YARDI MATRIX MULTIFAMILY WEBINAR

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1. Opening Remarks
2. COVID-19 Impacts on Migration
3. Gateway Market Analysis
4. Tech Hub Market Analysis
5. 2021 Outlook

Opening Remarks

Yardi Matrix House View November 2020

- Since the start of the pandemic, we have seen the following migration trends:
  - Gateway markets to secondary tech hub markets
  - Gateway markets to smaller cities within the same metro
  - Urban cores to the suburbs
  - The question is, are these trends *temporary or permanent?*
- Rent, occupancy and renewal percentages have fallen in primary markets amid job losses and migration out of these markets, while tech hubs markets have benefitted from the population and employment growth
- Despite the economic effects of the pandemic, we don't expect valuations in gateway markets to come down that much and we expect valuations in tech hub markets to increase
- Overall, things are looking ok, and multifamily is holding up fairly well…but there are some points of pain
- People are still paying rent and rents have not declined as much as initially feared
- Gateway markets have a long road ahead, but will recover — local political risk has been heightened since June and can't be ignored anymore
- Tech hub markets will continue to grow, but infrastructure investment is a key variable as to how well
- The recovery will not be universal – will vary based on metro and level of income

Source: Yardi Matrix

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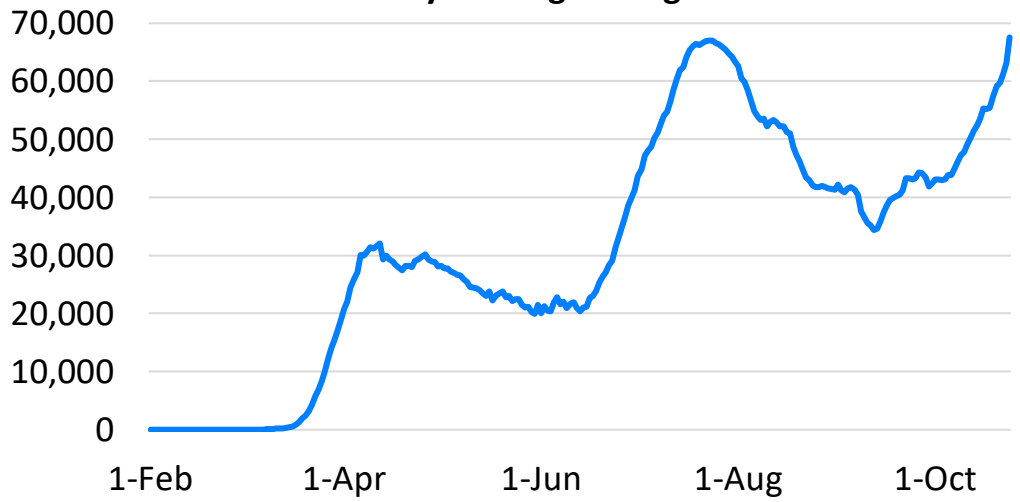
As the COVID-19 Pandemic Continues, Researchers Around the World Race for a Vaccine

More than 170 candidate vaccines are now tracked by the World Health Organization

- 11 vaccines are in Phase 3 (large-scale efficacy trials)
- 19 vaccines are in Phase 2 (expanded safety trials)
- 35 vaccines are in Phase 1 (small-scale safety trials)
- 142 vaccines are in the pre-clinical phase (not yet in human trials)

U.S. Cases Daily Trends
7-Day Moving Average



U.S. Deaths Daily Trends
7-Day Moving Average

*Data as of October 25, 2020 at 12:21 PM.
Source: Yardi Matrix; theguardian.com; Centers for Disease Control and Prevention (CDC)

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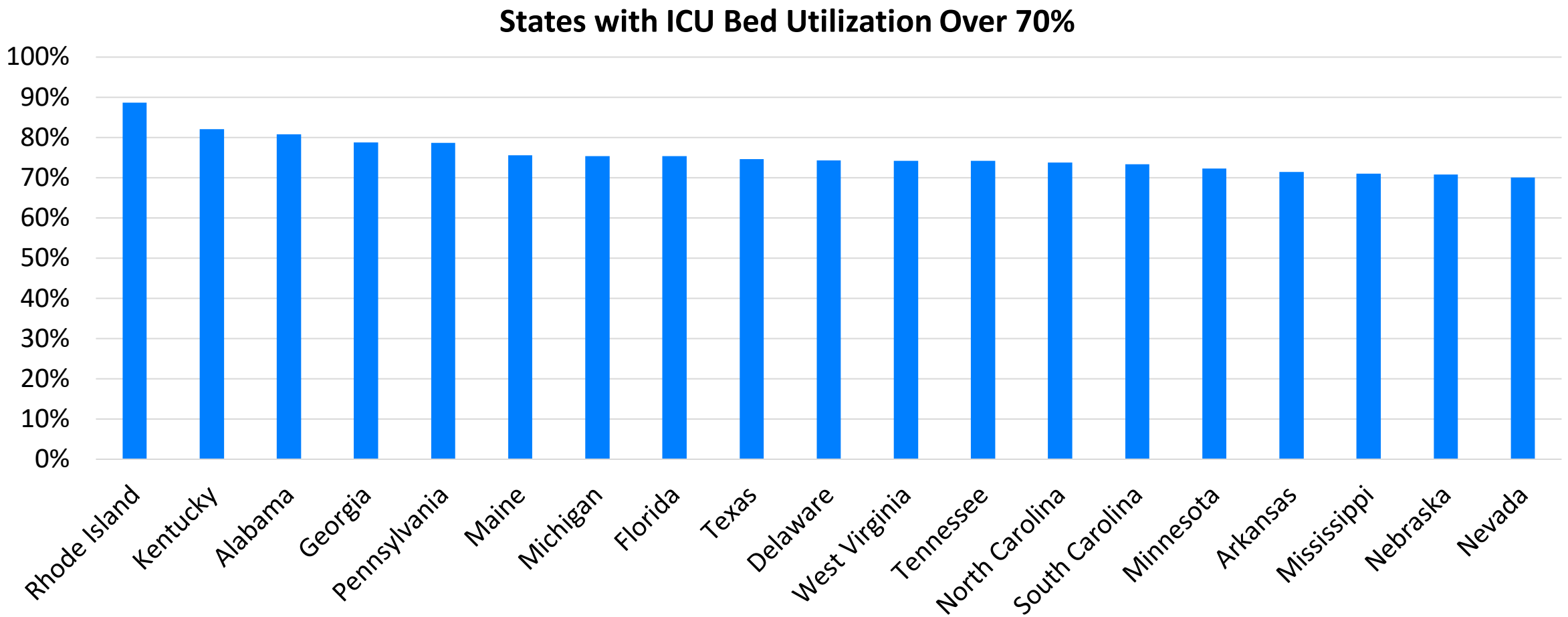
19 States Have ICU Utilization Above 70%, and COVID Cases Are Starting to Rise Again



*Data as of October 20, 2020. Includes ICU beds utilized by all patients
Source: Yardi Matrix; HHS Protect Public Data Hub

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While ICU Capacity at the State Level May Look Fine, Hospitals in Major Cities are Seeing ICU's Approach or Exceed Capacity

- On October 16th, **the University of Utah Health hospital in Salt Lake City reported its ICU hit 104% capacity**, with additional beds set up to accommodate the soaring number of patients
- In Indiana, **officials have put out a call for volunteers to help fill staffing shortages in hard-hit facilities** near the Michigan and Kentucky borders
- **Wisconsin opened a field hospital on its state fairgrounds** in West Allis after officials said the health care system is in crisis
- The area **around El Paso, Texas, a city of nearly 700,000, had 10 remaining ICU beds** on October 16, according to the state health department
- **Two out of three major hospitals in Albuquerque, N.M., are at, or exceeding, capacity**
- A spokesperson for Integris, **Oklahoma's largest health system, reported one available ICU bed** on October 15th after having none available the day before
- In **Fargo, North Dakota's most populous city, there were 10 ICU beds available as of October 14 and in Bismarck, the state capital, there was only one,** according to the health department

Source: Yardi Matrix; politico.com; newsweek.com

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COVID-19 Impacts on Migration

Multifamily Demand Observations

- Affordability concerns, demographic trends, political risk pressures and congestion in gateway markets were already having an impact on the desirability of these markets for residents and investors pre-pandemic. This trend has just accelerated amid the continued shutdowns
- Urban living's value proposition amid the COVID-19 shutdowns has declined – walkability to restaurants, museums and other entertainment can't be accessed, yet come at a very high price for renters
- People are placing more of a premium on their homes or apartments now that they are spending more time at home – fueling good demand for multifamily real estate and larger unit sizes
- We have seen that for many people, working from home has allowed them to relocate from high-priced markets to more affordable cities or suburbs, giving them more space for a similar price point
- A study of 17 million apartment units in Yardi Matrix's database demonstrates that rent growth so far this year has been closely tied to the overall expense of apartments by market
- Metros with higher average rents generally saw negative growth, while rent growth in less expensive metros was modestly positive or flat
- That is consistent with renters being more budget conscious at a time of economic hardship
- The question we will be asking ourselves is, "Are these trends temporary or permanent?"

Source: Yardi Matrix

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Certain Trends Have Seen a Reversal or Acceleration Due to Impacts of the Coronavirus

***ACCELERATION* OF TRENDS**

- E-commerce
- Virtualization
- Local political risk/higher taxes

POTENTIAL *REVERSAL* OF TRENDS

- Experiences over “Things”
- Densification
- Globalization

Source: Yardi Matrix

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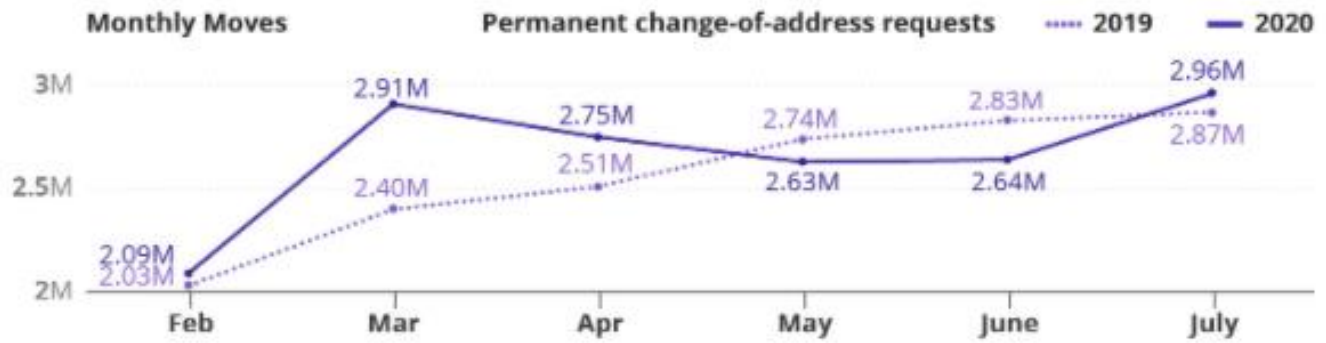
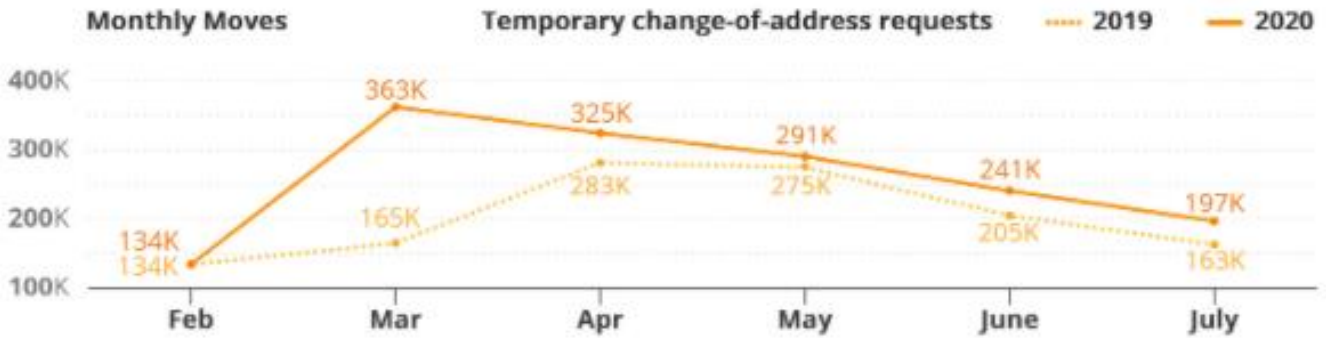
15.9M+ People Moved Since Feb, a 4% Increase From Last Year

MOVES BY MONTH

The number of total monthly moves has remained consistent throughout the pandemic, with slight spikes in March — at the onset of the pandemic — and in July. Summer months are peak moving season, which could also explain the July increase.





***Data pulled from total USPS change-of-address requests filed between Feb. 1 2020 and Jul. 31 2020. Data represents net move ins/outs**

Source: Yardi Matrix; MYMOVE, https://www.mymove.com/moving/covid-19/coronavirus-moving-trends/

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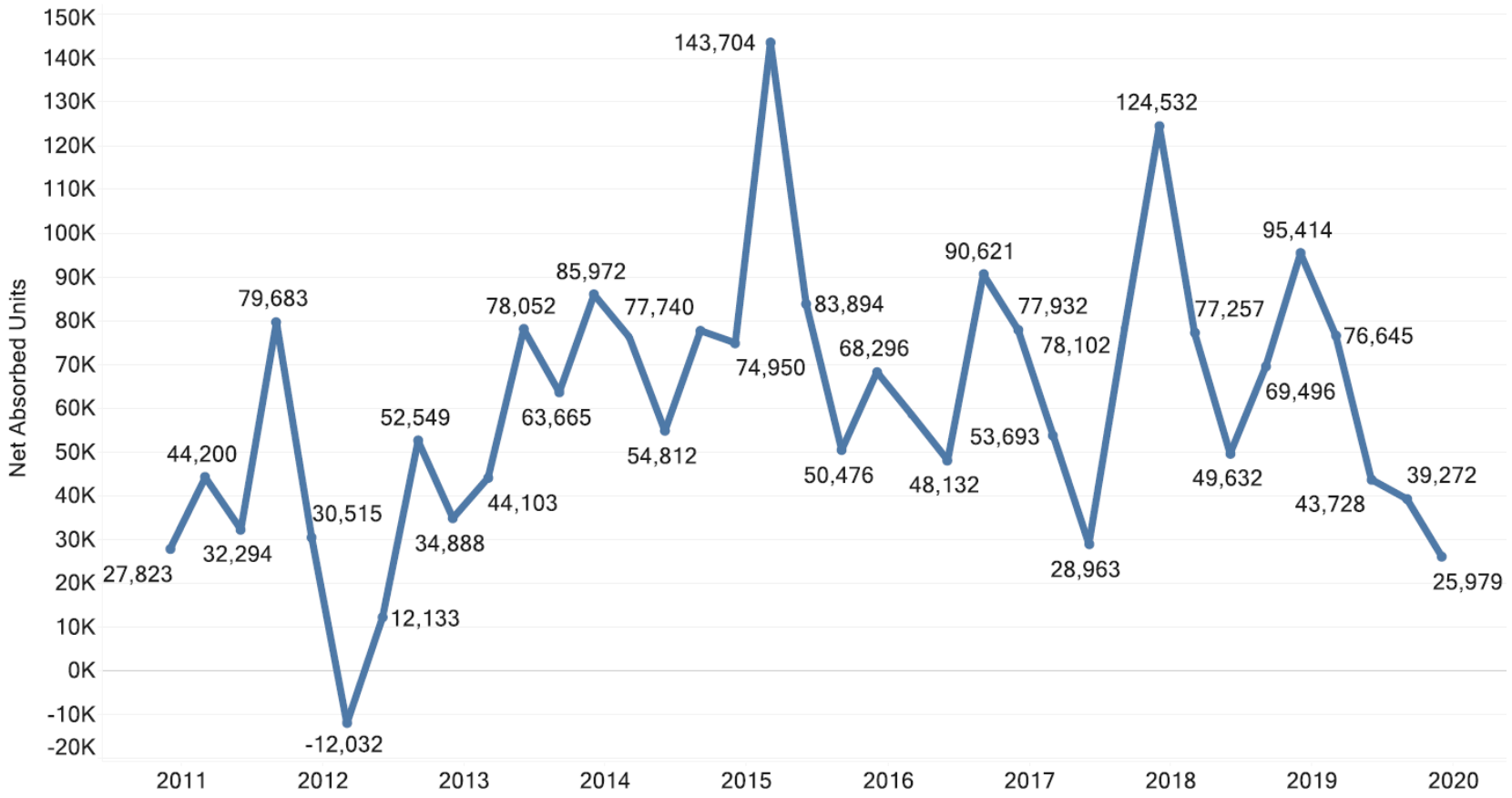
Multifamily Absorption Was Weak in the First Half of 2020, But is Rebounding

- Only 65,000 apartment units were absorbed nationally in the first six months of 2020
  - 60% less than the same period in 2019 and the lowest first-half number since 2011
- Demand picked up in July and August, as 50,000 units were absorbed nationally

National Quarterly Net Absorption QoQ



Source: Yardi Matrix

Secondary Markets, As Well As Markets in the Southeast and Southwest, Have Had the Most Demand YTD

- Secondary markets have had the strongest absorption, while gateway metros have suffered, experiencing a mass exodus of residents during the pandemic
- Southeast metros absorbed 41,400 units (1.0% of total stock), while Southwest metros absorbed 28,800 units (1.1%)
- West metros absorbed 23,500 units (0.8%), the Northeast 12,000 units (0.5%) and the Midwest 9,500 units (0.4%)

Geography	Net Absorption Jan-June 2020	Net Absorption July-Aug 2020
Gateway	-95	-154
Secondary	45,690	33,322
Tertiary	19,655	16,837
Midwest	3,338	6,151
Northeast	7,422	4,653
Southeast	22,684	18,734
Southwest	18,450	10,354
West	13,357	10,112

Geography	Net Absorption % Stock 2020 YTD through August
Gateway	0.0%
Secondary	1.2%
Tertiary	0.8%
Midwest	0.4%
Northeast	0.5%
Southeast	1.0%
Southwest	1.1%
West	0.8%

Source: Yardi Matrix

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Absorption Has Been Strongest in Markets That Have Grown Rapidly During the Past Decade

Metro	Net Absorption Jan-June 2020	Net Absorption July-Aug 2020
Dallas	7,719	4,060
Denver	4,794	3,567
Atlanta	3,478	3,019
Washington DC	1,407	2,683
Phoenix	3,073	2,163
Charlotte	2,268	1,567
Houston	2,413	1,530
Portland	466	1,370
Philadelphia	799	1,275
Inland Empire	1,715	1,089
Orlando	53	1,056
San Diego	1,388	1,026
Raleigh – Durham	1,394	1,014
Sacramento	865	975
Austin	3,052	929

Metro	Net Absorption Jan-June 2020	Net Absorption July-Aug 2020
Columbus	1,637	748
Seattle	1,472	737
Nashville	1,478	723
Las Vegas	2,090	718
San Antonio	2,265	679
Twin Cities	1,591	677
Tampa	2,081	402
Miami	-754	310
Boston	538	115
Pittsburgh	-157	109
New York	3,301	106
San Jose	-151	-322
Los Angeles	-2,339	-531
Chicago	-2,088	-1,320
San Francisco	-2,121	-2,546

Source: Yardi Matrix

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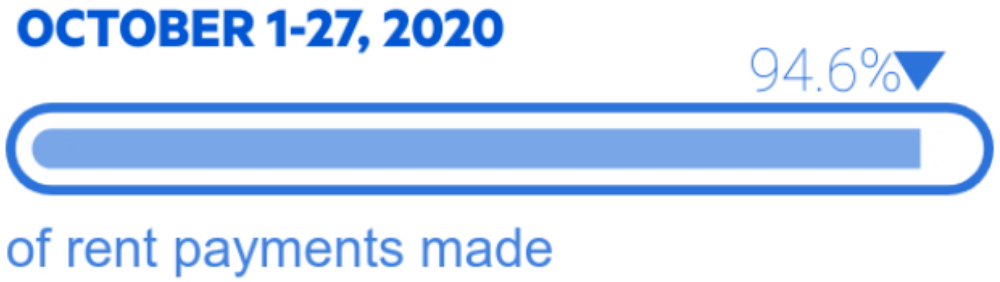
94.6% of Apartment Households Paid Rent as of October 27th



- The National Multifamily Housing Council (NMHC)'s Rent Payment Tracker found 94.6% percent of apartment households made a full or partial rent payment by October 17
- The survey consists of 11.4 million units of professionally managed apartment units across the country
- This is a 1.2%, or 141,583 household, decrease from the share who paid rent through October 27, 2019 and compares to 92.2% that had paid by September 27, 2020

Source: Yardi Matrix; NMHC.org

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However, the Pain is Not in Professionally Managed Multifamily, but Instead in the Small <50 Unit Rental Universe

TREPP: GSE LENDERS AID MULTIFAMILY BORROWERS WITH FORBEARANCES

- Small Balance Loans (SBL) account for about 18.5% of the total forbearance requests from a balance standpoint, but over 50% of requests by property count, according to Trepp
- Because SBLs are typically used to finance apartments with <100 units, each resident that has trouble paying rent has a more significant impact on the property's cash flow
- SBLs are also more commonly used as federal financing support for affordable or rent-stabilized housing as well as multifamily properties supplying more basic amenities, which gives them more exposure to lower/moderate-income residents that have been disproportionately impacted by COVID-related layoffs

Source: Yardi Matrix; Trepp

Multifamily Concessions Observations

- Gateway markets saw the largest increase in the percentage of properties offering concessions from January to September, but tech hub markets have the highest overall percentage of properties offering concessions
- Gateway markets saw the largest average concessions offered on a yearly basis (specifically: Manhattan, Los Angeles and the Bay Area)
- Class A & B properties are offering significantly more concessions than Class C properties
- Smaller units (studios & 1-bedrooms) saw the largest increase in concessions since January – further emphasizing that people want more space

