Overstaying Their Welcome: COVID-19, Unevictable Tenants, Rents, and Home Prices

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ABSTRACT

I explore the impact of Virginia's COVID-19 eviction moratorium on rents and home values across the state. Using panel data and a differences-in-differences research design, I show that both rents and home values decreased post-moratorium compared to surrounding states. One might expect landlords to raise rent to compensate themselves for the risk of an unevictable tenant, but my results show that landlords are unable to obtain such compensation. Forced to rent to economically distressed tenants with little recourse, landlords suffer a prolonged and escalating decline in property values that exceeds the benefits of rental price declines reaped by the tenants.

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PROPERTY RIGHTS ARE foundational to asset value. (La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997)). Curtailing those rights in residential real estate assets drastically reduces the value of those assets, creating long-term losses in value well after government intervention. My research demonstrates that while well-intended, government programs favoring tenants over landlords carry significant costs reflected in real estate asset prices, resulting in losses that cannot be recouped in the rental market. Utilizing a differences-in-differences design, with nearest neighbor propensity score matching, entropy balancing, and synthetic controls robustness tests, I show a significant negative impact on both home prices and rental prices in the State of Virginia, which extended the COVID-19 moratorium on evictions within the state after the federal ban on evictions expired.

Contrary to some theoretical frameworks, rental prices declined by almost 1% in Virginia. This serves as a contrast to the expectation that landlords would be able to compensate themselves for the risk of hosting an unevictable tenant. (Abramson (2024)). Despite this deviation of rental prices from economic models, I demonstrate some consistency between theory and empirics with respect to home prices: extending the eviction ban lowered residential real estate values almost 2% (and sometimes almost 5%), reducing total Virginia real estate value by more than $20 (to $50) billion, and resulting in an estimated capital loss of anywhere between 5% and (in rare cases 100%) compared to nearby regions for a leveraged property owner. My findings show that the landlords' loss of a critical property rights had a significant negative impact on residential real estate values, well beyond the benefit gained by tenants from reduced rents. Moreover, while the decline in rents experienced by tenants post- moratorium was temporary, homeowners' prices entered a continuous, unbroken downward trend, perhaps associated with distrust for state government that could invoke similar moratoria in the event of future perceived emergencies.[1]

[1] These declines occurred despite Viriginia's Rent Relief Program, which qualified landlords 1.) whose tenants fully complied with program requirements to receive rent from the Virginia government and 2.) while government funds

My findings are of particular importance to real estate finance, law and finance, and household finance. Residential real estate assets are estimated to exceed 43 trillion dollars in value nationwide,[2] which rivals the value of the United States stock market. A multi-trillion dollar financial sector currently exists to help investors and consumers gain a foothold in American real estate, and the performance of this sector is strongly related to the value of the underlying real estate assets. The rights to the underlying assets under the American law determines the value of this property, both for investors and consumers, and may help explain why residential real estate in the United States is among the most valuable in the world. Laws that reduce the value of this real estate, therefore, have impacts well beyond the property which they affect. For the average person, the home is by far the largest investment product, where the majority of generational and family wealth is stored, and home price fluctuations have heterogenous effects on homeowners and renters (the effects are also heterogenous by age and wealth level).[3] Hence, studying the impact of national and statewide policies regarding property rights and real estate value is critical.

One valuable right in real property is the right to rent it to another in exchange for a revenue stream, accompanied by the right to evict if the tenant defaults on his or her obligation. When residential property becomes rental property, the landlord transfers some (but not all) of the rights to the property to the tenant for the duration of the lease. In exchange, the property generates revenue akin to loan payments, and the landlord takes on the role of a creditor whose responsibility includes judging the creditworthiness of perspective renters prior to each lease. If the creditor loses

lasted. It is clear that these two limitations on program relief created limits to landlord recovery that failed to buttress home prices, especially since tenants could initiate some (but not full) compliance in response to an eviction notice, which would halt the eviction without granting the landlord government relief.

[2] Manhertz (2021).

[3] Neal (2011); Flavin and Yamashita (2002); Campbell and Cocco (2007).

the ability to evict a non-paying tenant from the residence (and the ability to re-rent it to a paying consumer), it is akin to losing a security interest in relation to a loan: the risk profile of the investment asset changes considerably. Given the large spread in loan rates between secured and unsecured loans, one might expect an eviction ban to raise rental prices, as landlords would require greater compensation from tenants if they are to become, in essence, unsecured lenders. Inability to raise rental prices would increase the landlord's risk without compensation, and due to the leverage inherent in the home mortgage system, increase the possibility of financial distress and might increase the odds of mortgage default and the inherent costs associated therewith (Gabriel (2021)).[4]

The source of this distress comes from the financial obligations of the landlord, which frequently include high-leverage mortgages on the property and might create financial distress that could impact all rental properties owned by that landlord. Because leverage on home loans can exceed a ratio of 20 to 1, particularly where government subsidies are involved, the landlord facing an eviction moratorium may be forced to shoulder the burden of the debt alone, frequently unaided by the rent he or she expected to collect. The distress becomes more pronounced if unevictable tenants stop paying rent across a large number of mortgaged properties. Likewise, if the landlord is forced into bankruptcy by one or more properties with unevictable tenants, the landlord's entire business might collapse, leading to the need to sell off non-defaulting rental properties at discount prices. Hence, losing the right to recover property from a non-paying tenant and release it to another can have dire consequences for current and perspective landlords. This could lead to market prices adjusting to accommodate the new legal framework surrounding homeownership

[4] Another way to conceptualize the returns on the $2.3 trillion in rental property in the United States is to characterize them as a function of property appreciation (akin to capital gains) and rent collection (akin to dividend yields). (Eisfeldt and Demers (2018)).

and home lending, and price adjustments in residential real estate can have externalities to broader financial markets (as observed in 2007–2008).

Unlike other asset classes ordinarily discussed by finance scholarship, real estate carries with it the possibility that the proprietor would lose legal access to his or her property for weeks, months, and during the COVID-19 pandemic, years as a result of eviction moratoria. Strong legal protections for tenants come at a cost to landlords, and whether this arrangement, on the whole, improves welfare is an important question which implicates trillions of dollars in asset value. One might expect landlords to charge a premium for losing the right to retake possession of their property immediately upon renter default; nevertheless, my research shows that legal frictions can make this compensation practically impossible, as rent prices fall in areas where the eviction moratorium takes effect.

To observe the impact of extending the eviction moratorium in Virginia after the expiration of the federal eviction ban, I utilize a differences-in-differences design and isolate the impact on rents and real estate values. While states periodically expand tenant protections against eviction, nothing as "protective" as the Virginia moratorium on evictions has been enacted in recent memory in the United States (even compared to some other states, which provided comparatively minute protections). The federal eviction ban expired in July of 2021, when a political movement to extend the moratorium at the state level was already underway in Virginia. The Virginia moratorium extended the eviction ban to June of 2022. Hence, I designate Virginia as a "treated" state in July of 2021 and observe its effects over nine post-treatment months, until April of 2022. Virginia's eviction ban was in strong contrast to surrounding states, which enacted no comparable moratoria either in July 2021 or at any time thereafter. I use Zillow data on county, zip code, city, and neighborhood home values, as well as zip code data on rents, to answer the questions: (1) did the

Virginia moratorium result in higher rent prices, and (2) did the reduction in landlords' legal rights lower Virginia home prices compared to homes in neighboring states?

In showing that the value of residential property declines despite the theoretical ability of landlords to compensate themselves via raised rates, I contribute to the literature on performance of financial assets where legal protections slacken. (King and Levine (1993); La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997); and La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998)). A landlord who cannot evict a defaulting tenant loses the ability to reclaim the asset and to "lend" it to another through a rental agreement. The landlord now becomes a financier for the tenant without any guarantee of repayment, the prospect of which might drive the landlord out of the renting market due to bankruptcy or a developed distaste for government intervention. This creates additional risk within the home market (and the mortgage market), raising the possibility of defaults and increasing the odds of foreclosure sales. Both of these forces could lead to an increased supply of homes for sale, which is entirely consistent with a decrease in home prices.

Furthermore, my research casts light on the potential legal frictions that contribute to the loss of home values where landlords are unable to expeditiously evict a defaulting tenant. First, the losses in home values can extend to all homeowners by driving down demand from buyers seeking to purchase an investment property. If Virginia's moratorium on evictions has a negative impact the value of rented property, then property that can potentially be rented also loses value. Since rationally markets should inherently price in the potential rental value of all homes, laws governing landlord and tenant relationships would inherently affect home prices.

Moreover, tenant protections during a pending eviction case prevent landlords from setting foot on their own property. This renders repairs, maintenance, cleaning, and improvements, all of which would raise or maintain home value, virtually impossible. Instead, the property can degrade

in value, taking down with it other properties within the same neighborhood. This may cause additional negative effects on the overall economy, as landlords can no longer spend money to otherwise improve the property or the community because the eviction moratorium prevents their evictions from being processed. (Gurun, Wu, Xiao, and Xiao (2022)). These effects can both degrade home value and force "fire sales," where landlords who risk defaulting on their mortgages due to non-payments of rent feel pressured to sell their homes to larger investors capable of weathering a prolonged eviction process.

I. Prior Literature and Hypothesis Development

Some scholars examine the COVID-19 eviction moratoria in a positive light, highlighting improvements in welfare for renters, there appears to be relatively little concern for the plight of the homeowner landlords. (An, Gabriel, and Tzur-Ilan (2022); Abramson (2024)). Their conclusions, which may still lack empirical data and an econometrically sound setting, deserve examination. This paper reorients the focus onto investors in property and their reaction to losing vital property rights, which so far lacked quasi-exogenous shocks ripe for exploration. (Malpezzi (2023)). In so doing, I draw on older ideas in finance and economics, which show strong connections between government protections for property rights and economic development (King and Levine (1993); La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997); La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998)).

Taken together, these works suggest a positive relationship between legal asset protections and the economic and financial health of a nation. A natural extension of the research is to identify specific rights, such as the rights in real estate, and observe the impact of curtailing these rights on the value of that real estate. The central criticism of these studies is that they uncover correlation rather than causation, and that it can be difficult to objectively measure which legal structures carry

better protections for investor assets and which carry fewer protections (Favara (2006); Levine, Loayza, and Beck (2000)). My approach of focusing on the State of Virginia and observing the impact of a quasi-exogenous law change while comparing the outcome to neighboring states within the same nation largely addresses these concern.

Prior scholarship also discusses how the management of rental property can have an impact on the broader economy, which suggests an examination of social welfare from the perspective of residential real estate investors as well as tenants. (Gurun, Wu, Xiao, and Xiao (2022)). Hence, the implications of my findings ultimately delve beyond the housing sector and can impact anything from revenue at local businesses, the amount of taxes collected by the state, the amount of emergency services, and even the amount of crime in a particular area. Focusing on real estate asset protections allows for a close link to research documenting yields among heterogeneous types of residential property. Eisfeldt and Demers (2018) note the negative relationship between the value of rental property and rental yields, showing that smaller, lower-priced properties have the highest yields and might experience the greatest fluctuations in home values as a result of an eviction moratorium. In the context of my research, this might imply that property values fluctuate differently post- moratorium depending on property size and value (which my results document).

Looking at the odds of homeownership from the renter's perspective, Sinai and Souleles (2005) find that risky conditions for renters increase the chances they will become homeowners, driving up prices. In the context of a law that makes even non-paying renters secure in their rental unit for an indefinite amount of time, one might expect a decline in home prices driven by decline in the renter demand for home ownership. Whether Virginia's policies ultimately caused rents and land values to rise or fall can also help forecast the overall changes to the economic and financial health of the impacted region, especially since prior scholarship demonstrates a recency bias and personal

experiences bias in housing price expectations.[5] (Malmendier and Nagel (2011); Kuchler and Zafar (2019)). Furthermore, if non-payment of rents leads to landlord mortgage defaults, the outcome could be a general increase in rents despite a decrease in home values, since homes in foreclosure will increase the supply of homes for sale but will decrease the number of homes available for rent. (Adelino, Schoar, and Severino (2017)). Likewise, the impact of depriving landlords (and perspective landlords) of the right to reclaim their property could have impacts on the financing provided for that property, potentially reflecting in mortgage rates.

My research addresses these profound economic and legal questions associated with the importance of protecting landlords' property rights by analyzing whether landlords will be able to raise rents sufficiently to compensate themselves for the risk of renting to an unevictable tenant. My initial hypothesis is that they will: just like an unsecured lender might raise the interest rate (and hence the price) of an unsecured loan with respect to a secured loan, landlords who cannot evict defaulting tenants can be expected to raise rental prices to compensate themselves for the additional risk involved. If landlords are able to do this, real estate prices should remain unchanged, since the landlords are able to compensate themselves for the risk created for them by Virginia's eviction moratorium.

> *H1: Landlords will increase rental prices to compensate themselves for the loss of a valuable property right.*

In an alternate hypothesis, if landlords are not able to raise rents, due to transaction costs or inability to wield negotiating power over unevictable tenants, I anticipate that home prices will drop because the landlords have lost a valuable security interest (their right to exclude from their

[5] Kindermann, Le Blanc, Piazzesi, and Schneider (2020) use data in Germany to show that renters can predict growth in the underlying value of residential real estate more accurately than homeowners, especially when the increases in home prices result from increases in rents.

property non-paying tenants). Since the ability to evict a tenant is linked directly to the revenue stream landlords receive from tenants (by "inspiring" the renter to adhere to the lease agreement), the loss of the right implies a decline in revenue streams. If home prices comprise the discounted value of all future rental payments (or owners' equivalent rents), then the loss of these revenue streams should result in home price declines. This would be true even for homes that are not used as rentals for two reasons. First, even homes not currently rented hold at least part of their value in their potential to be rental units. That value comprises of future rent payments and declines when those rent payments become more difficult to collect. Second, if the value of rental homes around a non-rental home declines, then substitute homes (which would be any rental homes listed for sale) will be available for a much more competitive, lower price, requiring the owner of an non-rental home to list and sell for less in order to find a willing buyer relatively rapidly.

> *H2: If landlords are unable to raise rents to compensate themselves for losing a valuable property interests, then residential real estate prices will fall.*

II. Data Description and Methodology

I utilize publicly available data from the Zillow Home Value Index ("ZHVI") to obtain rental prices and home value data for all states within the United States. (Zillow 2024). The index contains smoothed, seasonally adjusted valuation of everything from condominiums, one-bedroom single-family homes, to five-bedroom single-family homes. The index also provides rental prices for specific regions, typically denoted by zip code, county FIPS, or metropolitan statistical area ("MSA"). Zillow intends for this index to provide home values for homes between the 35th and the 65th percentile range. This data is naturally truncated at these levels. Data for top-tier and bottom-tier homes is also available depending on the geographic region of denomination, and I employ this data in my study wherever possible, validating the results. I obtain and combine the data for residential dwellings of all types across each state, county, zip

code, and neighborhood as covered by Zillow. Deeper descriptions of Zillow's methodology for gathering and presenting this data can be found in the links within this footnote.[6]

A. *Summary Statistics*

The summary statistics table, Table I, presents a summary of this data across the United States as of July 2021 and for all zip codes in the individual states of interest: the treated state of Virginia and the control states on its borders, which are North Carolina, Tennessee, Kentucky, West Virginia, and Maryland. Data for each zip code represents the typical home of that type in that zip code. The table also contains detailed statistics for the entire nation. The summary statistics provide mean, median, and select percentile values for all homes (designated as "Home Value"), homes deemed single family structures ("Single Family Homes"), homes which vary in size based on the number of bedrooms, and homes that are condominiums. They also provide rental prices for these regions. The mean for the average zip code in the country, home values exceeded $286,000 in the United States, while the average rental price approaches $2,000.

Predictably, home values climb with the number of bedrooms in a home. One can see a significant difference between the values in our states of focus, which is why it was important to use states bordering Virginia that contained homes valued both above and below the national and Virginia average. Maryland displays the highest average home values, though the average Virginia observation is quite close to the national average home value. Homes in Tennessee, Kentucky, and West Virginia are much cheaper than their northeastern counterparts, providing a good control measure for the western side of Virginia while Maryland and North Carolina

[6] Methodology for calculating the Zillow Home Value Index: https://www.zillow.com/research/zhvi-methodology-2019-highlights-26221/. Additional resources on the methodology: https://www.zillow.com/research/zhvi-methodology-2019-deep-26226/.

provide a decent control for the north and south side of the state, respectively. Internet Appendix Tables I through III include the same statistical representations of home values at the county, city, and neighborhood level. Rental prices are available from Zillow for each individual zip code but are unavailable for these levels of observation. One exception is the state of West Virginia, for which Zillow does not track rental prices even by zip code.

