Barriers to Consumer Negotiation and the Limits of Policy: Evidence from the NAR Settlement

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Abstract

The 2024 National Association of Realtors (NAR) settlement aimed to affect the level of real estate commission by shifting bargaining to buyers. We show in a model that negotiation frictions, including those driven by incidence bias and agent collusion, can continue to sustain commission norms. Survey experiment shows low negotiation intent, particularly when sellers continue to pay buyer commissions. Using data from a large-scale field survey and 10-Q data, we find limited buyer bargaining, limited changes in commission rates, and continued seller payment of commissions post-settlement. Our results suggest that negotiation frictions can constrain the effects of pro-consumer policies.

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1 Introduction

Real estate intermediation costs are sizeable in the United States, comprising about 0.6% of U.S. GDP.[1] Typically split between buyer and seller agents, these fees often total tens of thousands per sale and are significantly higher than in the U.K. (Barwick and Wong, 2019). Not only are real estate commission fees persistently high over time, but they are also remarkably uniform across agents; the literature has long documented minimal deviation from the 5–6% norm across agents (e.g., Owen, 1977; Crockett, 1982; Wachter, 1987; Barwick and Pathak, 2015; Nanda, Clapp, and Pancak, 2015; Hatfield, Kominers, and Lowery, 2025). The August 2024 National Association of Realtors (NAR) settlement was widely expected to affect these fees and potentially reshape the market by making buyer's agent commissions individually negotiated between the buyers and their agents.[2] The NAR settlement therefore provides a particularly useful setting to test whether shifting bargaining responsibility to consumers is sufficient to generate price competition when consumers continue to face barriers to negotiation, and how those barriers affect equilibrium prices and the response to policy.

The 2024 settlement between the NAR and a group of home sellers followed years of litigation. At the core of the dispute was the claim that NAR's rules, which made seller-payment of buyer commissions standard and potentially reduced buyer negotiation, are also potentially in violation of antitrust law. Specifically, seller-payment of buyer commissions promoted "steering," a potentially anti-competitive practice in which sellers pay elevated buyer commissions due to a fear that buyer agents guided clients away from listings offering lower commissions, while buyers themselves have a more limited choice in the commissions that are paid on their behalf. The plaintiffs argued that, instead of being seller-paid, if commissions were formally paid by the buyer, a more competitive market for buyer's agents would emerge as buyers would negotiate for lower fees and search for lower fee agents.[3]

Specifically, before the 2024 NAR settlement, MLS listing input forms typically included a standard buyer-broker compensation field completed by the listing broker pursuant to the seller's listing agreement. Sellers typically agreed to a total commission of roughly 5–6%, and listing

[1] U.S. residential brokerage fees average 5–6% of price, about $180 billion annually across over 1.5 million agents, which is 0.6% of the 2024 nominal GDP of $29.18 trillion. See Census/FRED and NAR.

[2] See, e.g., Reuters (2024); Brookings Institution (2024); Time Magazine (2024).

[3] Technically speaking, even before the NAR settlement, buyers could negotiate for a "rebate" on the seller-paid commissions, which in our survey around 10% of buyers do. This means that buyer commission negotiation was possible even before the settlement, though not as salient as the legally mandated signed buyer's representation agreements that clearly designate that commissions are to be negotiated by the buyers.

brokers commonly offered cooperative compensation to buyer brokers through the MLS, often around 2.5–3%. This structure could create incentives for buyer agents to steer clients toward listings offering higher buyer-broker compensation. Moreover, buyer representation agreements were not required in all states, and where they were used, they did not uniformly restrict buyer brokers from receiving seller-funded compensation above the amount specified in the agreement. These institutional details imply that buyer's agent commissions are mostly set by sellers and their listing agents, rather than negotiated between buyers and their own agents.

Effective August 17, 2024, the NAR settlement places greater emphasis on buyers and their agents in commission negotiations. A buyer's representation agreement (RA) is now required before touring MLS-listed homes. The RA must specify the agent's services and exact compensation, which is capped to the amount stated in the agreement. Under the new rules, MLS listings cannot advertise that the seller will pay the buyer's agent. These changes require that compensation be negotiated directly between buyers and their agents, rather than set implicitly through MLS offers, both legally and with salient reminders on the Buyer's representation agreements the buyers have to sign.[4]

How might negotiation frictions affect the post-NAR market equilibrium? We first address the role of negotiation frictions with a model of fee-setting between real estate agents and their clients. The model that shows, when consumers have heterogeneous negotiation and search costs, a commission norm naturally emerges, whose coverage depends on the distribution of negotiation costs of consumers. Furthermore, collusion, which punishes realtors from reducing commission rates when consumers negotiate, further reduces commission negotiation and generates a range of possible norms, whose range depends also on the baseline distribution of negotiation costs. Collusion amplifies these frictions and is effective only when finding a realtor willing to bargain is costly for consumers. Therefore, with strong enough negotiation costs, and possibly some reluctance on the realtors' part to reduce their commission rates when facing negotiation including due to fear of punishment, a relatively high commission norm can be sustained.

We also use the model to investigate the impact of behavioral frictions, such as incidence bias, where buyers may perceive commissions that are paid by sellers to be less salient, on commission rates. We find that such incidence bias can manifest itself as negotiation costs, and sellers endogenously offer to pay the fees given the existence of such biases.[5]

[4] See the Internet Appendix for further details about the settlement.

[5] Moreover, current mortgage financing rules do not allow the direct financing of buyer purchase expenses. Hence, buyers' agent commissions may be financed as seller concessions, which likely also reinforces the norm that sellers typically offer to pay the

Our empirical work starts with an examination of the behavioral mechanisms that may limit consumer negotiation using the Rice University Homeowner Survey Experiment. In this survey, we show that few homeowners have a stated intention to negotiate when presented with real-world scenarios, and using experimental randomization, we find incidence bias to be an important driver of this result. Another important driver of this result is the respondents' stated acceptance of norms (i.e., "2.5% is the norm"), which based on our model reflects these respondents' high negotiation costs relative to the expected benefits of deviating from the norm, either due to these respondents having high physical negotiation costs or low expected benefits from negotiation due to collusion. A less significant, but still interesting, driver behind low levels of negotiation intent reported by our respondents is a belief that negotiation may itself lead to worse service.

We next turn to an empirical examination of the effect of the NAR settlement on consumer negotiation, real estate commissions and other real estate intermediation outcomes. We test three hypotheses: (H1) The NAR settlement increases buyers' propensity to negotiate agent fees; (H2) The NAR settlement reduces buyer-agent fees; and (H3) The NAR settlement changes the composition of buyer-agent relationships. For example, we analyze whether the NAR settlement had any effect on the proportion of unrepresented buyers.

We examine H1 by examining reported negotiation in our large scale Rice University Real Estate Commission Survey, conducted between August 1, 2024, and January 21, 2025, and covering 6,826 transactions completed between March 1, 2024, and November 30, 2024. This survey of buyer and seller agents includes questions on buyer and seller commission rates and whether the buyer negotiated with the buyer's agent.[6] We find low rates of broker-reported buyer's agent negotiation both before and after the settlement, hovering between 9% and 11%, and with difference in difference analyses showing insignificant results. Strikingly, this percentage is similar to what homeowners themselves report when facing hypothetical scenarios that mimic real world conditions in our Rice University Homeowner Survey Experiment, at 8%. The strong agreement in magnitude between the two datasets suggests that negotiation frictions, including a combination of incidence bias, a preference for adhering to norms, and a fear of agent shirking, persist following the settlement.

We then examine H2 by analyzing the dynamics of real estate commission pricing following the NAR settlement using a combination of broker survey, administrative, and MLS data. We

buyers' agent commissions.

[6] A key advantage of the survey over MLS data is that it captures information on buyer-agent rebates, negotiation behavior, and whether sellers offered to pay commissions, which are typically unobservable in standard transaction records after the NAR settlement.

employ both an event-study specification and a difference-in-differences (DiD) regression. We test whether commission rates changed conditional on hiring an agent and whether buyers shifted toward discount brokers. In the event study, we examine changes in each outcome around the August 17, 2024, settlement date and use dynamic effects to assess pre-trends and the timing of any shifts. In the DiD specification, we interact a post-settlement indicator with an indicator for states without RA requirements pre-settlement (No-RA states). Following our pre-analysis plan, we control for CBSA-by-house-price-bin fixed effects, week fixed effects, city fixed effects, property type, and zip-code-level income. We use August 17, 2024 as the event date as that is the date that the NAR settlement's required practice changes came into effect, which is widely anticipated to affect commission rates. Prior to the event date, there are no movements in commission rates reported in either the media or in our survey responses. We also conduct complementary analyses using a set of brokerage 10-Q data, which extends over a longer sample period, and still finds no changes in real estate commissions. We also find that the norm of seller-paid commissions persists: 86.8 percent of sellers continue to offer to pay the buyer's agent commission after the settlement, compared with 94.4 percent before, and buyers continue to pay what sellers offer. This is consistent with our model, in which incidence bias leads sellers to endogenously offer to pay the fee and persistent negotiation frictions keep transactions at the customary rate.

We examine H3 by analyzing changes in real estate intermediation after the settlement. Specifically, we test whether buyers became more likely to forgo formal representation. We also examine whether buyers who forgo formal representation pay more for properties. Finally, we examine the increased use of higher volume and experienced agents following the settlement. We find that the NAR settlement induces a modest increase in the number of transactions completed by buyers who forgo formal representation. Examining this outcome, we find a persistent 1.7 percentage point upward shift in the overall share of unrepresented buyers, timed exactly with the settlement. Our results also show that buyers who negotiate with their agents, as well as unrepresented buyers, pay less than non-negotiating buyers who simply follow the norm both pre-and-post NAR. Buyers who negotiate with their agents pay approximately 20–43bps lower commission rates than other buyers, which is about $800–$1,720 on a $400,000 house. Furthermore, our hedonic models show that, conditional on home characteristics and neighborhood, unrepresented buyers pay approximately 1.8–2.2 percent less than represented buyers both pre-and-post NAR, which adds to the evidence that unrepresented buyers capture some of the commission savings of not having a buyer's agent (e.g. Elder, Zumpano, and Baryla, 2000). These results suggest that there is some room for buyer

negotiation to reduce transaction costs. Finally, we find an increase in the use of higher volume and experienced agents after the settlement, which can lead to a more professional and efficient market for agents (Barwick and Pathak, 2015; Gilbukh and Goldsmith-Pinkham, 2024), but can also lead to increased agent collusion (Barwick and Pathak, 2015).

Our paper contributes to the behavioral economics literature in two ways. First, our findings add to the evidence that behavioral biases, such as the salience-and-incidence bias, affect economic outcomes. Chetty, Looney, and Kroft (2009) show that consumers underreact to taxes that are not salient: in a grocery store field experiment and with alcohol tax data, they find that taxes included in posted prices reduce demand much more than sales taxes added at the register. Similarly, our findings indicate that these biases affect the propensity to negotiate even when the costs at stake are large, such as real estate agent fees. Second, (Chetty, 2015) argues that public policy should account for behavioral biases, since they shape how people respond to incentives. In the case of the NAR settlement, nudges such as anchors and framing could have helped homebuyers recognize the dollar amount and incidence of commission fees (Thaler and Sunstein, 2008).[7] Explicit requirements for sellers to "consider all offers" rather than advertise a maximum commission rate that they would cover would also reduce incidence bias and potentially lead to more buyer negotiation of commission rates.

We contribute to the literature by showing that the NAR settlement had only a modest effect on commissions.[8] Barwick, Pathak, and Wong (2017) show that properties offering lower commissions sell more slowly, which is evidence of steering. Our findings suggest that steering towards higher commission properties alone does not explain persistently high and uniform commissions. Instead, a combination of mechanisms, including behavioral biases, likely sustains these outcomes, implying that policies addressing frictions beyond steering may be more effective (Barwick and Wong, 2019). Our results contrast with Kim (2025), who estimate that fully decoupling buyers' agent fees from sellers' asking prices would reduce commissions by 53 percent, to about 3 percent. Kim (2025)'s estimates are consistent with the U.K., where buyers rarely use separate agents and commissions

[7] The settlement requires buyer representation agreements to include a conspicuous statement that "broker fees and commissions are not set by law and are fully negotiable." This disclosure does not explain the economic incidence of a seller-paid commission, translate percentage commissions into dollar amounts, or describe the potential gains from negotiating. A stronger behavioral nudge could, for example, require the following disclosure: "Your agent's fee is set at 2.5% of the home's purchase price (about $10,000 on a $400,000 home). Although the seller may agree to pay this fee, some or all of its economic cost may ultimately be reflected in the terms of the transaction. You can negotiate this fee directly with your agent. A lower fee may reduce your total transaction costs and may give you additional room to negotiate with the seller."

[8] There is anecdotal evidence suggesting that buyers' agent commissions may have increased after the settlement. See this discussion and this comment on Reddit. Our results suggest that such anecdotes were not systematic.

are typically 1–2 percent (Delcoure and Miller, 2002). Kim's and our findings are reconcilable: Kim (2025) notes that unmodeled frictions may matter, and our evidence indicates that barriers to negotiation hinder full decoupling. Together, the two sets of results suggest that the NAR settlement did not achieve full decoupling.

Another strand of literature studies the effect of real estate commission rates on house prices and consumer welfare. Buchak, Matvos, Piskorski, and Seru (2024) estimates a model of house prices and consumer welfare based on the assumption that the NAR settlement will reduce realtor commission rates. They find that such a reduction in commission rates would lead to higher house prices and adverse distributional outcomes. We do not rule out such an eventual reduction in commission rates. Our results suggest that barriers to negotiation remains strong after the settlement, and that further innovations potentially enabled by the NAR settlement may be necessary to create the structural change modeled in their paper. Other models of real estate intermediation motivated by the NAR settlement include Gabrovski, Kospentaris, and Ortego-Marti (2024) and Grochulski and Wang (2024). More broadly, Hsieh and Moretti (2003) and Han and Hong (2011) examines the cost of free entry in the real estate brokerage industry which results from high uniform commission rates. Gilbukh and Goldsmith-Pinkham (2024) studies the entry of real estate agents over the housing cycle and how they affect intermediation quality, Cunningham, Gerardi, and Shen (2024) studies the distribution of realtor value added in the market, and Gilbukh (2026) studies the role of experienced realtors in the market.

The paper is organized as follows. Section 2 presents our model. Section 3 presents our data. Section 4 outlines our empirical methodology. Section 5 reports the results examining H1. Section 6 discusses the empirical results for H2, and Section 7 presents those for H3. Section 8 concludes.

2 Model

How might negotiation frictions affect equilibrium commissions, pre-and-post NAR? What about in the presence of collusion? We develop a model of fee-setting between real estate agents and their clients to answer these questions. Clients, including home buyers and sellers, differ in how much value they receive from representation, in the cost of negotiating their agent's fee, and in the cost of searching for another agent, and only clients with low negotiation and search costs negotiate the posted rate, so the distribution of these costs determines both how many transactions occur at the customary rate and how strongly the threat of negotiation disciplines it.

Our model answers the questions as follows. First, when clients have heterogeneous negotiation and search costs, a commission norm naturally emerges, and its coverage depends on the distribution of negotiation costs. Second, collusion, which punishes agents for reducing commission rates when clients negotiate, further reduces negotiation and generates a range of possible norms, whose location and width also depend on the baseline distribution of negotiation costs; collusion is effective only when finding a willing agent is costly, and with strong enough negotiation costs and agents' fear of punishment, a relatively high commission norm can be sustained. Third, incidence bias manifests as negotiation costs, and under incidence bias, sellers endogenously offer to pay the fee. All proofs are in the Internet Appendix.

2.1 Setup

There is a continuum of real estate agents, each serving clients at a marginal cost $k \geq 0$ per transaction. Each agent posts a commission rate, expressed as a fraction of the house price, which we normalize to one; an agent's posted rate is what a client pays if she does not negotiate. Agents are infinitely lived and discount future profits at rate δ.

Each period, a new generation of clients enters, and each client is matched to an agent at random. A client's type (v, κ, d) is drawn independently from $H \otimes G \otimes D$: v is her value of agent representation relative to transacting without an agent (H has a positive, log-concave density h), κ is her cost per negotiation attempt (G is absolutely continuous with lower support $\kappa_L \geq 0$), and d is her cost per search attempt (D has lower support $d_L > 0$). A client who observes a posted rate c may accept it, forgo representation (payoff 0), negotiate at cost κ, or reject the agent and match with a new one at cost d; search is undirected.

Negotiations follow generalized Nash bargaining with client weight $\beta \in (0, 1)$, with disagreement payoffs derived from the model rather than assumed, as justified by the noncooperative foundations of Nash bargaining (Rubinstein, 1982): the client's disagreement payoff is the best of accepting the posted rate, forgoing representation, and searching; the agent's is its posted margin if the client would stay and zero otherwise. We study stationary symmetric equilibria in which all agents post a common rate $\bar{c}$; this equilibrium posted rate is the model's counterpart of the customary commission rate, the norm. We refer to G as the *negotiation frictions* and D as the *search frictions*.