Source: Yardi Matrix

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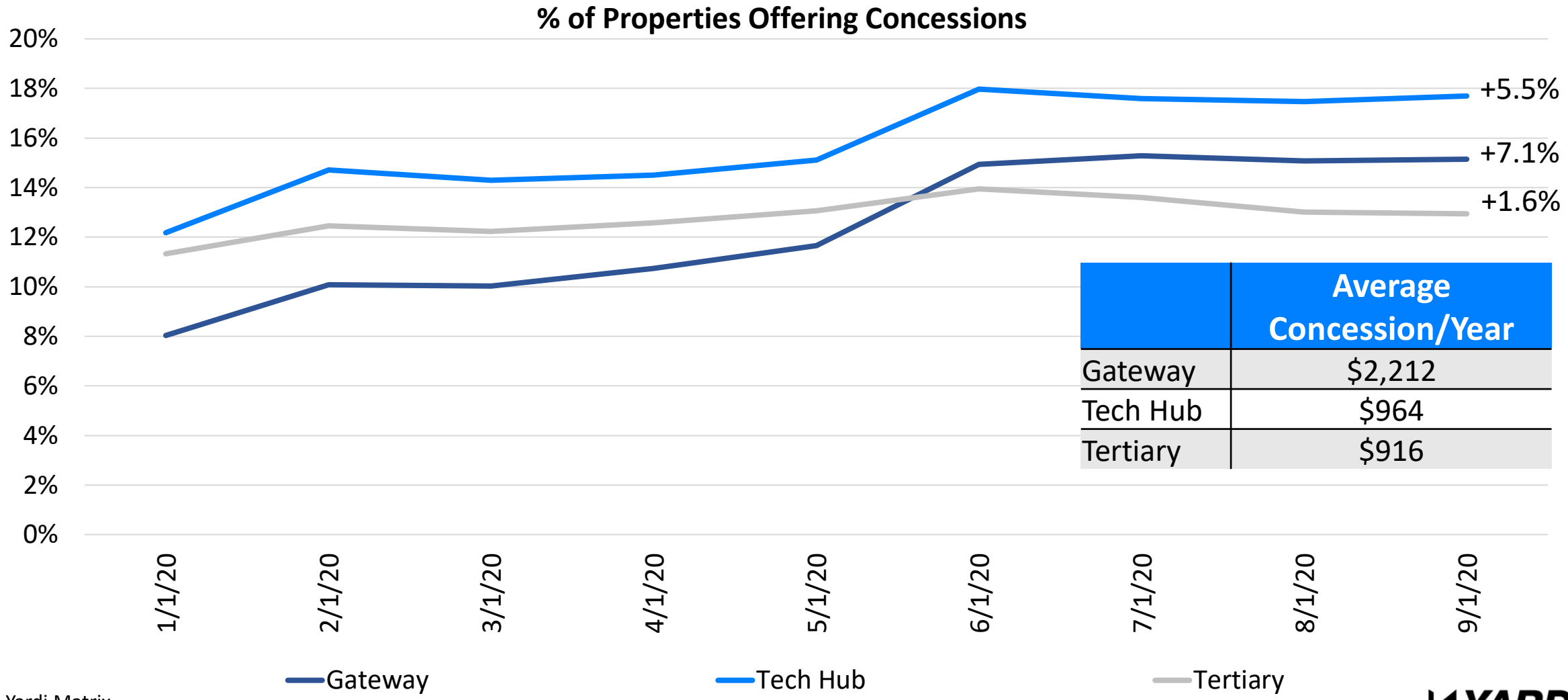
Concessions Increased the Most in Gateway Markets, But Tech Hub Markets Have the Highest % of Properties Offering Concessions



	Average Concession/Year
Gateway	$2,212
Tech Hub	$964
Tertiary	$916

Source: Yardi Matrix

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Concessions Concentrated in the Lifestyle Asset Class

Metro	Class A & B - % of Prop. Offering Concessions	Class C - % of Prop. Offering Concessions	Average Concession Per Year
San Jose	44.3%	28.0%	$2,952
San Antonio	34.3%	14.4%	$618
Los Angeles	28.7%	11.0%	$1,971
Orange County	27.6%	13.2%	$1,526
Austin	27.4%	16.1%	$852
San Francisco	27.2%	8.8%	$2,962
Atlanta	26.2%	8.5%	$901
Raleigh	25.2%	16.0%	$818
Chicago	24.6%	8.2%	$1,434
Houston	24.2%	17.6%	$810
Nashville	23.6%	8.4%	$947
Denver	23.1%	14.9%	$1,102
Seattle	22.6%	8.5%	$1,494
Dallas	21.8%	8.9%	$762
Las Vegas	21.7%	18.9%	$738

Metro	Class A & B - % of Prop. Offering Concessions	Class C - % of Prop. Offering Concessions	Average Concession Per Year
Phoenix	21.5%	13.6%	$690
Baltimore	20.8%	11.5%	$930
Orlando	20.6%	6.9%	$910
Charlotte	20.0%	2.3%	$837
Kansas City	19.8%	11.4%	$607
Portland	19.7%	9.6%	$1,052
Miami	19.6%	5.4%	$2,137
Boston	18.0%	5.9%	$2,028
Philadelphia	16.2%	8.6%	$1,106
Washington DC	16.1%	9.9%	$1,753
Twin Cities	13.4%	5.4%	$884
Tampa	13.3%	5.6%	$942
Inland Empire	11.7%	7.0%	$890
Indianapolis	10.5%	10.0%	$597
Sacramento	9.7%	4.3%	$736

*Data as of 9/1/2020
Source: Yardi Matrix

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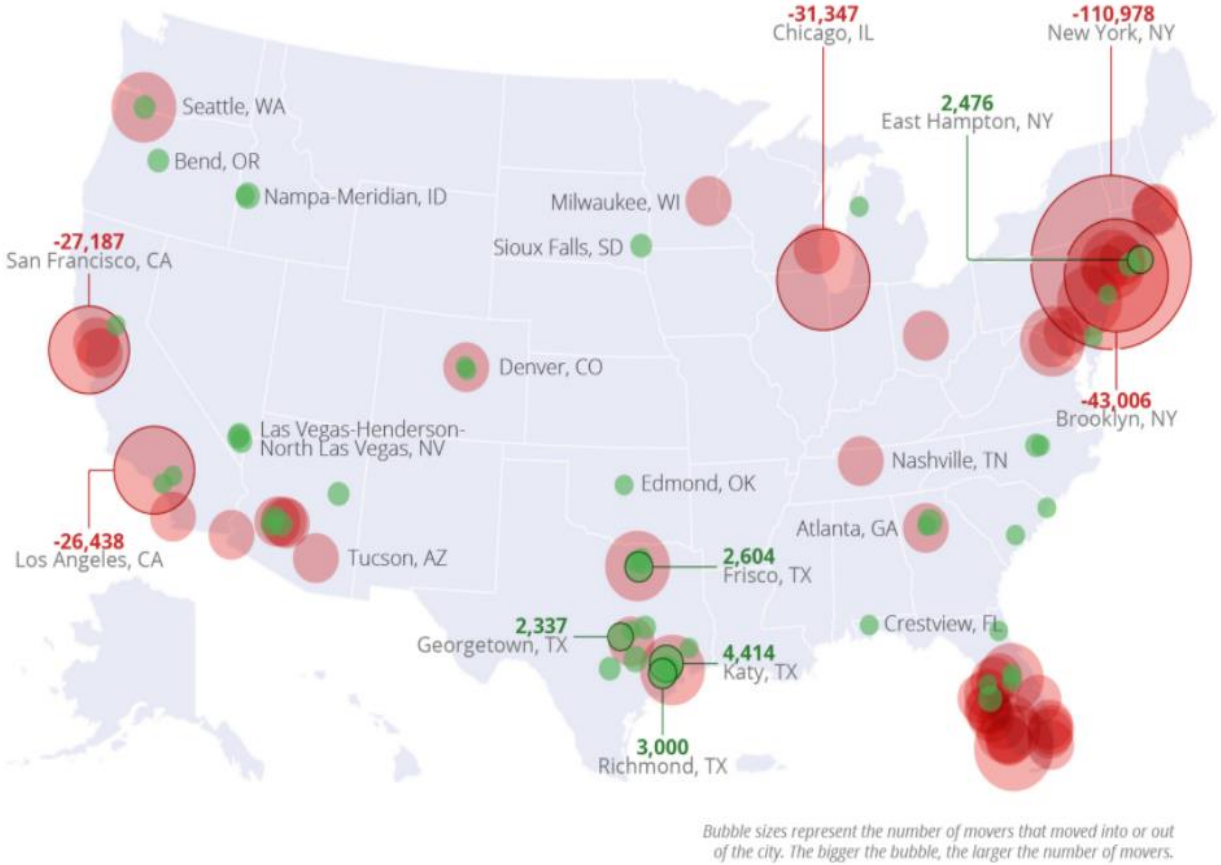
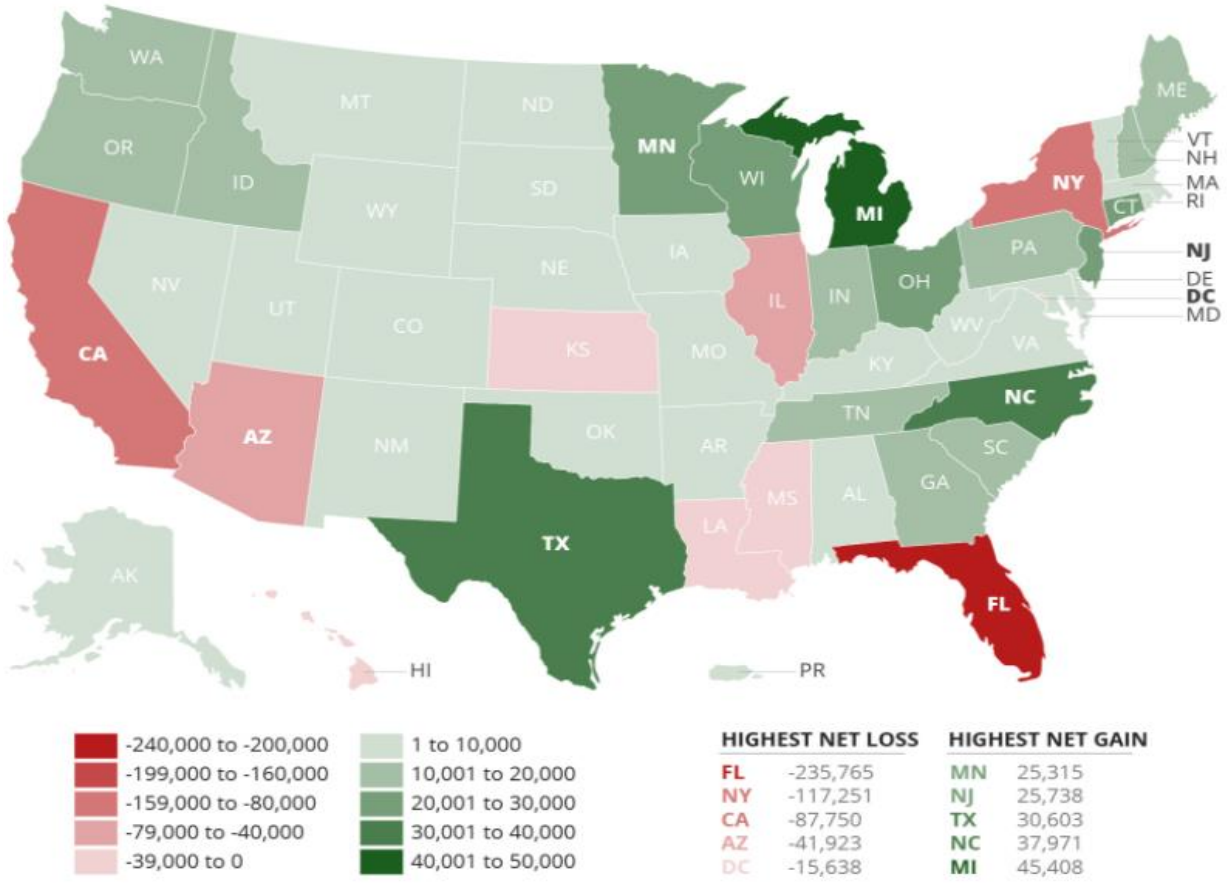
Migration Amid the Coronavirus: Gateway Markets Experiencing a Mass Exodus, While the Midwest Gains New Residents





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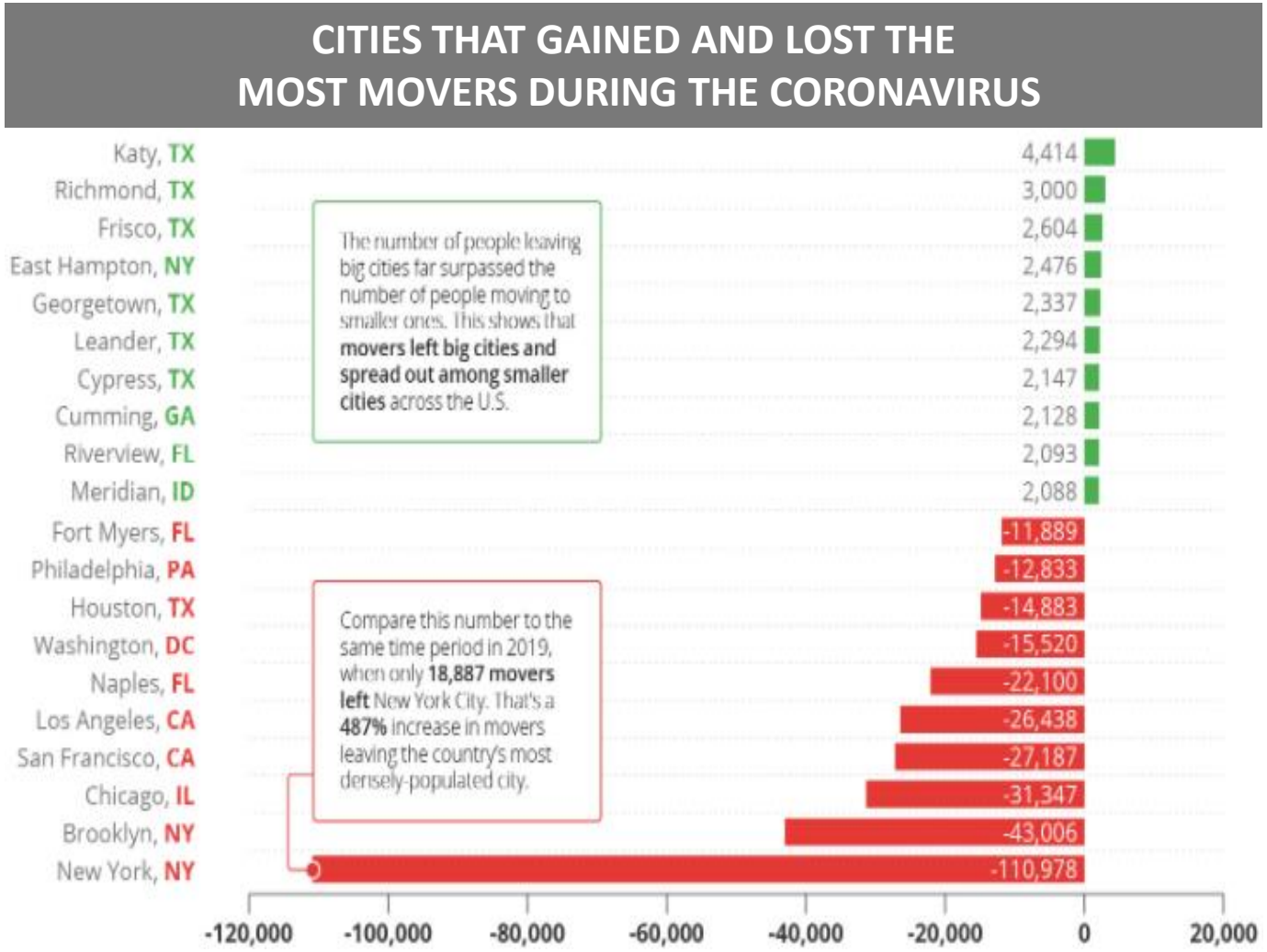
Source: Yardi Matrix; MYMOVE, https://www.mymove.com/moving/covid-19/coronavirus-moving-trends/

Movement Out of Big Cities Isn't a New Thing – But The Pandemic Has Accelerated the Trend



2020 Top Cities Ranking	# Movers Lost in 2020	# Movers Lost in 2019
New York City, NY	-110,978	-18,887
Brooklyn, NY	-43,006	-10,144
Chicago, IL	-31,347	-15,278
San Francisco, CA	-27,187	-9,683
Los Angeles, CA	-26,438	-13,474
Naples, FL	-22,100	-27,202
Washington, DC	-15,520	-5,896
Houston, TX	-14,883	-9,106
Philadelphia, PA	-12,833	-7,853
Fort Myers, FL	-11,889	-13,359

***Data pulled from total USPS change-of-address requests filed between Feb. 1 2020 and Jul. 31 2020. Data represents net move ins/outs**

Source: Yardi Matrix; MYMOVE, https://www.mymove.com/moving/covid-19/coronavirus-moving-trends/

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The Movement Isn't Just From Gateway to Tech Hub Markets – Many Residents Are Moving From Densely Populated Cities to Suburbs

***Data pulled from total USPS change-of-address requests filed between Feb. 1 2020 and Jul. 31 2020. Data represents net move ins/outs**

Source: Yardi Matrix; MYMOVE, https://www.mymove.com/moving/covid-19/coronavirus-moving-trends/

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Understanding the Nature of Job Losses as a Driving Factor in Accelerating Migration Out of Gateway Markets

- Aside from people wanting more living space for their homes, we need to look at job losses and affordability impacts on migration trends
- The country experienced rapid and catastrophic employment loss with the spread of the coronavirus and the majority of job losses were concentrated in the service industry
- Gateway markets are tourist destinations with desirable restaurants, nightlife and entertainment with a large employment base in the service industry
- Gateway markets are also the most expensive to live in…and with job losses disproportionately impacting service workers, it becomes much harder to pay rent and afford the lifestyle gateway markets have to offer

Source: Yardi Matrix

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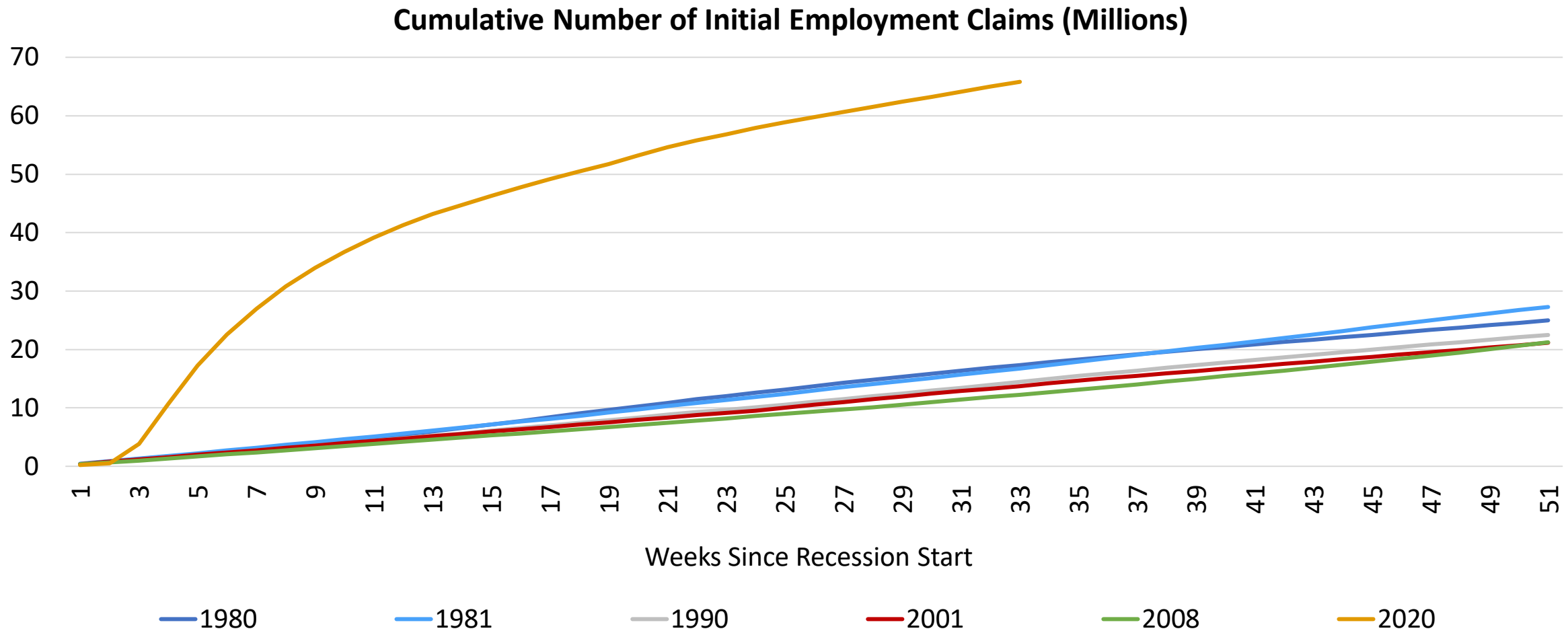
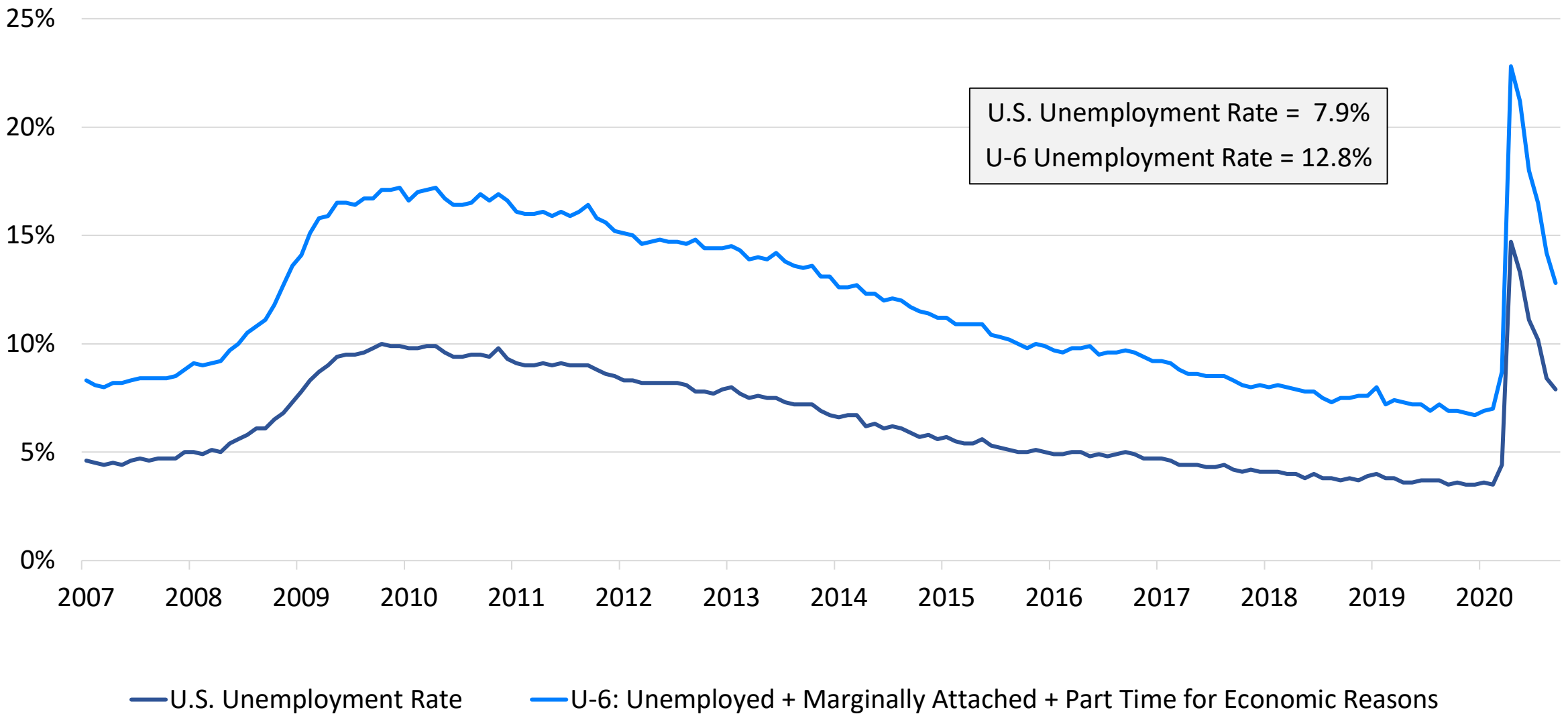
Initial Unemployment Claims Soared Much Faster in 2020 Compared to the Five Most Recent Recessions



