

ANALYSIS

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# Idiosyncratic Shocks and Multifamily Housing: Covid-19 and What We Can Learn from Earthquakes, Hurricanes, and Terrorism

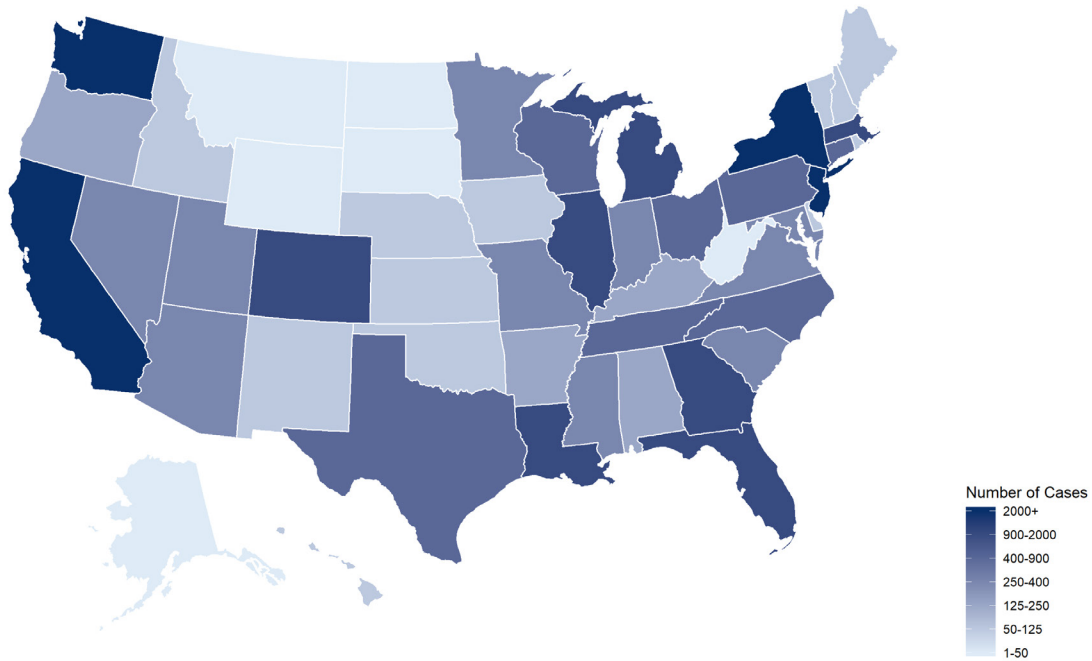
## [Abstract | Executive Summary](#)

How will multifamily performance metrics be affected by the coronavirus (COVID-19) pandemic over the long run? We examine case studies from idiosyncratic shocks of the past—the Northridge Earthquake of 1994 in Los Angeles; Hurricane Katrina and New Orleans in 2005; and the 9/11 terrorist attack—for guidance on how both supply- and demand-side factors may change in response to the experience of the coronavirus and social distancing. While the COVID-19 experience will not directly affect the physical supply of multifamily in the short run, it may redistribute the quantity of demand within and across submarkets. The quality or type of various elements demanded of the multifamily offering (like amenities) is also likely to evolve. We present a case study of the New York City situation to analyze possibilities of what may happen.

## Introduction

The coronavirus pandemic is ongoing, and the unprecedented policy response to slow the spread of COVID-19 has frozen global economic activity. Economic scenarios from Moody's Analytics that model either a critical or severe pandemic predict a recession in 2020. As of March 25, all fifty US states have reported cases of COVID-19, with the largest concentrations in the state of New York (26,358), New Jersey (3,675), California (2,511), and Washington (2,469). These four states represent close to two-thirds of the 54,453 total cases in the country, and the numbers are increasing daily.

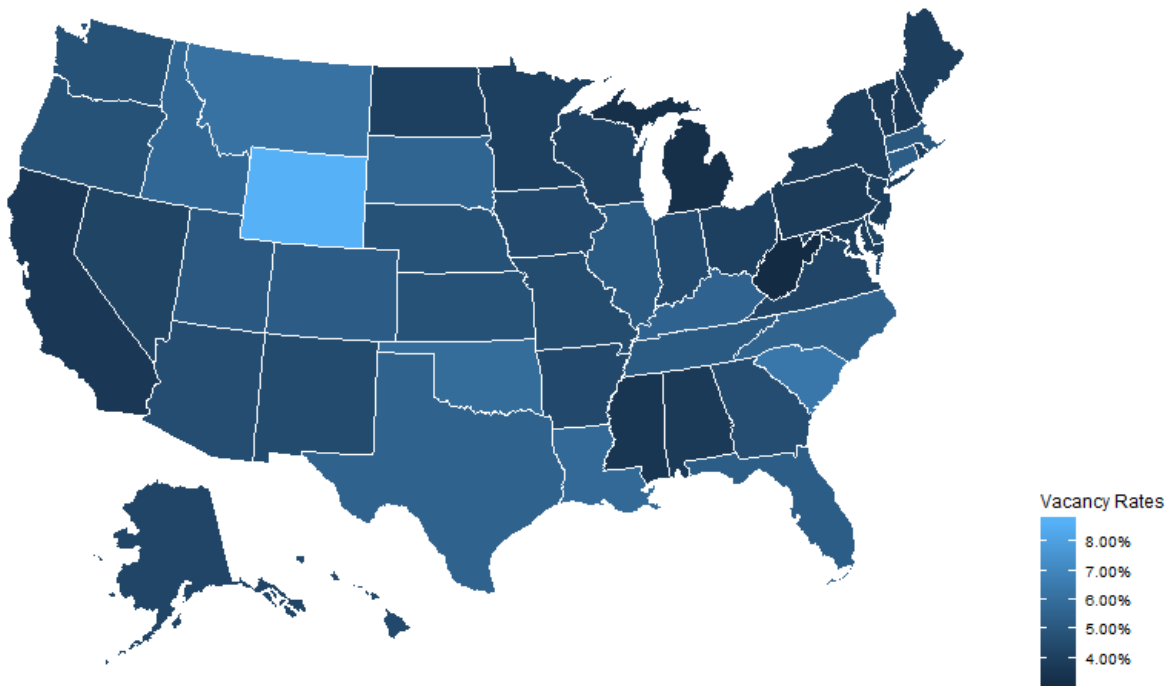
Figure 1 Number of Confirmed Cases by State



Source: US Center for Disease Control and Prevention (data as of March 25)

The four states with the largest number of COVID-19 cases also have the lowest multifamily vacancy rates (less than 4%), relative to other places. This is not a coincidence: dense urban areas within these states like New York, San Francisco, Los Angeles, and Seattle are magnets for employers and households, and there is strong demand for limited multifamily units.