2.2 Negotiation frictions and the commission norm

Lemma 1 (negotiated prices)**.** *Suppose all agents post $\bar{c}$. (i) A client with $v \geq \bar{c}$ and $\kappa+d \leq \beta(\bar{c}-k)$ negotiates and pays*

$$q = k + \frac{1-\beta}{\beta}(\kappa + d); \tag{1}$$

otherwise she does not negotiate and pays the posted rate $\bar{c}$. (ii) A client with $v \in (k, \bar{c})$ and $\kappa \leq \beta(v-k)$ negotiates and pays $p(v) = k + (1-\beta)(v-k)$; otherwise she exits. This is the participation margin.

As shown in Lemma 1, only clients with low negotiation costs negotiate, and they receive discounts. Clients with high negotiation costs either pay the posted rate or exit. A client negotiates only if her cost $\kappa+d$ is below the expected benefit $\beta(\bar{c}-k)$. Stated acceptance of the norm therefore reflects negotiation costs that are high relative to the expected benefits of deviating from it, whether because the costs themselves are high or because the expected benefits are low, as under collusion below.

The posted rate. An agent that raises its rate prices out some clients and pushes others into negotiation; this trade-off pins down the posted rate. Negotiation and search costs enter the bargaining margins only through their sum: write $\tau \equiv \kappa+d$ for a client's total cost per attempt, with distribution T, density t, and lower support $\tau_L = \kappa_L + d_L$ (the participation margin in Lemma 1(ii) involves no search and depends on κ alone). Formally, a matched client with $v \geq c$ accepts an agent posting c against a market at $\bar{c}$ iff $c \leq \bar{c}+d$, so a rate within d_L of the market loses no clients. The agent's negotiating set is $\tau \leq \hat{\tau}(c) \equiv \beta(c-k)$, at the market-pinned prices $q(\tau) \equiv k + \frac{1-\beta}{\beta}\tau$ of Equation (1); its participation-margin trades follow Lemma 1(ii) with upper limit c. Hence, for $c \leq \bar{c} + d_L$,

$$\begin{aligned}
&\pi(c) = (1 - H(c))\, A(c) + R(c), \quad \text{where} \\
&A(c) \equiv [1 - T(\beta(c-k))](c-k) + \int_{\tau_L}^{\beta(c-k)} [q(\tau) - k]\, dT(\tau), \\
&R(c) \equiv \int_k^c G(\beta(v-k))(1-\beta)(v-k)\, dH(v).
\end{aligned} \tag{2}$$

We assume π is strictly quasi-concave in c on the relevant range, so that it has a unique maximizer and the best response to any market rate is well defined. When no client negotiates, $\pi = (1 - H(c))(c - k)$ and strict quasi-concavity follows from the log-concavity of h, as in standard pricing problems; with negotiation, it is an additional regularity restriction on T. For example, it holds when T is uniform with a sufficiently dispersed support.[9]

Theorem 1 (the norm)**.** *Let c^* be the unconstrained maximizer of Equation (2). The unique stationary symmetric equilibrium posted rate is $\bar{c} = c^*$, characterized by the first-order condition*

$$(1 - H(c)) \left[1 - T(\hat{\tau}(c)) - \beta^2 (c - k)\, t(\hat{\tau}(c))\right] = h(c) \left[A(c) - (1 - \beta)(c - k)\, G(\beta(c - k))\right]. \tag{3}$$

The commission norm is therefore the unique outcome of independent pricing. No lower rate survives, because every client would rather accept an increase of up to d_L than pay her search cost. And no agent gains from raising its own rate above c^*: the extra margin on clients who accept is outweighed by the marginal clients who exit or negotiate instead. These effects also rule out multiple equilibria: any rate below c^* unravels as agents raise their own rates, and any rate above it unravels as they cut back to c^*. This is interesting because what determines the commission norm is often viewed as a puzzle (Hsieh and Moretti, 2003): here the norm is the unique equilibrium rather than one of many self-fulfilling outcomes.

How do the frictions affect the norm? Define the norm as the equilibrium posted rate c^* together with its *coverage* $B = 1 - T(\hat{\tau}(c^*))$, the share of clients with $v \geq c^*$ who transact at exactly c^*, and write $P = c^* - \int_{\tau_L}^{\hat{\tau}(c^*)} [c^* - q(\tau)]\, dT(\tau)$ for the average price among clients with $v \geq c^*$. We state the comparative statics for the case in which the negotiating share is small, as in our data.

Theorem 2 (coverage depends on the negotiation costs)**.** *Suppose the negotiating share is small ($\hat{\tau}(c^*)$ close to τ_L). Then: (i) A rightward shift of G raises the posted rate, the norm's coverage, and the average price. (ii) Coverage is full iff $\kappa_L + d_L \geq \beta(c^* - k)$.*

Because negotiation and search costs enter the bargaining margins only through their sum, a rightward shift of D has the same effects. As shown in Theorem 2, markets with stronger

[9] With T uniform with density t_0, strict quasi-concavity holds whenever $t_0 \leq [1 - (1 - \beta)(G(\beta(c - k)) + \beta(c - k)g(\beta(c - k)))]/[\beta(1 + \beta)(c - k) - \tau_L]$ for all c in the relevant range, where g is the density of G and the numerator is positive. The bracket on the left of Equation (3) is then positive and decreasing while the bracket on the right is positive and increasing, so π' crosses zero exactly once.

negotiation frictions have fewer clients who negotiate, more transactions at the customary rate, and higher commissions; a policy that reduces negotiation frictions moves all three together, while a policy that leaves them in place, as our evidence below suggests the settlement did, moves none. Part (ii) is what sustains a relatively high norm under strong enough negotiation costs: once they suppress negotiation entirely, the rate rises to the participation-capped level and every transaction occurs at the norm.

2.3 Collusion

What can collusion add? Colluding agents cannot change negotiated prices, which are pinned by clients' outside options, and gain nothing from changing posted rates. What a collusive arrangement can do is punish agents who reduce their commission rate when a client negotiates: an agent observed transacting below the norm triggers reversion to universal bargaining. Fearing this punishment, participating agents refuse to negotiate. Let $\varepsilon \in (0, 1]$ denote the reach of agents still willing to do so ($\varepsilon = 1$ is the frictions-only model), and let a fringe of mass ε_0 always bargain.

Let T_ε denote the distribution of $\kappa + d/\varepsilon$, so $T_1 = T$. Per unit of client mass with $v \geq c^*$, the flow gain from deviating is $\Gamma = \int^{\hat{\tau}(c^*)} [q(\tau) - k]\, dT_{\varepsilon_0}(\tau)$, and the per-period adherence premium relative to universal bargaining is $\Pi^N - \Pi^B$; adherence is sustainable iff $\delta \geq \delta^* \equiv \Gamma/(\Gamma + \Pi^N - \Pi^B)$, and $\mathcal{E}(\delta) \subseteq (0, 1]$ denotes the set of sustainable reaches.

Theorem 3 (collusion reduces negotiation and generates a range of norms)**.** *(i)* Collusion reduces negotiation, and costly search is necessary for it. *Under reach ε, each client's negotiation cost rises by $d(1 - \varepsilon)/\varepsilon$, which is proportional to her search cost and vanishes when search is costless: the negotiating share falls, and all equilibrium objects are those of the frictions-only model with T_ε in place of T. (ii)* The range of norms. *Writing $c^*(\varepsilon)$ for the posted rate under reach ε, the set of sustainable reaches is an interval $\mathcal{E}(\delta) = [\varepsilon_{\min}(\delta), 1]$ and the equilibrium norm ranges over*

$$[\, c^*(1),\ c^*(\varepsilon_{\min}(\delta))\,]\,. \tag{4}$$

When the negotiating share is small, a rightward shift of G raises both endpoints, lowers the patience threshold δ^* so that deeper restraint is sustainable, and shrinks the range's width, to zero once negotiation costs alone suppress negotiation.

As shown in Theorem 3, collusion operates by raising every client's cost of negotiating, so it

reduces the negotiating share and raises coverage just as the negotiation frictions do; the equivalent cost increase is proportional to each client's search cost, since a client who searches cheaply can still reach the fringe. Collusion is therefore effective only when finding a willing agent is costly, and a norm cannot be sustained by collusion alone. Without collusion the norm is unique; with collusion the baseline negotiation costs govern both the location and the width of the range of sustainable norms. When few clients would negotiate anyway, an agent gains little by cheating on the arrangement, and when negotiation costs alone suppress negotiation, adherence costs nothing ($\delta^* = 0$): strong negotiation costs and fear of punishment together sustain the high end of the range.

2.4 Incidence bias

Our survey experiment indicates that many buyers perceive the buyer-agent fee as paid by the seller. A buyer who believes she bears only part of the fee sees less reason to negotiate it. Let $\lambda \in [0, 1]$ be the true fraction of a marginal change in the buyer-agent fee borne by the buyer (embedded in H), and $\tilde{\lambda} \in [0, 1]$ the fraction she believes she bears, $\tilde{\lambda} \sim F$ independently of (v, κ). Perception governs bargaining behavior only; the participation margin and Equations (2)–(3) depend on true incidence. For a buyer with $v \geq \bar{c}$ and $\tilde{\lambda} > 0$, the bargaining above goes through with the buyer's stake scaled by $\tilde{\lambda}$: she pays

$$q(\kappa, \tilde{\lambda}) = k + \frac{1-\beta}{\beta} \cdot \frac{\kappa + d}{\tilde{\lambda}}, \qquad \text{and negotiates iff} \quad \kappa \leq \beta\tilde{\lambda}(\bar{c} - k) - d, \tag{5}$$

derived in the proof of Theorem 4. On the seller side, a seller with completion surplus $W > 0$ announces a contribution $s \in [0, \bar{c}]$ toward the fee; the buyer owes $\bar{c} - s$ out of pocket. Contributions are capitalized at the true incidence rate, so the seller's true cost of s is $(1 - \lambda)s$, while a buyer with perceived incidence $\tilde{\lambda}$ perceives the burden $\bar{c} - (1 - \tilde{\lambda})s$ and completes iff $v \geq \bar{c} - (1 - \tilde{\lambda})s$. The seller's completion probability and payoff are

$$Q(s) = \mathrm{E}_F \left[1 - H(\bar{c} - (1 - \tilde{\lambda})s)\right], \qquad S(s) = Q(s) \left[W - (1 - \lambda)s\right]. \tag{6}$$

Theorem 4 (incidence bias manifests as negotiation costs, and sellers endogenously pay the fee)**.** *(i)* Manifestation. *A buyer's negotiation behavior depends on* $(\kappa, d, \tilde{\lambda})$ *only through the inflated per-attempt cost* $(\kappa + d)/\tilde{\lambda}$*: she is observationally equivalent to an unbiased buyer with negotiation cost* $\kappa_{\text{eff}} \equiv (\kappa + d)/\tilde{\lambda} - d$*. (ii)* Sellers pay the fee if incidence bias exists. *If* F *places mass on* $\tilde{\lambda} < 1$*,*

Q is strictly increasing on $[0, \bar{c}]$, and with complete capitalization ($\lambda = 1$) every seller announces $s^* = \bar{c}$.

As shown in Theorem 4, incidence bias manifests as negotiation costs: even a buyer with no true bargaining cost behaves as if negotiating were costly, because she perceives only part of the gain from a lower fee as her own. Deeper bias acts like a rightward shift of the negotiation-cost distribution, so the comparative statics of Theorem 2 apply. Facing biased buyers, sellers pay the fee in full: a contribution raises the probability that the buyer completes the purchase, and under capitalization it costs the seller nothing. Seller payment in turn keeps the fee looking seller-paid and sustains the bias, consistent with the continued prevalence of seller offers after the settlement.

3 Data

We use three main datasets for our analysis. The first dataset is from the Rice University Homeowner Survey Experiment, conducted between July 14 and July 22, 2025. The survey collected responses from 1,600 real estate owners regarding both hypothetical negotiation scenarios and their own past home purchase experiences. Each respondent was randomly assigned to one of four scenarios describing a home with a list price of $400,000: (i) the buyer's agent commission stated as 2.5% of the list price and paid by the seller, (ii) the commission stated as $10,000 and paid by the seller, (iii) the commission stated as 2.5% and paid by the buyer, or (iv) the commission stated as $10,000 and paid by the buyer. This design allows us to examine how presentation in percentage versus dollar terms, and assignment of payment responsibility, shape negotiation behavior. In addition to negotiation intentions, the survey recorded respondents' reasons for not negotiating and whether they interviewed multiple agents. Details of the survey instrument are described in Appendix B.

The second dataset we use is from the Rice University Real Estate Commission Survey, which was fielded between August 1, 2024 and January 21, 2025, covering 6,826 transactions completed between March 1, 2024 and November 31, 2024. This survey of buyer and seller agents asks questions including about buyer and seller real estate commissions, whether the buyer negotiated with the buyer's agent, the extent to which buyer's agent paid rebates to the buyer. For flat fee agents, we convert the reported commission dollar amounts to commission rates. Details of the survey are described in Appendix C. An important advantage of the survey over internal MLS data is that it collects information about buyer's agent rebates and negotiation. We use the agent rebate

information to get a measurement of buyer's agent commission (net of rebates) pre-and-post NAR. We also verify our results on reported commission rates by using administrative data from publicly traded real estate brokerages.

The third dataset consists of transaction-level MLS data scraped from RedFin's public listings. We collect closed sales across the top 30 Core-Based Statistical Areas (CBSAs) from which RedFin collects MLS data, from March 1, 2024 to March 31, 2025. For each sale, we record sales characteristics including the sale price, transaction date, property type (single-family, condo, etc.), ZIP code, as well as details about the property (beds, baths, square footage, lot size, and the MLS description text). We also record agent identities in terms of the agent name, brokerage name, and state, from which we compute prior transaction counts and experience. On RedFin, transactions which did not involve an independent buyer's agent is recorded as having the same agent as the seller's agent, from which we create a dummy for independent representation. We plot weekly transaction volumes in this dataset in Figure 1, which shows strong seasonality in terms of summer and winter times. For all agent-brokerage pairs in our sample, we scrape data about their reported years of experience from their agent profiles on Homes.com and Zillow.

[Insert Figure 1 Here]

Finally, we use a series of auxiliary data to conduct our empirical analyses. First, we classify FinTech brokerages as transactions handled by RedFin itself by using the brokerage name in our scraped MLS data. We also identify discount brokerages as any of 82 identified discount brokerages (excluding RedFin) operating in our 30 CBSAs listed in Houzeo or RealEstateWitch, plus manual examination of the websites of all brokerages with at least 50 transactions in our sample.[10] State-level RA requirements pre-NAR are coded based on information from the South Carolina Association of Realtors.[11] Finally, we obtain data on days on market (DOM) from Realtor.com. Summary statistics of the variables used in our main empirical analyses are shown in Table 1. The lower sample sizes on the variable "buyer negotiated with buyer agent" and "seller offered buyer commission" in the pre-policy period is due to these questions only being asked starting in the second wave of the survey, covering transactions from July 1, 2024 onward.

[Insert Table 1 Here]

[10] We manually examined 5,735 brokerages' websites.

[11] Available at https://screaltors.org/nar-18-states-require-written-buyer-agency-agreements-2/.

4 Empirical Strategy

Our analysis relies on two complementary specifications, both of which are specified in our pre-analysis plan.[12] First, in an event-study specification, for a given outcome variable Y_{ist} we estimate for transaction i in city s completed on date t:

$$Y_{ist} = \alpha + \delta \, \text{Post}_t + X'_{ist}\gamma + \mu_s + \varepsilon_{ist}, \tag{7}$$

where Post_t is an indicator for the transaction being completed on or after the August 17, 2024 settlement, X_{ist} are a set of control variables which are the transaction price bucket, property type, CBSA-by-house price bin fixed effects, and zip-code income controls. The house price bins are in four categories: (i) less than or equal to $250,000, (ii) between $250,000 to $500,000, (iii) between $500,000 and $750,000, and (iv) over $750,000. Furthermore, μ_s capture city fixed effects, and ε_{ist} is an error term. The coefficient δ is our coefficient of interest, and captures the average post-event shift in the outcome variable Y_{ist} controlling for all of our covariates.

As an extension of the event-study specification, we also plot the dynamic effects version of Equation (7). Specifically, we plot δ_k coefficients, defined as:

$$Y_{ist} = \alpha + \sum_{k=-K}^{K} \delta_k \, \mathbf{1}\{\text{Month}_t = k\} + X'_{ist}\gamma + \mu_s + \varepsilon_{ist}, \tag{8}$$

where Equation (8) is the same as Equation (7) except the term involving the constant δ coefficient is replaced by a term involving dynamic coefficients δ_k that captures the effects by month.

