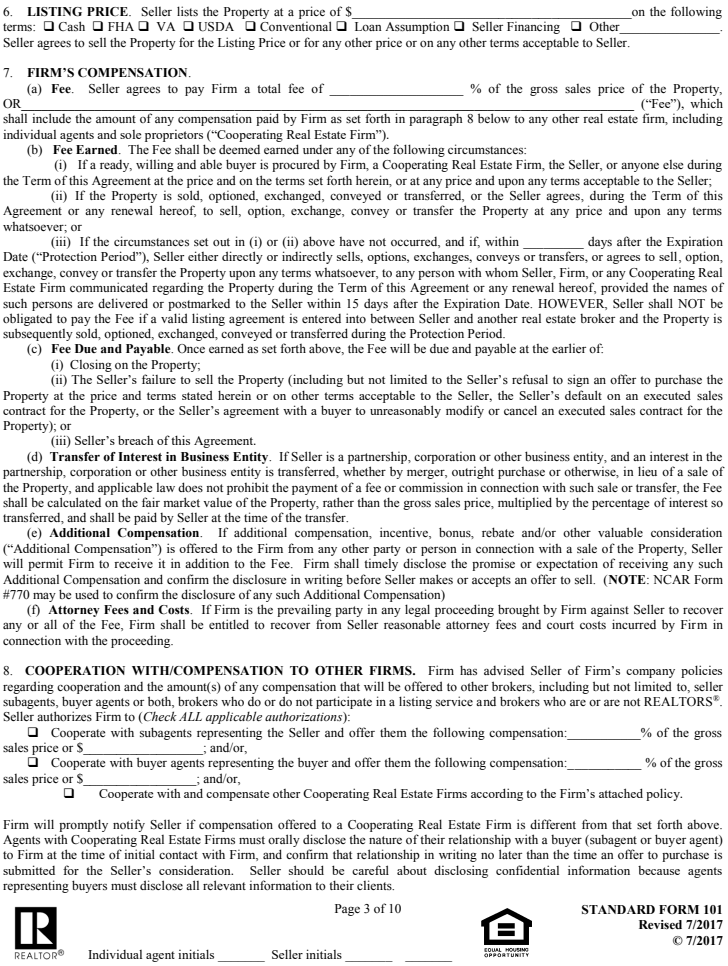
Table 7. Log Sale Price

	(1)	(2)	(3)	(4)	(5)
Include FHA	0.1688***	0.0123***	0.0108***	0.0943***	0.1474***
	(0.0006)	(0.0004)	(0.0004)	(0.0233)	(0.0014)
Time-by-Zip FE	Yes	Yes	Yes	-	-
Time-by-CBSA FE	-	-	-	Yes	Yes
House Char.	Yes	Yes	Yes	Yes	Yes
Hedonic Resid	No	Yes	Yes	No	No
Agent Exp.	No	Yes	Yes	Yes	Yes
Sample	All	All	$+/-5\% of Hed.Price$	IV	IV
Estimation Method	OLS	OLS	OLS	IV	OLS
N	2229478	1579423	1426526	305581	305581

Note: This table reports coefficient estimates from a regressions where the dependent variable is the log sale price for listings that sell.

Figures

Figure 1. Seller's Acceptable Financing Terms (North Carolina)



6. **LISTING PRICE**. Seller lists the Property at a price of $_____on the following terms: ❑ Cash ❑ FHA ❑ VA ❑ USDA ❑ Conventional ❑ Loan Assumption ❑ Seller Financing ❑ Other_____. Seller agrees to sell the Property for the Listing Price or for any other price or on any other terms acceptable to Seller.

7. **FIRM'S COMPENSATION**.

(a) **Fee**. Seller agrees to pay Firm a total fee of _____ % of the gross sales price of the Property, OR_____ ("Fee"), which shall include the amount of any compensation paid by Firm as set forth in paragraph 8 below to any other real estate firm, including individual agents and sole proprietors ("Cooperating Real Estate Firm").

(b) **Fee Earned**. The Fee shall be deemed earned under any of the following circumstances:

(i) If a ready, willing and able buyer is procured by Firm, a Cooperating Real Estate Firm, the Seller, or anyone else during the Term of this Agreement at the price and on the terms set forth herein, or at any price and upon any terms acceptable to the Seller;

(ii) If the Property is sold, optioned, exchanged, conveyed or transferred, or the Seller agrees, during the Term of this Agreement or any renewal hereof, to sell, option, exchange, convey or transfer the Property at any price and upon any terms whatsoever; or

(iii) If the circumstances set out in (i) or (ii) above have not occurred, and if, within _____ days after the Expiration Date ("Protection Period"), Seller either directly or indirectly sells, options, exchanges, conveys or transfers, or agrees to sell, option, exchange, convey or transfer the Property upon any terms whatsoever, to any person with whom Seller, Firm, or any Cooperating Real Estate Firm communicated regarding the Property during the Term of this Agreement or any renewal hereof, provided the names of such persons are delivered or postmarked to the Seller within 15 days after the Expiration Date. HOWEVER, Seller shall NOT be obligated to pay the Fee if a valid listing agreement is entered into between Seller and another real estate broker and the Property is subsequently sold, optioned, exchanged, conveyed or transferred during the Protection Period.

(c) **Fee Due and Payable**. Once earned as set forth above, the Fee will be due and payable at the earlier of:

(i) Closing on the Property;

(ii) The Seller's failure to sell the Property (including but not limited to the Seller's refusal to sign an offer to purchase the Property at the price and terms stated herein or on other terms acceptable to the Seller, the Seller's default on an executed sales contract for the Property, or the Seller's agreement with a buyer to unreasonably modify or cancel an executed sales contract for the Property); or

(iii) Seller's breach of this Agreement.

(d) **Transfer of Interest in Business Entity**. If Seller is a partnership, corporation or other business entity, and an interest in the partnership, corporation or other business entity is transferred, whether by merger, outright purchase or otherwise, in lieu of a sale of the Property, and applicable law does not prohibit the payment of a fee or commission in connection with such sale or transfer, the Fee shall be calculated on the fair market value of the Property, rather than the gross sales price, multiplied by the percentage of interest so transferred, and shall be paid by Seller at the time of the transfer.

(e) **Additional Compensation**. If additional compensation, incentive, bonus, rebate and/or other valuable consideration ("Additional Compensation") is offered to the Firm from any other party or person in connection with a sale of the Property, Seller will permit Firm to receive it in addition to the Fee. Firm shall timely disclose the promise or expectation of receiving any such Additional Compensation and confirm the disclosure in writing before Seller makes or accepts an offer to sell. (**NOTE**: NCAR Form #770 may be used to confirm the disclosure of any such Additional Compensation)

(f) **Attorney Fees and Costs**. If Firm is the prevailing party in any legal proceeding brought by Firm against Seller to recover any or all of the Fee, Firm shall be entitled to recover from Seller reasonable attorney fees and court costs incurred by Firm in connection with the proceeding.