Figure 2 Multifamily Vacancy Rates by State, Year-End 2019



Source: Moody's Analytics REIS

Paradoxically, the very same characteristics that make these cities such vibrant, desirable places to work and live – a diverse set of businesses, cultural centers, and institutions co-located in proximity to one another; robust trade and tourism – are also predisposing them to the spread of COVID-19. Proximity, frequent contact, and (for the case of New York) large groups of people traveling via public transportation set the stage for the high number of cases being identified in these places.

What will the future of US rental housing be like, once we reopen our doors? What are the implications for multifamily market-rate rentals, both in the intermediate term and over the long run? Will dense urban areas currently enjoying low vacancy rates suffer a permanent reversal? While we fully acknowledge that we are living through historically unprecedented times, we can and do examine idiosyncratic shocks of the past that affected rental housing. Some effects were lasting, others more transitory. We then speculate on how the COVID-19 shock will affect the multifamily sector.

### Idiosyncratic Shocks Can Affect Both Demand and Supply

Idiosyncratic shocks tend to have a dramatic short-term effect on performance variables like rents and vacancies. Surprisingly (at first glance), shocks that destroy or render existing stock functionally obsolescent actually tend to have a *positive* effect on performance metrics over the long run. However, this needs to be considered in line with how the *demand* side evolves, for a thorough assessment of any shock's ultimate impact on determinants of income and value like vacancies and rent growth.

As severe as the COVID-19 situation has become, it has yet to *directly affect* the *physical supply* of our current stock of real assets. There is an *indirect* effect for *future stock* given the slowdown in economic activity, as construction projects are delayed or canceled.<sup>1</sup> *Performance* measures for real estate economics are affected, as vacancies rise or rents fall. But, in the short run, the actual current stock of physical inventory is not directly affected.

In this section, we will cover two cases of shocks that *did* affect current inventory directly. We will discuss how housing choices and real estate performance measures evolved.

1. The Northridge Earthquake of 1994: a 6.7 magnitude earthquake that struck the San Fernando Valley area of Los Angeles and caused widespread damage. The Northridge Earthquake is the costliest earthquake on record in the United States, with up to \$26.4 billion (in 2018 dollars) of insured damages.<sup>2</sup>
2. Hurricane Katrina in 2005: a Category 3 storm that battered Louisiana, particularly the city of New Orleans. Hurricane Katrina is the costliest storm on record in the United States, with updated estimates of up to \$160 billion.<sup>3</sup>

*The Northridge Earthquake of 1994.* Early in the morning of January 17, 1994, an earthquake that registered 6.7  $M_w$  on the seismic magnitude scale hit the San Fernando Valley area of California. It did not last very long—something in the order of 10 to 20 seconds—but it did (along with its aftershocks, which occurred eleven hours later) claim the lives of 57 people and injured close to 9,000.<sup>4</sup>

Moody's Analytics REIS data show that real estate performance variables for the Los Angeles multifamily market was not in a situation of relative strength when the earthquake hit. The US economy had just recovered from an eight-month recession that ended in March 1991, but California took a harder hit from the savings and loan crisis and effective rent growth in Los Angeles was negative from 1991 to 1993, with vacancies steadily rising until it hit 6.2% at year-end 1993, almost double relative to five years prior.

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<sup>1</sup> In a paper published on economic scenarios and US commercial real estate performance (available upon request) we discuss how places like Boston (by decree) and Austin (because of disrupted supply chains) are already experiencing delays in new construction.

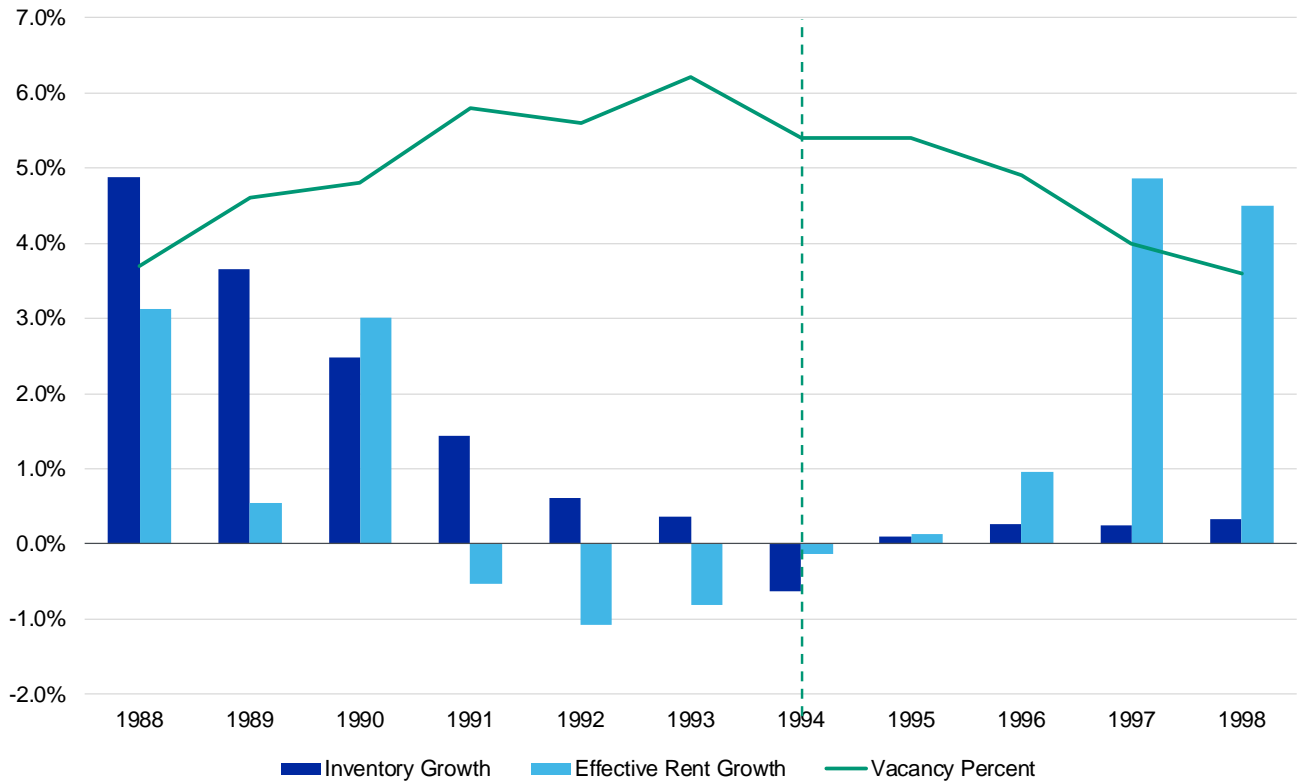
<sup>2</sup> Data from the Insurance Information Institute; figures for the Northridge Earthquake from Munich RE