Second, we use a difference-in-differences specification to examine the extent to which states with no prior Buyer's Representation Agreement (RA) requirements, which are more affected by the NAR settlement, differ in outcomes compared to states with prior RA requirements. We note this difference-in-differences approach captures the incremental effect of the RA requirement imposed by the NAR settlement. To the extent that the NAR settlement may have had other effects that are common to RA and no-RA states, for example by making households more aware of the ability to negotiate commissions, those are captured by the event indicator specification instead. The

[12] Available at https://www.socialscienceregistry.org/trials/14192/history/236907.

difference-in-differences regression specification is as follows:

$$Y_{ist} = \alpha + \beta_1 \,\text{Post}_t + \beta_2 \,\text{NonRA}_s + \beta_3 \,(\text{Post}_t \times \text{NonRA}_s) + X'_{ist}\gamma + \mu_s + \lambda_t + \varepsilon_{ist}, \tag{9}$$

in which Post_t equals one for sales on or after August 17, 2024, NonRA_s flags states without a pre-existing RA requirement, and control variables and fixed effects X_{ist}, μ_s is as in Equation (7). For the difference-in-differences specification, we also add calendar week fixed effects λ_t. In terms of dynamic analyses, we run the specification in Equation (8) separately for RA and no-RA states and plot the dynamic coefficients δ_k. Finally, for all analyses, we cluster coefficients at the market by week level, where each market consist of a CBSA by house price bin, consistent with our pre-analysis plan.

5 Do Barriers to Buyer–Agent Fee Negotiation Persist?

5.1 Lack of Negotiation by Buyers

A central mechanism through which the NAR settlement was expected to lower commission rates is by shifting the burden of negotiating the buyer's agent commission from sellers to buyers. If buyers actively negotiated, one would anticipate downward pressure on commission rates, as agents compete for business in a more transparent contracting environment. However, our survey evidence and experimental results suggest that buyers are unlikely to negotiate, before or after the NAR settlement.

In terms of summary statistics from our survey of real estate agents, Table 1, Panel (A), row 2 presents the fraction of buyer's agents that reported that their buyers negotiated on the inquired transaction. The estimated probability of negotiation is low, at 8.8% pre-NAR and 11.2% post-NAR. While the result indicates a modest increase in the fraction of buyers that negotiate, on balance they confirm that buyers rarely attempt to bargain over their agent's commission.

We formally test whether negotiation rates changed following the settlement in Table 2. Panel A of Table 2 reports event indicator specifications separately for RA and No-RA states. The estimated changes are small and statistically insignificant in both groups of states, both with and without control variables. Panel B of Table 2 reports the difference-in-differences specification comparing No-RA to RA states post-policy, and the estimated coefficient is also statistically insignificant.

These results confirm that the settlement did not measurably increase buyer negotiation.

[Insert Table 2 Here]

5.2 Experimental Design

We design a survey experiment to test the behavioral mechanisms that may suppress buyer-agent fee bargaining. The first is *incidence bias*: buyers negotiate less when the commission is framed as paid by the seller than when they perceive that they pay it themselves (Chetty et al., 2009). The second is the fee's customary presentation. Commissions are quoted as a small percentage of the price, and this presentation can suppress negotiation through acceptance of the customary rate, since the quoted percentage is the form in which the norm is stated, and through denominator neglect, since a percentage makes the fee's magnitude less concrete than a dollar amount (e.g., Denes-Raj and Epstein, 1994; Reyna and Brainerd, 2008). We refer to the corresponding treatment as *dollar framing*.

Respondents recruited via Prolific were randomly assigned to one of four scenarios describing a $400,000 home purchase. The scenarios varied along two dimensions: whether the commission was framed as a *percentage* or a *dollar amount*, and whether the commission was described as being paid by the *seller* or by the *buyer*. This produced a 2×2 randomized experiment design, which we label Scenarios 1–4:

- **Scenario 1: Percentage, Seller Pays.** The buyer's agent requests a *2.5% commission*, and the *seller* agrees to pay it.
- **Scenario 2: Dollar, Seller Pays.** The buyer's agent requests a *$10,000 commission*, and the *seller* agrees to pay it.
- **Scenario 3: Percentage, Buyer Pays.** The buyer's agent requests a *2.5% commission*, which the *buyer* must pay either at closing or by rolling it into the mortgage.
- **Scenario 4: Dollar, Buyer Pays.** The buyer's agent requests a *$10,000 commission*, which the *buyer* must pay either at closing or by rolling it into the mortgage.

The scenario involved an asking price of $400,000. Following the presentation of the scenario, respondents faced two comprehension checks: (a) selecting the commission amount (matching

their scenario), and (b) identifying who is nominally paying the commission. In accordance with platform policy, respondents failing either check were given another chance at that question, and those who failed again were removed from the sample. The primary outcome is an indicator for whether the respondent would ask their buyer's agent to reduce the commission. Those who responded "No" were asked to select reasons (multiple allowed).

We determined our target sample size ex ante through a pre-analysis plan. Power calculations, based on detecting a 10 percentage point increase in negotiation rates with 80% power at the 5% significance level, indicated a minimum of roughly 400 respondents per treatment arm. Therefore, we set a target of 1,600 completed responses in total. We offered an incentive of $44.44 per hour, well above the Prolific's recommended minimum of $12 per hour.

5.3 Results

The results of our pre-registered experiment is shown in Table 3, which we describe as follows.

[Insert Table 3 Here]

Comparison 1 (Scenario 3 vs. Scenario 1). When the commission is framed as a percentage and paid by the seller (Scenario 1), which mimics real-world conditions, 8.0–8.2% of respondents reported they would negotiate, closely matching the $\approx 9\%$ rate found in our realtor survey. When the commission is instead framed as paid by the buyer (Scenario 3), 27.5% of respondents indicated they would negotiate. The difference is 19.6 percentage points ($p < 0.001$). The effect of incidence is nearly identical under dollar framing: moving from seller paid to buyer paid raises the negotiation rate from 17.2% (Scenario 2) to 37.0% (Scenario 4), a difference of 19.8 percentage points. Incidence bias is therefore identified directly by randomization, and its effect is stable across presentations.

Comparison 2 (Scenario 2 vs. Scenario 1). When the commission is framed as a dollar amount and paid by the seller (Scenario 2), the negotiation rate rises from 8.0–8.2% to 17.2%. The difference is 9.3 percentage points ($p < 0.001$). The dollar framing effect is about half the size of the incidence effect in Comparison 1, at 9.3 versus 19.6 percentage points.

Comparison 3 (Scenario 4 vs. Scenario 1). When the commission is framed as a dollar amount and paid by the buyer (Scenario 4), 37.0% of respondents reported they would negotiate, compared to 8.0–8.2% in Scenario 1. The difference is 29.1 percentage points ($p < 0.001$).

In sum, incidence bias is the largest single driver of non-negotiation and is identified directly by randomization. Dollar framing also increases stated willingness to negotiate, and removing both the seller-paid framing and the percentage framing produces the largest increase.

Figure 2 reports the distribution of reasons selected by respondents who answered "No" to the negotiation question across all scenarios. Because multiple selections were permitted, percentages sum to more than 100%. The reported reasons line up with the drivers above. The most frequently cited reason, chosen by approximately 52% of non-negotiators, was that "the seller pays the commission anyway," which is consistent with incidence bias. The next most common, at 44%, was that "the commission amount is customary," which is direct evidence of acceptance of the customary rate. Through the lens of the model in Section 2, these respondents' negotiation costs are high relative to the expected benefits of deviating from the norm, whether because the costs themselves are high or because the expected benefits are low, as under collusion. A smaller but nontrivial share of respondents (29%) reported that "they did not want to offend their agent" or "receive worse service," a less significant but still interesting driver, followed by "it is too much hassle" (18%), a direct negotiation cost. Finally, 7% selected "Other." Appendix Figure A.1 conducts this analysis by scenario number, and shows that the changes in the respondents' reported reasons for non-negotiating are consistent with the treatments.

[Insert Figure 2 Here]

6 Does the NAR Settlement Change Fee Outcomes?

6.1 Stickiness of Commission Rates

Next, we analyze real estate commission rates paid by buyers and sellers who chose to be represented by a realtor. The primary goal of the NAR settlement was to reduce buyer's agent real estate commission rates, and its mechanisms for doing so include reducing making the option to negotiate clear to buyers in RA, reducing seller agent steering incentives, and potentially making homeowners more price conscious leading to a greater willingness to negotiate. On the other hand, if household negotiation patterns are relatively stable pre-and-post-NAR and those who negotiate already get

their target commission rate pre-policy, then the NAR settlement may not be able to break real estate commission norms.

We conduct two sets of analyses on real estate commission rates. First, in panel (a) of Figure 3 we present the dynamic effects for buyer's agent commission rates in the Rice University Real Estate Commission Survey following Equation 9. We find limited changes in commission rates following the policy in our Rice University Real Estate Commission Survey. Second, to confirm our survey's findings in administrative data, we also compute the average commission rate per side from publicly traded brokerages' 10-Q filings.

On the publicly traded brokerages' 10-Q filings, we first examine Compass, a national publicly-traded brokerage that is the largest U.S. brokerage by transaction volume,[13] using revenue and transaction volume data from their 10-Q filings. Compass notes that "[t]he Company currently generates substantially all of its revenue from commissions paid by clients at the time that a home is transacted." We compute their implied commission rate by dividing their revenue by their reported transaction volume. We perform a similar exercise using eXp Realty's 10-Qs, which is the largest U.S. brokerage brokerage by number of transactions.[14]. Furthermore, we examine Anywhere' 10-Qs, which directly reports their commission rates for their Franchise Group (Coldwell Banker, Century 21, Corcoran, ERA, Sotheby's International, Better Homes and Gardens) and for their own Advisors group. As panel (b) of Figure 3 shows, the average implied commission rate from these four brokerage groups is around 2.5 percentage points, similar to what is in our Rice University Commission Survey, and also did not change significantly following the NAR settlement.

[Insert Figures 3, 4, and 5 Here]

Figure 4 shows the heterogeneity analysis. In general, we find some heterogeneity by income and race: the estimated differential effect is negative in higher-income zip codes and those with a larger share of Asian residents, and positive in zip codes with a larger share of Black residents, though these differences are small in magnitude. Figure 5 shows relatively limited effects on commission rates across the distribution, which shows significant bunching at the focal rates of 2.0, 2.5, and 3.0 percent both before and after the policy.

Next, we examine the numerical coefficients on real estate commission rates from both buyer and seller's agents in our Real Estate Commission Survey in both event indicator and difference-in-differences specifications following our pre-analysis plan. The results are shown in Table 4.

[13] See Compass' press release HERE.
[14] See eXp's press release Here.

Columns (1) and (2) of Panel A of Table 4 shows the results for buyers' agent commissions in the event indicator specification. The coefficients are economically small and statistically insignificant at 0.01 percentage points, off of a base of 2.5 percentage points. Columns (3) and (4) of Panel A of Table 4 shows the results for sellers' agent commissions in event indicator specifications, and the results are also economically small and statistically insignificant at 0.035, off of a base of 2.5 percentage points. Panel B of Table 4 shows results for difference-in-differences specifications comparing no-RA states with RA states, which also have small and statistically insignificant coefficients.

[Insert Table 4 Here]

Furthermore, we conduct several additional analyses on commission. First, Appendix Table A.2 shows similar patterns with minimal control variables.[15]

6.1.1 Does a slow real estate market explain our results?

One hypothesis is that real estate commissions may be more sticky in cold real estate markets where competition for homes is less fierce, and that the NAR settlement may have a larger effect on buyer's agent commissions in hotter markets.[16] First, we note that our 2024 time period is not an unusually loose housing market – at an average days on market (DOM) of 54 days, it is relatively close to the historical average, and only loose relative to the historically tight COVID-19 and following period of 2021–2023.[17]

To further test this hypothesis, we run our event indicator analyses separately in hot and cold real estate markets. Hot markets are defined as zipcodes that had below-median days on market (DOM) in both the pre-policy and post-policy period within 2024, whereas cold markets are defined as zipcodes that had above-median days on market (DOM) in both the pre-policy and post-policy period within 2024. Zipcodes whose DOM changed categories between the pre-policy and post-policy periods are excluded from the analysis. The results are shown in Appendix Table A.3, which shows little changes in commission rates in both types of markets.

[15] Both analyses with and without the pre-specified control variables are in our pre-analysis plan.
[16] On the other hand, competition for buyers among buyer agents may be more fierce in cold markets with fewer transactions.
[17] See, e.g., https://fred.stlouisfed.org/series/MEDDAYONMARUS.

6.1.2 Does collusion explain our results?

Based on our model, collusion may serve as a barrier to negotiation that makes the NAR settlement less effective, but it is effective only when finding an agent willing to bargain is costly: if clients could costlessly reach a willing agent, no punishment scheme could stop them, since the fringe always bargains and negotiated prices are pinned by outside options. Given that some agents do offer discounts when buyers negotiate, as discussed in Section 7.2, we know that collusion does not fully fix commission rates for every agent, and that increases in commission negotiation due to a reduction in incidence bias could change market outcomes. Therefore, the observation that the NAR settlement could be more effective if households negotiated more likely survives beyond collusive forces.

6.1.3 Might commission rate effects take more time to show up?

One hypothesis is that the effect of the NAR settlement may take time to show up in the data. Given that our 10-Q sample covers a period of almost two years following the settlement and shows no discernable effect on commission rates, one might expect another trigger is necessary for things to begin changing. One such trigger may be a future technology advancement in real estate intermediation that becomes widely adopted. However, given the continued limited use of FinTech and discount brokerages we find in the following Section 6.2, our results suggest that one of the above would have to change in the market for the NAR settlement to finally impact commission outcomes: either buyers will have to start negotiating, or they will have to finally start adopting FinTech and discount brokerages.

6.2 Continued Limited Use of FinTech and Discount Brokerages

Another way that buyers and sellers were able to obtain lower commission rates is to use FinTech or discount brokerages. For buyers, these brokerages are able to provide a low effective commission rate pre-NAR by offering rebates of their buyer's agent commission. For sellers, these brokerages offer to list their homes on the MLS for a reduced or flat-fee. Since these brokerages charge a lower fee, to the extent the NAR settlement makes sellers and buyers more price-conscious, households may increasingly seek out FinTech and discount brokerages post-NAR.

Table 5 shows the results for FinTech and discount brokerages for both the event indicator specification in Equation 7 and the difference-in-difference study specification in Equation 9. In

panel A, column (1) suggests that there is a 0.22 percentage point increase in the share of sellers using a FinTech brokerage post-NAR, relative to a sample average of 1.2 percent, whereas column (2) suggests that there is a 0.40 percentage point increase in the share of buyers using a FinTech brokerage, relative to a sample average of 1.4 percent. While these increases are statistically significant, they are quite small in magnitude, suggesting that any shift to FinTech brokerages post-NAR is small in absolute terms. Similarly, Panel A, column (3) suggests that there is a 0.10 percentage point increase in the share of sellers using a discount brokerage, relative to a sample average a base of 0.7 percentage points, whereas panel A, column (4) suggests that there is no statistically significant change in the percent of buyers using a discount broker, with the coefficient being close to zero.

[Insert Table 5 Here]

Panel B of Table 5 shows the results for a differences-in-differences specification comparing No-RA to RA states post-policy following Equation 9. The coefficients are very close to zero throughout. These results suggest that while some households may have indeed become more price conscious post-NAR and marginally increased their usage of FinTech as well as discount brokerages, the proportion of households that did so is small in absolute terms, at less than 0.45 percentage points in the largest coefficient estimate. Appendix Table A.5 shows that these results are robust to using minimal control variables.

6.3 Lack of Decoupling Between Buyer and Seller Commissions

A central expectation of the 2024 NAR settlement was that by removing the buyer-broker compensation field from MLS listings and by decoupling buyer agent commission from what the seller offers, buyer commissions would sharply decline. However, our evidence indicates that buyers continue to pay what the sellers offer in terms of agent commissions on individual properties, consistent with a lack of buyer negotiation explored in Section 5.1. Furthermore, as we will show next, sellers continue to offer to pay specific amounts of buyers' agent commissions. In our model, this lack of decoupling is a consequence of negotiation frictions that sustains elevated commissions, because transactions continue to occur at the customary rate and buyers' agent commissions are endogenously paid by sellers.

[Insert Figure 6 Here]

To examine potential decoupling between buyer and seller commission rates following the NAR settlement, we begin with an analysis of the correlation between seller-offered and buyer-paid commissions before and after the settlement. Panel (a) of Figure 6 shows that, in the pre-NAR period, 94.4% of sellers offered an explicit percentage-based offer of compensation to the buyer's agent. Panel (b) of Figure 6 shows a nearly one to one relationship between what the sellers offer and what the buyers' agent received, with some evidence that sellers who offer low amounts below 2 percent of the transaction price end up paying more than what they initially offered.

After the policy change, panel (c) of Figure 6 shows that the fraction of sellers who offer buyers' agent commission is lower but still significant, at 86.8% of all sellers. Panel (d) of Figure 6 shows that the nearly one to one relationship between what the sellers offer and what the buyers' agent received remains tight after the policy, which is puzzling if buyers' agent commissions are independently negotiated with respect to sellers' commission offers.