I also merge the housing value data with economic indicators that may drive home values, such as the population of the state, the size of the labor force within that state, the number of employed individuals, and the number of individuals within that labor force that are unemployed (as defined by the Bureau of Labor Statistics). These datapoints may be important for home values and rental prices. A large population in a small state may imply the demand for housing is high and should be included as a control variable in a regression that seeks to isolate the impact of a treatment on home value and rental prices. The size of the labor force, or the proportion of the labor force to population, may also have an impact on the demand for homes for sale or rent, and hence their economic value. Scholarship has also shown a positive (albeit brief) correlation between homeowners experiencing a negative economic shock and an increase in labor supply, which validates its inclusion as a control for home values to ensure the price swings are not driven by labor force participation rather than the change to landlords' property rights. (Sodini, Nieuwerburgh, Vestman, and Lilienfeld-Toal (2017)). For the same reason, monthly data on the number of unemployed individuals could also correspond to housing values, as it is used by many to gage the general health of the overall economy. I gather all of the labor statistics at the state level from the Bureau of Labor Statistics and include it in my analysis.

I further include data from the decennial Census, the American Community Survey, statistics on business data, and post office delivery data. The specific control variables from these sources,

which I employ in foregoing regressions, are: zip code population, number of households per zip code, White population, Black population, Hispanic population, Asian population, Hawaiian population, Native American population, other population, male population, female population, persons per household, income per household, median age, median age for males, median age for females, number of businesses, number of employees, number of annual and first quarter payrolls, CBSA population (where available), the number of post office deliveries to residences, the number of post office deliveries to businesses, total post office deliveries per zip code, elevation, land area, water area, and the zip code population estimate (filling in monthly population expansion not reflected in census statistics taken annually or every decade). Some of these variables (land area, water area, etc.) do not change with time, and so become absorbed by the fixed effects in my regressions; nevertheless, the majority of these do change with time and have statistically significant correlations with the dependent variables, warranting their inclusion.

Finally, I include data obtained from several public records requests to the State of Virginia for the amount of aid distributed in connection with the statewide eviction moratorium. Under the federal moratorium, renters did not have to demonstrate that they applied for rental assistance with their state government in order to avoid eviction. The Virginia eviction moratorium outlined a specific requirement to avoid eviction: tenants could only become unevictable if they were actively trying to seek rental assistance (even if their requests for rental assistance ultimately failed based on procedural or substantive issues). The requirement was not stringent, so an application did not need to be perfect to stave off eviction, but it created useful public records of who sought to avoid eviction and the amount of aid that individual requested from the Virginia government.

Hence, the State of Virginia was able to provide detailed data on requests for assistance across the entire state during the time of the COVID-19 pandemic. I aggregate this data at the zip code level, which is the same level as my home value and rental price data in most of my regressions. I will employ this public records data from Virginia to identify zip codes where tenants are applying for the highest and lowest average amount of rental assistance, as these will also help me identify the areas of highest impact where tenants cannot be evicted under the Virginia moratorium for failure to pay rent.[7]

To isolate the impact of the extended eviction moratorium, I employ a differences-in-differences approach to observe how property values fare in the months after the passage of a law extending the ban on evictions in Virginia. (Bertrand and Mullainathan (2003), Meer and West (2015) Abraham and Sun (2019)). This law change extended the moratorium on evictions from July of 2021, when the national moratorium ended, until June of 2022. The neighboring states to Virginia, which did not extend the moratorium via state law, serve as controls, while Virginia in July of 2021 and thereafter serves as the treated state. I check whether the law, which applies to the entire state of Virginia, had an impact across the state by focusing on home values at the zip code level. However, to ensure that the results are robust, I will also observe the impact of the law change on home values at the county, city, and neighborhood level as well, including these results in the online appendix.

[7] It would also be natural to use these statistics as a control variable in my regressions, but this would only be possible if I had access to similar data from states surrounding Virginia. At the present moment, the public requests for this data have, unfortunately, met with legal challenges from every state surrounding Virginia. I also note that the alternative interpretation of this method of identification, that the variable may pick up greater severity of COVID-19 cases or variation in economic conditions in that particular area, is unlikely. Serious COVID-19 cases had fallen significantly by July of 2021 across the United States, and vaccines had been rolled out and distributed, addressing the more serious symptoms of the disease. While these areas may also exhibit variations in local economic conditions, I include more than a dozen controls for these conditions in my regressions.

B. *The Treatment*

The treatment in my regressions is a law that expanded tenant protections in Virginia by rendering tenants who experienced any kind of economic harm as a result of COVID-19 unevictable so long as they attempted compliance with the requirements of Virginia's rent relief program. Since almost anyone could demonstrate some harm from COVID-19 and make even a half-hearted compliance attempt with rent relief program requirements, anyone who wished to overstay his or her lease in Virginia could do so. This made renegotiating more favorable leases to landlords with respect to rent nearly impossible. It would be difficult to raise rental prices or impose restrictions on the tenant without the power to expel the tenant for non-compliance. These tenant protections stacked on other substantive and procedural restrictions on landlords.

Even before the eviction moratorium, landlords in Virginia and elsewhere could not evict a tenant on a whim. A relatively complex legal procedure exists to protect tenants at the expense of curtailing landlords' rights to their property. In some instances, even individuals who claim to have a lease (but in fact, do not) cannot be removed by police without a lengthy legal process. Regardless of any provisions in the lease to the contrary, landlords must give a tenant notice prior to eviction outlining the alleged lease violations leading to the initiation of the eviction proceedings. The tenant then has a period of time (usually about one week) to cure any defects, which would prevent the landlord from evicting that tenant despite prior breaches. During this time, the landlord ordinarily cannot enter the property, cannot make repairs to the property which would normally be made upon tenant surrender of the premises, and cannot realistically stop any damage that might be occurring therein. Because tenants who are being evicted are frequently unhappy with the landlord, this raises the risk to the property significantly.

If the tenant cannot comply with the demands of the eviction notice in the time provided, the landlords still cannot retake possession of the property. Instead, the landlord must file a civil complaint asking a court in the relevant jurisdiction to expel the tenant. Depending on the court's docket, this may take weeks if not months (and in some cases, years). The tenant can answer the complaint, deny any claims made by the landlord, deny being served with the notice or the complaint, and/or proceed to an evidentiary court hearing. Here, the landlord is not guaranteed a victory: defects in the notice, the complaint, or the service of either would allow the tenant to prevail and remain in the property even though rent has not been paid or other lease conditions have been violated. Even after the hearing is over and the court awards possession to the landlord, the landlord still cannot retake possession of the real estate. Instead, he or she must wait until the sheriff or a private process server can carry out the eviction, and neither the sheriff nor the process server can do so until the tenant has had an opportunity to appeal the decision of the court. Processing the appeal can also take months, if not years, and the trial court's decision to return the property to the landlord may be vacated, starting the process over again at square one. Even if no appeal is forthcoming, the court will grant the tenant additional time to move. In the meantime, the landlord must wait without receiving any rental income whatsoever. The landlord still cannot enter the premises and can do little to prevent damage or neglect to the property from a disgruntled tenant after the court hearing.[8]

Virginia's moratorium extended the landlords' waiting period for recovery of their real estate from a few months to well over a year. Given that the federal eviction moratorium had already delayed evictions for almost 18 months, the Virginia treatment had the potential to inflict

[8] Civil and criminal remedies do exist, but restitution is notoriously difficult to recover from tenants that are already in economic distress to the point that they cannot pay the rent. Collections on judgments obtained before the civil courts against individuals on the verge of, or in bankruptcy, frequently prove inefficient.

additional financial damage to owners of residential real estate by extending the waiting period to 30 months since tenant default or more. To measure whether this impacted land values, I estimate the following regression:

$$Y_{it} = \alpha + \beta_1 Treatment_{it} + \beta_2 Controls_{it} + \delta_i + \eta_t + \varepsilon_{it} \quad (1)$$

where Y_{it} represents home and property values, *Treatment* represents the differences-in-differences dummy variable equaling 0 prior to the extension of the federal eviction moratorium by Virginia law in Virginia, and 1 (in Virginia) thereafter,[9] $Controls_{it}$ represents various control variables from the Bureau of Labor Statistics, the Census, the American Community Survey, and Post Office Data, which will be designated within the regression tables, δ_i represents urban region, county, or zip code fixed effects (depending on the level of observation), η_t represents year-month fixed effects, and ε_{it} is an error term. The inclusion of fixed effects at the zip code and year-month level renders the above regression a generalized differences-in-differences. The estimated impact of extending the eviction moratorium on the dependent variable is β_1, making it the coefficient of interest.

I will generally cluster standard errors at the urban region, county, or zip code level, corresponding to the fixed effects I will employ. Clustering is ordinarily optimal at the highest level of treatment; in this case, at the state level, since the entire state of Virginia receives the treatment. However, since I only use the states that border Virginia as controls in the regression, this would only leave me a maximum of six clusters, which is insufficient for an adequate robust standard error calculation. In untabulated regressions, I test whether the results change if I move

[9] The Treatment variable equals zero for all untreated states at all times.

clustering from the zip code level to the county level (the broadest possible classification other than state), but I observe no major changes to the statistical significance of my results. I choose a nine-month window of time in which to conduct the observation, estimating the regression among all home value observations that are nine months or less prior to the treatment month and nine months or less after the treatment month. Using bordering states as controls, I run Regression (1) to test the hypotheses listed above.

C. *Differences-in-Differences Design*

I must also address whether the standard differences-in-differences assumptions hold in my research design, and if they do not hold, how that should impact the interpretation of the results (Glaeser (2018)). If some differences-in-differences assumptions hold, but others do not, the results may still be dependable where the violated assumptions are not fundamental to the analysis. One differences-in-differences assumption is that of parallel trends. In the context of my research, this would be the assumption that the value outcomes for homes in the treated regions would have been the same as the value outcomes for homes in the non-treated regions but-for the treatment. The parallel trends assumption should be satisfied if the law change was exogenous with respect to the home value and rental price outcomes I examine.

There may be endogeneity in eviction moratorium extension and other region characteristics (such as the voter base, for example), but if there is no endogenous effect on the dependent variable in Regression (1), the parallel trends assumption should hold (Glaeser (2018)). While parallel trends cannot be proven empirically, quasi-exogenous law change setting (and foregoing robustness checks) provide some confidence that the parallel trends assumption is satisfied. Additional robustness tests included in foregoing regressions and presented as figures within the

results section can provide some confidence that the parallel trends assumption holds. I present such tests below and demonstrate that they validate the parallel trends assumption.

Another differences-in-differences assumption is the stable unit treatment value assumption ("SUTVA"). In the context of my research, this assumption requires that the treatment status of one region does not influence the home values of control regions (Lechner (2010); Glaeser (2018)). I see no strong indication that changes in the eviction moratorium guidelines in one state would strongly influence nearby states. However, this effect is possible, because eviction moratoria may draw prospective tenants to the state from its neighbors while potentially forcing landlords out to neighboring states. If this were the case, it would tend to increase the demand for rental units in Virginia while decreasing their supply. This would have the tendency to raise rents in Virginia. In neighboring states, an exodus of landlords from Virginia for neighboring states would increase the number of landlords in those states while decreasing the number of tenants (since the tenants would flock to Virginia). This would have the tendency to lower rents in the neighboring states compared to Virginia. Hence, in a regression that compares Virginia to surrounding states, both at the level of the entire state and at the state border, addressing the validity of the SUTVA assumption is important.

If a SUTVA violation is serious, its effect could create bias as to the positive impacts of the eviction moratorium on Virginia rents. Hence, if the law change coefficient is positive with respect to rental prices, one could doubt the outcome because of a potential SUTVA violation. On the other hand, if the effect on rental prices is negative and statistically significant, a potential SUTVA violation is unlikely to lead to a "false positive," and the observed effect may actually be greater if not obscured by the potential effect of a Virginia law change on neighboring jurisdictions employed as control observations. As the results will show, the coefficient on rental prices is

negative and statistically significant in a variety of regressions and robustness tests, allaying concerns of a SUTVA violation and perhaps suggesting that the measured effect would be even more negative if not for the potential that Virginia's extension of the rent moratorium impacted the rental prices and home values of neighboring states.

The final differences-in-differences assumption relevant to my research is the perfect compliance assumption (Lechner (2010); Glaeser (2018)). The perfect compliance assumption requires that no treated regions received the treatment in the pre-treatment period and that all treated regions received the treatment in the post-treatment period. That is, none of the control regions should receive treatment at any time. To confirm this, I inspected the eviction moratoria provisions of all of the neighboring states to Virginia. Very few states across the entire country registered any significant extensions to the federal moratorium after it expired, and I was able to confirm that there were no such extensions beyond fifteen days in any of the states bordering Virginia. Moreover, the regions within Virginia could not have received the treatment of the state level eviction moratorium intended to aid renters after the expiration of the federal eviction moratorium. The federal moratorium terminated precisely July of 2021, and Virginia's state-level moratorium, while working its way through the state legislature at that time, did not take effect until August.

While it is possible that regions within Virginia could be considered "treated" when the passage of the legislation was relatively imminent, this would be a truly short pre-treatment period that violates the perfect compliance assumption and it is unlikely to bias the overall results. Moreover, since the federal moratorium was still in effect at that time, Virginia homeowners and renters would have experienced little difference between the two, further bolstering the perfect compliance assumption. If I define treated regions specifically as regions in Virginia after news

that the federal eviction moratorium was coming to an end (and would be replaced in Virginia by the state-level moratorium), the perfect compliance assumption should hold. Even if I were to try to isolate the impact of the law change premonitions, where the perfect compliance assumption may not hold, inference can still be possible because any such premonitions would be counterbalanced by the active status of the federal moratorium at the time, keeping the rental market and the residential real estate market relatively balanced pre-treatment. I move additional discussion of the perfect compliance assumption as it applies to the premonitions of statutory or regulatory changes to the internet appendix.

III. Virginia's COVID-19 Eviction Moratorium, Rents, and Home Prices

The results in uniformly indicate that Virginia's extension of the COVID-19 eviction moratorium decreased the rental prices Virginia by as much as 1% and decreased home prices anywhere from 2% to 5%. Contrary to the initial portion of my hypothesis, rental prices did not rise to compensate homeowners for losing the right to recover their property. Some frictions appear to prevent landlords from raising their rental prices compared to landlords in nearby states. On the other hand, my hypothesis about home prices declining if rental rates cannot rise holds true. Home values indeed decrease in Virginia post-treatment, and that decrease is quite persistent (while the decrease in rent proves temporary). The eviction moratorium reduced total Virginia's total real estate value (which is approximately $1 trillion) by more than $20 (to $50) billion and caused an estimated capital loss of anywhere between 5% and (in rare cases 100%) compared to nearby regions for a leveraged property owner (depending on the extent of the leverage).

A. *Main Results*

Table II shows a statistical decline in home values of roughly 2% that doubles the 1% decline in rents by magnitude. Table II does not break down the decline by month, but rather, presents a

pooled coefficient which represents the decline in prices of homes for rent or purchase in the average post-treatment month. It is notable that condominiums, which are more apartment-like and more likely to be rented out by their owners, exhibit a greater decline in value than single family homes: a drop of almost 3% in condominium prices. The rent results are statistically significant at the 5% level and the home value, single family home value, and condominium home value are statistically significant at the 1% level.

While one might expect landlords to raise rents to compensate themselves for having to rent to unevictable tenants, the opposite seems to occur. It appears that existing frictions prevent landlords from compensating themselves for the risk of being unable to reclaim and re-rent their property. This may be the result of landlords being "locked-in" to leases with tenants that are delinquent on rent and yet refusing to leave. As the terms of the lease cannot be successfully renegotiated with an unevictable tenant, Virginia landlords are unable to evict tenants and raise prices, even though landlords in neighboring states could do so without similar restrictions after the termination of the federal eviction moratorium. This would explain the counterintuitive negative result with respect to rents.

