Perception of Risk and User Cost in Property Markets: Evidence from Surfside Partial Building Collapse

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Abstract

This study investigates how unexpected structural failures, such as the Champlain Towers South collapse, can profoundly alter real estate market dynamics. Based on data from the Multiple Listing Service (MLS) for Miami-Dade from 2020 through 2022, the findings show that older condos experienced significant post-collapse list price discounts, longer time on the market, and reduced sale prices compared to newer units. These effects were not observed in the single-family home market, indicating that the collapse amplified perceptions of risk and increased financial burdens, specifically for aging condos. The negative impacts were especially pronounced for taller buildings and those near the coast, where maintenance and insurance costs are higher. Overall, the study underscores the critical influence of catastrophic events on property markets and highlights the need for policymakers and industry stakeholders to adapt to evolving risks and regulatory challenges to maintain market stability.

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1 Introduction

Property value is fundamentally determined by the expected future cash flows it is anticipated to generate, adjusted for risk. An update of the perception of property risk and expected future cash flows from a catastrophic shock would play a pivotal role in reshaping property market outcomes, including market value and liquidity. In this study, we take the partial collapse of the Champlain Towers South condominium in Surfside, Florida, in June 2021 as an example to investigate how catastrophic events can impact market dynamics by altering the perception of risk and expected cash flows.

On June 24, 2021, the partial collapse of the Champlain Towers South condominium resulted in the tragic loss of 98 lives, marking one of the most significant structural failures in U.S. history. Beyond the profound human and emotional impact, this disaster severely undermined public confidence in the safety of high-rise residential buildings, particularly those in coastal areas. Consequently, the event increased scrutiny of building inspection protocols and maintenance practices. It spurred calls for enhanced regulatory oversight and stricter enforcement of building codes and standards for condominium construction, management, and maintenance.

In this study, we quantify the impacts of this catastrophic event on property market outcomes. Two primary mechanisms drive these effects. The first one is through risk signaling. The collapse raised urgent concerns about the safety and structural integrity of aging condominium buildings.[1] During emergency inspections of older buildings, several were identified and deemed unsafe.[2] Market participants updated their perception of the risk and there was broad support for regulatory changes to strengthen building safety.[3] This heightened risk perception often leads to declining demand, as potential buyers shy away from investing in areas or properties perceived as unsafe

[1]For examples of articles speaking to the risk around building safety within the first few days, see: Fabiola Santiago, "Condo collapse is an urgent alert that old Florida structures need auditing," Miami Herald, June 24 updated July 8, 2021; Rene Rodriguez, Rebecca San Juan and Mary Ellen Klas, "'Is my building safe?' Experts say whether you should worry about another collapse," Miami Herald, June 25, 2021.

[2]Evacuations and forced relocation were not uncommon during this period and spanned residential and commercial buildings. For examples, see: Douglas Hanks, "Two Miami-Dade housing complexes flagged in audit of unsafe structures after condo collapse," June 29, 2021; Devoun Cetoute and Rob Wile, "North Miami Beach orders 10-story condo evacuated after report declares it unsafe," Miami Herald, July 2 updated July 7, 2021; Douglas Hanks and David Ovalle, "Downtown Miami civil courthouse 'temporarily evacuated' after building inspection," July 9 updated July 12, 2021; Samantha Gross, "Gables condo with 'severe corrosion' in garage marked unsafe," Miami Herald, July 26, 2021.

[3]Linda Robertson, Douglas Hanks, Samantha J. Gross and Martin Vassolo, "After Surfside collapse, Miami-Dade governments check on older buildings, discuss reform," June 28, 2021; Mary Ellen Klas and Ana Ceballos, "Condos' reserve funds, delayed repairs under new scrutiny since Surfside tragedy," Miami Herald, July 9, 2021.

or prone to future hazards. Anecdotally, buyers demanded the structural reports scrutinizing the condition of older buildings and walked away when concerns were not satisfied.[4] On the supply side, owners of those aging buildings may rush to sell, fearing further declines in value, resulting in an oversupply that exacerbates downward pressure on prices.

The second mechanism is the revision of expected cash flows associated with affected properties. The collapse significantly altered the financial costs of owning aging structures. Insurers may raise premiums or restrict coverage, making it more expensive and challenging to insure such properties. Lenders may tighten their criteria for mortgages, making it harder for buyers to secure financing, further dampening demand. Additionally, condominium associations face heightened costs for urgent repairs and maintenance to ensure structural safety and compliance with updated building codes. They may also need to increase reserve fund contributions to cover unexpected repairs, leading to higher assessments for unit owners. These rising user costs of owning properties make property ownership less affordable for current and prospective owners, ultimately reducing property values and market liquidity.

Based on these two mechanisms, we anticipate that the Surfside collapse would shift market participants' preferences away from older condominium buildings towards newer ones, resulting in a decline in market value and liquidity for older ones needing repairs. We employ a cross-sectional difference-in-difference method and event study method to identify the causal effect of this catastrophic event on condominiums' market outcomes. Our identification strategy leverages the differences in property price and liquidity changes before and after this collapse, comparing older (treated) and younger (control) condominiums. In our model, along with neighborhood and time-fixed effects, we control for a detailed set of property characteristics, including property physical features, associated amenities, property ownership, lease and tenant information, financial aspects of the transactions, and so forth. The assumption underpinning the identification strategy and conditioning on the full set of covariates is that the market outcomes of older condominiums would have evolved in parallel with those of younger ones in the absence of the collapse. To further validate this assumption, we conduct a placebo test throughout our empirical analyses by substituting condominium observations with single-family residences, assuming that the collapse

[4] Rebecca San Juan, "Demand Cools for Miami-Dade's coastal condos, a year after deadly high-rise collapse," Miami Herald, August 28, 2022.

would not trigger a similar shift in market participants' favor from older to newer single-family homes.

We focus on market outcomes across multiple dimensions, including list price, time-on-market, likelihood of sale, and sale price. Acknowledging the potential issue of market price and liquidity being jointly determined, we address this concern by following the approach outlined by Rutherford et al. (2005). This method also helps mitigate the common issue of sample selection bias in analyses of sale prices. This approach ensures our models are rigorously designed to provide unbiased and consistent estimates.

Our analysis focuses on property listings in Miami-Dade County, FL, from June 2020 to June 2022, with listing outcomes tracked through June 2023. The full sample includes 60,835 listings, of which approximately 55% are condos and the remainder are single-family homes. A visual assessment of market outcome trends over time for the treated and control groups, along with estimates from our event study model, supports the key pre-event parallel trends assumption necessary for using the Difference-in-Difference model.

Our baseline results provide empirical evidence that the partial collapse of Champlain Towers South had a disproportionate effect on older condos compared to their newer counterparts. Specifically, older condos listed over the course of the following year were listed at a discount of 4.1% and remained on the market 10.4 days longer than similar newer units. Additionally, older condos sold after the collapse were transacted approximately 6.3% less than newer ones. However, we failed to document any significant post-event divergence in the likelihood of sale between older and newer condos. While the differential impact on listing and sale prices persisted until the fourth and sixth quarters after the event, the extended time on the market was temporary. A placebo test using single-family homes showed no significant differential impact in either price or market liquidity between older versus newer homes. This finding supports our hypothesis that this unexpected event only reshaped market participants' perceived risk and expected user costs for condos, not single-family dwellings.

We perform certain robustness tests to validate our major findings. First, we used an alternative control group to strengthen the comparison between the treated group (older properties) and the control group (newer properties), and the results remained largely consistent with our baseline findings. Additionally, we analyzed a subsample of listings where the price was revised, focusing on the distribution of percentage changes in listing prices by property type (condo vs. single-family), age (older vs. newer), and cohort (when listed and when revised). The results show that the price change distributions for older and newer condos overlapped more closely when both listing and price revision occurred either before or after the event. In contrast, a divergence in this distribution between older and younger condos was observed when the condos were listed before the event but with prices revised after the event. This pattern was not observed for single-family homes. Moreover, the results of this robustness test suggest that the condo market fully internalized the impact of the building collapse at the time of listing rather than during price revisions.

We also examine factors associated with the perceived risk and expected user costs of condo buildings, including building height, proximity to the coast, and Champlain Towers South. We hypothesize that these factors may influence the extent to which the partial collapse of Champlain Towers South disproportionately affects market outcomes for older versus younger condos. To test this, we conducted subsample analyses along these two dimensions. The analysis by building height (measured by the number of floors) reveals that the differential impacts on market price and liquidity between older and younger condos are more pronounced for taller buildings. Older and taller condos experienced an additional post-event discount of 3.8% in list price and 6.1% in sale price relative to younger and taller condos. In contrast, older and shorter condos saw only a 2.1% relative discount in listing price and no significant discount in sale price compared to younger and shorter condos. Regarding time on market, the direction of this disparate impact between older and younger condos differs when comparing taller buildings to the shorter ones. The subsample analysis based on the proximity to the coast reveals that market participants interested in coastal condos tend to react more strongly than those focusing on inland condos. However, this difference between coastal and inland condo markets is evident only in market prices (listing and sale prices), but not in market liquidity. In the analysis of distance to Champlain Towers South, we find the evidence for an association between distance and treatment is conditional on the combination of proximity and being located along the coast. In the post-period, condos closer to Champlain Towers South see lower list and sale prices than those farther away. [5]

[5] An analysis of construction type and whether it explains variation in treatment is available upon request. We fail to reject the null hypothesis of no association in favor of the alternative; the lack of variability and representation across construction types somewhat limits the analysis. Also available upon request are tests of whether the main findings are robust to the subset of repeat-sales properties listed and sold before and after the event. The main findings of a meaningful and statistically significant discount concentrated within older condos post-event that are

Our study advances the understanding of how sudden catastrophic shocks reshape risk perception by real estate owners and investors. These shocks include disastrous hurricanes (i.e. Hallstrom and Smith (2005), Ortega and Taṣpınar (2018), Cohen et al. (2021), Gibson and Mullins (2020), Addoum et al. (2023), Rehse et al. (2019), Bin and Landry (2013), Ellen and Meltzer (2024), etc.), wildfires (i.e.,McCoy and Walsh (2018), Issler et al. (2023)), damaging earthquakes (Cheung et al. (2018)), terrorist threats (i.e.,Elster et al. (2017), Manelici (2017), Abadie and Dermisi (2008)), industrial accidents (Bauer et al. (2017), Coulomb and Zylberberg (2017)), and aviation accidents (D'Lima et al. (2023)). To our knowledge, the current study is the first one that focuses on how risk perception shifts following a major structural failure, adding to the body of knowledge on the relationship between safety concerns and property value and liquidity.

This study also contributes to the existing literature on how user costs of owning and maintaining property evolve after catastrophic events and their critical role in shaping property market outcomes. First formalized by Poterba (1984) and Hendershott and Slemrod (1982) and then summarized in Smith et al. (1988), user costs, including taxes, insurance expenses, mortgage payments, and maintenance costs, are shown to affect housing affordability, home ownership decisions, and market dynamics. The Surfside collapse in our study is a natural experiment to demonstrate how an unexpected shock can change market participants' expectations of user costs—due to increased scrutiny of building maintenance, rising insurance premiums, and restricted financing—and consequently influence market outcomes.

Moreover, as we focus on the differential impacts of the Surfside collapse on market dynamics by property age, this study is closely related to previous studies on the aging property market. As established in previous studies (i.e., Case and Shiller (1989), Case and Shiller (2003)), aging properties are often burdened with higher maintenance costs and depreciation, which can erode their market value and liquidity. Our study sheds light on the challenges and risks faced by owners and investors of aging properties, which were accelerated by this catastrophic tragedy. In addition, the paper has practical implications for policymakers, real estate professionals, and investors. It underscores the need for more stringent building maintenance protocols and proactive risk management strategies in real estate practices. It also highlights the importance of implementing measures

robust to repeat-sales analysis and model specifications (i.e., including property fixed effects and controlling for the time between the sale and subsequent listing).

to mitigate future risks, improving overall safety and stability in the real estate market.

The logical structure of the remainder of this article is as follows. Section 2 describes the institutional background, followed by a detailed review of the literature in Section 3. In Section 4, we describe our data and sample construction. We then elaborate our empirical research design and identification strategy in Section 5. Section 6 reports our results. We state concluding remarks in the final section.

2 Institutional Background

The partial collapse of Champlain Towers South had wide-ranging effects on all aspects of owning and maintaining condominium buildings. Rapid and significant interventions that followed disproportionately affected older condos related to underwriting, mortgage financing, insurance, and building certification and recertification.

Of primary concern was the timing of milestone inspections. Before Champlain Towers South, there was no state-wide requirement. Miami-Dade County had a building recertification requirement starting at 40 years old (and every ten years after). Built in 1981, Champlain Towers South was undergoing recertification when it collapsed, leading to the consensus that 40 years is too old for buildings to start milestone inspections.

Throughout the fall, winter, and spring of 2021 and into 2022, Miami-Dade County discussed and amended ordinances to enhance condo association management, reporting, and accountability. As of April, Miami-Dade County settled on 30 years as the new starting age for recertifications.[6] Working in parallel, the Florida Legislature passed Senate Bill 4-D (SB-4D) in May of 2021, which mandated oversight and enforcement of standards governing condominium maintenance and management and moved the recertification requirement from 40 to 30 years (or 25 years for properties within 3 miles of the coast).

While SB-4D has broad implications for condo management, liability, insurance, maintenance, and required reserves, the full impact has taken years to realize. Passed in May of 2022 and written into law in June of the same year, the requirement for compliance did not become effective until

[6] Ben Conarck and Aaron Leibowitz, "After Surfside collapse, Miami-Dade drafts reforms that fall short of recommendations," Miami Herald, April 21, 2022; For examples of the recommendations they reviewed see: Final Report of the Miami-Dade County Grand Jury, December 15, 2021 (https://miamisao.com/wp-content/uploads/2021/12/GRAND-JURY_202112151434-1.pdf); from the State's Engineering Associations[7]

January 1, 2025 (effective date pushed back a year by SB-154).[8] Examples of some of the changes include removing the right or ability of condo associations to ignore or delay what are determined to be "necessary repairs" by credentialed structural and electrical engineers but will be required to complete the repairs within 150 days. Also, they must maintain reserves sufficient to cover future structural repairs. Failure to meet these standards can result in penalties and expose condo associations and individual board members to liability. [9] Consequently, older condos are more likely to face increased assessment fees to cover the costs of repairs and compliance. This sharp rise in special assessments could lead to affordability issues, potentially forcing some owners to sell their units.

In early 2022, Fannie Mae and Freddie Mac introduced stricter requirements for condo financing.[10] They adopted a policy prohibiting purchasing loans tied to buildings with significant deferred maintenance or safety concerns. This policy includes a mandatory questionnaire requiring condo associations to certify the property's structural integrity, identify any safety issues, and detail potential repairs. Given their influential role in setting mortgage lending standards, this change had a chilling effect on condo financing, as associations became increasingly concerned about liability for non-compliance and the impact on property sales.[11]

The partial collapse of Champlain Towers South also disrupted the condo insurance market. In the aftermath, insuring condominium buildings and associations became significantly more challenging and costly. Some insurers exited the condo market altogether, while others increased premiums dramatically—by as much as 30% to 50%—often providing less coverage in return. [12] This shift has made it more difficult for condo associations to secure affordable insurance, especially for older buildings with heightened risks. Insurers increased their inspection requirements. "No matter what the state or the county decide, more frequent inspections of condos is already happening because some insurers are now requiring regular engineering reviews as a condition of renewing policies."[13]

[8] SB-4D "SB 4-D: Building Safety", May 26, 2022 (https://www.flsenate.gov/Session/Bill/2022D/4D), and SB-154 "CS/CS/SB 154: Condominium and Cooperative Associations", June 13, 2023 (https://www.flsenate.gov/Session/Bill/2023/154).

[9] Miami-Dade County's Board of Commissioners Ordinance Section 8-11, June 1, 2022. https://www.miamidade.gov/building/library/amended-miami-dade-ordinance.pdf

[10] Fannie Mae, Lender Letter (LL-2021-14) https://singlefamily.fanniemae.com/media/29411/display

[11] Jack Rogers, Condo Sellers Balk at Federal Disclosure Rule for Structural Flaws, GlobeSt.com, July 19, 2022.

[12] Ben Conarch, "As lawmakers avert their eyes, condo insurers flee Florida or jack up prices post-Surfside," Miami Herald, April 25, 2022.

[13] Andres Viglucci, After Surfside collapse, a push not just for more high-rise inspections but smarter ones, Miami Herald, January 25, 2022.

Looking at the prevailing institutional treatment of property age and the historical milestones in building quality, we adopt "Age 30" as the threshold for distinguishing between older and younger buildings for looking at differential treatment by property age. This is consistent with the determination that 40 was too old to begin milestone inspections. Also, 30 years aligns with Hurricane Andrew (1992 or 29 years before Champlain Towers South), a significant event in Florida building codes and regulations. Hurricane Andrew is largely credited with being responsible for the creation and adoption of the Florida Building Code (FBC), which led to improved and uniform or baseline building standards throughout the state.[14] Properties constructed after Andrew are built to different (stricter) standards than those built before.[15] Older buildings tend to face higher insurance premiums, stricter financing requirements, and more frequent assessments to cover maintenance costs. This makes younger condos more attractive and financially manageable for buyers and owners. Finally, the revolution of the condominium building recertification regulations in Miami-Dade, FL, described above, 30 is associated with the age condos must undergo a rigorous recertification process to ensure their structural and electrical safety, which often reveals deferred maintenance and the need for costly repairs. Thus, the "Age 30" threshold captures regulatory and structural distinctions relevant to building safety and market considerations.[16]

3 Literature Review

This study is related to prior studies on how catastrophic events reshape property owners' perception of risk and, thus, property value. For example, multiple previous studies examine how Hurricane Sandy, as a disastrous climate event, affected the housing market in NYC (Ortega and Taşpınar (2018), Cohen et al. (2021), Gibson and Mullins (2020)), the NYC commercial property value (Addoum et al. (2023), Fang et al. (2024)), the market reactions of Real Estate Investment Trusts (REITs) with and without properties in the evacuation zone of NYC (Rehse et al. (2019)), as well as the housing market in a hurricane unaffected region (Fang et al. (2023)). Bin and Landry (2013), focusing on multiple storm events, including Hurricane Fran and Hurricane Floyd, explore

[14] "30 Years Later: Hurricane Andrew Redesigned Modern Buildings." USGlass, August 22, 2022 (`https://www.usglassmag.com/30-years-later-hurricane-andrew-redesigned-modern-building-codes/`).

[15] Conveniently, the median age of condos in the sample is 31, so 30 conveniently bifurcates the sample of listed condos for the analysis.

[16] We adopted an alternative definition of "older" versus "younger" condos in our robustness check. The results remain the same.

how home buyers and sellers may update their risk perceptions of flood risk with and without the prevalence of hazard events. With wildfires becoming more frequent and intense during the recent decade, a couple of recent studies assess the consequences of wildfire in the real estate market using data from Colorado (McCoy and Walsh (2018)) and California (Issler et al. (2023)). Other related studies include the impact on the real estate market resulting from more frequent damaging earthquakes (Cheung et al. (2018)), a credible terrorist threat (Elster et al. (2017), Manelici (2017), Abadie and Dermisi (2008)), industrial accidents such as a nuclear accident (Bauer et al. (2017), Coulomb and Zylberberg (2017)), a jet crash (D'Lima et al. (2023)), and so forth.

This study also relates to prior studies on how changes in (expected) user costs of owning a real property would affect its value, including property taxes, insurance premiums, homeowner association assessment fees, mortgages, etc. Based on the capitalization theory (Oates (1969), Yinger (1982)), the price of real property is determined by the total stream of housing services minus the net present value of all costs of owning the property. With voluminous prior research on property tax capitalization and its degree, many previous empirical studies support the negative relationship between local property tax and property value, showing that an increase in the property tax rate would lead to a reduction in housing values. Ross and Yinger (1999), Sirmans et al. (2008), and Hilber (2017) provide an extensive summary of those prior studies. A recent study by Elinder and Persson (2017) focusing on the impact of a national property tax reform in Sweden, however, finds that house prices generally did not respond to a substantial property tax cut, and the price increase is only observed in a small segment of the market containing properties with very high tax values. Additionally, Sinai and Gyourko (2004) examine housing market responses to the Taxpayer Relief Act of 1997, which reduced capital gains taxes on housing sales, and find that this tax reform significantly lowered the user cost of owning property, increasing housing prices.

Multiple previous studies attempt to empirically quantify the price effect due to insurance price changes based on the theoretical foundation established by Nyce (1999) and MacDonald et al. (1987).[17] Some prior studies focusing on the National Flood Insurance Program (NFIP) take

[17] Specifically, Nyce (1999) developed his macroeconomic model based on the Stock Flow Model of a Housing Market originally developed by DiPasquale and Wheaton (1992)and DiPasquale and Wheaton (1994), stating that keep all housing amenities the same, raising the user cost of owning a house would have a significant impact by both reducing the demand and increasing the supply of housing, thus result in a reduction in property value in the short run and reduction in community size in the long run. The microeconomic model developed by MacDonald et al. (1987) describes a rational consumer's willingness to pay for a marginal reduction in the probability of an undesirable state, stating that the housing sale price differential will equal the change in the insurance cost. Both models predict

advantage of flood zone (re)designation to identify an update of perceived flood risk and thus a change of flood insurance cost and causally test its impact on house price. By employing the Diff-in-Diff approach, Indaco et al. (2019), Shr and Zipp (2019), and Votsis and Perrels (2016) revealed that when a property is assigned to a flood zone of the new map, it experienced a significant price reduction of a large magnitude in Centre County, PA (Shr and Zipp (2019)), Virginia Beach, VA (Indaco et al. (2019)), and Finland as well (Votsis and Perrels (2016)). Using data from NYC and looking at Hurricane Sandy, Gibson and Mullins (2020) and Ellen and Meltzer (2024) highlight variation in the negative price effect on properties according to the flood risk; the price impact on Sandy-flooded properties in the new floodplain is not statistically distinguishable from zero (Gibson and Mullins (2020)); there is a persistent price effect that is concentrated in specific areas specifically those outside pre-existing flood zones and lower-income neighborhoods (Ellen and Meltzer (2024)). A national study by Hino and Burke (2021) documents a price reduction from flood zone designation of only 2.1% and 1.4% based on their panel specification and repeated-sales specification, which is way below the benchmarks. In addition, they found the price penalty is larger for commercial buyers, in states with strong risk disclosure, and in markets where buyers are more risk aware.

To disentangle the price impact from insurance premium changes from that attributable to flood risk updates, a few prior studies use a plausibly exogenous shock to flood insurance pricing arising from the Biggert-Waters Flood Insurance Act of 2012 (BW2012), which was passed to rapidly phase out flood insurance premium subsidies. While Bakkensen and Barrage (2022), Gibson and Mullins (2020), and Indaco et al. (2019) found insignificant price impact from the BW2012 Act in Rhode Island, NYC, and Virginia Beach, VA, respectively, based on their hedonic Diff-in-Diff specification, Ge et al. (2022) pointed out that an issue with the prior three studies is the BW2012 Act would not affect the insurance premium of all properties equally, but rather discontinuously around flood zone boundaries and based on the timing of construction. Using the triple Diff-in-Diff approach, results based on a national sample of housing by Ge et al. (2022) suggest that houses facing the largest rate increase experienced a relative decline in prices of 2.5%, and this effect is three times larger for homes exposed to sea level rising risk. Georgic and Klaiber (2022) arrives at the same conclusion on the price impact of the BW2012 Act as Ge et al. (2022). Additionally, using the quasi-

that increased insurance costs are negatively capitalized into house prices.

experimental nature of eligibility criteria for houses receiving subsidized flood insurance premiums by participating in the NFIP program, Georgic and Klaiber (2022) provide robust empirical evidence of positive capitalization of those subsidies, which vary significantly across municipalities. While most of those previous studies focus on publicly funded flood insurance (e.g., the NFIP program), a few studies shed light on the private insurance market. Nyce et al. (2015) using the policy-level insurance data in Miami-Dade, FL, and Eastman et al. (2024) employing the insurer-county-quarter level private insurance data in Florida, both reveal a negative price impact from insurance premium increases.