In our model, the share of buyers who pay exactly the seller-offered rate measures how far buyer commissions are from being independently negotiated. We empirically measure this share by comparing the commission the buyer's agent received with the rate the seller offered, both reported by the seller's agent. Table 6 presents event indicator and difference-in-differences specifications for an indicator equal to one when the two coincide.

Pre-policy, 96.2 percent of buyers pay exactly the rate the seller offered. Post-policy, this share declines by about 3 percentage points to 93.1 percent, comparable to the rise in reported negotiation in Section 5.1, and the difference-in-differences estimates comparing No-RA to RA states are of similar size. The deviations are small, averaging under three quarters of a percentage point in either direction. Buyer commissions therefore continue to follow sellers' offers rather than being independently negotiated, and the settlement moved this share by only a few percentage points.

[Insert Table 6 Here]

7 The non-commission effects of the NAR settlement

7.1 Modest Rise of Unrepresented Buyers

One potential effect of the NAR settlement is to incentivize buyers to opt out of representation and thereby reducing the commissions they pay. The reason for this is, pre-NAR in No-RA states, buyer agent commissions are typically paid by the seller agent's brokerage. In this circumstance,

if the buyer chooses to not retain an agent the seller agent's brokerage can in many cases keep the commission allocated for buyer's agents. Therefore, there are limited advantages to buyers opting out of using a buyer's agent pre-NAR settlement in No-RA states. In RA states pre-NAR, and in all states post-NAR, the buyer's agent commissions are paid either by the seller or the buyer directly, and not using a buyer's agent can make the buyer's offer more competitive to the seller.[18]

We examine the dynamic effect of the NAR settlement on unrepresented buyers both overall and separately in RA and No-RA states in Figure 7, using the specification described in Equation (8). Panel (a) of Figure 7 shows a sharp rise in unrepresented buyers immediately following the policy of about 2 percentage points. Panel (b) of Figure 7 shows that this rise is apparent in No-RA states where the incentive to not use a buyer's agent increased. In addition, panel (c) of Figure 7 shows that in RA states the share of unrepresented buyers remains roughly constant.

[Insert Figure 7 Here]

We quantify the effect of the NAR settlement on unrepresented buyers in Table 7, with Panel A of Table 7 showing the result of the event indicator specification in Equation 7 and Panel B of Table 7 showing the result of the difference-in-difference study specification in Equation 9. Panel A of Table 7 shows that, post-policy, there is a 1.74 percentage point increase in the proportion of buyers opting out of independent representation, off of a sample average of 7.37 percentage points. Panel B of Table 7 shows that, comparing No-RA and RA states in a difference-in-differences specification, there is a 1.93 percentage point greater increase in the proportion of buyers opting out of independent representation in No-RA states compared to RA states. Appendix Table A.6 shows that these results are robust to using minimal control variables.

[Insert Table 7 Here]

In summary, we detect a sharp and persistent increase in the share of buyers opting out of independent representation post-NAR, with the effect being concentrated to No-RA states. This suggests that the increase in the financial incentive of opting out of independent representation indeed affected buyers' choices, although the effect size of 2 percentage points implies that over 90% of buyers still do get independent representation post-policy.

[18] Indeed, commenters note that the NAR settlement can make buyer's agents obsolete, as well as encourage alternative business models for buyer's agents with lower effective commission rates, although it is unclear why some of the alternative business models could not be achieved with buyer's agents giving rebates to buyers even pre-NAR.

7.2 Do Unrepresented and Negotiating Buyers Pay Less?

We present two pieces of evidence that, in the limited circumstances that buyers forgo representation or negotiate, they tend to get more favorable outcomes. First, Table 8 presents hedonic regressions of the log of the transaction price on a dummy variable indicating the buyer has foregone representation plus a large set of control variables including the square footage of the home, lot size (in thousands of square feet), CBSA by week fix effects, year of house construction fixed effects, lot size bucket fixed effects in bins of width 1000 square feet, square feet bucket fixed effects in bins of width 500 square feet, number beds fixed effects, number of baths fixed effects, and zipcode fixed effects. We further limit this analysis to single-family homes to obtain a more uniform sample. In addition to these hedonic variables, we also use the MLS text to control for if a listing is in a "good condition" or a "bad condition", where "good_condition" as a dummy variable indicating if the listing text included keywords of "renovated," "remodeled," or "state-of-the-art", and "bad_condition" as a dummy variable indicating if the listing text included keywords of "fixer-upper," "potential," "investor," or "bones." To our knowledge this is one of the first uses of the MLS listing text to enrich hedonic regressions and capture more unobservable home quality.

[Insert Table 8 Here]

Our main coefficient of interest is the dummy variable indicating whether the buyer has foregone independent representation, labelled as "foregone_representation." Column (1) of Table 8 shows that this coefficient is -0.0181 pre-policy and column (2) of Table 8 shows that this coefficient is -0.0193 post-policy. These results suggest that buyers who forego representation pay 1.81 percent lower house prices pre-policy and 1.93 percent lower transaction prices post-policy conditional on our covariates. Given that buyer's commission rates average around 2.5 percent of the transaction price, this results suggest that buyers capture most, though not all, of the cost savings from not using a buyer's agent.

Columns (3) and (4) of Table 8 repeats the foregone independent representation analysis for No-RA states, which as seen in Figure 7 are the main states in which the NAR settlement had an effect on independent representation. We obtain consistent results. Column (3) of Table 8 suggests that, in No-RA states, buyers who foregoed independent representation paid a 2.7 percent lower transaction price pre-policy, whereas column (4) of Table 8 suggests that, in No-RA states, buyers who foregoed independent representation paid a 2.2 percent lower transaction price post-policy. In

general, Table 8 provides suggestive evidence that buyers who forego independent representation receive a discount on their transaction price.

Second, Table 9 shows that buyers who negotiate pay between 20 to 43 basis points lower commission rates, depending on time period. This discount is economically meaningful, equivalent to $800 to $1720 on a $400,000 house. The point estimate is not statistically significantly different pre-policy versus post-policy. Though the differences between columns (1) and (2) vs. (3) and (4) are not statistically significant, one possible explanation for a reduction in the negotiation coefficient post-policy is that rebates become more difficult to offer with required buyer's representation agreements, removing one dimension of potential negotiation. While these reductions are economically meaningful for individual households, they are insufficient to materially shift average commission rates at the aggregate level, since only a small minority of buyers negotiate.

[Insert Table 9 Here]

7.3 The rise of higher volume and experienced agents

Finally, we analyze households' choices of real estate agents in terms of their transaction volume and experience following the NAR settlement. There are at least two reasons why households may switch to using higher volume and more experienced agents after the NAR settlement. First, the post-NAR settlement period represents a period of uncertainty during which both sellers and buyers may value expertise more, and higher volume as well as experienced agents may have more expertise to offer. Second, the requirement of RAs may incentivize buyers who are uncertain about agents' value to choose agents with greater perceived expertise, because the RA typically requires buyers to use their chosen agent to purchase the property as long as the transaction is completed in a certain amount of time. The former effect may be expected to apply in all states, for both sellers and buyers, though with potentially stronger effects in No-RA states. The second effect may be more concentrated for buyers in No-RA states for whom the RA requirement imposed by the NAR settlement is new.

As specified in our pre-analysis plan, we define high-volume agents as those in the top 25 percentile of total transactions during the pre-event window, and experienced agents as those with greater than or equal to 5 years of experience prior to the sale date. We begin by examining the dynamic effects of buyers and sellers choosing experienced and high volume agents using a linear

probability model as specified in Equation (8), both overall and separately for the subsamples of No-RA and RA states. The results for high volume agents are shown in Figure 8.

[Insert Figure 8 Here]

Examining Figure 8, we see a sharp and persistent increase in the proportion of households using high volume agents to complete their transactions. Figure 8, panel (a) shows that for sellers in all states, the share of households using high-volume agents to complete their transactions increased 2 to 4 percentage points post-NAR, with a sharp jump occurring in the first month following the implementation of NAR and persisting until the end of our sample period seven months after the implementation of the NAR settlement. Panel (b) and (c), which plots the dynamic effects estimated on subsamples of No-RA and RA states, respectively, shows that the jump in the use of high volume agents, which occurs discontinuously in the month following the NAR settlement implementation in both subsamples, is larger in No-RA states.

Panels (d) to (e) of Figure 8 show buyers' choice of high-volume agents also increased discontinuously and persistently the month following the NAR implementation both overall in Panel (d) and in No-RA states in panel (e). In RA states, panel (f) of Figure 8 shows relatively muted effects for the first three months following NAR implementation, though there is an increase starting from four months after the NAR implementation. Overall, Figure 8's results are consistent with a shift to high volume agents post-NAR among both buyers and sellers, with the effect being larger in No-RA states.

Next, we examine the dynamic effects of the use of experienced agents by the buyers and sellers in Figure 9, which, as mentioned earlier, we define as agents with more than or equal to 5 years of experience prior to the sale date, where the years of experience is obtained from the agents' Homes.com and Zillow profiles. Panels (a) to (c) of Figure 9 shows that, for sellers, there is a sharp increase in the use of experienced agents in the month following the NAR settlement both overall and in No-RA and RA states. Panels (d) to (f) of Figure 9 shows a more gradual shift towards more experienced agents among buyers, particularly in No-RA states.

[Insert Figure 9 Here]

We then turn to Table 10, with Panel A showing the event study coefficients as in Equation (7) and Panel B showing the differences-in-differences coefficients comparing No-RA to RA states in Equation (9). Panel A, column (1) of Table 10 shows a 3.5 percentage point increase in sellers'

use of high volume agents post-policy, off of a base of 63.8 percentage points. Similarly, Panel A, column (2) of Table 10 shows a 2.2 percentage point increase in buyers' use of high volume agents post-policy, off of a base of 57.7 percentage points. Turning to our experienced agent measure, Panel A, column (3) of Table 10 shows a 2.1 percentage point increase in sellers' use of high volume agents post-policy, off of a base of 83.2 percentage points, whereas Panel A, column (4) of Table 10 shows a 1.2 percentage point increase in buyers' use of experienced agents post-policy, off of a base of 73.8 percentage points. Note that our experience measure is only defined for agents who have profiles on Homes.com or Zillow, which is 74% of the seller's agent sample and 65% of the buyer's agent sample, and is the reason why our sample sizes are lower in columns (3) and (4) compared to columns (1) and (2). Thus, columns (3) and (4) indicate a shift to experienced realtors post-NAR within the sample of realtors that have Homes.com or Zillow profiles.

[Insert Table 10 Here]

Turning to our differences-in-differences results and examining our coefficient of interest, we find in Panel B, column (1) of Table 10 that, post-policy, sellers are 1.5 percentage points more likely to use high volume agents in No-RA states compared to RA states. Similarly, Panel B, column (2) of Table 10 shows that post-policy, buyers are 1.1 percentage points more likely to use high volume agents in No-RA states compared to RA states. Interestingly, in terms of experienced agents, Panel B, column (3) of Table 10 shows no statistically significant difference between sellers in No-RA states post-policy compared to sellers in RA states in terms of their hiring of experienced agents. Panel B, column (4) of Table 10 shows that buyers are more likely to hire experienced agents in No-RA states post-policy compared to buyers in RA states. Appendix Table A.7 shows similar results with minimal control variables.[19]

In general, we find a shift to high volume and experienced agents post-policy, an effect that is larger in No-RA states compared to RA states for the use of high volume agents by both sellers and buyers and for the use of experienced agents by buyers. An important potential confounder of our realtor volume and experience results is that inexperienced agents may be less likely to enter the market post-policy if transaction volumes are down. This effect was established in Gilbukh and Goldsmith-Pinkham (2024), which also examines its important equilibrium implications on search quality. However, Figure 8 shows a limited slowdown in volume between the NAR settlement taking effect in August 2024 until January 2025, where the slowdown in January 2025 appears

[19]Both analyses with and without the pre-specified control variables are in our pre-analysis plan.

to reflect seasonality effects. Therefore, the sharp change in September 2024, as documented in Figures 8 and 9, are indicative of a NAR specific effect. Furthermore, as our sample covers more than an entire year, the persistent effect from March 2024 to March 2025 is not due to seasonality. In general, the increased market share of higher volume and more experienced agents is consistent higher per-agent productivity and less inefficiency from free entry, as described in Hsieh and Moretti (2003) and Barwick and Pathak (2015). Therefore, the rise of high volume and experienced agents is likely a necessary condition for lowering commission rates. Nevertheless, it may also lead to increased scope for collusion, which may instead sustain current commission levels (Barwick and Pathak, 2015).

8 Conclusion

The 2024 NAR settlement was expected to have far-reaching effects on the US residential real estate market. We present the first empirical analysis on this settlement by primarily following a pre-registered analysis plan. We find continuity in the level of commission rates and in households' use of discount brokerages, consistent with continued limited negotiation on the side of buyers. These results, along with the results of our survey experiment, suggest that barriers to buyer negotiation persist after the policy.

The modest effect of the NAR settlement on commission rates does not imply that the settlement was inconsequential. By removing institutional barriers to decoupling buyer's commission rates from seller offers, the settlement may have opened the door to addressing other mechanisms that contribute to the persistence and uniformity of buyer's agent commissions. The persistence and uniformity of real estate commissions in the U.S. may resemble a multi-layered knot: complex, entangled, and resistant to simple solutions. The 2024 NAR settlement may have loosened one layer of this knot. Yet many layers remain intact, including behavioral frictions such as incidence bias. By partially untangling the regulatory structure, the settlement creates an opportunity for these remaining layers to be examined and potentially unraveled in the future.

Figure 1. Transaction Volume Surrounding NAR
This figure plots the weekly transaction volume in the 30 CBSAs we sample surrounding the NAR settlement.

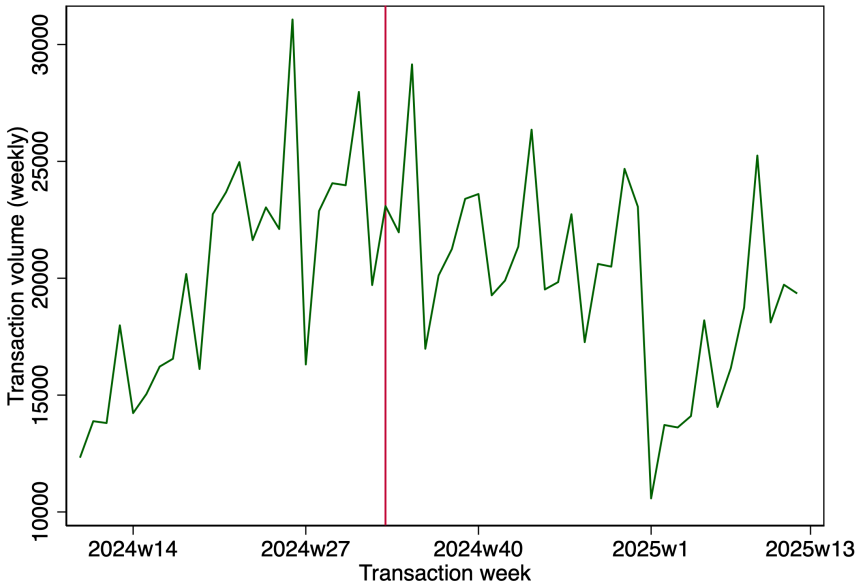


Figure 2. Survey respondents' reasons for not negotiating

This figure plots the survey respondents' reasons for not negotiating, as a percent of non-negotiators selecting that option. Per our pre-registration, non-negotiators were presented a multiple choices question allowing them to choose multiple options.