An eviction would allow the landlord to re-contract their properties to other market participant, even though it may not be the primary purpose for this legal mechanism, and reducing evictions inherently removes this pricing tool from homeowners' repertoire. Even though extending the eviction moratorium might have made Virginia a more attractive state for tenants to flock to, raising demand (and applying upward pressure to rental prices) for rental units, the results still show landlords unable to successfully raise rents compared to nearby jurisdictions.[10] Hence,

[10] Undoubtedly, some individuals did move out during the Virginia eviction moratorium, allowing the landlords in those instances to raise rates, but this was not enough to keep up with the rising rates in control jurisdictions which did not enact an eviction moratorium.

removing the valuable right to repossess property when its occupant is no longer able or willing to pay the rent imposes significant costs on the homeowner with respect to future revenue, because whatever upward price pressure such measures place on rents, the pressure is ultimately overcome by the loss of a valuable property right.

Table II also proves consistent with Sinai and Souleles (2005), because it documents the impact of a moratorium that created greater security for renters in their rental units. When renters feel particularly secure in their ability to remain in their rental because eviction for non-payment of rent is illegal, the demand for housing as well as home prices decline because there is no need to become an owner to secure greater property rights in the dwelling. It is apparent that the landlords absorb the costs imposed by the extended eviction moratorium, and demand for full ownership of properties slackens, both from current tenants and from investors into residences for the purpose of ultimately renting out those homes. Homeowners are unable to pass these costs to their tenants through raised rents, and so the value of residential real estate properties that could be rented decreases for this reason as well.

If the market value of residential real estate is the discounted present value of all future rents, then a decline in rental prices leads directly to declines in home prices. The data does not allow me to distinguish between housing units commonly used for rent and housing units that are not used in this manner; nevertheless, the price of any home includes within it the potential value of the home as a rental property. When the right to rent that property, and to evict unpaying tenants, is encumbered, any rentable property should suffer a decline in its value. The results are also consistent with more Virginia homeowners choosing to sell their home as a result of losing valuable property rights, thus increasing the market supply and lowering the price.

Table III further breaks down the price declines of affected homes after Virginia extended the COVID-19 eviction moratorium beyond the expiration of the federal ban on evictions. Here, we can see that some homes lose as much as 4.4% in value. Specifically, one bedroom homes, which may be most likely to be used as rentals, suffer the greatest declines. The declines are somewhat smaller for homes with two to four bedrooms, as these are most likely to be owned by families residing therein,[11] unlike one and five-plus bedroom homes. Consistently with this, the higher magnitude decline reflected in the values of one- and five-plus bedroom homes captures the increased likelihood that these homes would be used as rental units rather than for homeowners to personally occupy.[12] All results are statistically significant at the 1% level. The first two regression results tables alone demonstrate that extending the eviction ban lowered residential real estate values almost 2% (and sometimes almost 4.5%), reducing Virginia real estate value by more than $20 (to $50) billion, and resulting in an estimated loss of anywhere between 5% and (in rare cases) 100% compared to nearby regions for the leveraged property owner.[13]

[11] https://eyeonhousing.org/2023/12/share-of-bedrooms-in-new-single-family-homes-in-2022/#:~:text=The%20current%20estimates%20indicate%20the,share%20of%2010.5%25%20in%202022 ("The [Census Bureau's] current estimates indicate the share of new single-family homes with two bedrooms or less is 11.0%, three bedrooms, the largest share, had a share of 42.8%, four bedrooms make up 35.7% of new single-family homes, and five bedrooms or more had a share of 10.5% in 2022.").

[12] While the lower magnitude for "Five Bedroom Home Value" might undermine this intuition, one must consider that ZHVI includes values for 5+ bedroom homes, including multi-family rental units, within this valuation. The decline in the value of these 5+ bedroom home values would be entirely related to eviction laws if the prices of rental multi-family buildings drove the result.

[13] This total value calculation assumes the value of all Virginia homes, owner occupied or otherwise, was approximately $1 trillion at the time of the treatment, which is consistent with data from the American Community Survey for 2021. Internet Appendix Table IV and Internet Appendix Table V contain the same regression results but at the county level. The results are quite similar, both in terms of statistical and economic significance. Observations at the county level show declines that exceed approximately 4% of the home value, particularly for smaller homes. Internet Appendix Table VI and Internet Appendix Table VII show results at the city level. Here, the coefficients are also negative and statistically significant at the 1% level. For one bedroom homes, the losses are far more severe, exceeding approximately 6% of the home value. City-level results seem to be particularly susceptible to changes in ownership rights associated with rent, perhaps indicating that many residential homes are purchased for use as rental units in the present or at some point in the future (reversing prior trends). (Agarwal, Hu, and Huang (2016)). This is also consistent with the prediction of prior scholarship that city homeowners are more likely to experience price reversals, especially in the first years of homeownership (which would coincide roughly with 2020 and 2021 for

B. *Robustness*

To be confident in the results of Table II and III, the parallel trends differences-in-differences assumption must hold. While I cannot test the parallel trends assumption directly (since one can never know how Virginia home prices would have behaved but-for the treatment), I include as a robustness check a visual inspection of pre-trends. I follow Beck, Levine, and Levkov (2010) by graphing the coefficients of the differences between treated and untreated regions before and after the change to Virginia eviction laws. I designate Month = 0 as the central point which corresponds to July of 2021, when the federal moratorium expired and the first month when Virginia politician first moved to extend the eviction moratorium at the state level. I run the following regression and graph the coefficients:

$$Y_{it} = \alpha + \beta_1 Treatment_{it-9} + \ldots + \beta_{18} Treatment_{it+9} + \beta_{19} Controls_{it} + \delta_i + \eta_t + \varepsilon_{it} \qquad (2)$$

where the "*Treatment*" variable equals one for all Virginia regions starting in July of 2021 and every month thereafter. This variable equals zero in all other times and in all states that are not Virginia at all times. I exclude the first month of treatment, estimating the dynamic effect of extending the eviction moratorium on the value of residential homes and rental prices (Beck, Levine, and Levkov (2010)).

many new homeowners). Internet Appendix Table VIII and Internet Appendix Table IX contain results of the same regression at the neighborhood level. Internet Appendix Table X contains the results of Regression (1) when isolating only the least- and most- expensive homes in a particular city or county. Zillow identifies these homes as those below the 35% percentile and above the 65% percentile in value, respectively. The effects on these homes hover around negative one percent, most being statistically significant at the 1% level. Just like the main tables, these regression coefficients demonstrate an economically and statistically significant decline in home values after the extension of the eviction moratorium for Virginia. The impact on rental values at the county, city, and neighborhood levels is unavailable within the Zillow data.

I plot the coefficients and the 95% confidence intervals, which I adjust for clustering at the zip code level. As before, Y_{it} represents the dependent variable, scaled down using the natural logarithm function, $Controls_{it}$ represents various control variables which are listed and employed in Table II and Table III (in natural logarithm form unless they are dummy or categorical variables), δ_i represents region fixed effects, η_t represents year fixed effects, and ε_{it} is an error term. Ideally, if pre-trends do not drive the treatment effect, I would expect to see coefficients not statistically different from 0 prior to treatment and an apparent "break" between the pattern exhibited by rental values and home values of interest prior to Virginia's eviction moratorium and after Virginia's eviction moratorium. The graphed coefficients after the treatment indicating pretrends should be statistically significant in most cases, with the 95% confidence intervals not crossing the x-axis.

In Figures I through IV, I display the dynamic relationship of the Virginia eviction moratorium on rental prices and property values, including the same control variables as in Table II and Table III. This allows me to view how prices change over time and also helps alleviate potential pretrend concerns. Ideally, I would see no statistically significant difference between Virginia rental prices and home values and those of other states pre-treatment and would begin to see statistically significant differences post-treatment. This would boost confidence that pre-trends are not driving my results.

When it comes to rental prices and condominium values, the difference between Virginia and other states is not different from zero at any traditional level of statistical confidence until June of 2021, when the federal government had already given notice that the moratorium would expire in

July.[14] This one month is not a significant pretrend concern given the substance of the announcement and the otherwise flat nature of the remainder of the trends prior to treatment. Home values and single family home values exhibit no pretrends whatsoever, further strengthening the conclusion that Virginia's decision to extend the moratorium is driving the results and increasing confidence that condominium prices are more sensitive to news concerning the moratorium than single family home prices. Hence, the slight pre-trend in condominium and rental prices suggests anticipation of the legal change after federal announcement thereof and does not undermine the results. This similarity in pattern between condominiums prices and rental prices also suggests that the two move closely together because condominiums may be more likely to be utilized as rental units by their owners.

More notably, the post-treatment trends are strikingly different between rental prices and home values. These show that landlords are eventually able to charge higher rents, starting about six months after the Virginia moratorium (just as the Virginia moratorium itself approached expiry in June of 2022). At this timeframe, the post-treatment coefficient for Virginia rental prices compared to surrounding states become statistically insignificantly different from zero and remain so for the remaining time periods. Nevertheless, the damage to home values had already been done: finding that they are in a state where their right to evict an unpaying tenant might be limited at any moment, homeowners sell their homes and drive the price down consistently, with no immediate signs of recovery, even considering data as late as April of 2022. In fact, the coefficients on home value for single family homes, condominiums, and all homes regardless of type show a continuing downward trend which takes prices down as low as 7% in the final post-treatment month.

[14] It is also important to notice that the federal moratorium was initially set to expire in June of 2021, and the federal government's announcement moved the expiry to July of 2021, likely impacting rental and condominium prices a little before my selected treatment date.

Viewing Virginia's actions as a breach of the Lockean social contract which guarantees the citizen security in the citizen's property (or at least the right to recover the same from a non-paying tenant), Virginians and purchasers from outside of the state may view real property as less valuable and become less likely to pay as much for the right to own it compared to neighboring jurisdictions.[15] Likewise, if we think of landlords as secured lenders, once the secured lender loses the right to recover the security interest, the ability to continue engaging in the lending business becomes much less valuable because of the uncertainty surrounding the legal rights of creditors and lenders. The difference in the trends of home prices and rental prices post-treatment is significant because it documents the pricing of something more than just the loss of the immediate right to evict and re-lease the rental unit. Instead, it may document the perceived loss of a critical property right which may, in the future, be suspended again at the whim of the Virginia government in the event of another pandemic or other emergency.

I can also break down the pre-trends for home values by home type, which I do in Figures V through X. To ensure that no pre-trends drive the results with a smaller window of observation, I shrink the regression sample to six months pre- and post- treatment. I include everything between home values to 5+ bedroom home values in these figures, using the same control variables in the regression as before. I omit the single family home value and condominium home value breakdown

[15] Internet Appendix Figure I through Internet Appendix Figure III include similar breakdowns for the pre-treatment and post-treatment trends observed at the county level (with fixed effects and clustering at the county level as well). These are very similar to the trends observed at the zip code level (with the exception of rental prices, since those are unavailable at the county level, and hence not displayed in the appendix). Just like the zip code level, there appears to be no major statistically significant difference between the home values of Virginia and its border states prior to the treatment. On the other hand, post-treatment, Virginia home values plummet compared to the home values of control states. Every single pre-treatment coefficient is not different from zero at any traditional level of statistical confidence. On the other hand, every post-treatment coefficient is statistically different from zero at the 5% level (and usually at the 1% level). Moreover, the post-treatment relative decline in home values increases with every month after the extension of the eviction moratorium in Virginia. These effects are persistent across all homes, and they are also present when I separate condominiums from single family homes, as defined by Zillow.

in the body of the paper for the sake of space, though they are independently available in the internet appendix and are consistent with the main results.

Figures V through X show that, generally, there are few pre-trend concerns. There are no statistically significant pre-trends, with the exception of t - 1, in all but one of the figures. Since the pre-trend at t - 1 can be explained by the nature of government plans to initially terminate the moratorium one month earlier, the only pre-trend of concern is that for one bedroom home values. Here, Zillow provides a smaller sample than for home values overall, because it does not track some zip codes for home size breakdowns in the same way as for overall home value. Nevertheless, the pre-trends exhibited in Figure VI for one bedroom homes could be indicative of some premonition by owners of particularly "rentable" units that a bill was working its way through the legislature which would further encumber their ability to evict. Given that there are no predominant pre-trends exhibited in any of the other cross-sectional subsamples, this does not undermine the general lack of pre-trends for the prices of most housing units in Virginia compared to nearby states.[16] Again, notably, all figures exhibit a significant and persistent post-treatment decline in home values that shows no signs of recovery six months after Virginia's eviction moratorium.

To address potential skepticism about the selection of control observations for the treated zip codes within Virginia, I include in Table IV the regressions discussed above while limiting the sample to only the counties on the Virginia border. Specifically, I include the zip codes of only the outermost counties within Virginia (its border counties), and I include as control observations only

[16] I should note, also, that the overall pre-trends for homes, single family homes, and condominiums observed in Figures II through IV are not driven by the patterns observed in one bedroom home values, as one bedroom home values take up only a small subset of the overall sample of home values. Even if the prices of one bedroom homes do exhibit pretrends that may challenge the parallel trends assumption, these pre-trends do not contaminate the main results. Even if some difference in value of homes, single family homes, and condominiums can be attributed to the pretrends observed in one bedroom homes, the negative post-treatment home price consequences would still be robust to the removal of one bedroom home price effects altogether.

the zip codes from counties that border Virginia. This allows me to observe the effect of extending the eviction moratorium on locations that should be most geographically and economically similar to one another. This comparison generally serves as an important robustness check for the results observed in Table II and Table III, confirming the home value results observed in those tables, both overall and in the cross sections.

The results on the Virginia border show declines in home values of roughly 2.1%, statistically, significant at the one percent level. Furthermore, one bedroom single family residences decline in value by 4%, while larger homes exhibit a reduction in value of somewhere between 2.1% and 3.1%. The differences in coefficients in Table IV compared to Table II and Table III are not very large, and may not be statistically significant in some instances, Table IV confirms that the results hold even when I limit the regression to border counties, which reduces the sample size significantly.[17] This further confirms the disutility of landlords losing the right to regain control of their property after a renter becomes unable (or unwilling) to pay rent.

C. *Propensity Score Matching*

I also employ propensity score nearest neighbor matching to ensure that my results are robust across the state of Virginia and not just at the borders. The nearest neighbor propensity score matching technique helps identify more ideal controls for the treated zip codes in Virginia. Because prior regressions used geographically proximate areas to Virginia as controls, it is important to show that the results are still persistent when I employ propensity score matching to select control regions from across the United States. Nearest neighbor propensity score matching

[17] I repeat the at-the-border regressions at the county and city level. The results appear in Internet Appendix Table XI and Internet Appendix Table XII. The effect of extending the eviction moratorium in Virginia is quite similar in terms of economic and statistical significance with respect to Table IV. Notably, the effect seems to be more negative for condominiums compared to single family homes and for one-bedroom homes compared to larger residences.

will help ensure that each treated region is assigned a control region that resembles it based on a propensity score across a range of control variables. (Michels (2017)). This technique should allay concerns that the results are driven by selection of control regions rather than by the causal effect of Virginia's policy change.

Establishing robustness using propensity score nearest neighbor matching is important because, sometimes, matching zip codes within bordering counties in Virginia to the Virginia-border zip codes of neighboring states may not be enough to ensure the right selection of control zip code observations. It is possible that a zip code in central Tennessee, for example, might more closely resemble a counterpart in Virginia. In fact, there may be zip codes across the nation that exhibit relevant economic traits more similar to Virginia zip codes than any region within the neighboring states, even if that region happens to be on the Virginia border. To find these matching zip codes, I match Virginia zip codes to zip codes of non-treated states across the United States based on the economic variables available to me from the Bureau of Labor Statistics, the American Community Survey, the United States Post Office, and a variety of other demographic sources. I include these variables in the regressions as well to account for their effect on the dependent variables and to account for the possibility that their relationship to the dependent variable may be non-linear. (Michels (2017)).

Table V displays the results of matching Virginia zip codes to zip codes across the United States using the entire temporal length of my panel data, allowing a match across more than twenty-years of data before the treatment in Virginia. The results are materially similar to those presented in previous tables and exhibited in prior tables and in Figures I through X. In the regression displayed in Panel A, the coefficients are precisely identical (though with different robust standard errors) between home values overall, single family home values, and condominium

home values. The decline in home values post-treatment is negative and statistically significant at the 1% level. In Panel B, where I break the data down into cross sections by house size, the magnitude of losses suffered by homeowners also shows similarity to unmatched regressions, showing losses of anywhere between 2.5% and 2.9% in the average month after Virginia extended the eviction moratorium. These results are also statistically significant at the 1% level. This serves as a significant robustness check on prior results and confirms the conclusion that landlords and other homeowners are primarily harmed by this law change. Additional propensity score matching specifications, including different controls and time periods, appear in the appendix, further validating the main results.