*As of October 22, 2020. Seasonally adjusted initial unemployment claims. Data for 2020 shows cumulative claims over a 23-week period starting with March 7, 2020 week-end data

Source: Yardi Matrix; U.S. Department of Labor (DOL); National Bureau of Economic Research (NBER); Joint Center for Housing Studies of Harvard University (JCHS)

Unemployment & Underemployment Falling, but Still High



*Data as of October 23, 2020.
Source: Yardi Matrix; Bureau of Labor Statistics (BLS)

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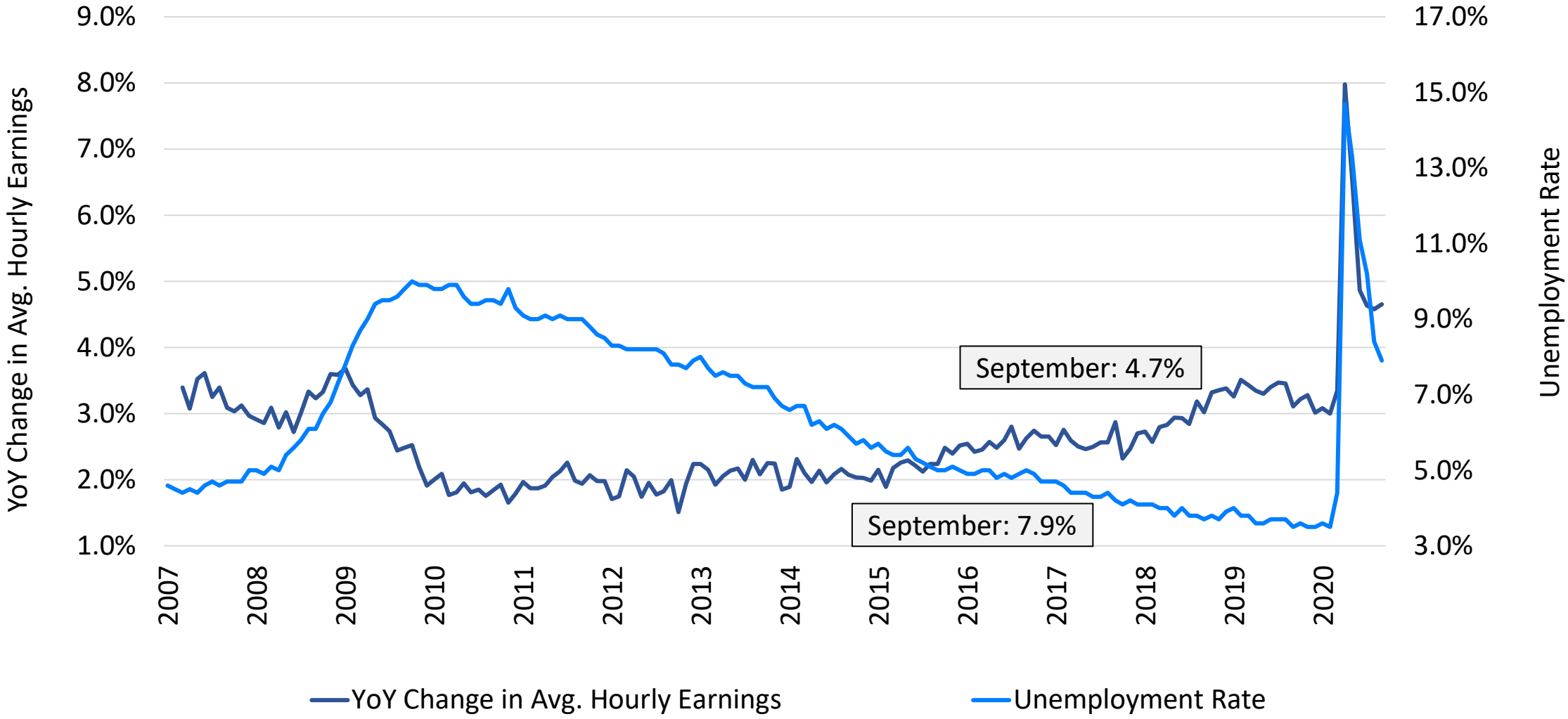
The Nature of Job Losses Affected Wages: With Fewer Lower-Wage Jobs in the Pool, Wages Falsely Appear to Have Jumped



Source: Yardi Matrix; Moody's Analytics; Bureau of Labor Statistics (BLS); Current Population Survey (CPS)

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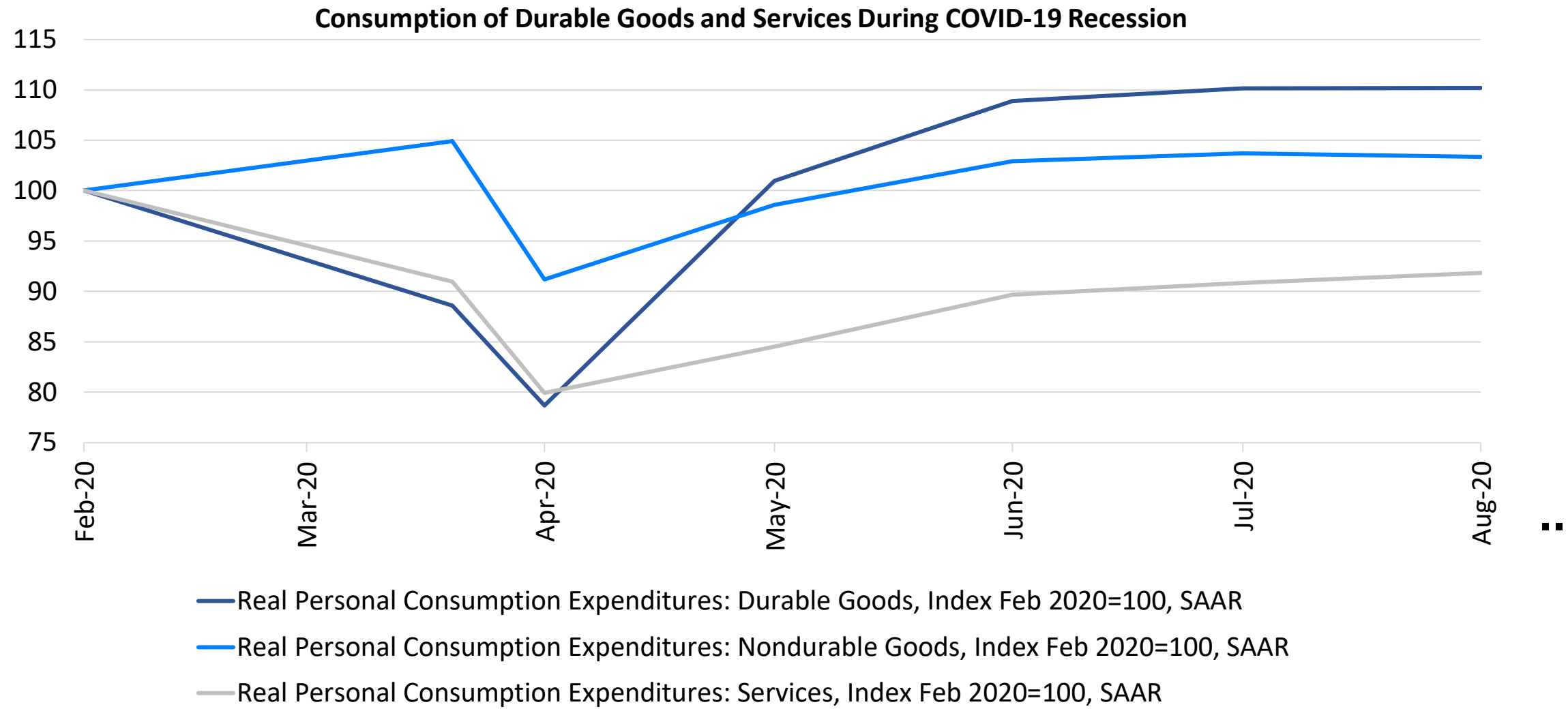
From Services to Goods: Consumers are Now Spending More Money on Durable Goods



Source: Yardi Matrix; Federal Reserve Bank of St. Louis (FRED); U.S. Bureau of Economic Analysis

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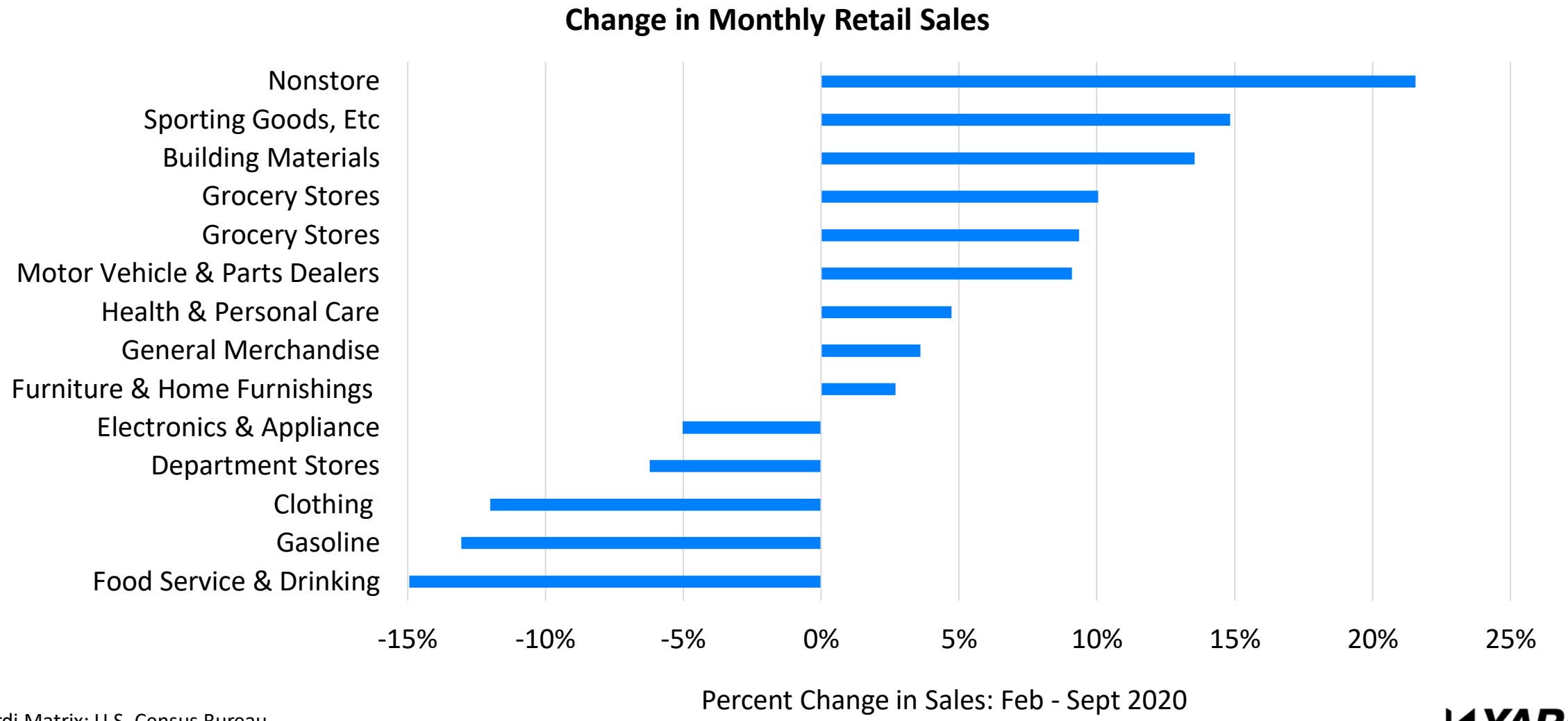
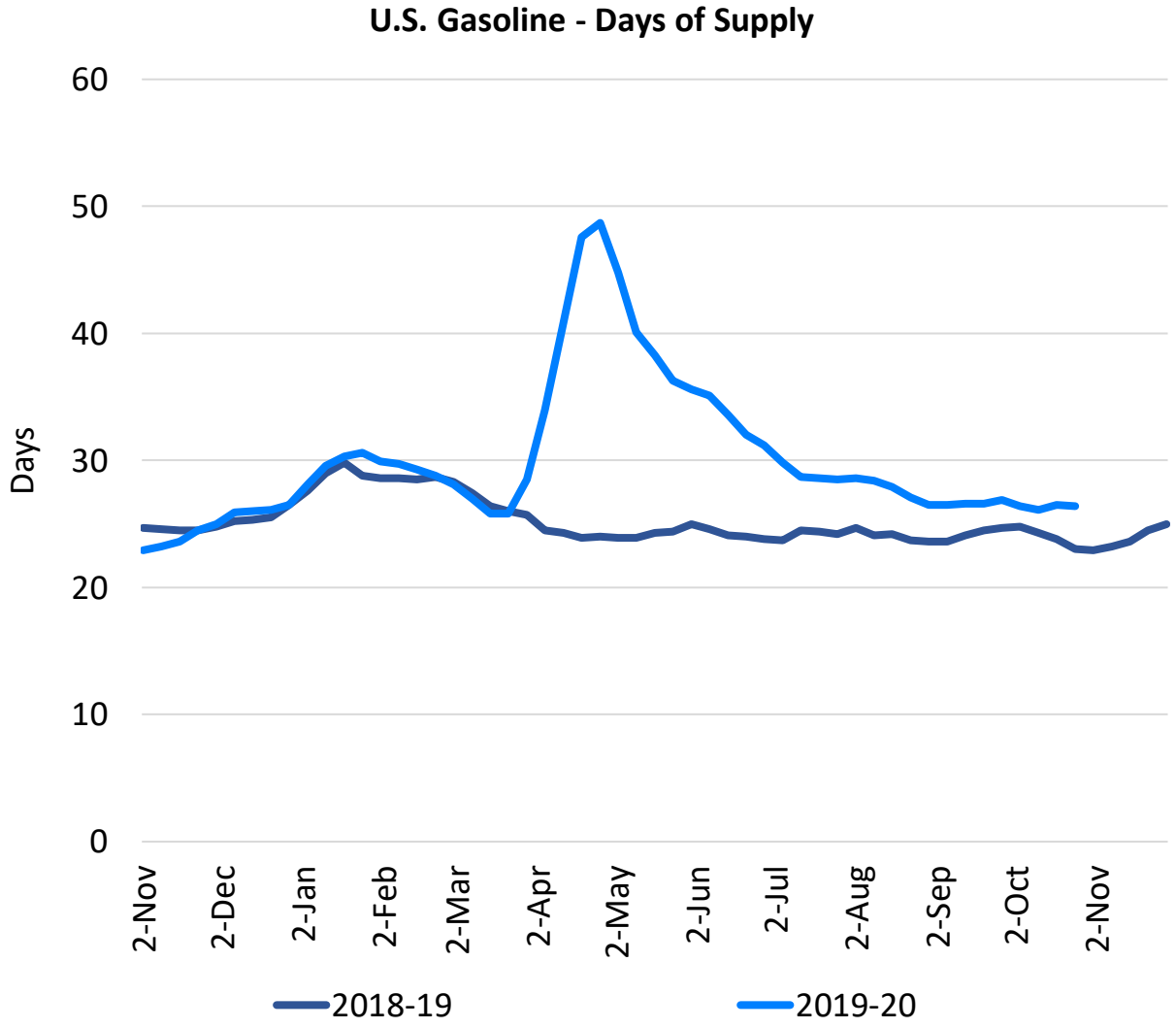
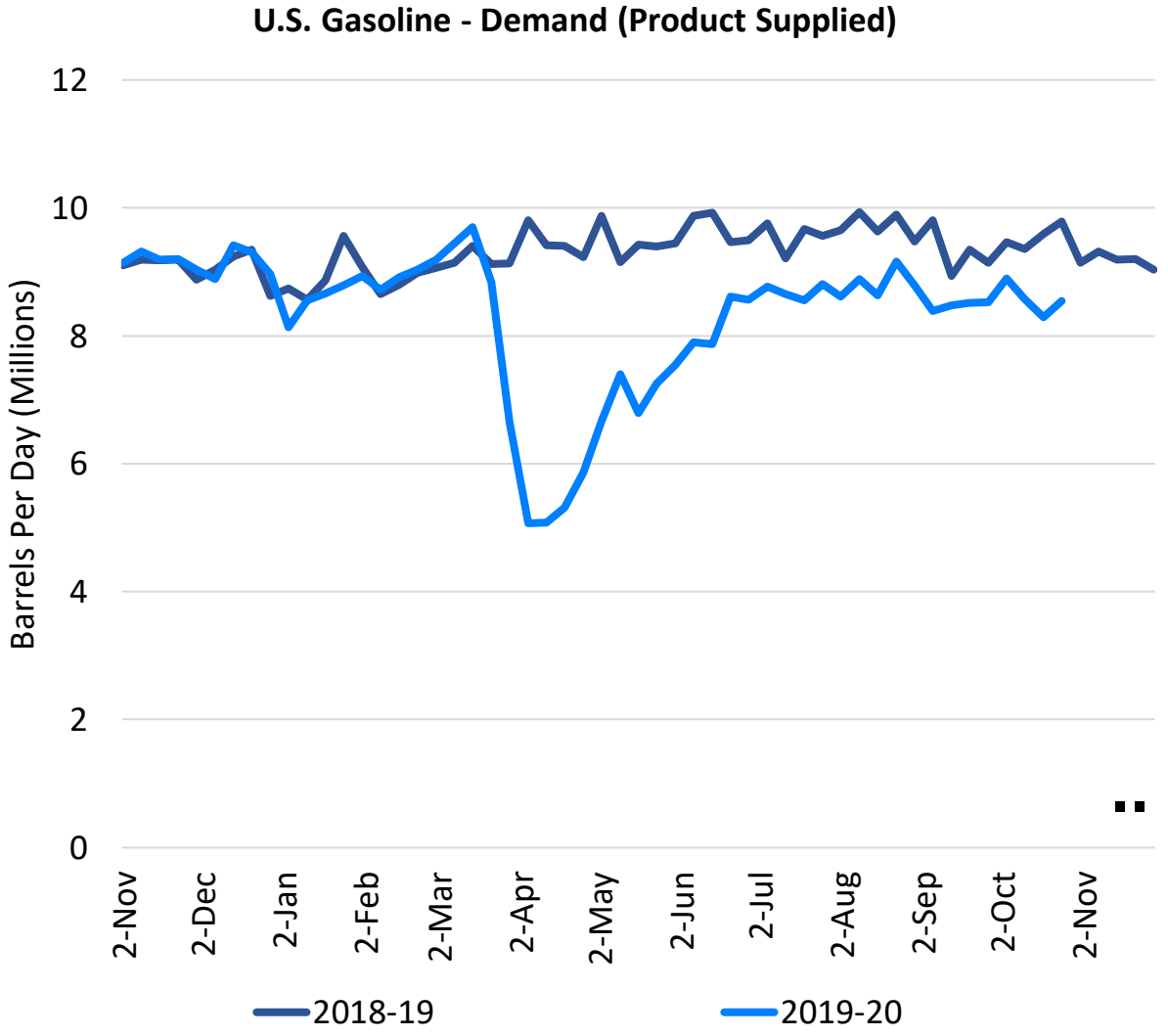
Restaurants, Gasoline and Clothing Purchases Hit the Hardest from February to September



Source: Yardi Matrix; U.S. Census Bureau

However, Gasoline Supply & Demand Imbalance Has Recovered





Source: Yardi Matrix; eia.gov

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Industries That Have Been Crushed By The Pandemic

AIRLINES:

- Airlines' losses are mounting, especially as revenues plunged over the summer, their most lucrative season
- **During Q3 2020**, Southwest Airlines Co. lost nearly $1.2 billion, American Airlines Group Inc. lost $2.4 billion, Alaska Air Group reported losing $431 million; and rivals United Airlines Holdings Inc. and Delta Air Lines Inc. also reported massive losses
- **The four largest U.S. carriers have lost more than $25 billion this year so far**

SPORTS:

- Since March, the COVID-19 pandemic has forced many sporting venues and event spaces to sit empty or operate with a limited capacity of fans
- **According to Forbes, the NFL is losing 38% of its total revenue already this year**

ENTERTAINMENT:

- AMC Entertainment Holdings Inc., the world's largest movie-theater company, **announced it may run of out cash by year's end if it doesn't raise additional funds or get more people back to theaters**
- **After reopening in August, Regal Cinemas, the second-largest cinema chain in the U.S., closed all its locations in October.** The decision to suspend operations at more than 500 locations followed a cascade of postponements for new Hollywood films

Source: Yardi Matrix; Wall Street Journal; Daily Trojan

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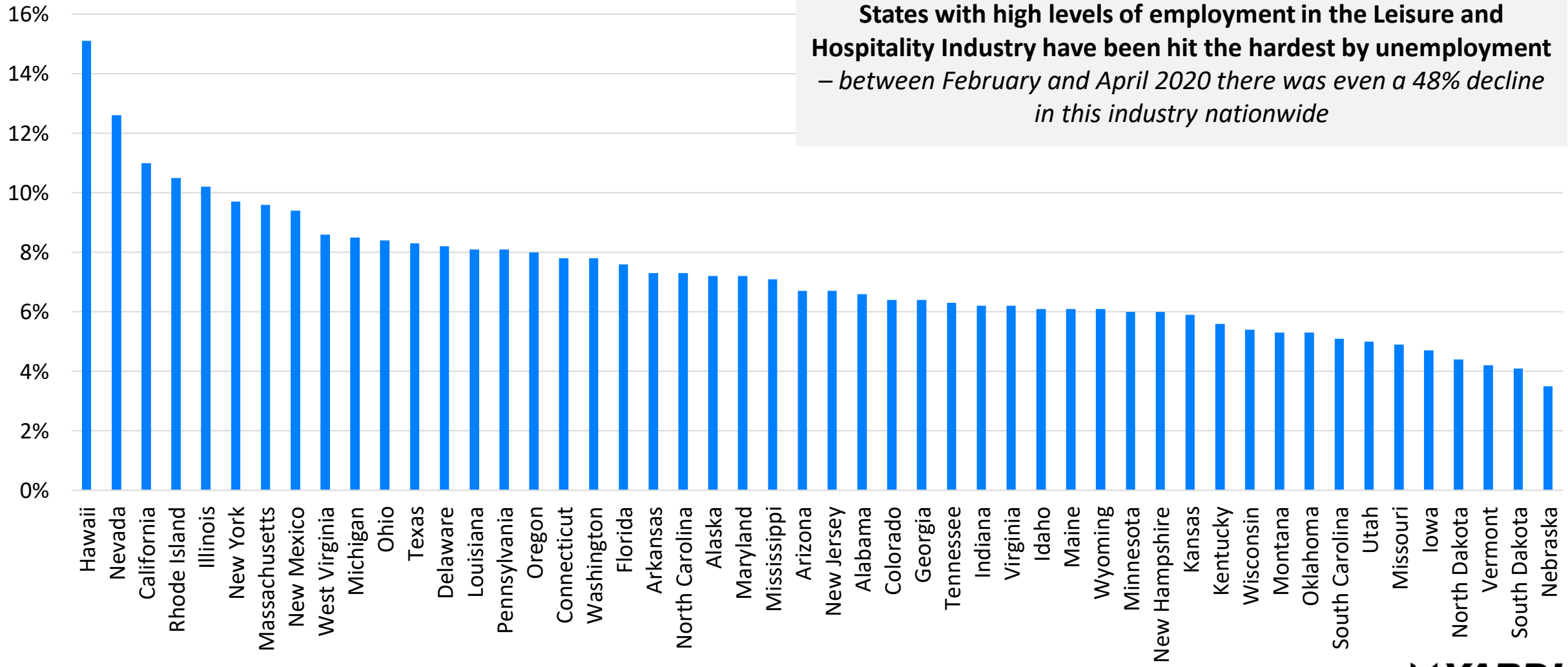
States Relying on Leisure and Hospitality, As Well As State Policy, Hit the Hardest by Unemployment