While no prior study investigates the price impact from a *change* in the cost of homeowner association assessment fees, probably due to lack of data, a small number of previous studies conducted a cross-sectional test on how the existence of a homeowner association (HOA) is capitalized into house price. Overall, most of these prior studies demonstrate a price premium ranging from 4% to 6%, using either a dataset covering the universe of HOAs across Florida over fifty years (Meltzer and Cheung (2014)), or a unique dataset including details on covenant restrictions, by-laws, and subdivision club goods in Wildwood, Missouri from 2000 to 2005 (Rogers (2010)), or by constructing the first ever (nearly) national map of the HOAs in the U.S. dating back from early 1980s to 2015 (Clarke and Freedman (2019)). Additionally, Clarke and Freedman (2019) reveals that this HOA price premium varies by location and is correlated with multiple factors, including the stringency of local land use regulation, local government spending on public goods, social attitudes toward race, economic inequality level, etc. Meanwhile, Meltzer and Cheung (2014) and Rogers (2010) find that this price premium also varies with time. It is strongest immediately following HOA formation and declines over time (Meltzer and Cheung (2014)) or falls to zero if a covenant is not updated after 25 years (Rogers (2010)). By contrast, Groves (2008), based on a unique dataset in Saint Louis County, Missouri, from 1992 to 2001, argued that the price premium disappeared when the value of certain housing characteristics are allowed to differ by whether they are located within an HOA. As the only prior study focusing on condominium associations, Narwold et al. (2018) points out that the purchase price of the condominium unit depends on whether the benefits of the HOA exceed or are lower than the costs and their empirical findings based on a sample of condominiums in downtown San Diego demonstrate that condo units with below-average (above-average) HOA fees sell at a premium (discount) relative to the average.

4 Data and Descriptive Statistics

To study the impact of Champlain Towers South's partial collapse, we obtained residential listings for Single-Family Houses (SFH) and Condos from the Miami-Dade County Multiple Listing Service (MLS) before and after the event. The properties were listed from June 2020 to June 2022 (within the four 90-day buckets of the event date), and their listing performance was tracked until June 2023. We removed observations missing critical information necessary for our analysis, such as listing price, sale price (if closed), property location, living square footage, occupancy, the number of floors for condos, lot size for SFH, property age, and the number of bedrooms and bathrooms, as well as those that sold the same day as listed.

To address outliers (as expected for self-reported data like the MLS), we adopt filters based on our original sample distribution by property type of key variables where sample restrictions are inclusive of over 99% of the sample. We drop listings with list prices less than $125,000 and more than $8,000,000, as well as when the sale-to-listing price ratio is below 0.8 or above 1.1 (if closed). We require condos to have 0-6 bedrooms, 1-6 bathrooms, and 400-4,250 square feet. For single-family listings, the requirement is 1-6 bedrooms, 1-6 bathrooms, 800-7,500 square feet, and lot sizes less than 2,000 square feet or more than 60,000 square feet were excluded from our final sample.

Also excluded are properties responsive to market dynamics or characteristics that differ meaningfully. Listings of REO and short sales were excluded, and we require that agents exclusively serve the clients. As builders usually have different price/TOM preferences, and new homes sell for a price premium, we require the property age to be at least two years and no more than 95 years old to mitigate the differences in the markets for new construction or historical properties and existing non-historical buildings.

The final sample includes 60,835 properties listed for sale in Miami-Dade County and sold or withdrawn by June 2023. Although, the number of observations will vary across the outcomes of interest. For example, the sale price analysis is conditional on the property transacting, and looking at the determinants of a property being sold requires the listing to be resolved, either closed or withdrawn. Also, to address censoring in the data that would be present due to earlier listings given a longer horizon to close, we limit the reported time on the market (TOM) to 360 days, where time on the market (TOM) is defined as the gap between the pending date and the listing date for listings closed and as the gap between the withdrawal date and the listing date for listings canceled. Therefore, the last listing has the same opportunity and time on the market to close as the first listing.

Table 1 summarizes the condo and single-family listings included for analysis.[18] Listings are close to evenly distributed between condos and single-family properties, with condo listings at roughly 55% (or 33,428) of the sample and single-family listings making up the rest (45% or 27,407). Of the 60,835 listings, 49,335 were transacted (81%), while the remaining 11,500 were withdrawn and canceled (19%). About half of the sample was listed after the partial collapse of Champlain Towers South. The average listing price is \$664,049, and the mean sale price is \$617,055. Both the listing and sale prices are right-skewed. On average, the property stays in the market for about 61 days. To measure the location characteristics of the properties, we utilize their street address to geocode the sample using ArcGIS.[19] The average distance from the central business district (CBD) is 9.8 miles, and from the Champlain Towers is 12.4 miles.[20]. Unsurprisingly, South Florida listings are close to the coast (mean of 3.1 miles) and at a low elevation of roughly 2 meters.[21] Additionally, roughly 30% of the listings benefit from being by water, 56% of them have a pool, and 22% (15%) of them are protected with impact doors (windows). Among the 49,335 listings closed, 30% were transacted with cash.

Table 2 displays the means by property type (single-family and condo) and condo age (above and below 30 years old). As expected, compared to single-family houses, condos tend to be less expensive, younger, smaller, closer to the coastline, more equipped with impact doors and windows, take more days to sell, have more stringent lease restrictions, and are more likely to be adjacent

[18] See Appendix Maps A1 and A2 for general locations of the Condo and SFH listings in the final sample.

[19] Addresses were geocoded to geographic coordinates (latitude, longitude) using the ArcGIS World Geocoder service. Addresses are represented as point objects corresponding to the centroid of each property identified by an address.

[20] The CBD of Miami was manually digitized at 1100 Brickell Bay Dr, Miami, FL 33131 as a point object.

[21] Shoreline data were obtained from the Miami-Dade County Open Data Portal (`https://gis-mdc.opendata.arcgis.com/datasets/MDC::shoreline/about`). A hydro-enforced Digital Elevation Model (DEM) with a 5-foot spatial resolution derived from LiDAR (Light Detection and Ranging) surveys conducted in 2021 in Miami-Dade County was obtained from the open data in ArcGIS Hub by Miami-Dade County publisher (`https://hub.arcgis.com/documents/8c48d4bb8d9a42908f4936f698a2961a/explore`). The DEM represents orthometric heights (in feet) in the North American Vertical Datum of 1988 (NAVD88) using the current GEOID12B, which can be considered as mean sea level (`https://www.fisheries.noaa.gov/inport/item/64424`). The elevation of an address point was derived from the underlying DEM by assigning the elevation of the 5x5 ft cell directly underneath an address point. All input datasets were reprojected into the Florida State Plane East (EPSG:6438) coordinate system to provide a uniform spatial reference for distance calculations.

to waters and regulated by a condominium owner's association (COA) or homeowner's association (HOA), and less likely to be owner-occupied. Additionally, cash purchases are more common among condos than single-family residences. While the differences between single-family and condos are large, the difference between condos by age is even larger. Older condos are priced less than half of younger condos on average. This price variation might be attributed to the fact that younger condos tend to be larger (i.e., more living sq. ft., bathrooms, and bedrooms), closer to CBD and the coast, slightly more likely to be by the waters, and have a pool, much more likely to have impact doors and windows and have less stringent lease restrictions.[22]

Figure 1 illustrates the time trends for key market outcome variables, broken down by condominium and single-family property types. Each outcome variable is regressed on observable characteristics, controlling for zip code and event-month fixed effects.[23] The estimation is conducted separately for condos and single-family houses. Panel A shows the time trend for list prices by property type, along with the 95% confidence intervals. The changes in list price HPIs for both condos and single-family properties, after adjusting for observable factors, are quite similar in the periods before and after the event. Panels B and D, which depict time on market and sale price HPIs, show similar trends across both property types in the pre-event period, but there are signs of stronger demand for condos in the post-event period. After the event, condos spend less time on the market and experience faster price appreciation than single-family properties. Panel C shows a slightly different pattern, with trends in the likelihood of sale converging more closely between the two property types in the post-event period compared to the pre-event period. Overall, there is no evidence that the partial collapse of Champlain Towers South triggered a shift in market preferences away from condos toward single-family homes. On the contrary, these trends suggest a potential increase in demand for condominiums post-event. This finding further supports our intention to examine the impact within the condominium market and across condominium age.

[22] See Appendix Tables A2, A3, A4, A5, and A6 for pre-post mean differences by sub-sample (all, SFH, condo, and condo age).

[23] The reference month is the one immediately preceding the event.

5 Methodology

We develop a difference-in-difference model to empirically estimate the partial building collapse's impact on the Miami condominium market and market participants' preferences. Market outcomes include 1) the list price, 2) time on the market, 3) sold/withdrawn outcomes, and 4) sale prices of closed listings. [24]

5.1 Model Setup

In the residential property market, households who might differ in their preferences for property characteristics are maximizing their utility functions constrained by their budgets. Competition amongst those households (buyers and sellers) thus results in the equilibrium property price schedule and market liquidity, which can be specified as:

$$Y_{izt}^{k} = X_{izt}^{k}\lambda^{k} + \alpha_{z}^{k} + \alpha_{t}^{k} + \varepsilon_{izt}^{k} \quad (1)$$

where Y_{izt}^{k} donates the $k-th$ market outcome (e.g., price, TOM) of property i in neighborhood z at time t, whereas X_{izt}^{k} consists of property-specific features including its physical characteristics, associated amenities, tenant and lease information and restrictions, financial traits, etc. Neighborhood fixed effect α_{z}^{k} and listing/selling time fixed effects α_{t}^{k} account for unobservable time-invariant variation across space and temporal changes that may impact market price and liquidity, respectively. [25] ε_{izt}^{k} is the idiosyncratic error term for the $k-th$ market outcome/equation.

To identify whether the tragedy of Champlain Tower South affects the Miami condominium market, we anticipate that this partial collapse would lead to a shift of market participants' preference from old condominiums towards younger ones, hence a different impact on market outcomes of old condominiums relative to their younger counterparts. Therefore, we introduce an indicator for whether property i was listed/under contract after this event $Post_{it}$, another indicator for whether property i at time t is an old one Old_{it} (e.g., above 30 years old), and an interaction term between

[24] In our empirical analysis, list price and sale price are both in the format of their logs.

[25] For listing price, time on market, and the probability of a listing closing, the time fixed effects are based on the listing date, whereas for sale price, they are based on the pending date.

the two previous indicators which serves as our difference-in-difference variable, as below.

$$\begin{aligned} Y^k_{izt} &= \phi^k Post_{it} + \gamma^k Old_{it} + \beta^k (Post_{it} * Old_{it}) + \delta^k * f(Age_{izt}) \\ &+ X^k_{izt}\lambda^k + \alpha^k_z + \alpha^k_t + \varepsilon^k_{izt} \end{aligned} \quad (2)$$

Thus, the resulting marginal effect of the difference-in-difference variable measures the variation in treatment effects between the old and young groups. Please note that to allow property age to have different marginal effects on the market outcome between old and young properties, we adopt a continuous linear spine function of property age with a knot point (here at age 30).[26]

One issue with this difference-in-difference method is that it reports an average treatment effect in the post-period when it could vary throughout the post-period. The impact, if any, may persist or diminish over time. To allow for variation over time, we adopt the event study method by dividing the pre- and post-event period into several 90-day buckets, as in Equation (3), to test for a dynamic or evolving treatment effect over time.

$$\begin{aligned} Y^k_{izt} &= \gamma^k Old_{it} + \sum_{l=L} \beta^k_l (Post^l_{it} * Old_{it}) + \delta^k * f(Age_{izt}) \\ &+ X^k_{izt}\lambda^k + \alpha^k_z + \alpha^k_t + \varepsilon^k_{izt} \end{aligned} \quad (3)$$

where a series of pre- and post-event time 90-day bucket indicators $Post^l_{it}$ were interacted with the Old_{it} indicator. Here, $l \subseteq \{-4, -3, -2, -1, 1, 2, 3, 4, ...\} \equiv L$. For example, $Post^1_{it}$ means that property i was listed/became under contract within the first 90 days post the event. The reference event time group is set as the first 90 days before the event.

5.2 Difference-in-Difference Identification

The validity of the difference-in-difference approach depends on several assumptions. The first assumption is the absence of any anticipation of the treatment. Although the collapse of Champlain Towers South resulted from a combination of factors, including structural issues, deterioration, and maintenance neglect, the date on which this tragedy occurred is not predictable and is exogenous

[26] The property age linear spline function was specified as follows: Age(age<30)=minimum (Age, 30); and Age(Age≥30)=maximum(Age, 30)-30. Therefore, the coefficient on Age*(age<30) measures the marginal effect of property age on the dependent variable when age is below 30. The coefficient on Age*(Age≥30) measures its marginal effect when age is above 30.

to the whole condominium market. Additionally, the universe market participant's awareness of condominium building safety and proactive maintenance was not raised until this partial collapse.

The second assumption is the pre-event parallel trends between the treatment and the control groups. In other words, conditional on all controls and in the absence of the event, the expected value of the treated group and that of the control group would have followed the same trend over time. We investigate whether this assumption is satisfied in two ways. First, we visually assess the trends for our market outcomes in the treated and control groups and before and after the event. Given the extensive set of covariates in our model, we plot the adjusted outcomes rather than the raw ones. Specifically, we parametrically regress our market outcome variable (e.g., logged list price, TOM, etc.) on the set of explanatory variables in Equation (1) including X_{izt}^{k}, the zip code fixed effect α_z^k, and event month fixed effects α_t^k, but excluding any variable of treatment.[27] This estimation is performed separately for the treated (old property) and control (young property) groups. Thus, the estimated coefficients of the event month indicators capture the time trends in market outcomes. Doing this removes the effect of control variables, allowing us to visualize whether the treatment and control groups exhibit similar pre-event trends.

The event study model also allows us to complement the visual assessment with statistical tests for differential time trends between treatment and control groups during the pre-event period. Specifically, we would focus on the estimator of the interaction term of the treatment indicator (Old_{it}) and each *pre*-event time 90-day bucket indicator $Post_{it}^{l}$ where $l \subseteq \{-4, -3, -2, -1\}$.

Placebo Test

A placebo test was performed throughout our empirical analyses to validate our difference-in-difference identification strategy. This placebo test replaces our condominium observations with single-family residences while repeating the model estimation outlined by Equations (2) and (3). This placebo test ensures that the treatment effect is properly identified and not simply a result of a "general" market trend favoring younger properties over older ones. The underlying assumption of this placebo test is the partial collapse of the condominium building would not lead to a shift in market participants' preferences towards newer single-family homes, given that older

[27] The reference event month is the one immediately preceding the event. We did not include the spline function of the property age; instead, we adopted its quadratic form.

single-family houses are not directly impacted by the increased scrutiny, heightened building safety concerns, or potential rises in insurance costs and assessment payments that explicitly affect older condominiums.

5.3 Endogeneity Issue & Selection Bias

As we focus on the impact of the collapse of Champlain Towers South on both market price and liquidity, a potential issue with those market outcomes is they are jointly determined as the housing market is a search and matching one. Another common challenge in housing studies is that we could only observe the sale price of the transacted listings, not those canceled/withdrawn. This limitation introduces a sample selection bias issue into our sale price analysis. We follow the approach outlined by Rutherford et al. (2005) to address these two issues.

First, we model the logged listing price (LP) based on Equation 1. In this model, the logged listing price is treated as a linear function of a set of covariates (X_{izt}^{LP}), which includes property-specific characteristics and indicators for the use of listing price setup tools (e.g., whether the Automatic Valuation Model (AVM) is employed). Additionally, we account for neighborhood and listing time fixed effect (α_z^{LP} and α_t^{LP}). Given the potential presence of heteroskedasticity, we estimate this listing price model using generalized least squares (GLS). The residuals from this model are then used to measure the degree of overpricing (DOP). Specifically, DOP captures the percentage deviation from an expected listing price conditional on its observed characteristics. It is calculated as $DOP = Log(LP) - E(log(LP/X_{izt}^{LP}, a_z^{LP}, a_t^{LP}))$. This calculated DOP is expected to influence the time on market (TOM) outcome.

Next, the TOM model is specified with TOM being a function of various factors, including property characteristics, ownership details, market conditions (e.g., market interest rate), listing effort (e.g., the number of photos), listing price residuals (DOP), and neighborhood and listing time fixed effects. Again, this TOM model is estimated using GLS with heteroskedasticity-robust standard errors, from which we derive the TOM residual. This TOM residual represents the excess time on the market ($ETOM$) relative to what is expected. It is defined as $ETOM = TOM - E(TOM/X_{izt}^{TOM}, DOP, a_z^{TOM}, a_t^{TOM})$. Both the DOP and $ETOM$ are anticipated to affect the probability of a listing being closed or withdrawn/canceled.

A probit model estimates the likelihood of a listing being closed or withdrawn/canceled. The independent variables in this model include property characteristics, ownership details, market conditions (e.g., market interest rates), listing effort (e.g., number of photos), listing price residuals (DOP), excess time on market ($ETOM$), as well as neighborhood and listing time fixed effects. The probit model predicts the probability of a listing being closed and calculates the Inverse Mills Ratio (IMR), which is then incorporated into the sale price (SP) model to address potential sample selection bias (Heckman (1979)).

The final step is to estimate the logged sale price (SP) model using only observations of completed transactions. This model includes a set of covariates (X_{izt}^{SP}) that account for property-specific features and financial aspects of the purchase (e.g., cash versus conventional loan). Additionally, the Inverse Mills Ratio (IMR) from the probit model is an extra regressor to address selectivity bias. Incorporating the IMR adjusts for potential sample selection issues by correcting the conditional error terms to ensure they have zero mean.

In addition to the methods outlined above to address the issue of endogeneity within our system of equations, we also ensure that the exclusion requirements are met so that the system is identifiable. Specifically, for each market outcome equation - listing price, TOM, closed/withdrawn probit, and sale price - we carefully manage variables to ensure certain variables in one equation do not appear in others. For example, indicators for using listing price setup tools (e.g., whether the Automatic Valuation Model (AVM) is employed) are included exclusively in the listing price equation. In contrast, the listing effort variable (e.g., number of photos) is excluded from the listing price equation but included in the other equations. The degree of overpricing (DOP), which is the logged listing price residual, appears only in the TOM and probit equations, while the excess time on market ($ETOM$), the TOM residual, is included only in the probit equation. Additionally, variables related to lease restrictions (e.g., no lease) and downpayment requirements (e.g., minimum downpayment) are expected to impact property prices but not liquidity. Financial aspects of the purchase are specifically included only in the sale price equation.

6 Results

6.1 Test of Parallel Trends

As elaborated in Section 5, we first assess the parallel trends between the treated and control groups by visually examining the plots of the market outcome variables over time, including list/sale price, time on market, and the likelihood of sale. In this analysis, single-family properties serve as the placebo group for comparison.

Figure 2 presents the time trends of listing prices by property age, shown in 30-day event-month intervals relative to the event date. Panel A displays condo trends, while Panel B focuses on single-family homes (SFHs). Specifically, the plots depict the coefficient estimates for the event month indicators, with the month immediately preceding the event serving as the reference point, and include the 95% confidence intervals. Before the event, both age groups of condos followed nearly identical trends. A similar pattern is observed for younger and older SFHs. However, after the event, younger condos (less than 30 years old) exhibit a sharper upward trajectory in list prices compared to older condos. In contrast, younger and older SFHs experience a similar post-event price increase, with minimal divergence between the two groups.

Similar to Figure 2, Figures 3, 4, and 5 plot the time trends of days on market, the likelihood of a listing closed, and sale price, respectively, by property age, and shown in event month intervals. In Figure 3, which focuses on days on market, older and younger condos follow similar trends before the event, with a steady decrease in time on market leading up to the event. After the event, however, younger condos experienced a sharper reduction in time on market, suggesting faster sales than older condos. In contrast, the gap in days on market between younger and older SFHs remained steady pre- and post-event. In terms of the sale likelihood (Figure 4), the patterns between older and younger properties are similar across both condos and SFHs. Older condos and SFHs consistently exhibit a higher likelihood of being sold than newer properties after accounting for all observables, both before and after the listing event. Figure 5 shows that older and younger condos follow relatively similar price trends leading up to the event. However, after the event, younger condos experienced a sharper increase in sale prices compared to older condos. In contrast, older and younger SFHs display more comparable rates of sale price appreciation both before and after the event, with no significant divergence between the two age groups.

A formal test for pre-event parallel trends between the treated and control groups is conducted using the event study method. The results of this test are discussed in conjunction with the presentation of the event study model estimates.

6.2 Main Results

Table 3 presents the Difference-in-Difference (Diff-in-Diff) coefficient estimates based on Equation 2 for various market outcome variables: ln(list price), time on the market, sale likelihood, and ln(sale price). In this analysis, older properties (Age$\geq$30) are treated as the treated group, while younger properties serve as the control one. While the primary focus of our analysis is on the estimates for condos (Panel A), single-family properties are included as a placebo group for comparison, with the corresponding results reported in Panel B.

The "Post-Period" indicator captures the overall treatment effect for older and younger properties following the event.[28] The indicator for older properties (Age$\geq$30) measures any pre-existing differences in price and market liquidity between older and younger properties before the event. The interaction term between these two indicators thus identifies how the treatment effect differs between younger and older properties after the event—essential for understanding variation in the impact. Additionally, as part of the continuous linear spline function of property age, the variable Age*(Age < 30) captures the marginal effects of age on the dependent variables for properties younger than 30 years old, while Age*(Age ≥ 30) reflects the marginal effects for older properties.

List Price

Table 3 column 1 presents the estimates for the logged list price. The insignificance of the "Post-Period" indicator for both condos (Panel A) and SFHs (Panel B) suggests that properties in Miami-Dade listed after the event do not exhibit significantly different prices compared to those listed pre-event, regardless of property age and after controlling for property and listing characteristics, as well as location and year-month fixed effects. However, the estimates for the older property indicator (Age $\geq$ 30) differ between condos and SFHs. While there was no significant pre-event price disparity between older and younger condos (once the general effect of property age on listing

[28]The post-period is defined in event time by the listing date for dependent variables such as ln(list price), time on the market, and sale likelihood, and by the pending date for ln(sale price).

price is controlled for), there was a notable pre-event price discount for older SFHs compared to their younger counterparts.

Turning to the main variable of interest — the interaction term (Post*(Age $\geq$ 30)) — the results show that, following the event, older condos were listed at a substantial 4.1% discount relative to younger condos. In contrast, no such disparate impact was observed between older and younger SFHs. The evidence supports an acute treatment effect from the partial building collapse within the condo market, specifically affecting older condos. Besides, it is worth noting that the estimates for the two continuous linear spline function variables — Age*(Age $<$ 30) and Age*(Age $\geq$ 30) — suggest that older and younger properties depreciate at different rates, especially with younger condos depreciating at a much faster pace.

Figure 6 presents the main estimates from the event study model described in Equation 3, plotting the coefficients for the interaction terms between the older property indicator and each pre- and post-event 90-day bucket indicator ($Post_{it}^{l} * Old_{it}$).[29] The interaction terms for the pre-event periods are used to test the parallel trends assumption, while the post-event interaction terms capture the causal effect of the event—the additional change in outcomes for older properties beyond what is observed for younger ones assuming the event is exogenous and there are no confounding events. The dashed vertical line represents the date of the partial building collapse, while the solid horizontal line marks the baseline (zero) for the coefficient estimates.

Panel A displays the estimation results for logged list prices. During the pre-event periods, there is no significant difference in list price movements between older and younger condos, except for event quarter -4. This result supports the parallel trends assumption, suggesting that the list prices of older and younger condos generally follow the same trajectory after controlling for observable characteristics, a continuous spline function of property age, and fixed effects. This parallel trend assumption also holds for single-family houses. However, after the event, older condos experienced a significant relative decline in list prices compared to younger condos, and this disparity persists. In contrast, the list prices of older and younger single-family houses continue to move in parallel, except for post-event quarter 4, where older single-family houses appreciate at a slightly higher rate than younger ones.

[29]The reference period is the 90 days immediately preceding the event.

Time on Market (TOM)

Table 3 column 2 reports the results for time on the market. Similar to the findings for list prices, both condos (Panel A) and single-family houses (Panel B) do not experience a significantly longer time on the market after the event, as the estimates for the "Post-Period" indicator variable are not significant at the 5% level. Meanwhile, the significance of the older property indicator (Age $\geq$ 30) in both panels implies that, before the event, it took 3-5 more days to sell older condos (and single-family houses) compared to the younger ones. The estimate for the interaction term (Post*(Age $\geq$ 30)) is only statistically significant at the 1-percent level for condos but not for single-family houses. This finding suggests that the event disproportionately impacts the market liquidity of older condos compared to younger condos. After the partial collapse, older condos remained on the market for an additional 10.4 days relative to younger condos.

Figure 6 panel B plots the estimates for time on market (TOM) based on the event study model, with the black markers representing condos and red markers representing single-family houses. The estimates for the interaction terms ($Post^l_{it} * Old_{it}$) during the pre-event periods are not significantly different from 0 for most periods in the case of condos, indicating a parallel trend in TOM between older and younger condos before the event. However, upon the partial building collapse, it took significantly longer to sell older condos than their younger counterparts. This differential effect on older condos diminishes by the end of the event horizon. In contrast, our placebo test using the sample of single-family houses shows no similar post-event trend between older and younger single-family houses, highlighting the event's impact on older condos and does not apply to single-family houses.