D. *Entropy Balancing*

In addition to propensity score nearest neighbor matching, I also employ entropy balancing to validate my results and ensure that the mean, variance, and skewness of the control zip codes across the nation accurately matches the mean, variance, and skewness of the treated zip codes with respect to the control variables listed in each respective table presenting the regression results. (Hainmueller (2012); Hainmueller, Jens and Xu (2013)). This allows me to use the entire panel data of untreated zip codes as a control for Virginia. The results of these regressions further validate the hypothesis suggested by financial literature on the importance of property rights: that real estate assets fall in value when exposed to the risk of unevictable tenants. Computational limitations limit the number of controls that may be employed to achieve convergence, but I am still able to use a wide variety of control variables to validate the effect I observe in the other models within this paper.

I also include the results of my regressions after employing entropy balancing, displayed in Table VI. Both the arrangement of results, and the results themselves, follow the propensity score

results closely. In Panel A of Table VI, I show the impact of Virginia's eviction moratorium on overall home prices and then the impact on the prices of single family homes and condominiums separately. Panel B of Table VI demonstrates the impact of Virginia's eviction moratorium on home prices but with cross sectional divisions by the number of bedrooms present in each home. Because entropy balancing allows me to balance controls throughout the United States to be similar in mean, variance, and skewness to the treated state, my results compare Virginia to the remaining forty-nine states in the United States with the entropy balancing weights applied. This greatly increases the sample size of the regression, which still includes pre-treatment observations from October of 2020 until July of 2021 and post-treatment observations from July 2021 to April of 2022.

Despite swelling the sample size to include the entirety of United States data, the results remain quite similar to those in the more localized regressions. I observe a decline of roughly 1.6% in overall home values and in the values of single family homes. Just as before, the effect appears stronger for more "rentable" units, such as condominiums, which show a decline of roughly 2.5% in value compared to control observations. Panel B of Table VI also shows the correspondence between homes which are more likely to be rented and other homes. For example, one bedroom homes, which would be perfect for single renters who have not yet formed family units, exhibit the largest response to the treatment. With a 3.5% decline, one bedroom homes appear to account for the majority of the declines in zip codes where this Zillow Home Value statistic is available.

The second highest area of impact is, once again, structures with five bedrooms or more, which themselves can include rental units. Here, the decline is roughly 2.7%. Homes with two-to-four bedrooms exhibit declines between 2% and 2.5%, which are likewise consistent with prior observations. The results do differ across the cross sections, but some of the differences are not

different from one another at any traditional level of statistical significance. Overall, the results are robust to entropy balancing and increase confidence that the observed treatment effect holds when comparing the treated observations to a larger set of control zip codes after they have been balanced to resemble the treated zip codes more closely. The statistical significance, the economic significance, and the magnitude of the cross sectional results relative to each other mirror the main results observed in Table II and Table III.

E. *Synthetic Control*

To solidify my findings and ensure the exhaustive inclusion of available econometric identification techniques, I also employ the synthetic control methodology to best select home value trends that would have mirrored Virginia's home prices but-for the treatment in the post-treatment period. (Mace (2023); Abadie and Gardeazabal (2003); Abadie et al. (2010); Abadie, Diamond, and Hainmueller (2015); Dube and Zipperer (2015)). Using a standardized set of parameters, I am able to implement state-level control variables for Virginia (population, labor force, employment, unemployment, and pre-treatment Virginia home prices) to form a counterfactual Virginia from the home values and state-level statistics of other states where a treatment never occurred. This counterfactual Virginia should, if the synthetic control assumptions hold, show how Virginia residential real estate prices would have behaved without Virginia's eviction moratorium based on how post-treatment changes in the parameters of the states the technique selects to form a synthetic state of Virginia. Assigning appropriate weights to these control states allows them to approximate the counterfactual of Virginia home prices even better, which I implement in my approach as well.

The advantage of a synthetic control method, used in conjunction with a differences-in-differences model, is that it can account for many time-specific factors which might otherwise

drive the result and obscure, suppress, or improperly amplify the treatment effect. Hence, even if the differences-in-differences estimator becomes biased due to some unaccounted source of endogeneity or a failure in the parallel trends assumption, a synthetic control approach should reassure us that the results nevertheless accurately represent the treatment's effect on the treated. (Mace (2023); Dube and Zipperer (2015)). To achieve the best match, I exclude states where ZHVI measures for rental home values and some zip code home values are unavailable for all periods within the time sample to ensure only the most reliable ZHVI matches.[18] While the post-treatment results are consistent with or without the exclusion of these states, the synthetic control match improves with their exclusion and best approximates the treatment effect on the treated within my sample.

In Figures XI through XVI, I employ the synthetic control method described above, showing the robustness of the results. The green vertical line in each figure designates the first designated date of treatment July 2021 (it should be noted that the treatment almost began on June 30, 2021, but the federal government extended its moratorium in the proverbial eleventh hour, until July of 2021). Each figure shows a significant relationship between the control "synthetic" Virginia (demarked as a blue, dashed line) and actual Virginia (demarked in solid red). Prior to the treatment, the lines are almost completely on top of one another for home values of almost all cross-sections. Minor deviations occur, but they are the exception, not the rule. In Figure XI, for example, documenting the main effect on overall home prices, the blue and red lines are almost precisely on top of one another until June of 2021. There, a divergence begins to develop, precisely

[18] Alaska, Arkansas, Iowa, Maine, Montana, North Dakota, South Dakota, Utah, Vermont, West Virginia, and Wyoming. This exclusion of some states due to data unavailability is not uncommon and does not result in bias in the model. Abadie, Diamond, and Hainmueller (2015), in introducing the synthetic control technique for comparative study cases also rely on estimation employing only 39 out of 50 states.

consistent with the first date of treatment occurring in July of 2021 and accounting for the federal government's pivot from ending the moratorium one month earlier. After July of 2021, the divergence in home values continue to exhibit greater magnitude with the passage of time.

Figure XII and XIII display similar convergence of treated and synthetic Virginia home values prior to treatment and sharp and immediate divergence post-treatment which is consistent with Virginia home prices failing to rise on pace with its neighbors, resulting in a relative decline. While some might argue that Figure XIV through Figure XVI exhibit some pre-treatment divergence between the end of 2020 and 2021, these divergences are small, no more than two or three thousand dollars in value, and they ultimately rectify just before the treatment occurs. Post-treatment, all of these figures likewise show significant declines at- and post- treatment for Virginia home values. These declines do not exhibit a recovery even nine months after the treatment took place.

Starting with Figure XVII, I incorporate the public records data from the State of Virginia into my research, which include the amount of aid distributed by the State of Virginia when providing rental assistance in response to applications for the same. I graph the monthly amount of assistance from the beginning of the federal rental assistance program to the end of my panel data across the entire state of Virginia. At month 0, representing July of 2021, the federal rental assistance program terminated, and the Virginia rental assistance program began to distribute payments directly from the government of Virginia to those filing for assistance. Under Virginia law, as long as tenants attempted to take part in this program, they could not be evicted by landlords for failure to pay rent, even if the attempt was rather half-hearted and did not result in the landlord receiving compensation from the government. The bureaucratic backlog this created must have been substantial, but the program did distribute rental assistance due to some successful applicants. Months subsequent to the termination of the federal eviction moratorium in July of 2021 are

represented by the positive numbers to the right of the zero and prior months, when the federal eviction moratorium still controlled Virginia evictions, are designated by the negative numbers.

Figure XVII shows where the total value of claims for rental assistance rose most after the federal moratorium ended, despite the subsiding COVID-19 pandemic. This is consistent with the incentive to apply for such aid under the Virginia eviction moratorium. While the federal eviction moratorium did not require a rental assistance application to stave off eviction, the Virginia moratorium included this requirement, and the number of applications in Virginia indeed rose. It is clear that the law had an impact on Virginia compared to the surrounding states, where rental assistance and the federal eviction moratorium ended completely. Figure XVII suggests that the help extended by Virginia to renters, conditioned on applying for rental assistance, may have encouraged more renters to seek relief compared to the federal program which had no such requirement.

Figure XVIII and Figure XIX represent the amount of aid requested within each Virginia zip code at the end of the federal moratorium (July 2021) and in the fifth month of the Virginia moratorium (December 2021).[19] Different zip codes exhibit differing needs for rental assistance over time, but the pattern remains generally similar across the state of Virginia. It is notable that the amount of rental assistance requested rose in December of 2021, perhaps due to renters' desire to divert their spending to holiday-related products and gifts instead of making rent payments, which Virginia law permitted them to eschew. The panel data on applications for rental assistance overall coincide with instances where eviction moratorium protections were invoked, and the data allows me to test whether the zip codes where residents invoked the protections of the eviction

[19] December 2021, according to Figure XVII, resulted in the highest number of requests for rental assistance on record, perhaps consistent with renters who were secure for eviction choosing to spend on holidays rather than rent.

moratorium the most experienced a more pronounced treatment effect compared to districts where the protections of the moratorium were not invoked to the same extent.

F. *Most Affected Zip Codes*

Using the public records data from Virginia which shows the number of aid applications from tenants in each zip code, as well as the amount of aid, I identify the zip codes where the eviction moratorium had the greatest effect and test whether the impact on home prices are stronger. I define areas of greatest impact based on the number of aid applied for in each zip code. After identifying these zip codes through public records data and compare their results to all zip codes within the State of Virginia, I will use demographic, labor, and postal activity statistics to match these zip codes to similar zip codes within the bordering states. I will test whether the effects I observe are more notable in these areas of greatest moratorium impact.

I aggregate the Virginia public records data at the zip code level to find the average amount of aid applied for by the tenants in every zip code. This will allow me to identifying zip codes in Virginia where the failure of a tenant to pay rent is particularly damaging to the landlord, as large missed payments (combined with the inability to evict the tenant) are likely to reflect in rents and home values to a greater extent. To test this, I rerun the regression presented in Table II in Table VII but limiting the treated observations in Virginia to only those in the top 5% in terms of average requests for rental assistance. The results in Table VII show that rental prices and home values decline more sharply in zip codes where the average amount of rental assistance requested by the defaulting tenants was in the top 5% of all Virginia zip codes. For example, Table II showed a decline in rental prices of approximately 1.1%. Table VII shows a decline of approximately 2.7%. Effects on overall home value and single family home value appear to be similar (though still slightly higher in areas of highest impact), but when I observe the effect on condominiums, condos

in zip codes with higher requests for rental assistance experience a much greater decline in price.[20] Table II showed declines of roughly 2.7% for condominiums after the extension of the eviction moratorium by via Virginia statute (which was already higher than value declines for the average home). Table VII, on the other hand, shows even greater declines, as high as 5.4%, which is consistent with the expectation that condominiums in zip codes with higher requests for rental relief suffer more on account of being frequently rented to tenants. All results in Table II are statistically significant at the 1% level.

In Table VIII, I run the same regressions as those in Table III but once again limiting the treated observations in Virginia to only those in the top 5% in terms of average requests for rental assistance. Across the board, the results are more negative when focusing on zip codes which requested the most rental assistance. Just as before, two- to -four- bedroom homes appear to show the least amount of price movement, though still exhibiting declines of anywhere between 3% and 4% (compared to Table III figures between 2.5% and 3.3%). One bedroom homes, which are ideal rentals for an individual or couple, exhibit strong effects, with declines of 6% (compared to the Table III figure of 4.4%). On the other side of the spectrum, five-plus bedroom homes, which can be purchased and rented out as a whole or on a room-by-room basis or as multi-family units, also suffer declines in value that exceed 5% (compared to the Table III measure of roughly 4.1%). Whether looking at home types by single family versus condominiums or dividing them by the number of bedrooms, the results are more extreme than those observed across the entire sample of zip codes in Table III. All results are statistically significant at the 1% level.

[20] Internet Appendix Table XIX contains regression results for the bottom 5% of all Virginia zip codes in terms of rental assistance requests. This table shows a much weaker relationship between the Virginia eviction moratorium and home prices in regions where renters did not seek a large amount of aid. The coefficients are all statistically insignificantly different from zero. This further confirms the hypothesized impact of the moratorium by showing that, where one would expect the impact of the treatment to be minimal, the impact is indeed minimal.

Table IX employs nearest neighbor propensity score matching to isolate the effect of the Treatment on Virginia zip codes in the top 5% in terms of average requests for rental assistance. I cannot match on the amount of assistance requested since states bordering Virginia have not provided these amounts despite several public records requests. Nevertheless, I can use other variables (listed as control variables in the table) to find the zip codes in neighboring states that are most similar to the top 5% rental assistance zip codes in Virginia. Limiting the regression to this matched sample, I am still able to document particularly sharp statistically significant effects associated with Virginia's extension of the eviction moratorium despite a significantly reduced sample size. For example, Panel B of Table IX shows that the rental price decline could have been as much as 7% compared to neighboring states in Virginia zip codes that requested the most rental assistance. Panel A of Table IX panel shows strong declines in home values for single family home values, while condominium value declines may have been even stronger. All results are statistically significant at the 1% level despite trimming the sample size to just over 1,000 observations in most regressions (and only 676 observations for one bedroom home values due to Zillow's uneven coverage of zip codes with respect to overall home value and cross sectional home value by bedroom count).

G. *Discussion*

Ultimately, my results show that landlords do not or cannot raise rental prices (at least compared to control regions) to compensate themselves for the loss of a valuable property right in the context of the landlord-tenant relationship. Perhaps due to frictions associated with lease renewals and renegotiations, landlords are not able to sufficiently compensate themselves for what most would perceive as the risk of an unevictable tenant. If my initial hypothesis that rents would rise to compensate landlords for a loss of a property right is false, then my alternative hypothesis

should be true: This should make residential real estate property less valuable. Here, the empirical results robustly confirm this drop in property values: As rents decrease, property values decrease even more, suggesting an inability of the landlords to pass along the costs of the moratorium to the tenants and to compensate themselves for the risk of being unable to evict a defaulting tenant.

In effect, the landlords lost an important security interest in their quasi- debt contract with renters. The value of that property or contractual right exceeded the benefits gained by the tenants, through declining rental rates, which were relatively fleeting. On the other hand, the loss of the Lockean right to exclude another from one's premises after nonpayment of rent caused the decline in values of all homes, not just those owned by landlords. This break in the Lockean bargain between the government and the landlords may also explain why rental prices eventually gain parity with states surrounding Virginia but why home prices do not. It is possible that, given the plausibility of future COVID-like emergencies, investors in Virginia residential real estate view the return of eviction moratoria to the state as quite likely (if not almost certain, given the lack of successful legal challenges). Seeing the state government set precedent for using its power in this manner, even after the federal COVID-related emergency comes to an end, renders Virginia a riskier locale for residential property investment, lowering prices of residential real estate assets.

The losses for the landlords and other residential real estate owners may spillover to the overall economy of the Virginia zip codes in important ways. Because of legal frictions, landlords already have limited access to the property of a tenant whose lease undergoes termination for failing to pay rent. The law protects the renter and minimizes contact between the landlord and the renter. Moreover, the landlord often cannot recover possession of the property, or even enter the property, until a court has specifically granted that landlord such permission. Under an eviction moratorium, such court orders cannot be obtained at all, which results in the landlord's inability to gain access

to the property for purposes of repair, improvement, and even routine maintenance.[21] This also likely contributes to the losses in home prices. This is yet another way that non-landlords may be affected by the moratorium: not only are their homes no longer desirable on the market as investment properties for perspective landlords, but now, the non-landlords share neighborhoods with properties which are rented out but cannot be functionally repaired, maintained, or in any way improved. These units can create reduced demand for other homes within the community, and hence, drive down value for everyone involved. These homes may also come up for sale more often, driving up the supply of homes on the market and resulting in further price declines (especially if one assumes simultaneously falling demand).