States with high levels of employment in the Leisure and Hospitality Industry have been hit the hardest by unemployment *– between February and April 2020 there was even a 48% decline in this industry nationwide*



*Unemployment Rates as of September 2020 (P)

Source: Yardi Matrix; U.S. Bureau of Labor Statistics; Federal Reserve Bank of St. Louis (FRED)

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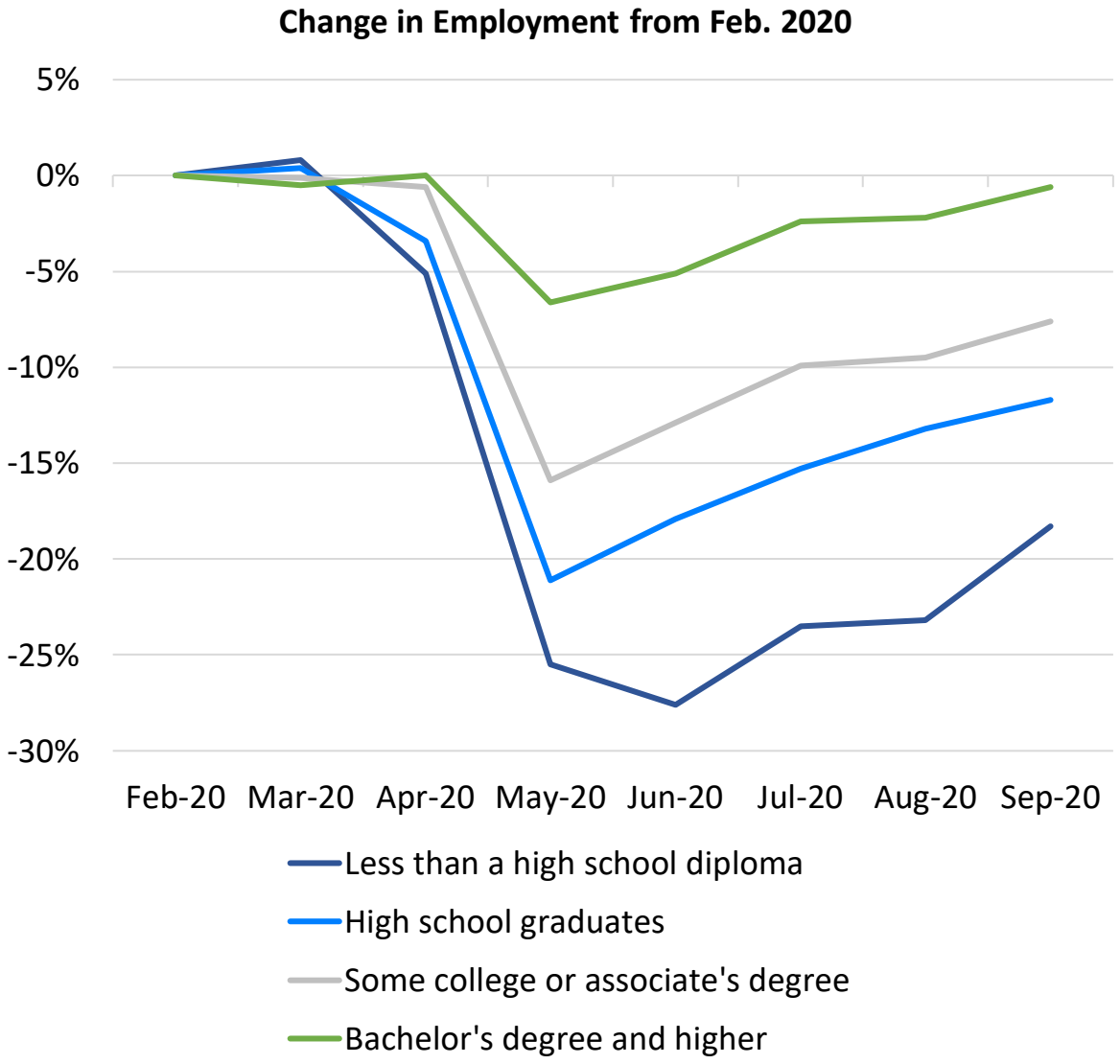
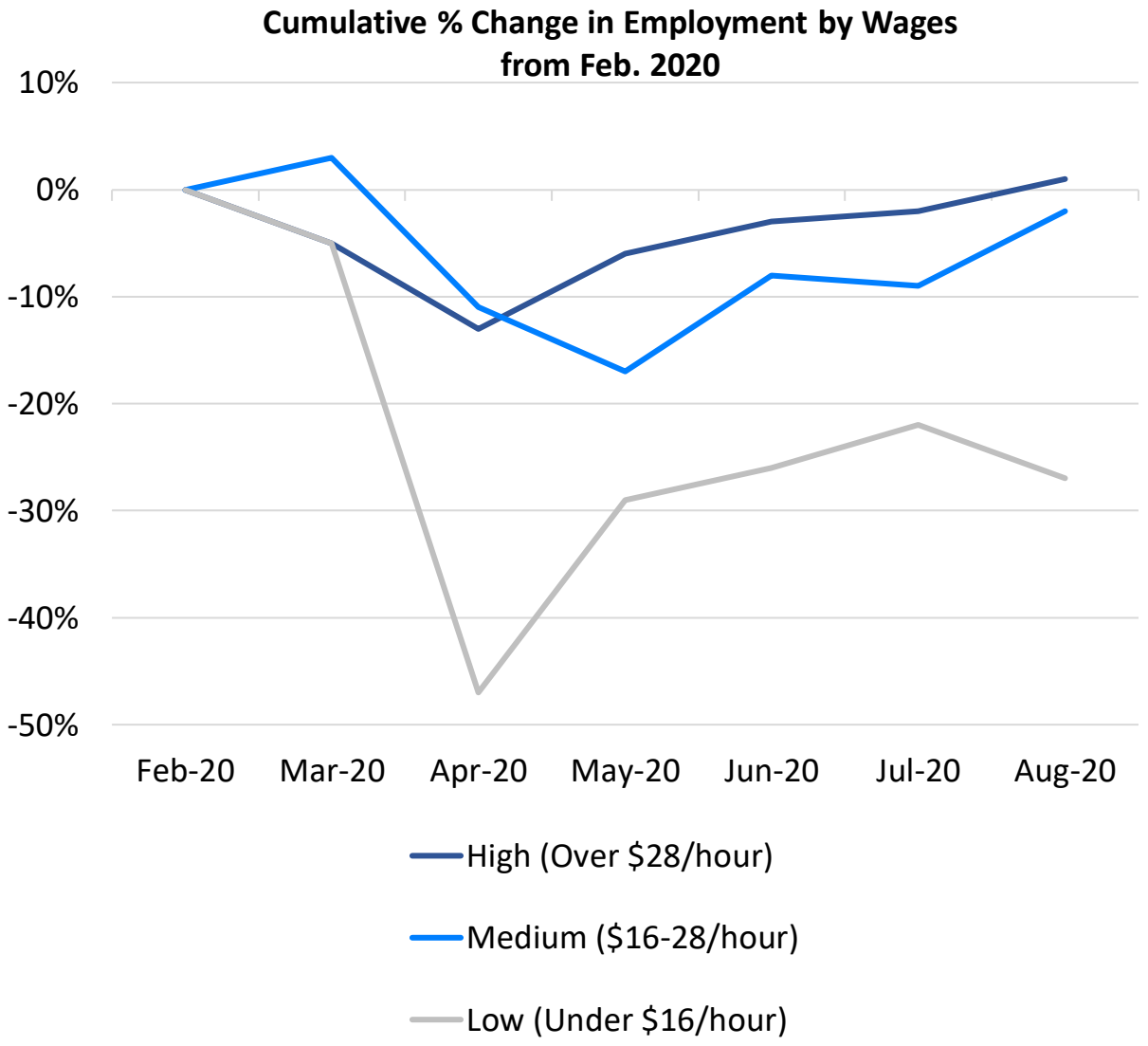
The Recovery in the Labor Market Has Been K-Shaped

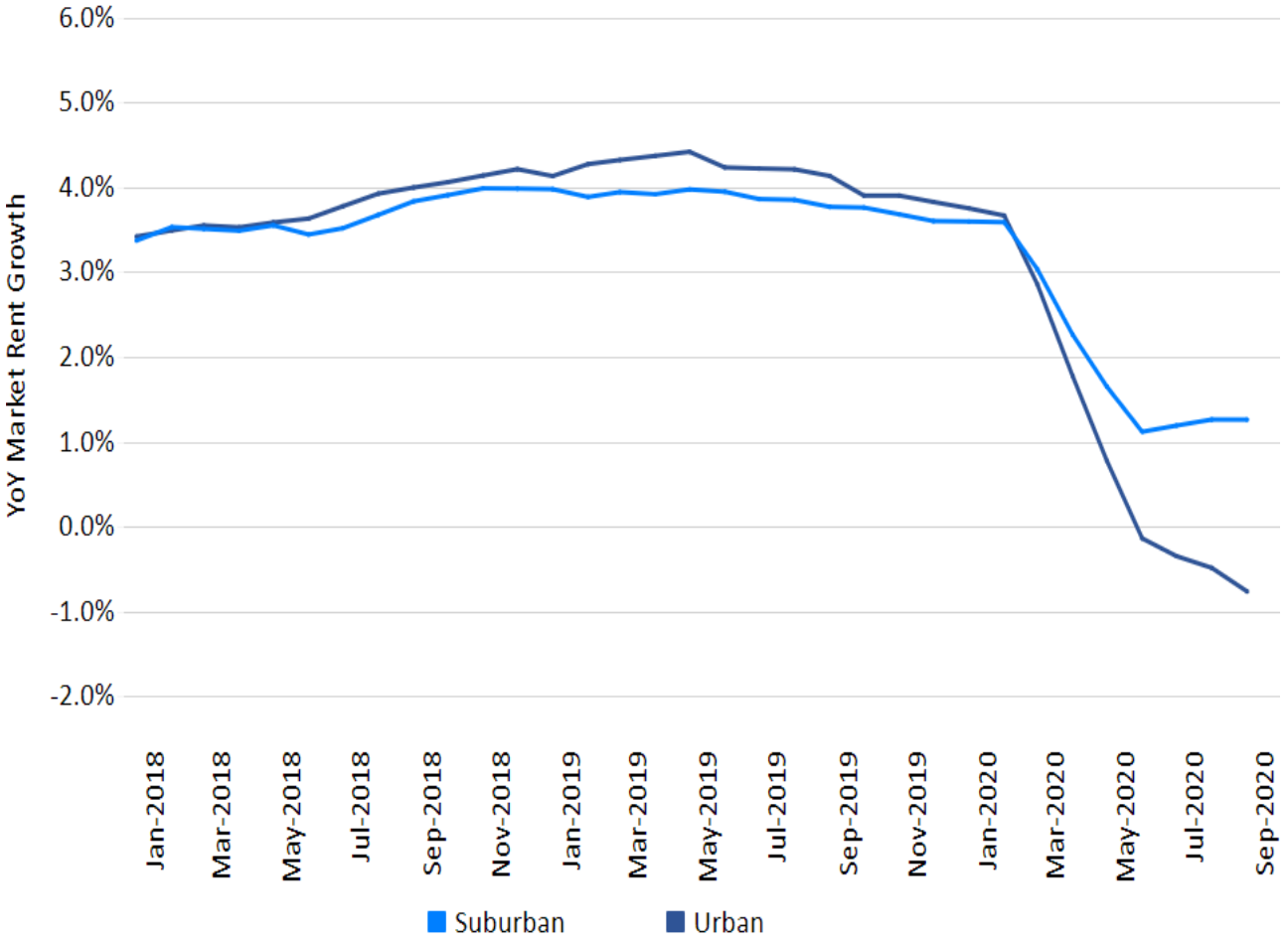




*For change in employment by education level: 25 years and older, seasonally adjusted. For change in employment by wages: seasonally adjusted
Source: Yardi Matrix; Evercore ISI; Business Insider; Wall Street Journal; U.S. Department of Labor

The Decade-long Urbanization Trend is Over

- Pre-pandemic, city centers with culture and amenities were experiencing the most growth and desirability among renters
- Now with restaurants, museums, bars and shops closed in urban centers, people are shifting their priorities to bigger spaces in smaller towns
- With new work-from-home policies, suburbs are more accessible to those who would have faced long commutes downtown to work



Source: Yardi Matrix

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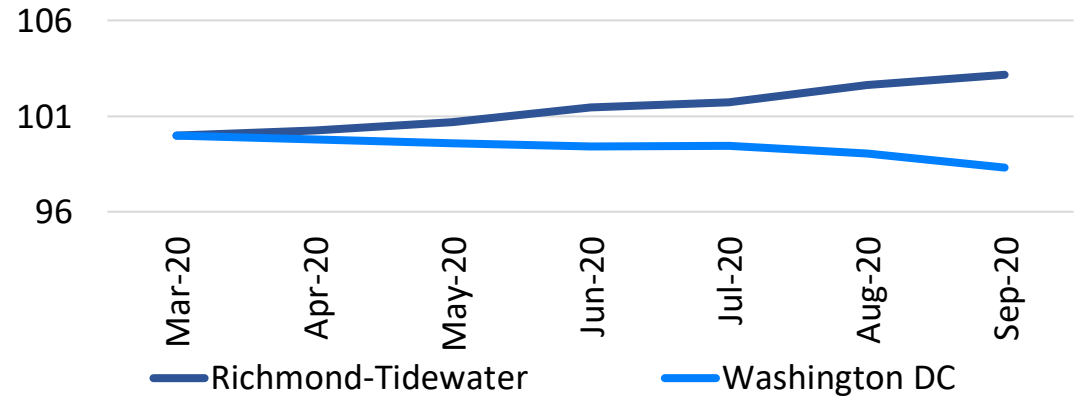
Rent Growth is Accelerating in Smaller Markets Near Gateway Cities

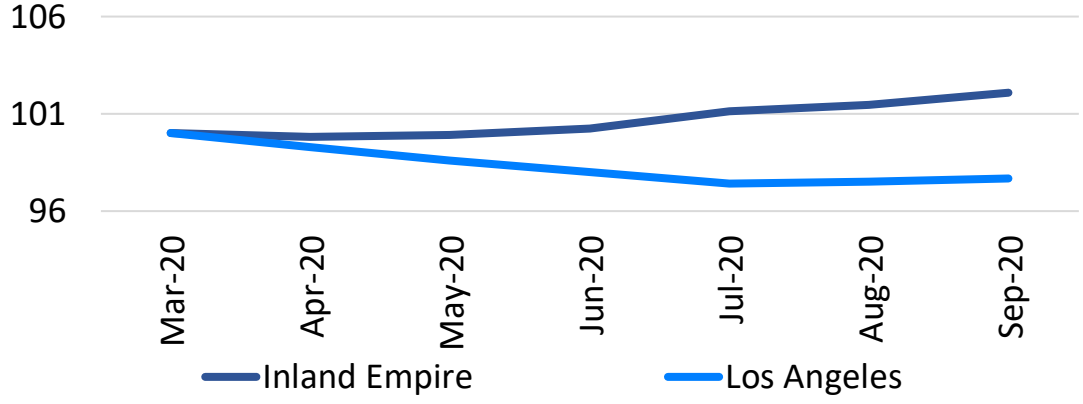
Richmond-Tidewater vs Washington DC

Indexed Rent Growth Since March 2020



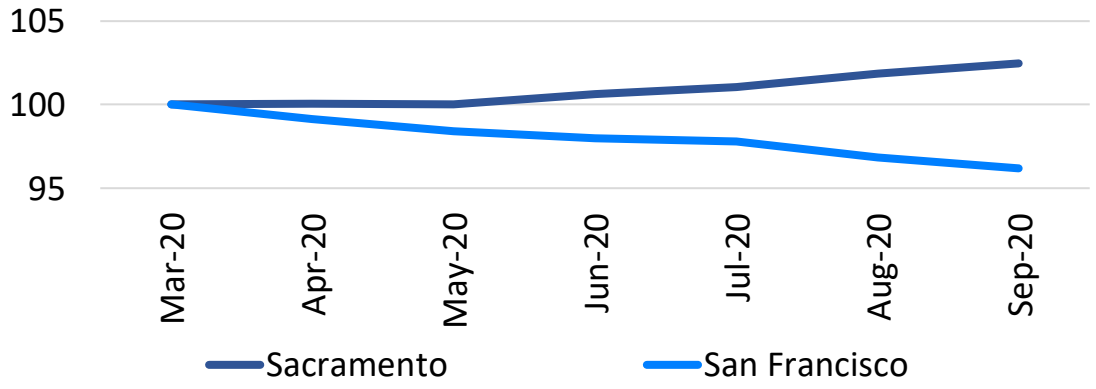
Inland Empire vs Los Angeles

Indexed Rent Growth Since March 2020



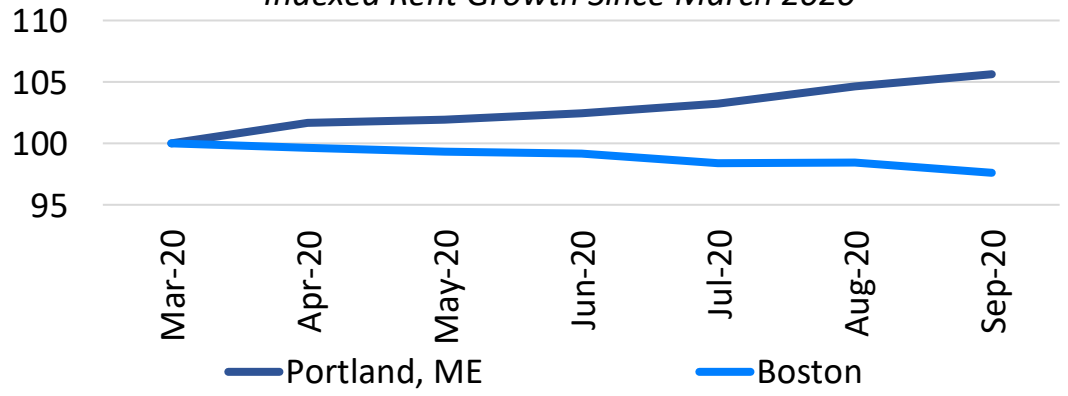
Sacramento vs San Francisco

Indexed Rent Growth Since March 2020



Portland, ME vs Boston

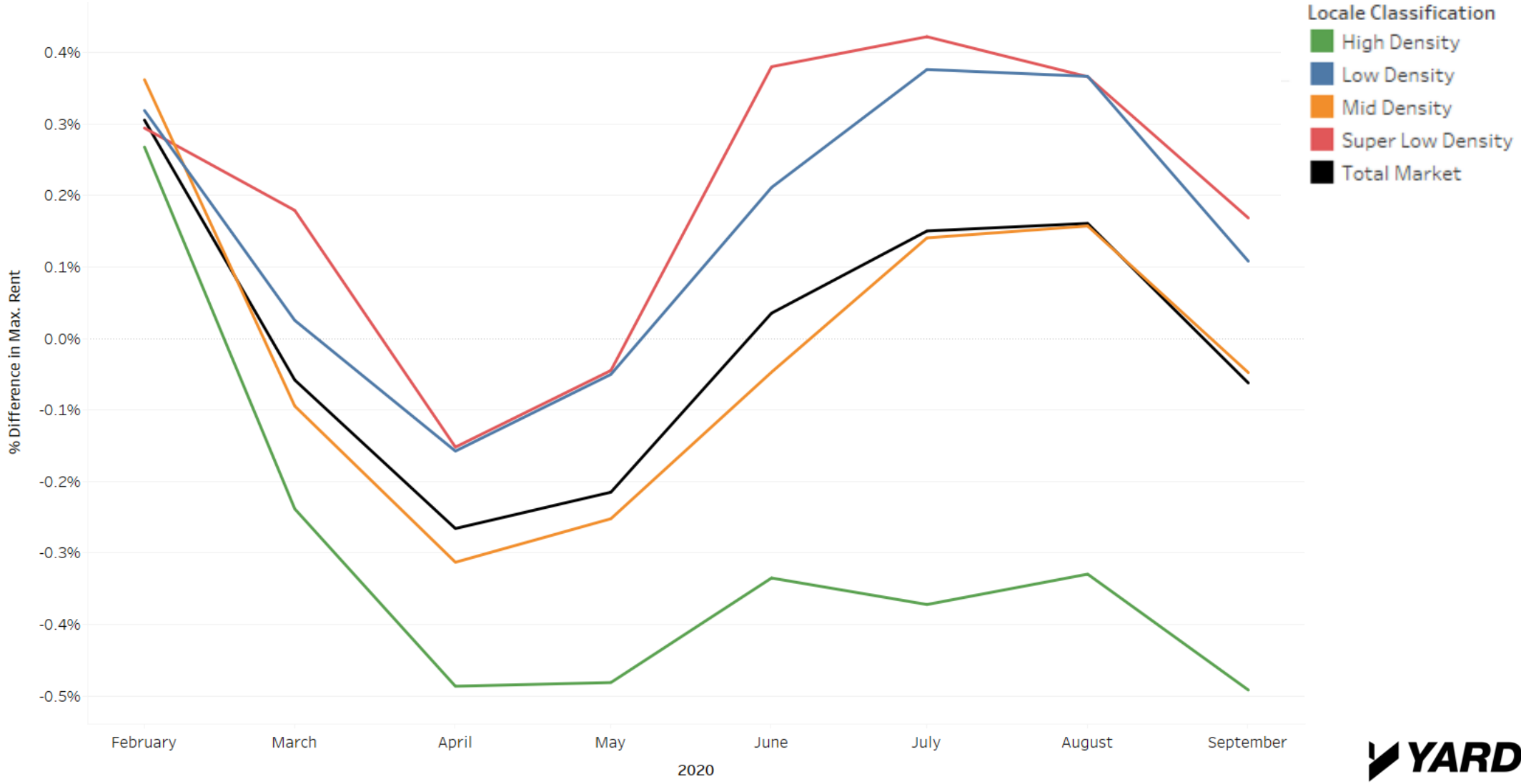
Indexed Rent Growth Since March 2020



Source: Yardi Matrix

YARDI

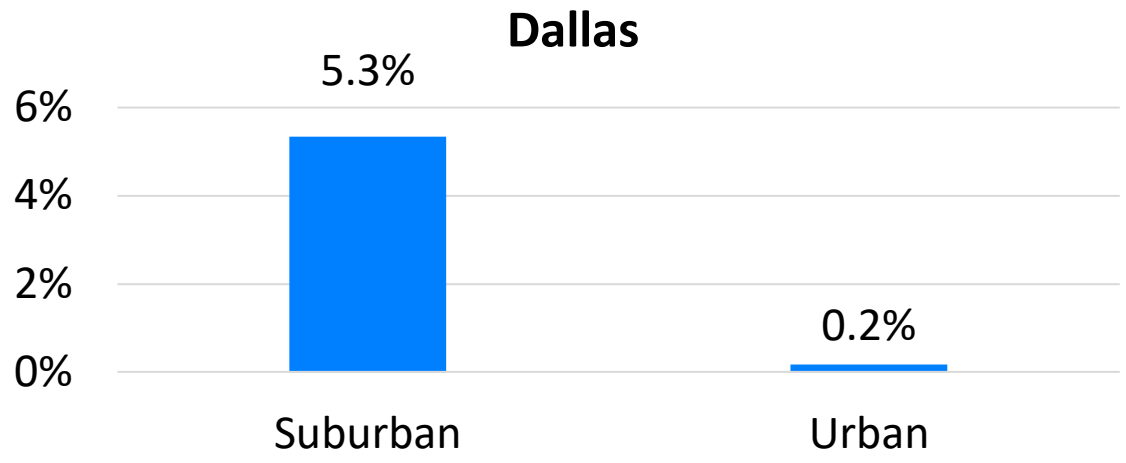
Nationally, High Density Areas Have Seen the Biggest Impact on Rents Since the Start of the Pandemic