Sale Likelihood

The Diff-in-Diff coefficient estimates from a probit regression of whether listed properties are sold or withdrawn are reported in Table 3 column 3. As shown in Panel A, after controlling for all observable property and listing features, market conditions, and neighborhood and temporal fixed effects, no significant post-event impact on the likelihood of sale was found in the condo market across property ages. However, we did see that, during the pre-event periods, older condos were significantly less likely to be sold than younger ones, as indicated by the 1% significance level of the coefficient for the older property indicator (Age $\geq$ 30). As for the interaction term between the post-event indicator and the older property indicator ($(Post^l_{it} * Old_{it})$, its insignificant coefficient suggests that there is no evidence that the event further increased the relative difficulty of selling older condos. In the placebo test, as shown in Panel B, we find that older and younger single-family houses were generally less likely to be sold after the event. However, there is no significant disparity in the likelihood of sale between older and younger properties, either before or after the event.

The event study model estimates for the probit model, which examines whether a property listing was closed or withdrawn, are shown in Figure 6 panel C. During the pre-event periods, we have seen evidence of parallel trends between older and younger properties for both condos and single-family houses, as the estimated coefficients for the interaction terms of the pre-event dummies and older property indicator are not significantly different from zero.[30] These parallel trends continue after the event for both property types. This result aligns with the Diff-in-Diff estimates, indicating that the partial building collapse did not have a disproportionate impact on the likelihood of sale for either older condos or single-family houses.

Sale Price

Column 4 of Table 3 reports the Diff-in-Diff estimates for logged sale price.[31] Focusing on condos in Panel A, during the pre-event periods, no significant sale price difference was observed between older and younger condos after accounting for property age using a continuous linear spline function. Following the event, condos, on average, experienced a significant 6.3% appreciation in sale prices, regardless of age. However, the event negatively impacted the sale prices of older condos relative to their younger counterparts, resulting in a significant 6.3% discount. This discount fully offsets the overall sale price appreciation for condos after the event. In contrast, as shown in Panel B, we did not find a similar disparate impact of the event on older single-family houses compared to younger ones — the interaction term (Post*(Age $\geq$ 30)) is only significant at a 10-percent level. Additionally, While older single-family houses were subject to a 2.1% pre-event price discount compared to younger properties, no significant post-event price appreciation was

[30] The only exception is the pre-event period -4 for condos.

[31] Please note that the number of observations here dropped as some property listings remained on the market at the end of the observation window. This reduction further reinforces the effectiveness of our approach in addressing potential sample selection bias.

documented across single-family houses of all ages after controlling for all covariates. This suggests that the event's differential impact on sale prices was specific to condos, leaving single-family houses unaffected.

Figure 6 panel D presents the event study model estimates for logged sale price. Given that our data covers listings one year before and after the event, we adopt a two-year post-event window to allow sufficient time to observe the sale price of the post-event listings. Before the event, the estimates for the interaction terms ($Post_{it}^{l} * Old_{it}$) indicate that sale prices for both older and younger condos moved in parallel for the majority of the period. However, following the event, older condos experienced a significantly larger decline in sale prices compared to their younger counterparts. Unlike the logged listing price results, this differential effect between older and younger condos did not manifest immediately. Still, it persisted from the second post-event quarter through at least the sixth post-event quarter.[32] In our placebo test, we found no significant difference in sale price trends between older and younger single-family homes, either before or after the event.

Overall, the Diff-in-Diff estimates and study event model results consistently show that the partial collapse of the Champlain Towers South had a significant differential impact on older condos compared to newer ones. Older condos were associated with lower listing prices, longer time on the market, and reduced sale prices. Our placebo tests further confirm that this effect is unique to the condo market, as no similar impact was observed in the single-family housing market.

It is important to highlight that in Table 3, which presents our main Diff-in-Diff model results, the coefficients for the Ln(list price) residual, DOM residual, and Inverse Mills Ratio are all significant in both Panels A and B. These results underscore the importance of the approach we employed to address the issues of endogeneity and sample selection bias, as discussed in Subsection 5.3.

6.3 Robust Tests

Alternative Control Group

One potential concern in our analysis is classifying properties into older and younger groups, particularly for those aged between 20 and 30 years. These buildings may not be considered particularly

[32] The interaction term coefficients for the seventh and eighth post-event quarters are not statistically significant. This may be due to a limited number of condos listed within the one-year post-event window that were still on the market by the seventh or eighth post-event quarters, potentially reducing statistical power. The large standard errors associated with these estimates, as shown in Panel D, further support this explanation.

new compared to properties constructed within the last two decades. They could share characteristics with older buildings, such as outdated techniques or potential structural wear—especially in a hurricane-prone region like Miami-Dade. To enhance the comparison between older and younger properties and to provide a more robust test, we introduce an alternative control group that includes only properties less than 20 years old.[33]

Table 4 reports the estimates from this robustness check based on the Diff-in-Diff model specifications. The results remain largely consistent with the baseline. When using condos under 20 years old as the control group—expected to be more distinct from the treated group (properties over 30 years old)—the findings reveal a significant pre-event price discount for older condos, approximately 11.6% for listing prices and 12.2% for sale prices. Additionally, older condos appeared harder to sell before the event. Interestingly, after accounting for all covariates, including fixed effects, older condos sold about five days faster than younger ones. Focusing on the main variable of interest — the interaction term (Post*(Age $\geq$ 30)) — the estimates indicate that the partial building collapse had a disproportionately negative impact on the market prices and liquidity of older condos compared to younger ones. This impact is slightly more pronounced with the alternative control group, with a -4.9% reduction in list price, 11.8 additional days on the market, and a -6.7% decrease in the sale price, compared to the original control group estimates of -4.1%, 10.4 additional days, and -6.3%, respectively. For the placebo group—single-family houses—the results align with the baseline findings. There are no notable disproportionate effects on market outcomes between older and younger houses. The only exception was the sale price model, where older single-family homes sold at a slight discount of 1.5% compared to those under 20 years old. However, this differential effect was much smaller than that observed for condos.

Accordingly, Figure 7 illustrates the robustness test using the event study model. The findings remain consistent with the previous results. The pre-event parallel trend assumption overall holds across all four market outcomes for both condos and single-family houses. While the results show a significantly disproportionate negative impact on the list price, sale price, and days on market for condos, no similar effects were observed for single-family houses.

[33]Given the study period, all properties under 20 years old were built after 2000.

Listings with Price Changes

It is common for listed properties to undergo price revisions while remaining on the market. In line with our research question, we would like to test whether older condos listed before the event are more likely to experience a larger price drop when their listing price is adjusted after the event than younger condos. Additionally, as a placebo test, we would not expect a similar price adjustment difference between older and younger single-family houses under the same conditions. Furthermore, neither condos nor single-family houses with their initial listing and price revision occurring before/after the event are expected to exhibit a significantly differential adjustment in listing prices across age groups.

In our sample, there are 16,350 listed properties where the list price was revised, representing roughly 26% of all listings. This proportion is 28% for condos and 25% for single-family houses. On average, the revised prices are 2.6% lower than the original list price, with price adjustments typically occurring after 73 days on the market.

In Figure 8, the distribution of list price percentage changes is plotted by property type (condo, single family), age (<30, ≥ 30), and cohort (whether the original listing and subsequent price revision occurred before or after the event). Figure 8 panel A compares the distribution of list price percentage changes for condos and single-family homes by age, specifically for properties listed and price-revised during the pre-event period. The kernel density distributions for older and younger properties within each type (condo or single-family) are quite similar, indicating minimal differences in price trends between older and younger properties within the same property type. On average, older condos experienced a price change of -3.6%, compared to -2.6% for younger condos, closely mirroring the pattern seen in single-family homes, with older properties seeing an average change of -2.5% and younger ones -1.7%.

Figure 8 panel B focuses on properties listed before the partial collapse that had their list prices revised after the event. This group includes 1,206 condos and 567 single-family homes, most likely to be affected by the event, assuming the shock was unexpected. The kernel densities here reveal that younger condos are more likely to experience positive price changes, with an average increase of 1.9%, while older condos, on average, see a price decline of -2.1%. In contrast, the distributions of listing price changes for single-family homes show much less variation between younger and older properties, with their kernel densities more closely overlapping. It is worth noting that properties in this cohort — listed before the event with list prices revised in the post-event period — are the only ones where the sign of the average price change by property type and age disagrees. Younger condos in this cohort are the only subgroup (by property type, age, and cohort) that experienced a positive average listing price change. This suggests a post-shock shift in demand within the condo market, with market participants favoring younger units over older ones, resulting in a premium on younger condos and a discount on older ones.

Figure 8 panel C shows the distributions for the post-period cohort — properties listed after the event with subsequent price revisions also occurring post-event. The sharp contrast in listing price changes between older and younger condos observed in Panel B largely disappears here. Additionally, the average price changes align across property types and ages. This finding suggests that the condo market in South Florida fully internalizes the impact of the partial building collapse at the time of listing, as opposed to when the listing price is revised.

6.4 Subsample Analysis

In this subsection, we examine several factors associated with the perceived risk and expected user costs of condo buildings that may influence the differential impact of the partial collapse by age. The first factor is building height. Taller buildings strain their foundations and load-bearing structures, making them more susceptible to design flaws, material fatigue, or construction defects. They are also more exposed to environmental forces such as high winds, earthquakes, and hurricanes, which heighten the risk of structural failure, particularly if not engineered to withstand these stresses. Furthermore, the larger number of occupants in taller buildings increases the potential human and financial consequences of a failure, making the risks higher and more severe than in shorter buildings. The complexity of maintaining and inspecting taller structures also contributes to their risk profile, as these buildings require more rigorous engineering assessments, specialized equipment, and stricter building code compliance. Collectively, these factors lead to greater risks, higher maintenance costs, insurance premiums, and reserve fund requirements for taller condos compared to shorter ones.

The second factor is the proximity to the coast. Coastal condos are subjected to higher levels of saltwater corrosion, which can weaken structural elements like steel and concrete over time, increasing the likelihood of degradation and failure. Additionally, these buildings face greater risks from natural disasters such as hurricanes, storm surges, and flooding, which can cause significant damage and threaten the structural integrity of the building. Coastal erosion and rising sea levels further exacerbate these risks, potentially undermining the foundation of buildings near the shore. As a result, condos near the coastline would require more frequent and intensive maintenance, inspections, and repairs to address these environmental challenges. These additional measures lead to higher insurance premiums, increased reserve fund contributions, and greater overall user costs for condo owners in coastal areas compared to those farther inland.

Additionally, we noticed that the introduction and implementation of Florida Senate Bill 4-D,[34] along with the corresponding updates to Miami-Dade ordinances,[35] establish different treatments for condominium buildings based on their height (number of floors), year built, and distance from the coastline. Enacted in May 2022, Florida Senate Bill 4-D primarily targets condos and co-ops that are three stories or more. [36] In contrast, the Miami-Dade Board of Commissioners Ordinance Section 8-11, effective June 1, 2022, extends those inspection and maintenance requirements to all buildings, regardless of height. [37] However, Miami-Dade ordinances differentiate between "threshold" and "non-threshold" buildings based on their height and occupancy, imposing extra inspection and maintenance requirements on "threshold buildings" (those taller than three stories) due to their higher potential safety risks.

In terms of the proximity to the coast, both the Florida Senate Bill 4-D and Miami-Dade Ordinance Section 8-11 outlined different building structural re-certification requirements for coastal condos (within 3 miles of the coastline) versus inland condos (beyond 3 miles). Specifically, they dictate that condominiums located within three miles of the coastline must adhere to an accelerated recertification schedule starting at 25 years old, while condominiums situated more than three miles from the coast are required to have their first inspection at 30 years of age.

Given the concern that condo building height and proximity to the coast are anecdotally and statutorily linked to perceived risk and user costs, we conducted subsample analyses along these two

[34] Florida Senate Bill 4-D, `https://www.flsenate.gov/Session/Bill/2022D/4D`

[35] Miami-Dade County's Board of Commissioners Ordinance Section 8-11, June 1, 2022. `https://www.miamidade.gov/building/library/amended-miami-dade-ordinance.pdf`

[36] Condos under three stories are not subject to the specific structural inspection and reserve requirements outlined in Senate Bill 4-D, although they must still comply with general building safety regulations.

[37] Condos under three stories with a size below 2,000 square feet may not be subject to the same rigorous inspection requirements, however.

dimensions. Additionally, we aim to explore whether the empirical results justify the differential treatment in building recertification timelines and requirements imposed by the State of Florida and Miami-Dade County. These analyses will help clarify how building height and coastal proximity influence regulatory decisions and the financial burden on condo owners.

Condos by Number of Floors

Condo buildings in this analysis are classified into two groups based on height, following a common convention: shorter condos with fewer than three stories and taller condos with three or more stories. We assess the impact on listing and sale prices, time on the market, and the likelihood of a listing being closed or withdrawn. These outcomes are examined using both the Difference-in-Differences (Diff-in-Diff) model, as specified in Equation 2, and the event study model, outlined in Equation 3.

Table 5 displays the Diff-in-Diff results, with condos having less than three floors and condos with at least three floors reported in Panels A and B, respectively. Accordingly, the results based on the event study model are displayed in Figure 9, plotting the estimates for the interaction terms of older property indicator and the series of 90-day event time buckets. Of the 33,428 condos in our sample, 19.8 is the average number of stories, with the overwhelming majority of condos, or 29,097 (87%), three stories or taller. Following our baseline model specifications, condos less than 30 years old (over 30 years old) are treated as the control (treated) group. [38]

As shown in Table 5 column 1, Panels A and B, the impact on listing prices reveals a notable contrast between shorter and taller condos post-event. On average, shorter condos, regardless of age, experienced a significant 5.3% increase in listing price after the partial building collapse, controlling for temporal fixed effects, whereas taller condos did not see any significant price rise. When examining the interaction between the older condo indicator and the post-event indicator, the results show that among shorter condos, older units faced a significant 2.1% discount relative to younger ones, significant at the 5-percent level. This relative discount is more pronounced for taller condos, with an additional 3.8% decline for the older versus younger ones, significant at the 1-percent level. Figure 9 panel A presents the event-study model results for listing prices. The pre-event parallel trend assumption holds for shorter and taller condos, as the estimates for

[38] Results based the alternative control group (age$\leq$20) are reported in Table A7 in the Appendix.

the interaction terms between the older condo indicator and pre-event periods are all statistically insignificant. Focusing on the differential impact by age, the negative effect on older condos relative to younger ones is smaller and temporary for shorter buildings (red lines). The relative negative impact on older condos among taller buildings is more pronounced and persists until the end of the study period. This outcome aligns with our expectations, as taller condo buildings face greater safety risks, potentially leading to higher future user costs and more stringent recertification and maintenance requirements. Therefore, the taller condo submarket would be disproportionately affected by the collapse to a larger extent than the submarket for shorter condos. While the differential impact between older and younger condos is smaller and temporary in the shorter condo market, it is larger and more persistent for taller condos.

Table 5 column 2 reports results for time on the market. The coefficient estimates on the post-event period alone are insignificant for shorter and taller condos. Additionally, there is a significant pre-event disparity in days on market between older versus younger condos, regardless of building height. The notable difference between shorter and taller condo buildings lies in the estimates for the interaction term between the older condo indicator and the post-event indicator. For taller condos, following the event, older units take an additional 10.8 days to sell compared to younger ones, signaling a significant delay. However, the sign of this disproportionate impact flips for shorter condos, with a relative 10.4 days less for older versus younger ones post-event. Figure 9 panel B illustrates the event study results for days on the market. The patterns for the interaction term estimates differ notably between shorter and taller condos. In the taller condo submarket, the pre-event trends in days on the market are similar for both older and younger condos. Still, after the event, older condos stay on the market significantly longer. The post-event pattern over time does not emerge for condos with less than three stories. Overall, these results align with the expectation that the differential impact of the partial collapse on market liquidity of older versus younger condos is heterogeneous, varying by building height. This age-based differential impact is more pronounced for taller than shorter condos.

Similarly, Table 5 column 3 presents the Difference-in-Differences (Diff-in-Diff) model estimates for the likelihood of a listing being closed or withdrawn. In contrast, 9 panel C illustrates the corresponding event study model estimates. For shorter condos, we found no significant post-event difference in the likelihood of sale, regardless of age, nor any disproportionate impact on older versus younger condos. In contrast, for taller condos, there was a significant post-event decline in the likelihood of sale across all units. However, no differential effect was observed between older and younger taller condos. The lack of a significant differential impact between older and younger condos, regardless of building height, is consistent with our baseline findings. Figure 9 panel C further illustrates that both older and younger condos follow a similar trend in the likelihood of sale during the pre-and post-event periods, for both shorter and taller condos.

Table 5 column 4 displays results for sales price by condo building height and reinforces prior findings. In Panel A, shorter condos show an average post-event price appreciation of 5.2%, although this is only marginally significant at the 10-percent level. Additionally, no significant differential price impact was found between older and younger shorter condos following the collapse. In contrast, while all taller condos experienced an average post-event price increase of 5.1%, older and taller condos were disproportionately impacted relative to their younger counterparts. This differential impact amounts to -6.1%, significant at the 1-percent level. Figure 9 panel D displays the event study model estimates for sales prices. For both shorter and taller condos, the pre-event parallel trend assumption holds. Post-event estimates reveal that a marked disparity in sales price impact between older and younger condos emerged only for taller buildings, not for shorter ones. In taller condos, from post-event periods 2 through 5, this significant differential effect ranged from -4.4% to -8.4%, all of which are significant at the 1-percent level.

The findings from this subsample analysis align with our expectation that condo building height significantly influences the differential impact of the Champlain Towers South collapse on market outcomes by age. Taller buildings are more sensitive to the heightened awareness of risk and the consequences of building failure in the post-event period, as well as the increased user costs due to stricter building recertification and maintenance requirements, compared to shorter buildings. This result also offers an empirical rationale for why Florida Senate Bill 4-D and Miami-Dade Ordinance Section 8-11 distinguish between condos with fewer than three floors and taller buildings.

Condos by Distance to the Coast

In our analysis of proximity to the coastline, we used a cutoff of 3 miles to distinguish between coastal and inland condos. Approximately 80% of the condos in our sample are situated within this 3-mile radius. We aim to investigate whether the differential impact of the partial collapse of the Champlain Towers South on market outcomes is more pronounced in the coastal condo market compared to the inland market, particularly concerning older versus younger condos. To do this, we employ the same analyses—Difference-in-Differences (Diff-in-Diff) and event study models—for listing price, time on the market, sale status (sold or withdrawn), and sale price.

Table 6 reports the Diff-in-Diff coefficient estimates for condos segmented by distance less than 3 miles (Panel A), and those beyond 3 miles (Panel B). Accordingly, Figure 10 displays the event study model estimates for the interaction terms of the older condo indicator and the event time buckets. Since coastal condos may face accelerated aging compared to inland condos, we perform our analysis here using the alternative control group (age<20). [39]

Focusing on the heterogeneous impacts on price, Table 6 Columns 1 and 4 illustrate the estimates for listing and sale price, respectively. The results indicate that, on average, coastal condos, regardless of age, did not experience a significant post-event increase in the listing price. In contrast, inland condos saw a notable listing price increase of approximately 4.8%. However, this pattern does not hold for sale prices. As shown in Column 4, both coastal and inland condos experienced significant post-event sale price appreciation, with coastal condos seeing a 5.7% increase and inland condos a 3.1% rise, regardless of age. We also observed a significant pre-event price disparity between older and younger condos in coastal and inland submarkets. This disparity is notably larger for coastal condos compared to inland ones. Specifically, older coastal condos faced a pre-event listing price discount of 16.9% and a sale price discount of 17.7% relative to younger coastal units. In contrast, the pre-event price gap between older and younger inland condos was much smaller, with a listing price discount of 4.8% and a sale price discount of 5.1%.

Turning our attention to the main variables of interest — the interaction terms. The results show that the partial collapse had a disproportionately negative price impact on older condos compared to younger ones in coastal and inland markets. For coastal condos, this differential impact on listing price is -4.8% and -6.4% for sale price, both statistically significant. These differential impacts are slightly more pronounced than those observed in the inland market, where the differential listing price effect is -3.3% and the sale price effect is -5.3%. Figure 10, Panels A and D, displays the event study estimates for listing and sale prices, respectively, and the results align with our Diff-in-Diff model findings. Before the event, older and younger condos followed a similar trend in listing price

[39] Results based on our baseline control group (age<30) are reported in Table A8 in the Appendix.

changes, whether located in coastal or inland areas. After the event, we observed an immediate and significant listing price discount for older coastal condos compared to younger ones (in the first post-event period). However, this immediate response was not seen in the inland market. Beginning in post-event period 2, the listing prices of older versus younger condos, regardless of proximity to the coast, were disproportionately and negatively affected by the event. That said, the magnitude of this disproportionate negative impact is greater in the coastal condo market compared to the inland market. For sale prices, we observed a significantly different impact between older and younger condos starting in post-event period 2 for coastal and inland markets. This differential impact persisted through post-event period 6. While the negative impact appears slightly larger for coastal condos compared to inland ones, we did not test the statistical significance of this difference.

Table 6 Columns 2 and 3 present the Diff-in-Diff estimates for two market liquidity outcomes — days on market and the probability of a listing being closed or withdrawn. After the event, we did not observe significant delays in closing a listing for the average coastal or inland condo, regardless of age. However, upon this partial collapse, older condos tended to take longer to sell than younger units. Specifically, it took an additional 8.1 days for older coastal units and 9.7 days for older inland units to sell. Regarding the likelihood of a sale, no significant impact was observed for coastal or inland condos, and there was no notable difference in the impact on older versus younger units, irrespective of their proximity to the coastline. The corresponding event study model results are displayed in Figure 10 Panels B and D, and overall align with the findings presented in Table 6. Different from the results on price, the trend lines for coastal and inland condos mirror each other throughout most of the observed periods. This finding indicates that, regarding market liquidity, the differential treatment effects on older versus younger condos are similar in coastal and inland markets.

The results are consistent with the hypothesis that proximity to the coast identifies additional risk and more expensive user costs, including maintenance costs, insurance premium payments, reserve fund contributions, etc. Condo buildings closer to the coastline tend to react more strongly to the collapse of Champlain Towers South than those located farther away. However, unlike the subsample analysis based on building height, the differences between coastal and inland condos are less pronounced than those observed between shorter and taller condos. Furthermore, this distinction between coastal and inland condos is evident only in market prices (listing and sale prices) but not in market liquidity.

Condos by Distance to Champlain Towers South

To test for spatial variation and an association between the treatment effect and proximity to the event, Tables 7 and 8 consider the distance to Champlain Towers South. In Table 7, the sample of condos is divided in half around the median distance of 6.92 miles to see if the main result holds across condos close to Champlain Towers South compared to those farther away. We find declining list and sale prices and longer TOM for older condos in the post-period that is statistically significant and consistent with the base model for near and far condos.

The robustness of the findings to segmenting condos in Miami by distance to Champlain Towers Souths belies the possibility of a gradient and diminishing treatment effect with distance. Table 8 includes distance and the distance interacted with the post-period indicator as control variables. From Panel A, the main finding that old condos are most impacted in the post-period remains while the interaction of distance and post-period fails to be significantly different than zero for list price, closed transactions, and sale price, and the positive and statistically significant coefficient for time on market suggests longer times on market for condos farther away.

To account for the geography of South Florida and the location of Champlain Towers South along the cost, Table 8 Panel B restricts the analysis to only those condos that are similarly situated to Champlain Towers South. These properties are most similar to Champlain Towers South regarding land value and environmental and coastal exposure to the elements. Panel B reports statistically significant albeit small positive coefficient estimates associated with distance in the post-period for list and sale price. The spatial variation is found amongst similarly situated condos along the cost; farther condos in the post-period are listed for higher prices and realize higher sale prices. Conversely, the price effect or discount is more pronounced for condos closer to Champlain Towers South, conditional on being along the coast.

Therefore, we fail to demonstrate that proximity or distance alone explains variation and changes in the market dynamics of older condos in the post-period. The evidence for an association between distance and treatment is conditional on the combination of proximity and being located along the coast, which is associated with a larger pricing effect post-event. The result is consistent with the impact or interaction of proximity and treatment being most prominent within the population of condos similarly situated to Champlain Towers South geographically.

7 Conclusion

As the first and only study to focus on the immediate impact of an unexpected building structural failure on the real estate market, this research offers valuable insights into how such an event can significantly reshape market participants' perceptions of risk and alter the expected user costs of owning similar properties. These shifts in risk perception and financial burdens can lead to profound changes in market dynamics, affecting demand and supply and ultimately influencing key outcomes such as property prices and liquidity.

Our analysis reveals several key impacts on the Miami-Dade condominium market following the partial collapse of Champlain Towers South. Using a difference-in-difference and event study approach, the findings show that older condos (those over 30 years) suffered significant negative effects regarding price discounts and longer time on the market than their younger counterparts. Specifically, older condos were listed at an approximate 4.1% discount, remained on the market an additional 10.4 days, and were sold at around 6.3% less than newer condos post-collapse. These differential impacts between older and newer condos were not observed in the single-family house market. The results of this placebo test, based on single-family properties, confirm that these effects are not due to a general market preference for newer properties but are driven by the accelerated perception of risk, more stringent regulatory requirements, higher insurance premiums, and increased financing challenges uniquely faced by aging condos.