There are also possible spillovers for the overall economy. Landlords now lack the ability to make repairs to their property and may have significantly reduced cashflows. These reduced cashflows may make it more likely that these landlords default on the mortgages which are frequently used to finance rental properties. Landlords' reduced cashflows can impact businesses that specialize in home repairs, stores that provide materials for such repairs, and my impact the retail sector overall because landlords have much less cash at their disposal. Likewise, individuals or businesses who work on home improvements will find a lower demand for their services, lowering or destroying their profit margins and perhaps giving them reason to close their businesses and seek work elsewhere. This, too, can lead to a downward spiraling effect with respect to overall housing prices: when businesses that depend on a healthy service demands from homeowners leave, the ability to secure these services when economic times improve also

[21] While some entry for maintenance purposes is permissible, it is not difficult to see how this type of entry into the home of a non-paying tenant can be viewed negatively by that tenant and give rise to civil accusations against the landlord. These accusations, whether substantiated or otherwise, can create significant costs to entry if tenants assert counterclaims to eviction on that basis. Moreover, it is not uncommon for entry under such circumstances to result in physical confrontations, and has, on numerous occasions, resulted in serious injury or death, further making it functionally unwise for a landlord to enter a unit for any reason while going through the process of eviction.

decreases. The demand for housing by individuals who work in those businesses, likewise, disappears and can also contribute to a downward spiral in real estate prices. (Gurun, Wu, Xiao, and Xiao (2022)).

IV. Conclusion

Depriving homeowners of any property right without sufficient compensation can have dire consequences for residential real estate asset values. When Virginia passed its eviction moratorium into law, one might expect that landlords and perspective landlords would have compensated themselves for the risk of hosting an unevictable tenant by raising rental prices, alleviating potential declines in property values. This expectation is well-founded, since landlords frequently act as quasi-lenders, using the rented unit as a security interest in the event of non-payment of the agreed-upon monthly rental price by the renter. Since secured loan rates are significantly lower than unsecured loan rates, one might expect rental prices to skyrocket when eviction becomes impossible and the security interest they once enjoyed no longer exists. Yet, the empirical results tell an alternate story.

When homeowners face the prospect or actuality of an eviction moratorium, home prices steadily decline compared to surrounding regions. Rents decline in relative terms, but not steadily, ultimately rebounding to resemble the rental prices of the control regions. This is likely because the legal quagmire caused by the moratorium makes renegotiating rent prices nearly impossible for any landlord saddled with an unevictable tenant. There is no opportunity to raise prices on the unevictable tenant and no opportunity to re-rent the unit to another. As a result, homeowners economic recourse becomes extremely limited. It is true they may be able to recover some rent from the tenant and some rent from the government (since some government aid is technically part of Virginia's eviction moratorium), but it is clear from the decline in home prices that this is an

insufficient amount of compensation. When landlords lose valuable property rights, even government assistance with rent, perhaps due to the bureaucratic delays inherent in the system, cannot rescue landlords from losing housing value.

The declines in home values appear to be persistent. This is consistent with the findings of Sinai and Souleles (2005) and Campbell and Cocco (2007), albeit in a different context. While rents fluctuate downward before eventually returning to parity with neighboring states, home values decline immediately post-treat,emt and continue to decline throughout the full temporal scope of my sample. This may reflect broken trust between homeowners and the government of their state. Once the right to reclaim one's property from a non-paying renter has been contravened by the state government, homeowners appear reluctant to trust that government in the future. This substantiates the general hypothesis of law, finance, and economics scholars that weakening property rights will ultimately lead to lower-priced assets and may shrink the number and types of assets available to investors. (King and Levine (1993); La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997); and La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998)). If the state of the United States COVID-19 pandemic is sufficient to extend a moratorium from the end of the federal moratorium in July of 2021 until June of 2022, other unpredictable emergencies may bring on their own eviction bans and loss of future income. Hence, the value of Virginia property declines.

There may also be an element of broken trust between the landlords and the renters. There was, after all, no requirement for renters to take advantage of the eviction moratorium, and renters could have continued to pay their rent on time (or, at the very least, submit the outstanding amount of rent at the conclusion of the moratorium, for which the tenants remained liable). Renters also had the option of negotiating some more favorable rental price with their landlords in exchange for continuing to submit timely rent payments despite the eviction moratorium. The fact that many

renters elected the moratorium relief might have harmed the relationship between tenants and landlords. Once the trust was breached, landlords may have been more reluctant to enter into future leasing contracts, especially with tenants who now had an eviction and a default on their record.

Finally, part of the decline in home prices may reflect the harms incurred by nearby homeowners, even if those homeowners never intend to become landlords themselves. First, the demand for their home as a potential investment property declined, as it became more difficult to profitably rent in Virginia. This alone can be a downward force on home prices, which appears to lower home values across Virginia between $20 billion and $50 billion. If landlords really act like secured creditors, and the ability to regain the security interest upon default can be switched on and off by the state government at any time, it should not be surprising that these creditors would be less likely to engage in business within the state. Moreover, the existence of legal frictions that prevent a landlord from repairing, improving, or otherwise maintaining a property in the possession of an unevictable tenant may cause the rented unit to become an undesirable fixture within the neighborhood. It may look disheveled and in a state of disrepair. This can also drive down the demand for properties within the neighborhood, within the zip code, and ultimately within the state. The effects I observe are entirely consistent with all of these possible sources of lower property values, and probably comprise some or all of them simultaneously.

Given the precedent sent by the federal and Virginia eviction moratoria in the event of a worldwide pandemic, my research speaks to an important policy consideration when enacting such moratoria in response to emergencies in the future. While providing relief for renters may be an important public policy purpose, policymakers must also be aware of the costs to residential real estate assets that may persist well after the enactment (and even the termination) of an eviction moratorium. My research helps documents those costs in the contexts of legal rights to real estate

and the value of private property protections in the housing market, showing significant and persistent downsides associated with the enactment of an eviction moratorium as they dynamically express themselves in the data.

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Table I

Summary statistics at the zip code level

This table presentes the raw summary statistics for the relevant variables within the regressions that appear in subsequent tables as of July 31, 2021. Observations record rental prices and home values, with the home values broken down by home type, for the average zip code across the United States, Virginia, and the states surrounding Virginia. All values are in United States dollars and represent the assessment of these homes using the Zillow Home Value Index formula. Because Zillow provides detailed statistics for homes between the 35th and 65th percentiles, the percentile distributions presented below are the 1%, 25%, 50%, 75%, and 99% within the range of detailed home prices provided by Zillow. I round values in excess of one million dollars to the nearest thousand.

Home Type	mean	sd	p1	p25	p50	p75	p99
ALL STATES AND DISTRICT OF COLUMBIA							
All Homes	286,080	287,471	46,234	132,496	207,200	337,887	1,411,000
Single Family Homes	297,581	338,772	46,057	132,331	207,959	343,410	1,613,000
One-Bedroom Homes	246,655	204,936	35,251	113,751	187,287	314,235	1,007,000
Two-Bedroom Homes	240,170	219,009	37,417	113,769	179,826	288,845	1,173,000
Three-Bedroom Homes	301,930	295,024	58,742	150,009	221,843	346,947	1,495,000
Four-Bedroom Homes	424,120	425,201	80,771	215,322	316,808	482,208	2,125,000
Five-Bedroom Homes	657,953	723,357	96,598	325,299	465,853	714,097	3,623,000
Condominiums	321,359	244,783	69,707	177,078	249,392	384,070	1,281,000
Rental Prices	1,972	752,0	936	1,545	1,824	2,253	4,368
VIRGINIA							
All Homes	293,001	200,466	56,721	155,959	246,406	353,636	1,010,000
Single Family Homes	300,737	215,323	56,722	155,959	247,267	356,715	1,069,000
One-Bedroom Homes	211,498	90,093	52,632	147,896	213,088	259,960	435,869
Two-Bedroom Homes	211,390	134,556	40,802	123,629	185,372	257,680	697,114
Three-Bedroom Homes	287,132	179,958	71,776	167,695	247,551	328,591	1,002,000
Four-Bedroom Homes	423,838	244,687	111,154	260,225	352,571	509,476	1,238,000
Five-Bedroom Homes	619,148	343,750	169,078	368,157	524,803	800,380	1,71,000
Condominiums	288,273	103,585	91,345	212,994	278,088	347,456	630,716
Rental Prices	1,859	454,4	1,067	1,509	1,780	2,110	3,284
MARYLAND							
All Homes	393,956	207,785	64,721	268,345	376,307	472,292	1,130,000
Single Family Homes	400,068	214,498	64,721	271,138	380,071	476,931	1,165,000
One-Bedroom Homes	172,825	73,451	54,246	116,188	158,342	211,505	398,855
Two-Bedroom Homes	249,772	97,190	68,794	193,101	245,652	301,827	522,744
Three-Bedroom Homes	349,083	141,272	78,492	260,289	346,309	410,843	906,951
Four-Bedroom Homes	479,173	192,153	137,580	365,328	458,223	557,738	1,183,000
Five-Bedroom Homes	617,826	261,516	158,027	437,185	580,009	730,591	1,586,000
Condominiums	250,766	101,320	81,763	191,493	230,840	305,414	532,886
Rental Prices	1,835	419,8	1,066	1,564	1,825	2,025	3,640
KENTUCKY							
All Homes	124,942	87,203	32,028	70,948	105,391	155,599	405,787
Single Family Homes	125,316	88,487	32,028	70,948	105,327	155,059	412,471
One-Bedroom Homes	127,652	70,326	34,560	63,359	115,824	183,365	314,235
Two-Bedroom Homes	102,366	57,831	29,848	62,328	87,746	131,176	326,860
Three-Bedroom Homes	137,717	64,349	40,929	94,565	123,441	171,218	343,286
Four-Bedroom Homes	222,208	98,189	55,669	148,875	201,148	278,339	491,576
Five-Bedroom Homes	344,047	156,355	86,974	234,993	298,202	412,399	735,375
Condominiums	185,400	53,995	93,119	152,671	176,765	223,101	339,672
Rental Prices	1,163	240,1	886	967,5	1,175	1,359	1,417

TENNESSEE							
All Homes	201,071	120,777	64,869	126,084	163,758	244,157	763,074
Single Family Homes	201,902	126,098	64,809	126,084	163,589	243,930	768,113
One-Bedroom Homes	219,430	95,348	41,228	130,869	224,941	289,511	369,873
Two-Bedroom Homes	165,498	94,500	43,569	99,285	143,729	204,906	472,937
Three-Bedroom Homes	214,245	108,140	79,196	139,129	187,515	258,091	680,347
Four-Bedroom Homes	326,578	159,460	88,038	219,579	295,565	395,908	940,538
Five-Bedroom Homes	485,028	277,713	67,601	321,905	423,747	543,153	1,778,000
Condominiums	256,893	99,182	44,243	187,976	241,880	329,786	523,008
Rental Prices	1,605	461,5	693	1,351	1,581	1,890	3,043
NORTH CAROLINA							
All Homes	228,434	129,546	55,521	145,456	195,932	288,156	671,156
Single Family Homes	233,254	143,961	54,086	145,456	198,642	292,357	713,153
One-Bedroom Homes	171,585	87,530	20,582	112,037	157,941	227,616	437,563
Two-Bedroom Homes	162,942	86,187	29,430	99,988	147,599	213,754	417,625
Three-Bedroom Homes	231,788	116,027	62,852	159,558	209,294	285,450	650,948
Four-Bedroom Homes	351,068	182,798	99,956	239,013	308,469	427,659	1,143,000
Five-Bedroom Homes	530,449	306,853	165,672	333,895	426,957	654,204	2,181,000
Condominiums	231,561	108,438	67,158	158,052	219,579	279,601	563,695
Rental Prices	1,573	184,6	1,054	1,472	1,572	1,684	2,012
WEST VIRGINIA							
All Homes	101,391	50,556	24,776	70,600	92,689	120,653	294,788
Single Family Homes	101,639	51,191	24,776	70,612	92,576	120,545	294,840
One-Bedroom Homes	75,517	35,771	31,155	48,601	61,675	96,919	178,316
Two-Bedroom Homes	82,869	40,067	22,257	56,754	72,922	95,995	215,165
Three-Bedroom Homes	114,148	47,360	32,613	84,561	106,290	134,913	273,239
Four-Bedroom Homes	171,735	83,732	42,581	112,306	145,900	213,777	437,972
Five-Bedroom Homes	291,506	166,309	74,682	171,228	276,528	385,058	1,189,000
Condominiums	132,510	47,634	51,362	100,876	121,052	175,141	214,307

Table II

Regression results: Eviction moratorium effects on rental prices and home values

This table demonstrates the impact of extending the COVID-19 eviction moratorium on rental prices and home values by displaying the results of Regression (1). I use a differences-in-differences approach, designating a zip code as treated if the state in which it is located extended the COVID-19 eviction moratorium after its federal counterpart expired in July of 2021. The *Treatment* variable reads 1 in the month of treatment and in each month after treatment for the regions in the treated state (Virginia). The variable reads 0 for all untreated regions across time and all treated regions prior to treatment. The coefficient associated with the *Treatment* variable designates the differences-in-differences effect of extending the COVID-19 moratorium on rental prices and real estate values. I absorb year-month and zip code fixed effects and cluster standard errors at the zip code level. All continuous variables are in natural logarithm form. Following conventional practice, I use *, **, and *** to denote statistical significance at the 10%, 5%, and 1% level, in that order. Standard errors appear in parentheses.

VARIABLES	(1) Rental Price	(2) Home Value	(3) Single Family Home Value	(4) Condominium Home Value
Treatment	-0.0113**	-0.0186***	-0.0186***	-0.0274***
	(0.00464)	(0.00195)	(0.00195)	(0.00445)
Zip Population Est.	-64.26*	-0.400***	-0.428***	6.637*
	(36.11)	(0.123)	(0.122)	(3.914)
Zip Inc. per. HH.	-0.0130	7.00e-05	8.51e-05	0.0341
	(0.0437)	(0.000259)	(0.000259)	(0.0252)
Zip Num. Bus.	0.0196	0.0267***	0.0271***	-0.0668
	(0.0627)	(0.00741)	(0.00736)	(0.0610)
Zip Num. Empl.	-0.0946*	0.00349	0.00405	-0.00583
	(0.0567)	(0.00444)	(0.00445)	(0.0351)
Zip 1st Q. Payrolls	0.0856*	0.00222	0.00144	0.0428
	(0.0485)	(0.00595)	(0.00596)	(0.0316)
Zip Ann. Payroll	0.00933	-0.00900**	-0.00865**	0.00356
	(0.0563)	(0.00380)	(0.00381)	(0.0317)
Zip PO Del. Res.	64.33*	0.521***	0.558***	-6.532*
	(36.13)	(0.161)	(0.161)	(3.910)
Zip PO Del. Bus.	0.116**	0.00756	0.00676	0.117**
	(0.0573)	(0.00483)	(0.00484)	(0.0502)
Zip PO Del. Tot.	-0.235	0.0859**	0.0854**	0.145
	(0.157)	(0.0351)	(0.0353)	(0.115)
Zip PO Box Ct.	-0.0337*	-0.0110*	-0.0113*	-0.0193
	(0.0172)	(0.00644)	(0.00644)	(0.0192)
State Unemployment	-0.103	0.0138	0.0124	0.0723
	(0.0645)	(0.0240)	(0.0240)	(0.0555)
State Population	3.580***	7.154***	7.127***	12.48***
	(0.924)	(0.200)	(0.200)	(0.655)
State Labor Force	1.324	-0.202	-0.186	-1.100
	(1.192)	(0.454)	(0.453)	(1.017)
State Employment	-0.969	-0.510	-0.534	-0.573
	(1.000)	(0.421)	(0.421)	(0.917)
Observations	5,800	68,947	68,857	13,974

Table III

Regression results: Eviction moratorium effects on homes of varying sizes

This table demonstrates the impact of extending the COVID-19 eviction moratorium home values by displaying the results of Regression (1). I use a differences-in-differences approach, designating a zip code as treated if the state in which it is located extended the COVID-19 eviction moratorium after its federal counterpart expired in July of 2021. The *Treatment* variable reads 1 in the month of treatment and in each month after treatment for the regions in the treated state (Virginia). The variable reads 0 for all untreated regions across time and all treated regions prior to treatment. The coefficient associated with the *Treatment* variable designates the differences-in-differences effect of extending the COVID-19 moratorium on real estate values, which are separated into groupings by size. I absorb year-month and zip code fixed effects and cluster standard errors at the zip code level. All continuous variables are in natural logarithm form. Following conventional practice, I use *, **, and *** to denote statistical significance at the 10%, 5%, and 1% level, in that order. Standard errors appear in parentheses.