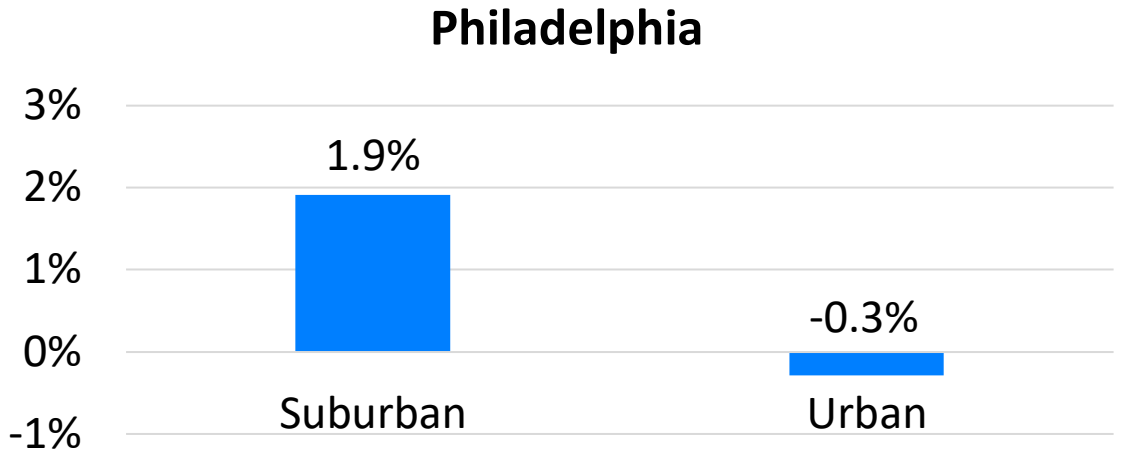


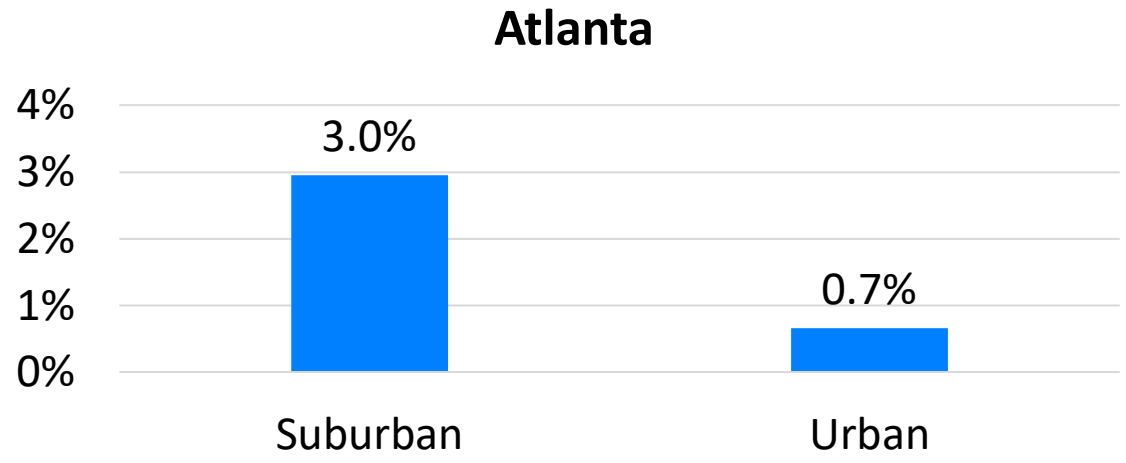
Source: Yardi Matrix

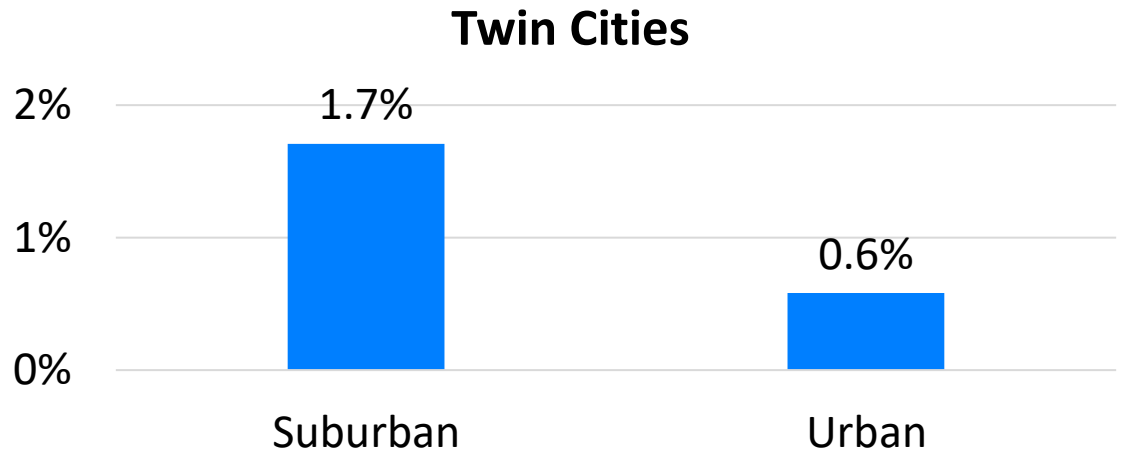
Suburbs Have Outperformed Their Urban Counterparts

RENT GROWTH MARCH – SEPTEMBER 2020









Source: Yardi Matrix

YARDI

Amenities in Urban Apartments Are Already Adjusting in an Attempt to Attract Business Professionals Working From Home

- As working from home becomes the norm, developers are swapping out plans for common area amenities such as movie theaters, game rooms and lounges, to areas better equipped for working from home
- Developers are betting that urban apartment dwellers will be more attracted to a package of work-from-home amenities, such as co-working spaces, Zoom-call rooms and podcast recording areas
- Commercial-grade Wi-Fi, USB ports, in-home offices, soundproofing and air-filtration will be the more desirable amenities moving forward

NEW WORK-FROM-HOME AMENITIES ARE ALREADY BEING IMPLEMENTED:

- **Society Living by Property Markets Group:**
  - Building under development in downtown Miami will have 30 offices and "social stairs": large steps with electrical outlets and ports where workers can hang out with their laptops
- **Post Brothers:**
  - Two properties under construction in Philadelphia – one with 3,000 sq. ft. of co-working space and one with 10,000 sq. ft. of co-working space
  - Both properties will have cubicles with high dividers, and multiple breakout rooms for Zoom calls and meetings
  - Also in downtown Philadelphia, a project in the design phase will have 15,000 sq. ft. of workspace divided into three areas: conference rooms on the ground floor, and co-working space and individual offices on the upper floors

Source: Yardi Matrix; wsj.com, "TikTok Studios, Zoom Rooms and Co-Working Spaces Are the New Must-Have Home Amenities"

One of the By-Products of People Moving to Suburbs is Increased Demand for Single-Family Rentals

Invitation Homes and Rockpoint Partners formed a $1B joint venture to acquire and renovate single-family rental homes across the U.S.

- **Invitation Homes** is the nation's largest owner of single-family rentals
- This marks **Rockpoint's** first substantial investment in the single-family rental market

Nuveen Real Estate will invest up to $400 million in a new single-family rental startup called **Sparrow**

- Marking the $131 billion investment manager's first foray into the niche asset class
- Sparrow and Nuveen will target high-growth markets with attractive economic and demographic drivers across the Sun Belt states

Single-family rental operator **Front Yard** is being taken private by investment management firm **Pretium** in a $2.4B deal

- The deal will make Pretium the second largest owner and operator of single-family rental housing in the U.S.

Source: Yardi Matrix; multihousingnews.com; globest.com

YARDI

Pandemic Valuation Sensitivity

Matrix Expert *Rent, Occupancy, and Expense data was used to model cashflow scenarios and resulting property valuations in two distinct markets*

The Scenario:

- Pre-Pandemic (March 2020) to Future (Aug 2021)

Markets:

- Coastal Class A: San Francisco Peninsula Class A Properties Completed 2018 or Earlier
- Sunbelt Class B: Raleigh-Durham Class B Properties Completed 2018 or Earlier

Debt and Cap Rate Spread over Ten Year Treasury Rates:

- Ten Year Treasury:
  - March 2020: 1.55%
  - Aug 2021: 1.00%
- Debt Spread:
  - 230 bps
- Cap Rate Spread:
  - 350 bps (San Francisco Peninsula)
  - 370 bps (Raleigh-Durham)

Source: Yardi Matrix

YARDI

Valuations Have Not Come Down That Much in Gateways – Won't See General Distress

San Francisco Peninsula Class A Results

Pre-COVID to Future rents and occupancy have declined for Class A San Francisco Peninsula properties

- 2.2% decline in in-place rent
- 6.8% decline in occupancy
- Overall Pre-COVID to Future property **revenue declines 9.2%**
- Approximate 55 bps decline in Ten Year Rate has driven cap rate compression, supporting valuations
- **Valuations decline 5.2%** Pre-COVID to Future

Sensitivity - % Change in Valuations - SF Peninsula Class A										
		Change in Revenue - March 2020 to September 2021								
		-15.0%	-12.5%	-10.0%	-7.5%	-5.00%	-2.50%	0.00%	2.50%	5.00%
Ten Year Treasury Rate - September 2021	0.50%	-5.4%	-0.2%	5.0%	10.3%	15.5%	20.8%	26.0%	31.3%	36.5%
	0.75%	-11.0%	-6.1%	-1.1%	3.8%	8.7%	13.7%	18.6%	23.6%	28.5%
	1.00%	-15.9%	-11.3%	-6.6%	-2.0%	2.7%	7.4%	12.0%	16.7%	21.4%
	1.25%	-20.4%	-16.0%	-11.5%	-7.1%	-2.7%	1.7%	6.1%	10.5%	15.0%
	1.50%	-24.4%	-20.2%	-16.0%	-11.8%	-7.6%	-3.4%	0.8%	5.0%	9.2%
	2.00%	-31.2%	-27.4%	-23.6%	-19.8%	-16.0%	-12.2%	-8.3%	-4.5%	-0.7%
	2.25%	-34.2%	-30.6%	-26.9%	-23.3%	-19.6%	-16.0%	-12.3%	-8.7%	-5.0%
	2.50%	-37.0%	-33.5%	-30.0%	-26.5%	-23.0%	-19.5%	-16.0%	-12.5%	-9.0%
	2.75%	-39.5%	-36.1%	-32.8%	-29.4%	-26.1%	-22.7%	-19.3%	-16.0%	-12.6%
	3.00%	-41.8%	-38.6%	-35.4%	-32.1%	-28.9%	-25.7%	-22.4%	-19.2%	-16.0%

Source: Yardi Matrix

YARDI

Valuations Are Actually Going Up in Tech Hub Markets

Raleigh-Durham Class B Results

Modest improvements in Pre-COVID to Future rents and occupancy for Raleigh-Durham Class B properties

- 2.6% increase in in-place rent
- 1.5% increase in occupancy
- Overall Pre-COVID to Future property **revenue increases 4.3%**
- Approximate 55 bps decline in Ten Year Rate has driven cap rate compression, supporting valuations
- **Valuations increase 9.6%** Pre-COVID to Future

Sensitivity - % Change in Valuations - Raleigh - Durham Class B										
		Change in Revenue - March 2020 to September 2021								
		-15.0%	-12.5%	-10.0%	-7.5%	-5.00%	-2.50%	0.00%	2.50%	5.00%
Ten Year Treasury Rate	0.50%	-26.6%	-19.2%	-11.8%	-4.4%	3.0%	10.4%	17.9%	25.3%	32.7%
	0.75%	-30.7%	-23.7%	-16.7%	-9.7%	-2.7%	4.2%	11.2%	18.2%	25.2%
	1.00%	-34.4%	-27.8%	-21.2%	-14.5%	-7.9%	-1.3%	5.3%	11.9%	18.6%
	1.25%	-37.7%	-31.4%	-25.1%	-18.9%	-12.6%	-6.3%	0.0%	6.3%	12.6%
	1.50%	-40.7%	-34.7%	-28.7%	-22.8%	-16.8%	-10.8%	-4.8%	1.2%	7.2%
	2.00%	-45.9%	-40.5%	-35.0%	-29.5%	-24.1%	-18.6%	-13.2%	-7.7%	-2.2%
	2.25%	-48.2%	-43.0%	-37.7%	-32.5%	-27.3%	-22.0%	-16.8%	-11.6%	-6.4%
	2.50%	-50.3%	-45.3%	-40.2%	-35.2%	-30.2%	-25.2%	-20.2%	-15.1%	-10.1%
	2.75%	-52.2%	-47.4%	-42.6%	-37.7%	-32.9%	-28.1%	-23.3%	-18.4%	-13.6%
	3.00%	-54.0%	-49.3%	-44.7%	-40.1%	-35.4%	-30.8%	-26.1%	-21.5%	-16.8%

Source: Yardi Matrix

YARDI

Yardi Matrix DSCR and LTV Product

- Yardi Matrix has leveraged our proprietary Matrix Expert operating expense data with our industry-leading rent and occupancy data to calculate estimates for property-specific debt service coverage ratios (DSCR) and loan-to-values (LTV) for our multifamily database

- Currently, there are more than 34,000 multifamily property records in the Matrix database with an associated loan where a DSCR can be calculated

- In addition, an LTV can be calculated on roughly 7,000 of these properties

Source: Yardi Matrix

There Aren't Any Obvious Points of Distress – If You Are Going to Find a Problem, You Will Have to Take a Specific, Targeted Look

Yardi Matrix estimated debt-service-coverage-ratio (DSCR) product

CASE STUDY	
Market	Miami
DSCR	<1.00
Occupancy	<90%
Year Built	After 2000

Year Rent Change

-8.9% 0.0% 8.9% N/A

Source: Yardi Matrix

YARDI

Distress Opportunities: Miami

Property #	Zip Code	Est. DSCR	Occupancy
1	33146	1.00	88.3%
2	33145	0.98	22.6%
3	33137	0.97	87.3%
4	33137	0.96	87.2%
5	33134	0.93	88.7%
6	33132	0.88	67.6%
7	33137	0.86	84.0%
8	33130	0.81	79.3%
9	33137	0.76	73.1%
10	33131	0.74	87.9%
11	33146	0.70	87.7%
12	33134	0.63	60.3%
13	33145	0.61	89.2%
14	33135	0.60	86.9%
15	33143	0.57	62.0%
16	33127	0.54	80.3%
17	33131	0.35	72.2%

Source: Yardi Matrix

YARDI

In Summary:

- There was a movement from gateway to tech hub markets prior to the start of the pandemic, but the shutdowns this March exacerbated these existing trends
  - Since March, we have witnessed a movement from gateway markets to tech hub markets, gateway markets to nearby smaller cities, and urban cores to suburbs
  - The nature of pandemic-driven job losses is an important driver of migration trends

- Secondary markets, as well as markets in the southeast and southwest, have had the most demand year-to-date, with absorption strongest in markets that have had rapid growth prior to the pandemic

- Overall, people are still paying rent, though there are some pain points for smaller owners/operators

- Gateway markets saw the largest increase in the percentage of properties offering concessions from January to September, but tech hub markets have the highest overall percentage of properties offering concessions

- Smaller units also saw the largest increase in concessions since January – people want more space

- Valuations in gateway markets haven't come down that much, and valuations in tech hub markets have increased

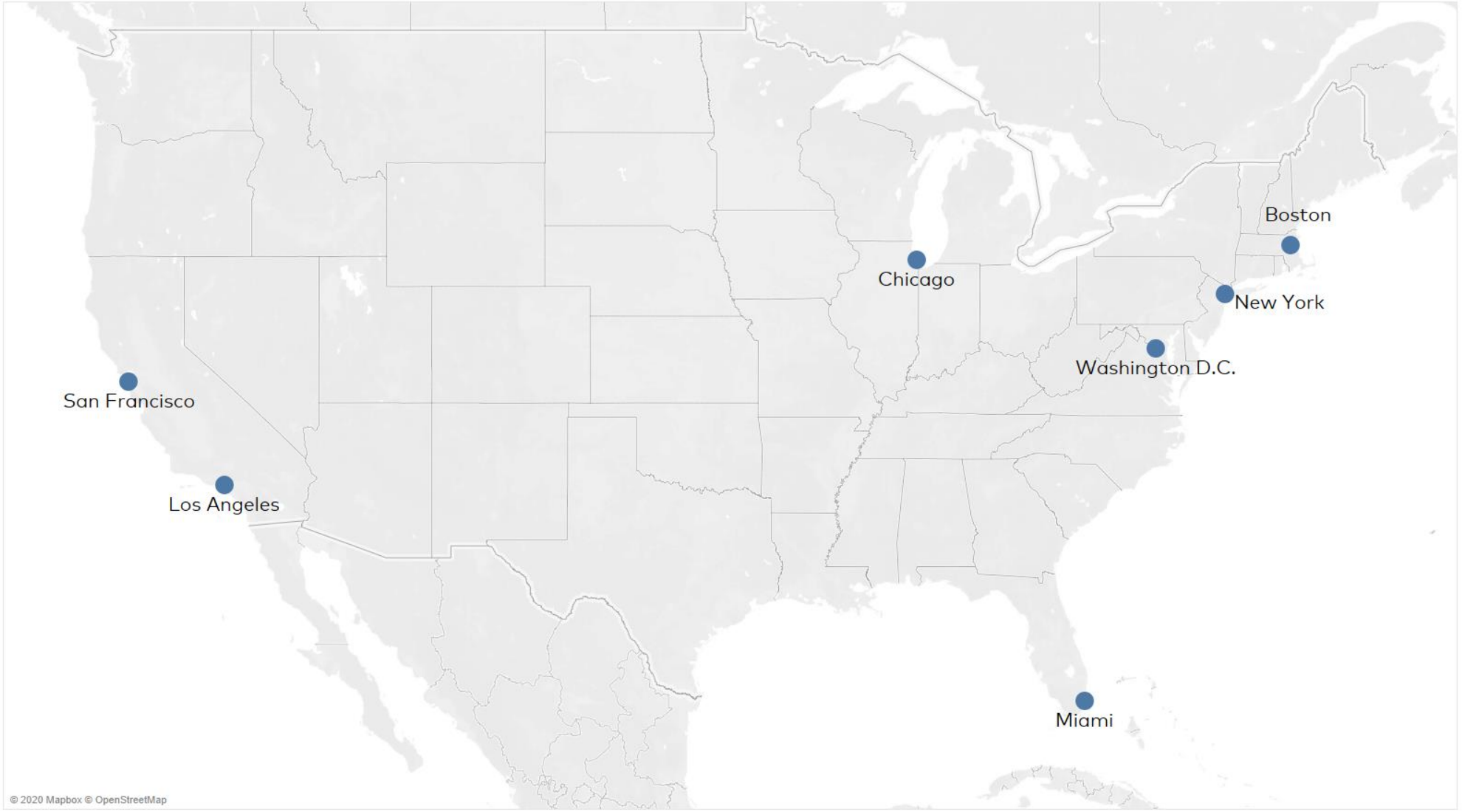
- ***Overall, things are looking ok, but there are some points of pain: the issue is, is it temporary or permanent?***

Source: Yardi Matrix

YARDI

Gateway Market Analysis

Our Primary Market Universe



Source: Yardi Matrix

Gateway Market Observations:

- Gateway markets will face a long road to recovery…they aren't dead, but it will be a long time before they get back to "normal"

- There are three major trends we see happening:
  1. A movement out of gateway markets due to high costs
  2. A movement within the same metro, but to less dense areas
  3. Political risk impacts that layer onto the previous 2 trends

Source: Yardi Matrix

Population Growth is Negative or Decelerating in Primary Markets

Market	2017 Pop. Growth	2018 Pop. Growth	2019 Pop. Growth	Overall Trend
National	**0.6%**	**0.5%**	**0.5%**	**Stable**
Washington DC	1.0%	0.6%	0.5%	Decelerating
Boston	0.7%	0.4%	0.3%	Decelerating
Miami	0.9%	0.3%	0.2%	Decelerating
San Francisco	0.5%	0.2%	0.0%	Decelerating
Chicago	-0.2%	-0.3%	-0.3%	Stable/Negative
Los Angeles	0.0%	-0.3%	-0.3%	Stable/Negative
New York	-0.1%	-0.3%	-0.3%	Stable/Negative

***Sorted by 2019 population growth**

Source: Yardi Matrix; U.S. Census Bureau (BOC)

YARDI

Employment Negative but Less Impacted in Miami and D.C.