<sup>3</sup> Data from the National Hurricane Center, updated last January 2019 here: <https://www.nhc.noaa.gov/news/UpdatedCostliest.pdf>

<sup>4</sup> A summary of various impacts is covered by William Petak and Shirin Elahi, "The Northridge Earthquake, USA, and its Economic and Social Impact" (2001). EuroConference on Global Change and Catastrophe Risk Management Earthquake Risks in Europe, IIASA, Laxenburg Austria, July 6–9, 2000.

Figure 3 Inventory Change, Effective Rent Growth, and Vacancy

Los Angeles Multifamily, 1988 to 1998



Source: Moody's Analytics REIS

The 1994 earthquake resulted in the destruction of almost 6,000 units of competitive apartment stock, translating to a negative 0.6% decline in inventory. The damage was concentrated in nine out of the 37 submarkets into which Moody's Analytics divides neighborhoods in Los Angeles. Two-thirds of destroyed apartment units were located in the Sherman Oaks/Studio City/North Hollywood and the Granada Hills/Northridge/Reseda submarkets.

Table 1 Share of Destruction (by Submarket)

Los Angeles Multifamily, 1994

SUBMARKET	SHARE OF DESTRUCTION
Sherman Oaks/Studio City/N Hollywood	40.0%
Granada Hills/Northridge/Reseda	27.0%
Panorama Hills/San Fernando/Pacoima	12.8%
Hollywood/Silver Lake	9.5%
Chatsworth/Canoga Park	3.6%
Van Nuys/North Hollywood	2.1%
Downtown	2.0%
Wilshire/Westlake	1.6%
Inglewood/Crenshaw	1.4%