VARIABLES	(1) One Bedroom Home Value	(2) Two Bedroom Home Value	(3) Three Bedroom Home Value	(4) Four Bedroom Home Value	(5) Five Bedroom Home Value
Treatment	-0.0441***	-0.0313***	-0.0246***	-0.0329***	-0.0405***
	(0.00794)	(0.00266)	(0.00186)	(0.00260)	(0.00331)
Zip Population Est.	-8.208	1.426*	-1.812**	-0.350	-8.366
	(6.946)	(0.762)	(0.754)	(1.518)	(7.256)
Zip Inc. per. HH	0.000563	0.000272	0.000122	-0.000792	-0.00148
	(0.00149)	(0.000448)	(0.000310)	(0.000991)	(0.000980)
Zip Num. Bus.	-0.167*	0.0269**	0.0258***	0.0395***	0.0233
	(0.0897)	(0.0132)	(0.00794)	(0.0147)	(0.0326)
Zip Num. Empl.	0.0263	-0.00293	-0.00542	-0.0265***	-0.0251
	(0.0496)	(0.00977)	(0.00559)	(0.0100)	(0.0185)
Zip 1st Q. Payrolls	-0.00671	0.00264	0.00258	0.0143	0.0299
	(0.0511)	(0.0105)	(0.00537)	(0.0110)	(0.0224)
Zip Ann. Payroll	0.0286	-0.00685	-0.00474	0.0117	0.0119
	(0.0368)	(0.00806)	(0.00450)	(0.0113)	(0.0244)
Zip PO Del. Res.	8.258	-1.304*	1.960***	0.462	8.487
	(6.975)	(0.765)	(0.758)	(1.526)	(7.255)
Zip PO Del. Bus.	0.157**	-0.00410	0.00731	0.00347	0.0199
	(0.0728)	(0.0112)	(0.00538)	(0.00982)	(0.0142)
Zip PO Del. Tot.	0.0467	0.143**	0.138***	0.285***	0.326**
	(0.194)	(0.0691)	(0.0367)	(0.0677)	(0.127)
Zip PO Box Ct.	-0.00371	-0.00634	-0.0159***	-0.0168***	-0.0128**
	(0.0104)	(0.00670)	(0.00594)	(0.00543)	(0.00597)
State Unemployment	-0.123	-0.114***	-0.0315	-0.124***	-0.218***
	(0.0994)	(0.0353)	(0.0261)	(0.0299)	(0.0367)
State Population	7.646***	7.245***	7.259***	7.181***	7.529***
	(0.707)	(0.267)	(0.202)	(0.245)	(0.369)
State Labor Force	1.673	1.855***	0.432	2.160***	3.882***
	(1.900)	(0.679)	(0.502)	(0.557)	(0.674)
State Employment	-1.185	-2.055***	-1.078**	-2.866***	-4.467***
	(1.764)	(0.624)	(0.456)	(0.536)	(0.654)
Observations	9,373	43,858	59,527	41,263	23,562

Figures I through IV

The dynamic relationship of an eviction moratorium to rental prices and property values

These figures plots the relationship of extending the COVID-19 moratorium of evictions via state law (after the expiration of the federal moratorium) on rental prices and home values. I consider a 19-month window, spanning from 9 months before the change in law until 9 months after the change in law. I use a differences-in-differences approach, designating as treated all zip codes in Virginia starting in July of 2021. All Virginia zip codes prior to this date and all zip codes in other states will be left untreated. I absorb month-year and zip codes fixed effects and cluster standard errors at the region level. The dashed lines represent 95% confidence intervals, adjusted for the region-level clustering. I report estimated coefficients from Regression (2), graphing each one with its corresponding month relative to the Virginia eviction moratorium law change. I exclude the month of the change (month 0), estimating the univariate dynamic effect on home values relative to the month of the law change. I include controls for state level unemployment, state level population, the size of the state labor force, the number of individuals employed within the state, as defined by the Bureau of Labor Statistics, as well as controls for zip code population estimate, incompe per household, number of businesses per zip code, number of employees per zip code, the number of business payrolls in the first quarter of the year in each zip code, the number of business payrolls in each zip code annually, the number of deliveries to residences in each zip code (as tracked by the Post Office), the number of business deliveries in each zip code (as tracked by the Post Office), the number of total deliveries in each zip code (as tracked by the Post Office), and the number of boxes delivered to each zip code (as tracked by the Post Office).

Figure I: Rental Prices

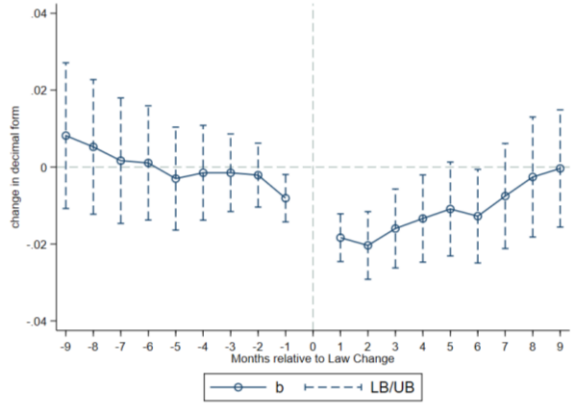


Figure II: Home Values

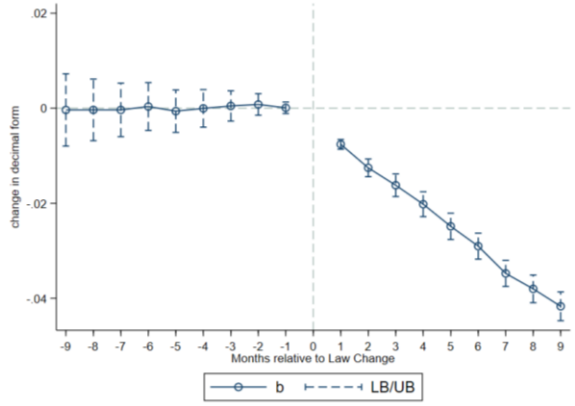


Figure III: Single Family Home Values

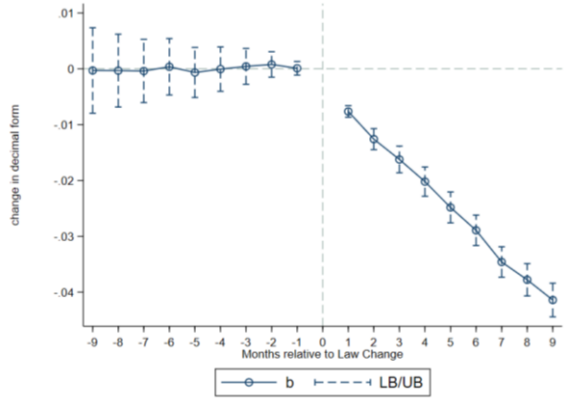
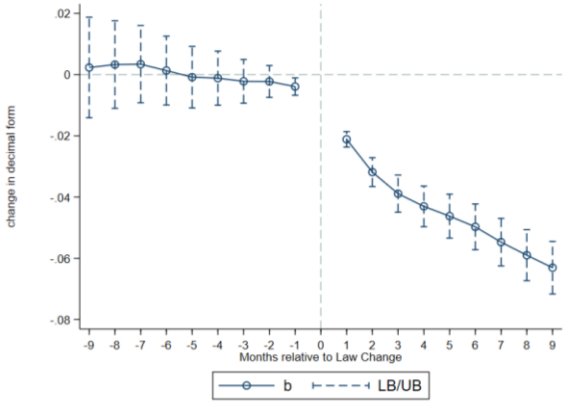


Figure IV: Condominium Home Values



Figures V through X

The dynamic relationship of an eviction moratorium to rental prices and property values

These figures plots the relationship of extending the COVID-19 moratorium of evictions via state law (after the expiration of the federal moratorium) on residential home values. I consider a 13-month window, spanning from 6 months before the change in law until 6 months after the change in law. I use a differences-in-differences approach, as described in prior figures. I absorb month-year and zip codes fixed effects and cluster standard errors at the region level. I limit the regression to zip codes within Virginia border counties and the counties on the border of Virginia in the surrounding states. The dashed lines represent 95% confidence intervals, adjusted for the region-level clustering. I report estimated coefficients from Regression (2), graphing each one with its corresponding month relative to the Virginia eviction moratorium law change. I exclude the month of the change (month 0), estimating the univariate dynamic effect on home values relative to the month of the law change. I include the same controls in each regression as those for prior figures.

Figure V: Home Value

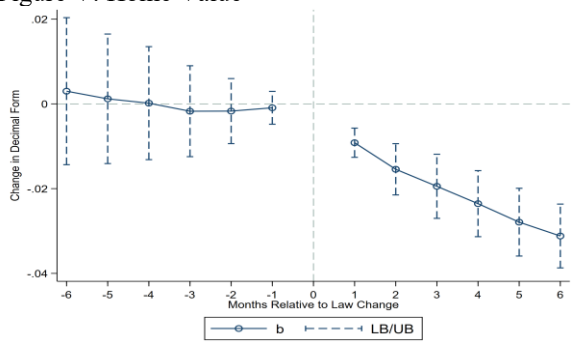


Figure VI: One Bedroom Home Value

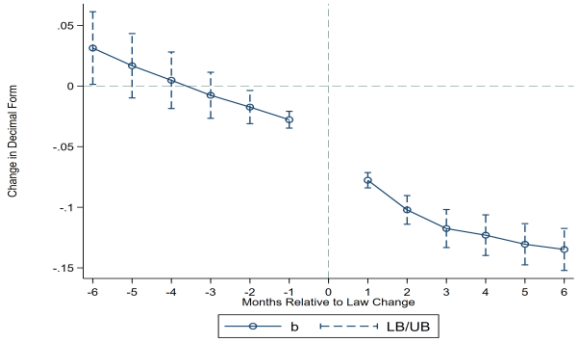


Figure VII: Two Bedroom Home Value

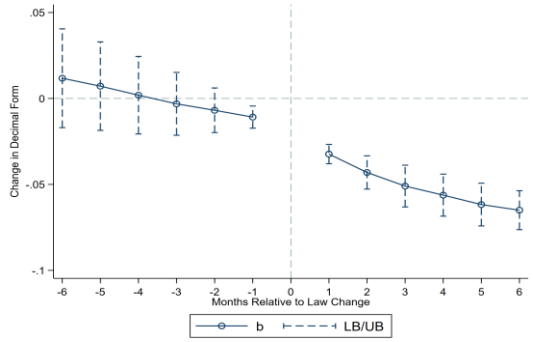


Figure VIII: Three Bedroom Home Value

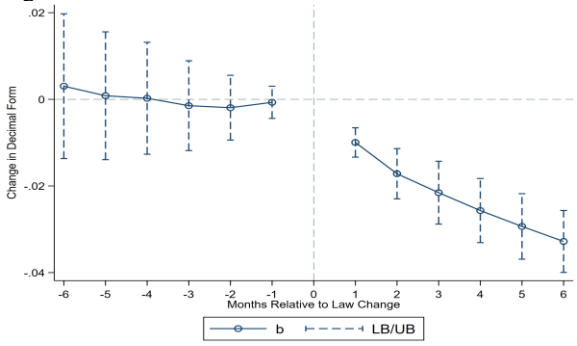


Figure IX: Four Bedroom Home Value

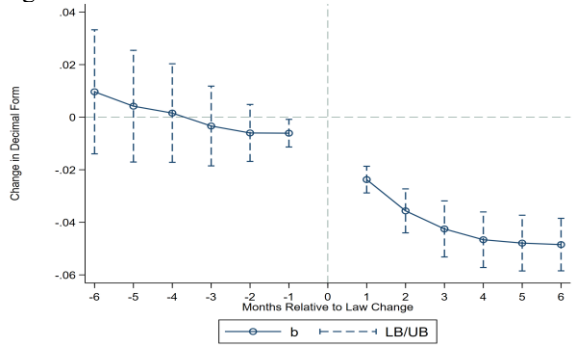


Figure X: Five Bedroom Home Value

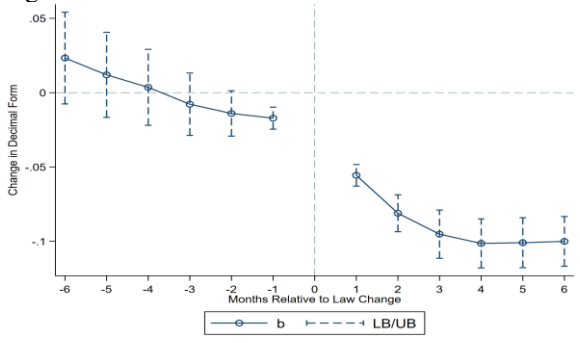


Table IV

Regression results: Eviction moratorium effects at the border

This table demonstrates the impact of extending the COVID-19 eviction moratorium on home values by displaying the results of Regression (1). I limit the regression to only the border counties of Virginia and all of the counties within the control states that border Virginia. I use a differences-in-differences approach, designating a zip code as treated if the state in which it is located extended the COVID-19 eviction moratorium after its federal counterpart expired in July of 2021. The *Treatment* variable reads 1 in the month of treatment and in each month after treatment for the regions in the treated state (Virginia). The variable reads 0 for all untreated regions across time and all treated regions prior to treatment. The coefficient associated with the *Treatment* variable designates the differences-in-differences effect of extending the COVID-19 moratorium on real estate values. I absorb year-month and zip code fixed effects and cluster standard errors at the zip code level. I also include controls for state population, the total labor force within each state, and the employed and unemployed population within each state (as defined by the Bureau of Labor Statistics). All continuous variables are in natural logarithm form. Following conventional practice, I use *, **, and *** to denote statistical significance at the 10%, 5%, and 1% level, in that order. Standard errors appear in parentheses.

VARIABLES	(1) Home Value	(2) Single Family Home Value	(3) One Bedroom Home Value	(4) Two Bedroom Home Value	(5) Three Bedroom Home Value	(6) Four Bedroom Home Value	(7) Five Bedroom Home Value
Treatment	-0.021***	-0.0211***	-0.0402***	-0.0313***	-0.0236***	-0.0248***	-0.0272***
	(0.00267)	(0.00267)	(0.00683)	(0.00432)	(0.00249)	(0.00345)	(0.00569)
Pop. Est.	-0.451**	-0.439**	-12.93	0.103	0.408	-2.238	-18.51*
	(0.203)	(0.192)	(7.873)	(1.858)	(1.086)	(3.293)	(10.16)
Inc. per. HH.	-0.000339	-0.000277	0.00455	0.000232	0.000385	-0.00185	0.0712*
	(0.000437)	(0.000439)	(0.00355)	(0.000867)	(0.000605)	(0.00158)	(0.0367)
Num. Bus.	-0.0121	-0.0111	0.0368	-0.0132	-0.00603	0.0370	0.00669
	(0.0141)	(0.0140)	(0.154)	(0.0226)	(0.0157)	(0.0273)	(0.0623)
Num. Empl.	0.00515	0.00687	-0.133	-0.0159	0.00309	-0.0442**	-0.0711*
	(0.00694)	(0.00684)	(0.113)	(0.0170)	(0.00911)	(0.0191)	(0.0427)
1st Q. Payr.	-0.0120	-0.0155	0.162	0.0105	-0.0116	-0.00657	-0.0766
	(0.0133)	(0.0133)	(0.122)	(0.0191)	(0.00965)	(0.0198)	(0.0493)
Ann. Payroll	0.00718	0.00908	-0.0490	4.96e-05	0.00825	0.0460**	0.149***
	(0.00979)	(0.00995)	(0.0651)	(0.0120)	(0.00715)	(0.0230)	(0.0493)
PO Del. Res.	0.592**	0.575**	12.59	-0.0924	-0.260	2.218	18.74*
	(0.268)	(0.253)	(7.901)	(1.888)	(1.107)	(3.289)	(10.16)
PO Del. Bus.	-0.0116	-0.0134	-0.0184	-0.00603	-0.0165	0.00908	0.0354
	(0.00838)	(0.00832)	(0.118)	(0.0181)	(0.0106)	(0.0253)	(0.0515)
PO Del. Tot.	0.154***	0.165***	-0.131	0.276***	0.161*	0.349***	0.0419
	(0.0510)	(0.0543)	(0.738)	(0.0978)	(0.0831)	(0.111)	(0.163)
PO Box Ct.	-0.0177	-0.0196	0.135*	0.0106	-0.0183	0.00767	0.0307
	(0.0137)	(0.0137)	(0.0784)	(0.0337)	(0.0203)	(0.0227)	(0.0342)
State Unemp.	-0.0836**	-0.0947**	-0.199	-0.203***	-0.117***	-0.145***	-0.206***
	(0.0418)	(0.0410)	(0.138)	(0.0666)	(0.0450)	(0.0492)	(0.0691)
State Pop.	3.293***	3.113***	2.970	3.371***	3.110***	1.966***	3.439***
	(0.407)	(0.403)	(2.422)	(0.602)	(0.424)	(0.608)	(1.205)
State Lab. For.	1.619**	1.817**	3.124	3.563***	2.102**	3.045***	4.540***
	(0.802)	(0.787)	(2.627)	(1.260)	(0.860)	(0.901)	(1.236)
State Emp.	-1.587**	-1.730**	-1.071	-2.770**	-1.721**	-2.483***	-3.456***
	(0.700)	(0.689)	(2.321)	(1.100)	(0.745)	(0.818)	(1.187)
Observations	14,239	14,221	1,944	8,649	12,045	8,032	4,469

Table V

Eviction moratorium and home values across zip codes employing propensity score matching

This table demonstrates the impact of an eviction moratorium on rental prices and home values by displaying the results of Regression (1). Prior to running the regressions, I employed propensity score matching with no replacement to match the treated zip codes to zip codes in states outside of Virginia that most greatly resemble them in terms of the control variables used below. I matched zip codes Virginia with zip codes within similar states within the date range of October of 2020 until April of 2022. I use a differences-in-differences approach, designating a zip code as treated if the state in which it is located extended the COVID-19 eviction moratorium after its federal counterpart expired in July of 2021. The *Treatment* variable reads 1 in the month of treatment and in each month after treatment for the regions in the treated state (Virginia). The variable reads 0 for all untreated regions across time and all treated regions prior to treatment. The coefficient associated with the *Treatment* variable designates the differences-in-differences effect of extending the COVID-19 moratorium on rental prices and real estate values. I absorb year-month and zip code fixed effects and cluster standard errors at the zip code level. All continuous variables are in natural logarithm form.