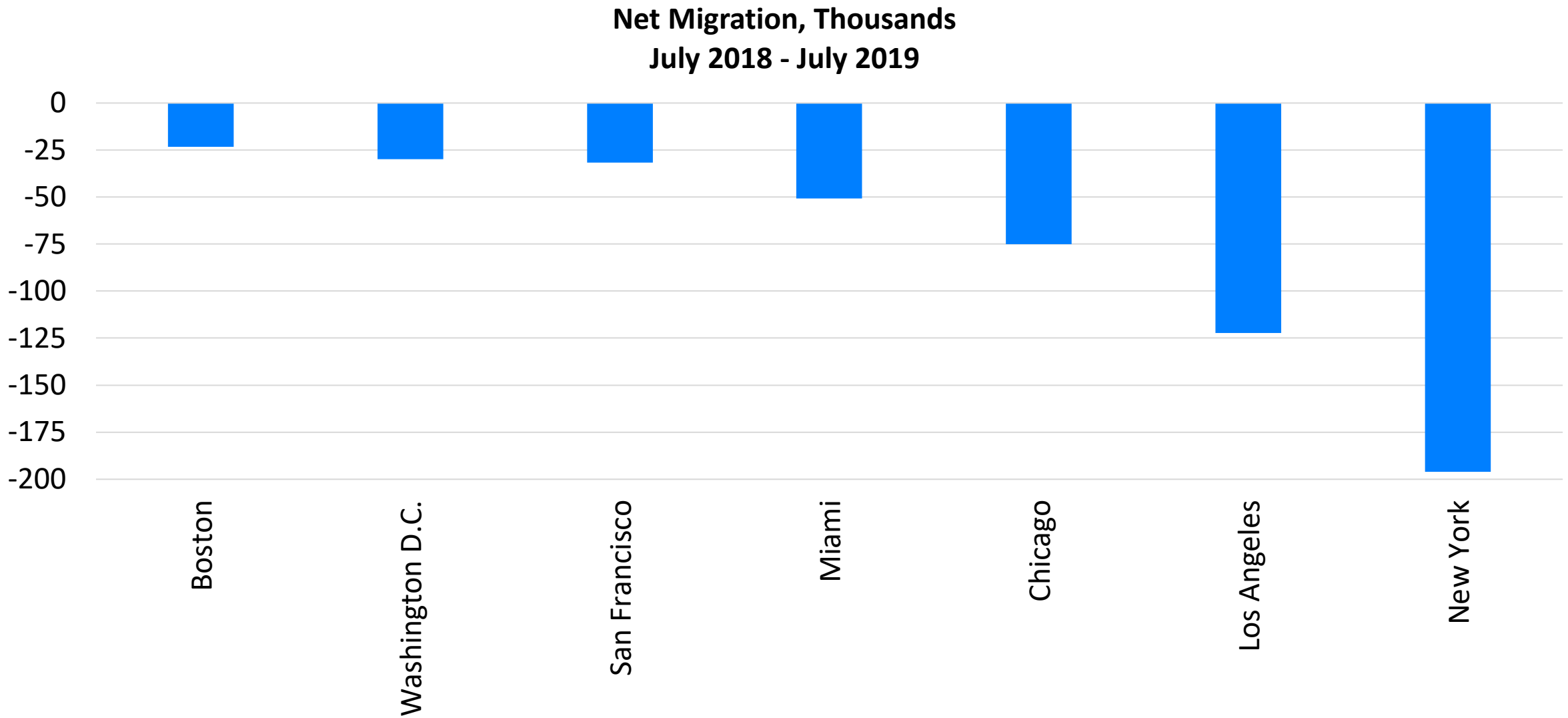
Market	Emp Growth Sept 18-19	Emp Growth Sept 19-20	Trend
Washington DC	1.3%	-5.8%	Decelerating
Miami	1.2%	-6.4%	Decelerating
National	**1.2%**	**-6.8%**	**Decelerating**
Chicago	0.4%	-6.9%	Decelerating
Los Angeles	1.1%	-9.6%	Decelerating
San Francisco	3.0%	-10.0%	Decelerating
Boston	1.1%	-10.1%	Decelerating
New York	1.8%	-11.7%	Decelerating

***Sorted by September '19-'20 employment growth**

Source: Yardi Matrix; U.S. Bureau of Labor Statistics (BLS)

YARDI

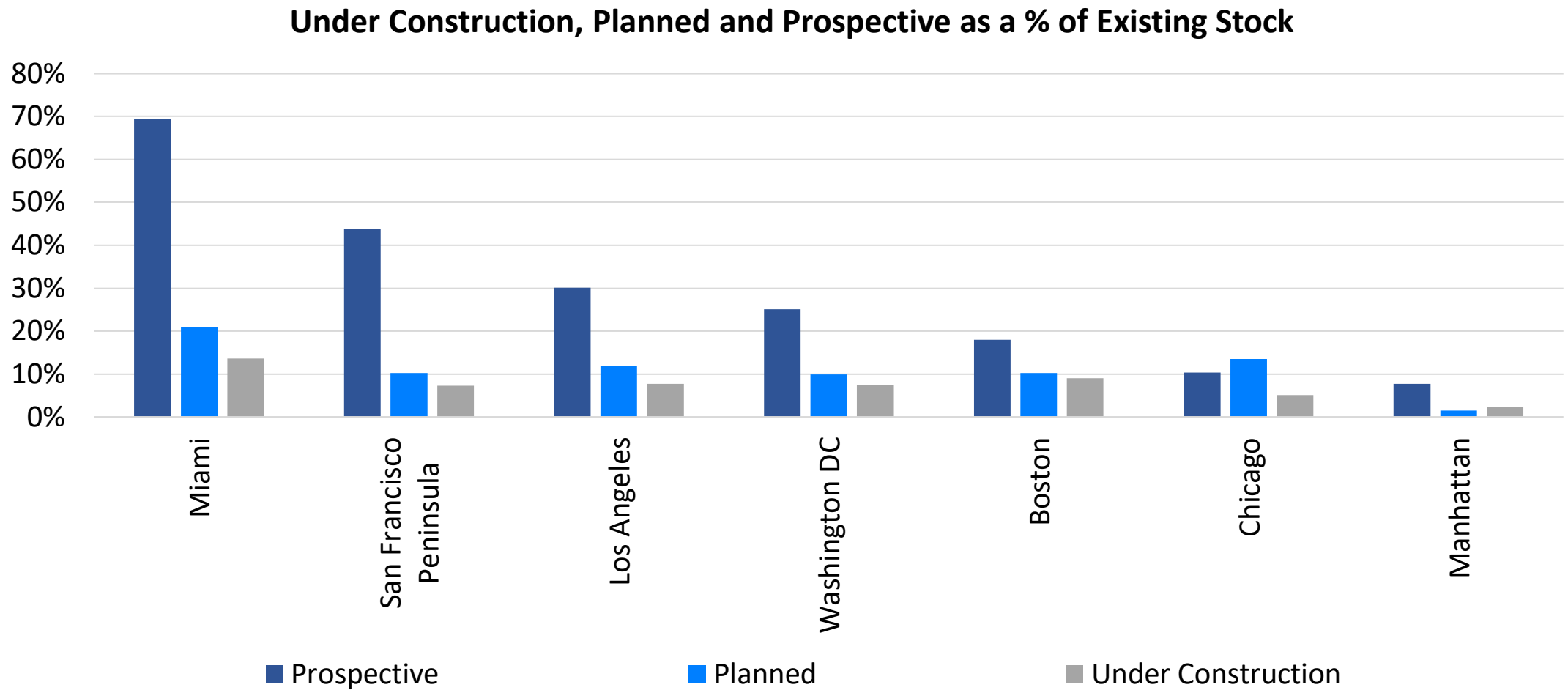
Domestic Migration is Out of Primary Markets



Source: Yardi Matrix; census.gov

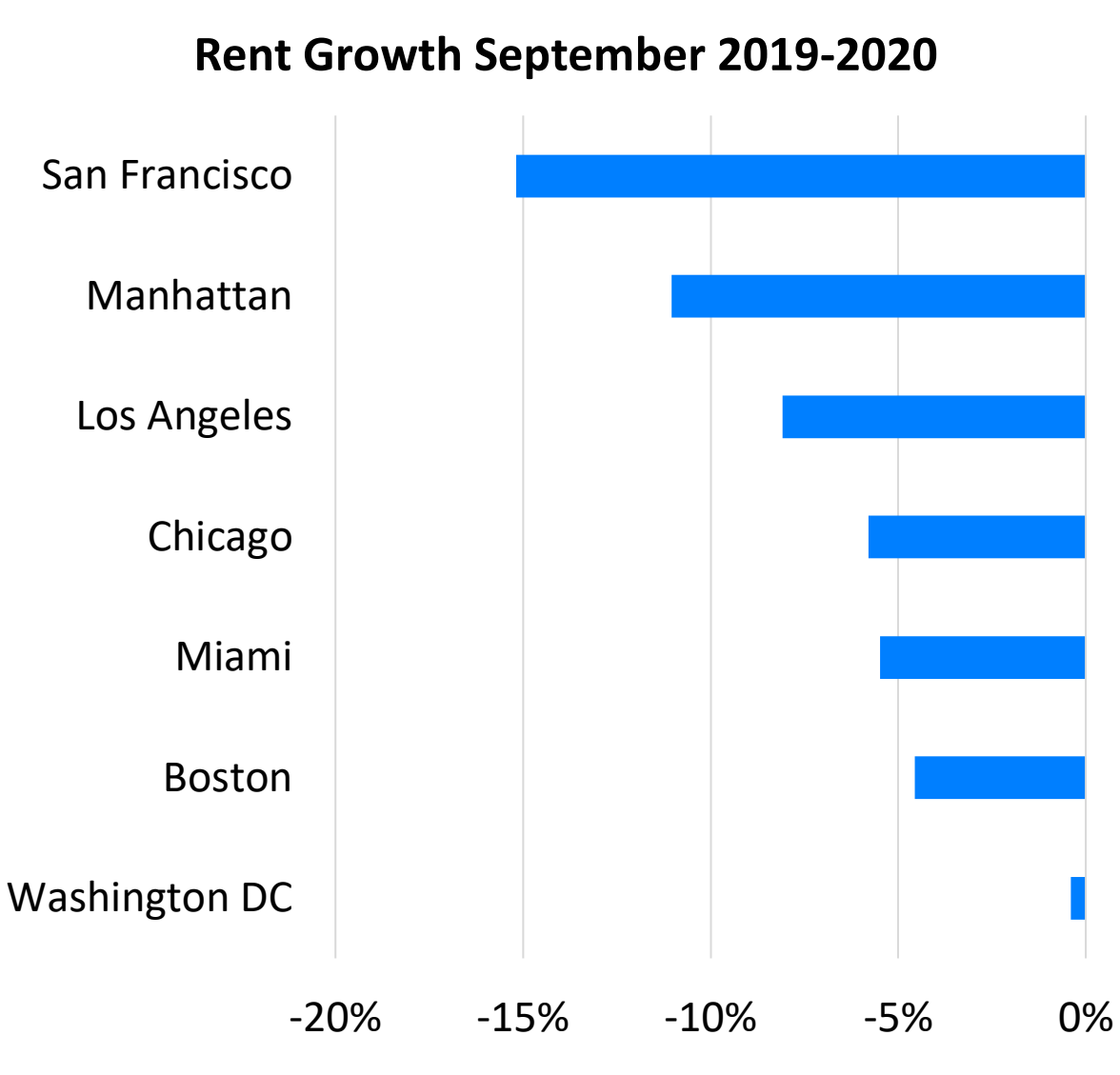
YARDI

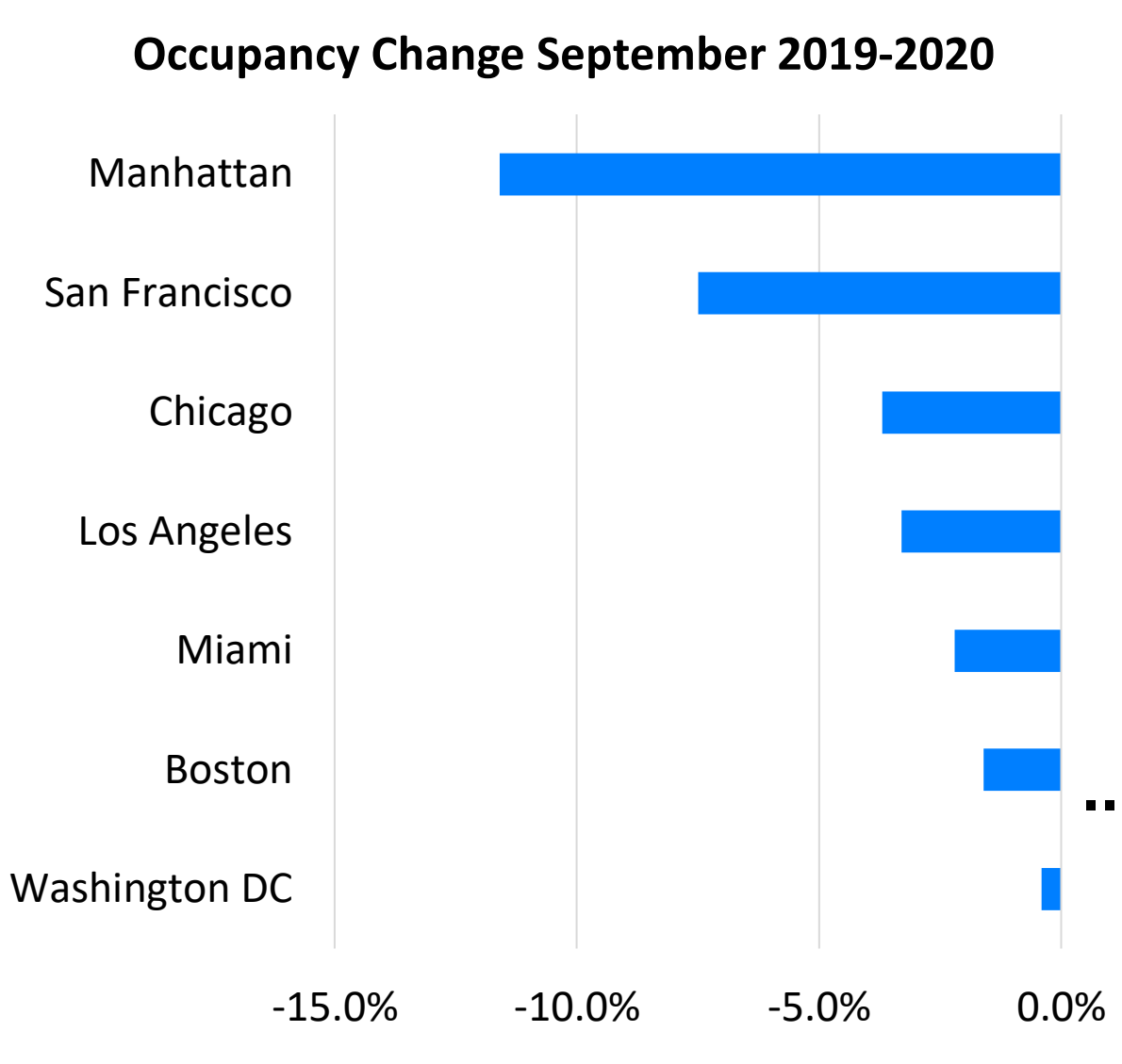
Miami, San Francisco and Los Angeles Have Significant Development Pipelines as a % of Existing Stock



Source: Yardi Matrix

Primary Markets Facing Rent and Occupancy Losses

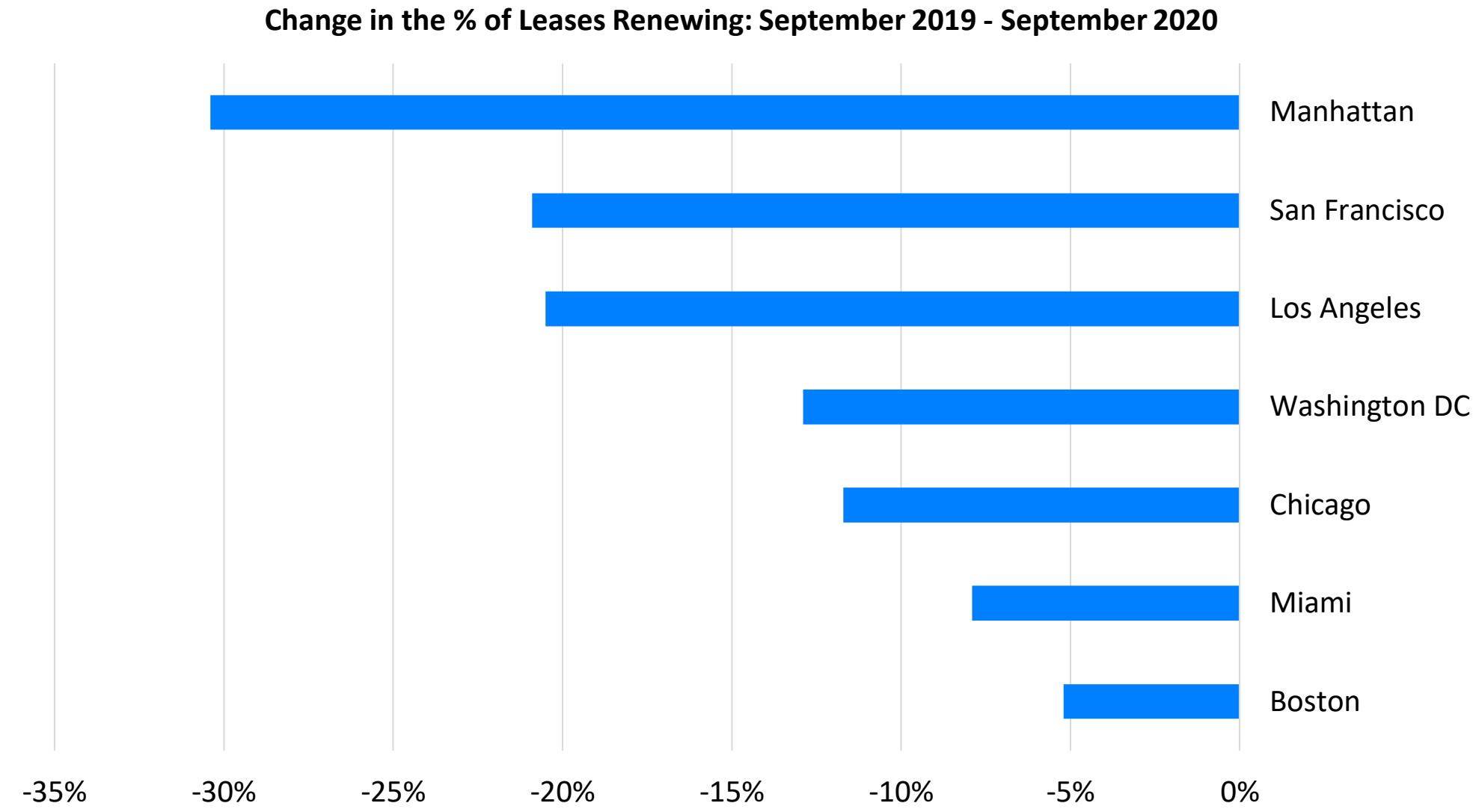




Source: Yardi Matrix Expert, based on new leases

Matrix Expert data is based upon aggregated and anonymized Yardi transaction activity

Primary Markets Facing Steep Declines in Retentions



Source: Yardi Matrix Expert

Matrix Expert data is based upon aggregated and anonymized Yardi transaction activity

Many Residents Are Moving From Densely Populated Cities to Suburbs

***Data pulled from total USPS change-of-address requests filed between Feb. 1 2020 and Jul. 31 2020. Data represents net move ins/outs**

Source: Yardi Matrix; MYMOVE, https://www.mymove.com/moving/covid-19/coronavirus-moving-trends/

YARDI

We Now Want to Overlay Political Risk on Top of These Migration Patterns

Market	Affordability	Philosophy Toward Affordability	Urban Policing/ Security	Social Mobility	Tax Burden (Business/Individual)	Unfunded Pension Liability	Overall Rating
Los Angeles	1	0.5	1	2	1	2	1.13
New York	1	0.5	1	2	1	2	1.13
San Francisco	1	0.5	1	3	1	2	1.24
Boston	1	1	2	2	1	1	1.33
Seattle	1	1	1	3	2	2	1.47
Chicago	2	2	1	2	1	1	1.55
Portland	2	0.5	1	2	3	2	1.58
Atlanta	2	2	1	1	2	2	1.67
Minneapolis	2	2	1	3	1	1	1.67
Washington D.C.	1	1	3	3	1	3	1.90
Dallas	2	2	2	2	3	1	2.00
Denver	2	2	2	3	2	1	2.00
Nashville	2	2	2	2	2	3	2.12
Orlando	2	2	2	2	3	2	2.12
Tampa	2	2	2	1	3	3	2.12
Austin	2	3	2	2	3	2	2.33
Indianapolis	3	2	2	2	3	3	2.45
Charlotte	3	3	2	1	3	3	2.55
Houston	3	3	2	3	3	1	2.55
Raleigh-Durham	3	3	3	1	3	3	2.77
Salt Lake City	2	3	3	3	3	3	2.78

Source: Yardi Matrix

YARDI

Political Risk Methodology

AFFORDABILITY

Based on a survey conducted by the Joint Center for Housing Studies (JCHS) of Harvard University.

We based our ratings on the following statistics:

- % of cost-burdened (paying from 30% - 50% of their income) middle income households (earning $45,000 - $75,000 per year)
- % of severely cost-burdened (more than 50% of their income) middle income households (earnings $45,000 - $75,000 per year)

Markets were then color categorized corresponding to the percentage of middle-income renters that were cost burdened or severely cost burdened.

PHILOSOPHY TOWARD AFFORDABILITY

Factors we based our ratings on:

- Rent control initiatives and laws
- Extended eviction moratoriums enacted due to the COVID-19 pandemic
- Inclusionary/exclusionary zoning policies
- Permitting and entitlement requirements
- Supply restrictions

Using the information found through this qualitative research, the market's stance on each focused topic was viewed as positively or negatively affecting the area's affordability.

*Each market was assigned a color and score. A **red color score** was assigned a value of 0.5 or 1 — differentiating the markets with stances negatively affecting affordability (E.g. rent control) that have also enacted long-term eviction moratoriums due to the pandemic with a 0.5 red score.*

URBAN POLICING/SECURITY RISK

The markets were rated in terms of their urban policing and security risk based on qualitative research

Factors we based our ratings on:

- Police enforcement of public nuisances and low-level crimes
- The attitude of the local police force toward protests and maintaining general orderliness
- Public policy response to police funding
- Reform of policing policies
- Initiatives to improve police training and disciplinary process
- The public view of the police force
- Issues or events that have resulted in police officers not wanting to go to work

Source: Yardi Matrix

YARDI

Political Risk Methodology (Cont.)

Social Mobility

The market's opportunity for social mobility incorporates secondary research and statistics from "The Opportunity Atlas," prepared by Opportunity Insights, a research and policy group based at Harvard University.

The *Opportunity Atlas* uses anonymous data following 20 million Americans from childhood to their mid-30s to determine which neighborhoods in America offer children the best chance to rise out of poverty.

Secondary Research:

- Charter school enrollment
- AP courses in each city's public high schools
- Apprenticeship programs
- Progressive tech-based curriculum in the public-school system

TAX BURDEN (BUSINESS & INDIVIDUAL)

Based on the state rank score of each market from the Tax Foundation's 2020 State Business Tax Climate Index.

Major tax components and their weighting:

- Individual Income Tax: 30.2%
- Sales Tax: 24.0%
- Corporate Tax: 19.7%
- Property Tax: 16.6%
- Unemployment Insurance Tax: 9.5%

The index's rank score for each market's state were arranged low to high, then assigned a color score:

- Ranks 1 to 16: Green
- Ranks 17 to 34: Yellow
- Ranks 35 to 50: Red

UNFUNDED PENSION LIABILITY

Data on each state's unfunded pension liability was collected from, "The State Pension Funding Gap: 2017," an issue brief from Pew Charitable Trusts.

Unfunded pension liability data on the city level was collected through various resources including the official government city websites, comprehensive annual financial reports, and other local sources.

*When city data was available it was used in place of state data

Divided into color groups based in the following funded ratios:

- Funded ratio between 80% to 100%: Green
- Funded ratio between 70% to 79%: Yellow
- Funded ratio below 70%: Red

Source: Yardi Matrix

Political Risk Methodology – Overall Rating

The overall rating of political risk for each market was based on the calculated weighted average of the six factors.

Each of the three different color ratings were assigned a numerical value:

Green = 3

Yellow = 2

Red = 1*

**Philosophy Towards Affordability red color ratings may be assigned a value of 1 or 0.5*

Three factors considered to affect short-term risk: affordability, philosophy toward affordability, and urban policing/security risk (comprise 65% of overall rating & weighted equally)

Three factors considered to affect long-term risk: social mobility, tax burden, and unfunded pension liability (comprise 35% of overall rating & weighted equally)

Markets with overall ratings in the bottom 20th percentile were categorized red, overall rating in the top 75th percentile were categorized green, and overall ratings that fell in the middle were categorized yellow.