8. **COOPERATION WITH/COMPENSATION TO OTHER FIRMS.** Firm has advised Seller of Firm's company policies regarding cooperation and the amount(s) of any compensation that will be offered to other brokers, including but not limited to, seller subagents, buyer agents or both, brokers who do or do not participate in a listing service and brokers who are or are not REALTORS®. Seller authorizes Firm to (*Check ALL applicable authorizations*):

❑ Cooperate with subagents representing the Seller and offer them the following compensation:_____% of the gross sales price or $_____; and/or,

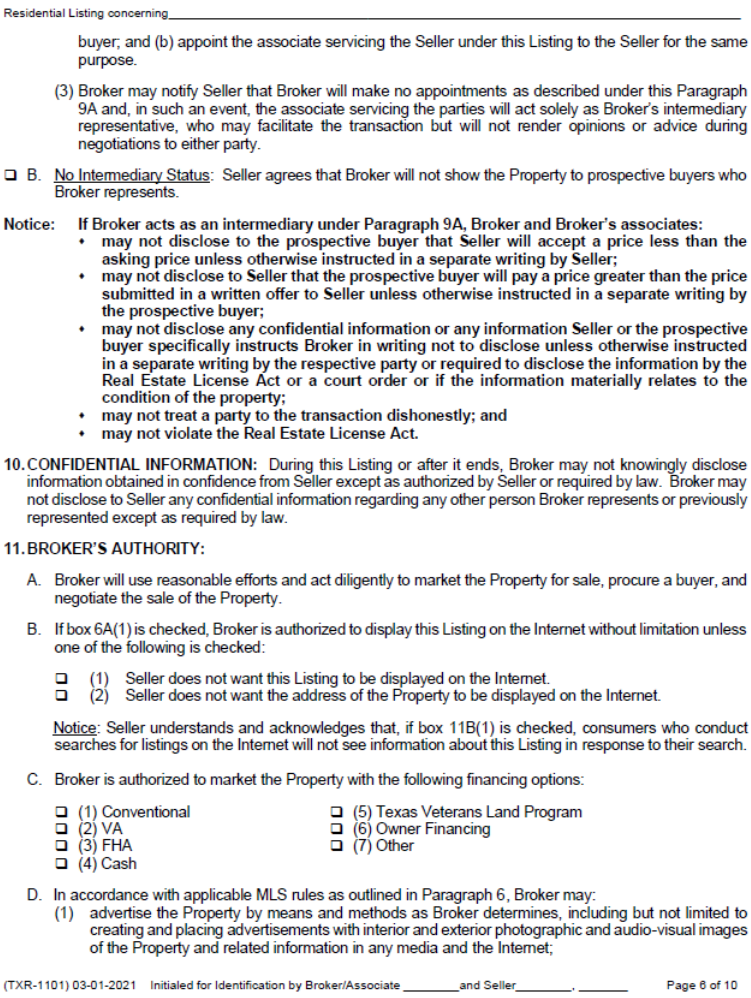
❑ Cooperate with buyer agents representing the buyer and offer them the following compensation:_____ % of the gross sales price or $_____; and/or,

❑ Cooperate with and compensate other Cooperating Real Estate Firms according to the Firm's attached policy.

Firm will promptly notify Seller if compensation offered to a Cooperating Real Estate Firm is different from that set forth above. Agents with Cooperating Real Estate Firms must orally disclose the nature of their relationship with a buyer (subagent or buyer agent) to Firm at the time of initial contact with Firm, and confirm that relationship in writing no later than the time an offer to purchase is submitted for the Seller's consideration. Seller should be careful about disclosing confidential information because agents representing buyers must disclose all relevant information to their clients.

Note: Excerpt from a North Carolina Right-to-Sell Listing Contract. Item 6 lists the acceptable financing types for the chosen list price as indicated by the seller.

Figure 2. Seller's Acceptable Financing Terms (Texas)



Residential Listing concerning _____

buyer; and (b) appoint the associate servicing the Seller under this Listing to the Seller for the same purpose.

(3) Broker may notify Seller that Broker will make no appointments as described under this Paragraph 9A and, in such an event, the associate servicing the parties will act solely as Broker's intermediary representative, who may facilitate the transaction but will not render opinions or advice during negotiations to either party.

❑ B. No Intermediary Status: Seller agrees that Broker will not show the Property to prospective buyers who Broker represents.

Notice: If Broker acts as an intermediary under Paragraph 9A, Broker and Broker's associates:
- **may not disclose to the prospective buyer that Seller will accept a price less than the asking price unless otherwise instructed in a separate writing by Seller;**
- **may not disclose to Seller that the prospective buyer will pay a price greater than the price submitted in a written offer to Seller unless otherwise instructed in a separate writing by the prospective buyer;**
- **may not disclose any confidential information or any information Seller or the prospective buyer specifically instructs Broker in writing not to disclose unless otherwise instructed in a separate writing by the respective party or required to disclose the information by the Real Estate License Act or a court order or if the information materially relates to the condition of the property;**
- **may not treat a party to the transaction dishonestly; and**
- **may not violate the Real Estate License Act.**

10. CONFIDENTIAL INFORMATION: During this Listing or after it ends, Broker may not knowingly disclose information obtained in confidence from Seller except as authorized by Seller or required by law. Broker may not disclose to Seller any confidential information regarding any other person Broker represents or previously represented except as required by law.

11. BROKER'S AUTHORITY:

A. Broker will use reasonable efforts and act diligently to market the Property for sale, procure a buyer, and negotiate the sale of the Property.

B. If box 6A(1) is checked, Broker is authorized to display this Listing on the Internet without limitation unless one of the following is checked:

❑ (1) Seller does not want this Listing to be displayed on the Internet.
❑ (2) Seller does not want the address of the Property to be displayed on the Internet.

Notice: Seller understands and acknowledges that, if box 11B(1) is checked, consumers who conduct searches for listings on the Internet will not see information about this Listing in response to their search.