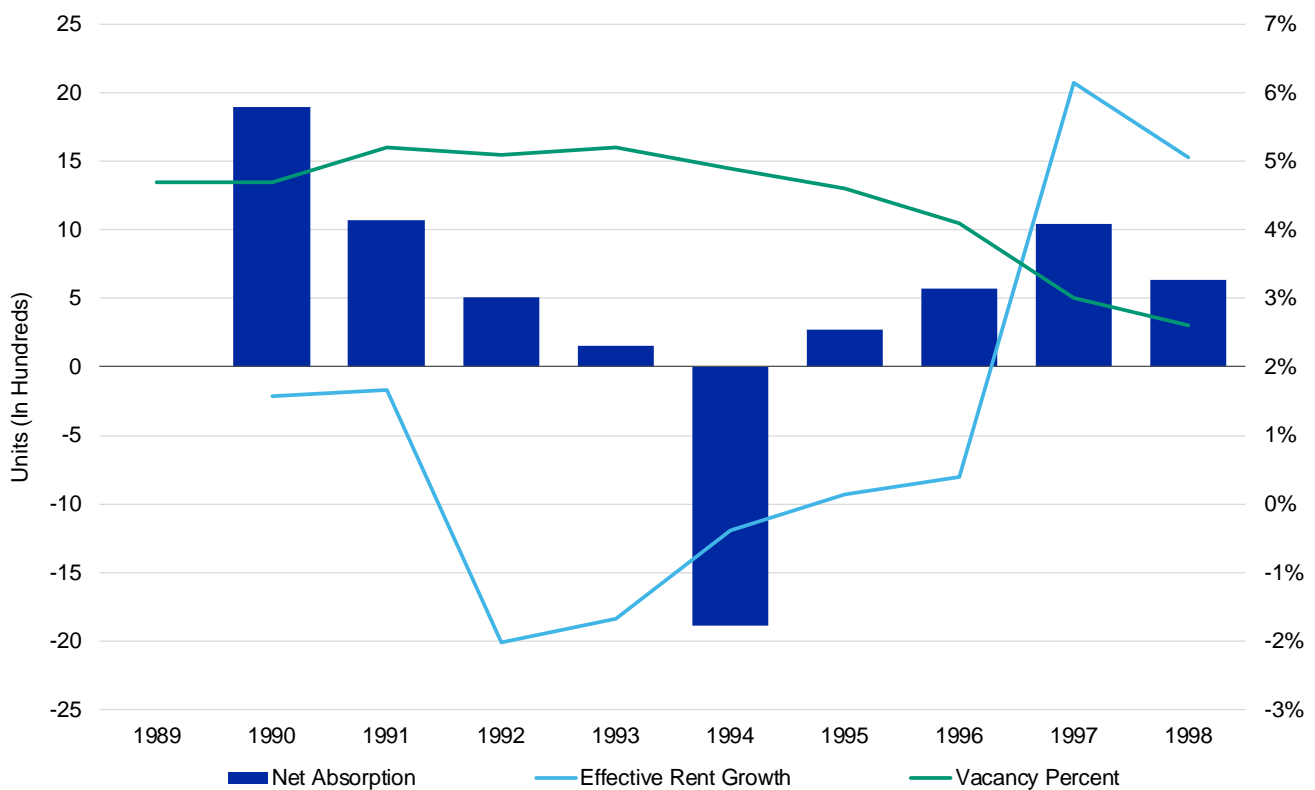
Source: Moody's Analytics REIS

*Net Effect on Real Estate Performance.* As counterintuitive as this might seem at the outset, the net effect of the 1994 Northridge Earthquake on multifamily performance variables was actually *positive*. In Figure 3 we observe that Los Angeles vacancies actually declined in 1994 and remained at a generally low level until the tech market crash of 2001.

One test of whether the direct shock to Los Angeles multifamily supply did indeed confer positive support to performance metrics is to examine whether the salutary effect was *magnified* in those places which were hit harder. We find that this is true: In the Sherman Oaks/Studio City/North Hollywood submarket, which sustained 40% of the total damage to multifamily supply, vacancies dipped to below 5% and continued declining through the late 1990s as the tech boom commenced. Rent growth turned positive in 1995, and continued accelerating until it hit a high of 14.3% in 2000. The tech bubble burst and rent growth moderated shortly after that, but inventory did not reach its 1993 pre-earthquake levels until 2002.

**Figure 4** Sherman Oaks/Studio City/North Hollywood Fundamentals

Los Angeles Multifamily, 1989 to 1998



Source: Moody's Analytics REIS

*Don't Jump to Incorrect Conclusions, Though.* Why did the 1994 earthquake end up being a *net positive* for real estate performance variables like rents and vacancies? Can we now conclude that supply shocks that result in a reduction in inventory are positive events over the long run? The analysis is incomplete, because we have yet to analyze the demand-side.

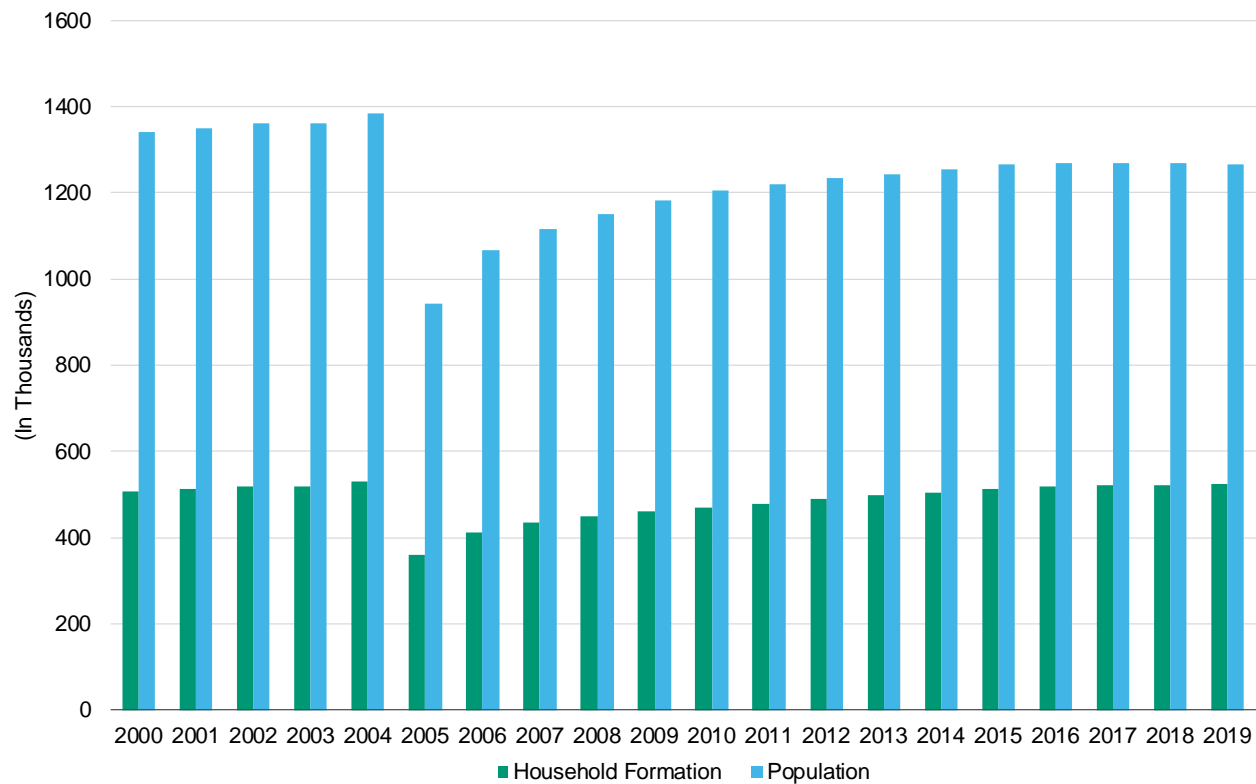
The supply shock ended up taking inventory off the market, but *demand for Los Angeles real estate* did not really wane. In other words, the shock was concentrated on the supply side, but there was no significant long-term shock to demand. Population and household figures steadily increased throughout the 1990s. Los Angeles also benefited from a general turnaround in crime rates that began in the early- to mid-1990s across most large US cities, leading households to consider cities once again a desirable place not just to work, but to live.<sup>5</sup> Even today Los Angeles retains its reputation as a vibrant city.

None of these favorable conditions held true for New Orleans after Hurricane Katrina in 2005.