Source: Yardi Matrix

YARDI

Significant California Ballot Measures That Impact CRE

Prop 15: The California Schools and Local Community Funding Act of 2020

- Would make the property tax freezes in Prop 13 no longer applicable to commercial real estate valued over $3 million
- CRE valued over $3 million would be taxed on its present-day value, making it susceptible to exponential tax increases
- Single-family homes, multifamily buildings, agricultural property and commercial real estate valued <$3 million are exempt
- If passed, the measure would be phased in starting in 2022 and could generate billions in revenue mainly going to county education offices

Prop 21: The Rental Affordability Act

- Would allow counties and cities to impose rent control on residential properties built over 15 years ago
- The measure would include units where the tenants change hands, though landlords could raise rents on turned-over units by at least 15% over three years

Source: Yardi Matrix; therealdeal.com, “The fine print: three California ballot measures that would rock real estate”

YARDI

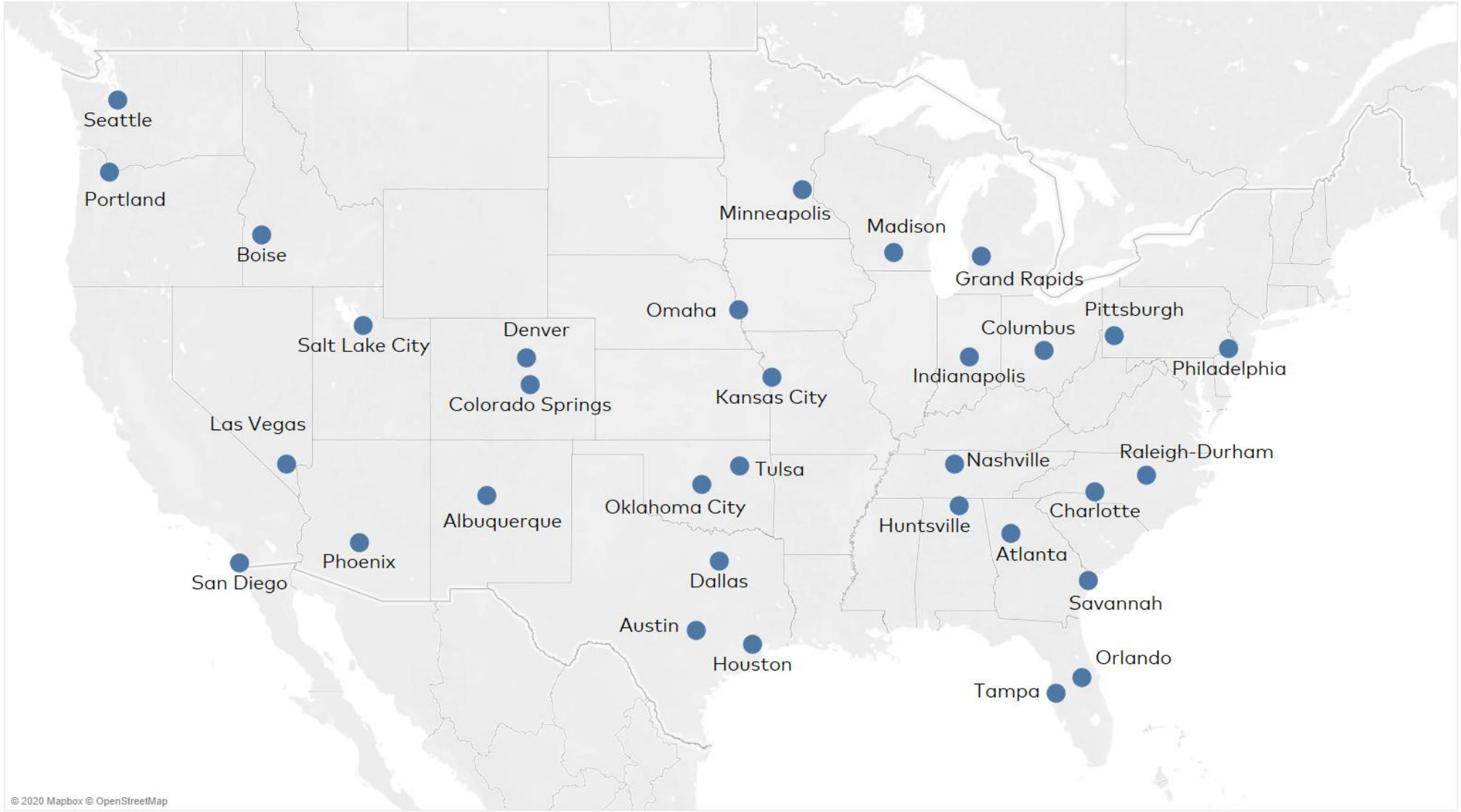
In Summary:

- There has been a movement out of gateway markets for affordability and lifestyle reasons for a few years now and we've seen this trend accelerate since the start of the pandemic
- Rent, occupancy and renewal percentages have fallen in primary markets amid job losses and migration out of these markets
- Some gateway markets (Miami, San Francisco and Los Angeles) have fairly sizable development pipelines – could be a draw on already low absorption these markets are experiencing
- Political risk, which has had a greater impact on primary markets even prior to the pandemic, will need to be considered moving forward when making investment decisions
- ***Gateway markets will recover, but they have a long road ahead***

Source: Yardi Matrix

Tech Hub Market Analysis

Our Secondary Tech Market Universe



Source: Yardi Matrix

Tech Hub Observations:

- Tech hub markets are benefitting from the continued migration out of gateway markets
- Midwest markets in particular have seen an increase in migration and subsequent increases in rent and occupancy since March
- Tech hub markets typically are more knowledge-based than service-based, so labor markets may not be impacted quite as bad as other cities
- We expect this growth to continue – the only hang ups to be aware of are:
  1. How much supply is being added
  2. The market's ability to handle the current and future growth – in a word, infrastructure

Source: Yardi Matrix

Population Growth Is in Secondary Markets

Market	2017 Pop. Growth	2018 Pop. Growth	2019 Pop. Growth	Overall Trend
Austin	2.6%	2.4%	2.8%	Accelerating
Boise	2.7%	2.7%	2.8%	Accelerating
Phoenix	1.8%	1.9%	2.0%	Accelerating
Las Vegas	2.0%	2.0%	1.8%	Decelerating
Raleigh-Durham	2.0%	2.0%	1.8%	Decelerating
Charlotte	2.1%	1.7%	1.7%	Stable
Dallas	2.0%	1.6%	1.6%	Stable
Salt Lake City	1.9%	1.6%	1.6%	Stable
Nashville	1.8%	1.6%	1.5%	Decelerating
Tampa	2.1%	1.8%	1.5%	Decelerating
Huntsville	1.0%	1.2%	1.5%	Accelerating
Denver	1.4%	1.5%	1.4%	Decelerating
Savannah	1.1%	0.8%	1.4%	Accelerating
Atlanta	1.5%	1.2%	1.3%	Accelerating
Houston	1.4%	1.1%	1.3%	Accelerating
Orlando	2.4%	2.1%	1.3%	Decelerating
Colorado Springs	1.7%	1.7%	1.2%	Decelerating

Market	2017 Pop. Growth	2018 Pop. Growth	2019 Pop. Growth	Overall Trend
Seattle	1.8%	1.2%	1.1%	Decelerating
Indianapolis	0.9%	1.1%	1.0%	Decelerating
Oklahoma City	0.6%	0.7%	1.0%	Accelerating
Columbus	1.5%	1.0%	0.9%	Decelerating
Omaha	1.0%	0.9%	0.9%	Stable
Minneapolis	1.0%	1.0%	0.8%	Decelerating
Portland	1.2%	0.8%	0.8%	Stable
Madison	1.1%	0.7%	0.7%	Stable
Kansas City	0.9%	0.8%	0.6%	Decelerating
Tulsa	0.3%	0.2%	0.6%	Accelerating
National	**0.6%**	**0.5%**	**0.5%**	**Stable**
Grand Rapids	0.8%	0.6%	0.4%	Decelerating
Albuquerque	0.4%	0.3%	0.3%	Stable
Philadelphia	0.2%	0.2%	0.2%	Stable
San Diego	0.5%	0.4%	0.1%	Decelerating
Pittsburgh	-0.5%	-0.3%	-0.2%	Accelerating

***Sorted by 2019 population growth**

Source: Yardi Matrix; U.S. Census Bureau (BOC)

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Employment Negative but Less Impacted in Secondary Markets

Market	Emp Growth Sept 18-19	Emp Growth Sept 19-20	Trend
Boise	3.7%	-0.8%	Decelerating
Salt Lake City	2.7%	-1.5%	Decelerating
Colorado Springs	2.4%	-2.0%	Decelerating
Omaha	0.6%	-2.1%	Decelerating
Austin	3.6%	-2.6%	Decelerating
Savannah	1.0%	-2.6%	Decelerating
Dallas	3.0%	-2.7%	Decelerating
Phoenix	3.3%	-2.9%	Decelerating
Indianapolis	1.2%	-3.3%	Decelerating
Atlanta	2.1%	-3.8%	Decelerating
Huntsville	2.4%	-3.8%	Decelerating
Oklahoma City	1.3%	-3.8%	Decelerating
Albuquerque	1.7%	-3.9%	Decelerating
Kansas City	0.7%	-4.0%	Decelerating
Tampa	2.3%	-4.1%	Decelerating
Denver	2.6%	-4.5%	Decelerating
Houston	2.0%	-5.2%	Decelerating

Market	Emp Growth Sept 18-19	Emp Growth Sept 19-20	Trend
Madison	0.9%	-5.3%	Decelerating
Nashville	2.9%	-5.5%	Decelerating
Tulsa	1.8%	-6.5%	Decelerating
Charlotte	2.5%	-6.8%	Decelerating
National	**1.2%**	**-6.8%**	**Decelerating**
Twin Cities	0.5%	-6.9%	Decelerating
Philadelphia	1.3%	-7.0%	Decelerating
Raleigh - Durham	3.0%	-7.2%	Decelerating
Columbus	0.9%	-7.4%	Decelerating
Pittsburgh	0.8%	-7.7%	Decelerating
Seattle	2.7%	-7.7%	Decelerating
Grand Rapids	0.2%	-7.9%	Decelerating
Portland	1.6%	-7.9%	Decelerating
San Diego	1.6%	-8.0%	Decelerating
Orlando	2.4%	-8.3%	Decelerating
Las Vegas	2.5%	-12.5%	Decelerating

***Sorted by September '19-'20 employment growth**

Source: Yardi Matrix; U.S. Bureau of Labor Statistics (BLS)

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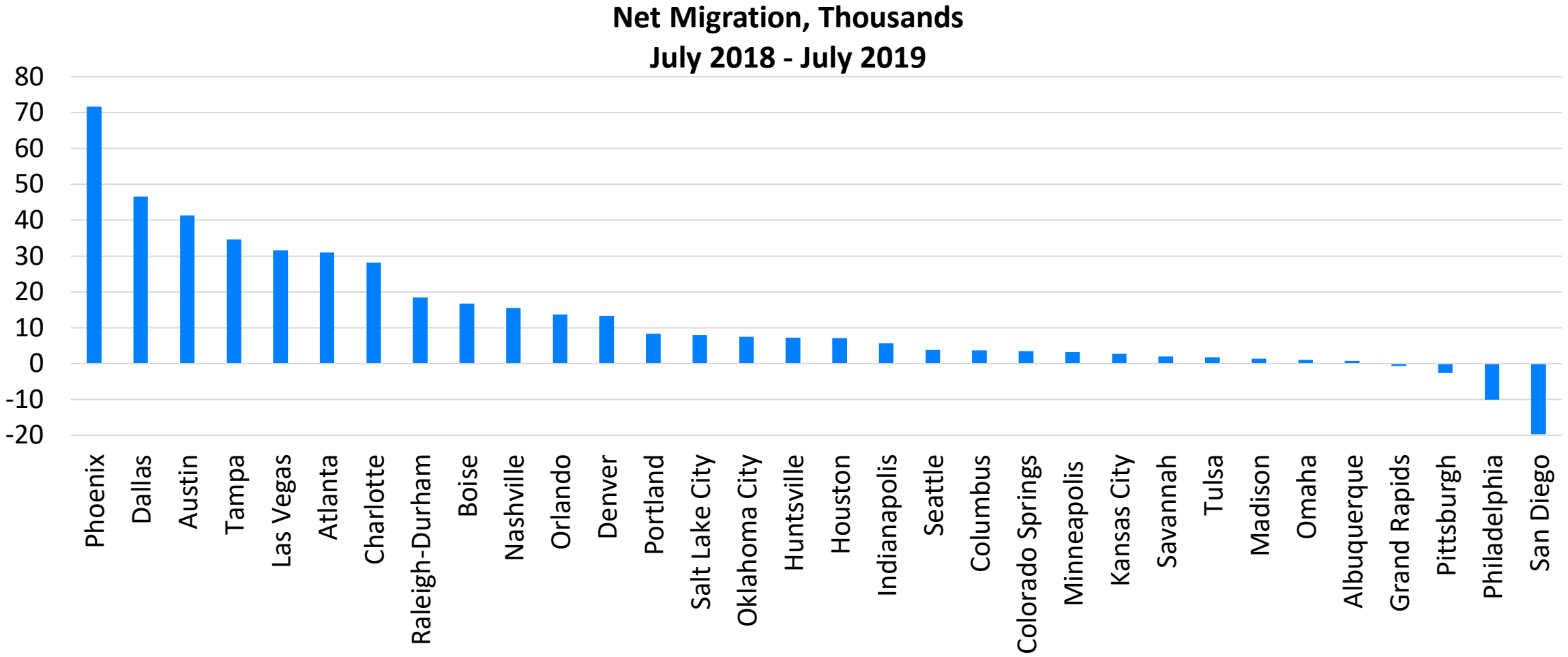
With the Exception of San Diego, Philadelphia and Pittsburgh, Domestic Migration is into Secondary Markets



Source: Yardi Matrix; census.gov

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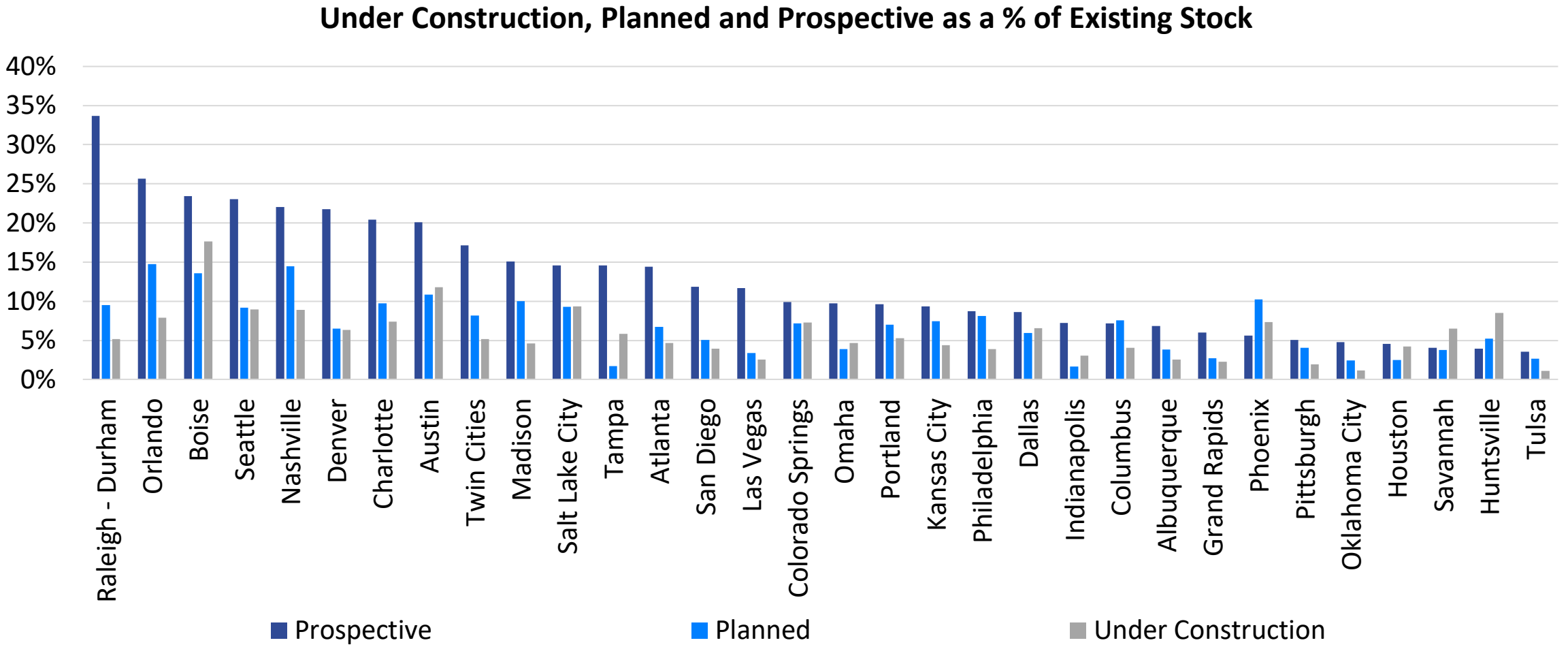
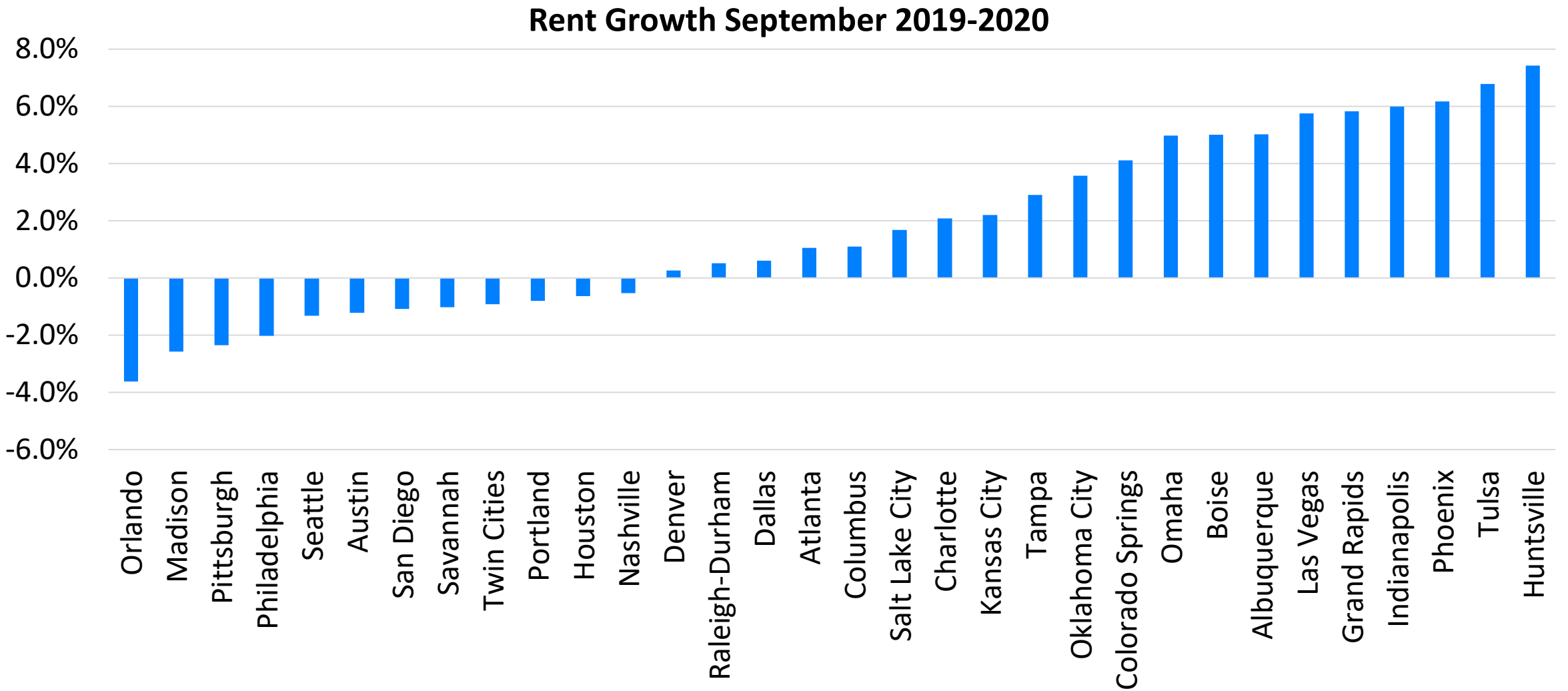
Secondary Markets See Smaller New Development Pipelines as a % of Existing Stock Compared to Primary Markets



Source: Yardi Matrix

Most Secondary Markets Still Have Healthy Rent Growth



Source: Yardi Matrix Expert, based on new leases

Matrix Expert data is based upon aggregated and anonymized Yardi transaction activity