Panel A:

VARIABLES	(1) Home Value	(2) Single Family Home Value	(3) Condominium Home Value
Treatment	-0.0279***	-0.0279***	-0.0279***
	(0.00487)	(0.00469)	(0.00568)
Zip Population Estimate	80.21**	68.32	138.1***
	(39.90)	(45.72)	(51.80)
Zip Income per Household	0.0495	0.0703	0.0170
	(0.0587)	(0.0482)	(0.0633)
Zip Number of Businesses	0.0882	0.0833	0.128
	(0.113)	(0.108)	(0.134)
Zip Number of Employees	-0.0284	0.00534	-0.0605
	(0.0660)	(0.0618)	(0.0901)
Zip 1st Quarter Payrolls	0.0649	0.0538	0.189*
	(0.0736)	(0.0685)	(0.102)
Zip Annual Payrolls	-0.0294	-0.0308	-0.137
	(0.0815)	(0.0755)	(0.130)
Zip Post Office Residential Deliveries	-80.31**	-68.30	-137.4***
	(39.89)	(45.72)	(51.76)
Zip Post Office Business Deliveries	0.198*	0.174*	0.281**
	(0.110)	(0.0981)	(0.114)
Zip Post Office Deliveries Total	-0.0764	-0.0779	-0.885**
	(0.295)	(0.272)	(0.373)
Zip Post Office Box Count	0.0475	0.0379	0.0664
	(0.0353)	(0.0334)	(0.0493)
State Unemployment	-0.0445**	-0.0501***	-0.0521**
	(0.0175)	(0.0165)	(0.0208)
State Population	5.274***	4.900***	6.788***
	(0.715)	(0.686)	(0.939)
State Employment	0.924***	0.938***	0.351
	(0.266)	(0.263)	(0.312)
Observations	3,488	3,466	3,113

Panel B:

VARIABLES	(1) One Bedroom Home Value	(2) Two Bedroom Home Value	(3) Three Bedroom Home Value	(4) Four Bedroom Home Value	(5) Five Bedroom Home Value
Treatment	-0.0275***	-0.0270***	-0.0289***	-0.0273***	-0.0247***
	(0.00835)	(0.00532)	(0.00468)	(0.00464)	(0.00455)
Zip Population Est.	72.84	111.7**	78.14**	70.37	14.23
	(55.65)	(50.67)	(38.33)	(50.45)	(44.40)
Zip Inc. per. HH.	0.0104	0.0774	0.0734*	0.0725	0.0141
	(0.0902)	(0.0707)	(0.0441)	(0.0525)	(0.0442)
Zip Num. Bus.	0.00205	0.0270	0.0434	0.0743	0.152
	(0.258)	(0.127)	(0.102)	(0.107)	(0.103)
Zip Num. Empl.	0.0442	0.00733	-0.0274	0.0144	0.0182
	(0.0820)	(0.0942)	(0.0637)	(0.0595)	(0.0564)
Zip 1st Q. Payrolls	0.159	0.143	0.0791	0.0357	0.0285
	(0.182)	(0.0908)	(0.0679)	(0.0635)	(0.0628)
Zip Ann. Payroll	-0.199	-0.206	-0.0403	0.00347	-0.00706
	(0.243)	(0.131)	(0.0778)	(0.0704)	(0.0645)
Zip PO Del. Res.	-72.61	-111.8**	-78.09**	-70.29	-14.10
	(55.57)	(50.63)	(38.32)	(50.46)	(44.42)
Zip PO Del. Bus.	0.173	0.202*	0.140	0.200**	0.242***
	(0.122)	(0.115)	(0.0888)	(0.0934)	(0.0816)
Zip PO Del. Tot.	-0.559	-0.0228	-0.0922	-0.156	-0.0107
	(0.546)	(0.348)	(0.275)	(0.278)	(0.244)
Zip PO Box Ct.	0.119*	0.0354	0.0259	0.0406	0.0740**
	(0.0689)	(0.0431)	(0.0311)	(0.0351)	(0.0345)
State Unemployment	-0.0326	-0.0423**	-0.0474***	-0.0506***	-0.0486***
	(0.0366)	(0.0178)	(0.0175)	(0.0156)	(0.0143)
State Population	5.993***	5.623***	5.126***	4.934***	4.321***
	(0.982)	(0.729)	(0.698)	(0.690)	(0.617)
State Employment	0.977**	0.705***	1.004***	0.932***	0.727***
	(0.433)	(0.267)	(0.267)	(0.267)	(0.261)
Observations	1,908	3,473	3,486	3,443	3,376

Table VI

Eviction moratorium and home values across zip codes employing entropy balancing

This table demonstrates the impact of an eviction moratorium on rental prices and home values by displaying the results of Regression (1). Prior to running the regressions, I employed entropy balancing to balance the mean, standard deviation, and skewness of untreated zip codes to be as similar as possible to those of the treated zip codes. I balanced zip codes in Virginia with zip codes within similar states within the date range of October of 2020 until April of 2022. I use a differences-in-differences approach, designating a zip code as treated if the state in which it is located extended the COVID-19 eviction moratorium after its federal counterpart expired in July of 2021. The *Treatment* variable reads 1 in the month of treatment and in each month after treatment for the regions in the treated state (Virginia). The variable reads 0 for all untreated regions across time and all treated regions prior to treatment. The coefficient associated with the *Treatment* variable designates the differences-in-differences effect of extending the COVID-19 moratorium on rental prices and real estate values. I absorb year-month and zip code fixed effects and cluster standard errors at the zip code level. I also include controls for state population, the total labor force within each state, and the employed and unemployed population within each state (as defined by the Bureau of Labor Statistics). All continuous variables are in natural logarithm form. Following conventional practice, I use *, **, and *** to denote statistical significance at the 10%, 5%, and 1% level, in that order. Standard errors appear in parentheses.

Panel A:

VARIABLES	(1) Home Value	(2) Single Family Home Value	(3) Condominium Home Value
Treatment	-0.0157***	-0.0163***	-0.0245***
	(0.00139)	(0.00137)	(0.00224)
State Population	8.076***	8.196***	7.788***
	(0.193)	(0.190)	(0.252)
State Unemployment	-0.108***	-0.113***	-0.198***
	(0.00561)	(0.00565)	(0.0132)
Zip Population Estimate	-0.0851	-0.0806	-0.997
	(0.161)	(0.159)	(1.193)
Zip Income per Household	0.000693*	0.000714*	0.00422***
	(0.000369)	(0.000366)	(0.000775)
Zip Number of Businesses	0.00515	0.00529	-0.0178
	(0.00821)	(0.00828)	(0.0359)
Zip Number of Employees	-0.0172**	-0.0171**	0.0269
	(0.00793)	(0.00791)	(0.0356)
Zip 1st Quarter Payrolls	0.00964*	0.00932	-0.0289
	(0.00573)	(0.00573)	(0.0382)
Zip Annual Payrolls	0.220	0.216	1.128
	(0.165)	(0.163)	(1.219)
Observations	508,658	506,830	133,759

Panel B:

VARIABLES	(1) One Bedroom Home Value	(2) Two Bedroom Home Value	(3) Three Bedroom Home Value	(4) Four Bedroom Home Value	(5) Five Bedroom Home Value
Treatment	-0.0345***	-0.0248***	-0.0197***	-0.0253***	-0.0272***
	(0.00372)	(0.00160)	(0.00127)	(0.00130)	(0.00157)
State Population	8.262***	7.743***	8.149***	7.637***	7.635***
	(0.391)	(0.196)	(0.174)	(0.166)	(0.193)
State Unemp.	-0.172***	-0.124***	-0.113***	-0.170***	-0.206***
	(0.0135)	(0.00586)	(0.00552)	(0.00542)	(0.00695)
Zip Pop. Est.	-0.960	-0.480	-0.265	-0.549	-0.614
	(1.267)	(0.300)	(0.182)	(0.482)	(0.474)
Zip Inc. per. HH.	0.00131	0.000238	0.000646	0.000573	0.00534
	(0.00137)	(0.000757)	(0.000594)	(0.000790)	(0.0108)
Zip Num. Bus.	0.0458	0.0160	0.0157*	0.00210	0.0507**
	(0.0486)	(0.0146)	(0.00867)	(0.0141)	(0.0258)
Zip Num. Empl.	-0.00808	-0.0228	-0.00777	0.00209	-0.0419
	(0.0705)	(0.0167)	(0.00885)	(0.0136)	(0.0273)
Zip 1st Q. Payrolls	-0.0219	0.00711	-0.00272	0.00642	0.00590
	(0.0670)	(0.0104)	(0.00611)	(0.0142)	(0.0266)
Zip Ann. Payroll	1.025	0.584*	0.420**	0.752	0.782
	(1.302)	(0.321)	(0.194)	(0.500)	(0.488)
Observations	103,456	342,540	429,966	331,984	203,806

Figures XI through XVI

Synthetic control: The relationship of an eviction moratorium to rental prices and property values

These figures plot the relationship of extending the COVID-19 moratorium of evictions via state law (after the expiration of the federal moratorium) on residential home values. I consider a 19-month window, spanning from 9 months before the change in law until 9 months after the change in law. I use a synthetic control approach, as described in the main text. State population, employment, unemployment, and labor force are used to identify and weigh the synthetic control for the State of Virginia.

Figure XI: Home Value

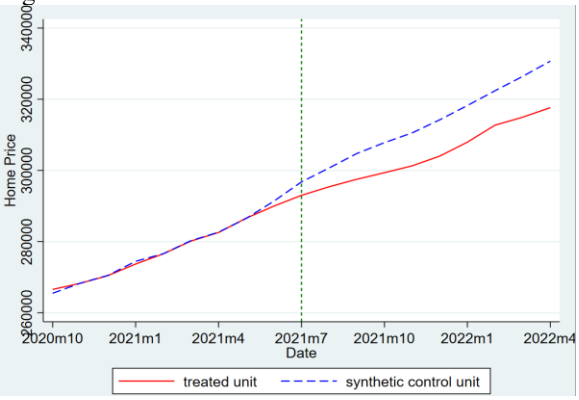


Figure XII: One Bedroom Home Value

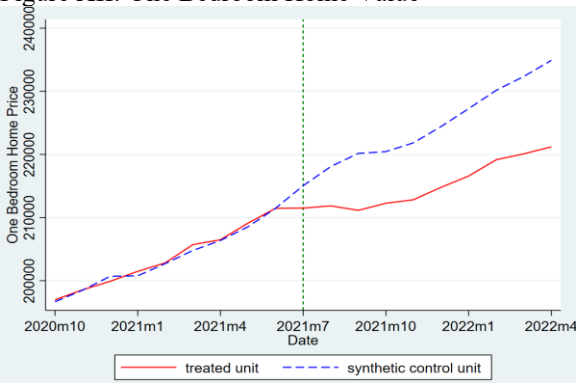


Figure XIII: Two Bedroom Home Value

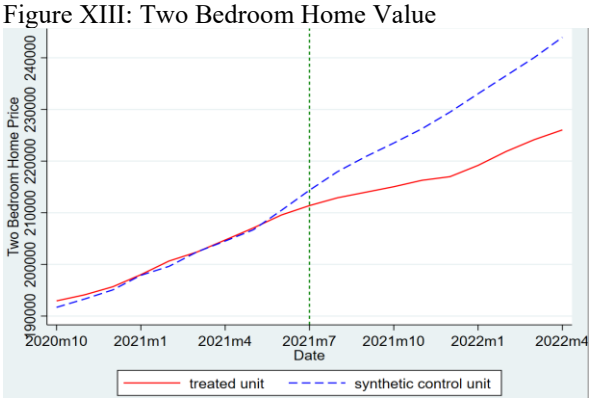


Figure XIV: Three Bedroom Home Value

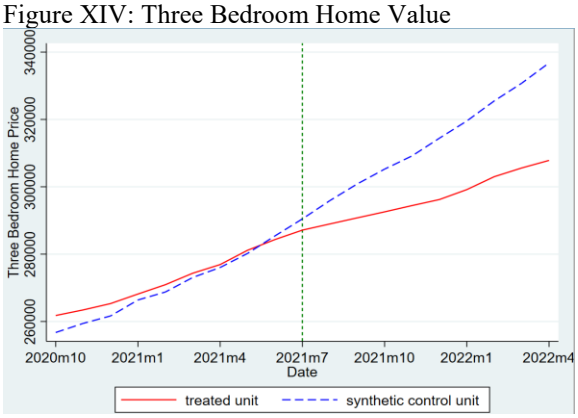


Figure XV: Four Bedroom Home Value

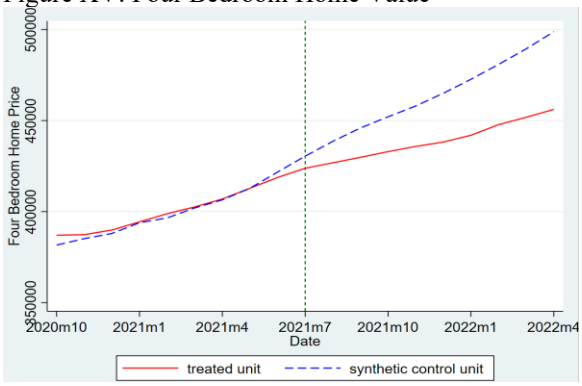
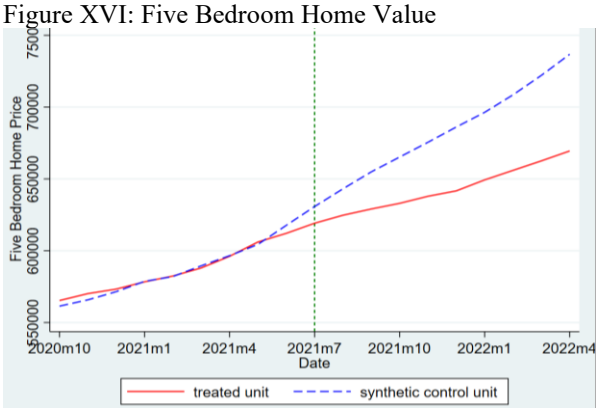


Figure XVI: Five Bedroom Home Value



Figures XVII through XIX

The dynamic relationship of an eviction moratorium to rental prices and property values

Figure XIII plots the amount of government rental assistance distributed in Virginia over monthly time intervals. Month 0 represents July 2021, when the federal moratorium concluded. The intervals surrounding this dates are denominated as months prior to and months subsequent to treatment, with negative numbers representing the months prior and positive numbers representing the months subsequent. Qualifying Virginia renters and landlords continued to receive aid in months after the termination of the federal moratorium because the government of Virginia extended the eviction moratorium and also took over the provisioning of aid to residents in the state. Figures XIV and XV represent the amount of government rental assistance received at various zip codes across Virginia in July of 2021 and December of 2021. The legend on each map shows the amounts of aid, with darker colors indicating more aid and lighter colors representing less. The amount of aid granted appears to have increased after the replacement of the federal eviction moratorium with the state eviction moratorium.