Furthermore, the post-collapse differential effects between older and younger condos were particularly pronounced for older condos in taller buildings and those closer to the coast. This underscores the heightened perceived risks and increased costs associated with maintaining and insuring aging structures, especially in high-risk areas and taller buildings, which are more vulnerable to structural issues and environmental hazards.

In general, the findings of this study highlight the critical role of catastrophic events in reshaping property markets by influencing risk perception and user costs. As regulatory environments continue to evolve, particularly in the face of natural disasters and structural failures, policymakers, real estate professionals, and investors must consider these factors to ensure the safety, affordability, and stability of the housing market.

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Figure 1. Trend by Event Month for Market Outcomes.
This figure displays the trend captured by event month indicators from regressing ln(list price), time on the market, sold (0,1), and ln(sale price) on observable characteristics and fixed effects (ZIP code), estimated separately by property type. The dotted lines represent the 95% confidence interval of the coefficient estimates from the reference month (event month -1).
† Displaying probit model coefficient estimates.

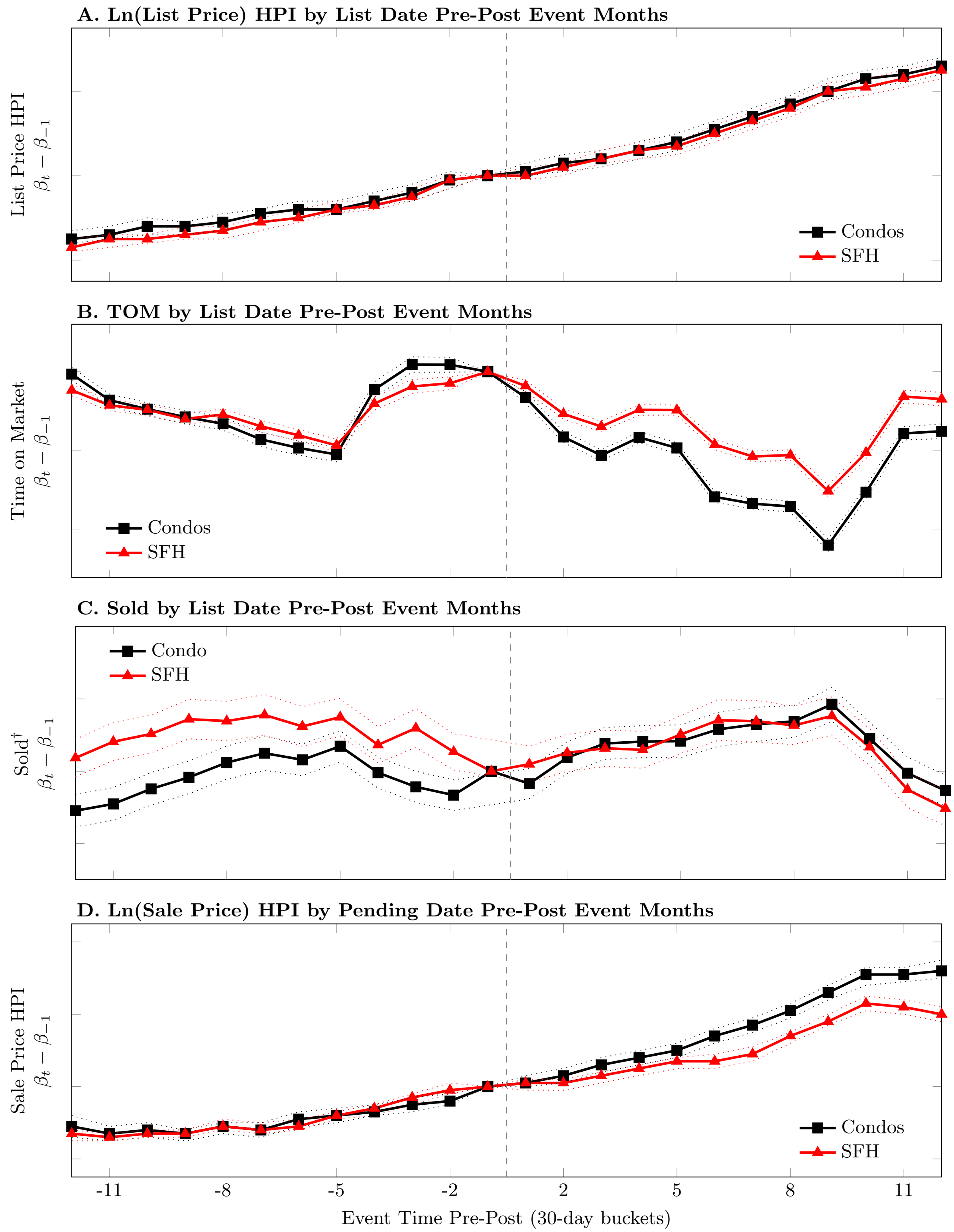
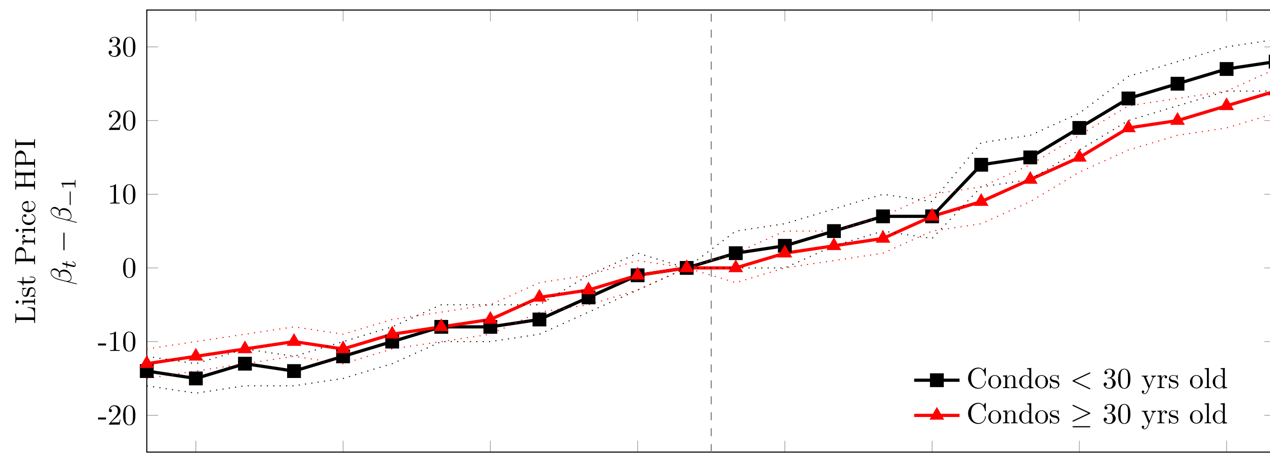


Figure 2. List Price HPIs by Property Age in Event Time by List Date.
This figure displays the list price trend captured by event month indicators from regressing ln(list price) on observable characteristics and fixed effects (ZIP code), estimated separately by property age subsample. Panel A and B are for Condos and SFHs respectively. The dotted lines represent the 95% confidence interval of the coefficient estimates from the reference event month (event month -1).

A. Condo



B. Single Family

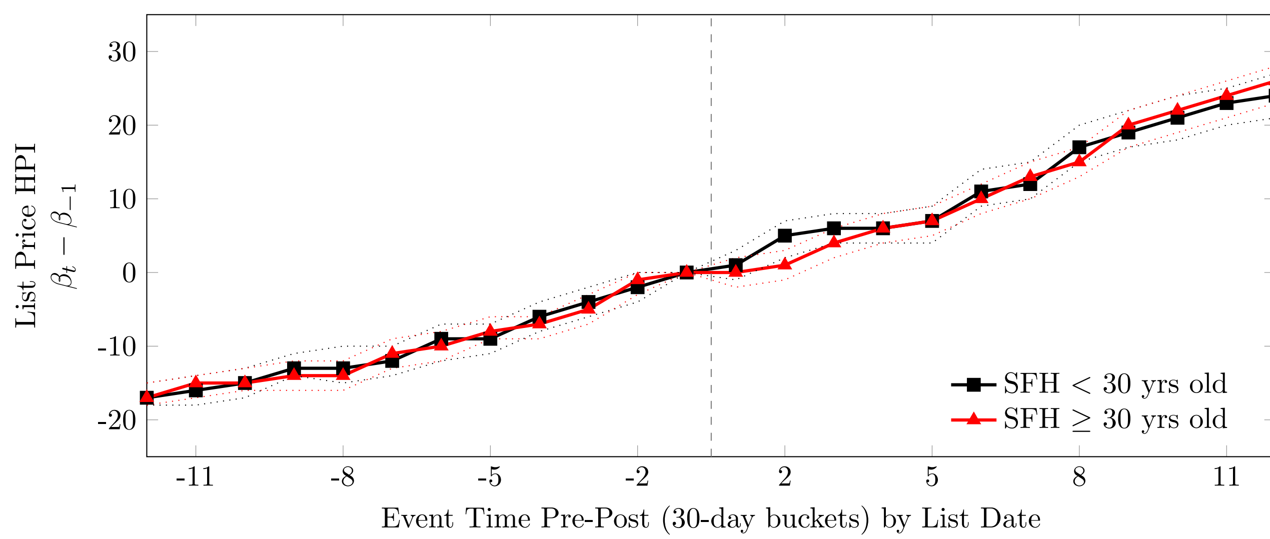


Figure 3. Time on Market by Property Age in Event Time by List Date.
This figure displays the trend captured by event month indicators from regressing time on market on observable characteristics and fixed effects (ZIP code), estimated separately by property age subsample. Panel A and B are for Condos and SFHs respectively. The dotted lines represent the 95% confidence interval of the coefficient estimates from the reference event month (event month -1).

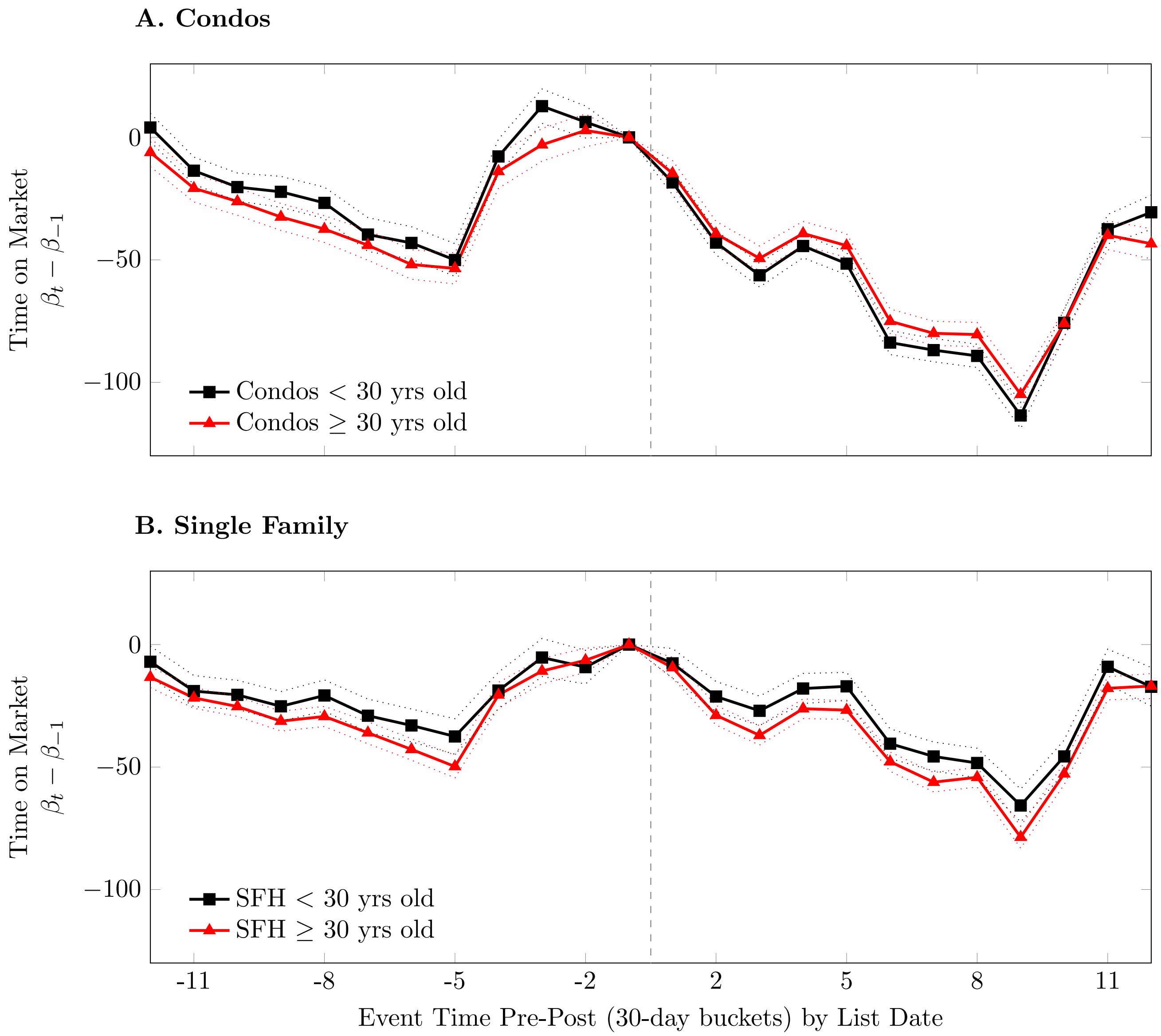


Figure 4. The likelihood of sold by Property Age in Event Time by List Date.
This figure displays the trend captured by event month indicators from estimating a probit regression of a listing sold/withdrawn on observable characteristics and fixed effects (ZIP code), estimated separately by property age subsample. Panel A and B are for Condos and SFHs respectively. The dotted lines represent the 95% confidence interval of the coefficient estimates from the reference month (event month -1).
† Displaying probit model coefficient estimates.

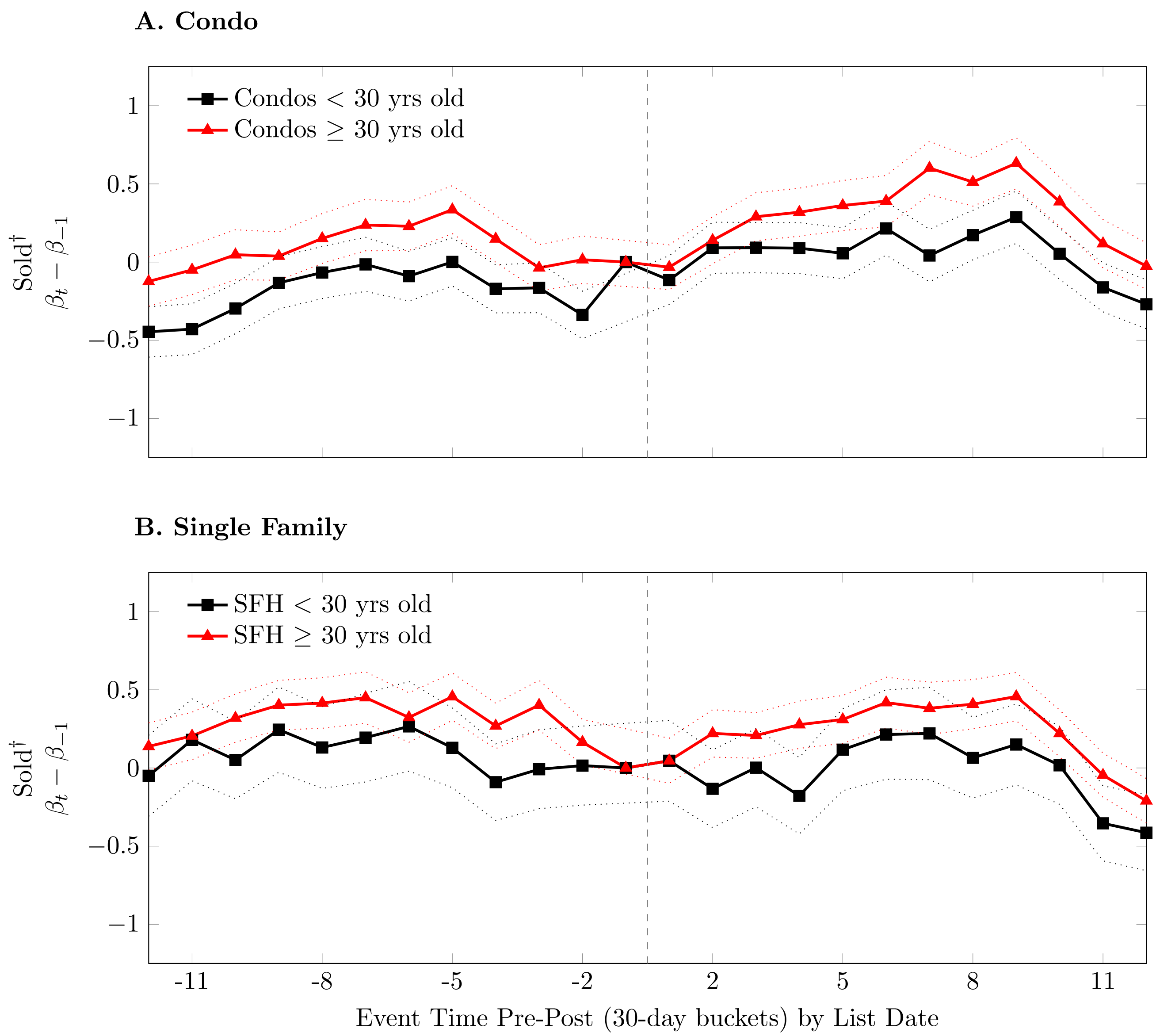


Figure 5. Sale Price HPIs by Property Age in Event Time by Pending Date.
This figure displays the price trend captured by event month indicators from regressing ln(sale price) on observable characteristics and fixed effects (ZIP code), estimated separately by property age subsample. Panel A and B are for Condos and SFHs respectively. The dotted lines represent the 95% confidence interval of the coefficient estimates from the reference event month (event month -1).

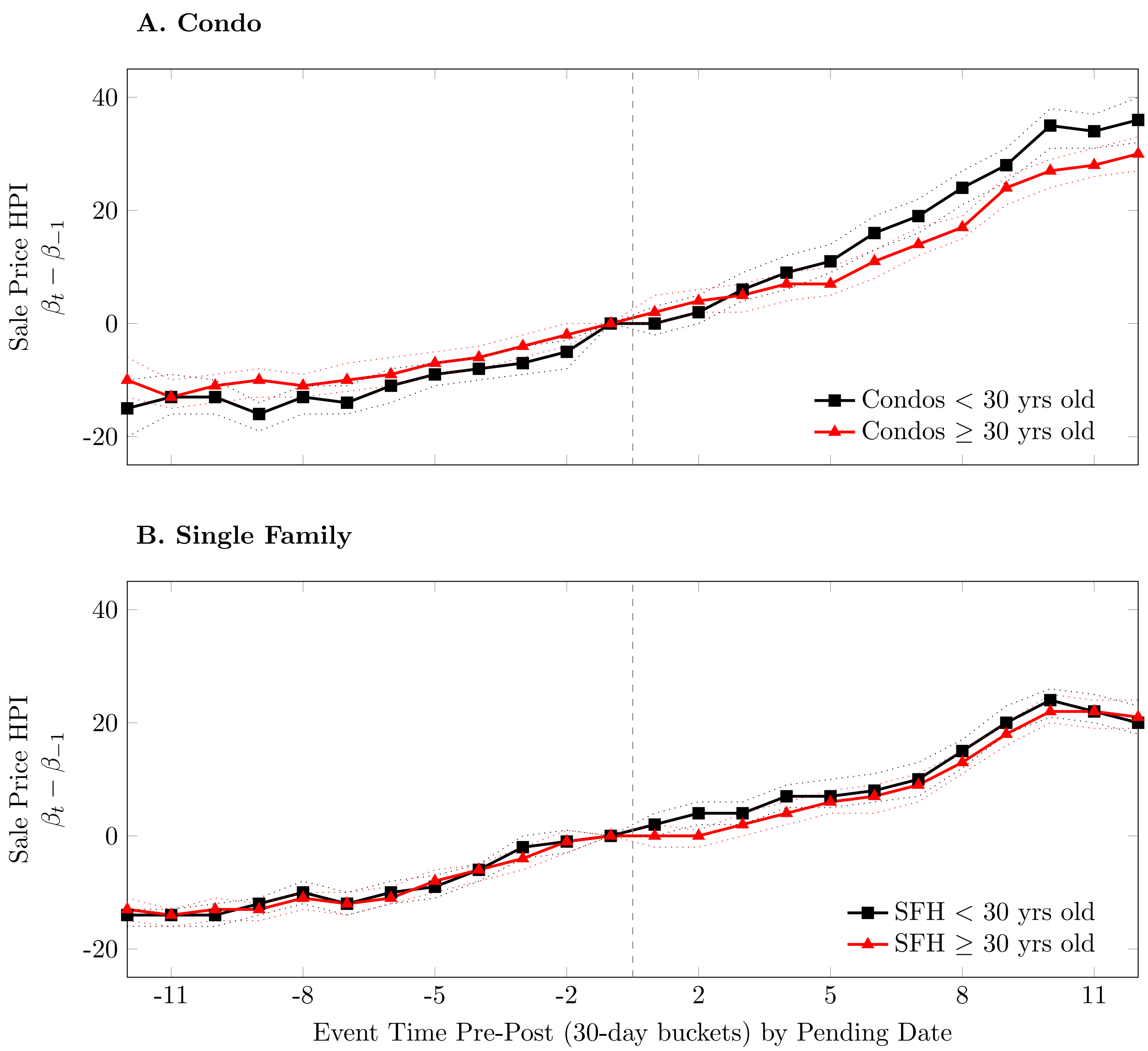


Figure 6. Baseline Event Study Estimates — Pre-Post Periods∗(Age ≥ 30).
This figure displays the estimates for the interaction terms between event quarter dummies ($Post^l$) and the older property indicator (Age ≥ 30), as specified in Equation 3 and displayed in Appendix Table A9. The reference event quarter is the quarter immediately before the event. The regression model includes controls for observable characteristics and fixed effects, and is estimated separately for condos and single-family homes (placebo group) across multiple outcome measures. Error bars represent the 95% confidence intervals for the coefficient estimates.
† Displaying probit model coefficient estimates.

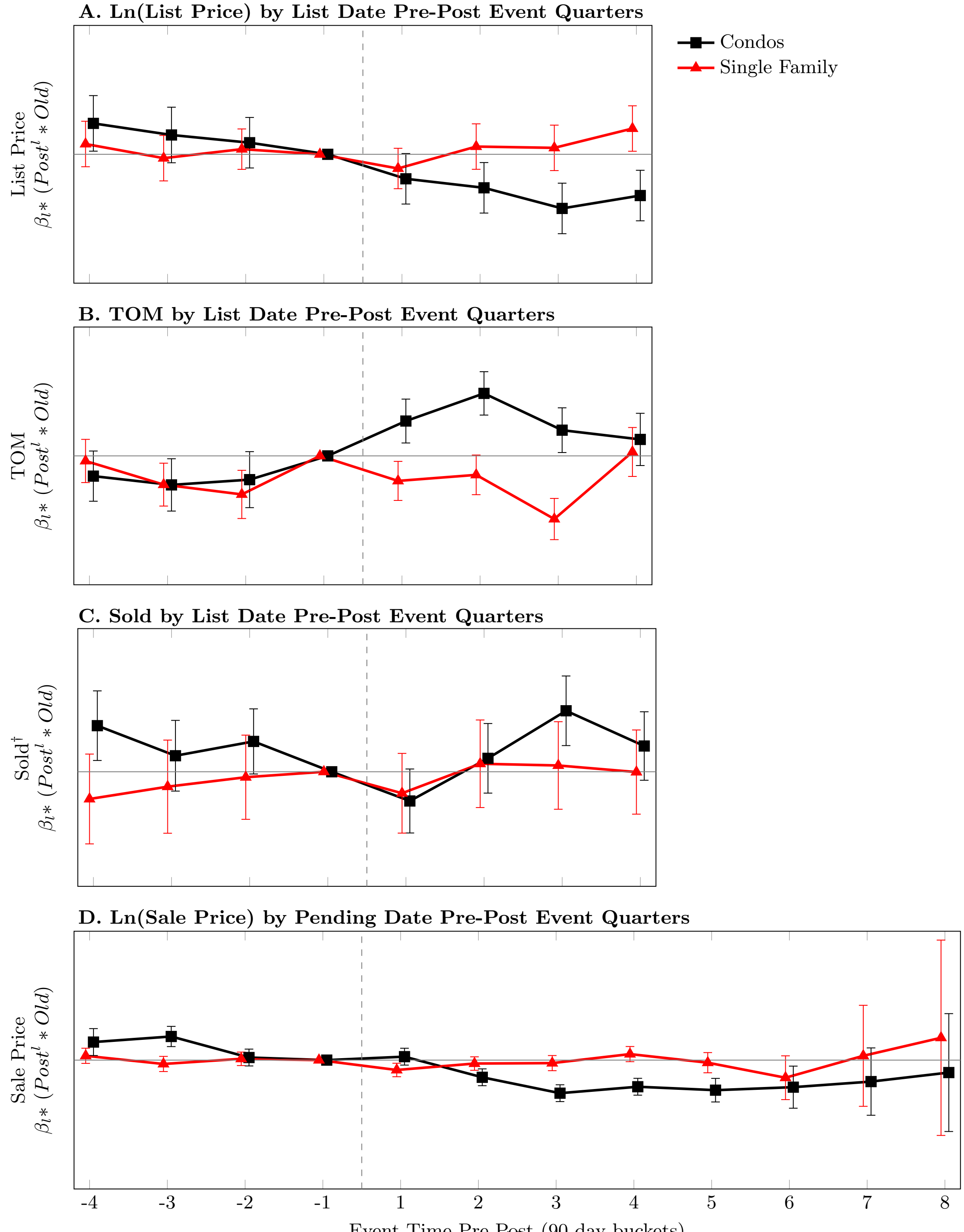


Figure 7. Event Study Estimates — Alternative Control Group (Age≤ 20).
This figure displays the estimates for the interaction terms between event quarter dummies ($Post^l$) and the older property indicator (Age ≥ 30), as specified in Equation 3. Properties under 20 years old serve as the control group, with the quarter immediately preceding the event as the reference period. The regression model includes controls for observable characteristics and fixed effects, and is estimated separately for condos and single-family homes (placebo group) across multiple outcome measures. Error bars represent the 95% confidence intervals for the coefficient estimates.
† Displaying probit model coefficient estimates.