C. Broker is authorized to market the Property with the following financing options:

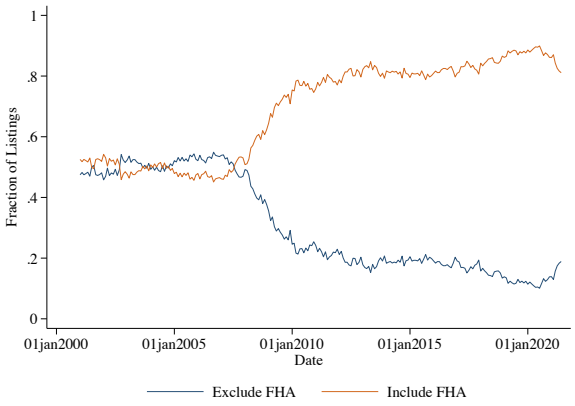
❑ (1) Conventional
❑ (2) VA
❑ (3) FHA
❑ (4) Cash
❑ (5) Texas Veterans Land Program
❑ (6) Owner Financing
❑ (7) Other

D. In accordance with applicable MLS rules as outlined in Paragraph 6, Broker may:
(1) advertise the Property by means and methods as Broker determines, including but not limited to creating and placing advertisements with interior and exterior photographic and audio-visual images of the Property and related information in any media and the Internet;

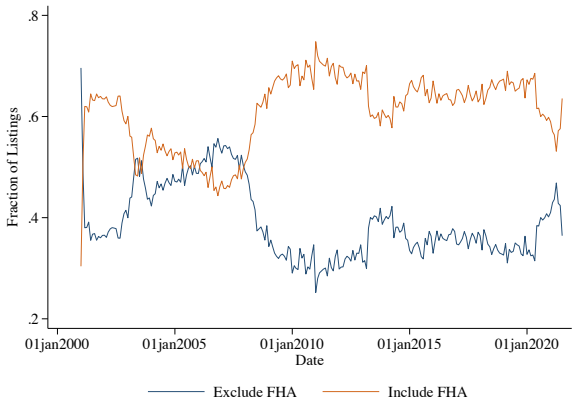
(TXR-1101) 03-01-2021 Initialed for Identification by Broker/Associate _____and Seller_____, _____ Page 6 of 10

Note: Excerpt from a Texas Right-to-Sell Listing Contract. Item 11.C lists the acceptable financing types as indicated by the seller.

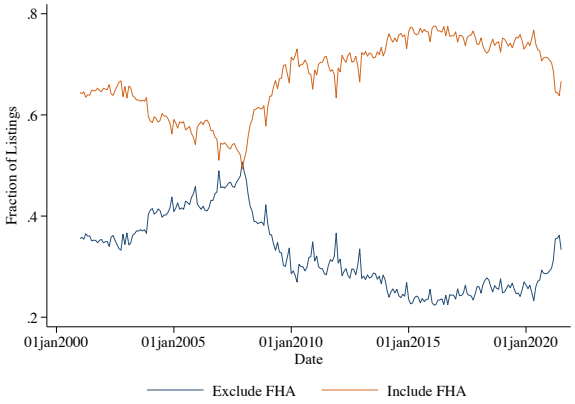
Figure 3. Acceptable Financing: Qualified Listings Allowing Some Financing



((a)) HAR



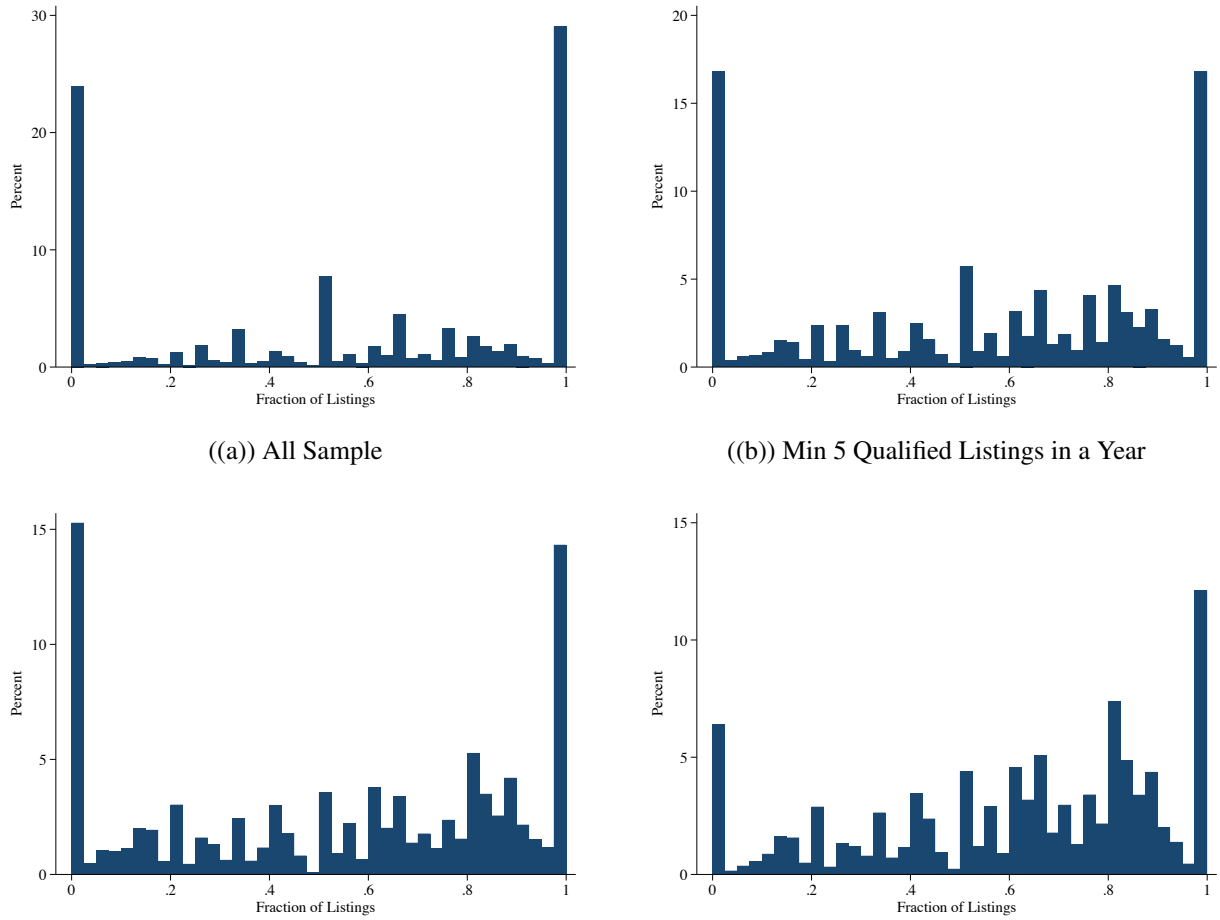
((b)) CANOPY



((c)) REALCOMP

Note: This figure illustrates acceptable financing categories of listings in our data for listings that qualify for an FHA mortgage with a minimal downpayment and that allow at least some form of financing (this excludes "cash only" listings). Each plot shows the fraction of listings that exclude and include FHA as acceptable financing over time. Panel A shows the breakdown for HAR MLS (Houston, TX), Panel B plots the data from CANOPY MLS (Charlotte, NC) and Panel C plots the variable for REALCOMP (Detroit, MI).