Figure XVII

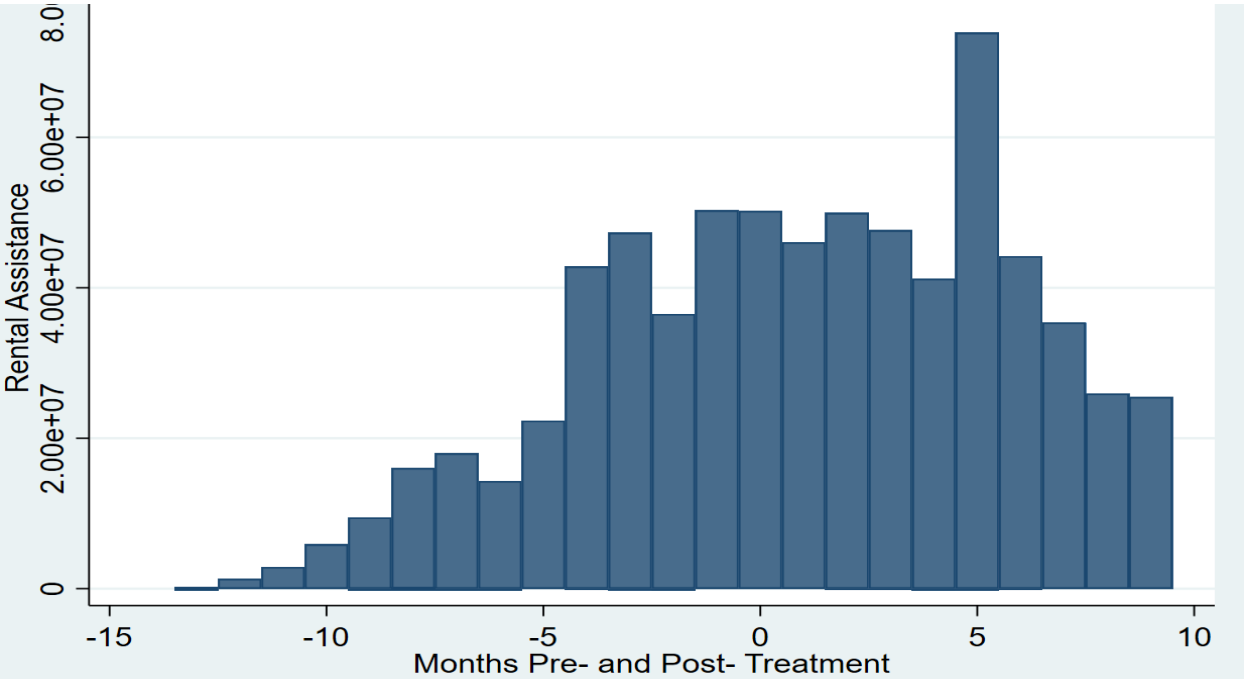


Figure XVIII: July 2021

Figure XIX: December 2021

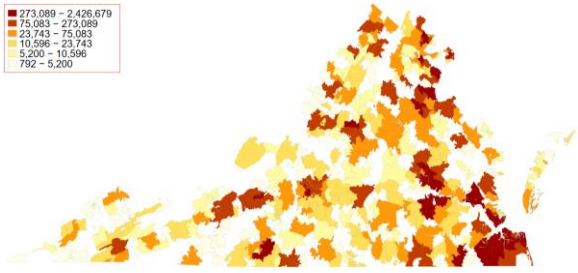


Table VII

Regression results: Eviction moratorium effects on homes with largest rental assistance requests

This table demonstrates the impact of extending the COVID-19 eviction moratorium home values by displaying the results of Regression (1). I use a differences-in-differences approach, designating a zip code as treated if the state in which it is located extended the COVID-19 eviction moratorium after its federal counterpart expired in July of 2021. The *Treatment* variable reads 1 in the month of treatment and in each month after treatment for the regions in the treated state (Virginia). The variable reads 0 for all untreated regions across time and all treated regions prior to treatment. The coefficient associated with the *Treatment* variable designates the differences-in-differences effect of extending the COVID-19 moratorium on real estate values. Here, I limit the treated observations in Virginia to those which were in the top five percent in terms of receiving government aid for tenant failure to pay. I absorb year-month and zip code fixed effects and cluster standard errors at the zip code level. All continuous variables are in natural logarithm form.

VARIABLES	(1) Rental Home Value	(2) Home Value	(3) Single Family Home Value	(4) Condominium Home Value
Treatment	-0.0270***	-0.0217***	-0.0220***	-0.0538***
	(0.00804)	(0.00236)	(0.00237)	(0.00760)
Zip Population Est.	-91.78*	-0.437***	-0.453***	4.722
	(46.69)	(0.126)	(0.126)	(3.312)
Zip Inc. per. HH	0.0406	6.21e-05	7.53e-05	0.0353
	(0.0446)	(0.000259)	(0.000260)	(0.0264)
Zip Num. Bus.	-0.00215	0.0272***	0.0275***	-0.109
	(0.0695)	(0.00756)	(0.00751)	(0.0702)
Zip Num. Empl.	-0.0732	0.00414	0.00464	0.0210
	(0.0662)	(0.00452)	(0.00453)	(0.0382)
Zip 1st Q. Payrolls	0.0572	0.00208	0.00131	0.0389
	(0.0591)	(0.00607)	(0.00608)	(0.0336)
Zip Ann. Payroll	0.0515	-0.00926**	-0.00887**	0.00370
	(0.0682)	(0.00387)	(0.00387)	(0.0339)
Zip PO Del. Res.	91.82*	0.570***	0.591***	-4.440
	(46.72)	(0.165)	(0.166)	(3.308)
Zip PO Del. Bus.	0.0991	0.00581	0.00516	0.0746
	(0.0655)	(0.00497)	(0.00498)	(0.0509)
Zip PO Del. Tot.	-0.236	0.0910**	0.0900**	0.104
	(0.165)	(0.0367)	(0.0368)	(0.119)
Zip PO Box Ct.	-0.0292	-0.0121*	-0.0123*	-0.0151
	(0.0205)	(0.00652)	(0.00653)	(0.0199)
State Unemployment	-0.0431	-0.0413	-0.0416	-0.0828
	(0.0891)	(0.0259)	(0.0259)	(0.0669)
State Population	4.539***	6.881***	6.861***	11.15***
	(1.095)	(0.203)	(0.203)	(0.629)
State Labor Force	-0.0170	1.013**	1.006**	2.079*
	(1.624)	(0.485)	(0.485)	(1.221)
State Employment	-0.270	-1.575***	-1.576***	-3.211***
	(1.401)	(0.461)	(0.461)	(1.158)
Observations	4,192	62,227	62,137	11,272

Table VIII

Regression results: Eviction moratorium effects on homes with largest rental assistance requests

This table demonstrates the impact of extending the COVID-19 eviction moratorium home values by displaying the results of Regression (1). I use a differences-in-differences approach, designating a zip code as treated if the state in which it is located extended the COVID-19 eviction moratorium after its federal counterpart expired in July of 2021. The *Treatment* variable reads 1 in the month of treatment and in each month after treatment for the regions in the treated state (Virginia). The variable reads 0 for all untreated regions across time and all treated regions prior to treatment. The coefficient associated with the *Treatment* variable designates the differences-in-differences effect of extending the COVID-19 moratorium on real estate values. Here, I limit the treated observations in Virginia to those which were in the top five percent in terms of receiving government aid for tenant failure to pay. I absorb year-month and zip code fixed effects and cluster standard errors at the zip code level. All continuous variables are in natural logarithm form.

VARIABLES	(1) One Bedroom Home Value	(2) Two Bedroom Home Value	(3) Three Bedroom Home Value	(4) Four Bedroom Home Value	(5) Five Bedroom Home Value
Treatment	-0.0599***	-0.0393***	-0.0295***	-0.0399***	-0.0536***
	(0.0132)	(0.00358)	(0.00228)	(0.00345)	(0.00510)
Zip Population Est.	-7.033	1.344	-1.944**	-0.778	-8.180
	(6.256)	(0.866)	(0.775)	(1.570)	(7.700)
Zip Inc. per. HH	0.000968	0.000320	0.000109	-0.00104	-0.00182*
	(0.00158)	(0.000467)	(0.000309)	(0.00109)	(0.000967)
Zip Num. Bus.	-0.178*	0.0244*	0.0262***	0.0415***	0.0291
	(0.0960)	(0.0135)	(0.00815)	(0.0155)	(0.0355)
Zip Num. Empl.	0.0128	-0.000285	-0.00492	-0.0274***	-0.0290
	(0.0532)	(0.0100)	(0.00576)	(0.0106)	(0.0208)
Zip 1st Q. Payrolls	-0.00134	0.00142	0.00219	0.0142	0.0323
	(0.0526)	(0.0109)	(0.00556)	(0.0118)	(0.0257)
Zip Ann. Payroll	0.0354	-0.00621	-0.00472	0.0127	0.0127
	(0.0385)	(0.00822)	(0.00463)	(0.0120)	(0.0272)
Zip PO Del. Res.	7.223	-1.166	2.110***	0.932	8.377
	(6.281)	(0.870)	(0.778)	(1.578)	(7.700)
Zip PO Del. Bus.	0.137*	-0.00977	0.00523	-0.00335	0.0115
	(0.0805)	(0.0114)	(0.00554)	(0.0102)	(0.0136)
Zip PO Del. Tot.	-0.00729	0.144**	0.144***	0.291***	0.291**
	(0.200)	(0.0701)	(0.0380)	(0.0687)	(0.133)
Zip PO Box Ct.	-0.00575	-0.00810	-0.0171***	-0.0190***	-0.0144**
	(0.00844)	(0.00637)	(0.00602)	(0.00546)	(0.00674)
State Unemployment	-0.353***	-0.221***	-0.0986***	-0.233***	-0.391***
	(0.118)	(0.0388)	(0.0281)	(0.0342)	(0.0453)
State Population	6.720***	6.763***	6.958***	6.658***	6.674***
	(0.759)	(0.273)	(0.205)	(0.248)	(0.370)
State Labor Force	6.416***	4.118***	1.856***	4.449***	7.374***
	(2.177)	(0.737)	(0.537)	(0.627)	(0.817)
State Employment	-5.678***	-4.138***	-2.384***	-4.997***	-7.746***
	(2.147)	(0.696)	(0.498)	(0.624)	(0.826)
Observations	7,660	37,897	52,966	35,363	19,238

Table IX

Eviction moratorium and home values across zip codes employing propensity score matching

This table demonstrates the impact of an eviction moratorium on rental prices and home values by displaying the results of Regression (1). Prior to running the regressions, I employed propensity score matching with no replacement to match the treated zip codes where the impact of the eviction moratorium was one standard deviation greater in terms of reduced rent payments than the average across Virginia to zip codes in states outside of Virginia that most greatly resemble them in terms of population, employment, unemployment, and the other control variables listed in the table below. In this implementation, I matched zip codes Virginia with zip codes within similar states within the date range of October of 2020 until April of 2022. I use a differences-in-differences approach, designating a zip code as treated if the state in which it is located extended the COVID-19 eviction moratorium after its federal counterpart expired in July of 2021. The *Treatment* variable reads 1 in the month of treatment and in each month after treatment for the regions in the treated state (Virginia). The variable reads 0 for all untreated regions across time and all treated regions prior to treatment. The coefficient associated with the *Treatment* variable designates the differences-in-differences effect of extending the COVID-19 moratorium on rental prices and real estate values.

Panel A:

VARIABLES	(1) Home Value	(2) Single Family Home Value	(3) Condominium Home Value
Treatment	-0.0357***	-0.0316***	-0.0474***
	(0.00786)	(0.00775)	(0.00808)
Zip Population Estimate	129.6**	116.0**	133.2**
	(54.33)	(52.12)	(65.32)
Zip Income per Household	0.000847	0.00250	-0.0309
	(0.0510)	(0.0477)	(0.0618)
Zip Number of Businesses	0.249*	0.258**	0.211
	(0.130)	(0.124)	(0.128)
Zip Number of Employees	0.0585	0.0590	0.0430
	(0.0724)	(0.0688)	(0.0725)
Zip 1st Quarter Payrolls	-0.0426	-0.0439	0.0313
	(0.116)	(0.107)	(0.122)
Zip Annual Payrolls	0.0360	0.0451	-0.0211
	(0.111)	(0.102)	(0.128)
Zip Post Office Residential Deliveries	-129.4**	-115.9**	-132.7**
	(54.37)	(52.16)	(65.35)
Zip Post Office Business Deliveries	0.355***	0.341***	0.408***
	(0.0789)	(0.0729)	(0.0908)
Zip Post Office Deliveries Total	-0.390	-0.280	-0.520
	(0.433)	(0.429)	(0.436)
Zip Post Office Box Count	0.242***	0.202***	0.245***
	(0.0476)	(0.0439)	(0.0538)
State Unemployment	-0.0547**	-0.0442*	-0.0881***
	(0.0246)	(0.0246)	(0.0265)
State Population	8.003***	8.277***	8.720***
	(1.541)	(1.649)	(1.636)
State Employment	2.256***	2.311***	0.367
	(0.737)	(0.776)	(0.566)
Observations	1,134	1,128	1,083

Panel B:

VARIABLES	(1) One Bedroom Home Value	(2) Two Bedroom Home Value	(3) Three Bedroom Home Value	(4) Four Bedroom Home Value	(5) Five Bedroom Home Value
Treatment	-0.0692***	-0.0428***	-0.0336***	-0.0310***	-0.0265***
	(0.0134)	(0.00769)	(0.00805)	(0.00753)	(0.00773)
Zip Population Est.	298.3***	173.4***	134.1**	114.7*	51.42
	(76.78)	(62.56)	(52.30)	(58.88)	(56.54)
Zip Inc. per. HH	-0.111	-0.0226	0.00389	0.0146	-0.0271
	(0.0758)	(0.0633)	(0.0508)	(0.0469)	(0.0493)
Zip Num. Bus.	0.0176	0.218*	0.223**	0.214*	0.291**
	(0.324)	(0.129)	(0.108)	(0.124)	(0.144)
Zip Num. Empl.	0.0974	0.0388	0.0515	0.0583	0.0254
	(0.101)	(0.0833)	(0.0628)	(0.0684)	(0.0717)
Zip. 1st Q. Payrolls	-0.0868	0.0762	-0.0110	-0.0768	0.00607
	(0.152)	(0.123)	(0.0987)	(0.107)	(0.115)
Zip Ann. Payroll	0.0121	-0.0790	0.0201	0.104	0.00479
	(0.184)	(0.139)	(0.0998)	(0.104)	(0.113)
Zip PO Del. Res.	-298.3***	-173.0***	-133.9**	-114.4*	-51.05
	(76.75)	(62.61)	(52.33)	(58.93)	(56.59)
Zip PO Del. Bus.	0.339**	0.374***	0.320***	0.323***	0.318***
	(0.152)	(0.0882)	(0.0679)	(0.0773)	(0.0796)
Zip PO Del. Tot.	-0.284	-0.351	-0.327	-0.326	-0.436
	(0.573)	(0.402)	(0.351)	(0.441)	(0.516)
Zip PO Box Ct.	0.246***	0.216***	0.168***	0.202***	0.219***
	(0.0718)	(0.0501)	(0.0458)	(0.0475)	(0.0486)
State Unemployment	-0.0678	-0.0513**	-0.0607**	-0.0510**	-0.0355
	(0.0581)	(0.0226)	(0.0268)	(0.0239)	(0.0228)
State Population	7.103***	8.978***	8.200***	7.757***	8.483***
	(1.844)	(1.457)	(1.584)	(1.489)	(1.684)
State Employment	-0.478	0.885*	2.082**	2.008***	2.043***
	(0.920)	(0.468)	(0.811)	(0.758)	(0.698)
Observations	676	1,124	1,128	1,126	1,113