*Hurricane Katrina and the Devastation of New Orleans in 2005.* The category 3 hurricane made landfall in late August, and dissipated after a week. But the destruction of the levees<sup>6</sup> around the city of New Orleans and a much-criticized delay in the policy response extended the tragedy over the following months. Large-scale population movements fleeing the area manifested in real estate variables in other metropolitan areas: Houston welcomed many refugees from Louisiana, and registered what is still a record high for quarterly absorption—over 25,000 apartment units—in the fourth quarter of 2005.

New Orleans suffered a large one-time decline in households from which the city never recovered. Data from Moody's Analytics reveals that close to 170,000 households left the area and never came back. The shock from Katrina in 2005 translated to a drop of over 30% for both household and population count. As of 2019, New Orleans has yet to recover its 2004 levels for both number of households and population.

Figure 5 New Orleans: Population and Households, 2000-2019



Source: Moody's Analytics

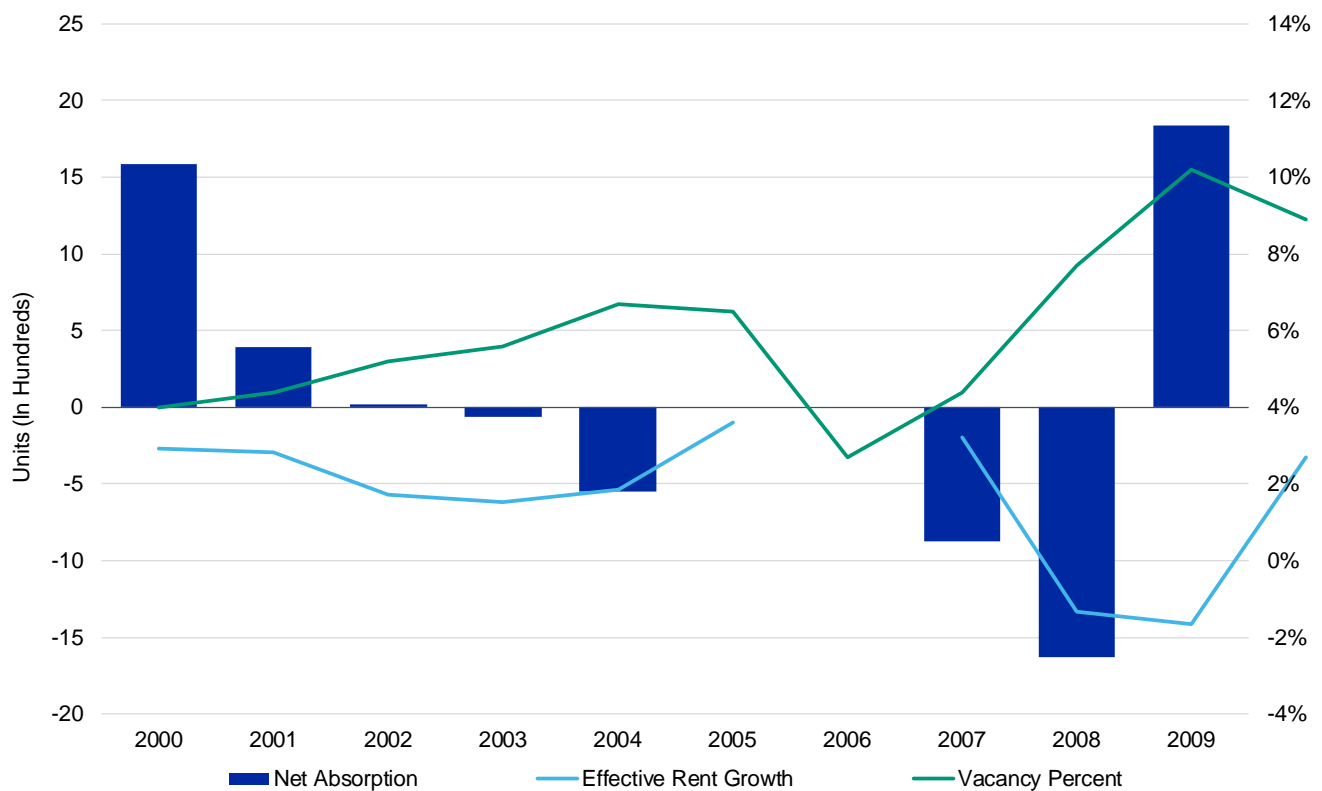
<sup>5</sup> A comprehensive summary of the recent history of the growth and resurgence in US cities is provided by Janet Rothenberg Pack in "Sunbelt/Frostbelt: Public Policies and Market Forces in Metropolitan Development" (Brookings Institution Press, 2005). Steven Levitt and John Donohue offers a somewhat controversial take on why the turnaround happened in the mid-1990s: "The Impact of Legalized Abortion on Crime." *The Quarterly Journal of Economics*, 116(2): 379-420 (popularized in Professor Levitt's subsequent book *Freakonomics*).

<sup>6</sup> Charles F. Anderson, Jurjen A. Battjes; et al. (2007). "The New Orleans Hurricane Protection System: What Went Wrong and Why." American Society of Civil Engineers.

*Net Effect on Real Estate Performance.* Hurricane Katrina devastated New Orleans so severely that Moody's Analytics REIS ceased coverage of the Ninth Ward submarket for market rate multifamily rentals. Data kept being collected, but presenting *change figures* like net absorption and rent growth figures for the period between 2005 and 2006 would be misleading, because of how inventory patterns shifted. For example, average effective rent levels (the average monthly rent paid by a household occupying multifamily) "jumped" by about 29.8% in 2006, from \$631 to \$819. Vacancy levels dropped to 2.7%. But that was because of the limited amount of supply that had returned to functional status even as FEMA checks to subsidize rent payments ceased in late 2006.

Though rent levels remained in the \$800s, vacancies offered the more useful benchmark on whether the net reduction in inventory caused by Katrina was a "net positive." It was not. Vacancies spiked to 10.2% in 2009 during the Great Recession, and very gradually came down over the last decade through 2019, alongside strong fundamentals for multifamily as a whole.