Figure 4. Acceptable Financing Strategies Among Real Estate Agents



((a)) All Sample

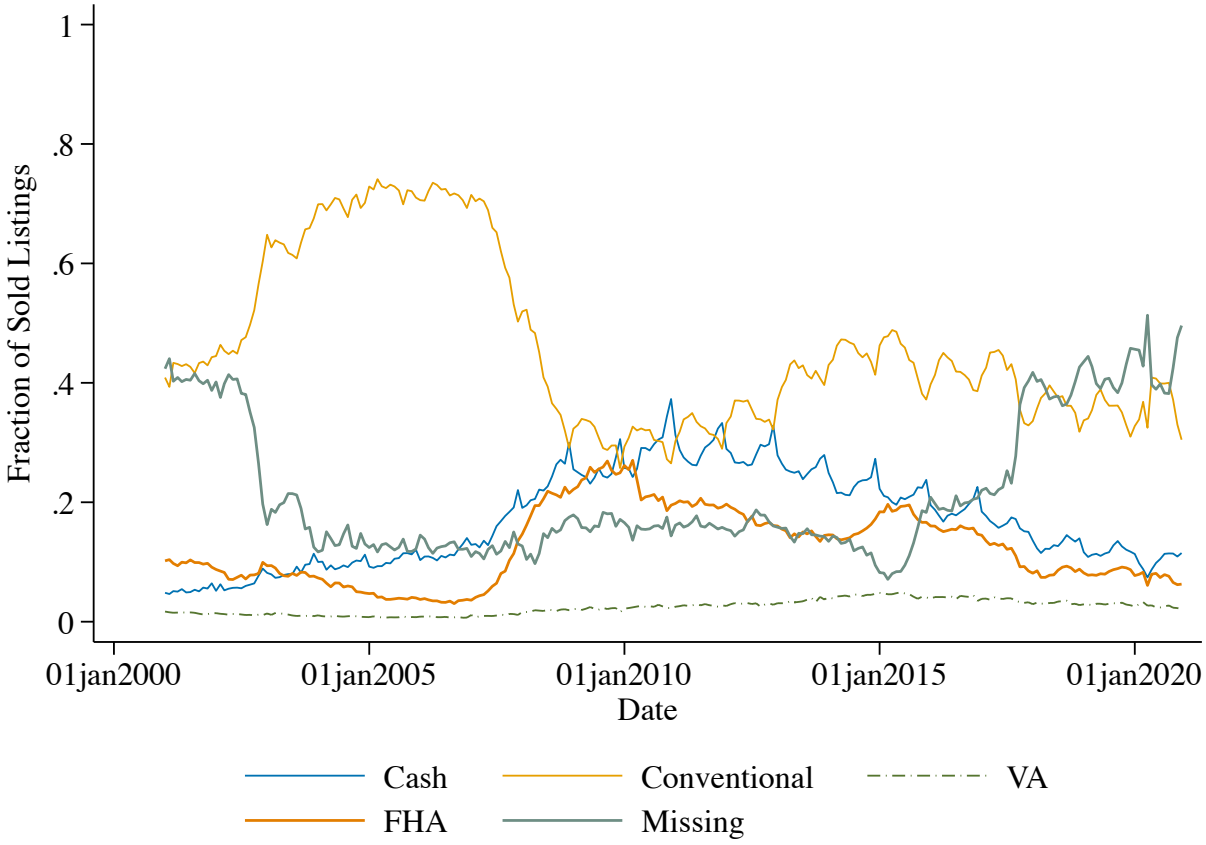
((b)) Min 5 Qualified Listings in a Year

((c)) 2003, Min 5 Qualified Listings

((d)) 2019, Min 5 Qualified Listings

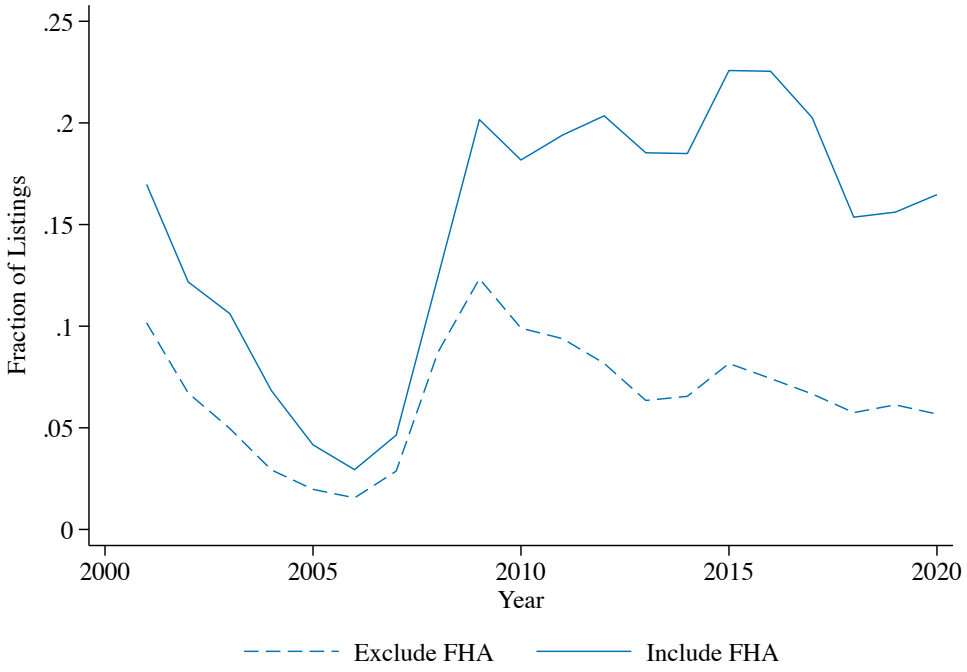
Note: This figure illustrates the fraction of qualified listings that each agent lists as acceptable for FHA financing. Panel A shows this distribution for all agent / year observations. Panel B shows this distribution only for observations where an agent has five or more qualified listings. Panel C and Panel D show the distribution for years 2003 and 2019, respectively. Both Panel C and D only include observations where an agent had five of more qualified listings in the corresponding year.

Figure 5. Buyer Financing on Sold Listings



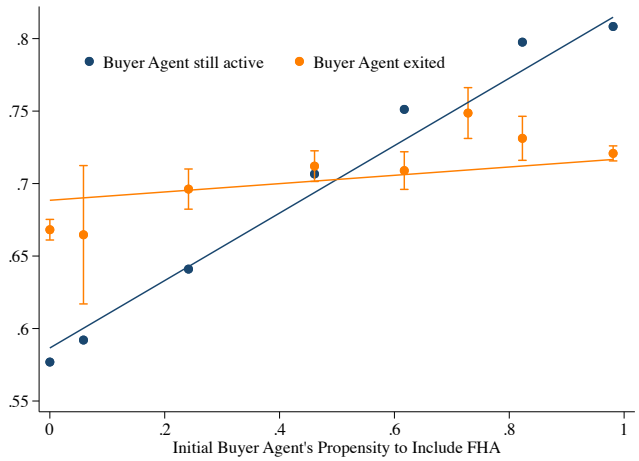
Note: This figure plots the share of sold listings actually financed with each financing type.