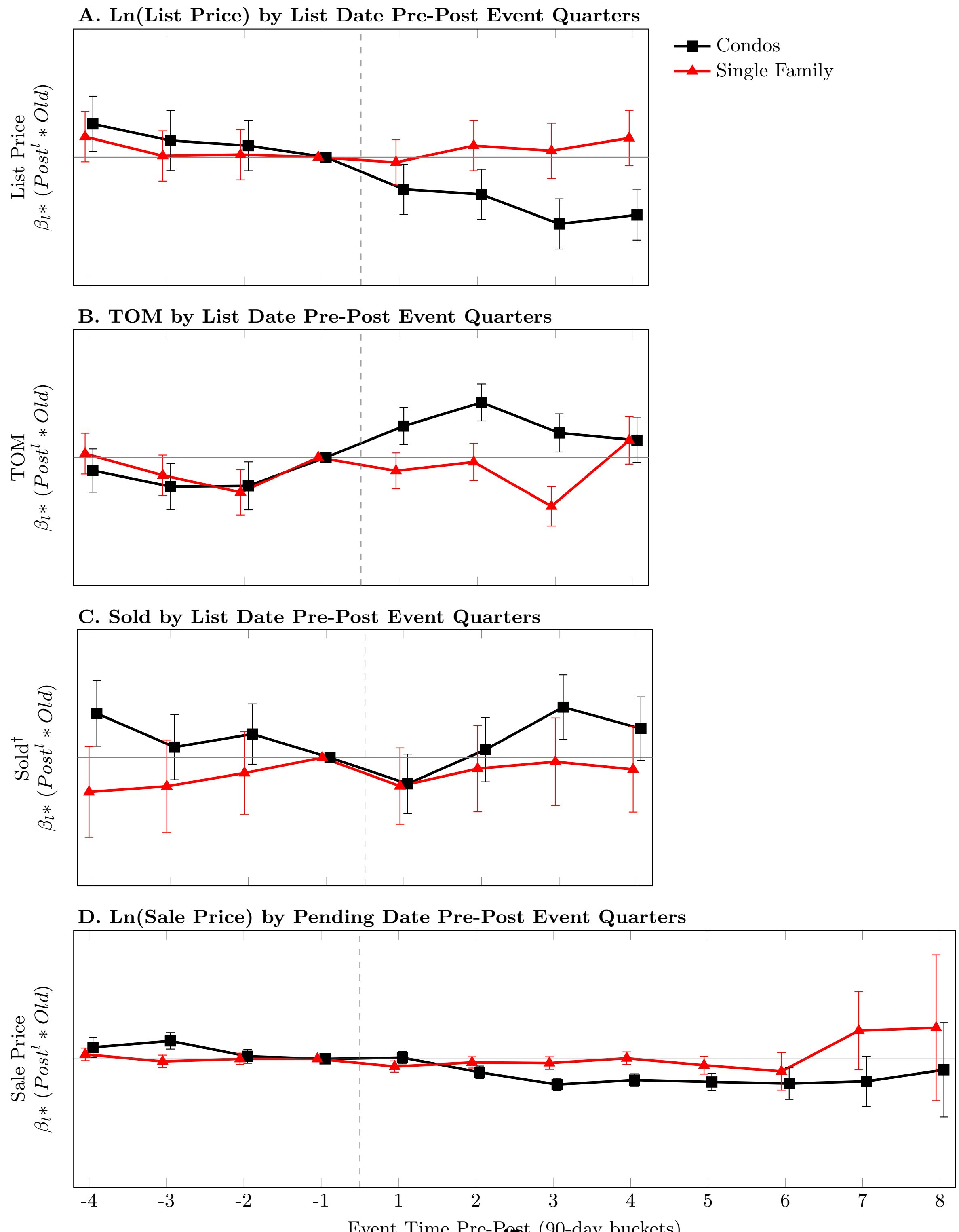
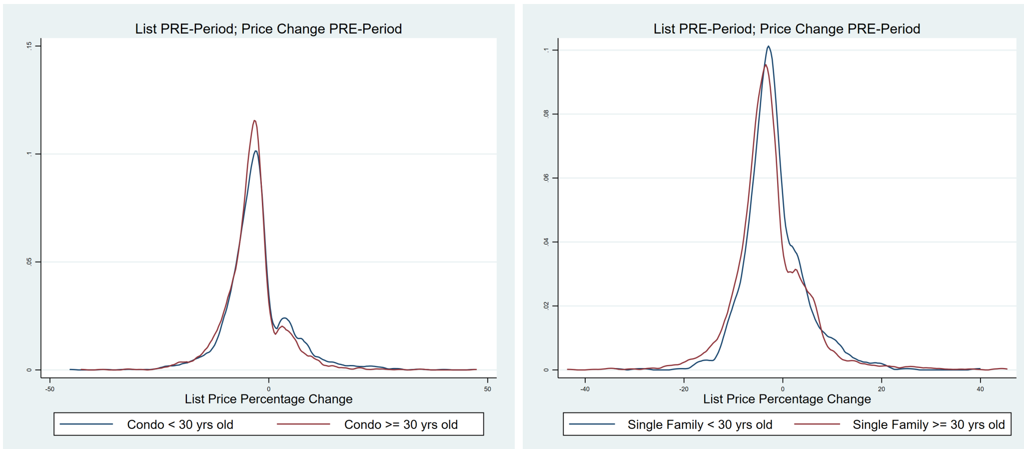
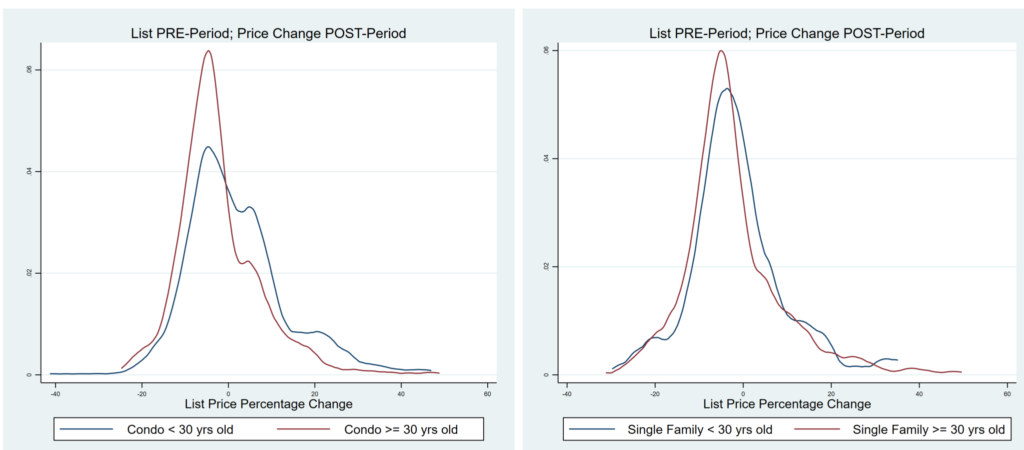


Figure 8. Kernel Density of List Price Changes by Listing and Price Change Pre-Post Event. This figure displays the distribution of list price percentage changes for properties with revised listing prices. The properties are segmented by type (condo, single family), age (<30, ≥30), and cohort. The three cohorts displayed include listed and price changed pre-event, listed pre-event and price changed post-event, and listed and price changed post-event.

A. Condos/SFH: Listed Pre-Event - List Price Changed Pre-Event



B. Condos/SFH: Listed Pre-Event - List Price Changed Post-Event



C. Condos/SFH: Listed Pre-Event - List Price Changed Post-Event

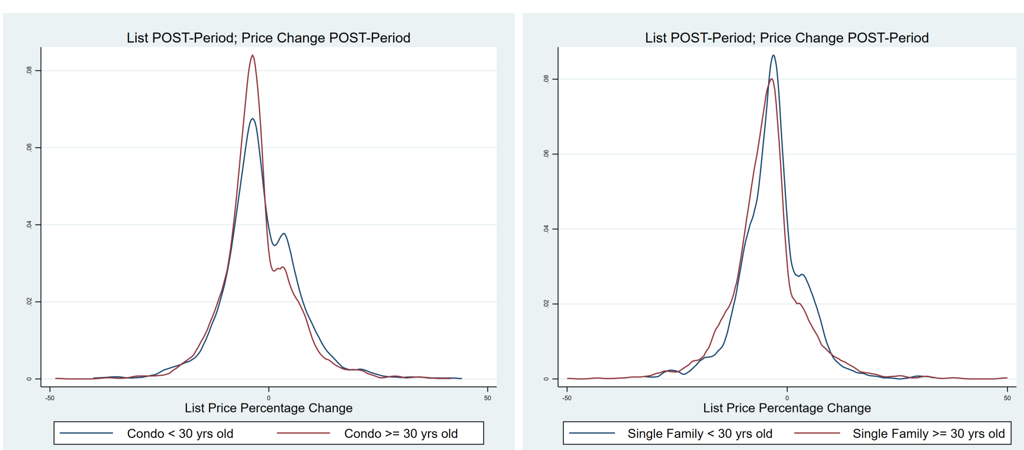


Figure 9. Subsample Event Study Estimates — Condos by Number of Floors

This figure displays estimates for the interaction terms between event quarter dummies ($Post^l$) and the older property indicator (Age $\geq$ 30), as specified in Equation 3. It is estimated separately for condos above and below three stories. Properties under 30 years old serve as the control group, with the quarter immediately preceding the event as the reference period. The regression model specification includes controls for observable characteristics and fixed effects (ZIP code). The error bars represent the 95% confidence interval of the coefficient estimates.

† Displaying probit model coefficient estimates.

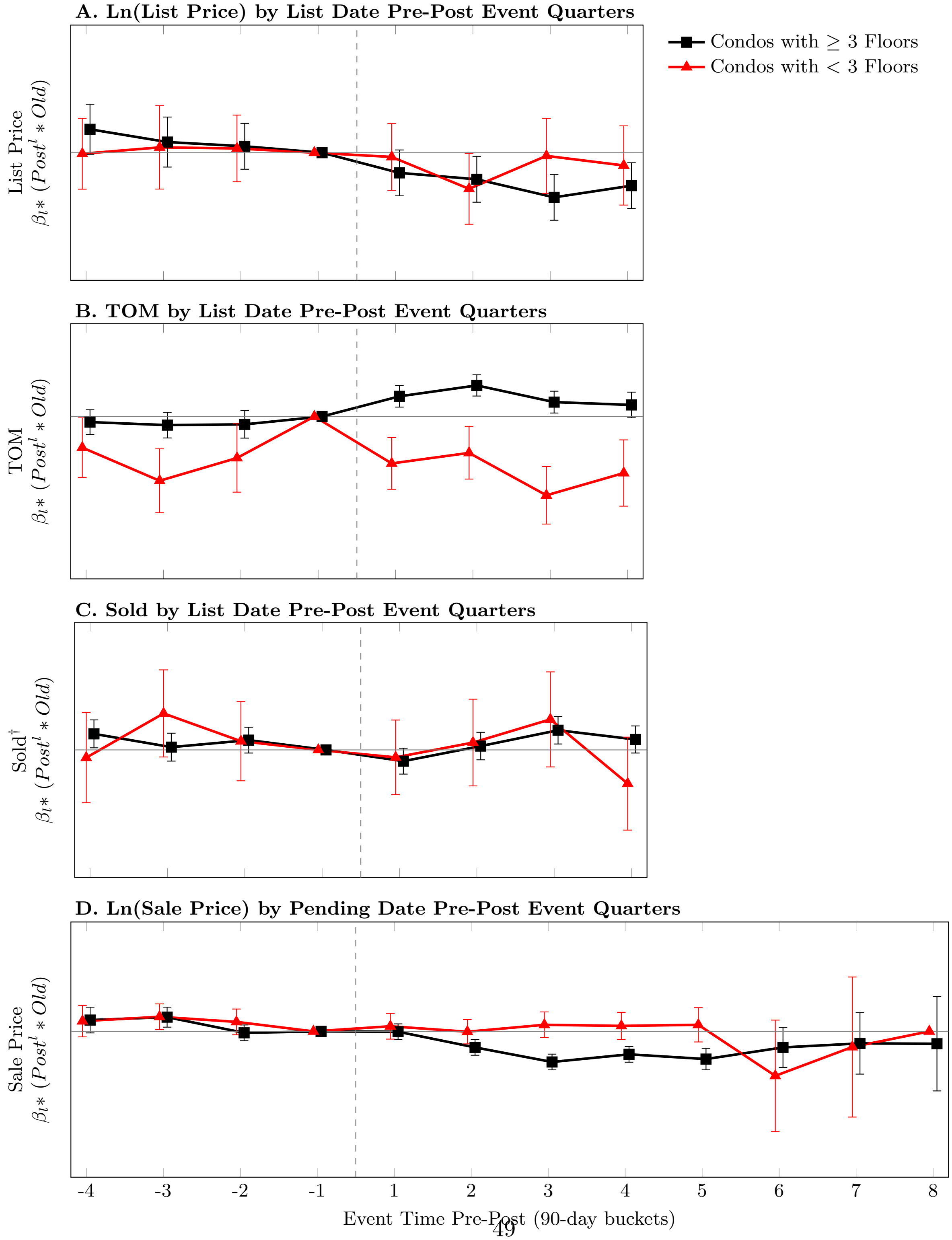


Figure 10. Subsample Event Study Estimates — Condos by Proximity to Coast

This figure displays estimates for the interaction terms between event quarter dummies ($Post^l$) and the older property indicator (Age $\geq$ 30), as specified in Equation 3. It is estimated separately for condos within and beyond 3 miles from the coast. Properties under 20 years old serve as the control group, with the quarter immediately preceding the event as the reference period. The regression model specification includes controls for observable characteristics and fixed effects (ZIP code). The error bars represent the 95% confidence interval of the coefficient estimates.

† Displaying probit model coefficient estimates.

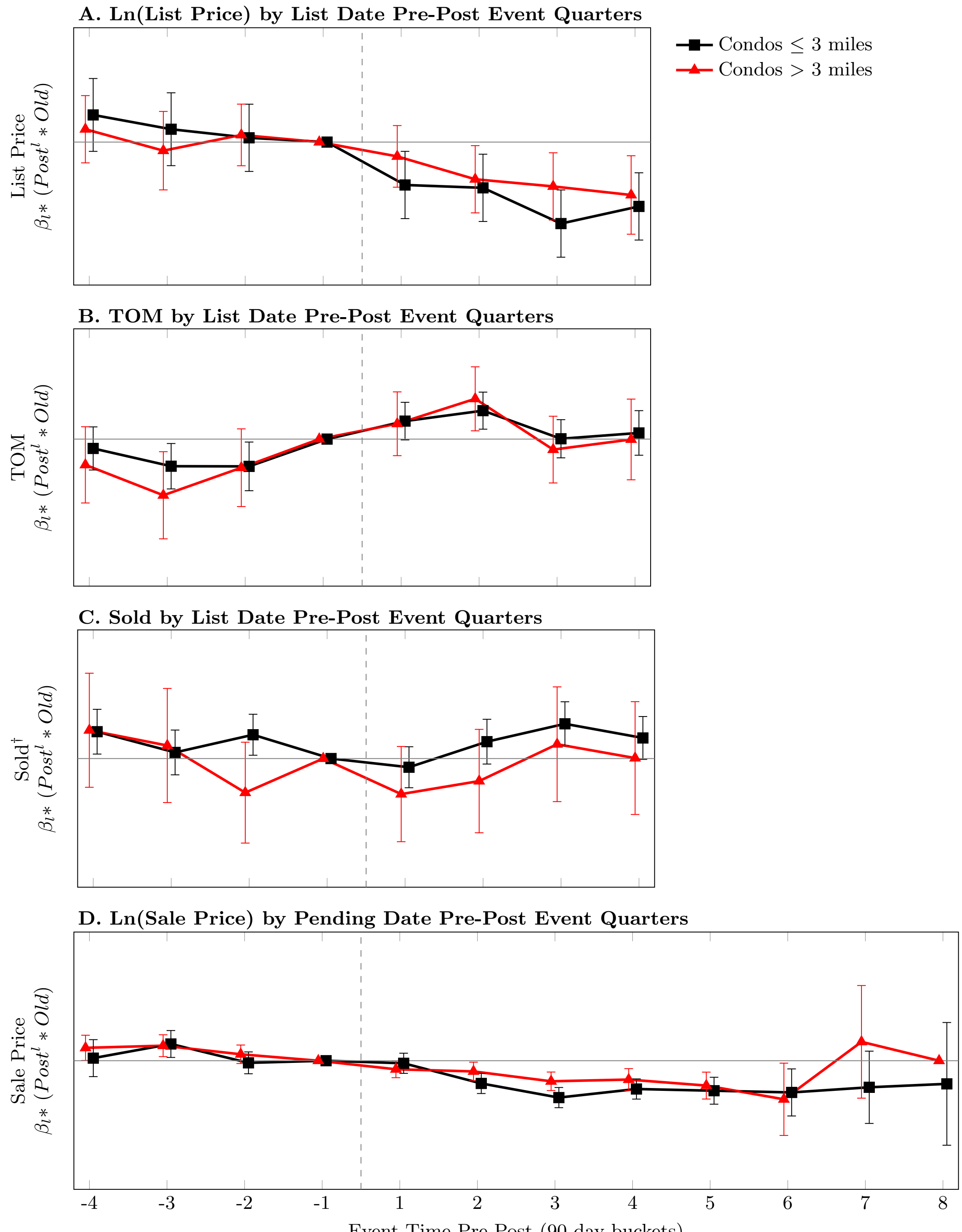


Table 1. Descriptive Statistics

Variables	Minimum	Mean	Maximum	S.D.
Sale Price (000s)	100	617	7,750	627
List Price (000s)	125	664	7,999	698
Ratio of Sale to List Price	0.80	0.97	1.09	0.04
Time on Market	2.00	61.47	360.00	68.38
Sold (%)	0.00	81.10	100.00	39.15
Condo (%)	0.00	54.95	100.00	49.76
Single Family (%)	0.00	45.05	100.00	49.76
List Pre-Event (%)	0.00	50.57	100.00	50.00
Property Age	2.00	38.41	95.00	22.92
Bedrooms	0.00	2.63	6.00	1.19
Baths	1.00	2.19	7.00	0.91
Living SqFt	401.00	1,566	7,454	832.69
Lot SqFt	0.00	4,110	59,967	6,493
Elevation (meters)	-1.10	2.32	10.69	1.00
CBD Distance (miles)	0.09	9.79	32.69	6.14
Shoreline Distance (miles)	0.00	3.13	12.93	3.62
Surfside Distance (miles)	0.01	12.35	41.29	8.43
Waterfront (%)	0.00	29.79	100.00	45.73
Pool (%)	0.00	56.43	100.00	49.58
Cooling AC (%)	0.00	95.49	100.00	20.76
Missing Occupancy (%)	0.00	30.09	100.00	45.87
Owner Occupied (%)	0.00	25.60	100.00	43.65
Tenant Occupied (%)	0.00	21.01	100.00	40.74
Vacant (%)	0.00	23.29	100.00	42.27
Impact Doors (%)	0.00	21.88	100.00	41.34
Impact Windows (%)	0.00	15.37	100.00	36.07
Leasing Restriction (%)	0.00	3.70	100.00	18.89
Leasing Restriction 1 year (%)	0.00	3.68	100.00	18.84
Down Payment Requirement (%)	0.00	0.40	100.00	6.33
Corporate Buyer Restriction (%)	0.00	0.17	100.00	4.17
Screened Cover (%)	0.00	5.23	100.00	22.27
HOA (%)	0.00	56.97	100.00	49.51
Security (%)	0.00	54.95	100.00	49.76
Membership (%)	0.00	3.12	100.00	17.38
New Construction (%)	0.00	16.10	100.00	36.76
AVM (%)	0.00	55.32	100.00	49.72
Cash Purchase (%)	0.00	30.42	100.00	46.01
Conventional Mortgage (%)	0.00	43.15	100.00	49.53
FHA or VA Mortgage (%)	0.00	5.78	100.00	23.33
Financing Other (%)	0.00	20.65	100.00	40.48
Observations	60,835			

Note: Table 1 displays descriptive statistics for the cleaned sample of Miami-Dade County, FL, that appear on the Multiple Listing Service (MLS) between June 2020 and June 2022, and sold or withdrawn by June 2023. See Appendix Maps A1 and A2 for general locations of the Condo and SFH listings in the final sample.

Table 2. Sample Means by Property Type and Across Condo Age

				Condos by Age	
Variables	All	Single Family	Condo	< 30 yrs	≥ 30 yrs
Sale Price (000s)	617	717	531	740	339
List Price (000s)	664	770	577	812	361
Ratio of Sale to List Price	0.97	0.98	0.97	0.97	0.97
Time on Market	61.47	45.67	74.57	81.03	68.67
Sold (%)	81.10	83.50	79.13	78.82	79.41
Condo (%)	54.95	0.00	1.00	1.00	1.00
Single Family (%)	45.05	1.00	0.00	0.00	0.00
List Pre-Event (%)	50.57	51.62	49.70	50.10	49.34
Property Age	38.41	47.21	31.19	13.49	47.53
Bedrooms	2.63	3.59	1.84	2.01	1.69
Baths	2.19	2.52	1.92	2.16	1.70
Living SqFt	1,566	2,021	1,192	1,334	1,061
Lot SqFt	4,110	9,123	0.00	0.00	0.00
Elevation (meters)	2.32	2.45	2.21	2.38	2.04
CBD Distance (miles)	9.79	12.38	7.66	5.92	9.28
Shoreline Distance (miles)	3.13	4.72	1.82	1.26	2.34
Surfside Distance (miles)	12.35	16.69	8.80	8.53	9.05
Waterfront (%)	29.79	8.04	47.62	50.91	44.58
Pool (%)	56.43	30.33	77.83	81.29	74.64
Cooling AC (%)	95.49	94.52	96.28	97.55	95.10
Missing Occupancy (%)	30.09	30.95	29.40	31.38	27.56
Owner Occupied (%)	25.60	38.73	14.84	13.10	16.46
Tenant Occupied (%)	21.01	11.18	29.07	30.76	27.52
Vacant (%)	23.29	19.15	26.69	24.76	28.47
Impact Doors (%)	21.88	18.58	24.58	39.64	10.69
Impact Windows (%)	15.37	13.96	16.53	25.95	7.83
Leasing Restriction (%)	3.70	0.12	6.64	0.99	11.85
Leasing Restriction 1 year (%)	3.68	0.12	6.61	0.99	11.79
Down Payment Requirement (%)	0.40	0.00	0.73	0.29	1.14
Corporate Buyer Restriction (%)	0.17	0.00	0.32	0.03	0.58
Screened Cover (%)	5.23	5.88	4.70	0.72	8.38
HOA (%)	56.97	22.39	85.32	85.68	84.99
Security (%)	54.95	0.43	99.65	99.63	99.67
Membership (%)	3.12	2.43	3.69	3.49	3.87
New Construction (%)	16.10	12.15	19.35	27.51	11.81
AVM (%)	55.32	55.11	55.50	56.09	54.96
Cash Purchase (%)	30.42	17.38	41.12	38.51	43.51
Conventional Mortgage (%)	43.15	52.53	35.47	37.22	33.85
FHA or VA Mortgage (%)	5.78	12.18	0.53	0.46	0.60
Financing Other (%)	20.65	17.92	22.89	23.81	22.04
Observations	60,835	27,407	33,428	16,043	17,385

Note: Table 2 presents the averages of the variables for the full sample, as well as for subsamples of single-family homes, condos, and condos under and over 30 years old. The full sample includes properties listed on the Multiple Listing Service (MLS) in Miami-Dade County, FL, between 06/01/2020 and 06/30/2022, and either sold or withdrawn by 06/30/2023.