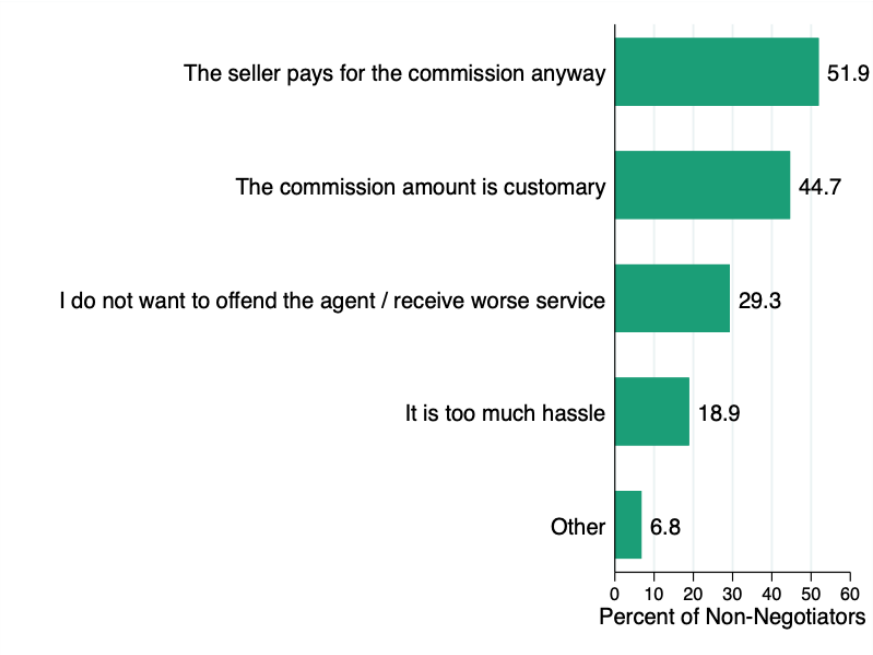
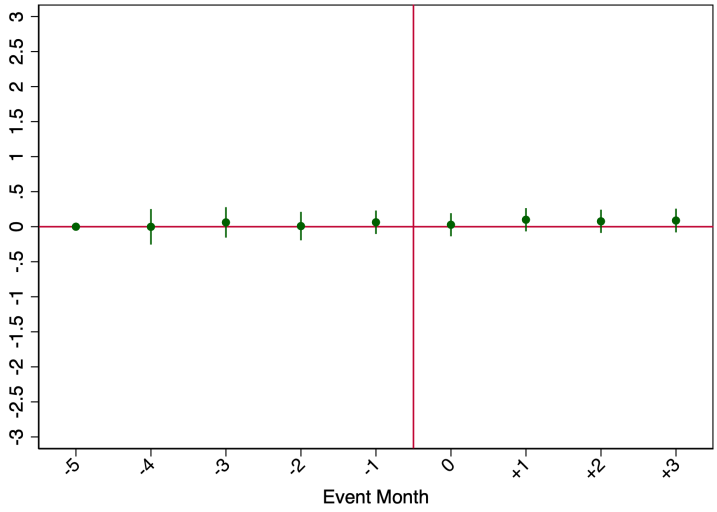
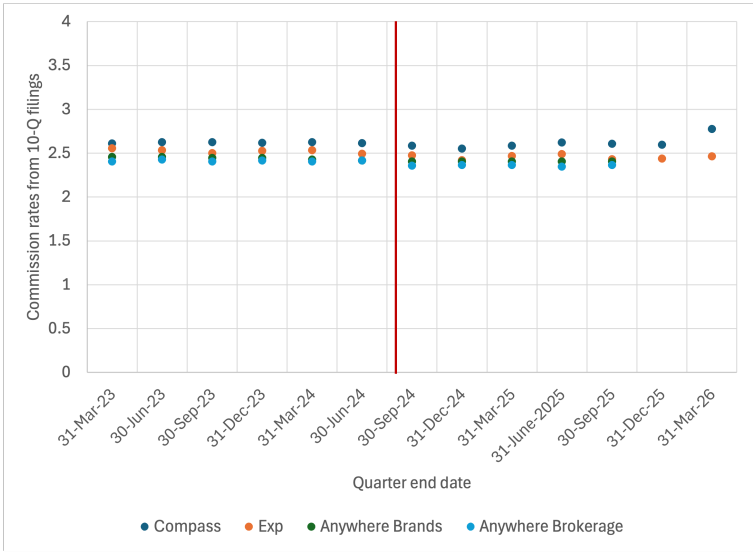


Figure 3. Commission Rates Surrounding the NAR settlement

This figure plots the commission rates surrounding the NAR settlement. Panel (a) reports the dynamic effects on the buyer's agent commission rates based on Equation (8). Panel (b) reports the implied commission rate reported in Compass, Exp, Anywhere Brands (including Coldwell Banker, Century 21, Corcoran, ERA, Sotheby's International, and Better Homes and Gardens), and Anywhere Advisors' quarterly reports. Compass and Exp brokerage commission rates are estimated as their quarterly revenue divided by total transaction value. Anywhere Brands' and Anywhere Advisors' commission rates are directly reported. The event date is August 17, 2024 and is indicated in red.



(a) Buyer's Agent Commission Rate Dynamic Effects



(b) Brokerage's Reported Commission Rate from 10-Qs

Figure 4. Heterogeneity in Commission Rates Surrounding the NAR settlement

This figure plots the heterogeneous effects of commission rates surrounding the NAR settlement. It reports the effects of the NAR settlement on the buyer's agent commission rates based on Equation (8), but with a triple interaction on normalized zip code dempgraphics.

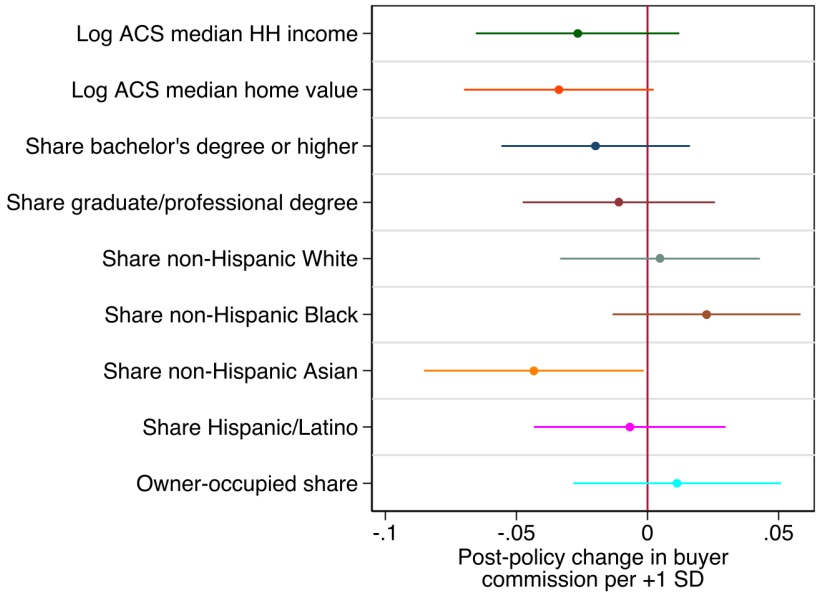


Figure 5. Bunching in commission rates pre-and-post policy

This figure plots the bunching of commission rates pre-and-post the NAR settlement. The data is from the Rice University Real Estate Commission Survey.

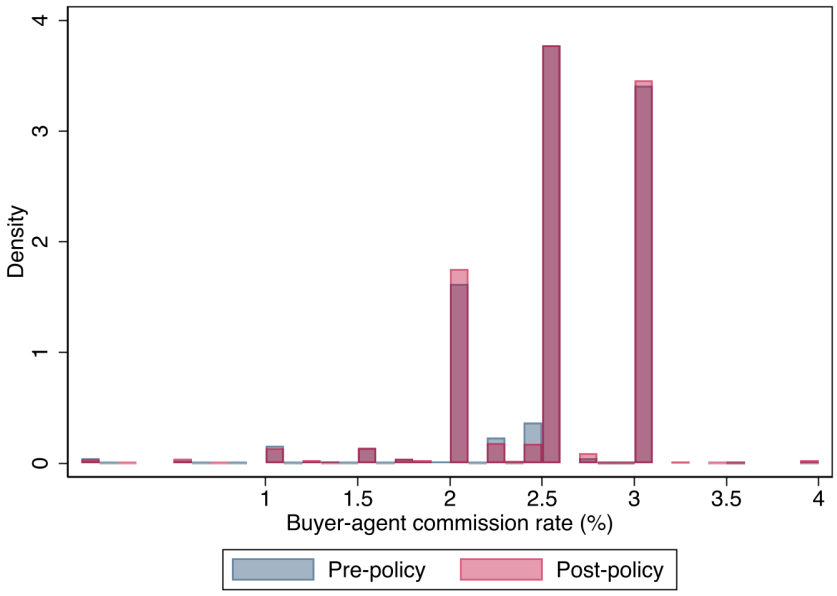
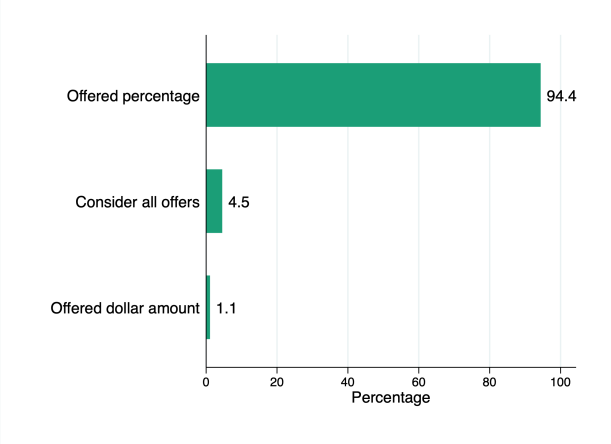
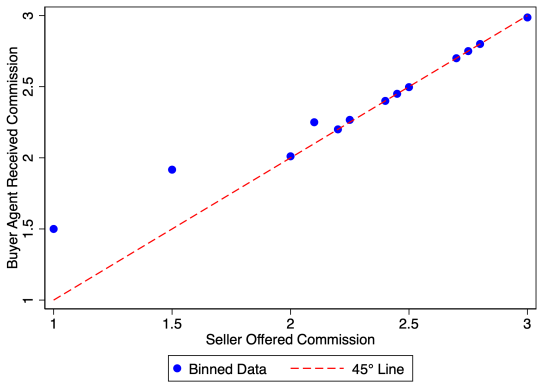


Figure 6. Sellers' offered commission vs buyers' received commission

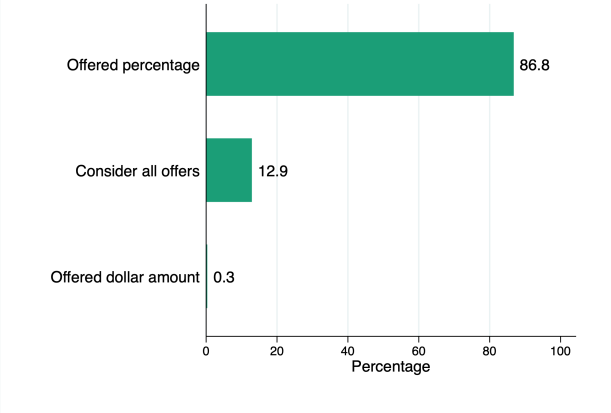
This figure plots the sellers' offer of commission paid, as reported by the seller's agent, pre and post-NAR, in panels (a) and (c) respectively. It also plots a bin-scatter of the sellers' offered commissions on the x-axis buyers' paid commissions on the y-axis, both reported by the sellers' agent, pre and post-NAR, in panels (b) and (d) respectively. The red line in panels (b) and (d) is a 45 degree line that crosses at zero.



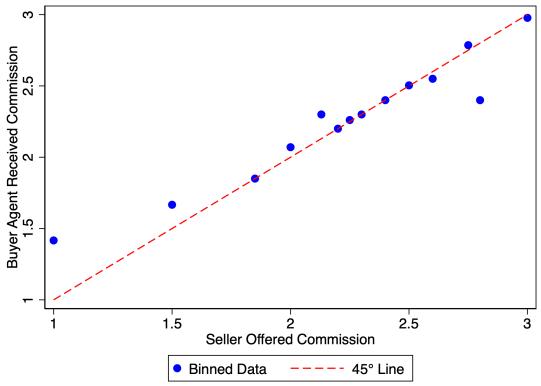
(a) Pre-policy, seller offers



(b) Pre-policy, offered and received commission



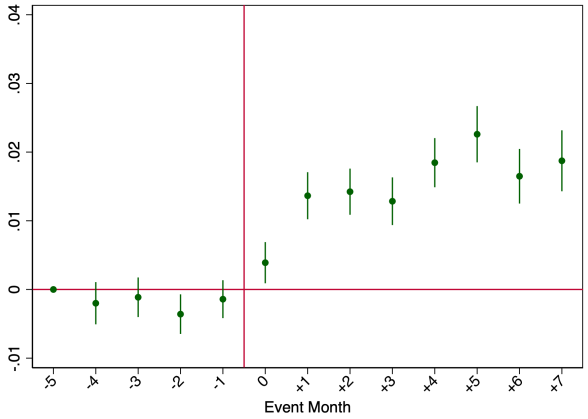
(c) Post-policy, seller offers



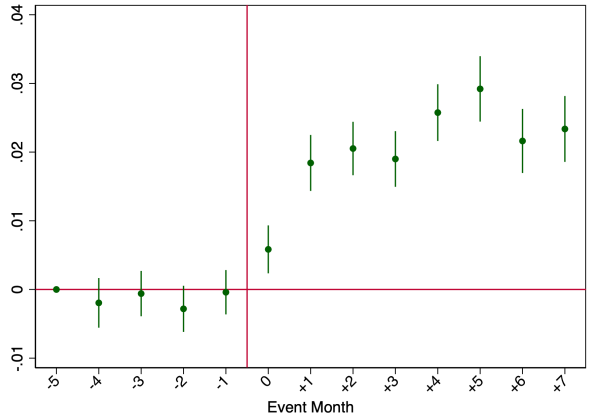
(d) Post-policy, offered and received commission

Figure 7. Foregone Independent Representation Dynamic Effects

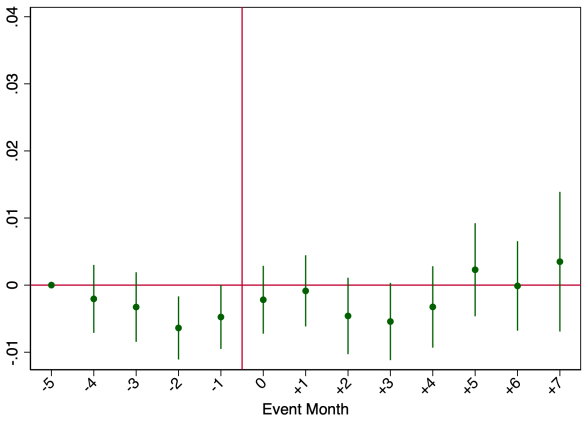
This figure plots the dynamic effects on whether the buyer was without independent representation. The event month is August 2024. The specification is as in Column (1) of panel A Table 7.



(a) All states



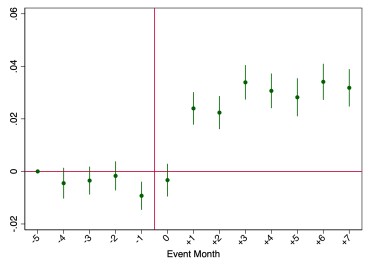
(b) No-RA states



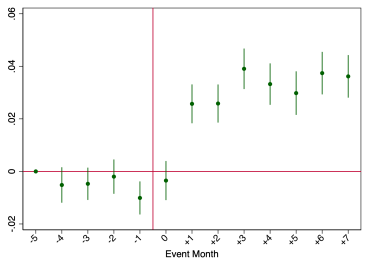
(c) RA states

Figure 8. High Volume Agent Dynamic Effects

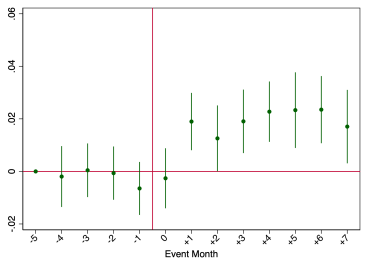
This figure plots the dynamic effects on whether the seller's agent was a high volume agent, defined as an agent in the upper 75th percentile of transactions pre-event. The event month is August 2024. The specification is as in Column (3) of panel A of Table 10 for panels (a)–(c), and Column (4) of panel A of Table 10 for panels (d)–(f).



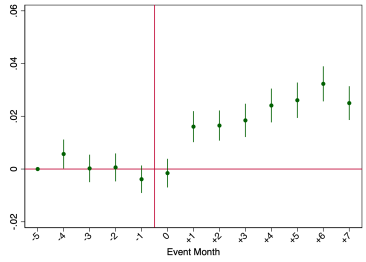
(a) Seller's Agent, All states



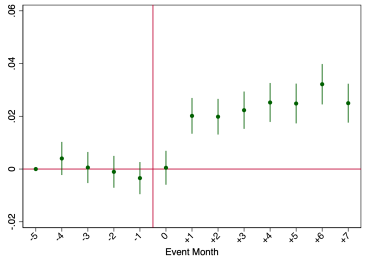
(b) Seller's Agent, No-RA states



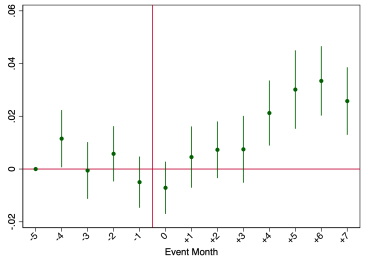
(c) Seller's Agent, RA states



(d) Buyer's Agent, All states



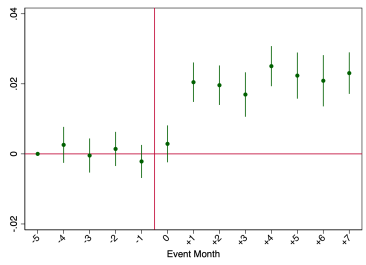
(e) Buyer's Agent, No-RA states



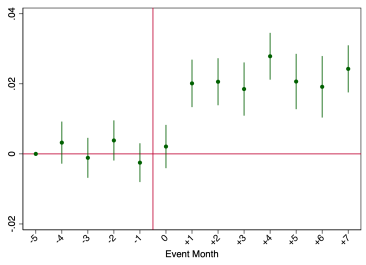
(f) Buyer's Agent, RA states

Figure 9. Experienced Agent Dynamic Effects

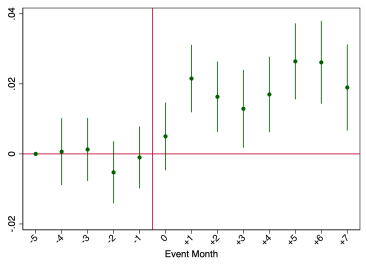
This figure plots the dynamic effects on whether the buyer's agent was an experienced seller's agent, defined as an agent with at least 5 years of experience at the time of transaction. The event month is August 2024. The specification is as in Column (5) of panel A of Table 10 in panels (a)–(c), and Column (6) of panel A of Table 10 in panels (d)–(f).