Figure 6. Fraction Sold to FHA Buyers by Acceptable Financing

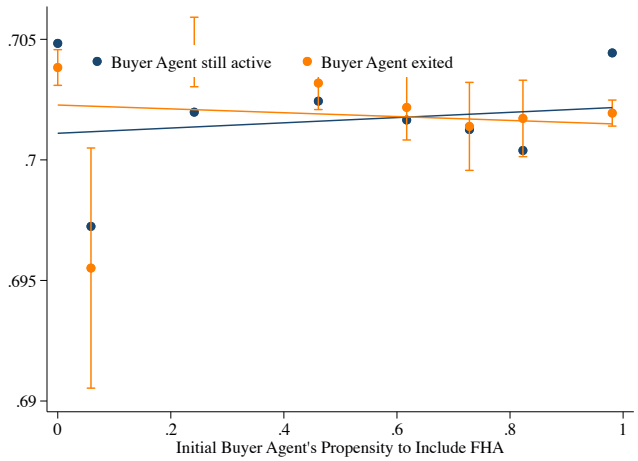


Note: This figure plots the fraction of listing purchased by FHA buyers by type of acceptable financing. The sample includes listings that did not sell.

Figure 7. Instrumental variable strategy with buyer's agent strategy & exit



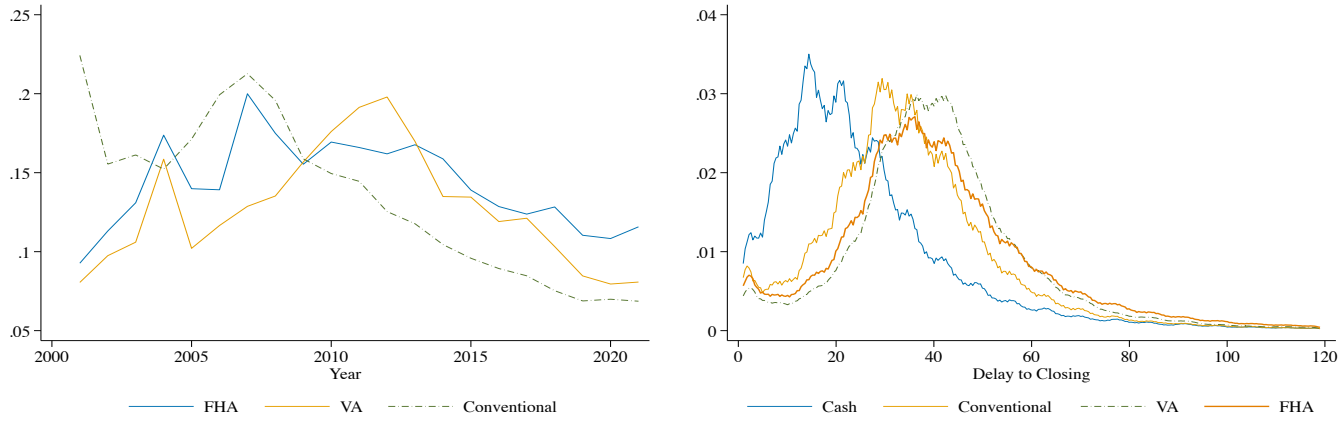
((a)) First stage: effect on listing agent listing strategy



((b)) Exclusion restriction: effect on predictable agent strategy

Note: This figure illustrates the validity of our quasi-experimental design. It shows binscatter plots where each dot represents five percent of the sample. In Panel ((a)), for each listing we plot whether the FHA was included as an acceptable form of financing or not against the average listing strategy of the buying agent who aided the seller in the original purchase of the property. The data is further split into two samples. The blue line represents the sample where the buying agent is still available at the time of the subsequent listing. The orange line represents the sample where the buying agent has exited the market at the time of the subsequent listing. This binscatter plot controls for purchase-year-by-listing-year-by-fips-code fixed affect, as well as zip code fixed effect. It also includes controls for property characteristics and the listing agent experience. Panel ((b)) repeats the exercise, except that instead of the actual inclusion of FHA as a form of acceptable strategy, we use the predicted value of FHA inclusion based on observable characteristics and fixed effects described above.

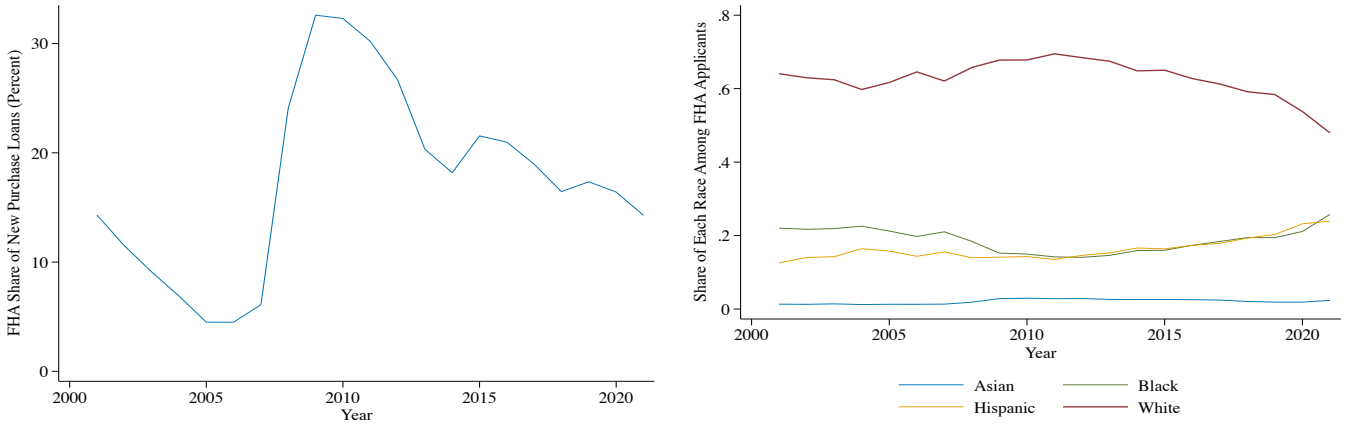
Figure 8. Potential Drawbacks of Accepting FHA Offers



((a)) Rejection Rates by Financing ((b)) Final Financing and Closing Delay

Note: Panel A plots county-level rejection rates by financing type in the HMDA data over time. We weight each county by the number of observations in our data. Panels B plots the distribution of the delay to close across final financing used in the transaction. We compute the delay from the CoreLogic data as number of days between the contract date and the close date.