Table 3. Baseline Diff-in-Diff Estimates — Pre-Post Periods$*$(Age $\geq$ 30)

	Ln(List Price) (1)	TOM (2)	Sold† (3)	Ln(Sale Price) (4)
A. Condo				
Post-Period	0.017	-5.680*	-0.157*	0.063***
	(0.015)	(3.070)	(0.091)	(0.015)
Post*(Age≥30)	-0.041***	10.404***	-0.018	-0.063***
	(0.006)	(1.180)	(0.033)	(0.006)
Age≥30	0.007	4.463***	-0.190***	-0.010
	(0.008)	(1.625)	(0.045)	(0.008)
Age*(Age<30)	-0.020***	-1.218***	0.014***	-0.016***
	(0.000)	(0.080)	(0.002)	(0.000)
Age*(Age≥30)	-0.003***	0.174***	-0.003**	-0.005***
	(0.000)	(0.047)	(0.001)	(0.000)
Ln(List Price) Residual		20.378***	-0.555***	
		(1.259)	(0.033)	
TOM Residual			-0.003***	
			(0.000)	
Inverse Mills Ratio				0.543***
				(0.013)
Constant	6.461***	60.209***	0.318	6.245***
	(0.079)	(14.782)	(0.499)	(0.080)
Adjusted R-squared	0.88	0.51	0.08†	0.90
Observations	33,321	32,799	32,799	26,097
B. Single Family				
Post-Period	0.023	3.822	-0.237**	-0.004
	(0.014)	(2.947)	(0.110)	(0.013)
Post*(Age≥30)	-0.001	-1.967*	0.050	-0.008*
	(0.005)	(1.091)	(0.044)	(0.005)
Age≥30	-0.027***	3.010**	-0.069	-0.021***
	(0.006)	(1.267)	(0.053)	(0.005)
Age*(Age<30)	-0.001**	-0.080	0.005*	-0.001**
	(0.000)	(0.065)	(0.003)	(0.000)
Age*(Age≥30)	-0.002***	0.022	-0.002	-0.002***
	(0.000)	(0.029)	(0.001)	(0.000)
Ln(List Price) Residual		23.677***	-0.941***	
		(1.507)	(0.053)	
TOM Residual			-0.006***	
			(0.000)	
Inverse Mills Ratio				0.430***
				(0.015)
Constant	9.297***	17.907	0.156	9.247***
	(0.065)	(12.837)	(0.461)	(0.065)
Adjusted R-squared	0.90	0.46	0.15†	0.91
Observations	27,379	27,242	27,242	22,824
Property/MLS/Financing Vars‡	Y	Y	Y	Y
Year-Month & Zip Code FE	Y	Y	Y	Y

Note: This table displays the baseline Diff-in-Diff model estimates, as outlined in Equation 2, with Panels A and B for condos and single-family houses (placebo group), respectively. The *Post-Period* indicator is determined by listing date for Ln(list price), TOM, and Sold/Withdrawn, and by pending date for ln(Sale Price). The age control group include properties under age 30. The 1, 2, and 3 stars indicate statistical significance at 10%, 5%, and 1%, respectively.

† Displaying probit model coefficient estimates and pseudo R-squared.

‡ The control variables vary by the four dependent variables. Please see subsection 5.3 for details.

Table 4. Diff-in-Diff Estimates with Alternative Control Group (Age ≤ 20)

	Ln(List Price) (1)	TOM (2)	Sold† (3)	Ln(Sale Price) (4)
A. Condo				
Post-Period	0.021	-6.282**	-0.117	0.064***
	(0.015)	(3.184)	(0.094)	(0.016)
Post*(Age≥30)	-0.049***	11.786***	-0.019	-0.067***
	(0.006)	(1.243)	(0.034)	(0.006)
Age≥30	-0.116***	-5.010***	-0.128***	-0.122***
	(0.007)	(1.571)	(0.041)	(0.008)
Age*(Age≤20)	-0.027***	-1.531***	0.022***	-0.020***
	(0.000)	(0.108)	(0.003)	(0.001)
Age*(Age≥30)	-0.003***	0.167***	-0.003**	-0.004***
	(0.000)	(0.048)	(0.001)	(0.000)
Ln(List Price) Residual		20.722***	-0.548***	
		(1.324)	(0.035)	
TOM Residual			-0.003***	
			(0.000)	
Inverse Mills Ratio				0.526***
				(0.014)
Constant	6.694***	67.331***	0.570	6.385***
	(0.081)	(15.457)	(0.522)	(0.083)
Adjusted R-squared	0.88	0.50	0.09†	0.90
Observations	31,078	30,597	30,590	24,345
B. Single Family				
Post-Period	0.030*	3.910	-0.232**	0.003
	(0.016)	(3.241)	(0.117)	(0.014)
Post*(Age≥30)	-0.004	-0.702	0.037	-0.015***
	(0.006)	(1.327)	(0.052)	(0.006)
Age≥30	0.010	-0.533	0.064	0.009
	(0.006)	(1.445)	(0.057)	(0.006)
Age*(Age≤20)	-0.005***	0.100	-0.002	-0.004***
	(0.001)	(0.107)	(0.004)	(0.000)
Age*(Age≥30)	-0.002***	0.023	-0.002*	-0.003***
	(0.000)	(0.030)	(0.001)	(0.000)
Ln(List Price) Residual		23.068***	-0.918***	
		(1.569)	(0.054)	
TOM Residual			-0.006***	
			(0.000)	
Inverse Mills Ratio				0.433***
				(0.015)
Constant	9.254***	21.728	0.231	9.184***
	(0.068)	(13.322)	(0.479)	(0.068)
Adjusted R-squared	0.89	0.46	0.15†	0.91
Observations	24,579	24,450	24,450	20,406
Property/MLS/Financing Vars‡	Y	Y	Y	Y
Year-Month & Zip Code FE	Y	Y	Y	Y

Note: This table displays the Diff-in-Diff model estimates with an alternative control group that includes properties under age 20. The model is estimated separately for condos and single family houses (placebo group). The *Post-Period* indicator is determined by listing date for Ln(list price), TOM, and Sold/Withdrawn, and by pending date for ln(Sale Price). The 1, 2, and 3 stars indicate statistical significance at 10%, 5%, and 1%, respectively.

† Displaying probit model coefficient estimates and pseudo R-squared.

‡ The control variables vary by the four dependent variables. Please see subsection 5.3 for details.

Table 5. Diff-in-Diff Estimates — Condo Subsample Analysis by Number of Floors

	Ln(List Price) (1)	TOM (2)	Sold† (3)	Ln(Sale Price) (4)
A. Condos: Number of Floors < 3				
Post-Period	0.053**	-0.916	0.410	0.052*
	(0.026)	(9.619)	(0.357)	(0.027)
Post*(Age≥30)	-0.021**	-10.353***	-0.143	-0.016
	(0.011)	(3.508)	(0.128)	(0.010)
Age≥30	-0.042***	11.539***	-0.100	-0.065***
	(0.013)	(3.801)	(0.163)	(0.013)
Age*(Age<30)	-0.000	-1.038***	0.023**	0.001
	(0.001)	(0.322)	(0.012)	(0.001)
Age*(Age≥30)	-0.001***	0.053	0.001	-0.002***
	(0.000)	(0.110)	(0.003)	(0.000)
Ln(List Price) Residual		29.773***	-0.854***	
		(5.798)	(0.172)	
TOM Residual			-0.006***	
			(0.001)	
Inverse Mills Ratio				0.165***
				(0.028)
Constant	8.788***	35.404	0.480	8.849***
	(0.137)	(38.066)	(1.451)	(0.139)
Adjusted R-squared	0.78	0.53	0.16†	0.80
Observations	4,264	4,241	4,228	3,505
A. Condos: Number of Floors ≥ 3				
Post-Period	0.006	-4.318	-0.232**	0.051***
	(0.016)	(3.236)	(0.095)	(0.017)
Post*(Age≥30)	-0.038***	10.824***	-0.010	-0.061***
	(0.006)	(1.275)	(0.035)	(0.007)
Age≥30	-0.002	4.695**	-0.190***	-0.014
	(0.009)	(1.827)	(0.049)	(0.010)
Age*(Age<30)	-0.020***	-1.226***	0.014***	-0.016***
	(0.000)	(0.084)	(0.002)	(0.000)
Age*(Age≥30)	-0.004***	0.170***	-0.004**	-0.006***
	(0.000)	(0.059)	(0.002)	(0.000)
Ln(List Price) Residual		20.633***	-0.575***	
		(1.334)	(0.035)	
TOM Residual			-0.003***	
			(0.000)	
Inverse Mills Ratio				0.538***
				(0.014)
Constant	6.274***	65.489***	-0.476	6.057***
	(0.086)	(16.161)	(0.661)	(0.087)
Adjusted R-squared	0.88	0.50	0.08†	0.90
Observations	29,057	28,558	28,553	22,592
Property/MLS/Financing Vars‡	Y	Y	Y	Y
Year-Month & Zip Code FE	Y	Y	Y	Y

Note: This table reports the condo subsample analysis based on the Diff-in-Diff model as outlined by Equation 3. Condo listings are categorized based on the number of floors: condos under three stories and condos with three or more stories. The *Post-Period* indicator is determined by listing date for Ln(list price), TOM, and Sold/Withdrawn, and by pending date for ln(Sale Price). The age control group include condos under age 30. The 1, 2, and 3 stars indicate statistical significance at 10%, 5%, and 1%, respectively.

† Displaying probit model coefficient estimates and pseudo R-squared.

‡ The control variables vary by the four dependent variables. Please see subsection 5.3 for details.

Table 6. Diff-in-Diff Estimates — Condo Subsample Analysis by Proximity to Coast

	Ln(List Price) (1)	TOM (2)	Sold† (3)	Ln(Sale Price) (4)
A. Condos: Distance to the Coast ≤ 3 Miles				
Post-Period	0.005	-5.148	-0.139	0.057***
	(0.017)	(3.567)	(0.102)	(0.019)
Post*(Age≥30)	-0.048***	8.115***	0.010	-0.064***
	(0.007)	(1.416)	(0.037)	(0.007)
Age≥30	-0.169***	-1.713	-0.173***	-0.177***
	(0.008)	(1.770)	(0.044)	(0.009)
Age*(Age≤20)	-0.027***	-1.560***	0.022***	-0.020***
	(0.001)	(0.118)	(0.003)	(0.001)
Age*(Age≥30)	-0.001***	0.132**	-0.002	-0.002***
	(0.000)	(0.055)	(0.001)	(0.000)
Ln(List Price) Residual		20.749***	-0.564***	
		(1.434)	(0.037)	
TOM Residual			-0.003***	
			(0.000)	
Inverse Mills Ratio				0.513***
				(0.015)
Constant	6.643***	66.535***	0.180	6.305***
	(0.090)	(17.320)	(0.488)	(0.093)
Adjusted R-squared	0.87	0.50	0.08†	0.89
Observations	24,869	24,412	24,404	19,069
B. Condos: Distance to the Coast > 3 Miles				
Post-Period	0.048***	-3.193	0.021	0.031**
	(0.018)	(7.056)	(0.258)	(0.015)
Post*(Age≥30)	-0.033***	9.716***	-0.095	-0.053***
	(0.008)	(2.973)	(0.105)	(0.008)
Age≥30	-0.048***	-11.402***	-0.062	-0.051***
	(0.010)	(3.553)	(0.134)	(0.009)
Age*(Age≤20)	-0.016***	-1.587***	0.032***	-0.013***
	(0.001)	(0.256)	(0.010)	(0.001)
Age*(Age≥30)	-0.007***	0.136	-0.002	-0.007***
	(0.000)	(0.109)	(0.004)	(0.000)
Ln(List Price) Residual		54.500***	-1.581***	
		(5.411)	(0.194)	
TOM Residual			-0.006***	
			(0.000)	
Inverse Mills Ratio				0.125***
				(0.020)
Constant	9.890***	-93.590***	4.005***	9.949***
	(0.089)	(35.174)	(1.345)	(0.095)
Adjusted R-squared	0.85	0.47	0.13†	0.87
Observations	6,209	6,185	6,152	5,276
Property/MLS/Financing Vars‡	Y	Y	Y	Y
Year-Month & Zip Code FE	Y	Y	Y	Y

Note: This table reports the condo subsample analysis based on the Diff-in-Diff model as outlined by Equation 3. Condo listings are categorized based on the distance from the coastline: condos within 3 miles versus condos beyond 3 miles. The *Post-Period* indicator is determined by listing date for Ln(list price), TOM, and Sold/Withdrawn, and by pending date for ln(Sale Price). The age control group include condos under age 20. The 1, 2, and 3 stars indicate statistical significance at 10%, 5%, and 1%, respectively.

† Displaying probit model coefficient estimates and pseudo R-squared.

‡ The control variables vary by the four dependent variables. Please see subsection 5.3 for details.

Table 7. Condos Distance to Surfside Diff-in-Diff Estimates Segmented by Median Distance

	Ln(List Price) (1)	TOM (2)	Sold† (3)	Ln(Sale Price) (4)
A. Condos ≤ Median Condo Distance				
Post-Period	0.003	-6.188	-0.148	0.076***
	(0.022)	(4.445)	(0.121)	(0.026)
Post*(Age≥30)	-0.034***	7.676***	0.059	-0.038***
	(0.009)	(1.807)	(0.046)	(0.010)
Age≥30	-0.151***	5.159**	-0.264***	-0.152***
	(0.012)	(2.466)	(0.062)	(0.014)
Age*(Age<30)	-0.017***	-1.168***	0.013***	-0.014***
	(0.001)	(0.123)	(0.003)	(0.001)
Age*(Age≥30)	-0.000	0.142**	-0.001	-0.002***
	(0.000)	(0.062)	(0.002)	(0.000)
Ln(List Price) Residual		16.979***	-0.531***	
		(1.663)	(0.042)	
DOM Residual			-0.003***	
			(0.000)	
Inverse Mills Ratio				0.541***
				(0.018)
Constant	6.810***	50.357**	4.981***	6.561***
	(0.122)	(21.971)	(0.622)	(0.127)
Adjusted R-squared	0.86	0.50	0.07†	0.88
Observations	16,664	16,317	16,316	12,462
B. Condos > Median Condo Distance				
Post-Period	0.036**	-9.575**	-0.164	0.043***
	(0.017)	(4.187)	(0.142)	(0.016)
Post*(Age≥30)	-0.049***	17.953***	-0.121**	-0.082***
	(0.006)	(1.532)	(0.049)	(0.006)
Age≥30	0.174***	-0.536	-0.052	0.131***
	(0.009)	(2.174)	(0.069)	(0.010)
Age*(Age<30)	-0.022***	-1.248***	0.013***	-0.017***
	(0.000)	(0.107)	(0.003)	(0.000)
Age*(Age≥30)	-0.004***	0.044	-0.001	-0.005***
	(0.000)	(0.080)	(0.003)	(0.000)
Ln(List Price) Residual		32.309***	-0.747***	
		(2.124)	(0.062)	
DOM Residual			-0.004***	
			(0.000)	
Inverse Mills Ratio				0.410***
				(0.017)
Constant	6.949***	63.069***	-0.142	6.785***
	(0.083)	(17.736)	(0.688)	(0.082)
Adjusted R-squared	0.92	0.51	0.10†	0.93
Observations	16,657	16,482	16,482	13,635
Property/MLS/Financing Vars‡	Y	Y	Y	Y
Year-Month & Zip Code FE	Y	Y	Y	Y

Note: This table displays the baseline Diff-in-Diff model estimates, as outlined in Equation 2, with Panels A and B for condos within and beyond the median distance of condos from Champlain Towers South (6.92 miles), respectively. The *Post-Period* indicator is determined by listing date for Ln(list price), TOM, and Sold/Withdrawn, and by pending date for ln(Sale Price). The age control group include properties under age 30. The 1, 2, and 3 stars indicate statistical significance at 10%, 5%, and 1%, respectively.
† Displaying probit model coefficient estimates and pseudo R-squared.
‡ The control variables vary by the four dependent variables. Please see subsection 5.3 for details.

Table 8. Condos Distance to Surfside Diff-in-Diff Estimates

	Ln(List Price) (1)	TOM (2)	Sold† (3)	Ln(Sale Price) (4)
A. All Condos				
Post-Period	0.020	-15.949***	-0.117	0.068***
	(0.016)	(3.171)	(0.094)	(0.016)
Surfside Distance (miles)	0.015***	-0.841	0.050***	0.010***
	(0.003)	(0.640)	(0.019)	(0.004)
Post*Surfside Distance (miles)	-0.000	1.220***	-0.005	-0.001
	(0.000)	(0.087)	(0.003)	(0.000)
Age≥30	0.007	4.643***	-0.190***	-0.010
	(0.008)	(1.621)	(0.045)	(0.008)
Post*(Age≥30)	-0.041***	9.733***	-0.018	-0.063***
	(0.006)	(1.181)	(0.033)	(0.006)
Age*(Age<30)	-0.020***	-1.216***	0.013***	-0.016***
	(0.000)	(0.080)	(0.002)	(0.000)
Age*(Age≥30)	-0.003***	0.170***	-0.003**	-0.005***
	(0.000)	(0.047)	(0.001)	(0.000)
Ln(List Price) Residual		20.413***	-0.558***	
		(1.256)	(0.033)	
DOM Residual			-0.003***	
			(0.000)	
Inverse Mills Ratio				0.543***
				(0.013)
Constant	6.384***	67.576***	-0.163	6.198***
	(0.079)	(14.975)	(0.531)	(0.080)
Adjusted R-squared	0.88	0.51	0.08†	0.90
Observations	33,321	32,799	32,799	26,097
B. Subset of Condos Along the Coast				
Post-Period	-0.060**	-1.059	-0.329**	0.024
	(0.024)	(4.622)	(0.128)	(0.027)
Surfside Distance (miles)	-0.013**	1.896*	-0.012	-0.028***
	(0.006)	(1.089)	(0.029)	(0.006)
Post*Surfside Distance (miles)	0.007***	0.215	-0.003	0.007***
	(0.002)	(0.304)	(0.009)	(0.002)
Age≥30	-0.087***	6.416***	-0.213***	-0.086***
	(0.012)	(2.273)	(0.058)	(0.013)
Post*(Age≥30)	-0.017**	4.951***	0.018	-0.041***
	(0.009)	(1.684)	(0.044)	(0.009)
Age*(Age<30)	-0.018***	-0.984***	0.010***	-0.015***
	(0.001)	(0.108)	(0.003)	(0.001)
Age*(Age≥30)	-0.004***	0.122*	-0.002	-0.006***
	(0.000)	(0.070)	(0.002)	(0.001)
Ln(List Price) Residual		20.417***	-0.584***	
		(1.572)	(0.041)	
DOM Residual			-0.003***	
			(0.000)	
Inverse Mills Ratio				0.541***
				(0.016)
Constant	6.323***	36.871	0.610	6.329***
	(0.129)	(24.297)	(0.650)	(0.132)
Adjusted R-squared	0.86	0.50	0.07†	0.88
Observations	18,581	18,219	18,217	14,123
Property/MLS/Financing Vars‡	Y	Y	Y	Y
Year-Month & Zip Code FE	Y	Y	Y	Y

Note: This table displays the baseline Diff-in-Diff model estimates, as outlined in Equation 2, with Panels A and B for all condos and restricted to those along the coast (within 0.2 miles of the shore), respectively. The *Post-Period* indicator is determined by listing date for Ln(list price), TOM, and Sold/Withdrawn, and by pending date for ln(Sale Price). The age control group include properties under age 30. The 1, 2, and 3 stars indicate statistical significance at 10%, 5%, and 1%, respectively.
† Displaying probit model coefficient estimates and pseudo R-squared.
‡ The control variables vary by the four dependent variables. Please see subsection 5.3 for details.

Appendix A

Figure A1. Miami-Dade County Condo listings from June 2020 through June 2022.

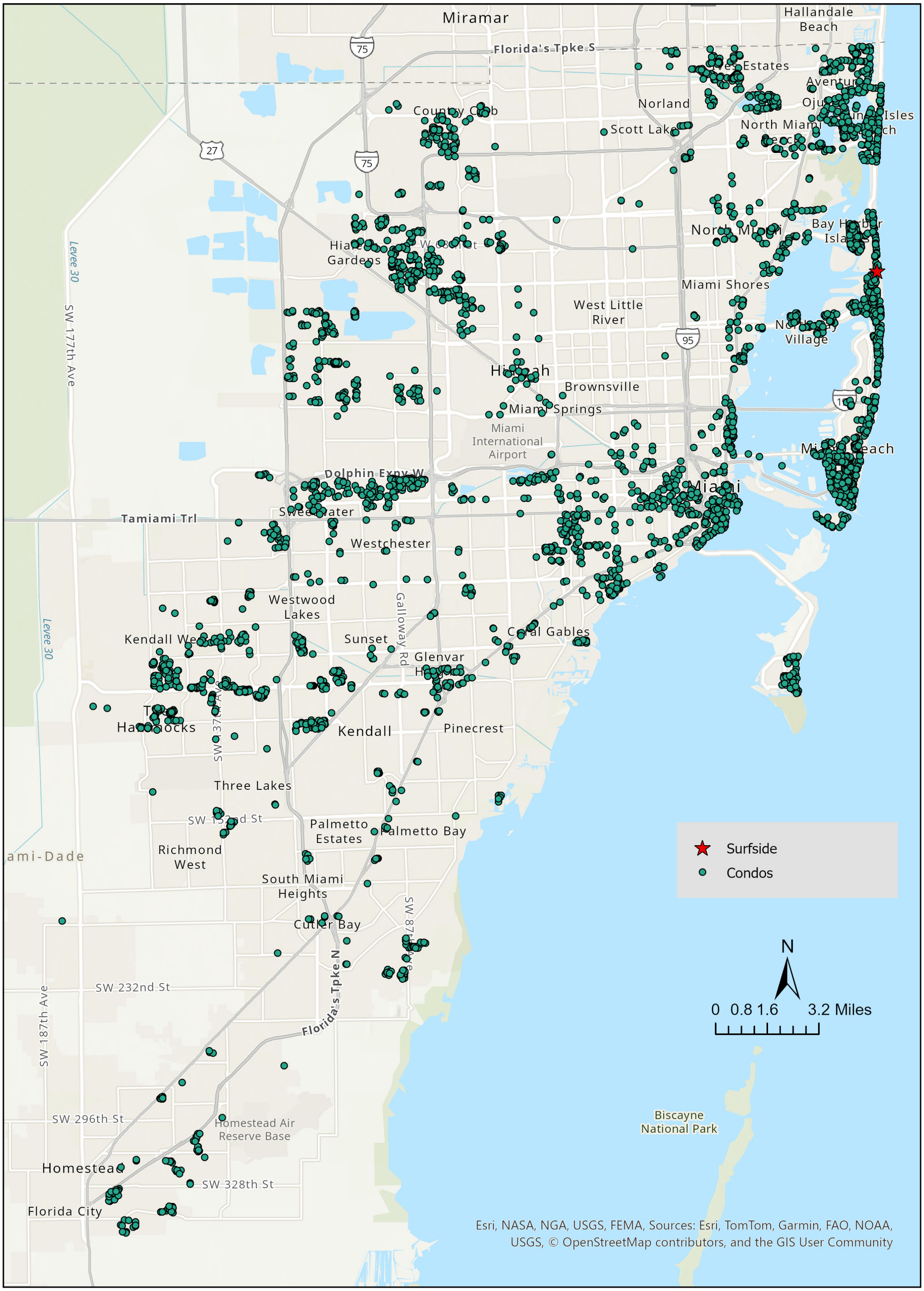


Figure A2. Miami-Dade County Single-Family listings from June 2020 through June 2022.