Figure 6 New Orleans Multifamily Fundamentals (2000 to 2010)



Source: Moody's Analytics REIS

*Demand Pullback was the Dominant Effect.* Though a reduction in functional inventory propped up rent levels and pushed vacancies down for stock that remained (a positive for performance metrics), the dominant effect of a demand pullback by way of less population and households choosing to live in New Orleans proved to have the lasting impact. The fact that households were forced to uproot and live elsewhere for an extended period of time—FEMA checks to subsidize rent payments lasted for at least one year—prompted many people to permanently relocate away from New Orleans. Demographic studies show that up to one-third of displaced residents never came back.<sup>7</sup> Where did its displaced populations go? Cities like Baton Rouge, Birmingham, Dallas, San Antonio, and Atlanta benefited, but even today some refer to Houston as "New Orleans West." Approximately 100,000 people who moved to Houston from New Orleans after Katrina ended up staying.<sup>8</sup>

<sup>7</sup> Sastry, Narayan, and Gregory, Jesse (2014). "The Location of Displaced New Orleans Residents in the Year After Hurricane Katrina." *Demography* 51(3): 753-775.

<sup>8</sup> <https://www.theguardian.com/us-news/2015/aug/25/new-orleans-west-houston-hurricane-katrina>

## Quo Vadis, Post COVID-19?

A pandemic like COVID-19 has unique features relative to the cases discussed above. It is an idiosyncratic shock that *does not affect* the current physical stock of rental inventory, but which may change household preferences and decision-making processes, leading to a change in the *quantity and quality of demand* for rental housing. Therefore, the COVID-19 situation suggests that multifamily performance metrics will not benefit from a reduction in inventory that follows other types of shock, but *will* have to deal with factors that influence and may depress demand for certain areas.

Consider the proposition that the COVID-19 situation is also very much like a *terrorist attack*, given its psychological ramifications. How do terrorist attacks affect drivers of real estate? Brodeur (2018) finds evidence that county-level population was reduced by 2% in the years following a successful terrorist attack, which translated to a 1-2% drop in home prices. He also argues that media coverage was more extensive for successful terrorist attacks, dampening demand for housing in specific counties affected.<sup>9</sup> These observations certainly seem to apply to the current COVID-19 situation, but how might all this translate to the rental housing markets?

We will not focus here on the *short-run* effect of economic dislocation on multifamily fundamentals. If jobs are lost on a massive and systematic basis, and if the recovery is prolonged past the second quarter, when a lot of forecasters are expecting the US economy to reopen its doors, then multifamily vacancies will rise and rent growth will fall.<sup>10</sup> In the sections below, we speculate on the *intermediate* and *long-run* effects of the COVID-19 situation on the rental housing sector, and the channels through which these effects will be transmitted.

From the outset, however, remember that any effect of COVID-19 on the demand side will *not* be offset by an immediate reduction in supply. The COVID-19 situation is not resulting in the destruction or conversion of existing rental stock. As we've discussed in earlier sections, a reduction in rental stock supply tends to have a *positive* effect on real estate performance variables like rents and vacancies. Therefore, negative effects on the demand-side will *not* be tempered by positive effects on the supply-side.

**Effect on *Quantity* of Demand: Ambiguous.** Unless there are significant changes to US population and household counts, it seems unlikely that national or even metropolitan level figures for the *quantity* of demand for rental housing will change.<sup>11</sup> Cheerleaders of the for-sale housing market will point to radically low interest rates and speculate on whether more households will shift from renting to owning. But an argument can also be made that during a time of relative uncertainty, households might prefer the flexibility of renting over owning a home along with a 30-year fixed mortgage: homeownership comes with commitments that cannot be abandoned or renegotiated easily if another pandemic comes around.

*Within* neighborhoods, however, there may be a reallocation of demand. For example, if the perceived risk of living in a multifamily building during a pandemic rises, then neighborhoods that offer housing options with relative space between units will benefit. This will manifest in different ways, depending on the geospatial layout and household resource bases of various places. For example, multifamily buildings in the Buckhead submarket of Atlanta or the Falls Church submarket of Northern Virginia may be at greater risk. Rental options that are less dense, from brownstones and townhouses to single-family homes, surround high-rise multifamily buildings in these areas. Households in these neighborhoods also invariably own cars and use them for their daily commute, to central business district (CBD) areas in downtown Atlanta or Washington, DC. It will be easier for households to make the choice to move from relatively dense multifamily buildings with 40 units or more to less dense rental housing options.

Consider the greater switching costs for a household renting an apartment in New York City, where owning a car is prohibitive given the associated insurance and parking costs. Households will need to buy a car (or two). Moving to more spacious suburban locations outside of Manhattan (in the suburbs of upstate New York, Connecticut, or New Jersey) will add at least 45 minutes to the daily commute. Households that can afford to incur the costs of moving to a less dense location may make the decision to move, but it will be relatively easier (cheaper) to do so in Northern Virginia or Atlanta than it will be for New York City.

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<sup>9</sup> Brodeur, Abel (2018). "The Effect of Terrorism on Employment and Consumer Sentiment: Evidence from Successful and Failed Terror Attack." *American Economic Journal: Applied Economics*, 10(4): 246–282.

<sup>10</sup> We quantify the near-term effects on multifamily in this paper (available upon request). "How Bad Can It Get? COVID-19 and the Outlook for CRE."

<sup>11</sup> Unless COVID-19 causes many more fatalities than is currently predicted.



Even *across* suburban locations, the standard calculus conferring a premium on towns located close to a direct train route to New York City will likely not disappear. Unless New York City and other major CBDs suffer a permanent and debilitating decline in employment numbers, people will still likely prefer direct access to trains to commute into their places of work, and pay a corresponding premium.