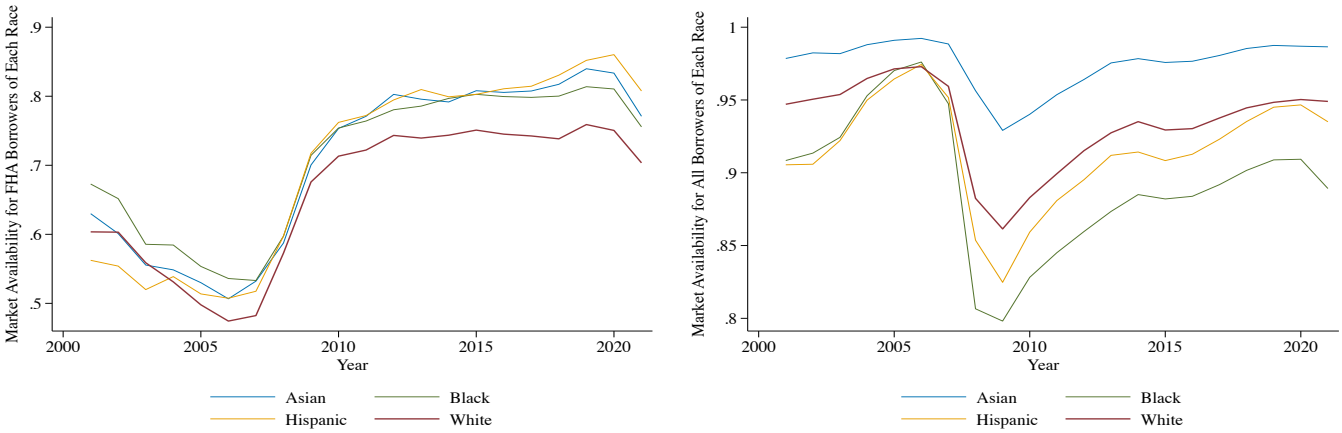
Figure 9. Race and FHA



((a)) Fraction of Applicants that Apply with an FHA Loan ((b)) Fraction of FHA Applicants

Note: Panel A plots the share or applicants or each race that apply for an FHA loan. Panel B plots the fraction of all FHA borrowers that are of a particular race. Both plots use data for zip codes that are in our main MLS dataset.

Figure 10. Race and Market Availability



((a)) Fraction of Market Available to FHA applicants ((b)) Fraction of Market Available

Note: Panel A plots the fraction of listings available to FHA borrowers of each race. To construct this data, we first compute the average number of eligible listings in each zip code that include FHA. Then we average this fraction across zip code with different weights for each race, corresponding to the fraction of applicants of that race who apply in that zip code. Panel B plots the market availability for all borrowers or each race. It is the weighted average between 100% (market available to non-FHA borrowers) and the market availability of FHA borrowers of that race. The two are weighted by the fraction of FHA borrowers within each race.

Appendices

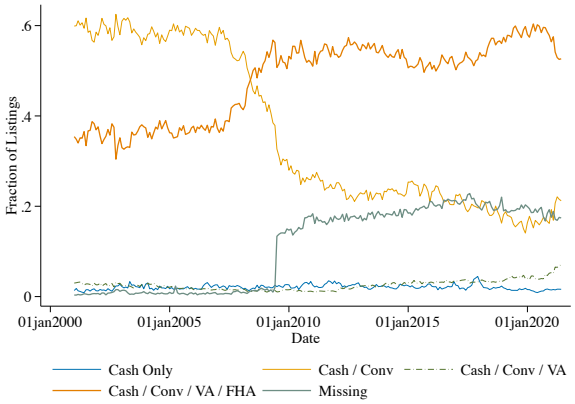
A.1. Additional Tables

Table A.1. Comparison of Missing and Non-Missing Acceptable Financing HAR Listings in 2010

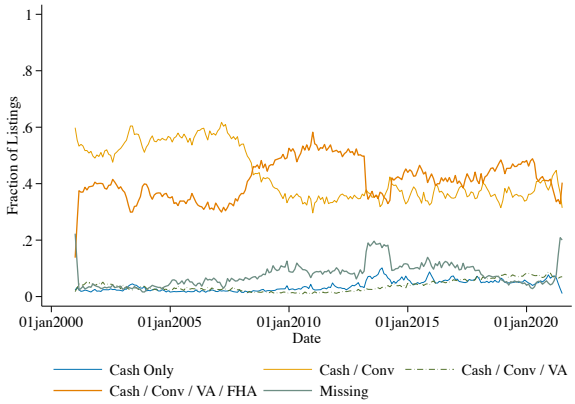
	Not Missing Financing (1)	Missing Financing (2)
Square Feet	2,079 (665)	2,047)786)()
Total Baths	2.1 (.54)	2.1 (.72)()
Total Beds	3.4 (.69)	3.4 (.74)
Has pool	.46 (.50)	0.37 (.48)
List Price (USD)	147,957 (61,103)	147,150 (67,027)
Close Price (USD)	137,003 (59,851)	134,693 (59,033)
FA_DOM	111 (108)	125 (120)
Sale	.56 (.50)	0.43 (0.49)
Observations	56,547	10,502

Note: Sample includes FHA-eligible HAR listings in 2010. Mean values are reported with standard deviations in parentheses.

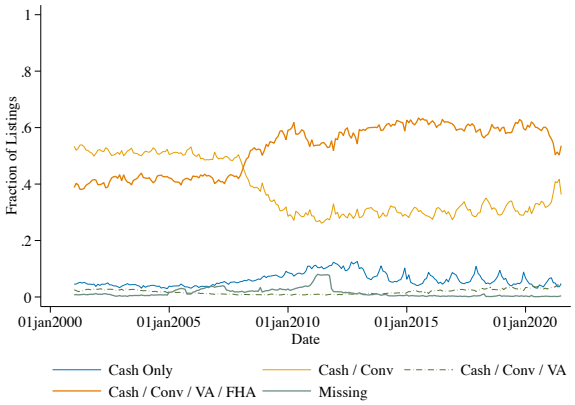
Figure A.1. Acceptable Financing in Full Sample: Raw



((a)) HAR



((b)) CANOPY



((c)) REALCOMP

Note: This figure illustrates the advertising categories of listings in our data. Each plot shows the fraction of listings that were in the corresponding category of acceptable financing over time. The sample includes both FHA-eligible and FHA-inelegible properties. Panel A shows the breakdown for HAR MLS (Houston, TX), Panel B plots the data from CANOPY MLS (Charlotte, NC) and Panel C plots the variable for REALCOMP (Detroit, MI).