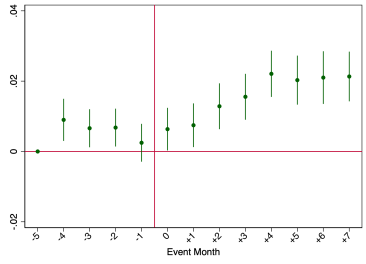
(a) Seller's Agent, All states



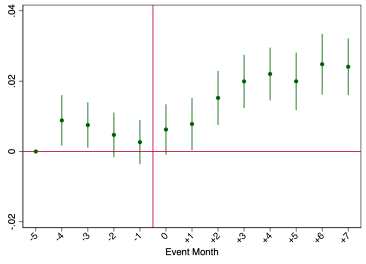
(b) Seller's Agent, No-RA states



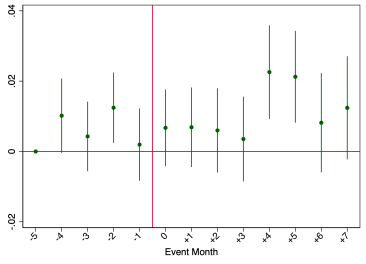
(c) Seller's Agent, RA states



(d) Buyer's Agent, All states



(e) Buyer's Agent, No-RA states



(f) Buyer's Agent, RA states

Table 1. Summary Statistics

This table presents summary statistics of the variables used in our empirican analysis. Panel A reports the summary statistics from the Rice University Real Estate Commission Survey. Lotsize is winsorized at the 1st and 99th percentiles. Panel B reports the summary statistics from MLS data. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

Panel A: Rice University Real Estate Commission Survey

	Pre-policy			Post-policy		
Variable	Mean	SD	*N*	Mean	SD	*N*
Reported by Buyer Agents						
buyer commission (net of rebates)	2.515	0.486	1,328	2.525	0.487	1,421
buyer negotiated with buyer agent	0.088	0.284	588	0.112	0.316	1,424
Reported by Seller Agents						
seller offered buyer commission	2.596	0.350	797	2.543	0.389	1,360
buyer commission (gross)	2.590	0.437	1,328	2.547	0.416	1,457
seller commission	2.514	0.695	1,553	2.550	0.702	1,469

Panel B: MLS Data

	Pre-policy			Post-policy		
Variable	Mean	SD	*N*	Mean	SD	*N*
FinTech Broker (Seller)	0.011	0.105	169,304	0.011	0.105	215,585
FinTech Broker (Buyer)	0.013	0.114	169,304	0.013	0.114	215,585
Discount Broker (Seller)	0.007	0.080	169,304	0.006	0.079	215,585
Discount Broker (Buyer)	0.002	0.045	169,304	0.002	0.046	215,585
No Indep. Rep.	0.052	0.222	169,304	0.056	0.230	215,585
Log Price	13.324	0.700	169,304	13.269	0.696	215,585
sqft	2.482	1.173	169,043	2.461	1.146	215,258
lotsize	21.690	48.248	169,264	21.106	47.931	215,508
good_condition	0.095	0.294	169,304	0.088	0.284	215,585
bad_condition	0.073	0.260	169,304	0.083	0.275	215,585

Table 2. Buyer Negotiation Following NAR

This table presents event indicator and difference-in-differences (DiD) analyses of whether the buyer negotiated with the buyer's agent following the NAR settlement implementation, using data from the Rice University Real Estate Commission Survey. The dependent variable is an indicator for whether the buyer negotiated, as reported by buyer's agents. Panel A reports event indicator specifications estimated separately in RA and No-RA states. Panel B reports the difference-in-differences specification, where post_policy $\times$ $NonRA$ is the interaction between a post-NAR dummy and the state not requiring buyer's representation agreements pre-policy. Control variables include a categorical variable for the property type and a continuous variable representing the log of IRS SOI zip code average gross income. The negotiation question was asked starting in the second wave of the survey, covering transactions from July 1, 2024 onward. Standard errors are reported in parentheses and are clustered by market by house price bins by week. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

Panel A: Event Indicator

	RA states		No-RA states	
	(1)	(2)	(3)	(4)
post_policy	0.0290	-0.000562	0.0218	0.0210
	(0.0250)	(0.0348)	(0.0175)	(0.0268)
Controls	No	Yes	No	Yes
CBSAby HP Bin FE	No	Yes	No	Yes
City FE	No	Yes	No	Yes
_cons	Yes	No	Yes	No
ymean	0.0845	0.0811	0.113	0.116
N	521	407	1491	1135

Panel B: Difference-in-Differences

	(1)	(2)
post_policyXnon_bra	-0.00986	-0.00998
	(0.0255)	(0.0423)
Controls	No	Yes
CBSAby HP Bin FE	Yes	Yes
Week FE	Yes	Yes
City FE	No	Yes
ymean	0.105	0.107
N	2008	1557

Table 3. Survey Experiment of Biases

This table presents results from the Rice University Homeowner Survey Experiment. Panel A reports the respondents' reported negotiation tendencies based on hypothetical scenarios. Panel B reports the fraction of respondents that shopped for more than one realtor. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

Panel A: Survey Experiment Results

Comparison	Baseline	Treatment	Difference	t-statistic	p-value
Scenario 2 vs 1 (dollar framing)	0.079	0.172	0.093***	3.94	<0.001
Scenario 3 vs 1 (incidence bias)	0.079	0.275	0.196***	7.49	<0.001
Scenario 4 vs 1 (dollar framing & incidence bias)	0.079	0.370	0.291***	10.60	<0.001

Panel B: Fraction of Respondents Shopping for More Than One Realtor

Measure	Value
Mean	0.340
Standard error	0.015

Table 4. Commission Rates Following NAR

This table presents event indicator and difference-in-differences (DiD) analyses of opt-out of commission rates following the NAR settlement implementation, with control variables, using data from the Rice University Real Estate Commission Survey. Control variables include a categorical variable for the property type and a continuous variable representing the log of IRS SOI zip code average gross income. post_policy × $NonRA$ is the interaction between a post-NAR dummy and the state not requiring buyer's representation agreements pre-policy. The independent variable in columns (1)–(2) is the buyer's commission rate, as reported by buyer's agents, in percentage points. The independent variable in columns (3)–(4) is the seller's commission rate, as reported by seller's agents, in percentage points. Standard errors are reported in parentheses and are clustered by market by house price bins by month. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

Panel A: Event Indicator

	Buyer (1)	Buyer (2)	Seller (3)	Seller (4)
post_policy	0.00789	0.0113	0.0352	0.0359
	(0.0219)	(0.0220)	(0.0319)	(0.0312)
Controls	No	Yes	No	Yes
CBSAby HP Bin FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
ymean	2.540	2.540	2.535	2.535
N	2250	2250	2529	2529

Panel B: Difference-in-Differences

	Buyer (1)	Buyer (2)	Seller (3)	Seller (4)
post_policyXnon_bra	-0.0473	-0.0432	0.0202	0.0293
	(0.0384)	(0.0384)	(0.0684)	(0.0674)
Controls	No	Yes	No	Yes
CBSAby HP Bin FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
ymean	2.579	2.579	2.540	2.540
N	1545	1545	1801	1801

Table 5. FinTech and Discount Brokerage Choices Following NAR

This table presents event indicator and difference-in-differences (DiD) analyses of buyers' and sellers' choice of FinTech and discount brokerages following the NAR settlement implementation, with control variables, using MLS data. FinTech brokerages is defined as RedFin. Discount brokerages are a list of 82 firms searched from the top 20 US metro areas, excluding RedFin. Control variables include a categorical variable for the property type and a continuous variable representing the log of IRS SOI zip code average gross income. post_policy × *NonRA* is the interaction between a post-NAR dummy and the state not requiring buyer's representation agreements pre-policy. Standard errors are reported in parentheses and are clustered by market by house price bins by week. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

Panel A: Event Indicator

	FinTech Broker		Discount Broker	
	Seller	Buyer	Seller	Buyer
	(1)	(2)	(3)	(4)
post_policy	0.00222***	0.00404***	0.00102***	0.0000882
	(0.000428)	(0.000492)	(0.000327)	(0.000181)
Controls	Yes	Yes	Yes	Yes
CBSAby HP Bin FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
ymean	0.0117	0.0143	0.00705	0.00211
N	286793	286793	286793	286793

Panel B: Difference-in-Differences

	FinTech Broker		Discount Broker	
	Seller	Buyer	Seller	Buyer
	(1)	(2)	(3)	(4)
post_policyXnon_bra	-0.00159	-0.0000327	-0.00111	-0.000106
	(0.000992)	(0.00109)	(0.000761)	(0.000396)
Controls	Yes	Yes	Yes	Yes
CBSAby HP Bin FE	Yes	Yes	Yes	Yes
Week FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
ymean	0.0117	0.0143	0.00705	0.00211
N	286793	286793	286793	286793

Table 6. Buyers Pay What Sellers Offer

This table presents event indicator and difference-in-differences (DiD) analyses of an indicator equal to one when the buyer's agent's received commission equals the seller's offered commission, both as reported by sellers' agents, using data from the Rice University Real Estate Commission Survey. Columns (1) and (2) show the event indicator specification in Equation (7), and columns (3) and (4) show the DiD specification in Equation (9). Control variables include a categorical variable for the property type and a continuous variable representing the log of IRS SOI zip code average gross income. Standard errors are reported in parentheses and are clustered by market by house price bins by month. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

	Event Indicator		DiD	
	(1)	(2)	(3)	(4)
post_policy	-0.0312***	-0.0276**		
	(0.0101)	(0.0128)		
post_policyXnon_bra			-0.0329**	-0.0262
			(0.0161)	(0.0183)
Controls	No	Yes	No	Yes
CBSAby HP Bin FE	Yes	Yes	Yes	Yes
Month FE	No	No	Yes	Yes
City FE	No	Yes	No	Yes
ymean	0.943	0.952	0.943	0.952
N	1938	1468	1938	1468

Table 7. Foregone Independent Representation Following NAR

This table presents event indicator and difference-in-differences (DiD) analyses with no independent representation as the dependent variable using MLS data. Control variables include a categorical variable for the property type and a continuous variable representing the log of IRS SOI zip code average gross income. Lotsize is winsorized at the 1st and 99th percentiles. post_policy $\times NonRA$ is the interaction between a post-NAR dummy and the state not requiring buyer's representation agreements pre-policy. Standard errors are reported in parentheses and are clustered by market by house price bins by week. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

Panel A: Event Indicator

	No Indep. Rep. (1)
post_policy	0.0138***
	(0.000928)
Controls	Yes
CBSAby HP Bin FE	Yes
City FE	Yes
ymean	0.0567
N	286793

Panel B: Difference-in-Differences

	No Indep. Rep. (1)
post_policyXnon_bra	0.0125***
	(0.00180)
Controls	Yes
CBSAby HP Bin FE	Yes
Week FE	Yes
City FE	Yes
ymean	0.0567
N	286793

Table 8. Hedonic Regression of Log Prices Paid by Foregone Independent Representation Status

This table presents the results of a hedonic regression with a dependent variable being the log of the transaction price, and the main independent variable "foregone_representation" being an indicator variable for whether the buyer foregoed independent representation. The sample is limited to single-family homes in our MLS data. The square footage of the house, "sqft," and the size of the lot, "lotsize," are in thousands. We further construct variables "good_condition" as a dummy variable indicating if the listing text included keywords of "renovated," "remodelled," or "state-of-the-art", and "bad_condition" as a dummy variable indicating if the listing text included keywords of "fixer-upper," "potential," "investor," or "bones." Standard errors are clustered at the CBSA by house price bin by week level.

	All states		No-RA states	
	Pre-policy (1)	Post-policy (2)	Pre-policy (3)	Post-policy (4)
foregone_representation	-0.0182***	-0.0193***	-0.0271***	-0.0223***
	(0.00395)	(0.00393)	(0.00458)	(0.00456)
sqft	0.279***	0.275***	0.376***	0.305***
	(0.00490)	(0.00484)	(0.00602)	(0.00573)
lotsize	0.0155***	0.0163***	0.0162***	0.0174***
	(0.000804)	(0.000841)	(0.00100)	(0.00102)
good_condition	0.0476***	0.0593***	0.0524***	0.0617***
	(0.00200)	(0.00200)	(0.00239)	(0.00233)
bad_condition	-0.0884***	-0.0946***	-0.0940***	-0.0947***
	(0.00314)	(0.00295)	(0.00372)	(0.00362)
CBSAXweek FE	Yes	Yes	Yes	Yes
Year Built FE	Yes	Yes	Yes	Yes
Lot Size Bucket FE	Yes	Yes	Yes	Yes
Square Feet Bucket FE	Yes	Yes	Yes	Yes
Beds FE	Yes	Yes	No	Yes
Baths FE	Yes	Yes	No	Yes
zipcode	Yes	Yes	Yes	Yes
ymean				
N	166886	212757	114650	146720

Table 9. Commission Rate and Buyer Negotiation

This table presents regressions of buyers' agent received commission (net of rebates) on an indicator variable for whether the buyer negotiated, using data from the Rice University Real Estate Commission Survey. Control variables include a categorical variable for the property type and a continuous variable representing the log of IRS SOI zip code average gross income. Standard errors are reported in parentheses and are clustered by market by house price bins by week. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

	Pre-policy (1)	Pre-policy (2)	Post-policy (3)	Post-policy (4)
negotiate_flag	-0.432***	-0.441***	-0.197**	-0.200***
	(0.160)	(0.167)	(0.0765)	(0.0765)
Controls	No	Yes	No	Yes
CBSAby HP Bin FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
ymean	2.628	2.628	2.562	2.562
N	343	343	967	967

Table 10. Agent Choices Following NAR

This table presents event study and difference-in-differences (DiD) analysis of buyers' and sellers' choice of experienced agents following the NAR settlement implementation, with control variables. Control variables include a categorical variable for the property type and a continuous variable representing the log of IRS SOI zip code average gross income. Post_policyXnon_bra is the interaction between a post-NAR dummy and the state not requiring buyer's representation agreements pre-policy. Standard errors are reported in parentheses and are clustered by market by house price bins by week. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

Panel A: Event Study

	High Volume Agent		Experienced Agent	
	Seller	Buyer	Seller	Buyer
	(1)	(2)	(3)	(4)
post_policy	0.0317***	0.0182***	0.0203***	0.0118***
	(0.00188)	(0.00190)	(0.00158)	(0.00205)
Controls	Yes	Yes	Yes	Yes
CBSAby HP Bin FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
ymean	0.645	0.585	0.848	0.746
N	286793	286793	214789	190762

Panel B: Difference-in-Differences

	High Volume Agent		Experienced Agent	
	Seller	Buyer	Seller	Buyer
	(1)	(2)	(3)	(4)
post_policyXnon_bra	0.00634	0.00718*	0.00131	0.00955**
	(0.00393)	(0.00402)	(0.00338)	(0.00432)
Controls	Yes	Yes	Yes	Yes
CBSAby HP Bin FE	Yes	Yes	Yes	Yes
Week FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
ymean	0.645	0.585	0.848	0.746
N	286793	286793	214789	190762

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Internet Appendix

A The 2024 NAR Settlement

The 2024 settlement between the NAR and a group of home sellers followed years of litigation initiated by two high-profile class-action lawsuits, *Moehrl v. NAR* and *Sitzer/Burnett v. NAR*, which challenged the structure of commission payments and alleged that the NAR's policies enabled anticompetitive behavior. At the core of the dispute was the claim that NAR's rules promoted "steering," a practice in which buyer agents purportedly guided clients away from listings offering lower commissions. The legal proceedings culminated in a jury verdict in October 2023, where NAR, HomeServices of America, and Keller Williams were found liable and ordered to pay $1.78 billion in damages, an amount that could be tripled under antitrust law. In the face of mounting legal pressure and the prospect of further trials, NAR chose to settle in March 2024. The settlement took effect on August 17, 2024. The proposed $418 million settlement covers claims from Moehrl, Sitzer/Burnett, and related cases. Other brokerages like Anywhere Real Estate, RE/MAX, and Keller Williams also settled for significant sums, collectively exceeding half a billion dollars.