**Commuting to Work? But What About Working from Home?** How might the realization that many jobs can, in fact, be done remotely affect rental housing markets? Abadie and Dermisi (2008) present results that suggest that the 9/11 terrorist attacks did have important geospatial effects on office properties in the city of Chicago.<sup>12</sup> They speculate on whether firms that let their employees work from home will experience a drop in productivity. We need to be careful about making sweeping judgments about the end of demand for office space given the rise of technology that allows people to work from home. In a forthcoming paper we will discuss the possibility of firms permanently relocating their office facilities away from concentrated business districts, and its implications for both the office and multifamily sectors.

The effect on the demand for the *raw count of rental units* is therefore ambiguous. However, we can speculate that households that become more concerned about working from home<sup>13</sup> may be prompted to pay more of a premium for *more spacious* units, given the need to balance both work and school during a quarantine. Does this mean that two- and three-bedroom rents will rise faster than rents for studios and one-bedroom units? This trend will be naturally constrained in markets like New York and San Francisco, where rent levels are already so high that there will be relatively few households that can afford to trade up to a larger unit, even if they wanted to. The opportunity may well lie in neighborhoods *adjacent* to high rent markets—think of Hoboken and Jersey City, which have long benefited from positive externalities given their proximity to New York—if developers offer larger units or amenities that accommodate the need to balance work and child care. A similar situation will likely benefit San Mateo, given its proximity to San Francisco.

### The Case of New York City

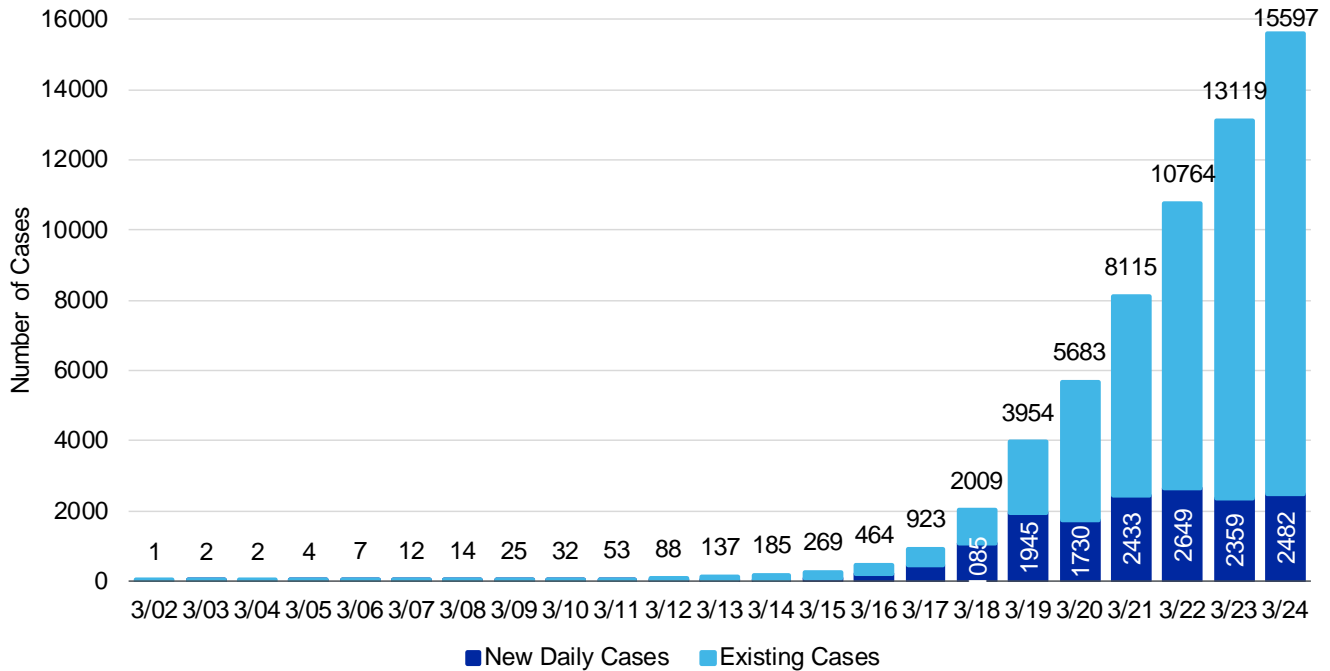
Consider the COVID-19 situation in New York City, which has quickly become the epicenter of COVID-19 cases in the United States. After identifying its first case on March 2, there are now close to 16,000 identified cases in the five boroughs (as of March 24). This represents roughly 5% of all coronavirus cases *worldwide*.

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<sup>12</sup> Abadie, Alberto, and Dermisi, Sofia (2008). "Is Terrorism Eroding Agglomeration Economies in Central Business Districts? Lessons from the Office Real Estate Market in Downtown Chicago." *Journal of Urban Economics*, 64: 451-463.

<sup>13</sup> And this will not be all households: there will still be plenty of jobs in retail establishments like restaurants, the performing arts, and other industries that will not permit workers to work from home.

Figure 7 Existing Cases and New Daily Cases in NYC, March 2 to March 24



Source: New York City Department of Health, as of March 24 at 5:00pm

What might happen to New York City multifamily after the COVID-19 crisis is resolved? It is too early to tell, but we can use the cases we’ve discussed to analyze both the optimistic and pessimistic ends of the spectrum of scenarios.

*The optimistic case.* Like Los Angeles in 1994, New York City will experience a sharp but temporary deterioration in multifamily performance metrics. Once the economy reopens, New York City will retain its premier status as a ‘superstar city,’ continuing to attract employers and households given its vibrant diversity of industries and job options.<sup>14</sup> New York City rents and vacancies will experience a severe but temporary decline in rents and transaction prices over 2020, but will bounce back.

*The pessimistic case.* Households and employers will realize that a dense urban area like New York City presents a severe risk in case of another pandemic. There will be a permanent outflow of employers and households from New York, closer to the experience of New Orleans after Hurricane Katrina. The natural vacancy rate of New York City will move from under 3% to above 5% or higher. Rent levels will suffer a one-time decline as households move out en masse, and will not grow as quickly as it did historically.