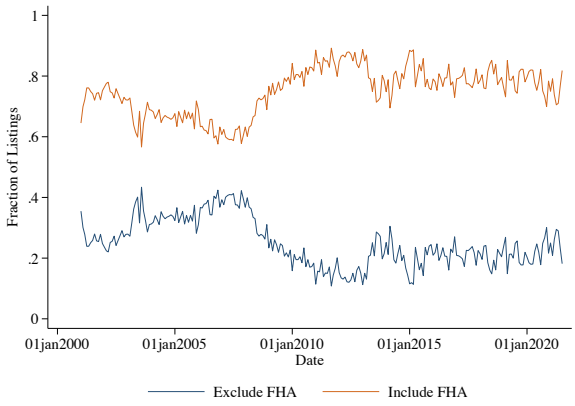
9. Sample of New Properties

In most of our analysis we subset the data sample on whether the property would have been eligible for FHA financing based on price. However, there are several other requirements to qualify for an FHA mortgage beyond the loan limit. Notably, the property has to be in good condition and should not require any major repairs. It could be that the seller chooses whether to advertise to FHA financing or not based on the private information of the quality of the home. In other words, listings within the FHA loan limits that are not advertised to the FHA borrowers may be ones that would never pass the FHA inspection and appraisal process. We acknowledge that the possibility for this self-selection. However, we note that even if that were the case, it would still be valuable to document the share of the market that FHA buyers would have a difficult time accessing under the current standards. To test whether this is a likely explanation for the variation in our sample, we repeat our analysis for newly built properties. In particular, we examine the listings for properties that were built within five years of the list date. These homes are likely not in need of significant repairs as most structural elements of the home are built to last for decades or longer.

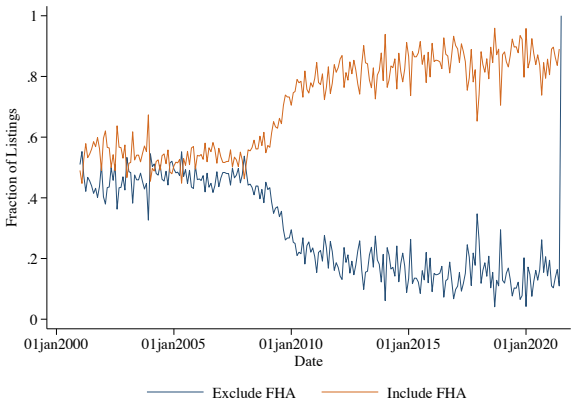
Figure 2 plots the breakdown of the underlying variable for terms offered for listings of new homes that qualify for FHA on price. Among the new buildings, a much larger fraction list FHA financing as acceptable. However it is far less than 100 percent, especially in the early 2000s. This suggests that even listings that we are certain would qualify for FHA funding are often unavailable to buyers who rely on the program. Figure 3 shows the fraction of listings among the new properties that sell to an FHA buyer. Just as in the main sample, the properties that accept FHA financing are more likely to eventually sell to an FHA buyer.

Figure 2. Advertising based on Financing Type: Qualified Listings of New Homes

((a)) HAR



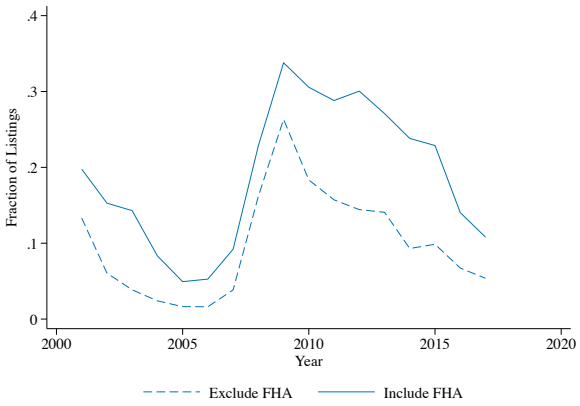
((b)) CANOPY



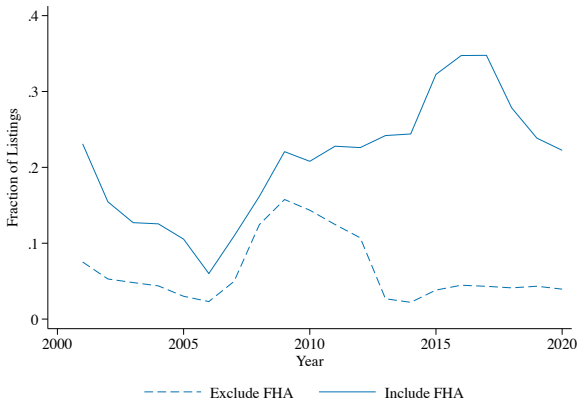
((c)) REALCOMP

Note: This figure illustrates the advertising categories of listings in our data for new homes whose list price qualifies the purchase for an FHA mortgage with a minimal downpayment. We define a house to be new if it was built within five years of the list year. Each plot shows the fraction of listings that were in the corresponding category of advertising over time. Panel A shows the breakdown for HAR MLS (Houston, TX), Panel B plots the data from CANOPY MLS (Charlotte, NC) and Panel C plots the variable for REALCOMP (Detroit, MI).

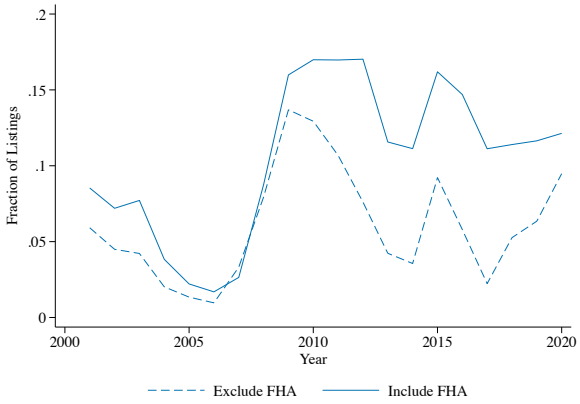
Figure 3. Fraction Sold to FHA Buyers by Acceptable Financing



((a)) HAR



((b)) CANOPY



((c)) REALCOMP

Note: This figure plots the fraction of new homes listed for sale that are purchased by FHA buyers by type of advertising. We define a house to be new if it was built within five years of the list year. Panel A shows the results for HAR MLS (Houston, TX), Panel B - for CANOPY MLS (Charlotte, NC) and Panel C - for REALCOMP (Detroit, MI).