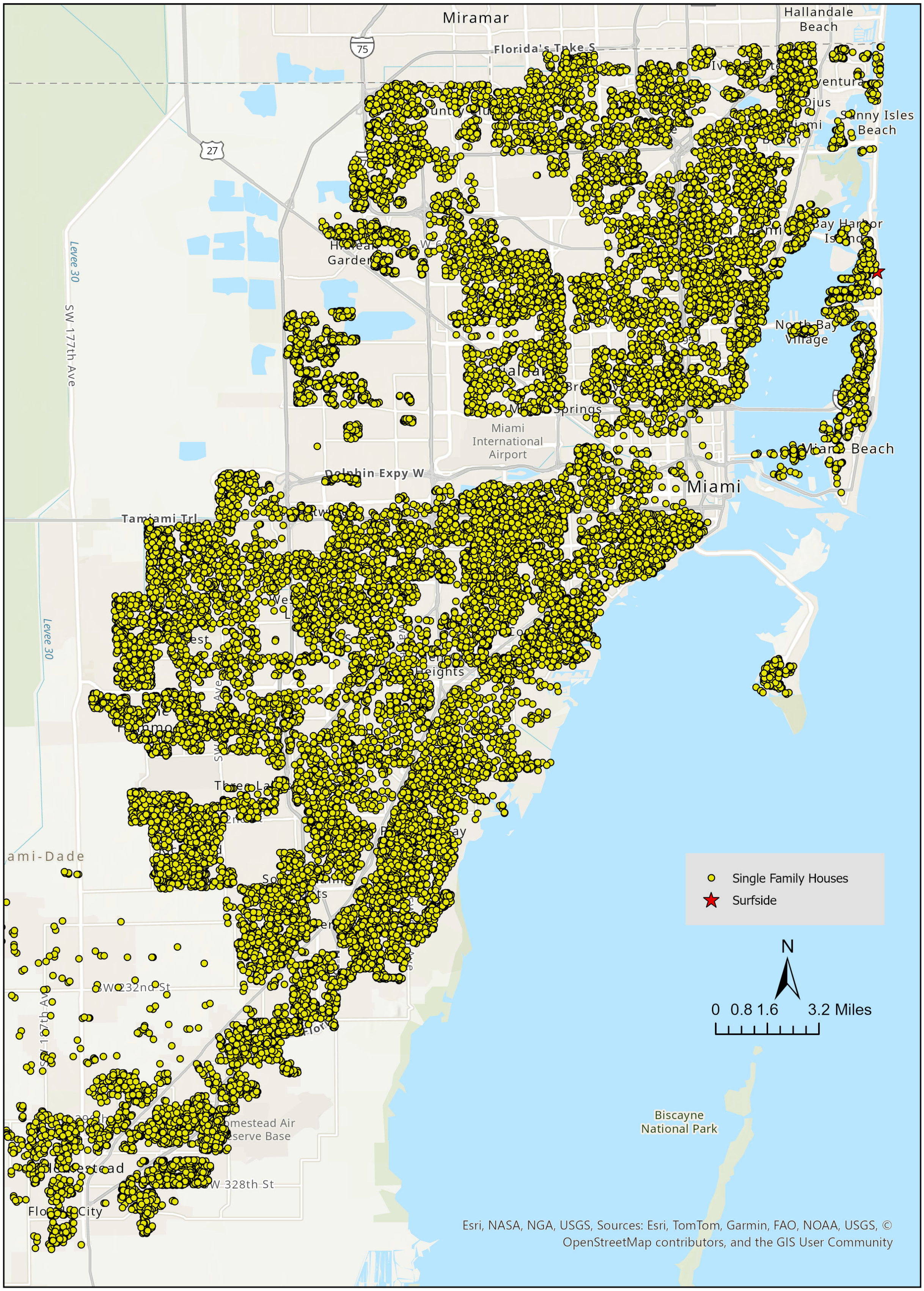


Figure A3. Distribution of Miami-Dade County Listings by Distance from Champlain Towers South Pre-Post by Property Type.

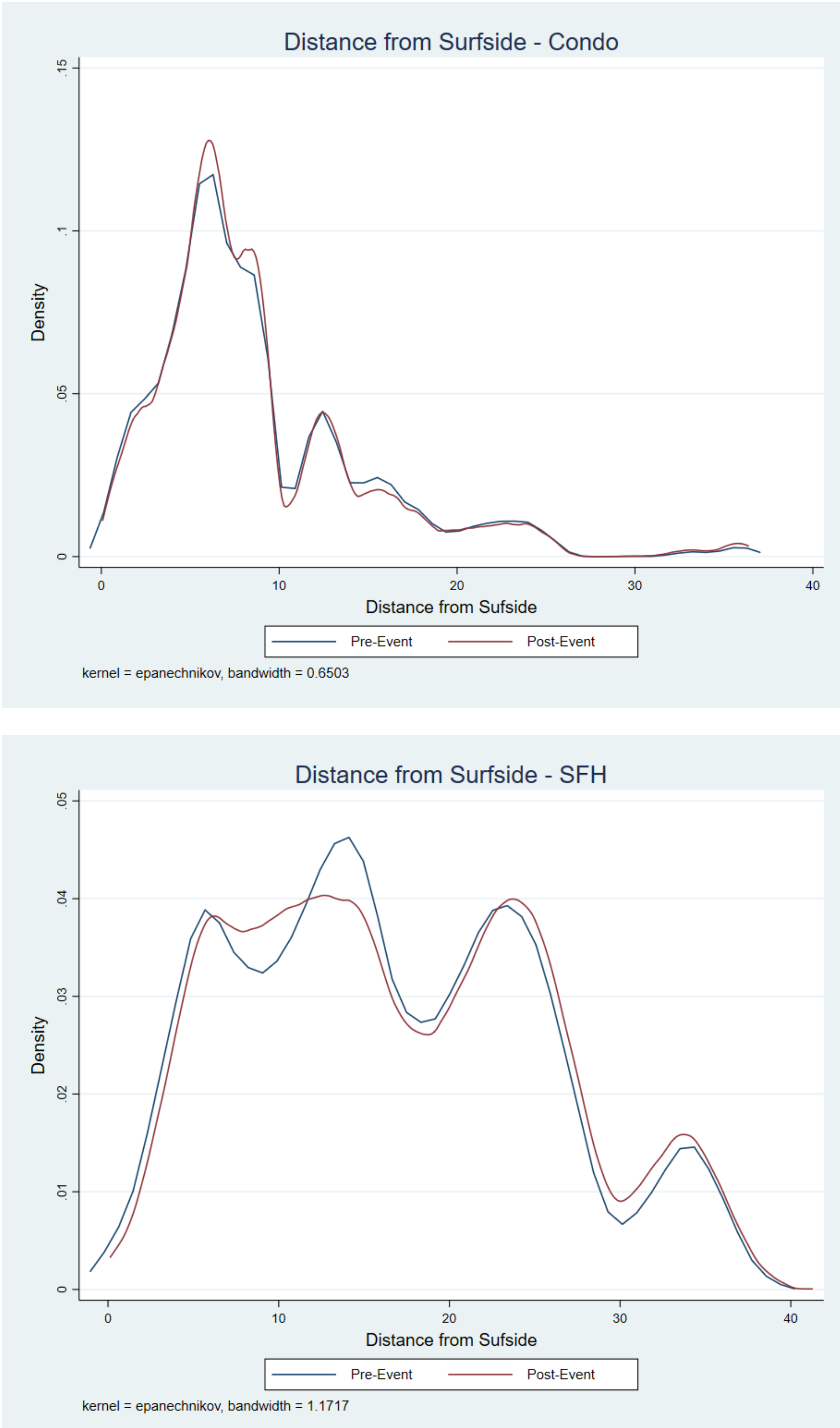


Figure A4. Subsample Event Study Estimates — Condos by Number of Floors — Control Group (Age $\leq$ 20)

This figure displays estimates for the interaction terms between event quarter dummies ($Post^l$) and the older property indicator (Age $\geq$ 30), as specified in Equation 3. It is estimated separately for condos above and below three stories. Properties under 20 years old serve as the control group, with the quarter immediately preceding the event as the reference period. The regression model specification includes controls for observable characteristics and fixed effects (ZIP code). The error bars represent the 95% confidence interval of the coefficient estimates.

† Displaying probit model coefficient estimates.

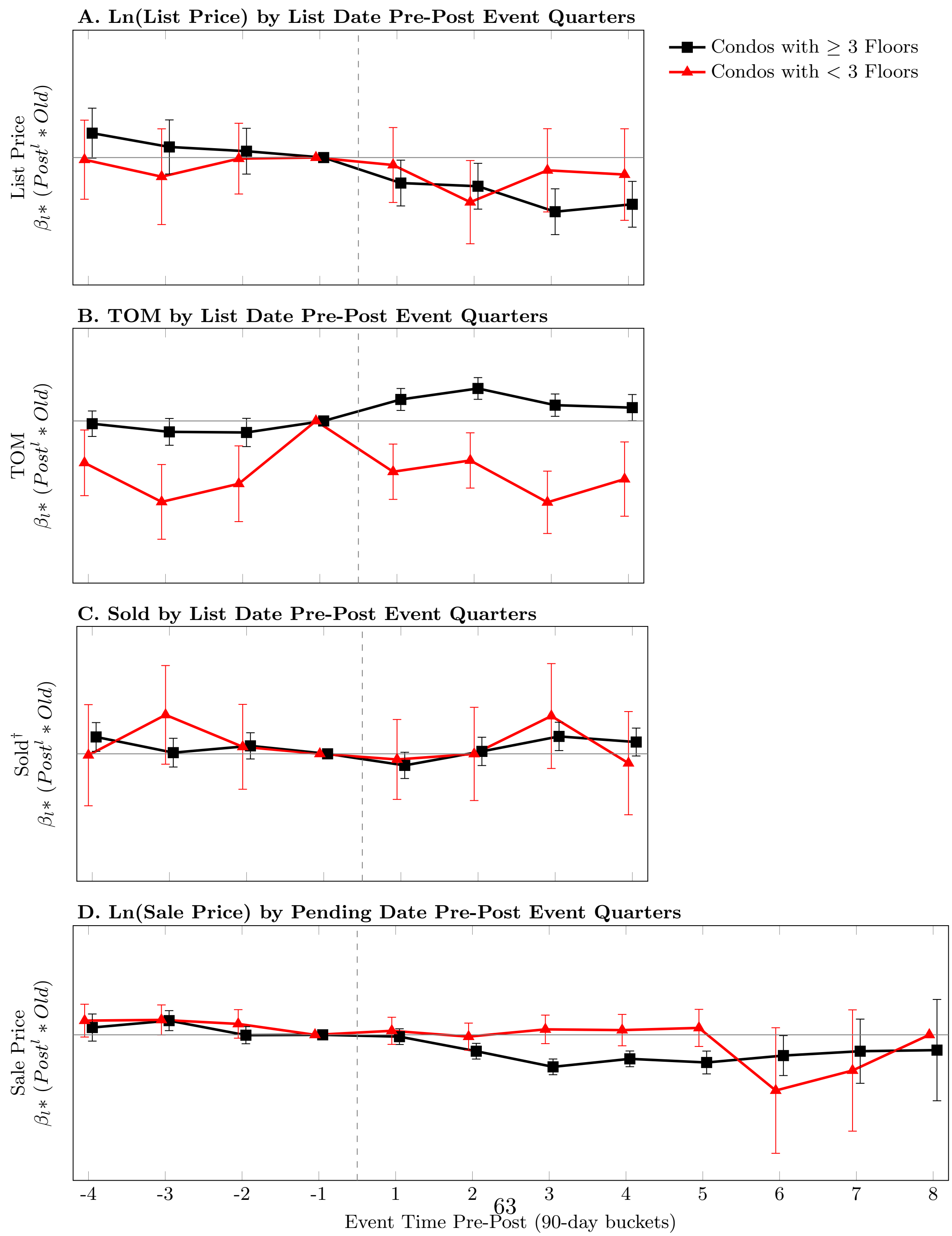


Figure A5. Subsample Event Study Estimates — Condos by Proximity to Coast — Control Group (Age < 30)

This figure displays estimates for the interaction terms between event quarter dummies ($Post^l$) and the older property indicator (Age $\geq$ 30), as specified in Equation 3. It is estimated separately for condos within and beyond 3 miles from the coast. Properties under 30 years old serve as the control group, with the quarter immediately preceding the event as the reference period. The regression model specification includes controls for observable characteristics and fixed effects (ZIP code). The error bars represent the 95% confidence interval of the coefficient estimates.

† Displaying probit model coefficient estimates.

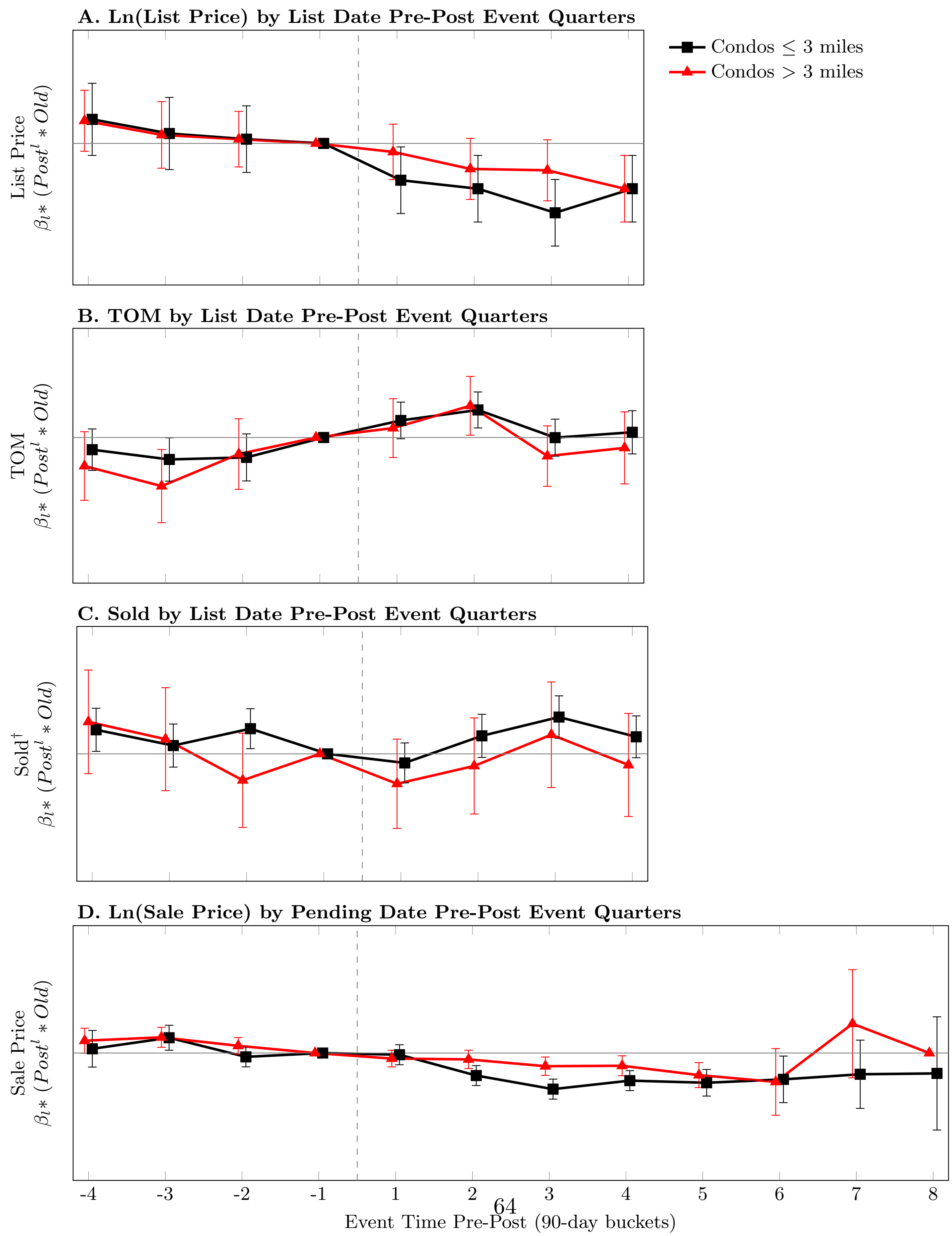


Table A1. Correlation Coefficients

	Sale Price	Ln(Sale Price)	List Price	Ln(List Price)	Ratio of Sale to List Price	Time on Market	Sold
Condo	-0.148***	-0.285***	-0.137***	-0.263***	-0.161***	0.210***	-0.056***
Single Family	0.148***	0.285***	0.137***	0.263***	0.161***	-0.210***	0.056***
List Pre-Event	-0.042***	-0.078***	-0.048***	-0.081***	-0.118***	0.108***	-0.011***
List Post-Event	0.042***	0.078***	0.048***	0.081***	0.118***	-0.108***	0.011***
Sale Pre-Event	-0.065***	-0.098***	-0.074***	-0.102***	-0.083***	-0.141***	0.350***
Sale Post-Event	0.065***	0.098***	0.013***	0.039***	0.083***	-0.079***	0.452***
Property Age	-0.084***	-0.122***	-0.099***	-0.138***	0.004	-0.087***	0.004
Condo $<$ 30 yrs old	0.115***	0.157***	0.127***	0.174***	-0.089***	0.170***	-0.035***
Condo $\geq$ 30 yrs old	-0.276***	-0.469***	-0.275***	-0.460***	-0.092***	0.066***	-0.027***
Bedrooms	0.401***	0.513***	0.396***	0.506***	0.058***	-0.107***	0.017***
Baths	0.656***	0.685***	0.653***	0.687***	-0.079***	0.046***	-0.033***
Living SqFt	0.680***	0.719***	0.678***	0.717***	-0.065***	0.002	-0.007*
Elevation (meters)	0.127***	0.185***	0.115***	0.176***	0.018***	-0.036***	0.018***
CBD Distance (miles)	-0.162***	-0.175***	-0.154***	-0.174***	0.151***	-0.171***	0.067***
Shoreline Distance (miles)	-0.227***	-0.227***	-0.225***	-0.230***	0.184***	-0.207***	0.075***
Surfside Distance (miles)	-0.124***	-0.099***	-0.132***	-0.112***	0.212***	-0.229***	0.103***

Note: Table A1 displays correlation coefficients for the cleaned sample of Miami-Dade County that appear on the Multiple Listing Service (MLS) between 06/01/2020 and 06/30/2022, and sold or withdrawn by 06/30/2023. The 1, 2, and 3 stars indicate statistical significance at 10%, 5%, and 1%, respectively.

Table A2. Mean Differences All Properties Listed Pre-Post

	Pre		Post				
Variable	Mean	S.D.	Mean	S.D.	Difference	t-stat	p-value
Sale Price (000s)	591	615	641	637	53	-9.33	0.00
List Price (000s)	631	678	698	717	66	-11.75	0.00
Ratio of Sale to List Price	0.97	0.04	0.98	0.05	0.01	-26.33	0.00
Time on Market	68.79	73.08	54.06	62.40	-14.73	26.57	0.00
Sold (%)	80.68	39.48	81.52	38.81	0.85	-2.67	0.01
Condo (%)	54.01	49.84	55.91	49.65	1.90	-4.71	0.00
Single Family (%)	45.99	49.84	44.09	49.65	-1.90	4.71	0.00
Property Age	38.37	23.05	38.45	22.79	0.09	-0.46	0.64
Bedrooms	2.66	1.19	2.60	1.19	-0.07	6.84	0.00
Baths	2.22	0.93	2.16	0.89	-0.07	9.20	0.00
Living SqFt	1,604	864.12	1,527	797.39	-77.00	11.42	0.00
Lot SqFt	4,253	6,605	3,963	6,374	-289.61	5.50	0.00
Elevation (meters)	2.33	1.00	2.30	1.01	-0.03	3.27	0.00
CBD Distance (miles)	9.70	6.05	9.88	6.22	0.18	-3.67	0.00
Shoreline Distance (miles)	3.07	3.61	3.19	3.62	0.13	-4.24	0.00
Surfside Distance (miles)	12.31	8.35	12.40	8.51	0.08	-1.18	0.24
Waterfront (%)	30.20	45.91	29.37	45.54	-0.84	2.25	0.02
Pool (%)	57.01	49.51	55.83	49.66	-1.18	2.94	0.00
Cooling AC (%)	95.74	20.19	95.22	21.33	-0.52	3.09	0.00
Missing Occupancy (%)	30.73	46.14	29.45	45.58	-1.28	3.43	0.00
Owner Occupied (%)	26.56	44.17	24.62	43.08	-1.94	5.49	0.00
Tenant Occupied (%)	18.67	38.97	23.41	42.34	4.74	-14.37	0.00
Vacant (%)	24.04	42.73	22.52	41.77	-1.52	4.43	0.00
Impact Doors (%)	22.25	41.60	21.50	41.08	-0.76	2.25	0.02
Impact Windows (%)	16.38	37.01	14.34	35.05	-2.04	6.97	0.00
Leasing Restriction (%)	3.35	18.00	4.06	19.75	0.71	-4.65	0.00
Leasing Restriction 1 year (%)	3.34	17.96	4.04	19.68	0.70	-4.57	0.00
Down Payment Requirement (%)	0.35	5.89	0.46	6.76	0.11	-2.16	0.03
Corporate Buyer Restriction (%)	0.12	3.51	0.23	4.75	0.10	-3.03	0.00
Screened Cover (%)	5.34	22.49	5.12	22.05	-0.22	1.20	0.23
HOA (%)	55.88	49.65	58.08	49.34	2.20	-5.49	0.00
Security (%)	54.04	49.84	55.89	49.65	1.85	-4.59	0.00
Membership (%)	3.24	17.70	3.00	17.05	-0.24	1.71	0.09
New Construction (%)	16.04	36.70	16.17	36.82	0.13	-0.42	0.67
AVM (%)	56.67	49.55	53.95	49.85	-2.72	6.75	0.00
Cash Purchase (%)	27.85	44.83	33.05	47.04	5.20	-13.95	0.00
Conventional Mortgage (%)	44.54	49.70	41.74	49.31	-2.80	6.98	0.00
FHA or VA Mortgage (%)	6.51	24.68	5.03	21.85	-1.49	7.88	0.00
Financing Other (%)	21.09	40.80	20.19	40.14	-0.91	2.76	0.01
Observations	30,763		30,072				

Note: Table A2 displays mean differences pre-post the partial collapse of Champlain Towers South for the cleaned sample of Miami-Dade County that appear on the Multiple Listing Service (MLS) between 06/01/2020 and 06/30/2022, and sold or withdrawn by 06/30/2023.

Table A3. Mean Differences Single Family Listed Pre-Post

	Pre		Post				
Variable	Mean	S.D.	Mean	S.D.	Difference	t-stat	p-value
Sale Price (000s)	692	672	745	695	53	-5.87	0.00
List Price (000s)	736	740	806	787	71	-7.64	0.00
Ratio of Sale to List Price	0.98	0.04	0.99	0.05	0.01	-12.72	0.00
Time on Market	46.71	57.12	44.57	54.72	-2.14	3.16	0.00
Sold (%)	85.04	35.67	81.85	38.54	-3.19	7.12	0.00
Property Age	47.08	23.98	47.34	23.51	0.26	-0.89	0.37
Bedrooms	3.60	0.87	3.58	0.85	-0.02	1.98	0.05
Baths	2.56	1.01	2.47	0.95	-0.08	6.95	0.00
Living SqFt	2,065	930.30	1,974	848.36	-90.95	8.44	0.00
Lot SqFt	9,248	6,977	8,989	6,854	-258.42	3.09	0.00
Elevation (meters)	2.45	0.74	2.44	0.68	-0.01	1.39	0.17
CBD Distance (miles)	12.13	5.91	12.64	5.95	0.51	-7.16	0.00
Shoreline Distance (miles)	4.57	3.46	4.89	3.37	0.32	-7.78	0.00
Surfside Distance (miles)	16.44	8.81	16.95	8.96	0.50	-4.70	0.00
Waterfront (%)	8.50	27.88	7.55	26.42	-0.95	2.88	0.00
Pool (%)	31.88	46.60	28.67	45.22	-3.22	5.79	0.00
Cooling AC (%)	95.10	21.58	93.90	23.94	-1.20	4.38	0.00
Missing Occupancy (%)	31.50	46.45	30.36	45.98	-1.15	2.05	0.04
Owner Occupied (%)	39.70	48.93	37.69	48.46	-2.01	3.42	0.00
Tenant Occupied (%)	10.96	31.24	11.41	31.80	0.46	-1.20	0.23
Vacant (%)	17.84	38.29	20.55	40.40	2.70	-5.69	0.00
Impact Doors (%)	19.68	39.76	17.42	37.92	-2.26	4.82	0.00
Impact Windows (%)	15.52	36.21	12.30	32.85	-3.22	7.70	0.00
Leasing Restriction (%)	0.13	3.66	0.11	3.25	-0.03	0.68	0.49
Leasing Restriction 1 year (%)	0.13	3.57	0.11	3.25	-0.02	0.52	0.60
Screened Cover (%)	6.06	23.86	5.69	23.17	-0.36	1.28	0.20
HOA (%)	22.42	41.71	22.36	41.67	-0.06	0.12	0.91
Security (%)	0.36	5.99	0.50	7.04	0.14	-1.74	0.08
Membership (%)	2.51	15.64	2.34	15.11	-0.17	0.92	0.36
New Construction (%)	12.13	32.65	12.17	32.70	0.04	-0.11	0.91
AVM (%)	56.25	49.61	53.89	49.85	-2.36	3.93	0.00
Cash Purchase (%)	15.91	36.58	18.95	39.19	3.04	-6.65	0.00
Conventional Mortgage (%)	54.19	49.83	50.75	50.00	-3.44	5.70	0.00
FHA or VA Mortgage (%)	13.42	34.09	10.85	31.10	-2.58	6.52	0.00
Financing Other (%)	16.48	37.10	19.45	39.58	2.97	-6.42	0.00
Observations	14,148		13,259				

Note: Table A3 displays mean differences pre-post the partial collapse of Champlain Towers South for single-family properties from the cleaned sample of Miami-Dade County that appear on the Multiple Listing Service (MLS) between 06/01/2020 and 06/30/2022, and sold or withdrawn by 06/30/2023.