Before the 2024 NAR settlement, commission practices varied across states, including differences in whether and when buyers were required to sign a RA. Sellers typically agreed to a total commission of roughly 5–6% , and listing brokers commonly offered cooperative compensation to buyer brokers through the MLS, often around 2.5–3%. Where buyer RAs were used, they specified services and compensation terms, but they did not uniformly restrict buyer brokers from receiving seller funded compensation.[1] In both institutional contexts, if the buyer went unrepresented, outcomes hinged on the listing agreement: in some cases, the listing agent retained the full commission; in others, particularly where permitted, the seller could "save" the buyer-agent portion (around 2–3%) and negotiate a price reduction, effectively passing savings to the buyer. These structural differences shaped how much room buyers had to negotiate and how transparent the process felt from the outset Barwick et al. (2017); Barwick and Wong (2019); Monestier (2024). The first two columns of Table A.1 summarize the pre-settlement differences between states with and without RAs.

[1] See, e.g., https://creschool.com/how-do-real-estate-commissions-work/.

[Insert Table A.1 Here]

As part of the March 2024 settlement (NAR Settlement, 2024), the NAR agreed with practice changes aimed to address steering and incentivize buyers to negotiate their agent commissions directly with their agents. MLSs can no longer display buyer-agent compensation, and participation cannot be conditioned on such offers. NAR and MLSs are also barred from creating or supporting alternative platforms to facilitate commission offers, except in narrow cases where agents display only their own listings. Before touring homes, buyers must sign RAs that clearly state their agent compensation, which cannot exceed the agreed amount, and agents may not advertise their services as free unless they receive no payment. Listing brokers must obtain seller approval for any payments to buyer representatives, and both buyers and sellers must be told in writing that commissions are fully negotiable and not set by law. Agents are prohibited from filtering listings based on commission levels. The last column of Table A.1 summarizes the post-settlement procedures.

Even under the revised NAR rules, buyers can offset or finance these costs with the sellers' cooperation. One common approach is through *seller concessions*, wherein the seller agrees to credit the buyer a specified amount at closing that can be used to cover the buyer-agent's commission. This may be structured by increasing the purchase price and providing a closing cost credit of the same amount, effectively allowing the buyer to finance the commission via their mortgage.[2] For instance, adding a $15,000 fee to a mortgage at a 6.5% interest rate would raise monthly payments by approximately $94, a manageable adjustment for many buyers. While steering is banned post-NAR, sellers typically have little to lose in helping buyers finance their pre-agreed upon commission fees by accepting a higher price and then returning the extra amount in seller concessions.[3]

[2] Crucially, Fannie Mae and Freddie Mac do not count customary seller-paid buyer-agent commissions toward Interested Party Contribution (IPC) limits, which allows these credits to be layered atop existing closing cost assistance without affecting the loan-to-value (LTV) of the loan. VA policy previously prohibited veteran buyers from financing real estate broker fees. However, in light of the NAR settlement, the VA changed its rules to allow buyers to finance their buyer-broker fees, beginning August 10, 2024, subject to certain safeguards.

[3] Seller concessions are a selling expense and are tax deductible, per Rocket Mortgage HERE.

B The Rice University Homeowner Survey Experiment

B.1 Survey instrument

Introduction

Hi! We are researchers at Rice University conducting a survey experiment with the aim of understanding real estate commission trends. This survey has been approved by Rice University IRB-FY2025-19.

We hope to ask you a few questions about a hypothetical scenario, as well as about your own home purchase experience. Participation in this study is voluntary.

By continuing the survey, you acknowledge consent to the study.

Questions

One of scenarios 1–4 are presented randomly.

Q1. **Scenario 1 (Seller pays – percentage)** You are planning to make an offer on a house, and the seller is asking $400,000. The buyer's agent asks for a 2.5% commission, which the **seller agrees to pay**.

What commission rate did the buyer's agent ask for?

- 2%
- 2.5%
- 3%
- 3.5%

Q2. **Scenario 2 (Seller pays – dollar)** You are planning to make an offer on a house, and the seller is asking $400,000. The buyer's agent asks for a $10,000 commission, which the **seller agrees to pay**.

What commission amount did the buyer's agent ask for?

- $5,000

- $8,000
- $10,000
- $12,000

Q3. **Scenario 3 (Buyer pays – percentage)** You are planning to make an offer on a house, and the seller is asking $400,000. The buyer's agent asks for a 2.5% commission, which **you must pay** either at closing or by rolling it into your mortgage.

What commission rate did the buyer's agent ask for?

- 2%
- 2.5%
- 3%
- 3.5%

Q4. **Scenario 4 (Buyer pays – dollar)** You are planning to make an offer on a house, and the seller is asking $400,000. The buyer's agent asks for a $10,000 commission, which **you must pay** either at closing or by rolling it into your mortgage.

What commission amount did the buyer's agent ask for?

- $5,000
- $8,000
- $10,000
- $12,000

Q5. **Second cmprehension check – commission identification** If a respondent selects an incorrect response in any scenario, the identical scenario is re-displayed and the question in Q1–Q4 is re-asked.

Q6. **Comprehension check – payer identification** According to the scenario, who is paying the buyer's agent commission?

- You are paying
- The seller is paying

Q7. **Second comprehension check – payer identification** If the participant misidentifies the payer, the identical scenario text is re-displayed and the comprehension check is re-administered.

Q8. **Negotiation intention** In this scenario, would you ask your buyer's agent to reduce their commission amount?

- Yes
- Maybe
- No

Q9. **If Q8 = Yes:** Why would you negotiate for a lower commission? (Select all that apply.)

- I always negotiate
- I can negotiate a lower price from the seller if my commission is lower
- Because the commission is high
- Other: _____

Q10. **If Q8 = No:** Why would you not negotiate for a lower commission? (Select all that apply.)

- It is too much hassle
- The seller pays for the commission anyway
- The commission amount is customary
- I do not want to offend the agent / receive worse service
- Other: _____

Q11. **Own experience – buyer agent usage** Did you hire a buyer's agent when you bought your home?

- Yes
- No
- I was not involved in the purchase of my home

Q12. **If Q11 = Yes:** Did you interview more than one agent before hiring your buyer's agent?

- Yes
- No

B.2 Participant recruitment

Participants were recruited via Prolific and completed the survey on Qualtrics. The recruitment is carried out over the course of 5 hours, and 1,600 participants were recruited with the recruitment continuing until the sample size among those passing comprehension checks (either of two tries) was reached. Per Prolific rules, participants failing two comprehension checks are eliminated from the sample and are not counted in the 1,600 total. There were 72 such participants.

C The Rice University Real Estate Commission Survey

C.1 Survey instrument

Introduction

Hi FirstName! We are researchers at Rice University conducting a Real Estate Agent Commission Survey with the aim of understanding real estate commission trends. This survey has been approved by Rice University IRB-FY2025-19.

We hope to ask you a few questions about one of your recent transactions at Property address on Sale date.

Questions

Q1. Which side did you represent for the transaction on Property address on Sale date?

- Seller
- Buyer
- Both seller and buyer

Q2. Was the buyer also represented by a buyer's agent? *(If Q1 = Seller)*

- Yes
- No – they were self-represented

Q3. What percentage of the sale price did you receive in gross agent commissions? Provide the percentage before any fees and taxes, including any portion that would have gone to a buyer's agent. *(If Q1 = Both or Q2 = No)* _____

Q4. Did the buyer's agent receive a flat fee or a percentage of the sale price? *(If Q1 = Seller & Q2 = Yes)*

- Flat fee
- Percentage of the sale price

Q5. How much did the buyer's agent receive as a flat fee? *(If Q4 = Flat fee)* _____

Q6. What percentage of the sale price did the buyer's agent receive in commissions? Provide before fees and taxes. *(If Q4 = Percentage)* _____

Q7. What percentage of the sale price did you receive in commissions excluding the buyer's agent portion? Provide before fees and taxes. *(If Q1 = Seller & Q2 = Yes)* _____

Q8. Did the seller initially offer a buyer's agent commission? *(If Q1 = Seller)*, *(waves 2–3 only)*.

- Yes, specific percentage
- Yes, fixed dollar amount
- No, considered all offers without specific offer

Q9. What percentage of the sale price did the seller initially offer as buyer's agent commission? *(If Q8 = Yes, specific percentage)*, *(waves 2–3 only)*. _____

Q10. What dollar amount did the seller initially offer as buyer's agent commission? *(If Q8 = Yes, fixed dollar amount)*, *(waves 2–3 only)*. _____

Q11. Did the seller offer a buyer's agent commission to other buyers in the market? *(If Q1 = Both)*

- Yes, specific percentage
- Yes, fixed dollar amount
- No, considered all offers without specific offer

Q12. Did you receive a flat fee or percentage of sale price as your buyer's agent commission? *(If Q1 = Buyer)*

- Flat fee
- Percentage of the sale price

Q13. Did you rebate some of your commissions to the buyer? *(If Q1 = Buyer)*

- No
- Yes

Q14. What dollar amount did you receive in buyer agent commissions? Provide before fees and taxes. *(If Q12 = Flat fee & Q13 = No)* _____

Q15. What percentage of sale price did you receive as buyer's agent commissions? Provide before fees and taxes. *(If Q12 = Percentage & Q13 = No)* _____

Q16. What percentage of sale price did you rebate to the buyer? *(If Q13 = Yes & Q12 = Percentage)*

Q17. What dollar amount did you rebate to the buyer? *(If Q13 = Yes & Q12 = Flat fee)* _____

Q18. After rebating, what percentage or dollar amount did you receive in agent commissions? Provide before fees and taxes. *(If Q13 = Yes)* _____

Q19. Why was your commission zero? *(If any commission question = 0)*

- This transaction involved me as the buyer/seller
- This transaction involved my family or friends
- Other: _____

Q20. Did the buyer try to negotiate on buyer's agent commission? *(If Q1 = Buyer)*, *(waves 2–3 only)*.

- Yes
- No

Q21. Was the buyer a first-time home buyer? *(If Q1 = Buyer)*

- Yes
- No
- Don't know

Q22. How important are the following factors in determining prevailing commission rates for buyers' agents in your market? *(Rank 1–5)*

1. Value provided to client
2. Time cost of service
3. Perception of quality
4. Relationship with other agents
5. Brokerage and licensing fees

C.2 Participant recruitment

Participant recruitment was conducted following Rice University IRB using email invitations. Two to three follow-ups are sent to non-responding individuals. The survey was conducted in three waves: August 2024 (covering transactions from February 1, 2024 to June 30, 2024), November 2024 (covering transactions from July 1, 2024 to September 30, 2024), and January 2025 (covering transactions from October 1, 2024 to November 30, 2024).

Response rates was approximately 5%. This response rate is consistent with other consumer surveys used in the literature.[4] Furthermore, our survey result on commission rates are consistent with analyses using 10-Q data.

D Additional Empirical Analyses

[4]For example, Michigan Consumer Sentiment Survey has a response rate of 2.6–4.2% HERE.

Figure A.1. Survey respondents' reasons for not negotiating by scenario number

This figure plots the survey respondents' reasons for not negotiating, as a percent of non-negotiators selecting that option, by scenario number. Scenarios 3 and 4 change the framing from "seller paid" to "buyer paid." Scenario 2 changes the framing from the customary percentage to a dollar amount.

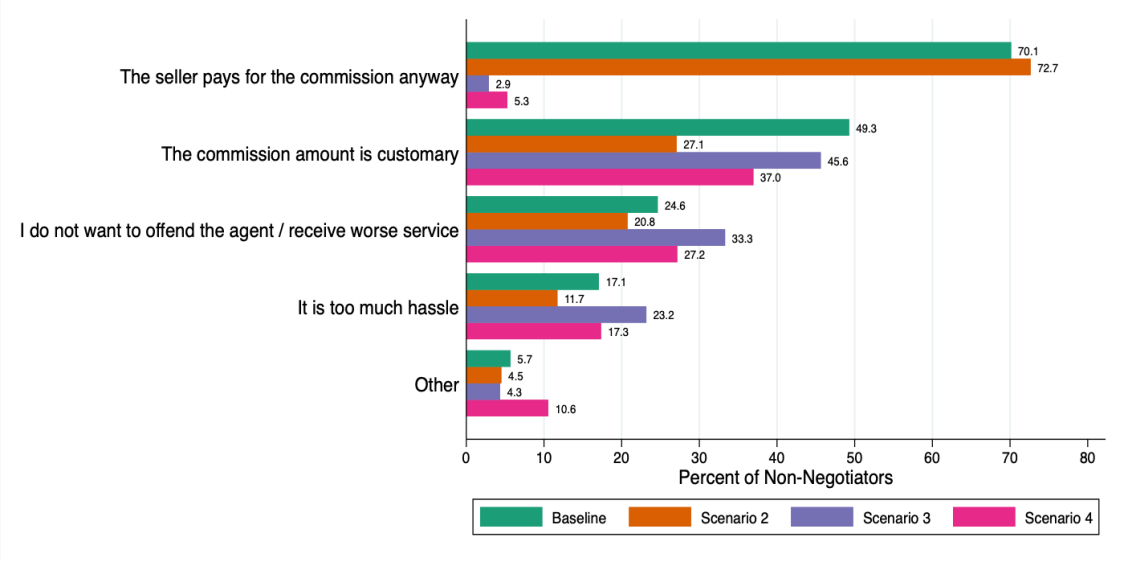


Table A.1. Commission Structures Before and After the 2024 NAR Settlement

This table compares commission structures before and after the 2024 NAR settlement. Panel A describes buyer representation agreements, Panel B the overall commission structure, Panel C the scope for buyer negotiation, and Panel D the outcome if a buyer has no agent. The first two columns show pre-settlement differences across states with and without buyer representation agreements (RAs), while the third column summarizes the nationwide rules introduced after the settlement.

Pre-Settlement		**Post-Settlement**
States with RA	**States without RA**	**All states**
Panel A: Buyer Representation Agreement		
Buyers signed written agreements specifying services and capping buyer agent compensation (typically 2.5 to 3% of price).	No written agreement; buyer agent compensation determined by the seller's MLS offer.	Written buyer agreements required; must specify services and fee, signed before tours; total compensation capped from any source.
Panel B: Commission Structure		
Sellers contracted for 5 to 6% total, with roughly half (about 2.5 to 3%) offered to the buyer's agent via the MLS.	Same 5 to 6% total commission; split controlled by listing contract and MLS offer.	Listing contracts specify only the listing side fee (about 2.5 to 3%); no advertising or offering buyer agent compensation on the MLS.
Panel C: Room for Buyer Negotiation		
Buyer could negotiate the fee in the RA and commission rebates	Buyers could negotiate commission rebates; beyond rebates, there is less room for negotiation buyer's fee was dictated by the seller's MLS offer.	Buyer could negotiates the fee in the RA and commission rebates
Panel D: If Buyer Has No Agent		
Outcome depended on the listing contract; sometimes the listing agent retained the full 5 to 6%, in other cases the seller saved the buyer's portion (about 2.5 to 3%) and could pass savings to the buyer in a markdown.	Same as RA states; the listing agreement governed whether the listing agent retained the full commission or the seller recovered the buyer side.	No buyer side commission is due; sellers may offer concessions during negotiations that can be applied to buyer costs, but not via MLS offers or the listing contract.