10. MLS Selection

Table 2

	Score	Total Obs.	All Yrs	Consistent Coverage	Financing All Yrs	Financing avg. Coverage	Sold Financing All Yrs	Sold Financing avg. Coverage
IRES	0.95	513,434	1	1	1	0.94	1	0.97
NYS_BUFFALO	0.95	243,996	1	1	1	0.95	1	0.95
REALCOMP	0.92	4,004,177	1	1	1	0.99	1	0.79
ELPASO	0.92	208,512	1	1	1	0.93	1	0.90
HMLMLS	0.90	886,767	1	1	1	0.88	1	0.95
SAN	0.90	22,405	1	1	1	0.96	1	0.78
GBRMLS_II	0.87	254,248	1	1	1	0.89	1	0.84
ARMLS_II	0.86	2,205,663	1	1	1	0.99	0	0.60
NNRMLS	0.86	279,928	1	1	1	0.84	1	0.88
NYS_SYRACUSE	0.84	162,394	1	1	1	0.79	1	0.94
HAR	0.82	2,098,049	1	1	1	0.87	0	0.73
HIGH	0.72	260,233	1	1	1	0.88	0	0.41
CBOR	0.66	809,355	1	1	1	0.55	1	0.88
HICMLS	0.66	262,851	1	1	1	0.99	1	0.00
SJSRMLS	0.64	167,545	1	1	1	0.51	1	0.91
RIM	0.64	31,256	1	1	1	0.53	1	0.84
RIS	0.63	321,621	1	1	1	0.57	0	0.75
DAYTON	0.61	456,125	1	1	1	0.92	1	0.00
GSC	0.58	25,768	1	1	1	0.72	0	0.29
MARIS	0.57	1,242,274	1	1	1	0.52	1	0.66
MLSGATEWAY	0.53	581,331	1	1	1	0.65	1	0.30
GNWMLS	0.53	59,566	1	1	1	0.79	1	0.00
BCAR	0.53	133,254	1	1	1	0.79	1	0.00
MCAR	0.51	577,582	1	1	1	0.30	1	0.92
ITH	0.48	26,401	1	1	1	0.72	1	0.00
NWMS	0.48	93,302	1	1	1	0.30	1	0.82
RAMC	0.46	81,063	1	1	1	0.23	1	0.93
BHAM	0.45	456,503	1	1	1	0.67	1	0.00
REIN	0.43	731,863	1	1	1	0.64	1	0.01
BAREIS	0.43	3,935,028	1	1	1	0.64	1	0.00
NWMLS_II	0.42	2,401,307	1	1	1	0.63	1	0.00
VICTOR	0.42	191,844	1	1	1	0.63	1	0.00
MLSPIN	0.41	1,766,802	1	1	1	0.62	1	0.00
PRS	0.41	76,017	1	1	1	0.61	1	0.00
WARDEX	0.40	96,537	1	1	1	0.00	1	1.21
GOLDEMP	0.40	242,662	1	1	1	0.60	0	0.00
GOLDENI	0.40	50,661	1	1	1	0.54	1	0.10
NCRMLS	0.39	462,205	1	1	1	0.59	1	0.00
CIBR	0.39	103,100	1	1	1	0.59	1	0.00
NORTHSTAR	0.39	2,437,369	1	1	1	0.58	1	0.00
NKY	0.39	176,003	1	1	1	0.58	1	0.00
CINCY	0.38	763,391	1	1	1	0.57	1	0.00
TAR	0.37	470,312	1	1	1	0.56	1	0.00
CITRUS	0.37	90,931	1	1	1	0.55	1	0.00
BROOKLYN	0.36	50,127	1	1	1	0.54	1	0.00
MAAOR	0.35	163,563	1	1	1	0.06	1	0.92
MAUI	0.34	76,027	1	1	1	0.16	1	0.72
DAYTONA	0.34	210,419	1	1	1	0.07	1	0.88
SWFL_NAPLES	0.34	185,643	1	1	1	0.51	1	0.00
FSM	0.34	78,950	1	1	1	0.35	0	0.32
SWFL_BONITA	0.33	42,862	1	1	1	0.50	1	0.00
TULSA	0.33	490,143	1	1	1	0.50	1	0.00
SIBOR	0.33	94,503	1	1	1	0.00	1	0.98
WESTPENN	0.32	544,602	1	1	1	0.00	1	0.96
WMB	0.31	59,588	1	1	1	0.00	1	0.94
TRIAD	0.31	455,888	1	1	1	0.47	0	0.00
RMLS	0.31	1,501,982	1	1	1	0.00	1	0.93
SACM	0.31	1,448,341	1	1	1	0.00	1	0.92
BRIDGE	0.30	150,775	1	1	1	0.00	1	0.91
NOMAR	0.30	363,283	1	1	1	0.01	1	0.87
RMLSFL	0.29	1,043,390	1	1	1	0.00	1	0.86
METRO	0.29	850,181	1	1	1	0.00	1	0.86
ARKMLS	0.28	249,204	1	1	1	0.22	0	0.40
NORIS	0.27	301,240	1	1	1	0.00	1	0.81
SWFL_FLORIDAGULFCOAST	0.26	371,749	1	1	1	0.39	1	0.00
RAFGC	0.22	19,665	1	1	1	0.33	1	0.00
MRMLS_PFAOR	0.21	47,581	1	1	1	0.32	1	0.00
MLSLI	0.15	1,458,690	1	1	1	0.00	1	0.45
YES-MLS	0.15	1,582,263	1	1	1	0.22	1	0.00
NNEREN	0.12	637,121	1	1	1	0.17	1	0.00
SMART_II	0.08	1,336,246	1	1	1	0.04	1	0.16
GHVMLS	0.05	1,475,973	1	1	1	0.08	1	0.00
MRMLS_CRM	0.02	3,718,290	1	1	1	0.02	1	0.00
iTech	0.00	5,616,595	1	1	1	0.00	1	0.00
SUMMIT	0.00	54,911	1	1	1	0.00	1	0.00
RAPCOOP	0.00	219,835	1	1	1	0.00	0	0.00
MIAAR	0.00	23,818	1	1	1	0.00	1	0.00
LBAR_II	0.00	327,568	1	1	1	0.00	1	0.00
CALAVERAS	0.00	33,478	1	1	1	0.00	1	0.00
BRIGHT	0.00	5,739,385	1	1	1	0.00	1	0.00
WESTAL	0.00	60,868	1	1	0	0.00	1	0.89
SIRA	0.00	133,490	1	1	0	0.17	1	0.89
SFAR	0.00	2,452,748	1	1	0	0.00	1	0.00
RCMLS	0.00	101,860	1	1	0	0.38	0	0.19
RANWW	0.00	148,797	1	1	0	0.01	1	0.92
MRMLS_VCCAR	0.00	37,790	1	1	0	0.42	1	0.00
LOUISVILLE	0.00	490,914	1	1	0	0.18	1	0.82
GSM	0.00	43,171	1	1	0	0.00	1	0.00
GLOBAL	0.00	284,845	1	1	0	0.00	1	0.94
CDR	0.00	129,453	1	1	0	0.00	1	0.88
CAPECOD	0.00	148,368	1	1	0	0.00	1	0.00
CADESERT	0.00	330,732	1	1	0	0.00	1	0.78
WRIST	0.00	111,130	1	0	1	0.99	1	0.89
ULSTER	0.00	48,332	1	0	1	0.00	1	0.71