Table A4. Mean Differences Condos Listed Pre-Post

Variable	Pre Mean	Pre S.D.	Post Mean	Post S.D.	Difference	t-stat	p-value
Sale Price (000s)	496	540	563	575	67	-9.77	0.00
List Price (000s)	542	607	612	643	70	-10.22	0.00
Ratio of Sale to List Price	0.96	0.04	0.97	0.04	0.01	-27.57	0.00
Time on Market	87.92	79.71	61.58	66.93	-26.33	32.49	0.00
Sold (%)	76.96	42.11	81.26	39.02	4.30	-9.69	0.00
Property Age	30.94	19.34	31.44	19.54	0.50	-2.35	0.02
Bedrooms	1.86	0.77	1.82	0.78	-0.04	5.07	0.00
Baths	1.94	0.75	1.91	0.75	-0.04	4.34	0.00
Living SqFt	1,210	556.31	1,173	535.60	-36.96	6.19	0.00
Elevation (meters)	2.22	1.17	2.19	1.20	-0.03	2.35	0.02
CBD Distance (miles)	7.63	5.37	7.70	5.53	0.08	-1.26	0.21
Shoreline Distance (miles)	1.79	3.22	1.86	3.23	0.06	-1.79	0.07
Surfside Distance (miles)	8.80	6.00	8.80	6.09	0.01	-0.10	0.92
Waterfront (%)	48.69	49.98	46.57	49.88	-2.11	3.87	0.00
Pool (%)	78.41	41.15	77.26	41.92	-1.15	2.54	0.01
Cooling AC (%)	96.29	18.91	96.26	18.96	-0.02	0.10	0.92
Missing Occupancy (%)	30.06	45.85	28.73	45.25	-1.33	2.67	0.01
Owner Occupied (%)	15.38	36.08	14.32	35.03	-1.06	2.73	0.01
Tenant Occupied (%)	25.24	43.44	32.87	46.97	7.63	-15.42	0.00
Vacant (%)	29.32	45.53	24.08	42.76	-5.24	10.85	0.00
Impact Doors (%)	24.45	42.98	24.72	43.14	0.27	-0.58	0.56
Impact Windows (%)	17.11	37.66	15.95	36.62	-1.16	2.85	0.00
Leasing Restriction (%)	6.09	23.92	7.18	25.83	1.09	-4.02	0.00
Leasing Restriction 1 year (%)	6.07	23.88	7.14	25.75	1.06	-3.92	0.00
Down Payment Requirement (%)	0.64	8.00	0.82	9.02	0.18	-1.89	0.06
Corporate Buyer Restriction (%)	0.23	4.78	0.40	6.35	0.17	-2.86	0.00
Screened Cover (%)	4.73	21.23	4.68	21.11	-0.06	0.24	0.81
HOA (%)	84.37	36.31	86.25	34.43	1.88	-4.87	0.00
Security (%)	99.74	5.08	99.57	6.57	-0.17	2.73	0.01
Membership (%)	3.86	19.26	3.52	18.42	-0.34	1.66	0.10
New Construction (%)	19.37	39.52	19.32	39.48	-0.06	0.13	0.90
AVM (%)	57.03	49.51	53.99	49.84	-3.03	5.58	0.00
Cash Purchase (%)	38.03	48.55	44.17	49.66	6.14	-11.43	0.00
Conventional Mortgage (%)	36.32	48.09	34.63	47.58	-1.69	3.23	0.00
FHA or VA Mortgage (%)	0.63	7.93	0.43	6.57	-0.20	2.48	0.01
Financing Other (%)	25.03	43.32	20.77	40.57	-4.26	9.27	0.00
Observations	16,615		16,813				

Note: Table A4 displays mean differences pre-post the partial collapse of Champlain Towers South for condos from the cleaned sample of Miami-Dade County that appear on the Multiple Listing Service (MLS) between 06/01/2020 and 06/30/2022, and sold or withdrawn by 06/30/2023.

Table A5. Mean Differences Condominiums < 30 Years Old Listed Pre-Post

	Pre		Post				
Variable	Mean	S.D.	Mean	S.D.	Difference	t-stat	p-value
Sale Price (000s)	683	672	794	699	111	-9.07	0.00
List Price (000s)	754	755	871	784	117	-9.64	0.00
Ratio of Sale to List Price	0.96	0.04	0.97	0.04	0.01	-20.32	0.00
Time on Market	96.72	83.08	65.59	70.76	-31.14	25.31	0.00
Sold (%)	76.44	42.44	81.21	39.06	4.78	-7.41	0.00
Property Age	13.57	6.76	13.42	6.67	-0.15	1.39	0.16
Bedrooms	2.03	0.82	1.98	0.83	-0.05	3.43	0.00
Baths	2.18	0.86	2.15	0.87	-0.03	2.08	0.04
Living SqFt	1,351	634.45	1,316	620.07	-35.58	3.59	0.00
Elevation (meters)	2.39	1.27	2.38	1.36	-0.01	0.71	0.48
CBD Distance (miles)	6.01	5.74	5.82	5.86	-0.19	2.04	0.04
Shoreline Distance (miles)	1.32	2.98	1.20	2.80	-0.12	2.55	0.01
Surfside Distance (miles)	8.58	5.31	8.48	5.35	-0.11	1.28	0.20
Waterfront (%)	51.56	49.98	50.27	50.00	-1.29	1.63	0.10
Pool (%)	81.91	38.49	80.66	39.50	-1.25	2.03	0.04
Cooling AC (%)	97.56	15.43	97.54	15.49	-0.02	0.09	0.93
Missing Occupancy (%)	32.33	46.78	30.43	46.01	-1.90	2.60	0.01
Owner Occupied (%)	13.69	34.37	12.51	33.08	-1.18	2.22	0.03
Tenant Occupied (%)	27.20	44.50	34.34	47.49	7.14	-9.83	0.00
Vacant (%)	26.78	44.29	22.72	41.91	-4.06	5.97	0.00
Impact Doors (%)	38.68	48.70	40.60	49.11	1.92	-2.49	0.01
Impact Windows (%)	26.54	44.15	25.36	43.51	-1.18	1.70	0.09
Leasing Restriction (%)	1.16	10.69	0.82	9.04	-0.33	2.13	0.03
Leasing Restriction 1 year (%)	1.16	10.69	0.82	9.04	-0.33	2.13	0.03
Down Payment Requirement (%)	0.34	5.79	0.25	4.99	-0.09	1.01	0.31
Corporate Buyer Restriction (%)	0.01	1.12	0.05	2.23	0.04	-1.35	0.18
Screened Cover (%)	0.75	8.61	0.70	8.34	-0.05	0.35	0.73
HOA (%)	84.64	36.06	86.72	33.94	2.09	-3.77	0.00
Security (%)	99.75	4.98	99.51	6.96	-0.24	2.49	0.01
Membership (%)	3.86	19.26	3.12	17.40	-0.73	2.53	0.01
New Construction (%)	27.36	44.58	27.66	44.73	0.30	-0.43	0.67
AVM (%)	58.04	49.35	54.13	49.83	-3.91	4.99	0.00
Cash Purchase (%)	35.72	47.92	41.32	49.24	5.61	-7.31	0.00
Conventional Mortgage (%)	37.63	48.45	36.81	48.23	-0.82	1.07	0.28
FHA or VA Mortgage (%)	0.55	7.38	0.36	6.01	-0.19	1.74	0.08
Financing Other (%)	26.10	43.92	21.50	41.08	-4.60	6.85	0.00
Observations	8,038		8,005				

Note: Table A5 displays mean differences pre-post the partial collapse of Champlain Towers South for condos younger than 30 years old from the cleaned sample of Miami-Dade County that appear on the Multiple Listing Service (MLS) between 06/01/2020 and 06/30/2022, and sold or withdrawn by 06/30/2023.

Table A6. Mean Differences Condominiums ≥ 30 Years Old Listed Pre-Post

	Pre		Post				
Variable	Mean	S.D.	Mean	S.D.	Difference	t-stat	p-value
Sale Price (000s)	323	285	354	309	31	-6.07	0.00
List Price (000s)	344	313	377	338	33	-6.65	0.00
Ratio of Sale to List Price	0.96	0.04	0.97	0.04	0.01	-18.81	0.00
Time on Market	79.78	75.55	57.96	63.04	-21.82	20.59	0.00
Sold (%)	77.45	41.79	81.31	38.98	3.86	-6.30	0.00
Property Age	47.23	11.55	47.83	11.16	0.60	-3.47	0.00
Bedrooms	1.71	0.69	1.67	0.69	-0.04	3.50	0.00
Baths	1.72	0.55	1.69	0.53	-0.04	4.33	0.00
Living SqFt	1,078	431.60	1,044	403.82	-34.22	5.40	0.00
Elevation (meters)	2.06	1.04	2.02	1.00	-0.04	2.57	0.01
CBD Distance (miles)	9.14	4.50	9.41	4.58	0.27	-3.88	0.00
Shoreline Distance (miles)	2.23	3.38	2.45	3.47	0.21	-4.10	0.00
Surfside Distance (miles)	9.00	6.59	9.10	6.67	0.10	-1.03	0.30
Waterfront (%)	45.99	49.84	43.21	49.54	-2.78	3.69	0.00
Pool (%)	75.13	43.23	74.16	43.78	-0.97	1.47	0.14
Cooling AC (%)	95.09	21.61	95.11	21.57	0.01	-0.05	0.96
Missing Occupancy (%)	27.93	44.87	27.19	44.50	-0.74	1.10	0.27
Owner Occupied (%)	16.96	37.53	15.96	36.63	-1.00	1.78	0.08
Tenant Occupied (%)	23.40	42.34	31.53	46.47	8.13	-12.05	0.00
Vacant (%)	31.70	46.53	25.32	43.49	-6.38	9.35	0.00
Impact Doors (%)	11.11	31.43	10.29	30.38	-0.82	1.76	0.08
Impact Windows (%)	8.28	27.56	7.40	26.18	-0.88	2.15	0.03
Leasing Restriction (%)	10.72	30.93	12.97	33.59	2.25	-4.59	0.00
Leasing Restriction 1 year (%)	10.68	30.89	12.88	33.49	2.19	-4.49	0.00
Down Payment Requirement (%)	0.93	9.61	1.34	11.50	0.41	-2.53	0.01
Corporate Buyer Restriction (%)	0.43	6.55	0.73	8.49	0.30	-2.56	0.01
Screened Cover (%)	8.46	27.84	8.29	27.57	-0.18	0.42	0.67
HOA (%)	84.12	36.55	85.83	34.88	1.71	-3.16	0.00
Security (%)	99.73	5.17	99.61	6.20	-0.12	1.36	0.17
Membership (%)	3.86	19.26	3.87	19.29	0.01	-0.04	0.97
New Construction (%)	11.89	32.37	11.74	32.19	-0.15	0.31	0.75
AVM (%)	56.08	49.63	53.87	49.85	-2.21	2.93	0.00
Cash Purchase (%)	40.19	49.03	46.75	49.90	6.56	-8.75	0.00
Conventional Mortgage (%)	35.08	47.73	32.64	46.89	-2.44	3.40	0.00
FHA or VA Mortgage (%)	0.71	8.40	0.50	7.05	-0.21	1.80	0.07
Financing Other (%)	24.02	42.72	20.11	40.08	-3.91	6.23	0.00
Observations	8,577		8,808				

Note: Table A6 displays mean differences pre-post the partial collapse of Champlain Towers South for condos 30 years or older from the cleaned sample of Miami-Dade County that appear on the Multiple Listing Service (MLS) between 06/01/2020 and 06/30/2022, and sold or withdrawn by 06/30/2023.

Table A7. Diff-in-Diff Estimates — Condo Subsample Analysis by Number of Floors - Alternative Control Group (Age≤20)

	Ln(List Price) (1)	TOM (2)	Sold† (3)	Ln(Sale Price) (4)
A. Condos: Number of Floors < 3				
Post-Period	0.062**	-1.626	0.670*	0.067**
	(0.029)	(10.071)	(0.388)	(0.030)
Post*(Age≥30)	-0.026**	-8.425*	-0.146	-0.025**
	(0.013)	(4.445)	(0.150)	(0.012)
Age≥30	-0.062***	0.059	0.036	-0.078***
	(0.015)	(4.841)	(0.174)	(0.015)
Age*(Age≤20)	0.002	-1.113**	0.041**	0.004**
	(0.001)	(0.509)	(0.017)	(0.002)
Age*(Age≥30)	-0.001***	0.054	0.001	-0.001***
	(0.000)	(0.113)	(0.003)	(0.000)
Ln(List Price) Residual		33.342***	-0.904***	
		(6.018)	(0.177)	
TOM Residual			-0.006***	
			(0.001)	
Inverse Mills Ratio				0.160***
				(0.028)
Constant	8.749***	46.512	0.644	8.773***
	(0.144)	(40.208)	(1.516)	(0.147)
Adjusted R-squared	0.77	0.53	0.17†	0.80
Observations	3,982	3,961	3,937	3,257
A. Condos: Number of Floors ≥ 3				
Post-Period	0.009	-4.627	-0.210**	0.048***
	(0.016)	(3.360)	(0.098)	(0.017)
Post*(Age≥30)	-0.046***	11.889***	-0.011	-0.063***
	(0.006)	(1.331)	(0.036)	(0.007)
Age≥30	-0.130***	-4.620***	-0.129***	-0.132***
	(0.009)	(1.728)	(0.044)	(0.009)
Age*(Age≤20)	-0.028***	-1.549***	0.021***	-0.020***
	(0.000)	(0.112)	(0.003)	(0.001)
Age*(Age≥30)	-0.004***	0.165***	-0.004***	-0.005***
	(0.000)	(0.060)	(0.002)	(0.000)
Ln(List Price) Residual		20.773***	-0.566***	
		(1.406)	(0.037)	
TOM Residual			-0.003***	
			(0.000)	
Inverse Mills Ratio				0.521***
				(0.014)
Constant	6.528***	70.937***	0.006	6.209***
	(0.088)	(16.869)	(0.687)	(0.090)
Adjusted R-squared	0.88	0.50	0.08†	0.89
Observations	27,096	26,636	26,621	21,088
Property/MLS/Financing Vars‡	Y	Y	Y	Y
Year-Month & Zip Code FE	Y	Y	Y	Y

Note: This table reports the condo subsample analysis based on the Diff-in-Diff model. Condo listings are categorized based on the number of floors: condos under three stories and with three or more stories. The *Post-Period* indicator is determined by listing date for Ln(list price), TOM, and Sold/Withdrawn, and by pending date for ln(Sale Price). The age control group include condos under age 20. The 1, 2, and 3 stars indicate statistical significance at 10%, 5%, and 1%, respectively.

† Displaying probit model coefficient estimates and pseudo R-squared.

‡ The control variables vary by the four dependent variables. Please see subsection 5.3 for details.

Table A8. Diff-in-Diff Estimates - Condo Subsample Analysis by Proximity to Coast (Control Group: Age<30)

	Ln(List Price) (1)	TOM (2)	Sold† (3)	Ln(Sale Price) (4)
A. Condos: Distance to the Coast ≤ 3 Miles				
Post-Period	0.001	-4.825	-0.167*	0.063***
	(0.017)	(3.437)	(0.098)	(0.019)
Post*(Age≥30)	-0.041***	7.240***	0.009	-0.062***
	(0.007)	(1.363)	(0.036)	(0.007)
Age≥30	-0.037***	7.289***	-0.228***	-0.056***
	(0.009)	(1.914)	(0.049)	(0.010)
Age*(Age<30)	-0.021***	-1.224***	0.014***	-0.016***
	(0.000)	(0.090)	(0.002)	(0.000)
Age*(Age≥30)	-0.001***	0.140***	-0.001	-0.003***
	(0.000)	(0.054)	(0.001)	(0.000)
Ln(List Price) Residual		20.606***	-0.569***	
		(1.366)	(0.035)	
TOM Residual			-0.003***	
			(0.000)	
Inverse Mills Ratio				0.528***
				(0.014)
Constant	6.403***	65.719***	0.073	6.157***
	(0.088)	(16.659)	(0.469)	(0.090)
Adjusted R-squared	0.87	0.50	0.08†	0.89
Observations	26,642	26,147	26,146	20,410
B. Condos: Distance to the Coast > 3 Miles				
Post-Period	0.039**	-1.747	-0.107	0.020
	(0.017)	(6.757)	(0.246)	(0.014)
Post*(Age≥30)	-0.027***	6.607***	-0.083	-0.041***
	(0.007)	(2.509)	(0.094)	(0.007)
Age≥30	0.047***	3.106	-0.132	0.036***
	(0.009)	(2.752)	(0.119)	(0.009)
Age*(Age<30)	-0.013***	-1.437***	0.020***	-0.011***
	(0.001)	(0.176)	(0.007)	(0.001)
Age*(Age≥30)	-0.007***	0.135	-0.002	-0.007***
	(0.000)	(0.106)	(0.004)	(0.000)
Ln(List Price) Residual		50.983***	-1.515***	
		(5.181)	(0.184)	
TOM Residual			-0.006***	
			(0.000)	
Inverse Mills Ratio				0.135***
				(0.020)
Constant	9.783***	-103.725***	4.096***	9.842***
	(0.086)	(33.044)	(1.336)	(0.092)
Adjusted R-squared	0.84	0.47	0.13†	0.87
Observations	6,679	6,652	6,652	5,687
Property/MLS/Financing Vars ‡	Y	Y	Y	Y
Transaction Variables	Y	Y	Y	Y
Year-Month & Zip Code FE	Y	Y	Y	Y

Note: This table reports the condo subsample analysis based on the Diff-in-Diff model as outlined by Equation 3. Condo listings are categorized based on the distance from the coastline: condos within 3 miles versus condos beyond 3 miles. The *Post-Period* indicator is determined by listing date for Ln(list price), TOM, and Sold/Withdrawn, and by pending date for ln(Sale Price). The age control group include condos under age 30. The 1, 2, and 3 stars indicate statistical significance at 10%, 5%, and 1%, respectively.

† Displaying probit model coefficient estimates and pseudo R-squared.

‡ The control variables vary by the four dependent variables. Please see subsection 5.3 for details.

Table A9. Baseline Event Study Estimates — Pre-Post Periods∗(Age ≥ 30)

	Ln(List Price) (1)	TOM (2)	Sold† (3)	Ln(Sale Price) (4)
A. Condo				
$Prior_{-4}$∗(Age≥30)	0.024**	-3.926	0.161**	0.042***
	(0.011)	(2.484)	(0.062)	(0.016)
$Prior_{-3}$∗(Age≥30)	0.015	-5.630**	0.056	0.055***
	(0.011)	(2.590)	(0.063)	(0.012)
$Prior_{-2}$∗(Age≥30)	0.009	-4.609*	0.106*	0.006
	(0.010)	(2.772)	(0.058)	(0.010)
$Post_1$∗(Age≥30)	-0.019**	6.760***	-0.102*	0.008
	(0.010)	(2.171)	(0.057)	(0.010)
$Post_2$∗(Age≥30)	-0.026**	12.125***	0.047	-0.040***
	(0.010)	(2.146)	(0.062)	(0.010)
$Post_3$∗(Age≥30)	-0.042***	4.987**	0.213***	-0.077***
	(0.010)	(2.212)	(0.062)	(0.010)
$Post_4$∗(Age≥30)	-0.032***	3.194	0.090	-0.062***
	(0.010)	(2.584)	(0.061)	(0.010)
$Post_5$∗(Age≥30)				-0.070***
				(0.014)
$Post_6$∗(Age≥30)				-0.063**
				(0.025)
$Post_7$∗(Age≥30)				-0.050
				(0.040)
$Post_8$∗(Age≥30)				-0.029
				(0.070)
Age≥30	-0.004	8.160***	-0.272***	-0.027***
	(0.010)	(2.389)	(0.057)	(0.010)
Age*(Age<30)	-0.020***	-1.230***	0.014***	-0.015***
	(0.000)	(0.080)	(0.002)	(0.000)
Age*(Age≥30)	-0.003***	0.176***	-0.003**	-0.005***
	(0.000)	(0.047)	(0.001)	(0.000)
Ln(List Price) Residual		20.376***	-0.557***	
		(1.258)	(0.033)	
DOM Residual			-0.003***	
			(0.000)	
Inverse Mills Ratio				0.543***
				(0.013)
Constant	6.466***	57.261***	0.260	6.255***
	(0.079)	(14.804)	(0.499)	(0.080)
Adjusted R-squared	0.88	0.51	0.08†	0.90
Observations	33,321	32,799	32,799	26,097
Property/MLS/Financing Vars‡	Y	Y	Y	Y
Year-Month & Zip Code FE	Y	Y	Y	Y

Table A9. Baseline Event Study Estimates — Cont.

	Ln(List Price) (1)	TOM (2)	Sold† (3)	Ln(Sale Price) (4)
B. Single Family				
$Prior_{-4}*(Age \geq 30)$	0.008	-0.986	-0.095	0.010
	(0.009)	(2.138)	(0.080)	(0.009)
$Prior_{-3}*(Age \geq 30)$	-0.003	-5.576***	-0.052	-0.009
	(0.009)	(2.121)	(0.083)	(0.009)
$Prior_{-2}*(Age \geq 30)$	0.004	-7.474***	-0.019	0.003
	(0.008)	(2.384)	(0.075)	(0.008)
$Post_1*(Age \geq 30)$	-0.011	-4.855**	-0.075	-0.023***
	(0.008)	(1.932)	(0.071)	(0.008)
$Post_2*(Age \geq 30)$	0.006	-3.683*	0.028	-0.008
	(0.009)	(1.961)	(0.078)	(0.008)
$Post_3*(Age \geq 30)$	0.005	-12.249***	0.022	-0.007
	(0.009)	(2.039)	(0.078)	(0.009)
$Post_4*(Age \geq 30)$	0.020**	0.758	-0.001	0.014
	(0.009)	(2.422)	(0.075)	(0.009)
$Post_5*(Age \geq 30)$				-0.006
				(0.012)
$Post_6*(Age \geq 30)$				-0.041
				(0.026)
$Post_7*(Age \geq 30)$				0.010
				(0.060)
$Post_8*(Age \geq 30)$				0.052
				(0.116)
Age≥30	-0.032***	6.184***	-0.018	-0.023***
	(0.008)	(1.968)	(0.069)	(0.007)
Age*(Age<30)	-0.001**	-0.083	0.005*	-0.001**
	(0.000)	(0.066)	(0.003)	(0.000)
Age*(Age≥30)	-0.002***	0.020	-0.002	-0.002***
	(0.000)	(0.029)	(0.001)	(0.000)
Ln(List Price) Residual		23.536***	-0.943***	
		(1.505)	(0.053)	
TOM Residual			-0.006***	
			(0.000)	
Inverse Mills Ratio				0.430***
				(0.015)
Constant	9.299***	15.665	0.190	9.246***
	(0.065)	(12.892)	(0.463)	(0.065)
Adjusted R-squared	0.90	0.46	0.15†	0.91
Observations	27,379	27,242	27,242	22,824
Property/MLS/Financing Vars‡	Y	Y	Y	Y
Year-Month & Zip Code FE	Y	Y	Y	Y

Note: This table displays the baseline event study model estimates, as outlined in Equation 3 and displayed in Figure 6, with Panels A and B for condos and single-family houses (placebo group), respectively. The *Post-Period* indicator is determined by listing date for Ln(list price), TOM, and Sold/Withdrawn, and by pending date for ln(Sale Price). The age control group include properties under age 30. The 1, 2, and 3 stars indicate statistical significance at 10%, 5%, and 1%, respectively.
† Displaying probit model coefficient estimates and pseudo R-squared.
‡ The control variables vary by the four dependent variables. Please see subsection 5.3 for details.