Table A.2. Commission Rates Following NAR, No Controls

This table presents event indicator and difference-in-differences (DiD) analyses of opt-out of commission rates following the NAR settlement implementation, with control variables, using data from the Rice University Real Estate Commission Survey. post_policy × $NonRA$ is the interaction between a post-NAR dummy and the state not requiring buyer's representation agreements pre-policy. The independent variable in columns (1)–(2) is the buyer's commission rate, as reported by buyer's agents, in percentage points. The independent variable in columns (3)–(4) is the seller's commission rate, as reported by seller's agents, in percentage points. Standard errors are reported in parentheses and are clustered by market by house price bins by month. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

Panel A: Event Indicator

	Buyer	Buyer	Seller	Seller
	(1)	(2)	(3)	(4)
post_policy	0.0193	-0.0299**	0.0308	-0.000953
	(0.0167)	(0.0117)	(0.0249)	(0.0307)
CBSAby HP Bin FE	Yes	Yes	Yes	Yes
ymean	2.521	2.568	2.532	5.106
N	2744	2779	3016	2758

Panel B: Difference-in-Differences

	Buyer	Buyer	Seller	Seller
	(1)	(2)	(3)	(4)
post_policyXnon_bra	-0.0108	-0.0304	0.0160	-0.0194
	(0.0323)	(0.0196)	(0.0436)	(0.0511)
CBSAby HP Bin FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
ymean	2.544	2.559	2.538	5.100
N	2001	2259	2276	2238

Table A.3. Commission rates in hot vs cold markets

This table presents an event indicator analysis of buyers' and sellers' agent commissions. Hot markets are zipcodes with below median days on market (DOM) in both the pre-event and post-event periods in 2024. Cold markets are zipcodes with above median days on market (DOM) in both the pre-event and post-event periods in 2024. Commission rate data is from the Rice University Real Estate Commission Survey, and DOM data is from Realtor.com. Control variables include a categorical variable for the property type and a continuous variable representing the log of IRS SOI zip code average gross income. Standard errors are reported in parentheses and are clustered by market by house price bins by week. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

Panel A: Hot Markets

	Buyer (1)	Buyer (2)	Seller (3)	Seller (4)
post_policy	0.0107	0.0117	0.0281	0.0298
	(0.0440)	(0.0473)	(0.0584)	(0.0583)
Controls	No	Yes	No	Yes
CBSAby HP Bin FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
ymean	2.445	2.445	2.522	2.522
N	498	498	568	568

Panel B: Cold Markets

	Buyer (1)	Buyer (2)	Seller (3)	Seller (4)
post_policy	0.0482	0.0460	0.0857	0.0892
	(0.0421)	(0.0410)	(0.0741)	(0.0721)
Controls	No	Yes	No	Yes
CBSAby HP Bin FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
ymean	2.631	2.631	2.562	2.562
N	491	491	517	517

Table A.4. Commission rates in high HHI vs low HHI markets

This table presents an event indicator analysis of buyers' and sellers' agent commissions. High HHI markets are zipcodes with above median buyer's agent HHI in our MLS data in 2024. Low HHI markets are zipcodes with below median buyer's agent HHI in our MLS data in 2024. Commission rate data is from the Rice University Real Estate Commission Survey, and DOM data is from Realtor.com. Control variables include a categorical variable for the property type and a continuous variable representing the log of IRS SOI zip code average gross income. Standard errors are reported in parentheses and are clustered by market by house price bins by week. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

Panel A: High Buyer's Agent HHI Markets

	Buyer (1)	Buyer (2)	Seller (3)	Seller (4)
post_policy	0.0107	0.0117	0.0281	0.0298
	(0.0440)	(0.0473)	(0.0584)	(0.0583)
Controls	No	Yes	No	Yes
CBSAby HP Bin FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
ymean	2.445	2.445	2.522	2.522
N	498	498	568	568

Panel B: Low Buyer's Agent HHI Markets

	Buyer (1)	Buyer (2)	Seller (3)	Seller (4)
post_policy	0.0482	0.0460	0.0857	0.0892
	(0.0421)	(0.0410)	(0.0741)	(0.0721)
Controls	No	Yes	No	Yes
CBSAby HP Bin FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
ymean	2.631	2.631	2.562	2.562
N	491	491	517	517

Table A.5. Discount Brokerage Choices Following NAR, No Controls

This table presents event indicator and difference-in-differences (DiD) analyses of buyers' and sellers' choice of FinTech and discount brokerages following the NAR settlement implementation, with control variables. FinTech brokerages is defined as RedFin. Discount brokerages are a list of 82 firms searched from the top 20 US metro areas, excluding RedFin. post_policy × $NonRA$ is the interaction between a post-NAR dummy and the state not requiring buyer's representation agreements pre-policy. Standard errors are reported in parentheses and are clustered by market by house price bins by week. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

Panel A: Event Indicator

	FinTech Broker		Discount Broker	
	Seller	Buyer	Seller	Buyer
	(1)	(2)	(3)	(4)
post_policy	0.00184***	0.00375***	0.00100***	0.000137
	(0.000420)	(0.000486)	(0.000327)	(0.000177)
CBSAXHP Bin FE	Yes	Yes	Yes	Yes
ymean	0.0117	0.0143	0.00705	0.00211
N	286926	286926	286926	286926

Panel B: Difference-in-Differences

	FinTech Broker		Discount Broker	
	Seller	Buyer	Seller	Buyer
	(1)	(2)	(3)	(4)
post_policyXnon_bra	-0.00170*	0.0000797	-0.00212***	-0.000559
	(0.000947)	(0.00103)	(0.000723)	(0.000359)
CBSAby HP Bin FE	Yes	Yes	Yes	Yes
Week FE	Yes	Yes	Yes	Yes
ymean	0.0117	0.0143	0.00705	0.00211
N	286926	286926	286926	286926

E Model Proofs

Proof of Lemma 1. (i) Continuing to search means paying d, matching afresh, paying κ again, and negotiating to the same stationary price: disagreement value $v - q - \kappa - d$. Nash with agent disagreement 0: $q-k = (1-\beta)[(v-k)-(v-q-\kappa-d)] \Rightarrow \beta(q-k) = (1-\beta)(\kappa+d)$, a contraction, hence unique. Self-consistency (searching beats accepting): $\bar{c} \geq q+\kappa+d \iff \kappa+d \leq \beta(\bar{c}-k)$. For $\kappa + d > \beta(\bar{c} - k)$, the best disagreement action is accepting the posted rate, the net surplus is zero, and initiating wastes κ. Note that at the threshold, $\bar{c} - q = \beta(\bar{c} - k)$.

(ii) Such a client cannot profitably transact at the posted rate, and searching reaches the same

Table A.6. Foregone Independent Representation Following NAR, No Controls

This table presents event indicator and difference-in-differences (DiD) analyses of opt-out of the buyer's choice to be without independent representation following the NAR settlement implementation. Control variables include a categorical variable for the property type and a continuous variable representing the log of IRS SOI zip code average gross income. post_policy $\times NonRA$ is the interaction between a post-NAR dummy and the state not requiring buyer's representation agreements pre-policy. Standard errors are reported in parentheses and are clustered by market by house price bins by week. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

Panel A: Event Indicator

	No Indep. Rep. (1)
post_policy	0.0140***
	(0.000934)
CBSAby HP Bin FE	Yes
ymean	0.0568
N	286926

Panel B: Difference-in-Differences

	No Indep. Rep. (1)
post_policyXnon_bra	0.0143***
	(0.00182)
CBSAby HP Bin FE	Yes
Week FE	Yes
ymean	0.0568
N	286926

terms after paying d and a second κ, so the disagreement point is mutual exit $(0, 0)$. Nash splits the match surplus $v - k$: the fee is $p(v)$, the client receives $\beta(v - k)$, and she initiates only when $\beta(v - k) \geq \kappa$. The agent accepts: $(1 - \beta)(v - k) > 0$ against nothing. □

Proof of Theorem 1. $A'(c) = [1-T(\hat{\tau})]+t(\hat{\tau})\,\hat{\tau}'(c)\,[(q(\hat{\tau})-k)-(c-k)]$ with $\hat{\tau}' = \beta$ and $(c-k)-(q(\hat{\tau})-k) = \beta(c-k)$, giving $A' = 1-T(\hat{\tau})-\beta^2(c-k)t(\hat{\tau})$; $R'(c) = G(\beta(c-k))(1-\beta)(c-k)h(c)$. Then $\pi' = -hA+(1-H)A'+R' = 0$ rearranges to Equation (3). Existence and uniqueness: against a market at $\bar{c}$, a deviation to c earns at most $\pi(c)$, with equality whenever $c \leq \bar{c} + d_L$: negotiators stay and pay the market-pinned $q(\tau)$ regardless of d, and a rate above $\bar{c} + d_L$ loses the accepting clients with $d < c - \bar{c}$, which only removes positive-margin trades. First, $\bar{c} = c^*$ is an equilibrium: adhering earns $\pi(c^*)$, and every deviation earns at most $\pi(c) \leq \pi(c^*)$. Second, no other symmetric rate is: if $\bar{c} < c^*$, deviating to $\min\{c^*, \bar{c} + d_L\}$ retains all clients and earns more than $\pi(\bar{c})$, since π

Table A.7. Agent Experience Choices Following NAR, No Controls

This table presents event indicator and difference-in-differences (DiD) analyses of buyers' and sellers' choice of experienced agents following the NAR settlement implementation, without control variables. post_policy × $NonRA$ is the interaction between a post-NAR dummy and the state not requiring buyer's representation agreements pre-policy. Standard errors are reported in parentheses and are clustered by market by house price bins by week. *, **, and *** indicate statistical significance at the 10%, 5%, and 1%, respectively.

Panel A: Event Indicator

	High Volume Agent		Experienced Agent	
	Seller (1)	Buyer (2)	Seller (3)	Buyer (4)
post_policy	0.0378***	0.0212***	0.0202***	0.0122***
	(0.00192)	(0.00190)	(0.00160)	(0.00205)
CBSAXHP Bin FE	Yes	Yes	Yes	Yes
ymean	0.645	0.585	0.848	0.746
N	286926	286926	214929	190899

Panel B: Difference-in-Differences

	High Volume Agent		Experienced Agent	
	Seller (1)	Buyer (2)	Seller (3)	Buyer (4)
post_policyXnon_bra	0.0205***	0.0145***	0.000691	0.0112***
	(0.00380)	(0.00390)	(0.00323)	(0.00409)
CBSAby HP Bin FE	Yes	Yes	Yes	Yes
Week FE	Yes	Yes	Yes	Yes
ymean	0.645	0.585	0.848	0.746
N	286926	286926	214929	190899

is strictly increasing below c^*; if $\bar{c} > c^*$, deviating to c^* retains all clients and earns $\pi(c^*) > \pi(\bar{c})$. Only d_L matters for this argument: deviations above c^* are unprofitable even before any client loss, so the shape of D beyond its lower support never enters. □

Proof of Theorem 2. Uniform shifts. A uniform shift of G or of D shifts every client's total cost τ by the same amount, so consider a uniform shift θ of T and differentiate at $\theta = 0$ (for shifts of D the participation margin, which depends on κ alone, is unchanged, so $\partial R'/\partial\theta = 0$). *Posted rate:* $\text{sign}(dc^*/d\theta) = \text{sign}(\partial\pi'/\partial\theta)$ at c^*. Differentiating π' in θ: $\partial A/\partial\theta = \beta(c-k)t(\hat{\tau}) + \frac{1-\beta}{\beta}T(\hat{\tau})$, $\partial A'/\partial\theta = t(\hat{\tau}) + \beta^2(c-k)t'(\hat{\tau})$. As $\hat{\tau} \downarrow \tau_L$: $T(\hat{\tau}) \to 0$ and $\partial\pi'/\partial\theta \to (1-H)t(\hat{\tau}) - h\beta(c-k)t(\hat{\tau}) + (1-H)\beta^2(c-k)t'(\hat{\tau})$; Equation (3) gives $(1-H)/h \to c-k$ in the same limit, so the first two terms sum to $ht(\hat{\tau})(c-k)(1-\beta) > 0$, which dominates the t' term for $\hat{\tau}$ close enough to

τ_L when $t(\tau_L^+) > 0$. *Average price:* total differentiation of P at $\bar{c} = c^*$ gives

$$\frac{dP}{d\theta} = \beta(c^* - k)t(\hat{\tau}) + \frac{1-\beta}{\beta}T(\hat{\tau}) + \left[1 - T(\hat{\tau}) - \beta^2(c^* - k)t(\hat{\tau})\right]\frac{dc^*}{d\theta} > 0, \tag{10}$$

the bracket being positive at the optimum (the left side of Equation (3) over $1 - H$). *Coverage:* $dB/d\theta = t(\hat{\tau})[1 - \beta\, dc^*/d\theta] > 0$ near the threshold, where $dc^*/d\theta$ is bounded by an expression vanishing with t.

General rightward shifts, (i). A rightward shift of G or of D shifts T rightward. Differentiate B, Equation (3), and P holding $\tau \mapsto q(\tau)$ fixed; shrinking $T(\hat{\tau})$ and $t(\hat{\tau})$ moves Equation (3) toward the participation-capped condition, and the price rises as low-τ negotiators are replaced by posted-rate payers.

(ii). $\hat{\tau}(c^*) \le \tau_L \iff \beta(c^* - k) \le \kappa_L + d_L$. On that region $T(\hat{\tau}) = t(\hat{\tau}) = 0$ and $A(c) = c - k$, so Equation (3) reduces to $(1 - H) = h(c - k)[1 - (1 - \beta)G(\beta(c - k))]$, in which D does not appear. □

Proof of Theorem 3. (i). A client seeking a negotiation reaches a willing agent with probability ε per round: $V = \varepsilon(v - q - \kappa) + (1 - \varepsilon)(V - d)$, so $V - d = v - q - \kappa - d/\varepsilon$: the frictions-only disagreement value with her own d/ε in place of d. Every step of Lemma 1 and Equations (2)–(3) carries over with that substitution, replacing T by T_ε (the participation margin involves no search and is unchanged). The proportional-shift representation follows since $\kappa + d/\varepsilon = (\kappa + d(1 - \varepsilon)/\varepsilon) + d$. Since $d/\varepsilon \ge d$, $T_\varepsilon(\hat{\tau}) \le T(\hat{\tau})$ pointwise, so the negotiating share falls.

(ii). The grim-trigger comparison $\Pi^N/(1 - \delta) \ge \Pi^N + \Gamma + \delta\Pi^B/(1 - \delta)$ rearranges to $\delta \ge \delta^*$; the deviator's negotiated price equals the market's price at total cost $\kappa + d/\varepsilon_0$, because the Nash split depends on the client's outside option (searching for the fringe), not on which agent concedes. If $\kappa_L + d_L/\varepsilon_0 \ge \beta(c^* - k)$, the interval in Γ is empty, so $\delta^* = 0$. Below sufficiency, Γ grows continuously from zero while the premium stays bounded away from zero when $\hat{\tau}(c^*) > \tau_L$; near the threshold, $\operatorname{sign}(\partial\delta^*/\partial x) = \operatorname{sign}(\Delta\, \partial\Gamma/\partial x - \Gamma\, \partial\Delta/\partial x)$ with $\Delta \equiv \Pi^N - \Pi^B$ bounded and $\Gamma \to 0$, and the boundary term of $\partial\Gamma/\partial x$, proportional to the density of T_{ε_0} at the threshold, dominates, giving $\partial\delta^*/\partial x < 0$ for a rightward shift x of either G or D; Γ is decreasing under such shifts everywhere, by Leibniz differentiation. Hence $\mathcal{E}(\delta) = [\varepsilon_{\min}(\delta), 1]$ with $\varepsilon_{\min}$ nonincreasing in δ and weakly falling in the frictions. Away from the threshold, global monotonicity requires $\partial \log\Gamma/\partial x < \partial \log(\Pi^N - \Pi^B)/\partial x$; with the posted rate endogenous, profits are evaluated at the reach-ε_0 rate on the adherence path and the no-collusion rate in punishment, which strengthens the

punishment and weakly lowers δ^*.

The range. Each sustainable ε induces the unique posted rate $c^*(\varepsilon)$ by Theorem 1 applied with T_ε; lowering ε shifts T_ε rightward, so $c^*(\varepsilon)$ is nonincreasing in ε near the threshold by Theorem 2 applied with T_ε, and the equilibrium norms are the interval in Equation (4). A rightward shift of G raises $c^*(\varepsilon)$ at every reach (Theorem 2 at T_ε) and, by the monotonicity of δ^* above, lowers $\varepsilon_{\min}(\delta)$, which raises the upper endpoint further. For the width: once $\kappa_L + d_L/\varepsilon \geq \beta(c-k)$, the negotiation terms in Equation (3) vanish identically, so $c^*(\varepsilon)$ is constant in ε on that region; since $d/\varepsilon \geq d$, the range collapses to a point once $\kappa_L + d_L \geq \beta(c^* - k)$, and rightward shifts of G move the market toward that sufficiency, shrinking the width. □

Proof of Theorem 4. Derivation of Equation (5). The buyer's perceived payoff from transacting at fee q is, up to terms independent of q, $-\tilde{\lambda}q$; her disagreement action is continued search, with perceived value $-\tilde{\lambda}q^* - \kappa - d$ at the stationary fee q^*. Nash maximizes $(\Delta_B)^\beta(\Delta_A)^{1-\beta}$ with $\Delta_B = \tilde{\lambda}(q^* - q) + \kappa + d$, $\Delta_A = q - k$; the first-order condition with stationarity $q = q^*$ gives $\beta\tilde{\lambda}(q-k) = (1-\beta)(\kappa + d)$, which is Equation (5); entry requires $\tilde{\lambda}(\bar{c} - q) \geq \kappa + d$, i.e. $\kappa \leq \beta\tilde{\lambda}(\bar{c} - k) - d$.

(i). Entry $\iff$ $(\kappa + d)/\tilde{\lambda} \leq \beta(\bar{c} - k)$ $\iff$ $\kappa_{\text{eff}} + d \leq \hat{\tau}(\bar{c})$; the fee is $k + \frac{1-\beta}{\beta}(\kappa_{\text{eff}} + d)$, matching Lemma 1 at cost κ_{eff}. *(ii).* $Q'(s) = \mathrm{E}_F[(1-\tilde{\lambda})h(\bar{c} - (1-\tilde{\lambda})s)] > 0$ on the mass with $\tilde{\lambda} < 1$ since $h > 0$. $S'(s) = Q'(s)[W - (1-\lambda)s] - (1-\lambda)Q(s)$; at $\lambda = 1$ this is $Q'(s)W > 0$, so the maximum over $[0, \bar{c}]$ is the corner $s^* = \bar{c}$. □