The answer is likely to be somewhere in between, but the situation is still unfolding. Households that can afford to buy a car (or two) and move to less dense urban areas may choose to do so. Larger two- or three-bedroom units in New York City may therefore experience a price decline, however temporary or sustained – but does that mean that no other household will take advantage of better pricing? It was easy to predict that both households and employers would leave downtown Manhattan permanently after the shock of 9/11 – and many did. But the neighborhood then underwent a revitalization effort that lured relatively affluent (annual income of \$200,000 or greater) households from other New York submarkets to relocate to downtown Manhattan.<sup>15</sup> It can be argued that these are the same households that had the means to locate elsewhere *outside* of New York City, but they chose to stay *within*.

<sup>14</sup> For a contemporary analysis of the characteristics of ‘superstar cities,’ see Gyourko, Joseph; Mayer, Christopher; and Sinai, Todd (2013). “Superstar Cities.” *American Economic Journal: Economic Policy*. 5(4): 167-199. For a classic assessment on why diversity is good for cities, see Jane Jacobs 1969 work “The Economy of Cities.”

<sup>15</sup> A great summary of the transformation of downtown Manhattan from a household composition point of view is here: <https://www.osc.state.ny.us/press/releases/sept16/090616.htm>

**But COVID-19 Is Different.** The distinction we need to make when we compare the shock of 9/11 to the COVID-19 situation is that as terrible as 9/11 was, it still affected a very specific area, and very particular populations and employers. COVID-19 is not just a specific, *local* shock. It is a *national and global shock* – which means that New York City as a *whole* may be considered a greater risk, given urban density. The future might not involve the reallocation of households from the Upper East Side to lower Manhattan: is any neighborhood in a dense city going to feel safe, in the next pandemic? The COVID-19 situation may well mean systemic flight from urban areas like New York to suburban areas. This will lend greater weight to the pessimistic case presented above.

**Effect on the *Quality* of Demand: Towards a New Model.** For multifamily properties that *do* cater to households working from home, new forms of amenities may emerge and evolve. In other words, the *quality* of what is demanded from multifamily will likely change. We already saw this happening in the shift from brick and mortar retail to online shopping: apartment buildings offered delivery receipt and storage services.<sup>16</sup> Wifi access points are now no longer a “nice to have,” but a requirement for new buildings in major metropolitan areas if they are to be perceived as competitive and cutting edge.

What will multifamily amenities of the future look like? Space that functions as social gathering areas during normal times, with amenities like shared movie viewing facilities or party areas, might need to be built so that it can be converted quickly into standalone office cubicles six feet apart from each other (for example, with the help of temporary walls). Will this flexible space also include day care facilities for child care, to complement the office space cubicle component? Or will day care facilities be a substitute for the office space idea—so that people working from their apartments could drop their children off in a safe day care facility located downstairs?

While ideas like this will likely be limited initially to newly built premium apartment complexes, new ideas will percolate as existing projects are renovated. Even Class B+ or Class B projects may feature such amenities over time, if the fear and concern from pandemics and social distancing remain. Townhouse or subdivision complexes, whether for sale or for rent, may adopt such amenities if there is enough demand for it. Consider a typical Toll Brothers development for single-family homes, which usually come with a central clubhouse and feature a gym or pool or other community perks. Would such central clubhouses offer individual storage units, for emergency stocking purposes? After all, toilet paper—the hot ticket item during the current COVID-19 crisis—takes up a lot of space. Would such storage units have premium refrigerated versions, in case renters or owners need to stock up on 30 days worth of frozen foods?

Co-living arrangements, which received some press coverage over the last 18 months given the furor around WeWork, is a recent “trend” that may now be dead in the water. The very premise of shared facilities like kitchens and living rooms in dorm-like facilities marketed to young professionals may be the first casualty of the COVID-19 situation, though one can argue that the trend never really was “born” (or at least spread widely).<sup>17</sup>

**But If (More) Things Change, Will (Some) Things Stay the Same?** Given that any resolution to the COVID-19 situation may require anywhere from a few weeks to a few months, there is still much uncertainty as to how rental housing will evolve and adapt to this unique shock.

Mass psychology and the reaction to severe shocks are also notoriously difficult to predict. It is likely that some of the most radical predictions of how this crisis will overhaul our entire approach to rental housing will not come to pass. Kay, Geisler, and Bills (2010) actually note how after 9/11, entire communities actually seemed to dig in and stay put, yearning for stability and continuity. “Terrorism appears to have fortified residents tendencies to stay put,” the authors wrote.<sup>18</sup> In direct opposition to the most pessimistic predictions dramatizing the demise of New York City’s financial district post-9/11, the movement of over 60,000 households to the area actually changed the composition of the neighborhood to being almost solely dedicated to office workers, to its current vibrant blend of retail, housing, mixed use, and yes, office buildings.

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<sup>16</sup> Amazon has even explored direct relationships with apartment landlords: <https://www.wsj.com/articles/amazon-and-big-apartment-landlords-strike-deals-on-package-delivery-1508261759>

<sup>17</sup> The WeLive concept never took off in other countries, and even in New York City WeWork’s two locations came under investigation from the NYC housing authorities: <https://www.nytimes.com/2019/10/13/nyregion/welive-nyc-wework.html>

<sup>18</sup> Kay, David; Geisler, Charles; and Bills, Nelson (2010). “Residential Preferences: What’s Terrorism Got to Do with It?” *Rural Sociology* 75(3), pp. 426–454.

"There was some fear after 9/11 that large urban clusters in the United States would lose their luster, given that they might be perceived as a target for future terrorist attacks. Employers would leave, and few households would want to live in a place like New York, which will always remain a hot spot. That really didn't come to pass," said Ryan Severino, Chief Economist at Jones Lang LaSalle. "Still, 9/11 did permanently change certain things: for example, the way we travel through airports. So, expect some changes to occur for things like how benefits from a basic good like rental housing are delivered."

As the world reels from the disruptions caused by the coronavirus and associated shelter-in-place mandates, the next task will be to restart the economy, and then subsequently calibrating our real estate infrastructure to better handle future pandemics.

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