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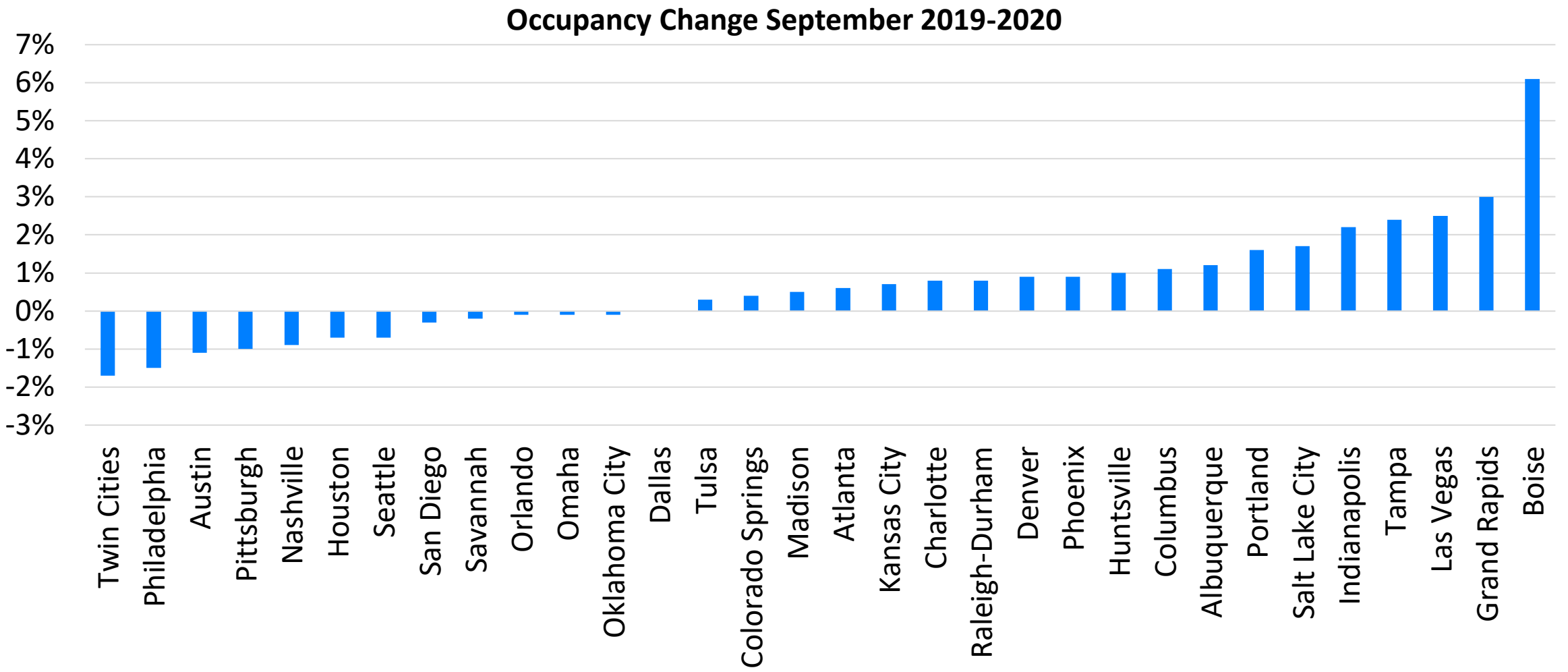
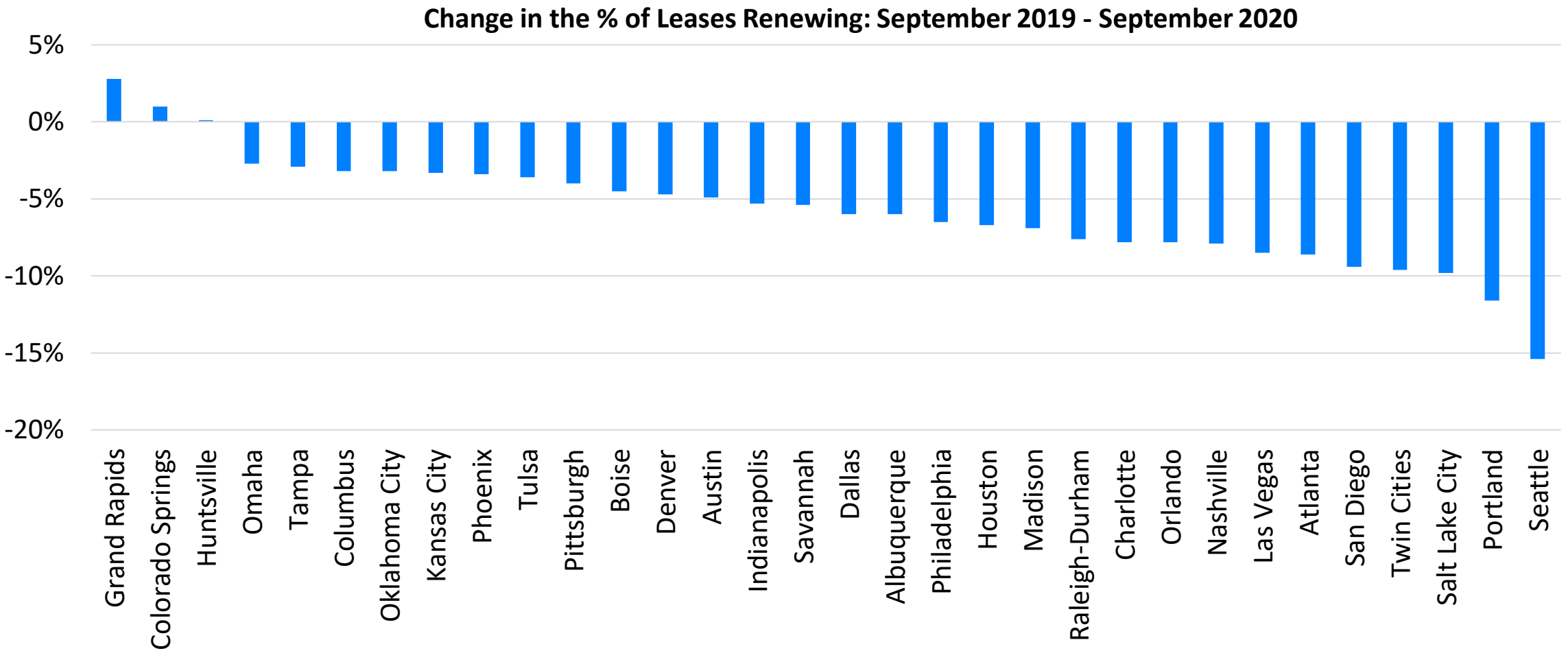
However, Occupancy Has Remained Relatively Flat



Source: Yardi Matrix Expert

Matrix Expert data is based upon aggregated and anonymized Yardi transaction activity

Retention Rates Have Declined in Most Secondary Markets, But at a Lower Rate Than Gateway Markets



Source: Yardi Matrix Expert

Matrix Expert data is based upon aggregated and anonymized Yardi transaction activity

Handling Future Growth – ***Top Tech Hubs***

Weighting:	Long-Term 10%	Medium-Term 40%	Short-Term 50%					Combined = 100%
Market	Tax Burden/ Pension Liability	********* *Infrastructure* *********	Projected Supply/ Demand	Quality of Tech Labor Market	Affordability	Philosophy Toward Affordability	Urban Policing/ Security	Overall Rating
Salt Lake City	3	3	3	3	2	3	3	2.90
Charlotte	3	3	2	2	3	3	2	2.70
Austin	2	3	3	3	2	3	2	2.70
Denver	2	3	2	3	2	2	2	2.50
Las Vegas	2	3	3	2	2	2	2	2.50
Phoenix	2	3	2	3	2	2	2	2.50
Raleigh-Durham	3	2	2	3	3	3	3	2.50
Dallas	2	3	2	3	2	2	2	2.50
Houston	3	2	2	3	3	3	2	2.40
Portland	3	3	2	3	2	0.5	1	2.35
Minneapolis	1	3	3	2	2	2	1	2.30
Tampa	2	3	2	1	2	2	2	2.30
Atlanta	2	2	3	3	2	2	1	2.10
Nashville	2	2	3	2	2	2	2	2.10
Kansas City	2	2	3	1	3	3	1	2.10
Miami	2	2	3	1	1	3	1	1.90
Orlando	3	1	3	3	2	2	2	1.90
Seattle	2	2	2	3	1	1	1	1.80
Pittsburgh	1	1	2	1	3	3	3	1.70
Philadelphia	1	1	3	1	2	2	3	1.60
San Diego	1	1	3	3	1	1	3	1.60

Historical & Projected Supply/Demand Balance Legend:				
Dark Red = Significant Undersupply	**Light Red** = Slight Undersupply	**Green = Balanced Market**	**Light Blue** = Slight Oversupply	**Dark Blue** = Significant Oversupply

Source: Yardi Matrix

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Handling Future Growth – ***Emerging Tech Hubs***

Weighting:	Long-Term 10%	Medium-Term 40%	Short-Term 50%					Combined = 100%
Market	Tax Burden/ Pension Liability	********* *Infrastructure* *********	Projected Supply/ Demand	Quality of Tech Labor Market	Affordability	Philosophy Toward Affordability	Urban Policing/ Security	Overall Rating
Boise	3	3	3	3	3	3	3	3.00
Indianapolis	3	3	3	2	3	3	2	2.80
Madison	3	3	3	2	2	3	3	2.80
Omaha	2	2	3	2	3	3	1	2.20
Savannah	2	2	2	2	3	3	2	2.20
Oklahoma City	2	2	3	1	3	3	1	2.10
Tulsa	2	2	3	1	3	3	1	2.10
Huntsville	1	2	1	3	3	3	1	2.00
Grand Rapids	2	1	2	2	3	3	2	1.80
Columbus	2	1	2	2	3	3	2	1.80
Albuquerque	2	1	2	2	3	3	1	1.70
Colorado Springs	1	1	3	3	2	2	1	1.60

Historical & Projected Supply/Demand Balance Legend:				
Dark Red = Significant Undersupply	**Light Red** = Slight Undersupply	**Green = Balanced Market**	**Light Blue** = Slight Oversupply	**Dark Blue** = Significant Oversupply

Source: Yardi Matrix

YARDI

Methodology: Infrastructure

The overall rating for the quality of infrastructure of each market was based on four different categories:

TRANSPORTATION

SCHOOLS

ENERGY

WATER

Source: Yardi Matrix; Pixabay
*Our full methodology document is available for Matrix clients

Methodology: Infrastructure Overall Rating

Weighting:	25%	25%	25%	25%	Combined = 100%
Market	Transportation	Schools	Energy	Water	Overall Infrastructure Rating
Charlotte	3	3	3	3	3.00
Boise	3	3	2	3	2.75
Austin	3	3	3	1	2.50
Dallas	3	3	2	2	2.50
Denver	2	3	2	3	2.50
Indianapolis	1	3	3	3	2.50
Las Vegas	2	2	3	3	2.50
Madison	2	3	3	2	2.50
Minneapolis	3	2	2	3	2.50
Phoenix	3	3	3	1	2.50
Portland	3	2	2	3	2.50
Salt Lake City	3	3	2	2	2.50
Tampa	3	3	1	3	2.50
Miami	3	3	1	2	2.25
Oklahoma City	2	3	1	3	2.25
Omaha	2	1	3	3	2.25
Raleigh-Durham	1	2	3	3	2.25
Atlanta	2	2	3	1	2.00
Houston	3	2	2	1	2.00
Huntsville	2	1	2	3	2.00
Kansas City	3	3	1	1	2.00
Nashville	1	1	3	3	2.00
Savannah	1	3	2	2	2.00
Seattle	2	1	2	3	2.00
Tulsa	2	1	2	3	2.00
Colorado Springs	1	2	3	1	1.75
Grand Rapids	1	3	1	2	1.75
Orlando	3	1	1	2	1.75
San Diego	3	1	1	2	1.75
Columbus	1	1	1	3	1.50
Pittsburgh	1	2	1	1	1.25
Albuquerque	1	1	1	1	1.00
Philadelphia	1	1	1	1	1.00

Source: Yardi Matrix

*Our full methodology document is available for Matrix clients

YARDI

Methodology: Infrastructure Overall Rating

The overall rating for the quality of infrastructure of each market was based on these four different categories—

transportation, schools, energy and water.

A market's overall color score for each of these four categories were assigned a value (Green=3, Yellow=2 and Red=1).

The average of each market's four category scores was then calculated to determine its overall infrastructure score.

The resulting average overall infrastructure scores for each market were assigned a final color based on the all market scores divided into 33rd and 66th percentiles.

Overall Infrastructure Color Ratings:

Green = overall infrastructure scores in the top 66th percentile

Yellow = overall infrastructure scores between the 33rd & 66th percentiles

Red = overall scores in the bottom 33rd percentile

Source: Yardi Matrix

*Our full methodology document is available for Matrix clients

YARDI

Methodology: Infrastructure - Transportation

Weighting:	Existing Transportation Infrastructure 40%								Future Transportation Infrastructure 60%			Combined = 100%
Market	Road Conditions	Transit	# of Flights	Intl Airport and/or Airline Hubs	Airline Departures	Airline Arrivals	Commute	Bridges	Road Conditions	Transit	Aviation	Overall Rating *Transportation*
Portland	3	3	2	3	3	3	2	2	3	3	2	2.85
Phoenix	2	2	3	3	2	3	2	3	3	3	2	2.80
Miami	3	3	2	3	1	3	1	3	3	3	2	2.75
Austin	3	2	2	3	2	2	1	3	3	3	3	2.70
Charlotte	2	2	3	3	1	3	2	2	3	3	3	2.70
Dallas	2	3	3	3	1	1	1	3	3	3	3	2.65
Houston	2	2	3	3	1	1	1	3	3	3	3	2.60
Kansas City	2	2	2	2	2	2	2	2	3	3	3	2.60
Orlando	2	2	3	3	1	1	1	3	3	3	3	2.60
San Diego	1	2	2	3	2	2	1	2	3	3	2	2.55
Boise	3	2	1	1	3	3	3	2	3	2	3	2.50
Minneapolis	2	3	3	3	3	3	2	3	2	3	1	2.50
Salt Lake City	3	3	2	2	3	3	3	3	2	3	3	2.50
Tampa	3	2	2	3	2	2	1	3	3	2	2	2.50
Atlanta	3	3	3	3	3	3	1	3	2	3	2	2.40
Las Vegas	3	2	3	3	1	2	2	3	3	1	1	2.35
Madison	1	2	1	2	2	1	3	3	3	2	2	2.35
Tulsa	1	2	1	2	3	1	3	2	3	2	2	2.35
Omaha	1	2	1	1	2	1	3	3	3	2	2	2.30
Huntsville	3	1	1	2	3	2	2	3	3	1	2	2.25
Seattle	1	3	3	2	2	2	1	3	2	3	1	2.25
Denver	1	3	3	3	1	1	2	2	2	3	3	2.20
Oklahoma City	1	1	1	1	2	1	3	2	3	2	3	2.20
Raleigh-Durham	3	2	2	3	1	1	2	1	3	1	3	2.15
Savannah	3	2	1	2	2	1	1	3	3	1	3	2.15
Pittsburgh	2	3	2	2	3	2	1	2	2	2	3	2.05
Nashville	3	2	2	3	1	2	2	3	2	1	3	1.90
Indianapolis	2	2	2	2	2	2	2	2	1	3	1	1.80
Philadelphia	1	3	3	3	2	2	1	1	2	1	2	1.80
Colorado Springs	1	1	1	1	1	1	2	2	2	2	2	1.70
Grand Rapids	2	2	1	2	2	1	2	2	1	2	3	1.50
Albuquerque	2	2	1	1	3	2	3	2	1	1	3	1.40
Columbus	2	2	1	2	2	2	2	2	1	1	1	1.35

Source: Yardi Matrix

*Markets with notable current/future bridge infrastructure improvement projects have this positively factored into their final bridge color score

**Our full methodology document is available for Matrix clients

YARDI

Methodology: Infrastructure - Transportation

The markets were rated in terms of their transportation infrastructure based on eleven different categories, which included several different statistics and qualitative research.

Transportation statistics used:

- Road Conditions: percent of major roads in urban area in poor condition
- Commute: state rank based on average commute time
- Transit: AllTransit Performance Score
- Bridges: 2018 state rank based on percent of deficient bridges
  **Markets with notable current/future bridge infrastructure improvement projects have this positively factored into their final bridge color score*
- Aviation: airport rank based on number of scheduled flight departures
- Aviation: efficiency of airport based on percent of on-time departure flights
- Aviation: efficiency of airport based on percent of on-time arrival flights

Qualitative research used:

- Aviation: international flights and airline hubs at major metro airport
- Road Conditions: efforts to improve and expand infrastructure
- Transit: efforts to improve and expand infrastructure
- Aviation: availability of land surrounding airport for growth, and projects underway to expand airport flight operations

Each market in each category was given a green (3), yellow (2) or red (1) score and the scores were weighted as follows:

Average score of all the following categories weighted at 40%:

- Road Conditions: percent of major roads in urban area in poor condition
- Commute: state rank based on commute time
- Transit: AllTransit Performance Score
- Bridges: 2018 state rank based on percent of deficient bridges
- Aviation: airport rank based on number of scheduled flight departures
- Aviation: efficiency of airport based on percent of on-time departure flights
- Aviation: efficiency of airport based on percent of on-time arrival flights
- Aviation: international flights and airline hubs at major metro airport

Average score of all the following categories weighted at 60%:

- Road Conditions: efforts to improve and expand infrastructure
- Transit: efforts to improve and expand infrastructure
- Aviation: availability of land surrounding airport for growth, and projects underway to expand airport flight operations

Weighted average scores were added together and the resulting weighted average overall scores for each market were assigned a final color based on the all scores divided into 33rd and 66th percentiles as follows:

Green = overall transportation scores in the top 66th percentile
Yellow = overall transportation scores between the 33rd and 66th percentiles
Red = overall transportation scores in the bottom 33rd percentile

Source: Yardi Matrix
*Our full methodology document is available for Matrix clients

YARDI

Methodology: Infrastructure - Schools

Weighting:	Existing School Infrastructure 40%					Future School Infrastructure 60%	Combined = 100%
Market	State Public School Systems	State Spendings vs. School System	High School Graduation Rate	Charter Schools: # and District Support	School District Student-Teacher Ratio	Current Capacity and Utilization Rate of Schools within District & Projects and/or Funding for Future Growth	Overall Rating *Schools*
Charlotte	2	2	2	3	2	3	3.00
Denver	2	3	1	3	2	3	2.68
Indianapolis	2	3	1	2	3	3	2.68
Dallas	2	2	2	2	2	3	2.60
Grand Rapids	2	2	2	2	2	3	2.60
Miami	2	2	2	3	1	3	2.60
Salt Lake City	2	3	2	2	1	3	2.60
Oklahoma City	1	2	1	3	2	3	2.52
Phoenix	1	2	2	3	1	3	2.52
Boise	2	2	1	1	2	3	2.44
Madison	3	3	3	2	3	2	2.32
Austin	2	2	3	2	3	2	2.16
Kansas City	2	2	3	2	3	2	2.16
Savannah	2	2	2	3	3	2	2.16
Tampa	2	2	2	3	3	2	2.16
Colorado Springs	2	3	1	3	2	2	2.08
Raleigh-Durham	2	2	2	2	3	2	2.08
Houston	2	2	2	3	1	2	2.00
Minneapolis	3	2	1	1	3	2	2.00
Las Vegas	1	2	2	3	1	2	1.92
Portland	1	1	1	3	1	2	1.76
Atlanta	2	2	2	3	3	1	1.56
Pittsburgh	2	1	3	3	3	1	1.56
Nashville	2	2	2	3	2	1	1.48
Omaha	3	2	2	1	3	1	1.48
Orlando	2	2	2	3	2	1	1.48
Columbus	2	2	3	1	2	1	1.40
Huntsville	1	2	3	1	3	1	1.40
Tulsa	1	2	2	3	2	1	1.40
Albuquerque	1	2	1	3	2	1	1.32
San Diego	2	1	2	3	1	1	1.32
Philadelphia	2	1	1	3	1	1	1.24
Seattle	2	1	2	1	1	1	1.16

Source: Yardi Matrix

*Our full methodology document is available for Matrix clients

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Methodology: Infrastructure - Schools

The markets were rated in terms of their school infrastructure based on six different categories, which included several different statistics and qualitative research.

The largest school district in each market was focused on for the school district specific statistics and qualitative research.

School statistics used:

- Score for public school systems in state based on 15 quality factors and 14 safety factors
- State school spending rank vs. state school system quality ranking
- County-level high school graduation rate
- Overall student-teach ratio metro school district

Qualitative research used:

- Charter school options within school district and district support for local charter schools
- Current capacity and utilization rate within school district and projects and/or funding for future growth

Each market in each category was given a green (3), yellow (2) or red (1) score and the scores were weighted as follows:

Average score of all the following categories weighted at 40%:

- Score for public school systems in state based on 15 quality and 14 safety factors
- State school spending rank vs. state school system quality ranking
- County-level high school graduation rate
- Charter school options within school district and district support for local charter schools
- Overall student-teach ratio metro school district

The following category was weighted at 60%:

- Current capacity and utilization rate within school district and projects and/or funding for future growth

Both scores were added together and the resulting weighted overall scores for each market were assigned a final color based on the all scores divided into 33rd and 66th percentiles as follows:

Green = overall school scores in the top 66th percentile
Yellow = overall school scores between the 33rd and 66 percentiles
Red = overall school scores in the bottom 33rd percentile

Source: Yardi Matrix
*Our full methodology document is available for Matrix clients

YARDI

Methodology: Infrastructure - Energy

Weighting:	Existing Energy Infrastructure (State Level) 40%						Future Energy Infrastructure 60%	Combined = 100%
Market	Avg Price of Electricity	Avg Price of Natural Gas	Avg Price per Gallon of Gasoline	Total # of Outages	Avg Duration of Outages	# of People Affected by Outages	Conditions of Existing Energy Infrastructure & Projects and/or Funding for Energy Infrastructure Growth	Overall Rating *Energy*
Omaha	3	3	2	3	1	3	3	2.80
Colorado Springs	2	3	2	2	2	3	3	2.73
Indianapolis	2	3	3	2	2	2	3	2.73
Las Vegas	2	2	1	3	3	3	3	2.73
Nashville	3	2	3	2	2	2	3	2.73
Atlanta	2	1	3	2	2	2	3	2.60
Charlotte	3	1	3	1	2	2	3	2.60
Madison	1	3	2	2	2	2	3	2.60
Phoenix	2	2	1	3	1	3	3	2.60
Raleigh-Durham	3	1	3	1	2	2	3	2.60
Austin	2	1	3	1	3	1	3	2.53
Boise	3	3	1	3	3	3	2	2.27
Tulsa	3	1	3	3	3	3	2	2.27
Minneapolis	1	3	2	3	3	3	2	2.20
Salt Lake City	3	3	1	3	2	3	2	2.20
Denver	2	3	2	2	2	3	2	2.13
Huntsville	2	1	3	3	3	2	2	2.13
Portland	3	3	1	2	2	2	2	2.07
Savannah	2	1	3	2	2	2	2	2.00
Dallas	2	1	3	1	3	1	2	1.93
Houston	2	1	3	1	3	1	2	1.93
Seattle	3	3	1	1	1	2	2	1.93
Columbus	2	2	2	1	1	2	2	1.87
Orlando	2	1	2	2	1	1	2	1.80
Tampa	2	1	2	2	1	1	2	1.80
Philadelphia	1	1	1	1	2	2	2	1.73
Pittsburgh	1	1	1	1	2	2	2	1.73
Oklahoma City	3	1	3	3	3	3	1	1.67
Albuquerque	2	2	2	3	3	3	1	1.60
Kansas City	3	1	3	2	1	3	1	1.47
Grand Rapids	1	3	2	1	2	1	1	1.27
Miami	2	1	2	2	1	1	1	1.20
San Diego	1	2	1	1	1	1	1	1.07

Source: Yardi Matrix

*Our full methodology document is available for Matrix clients

YARDI

Methodology: Infrastructure - Energy

The markets were rated in terms of their school infrastructure based on seven different categories, which included several different statistics and qualitative research.

Energy statistics used:

- State average residential price of electricity in cents per kilowatthour
- State average residential price of natural gas in dollars per thousand cubic feet
- State average price of regular gasoline in dollars per gallon (as of Jan. 21, 2020)
- Total number of power outages statewide 2008 through 2017
- Average duration of power outages statewide 2008 through 2017
- Total number of people affected by power outages statewide 2008 through 2017

Qualitative research used:

- Conditions of existing energy infrastructure and projects and/or funding for energy infrastructure growth

Each market in each category was given a green (3), yellow (2) or red (1) score and the scores were weighted as follows:

Average score of all the following categories weighted at 40%:

- State average residential price of electricity in cents per kilowatthour
- State average residential price of natural gas in dollars per thousand cubic feet
- State average price of regular gasoline in dollars per gallon
- Total number of power outages statewide 2008 through 2017
- Average duration of power outages statewide 2008 through 2017
- Total number of people affected by power outages statewide 2008 through 2017

The following category was weighted at 60%:

- Conditions of existing energy infrastructure and projects and/or funding for energy infrastructure growth

Both scores were added together and the resulting weighted overall scores for each market were assigned a final color based on the all scores divided into 33rd and 66th percentiles as follows:

Green = overall energy scores in the top 66th percentile
Yellow = overall energy scores between the 33rd and 66 percentiles
Red = overall energy scores in the bottom 33rd percentile

Source: Yardi Matrix
*Our full methodology document is available for Matrix clients

YARDI

Methodology: Infrastructure - Water

Weighting:	Existing Water Infrastructure (State Level) 40%		Future Water Infrastructure 60%			Combined = 100%
Market	Avg Cost of Water Utility Bill	Water Pressure Based on Use & Availability	Water Supply Condition, Quantity & Quality	Condition of Existing Water Infrastructure	Efforts/Funding to Improve Conditions for Future Growth	Overall Rating *Water*
Las Vegas	3	2	3	3	3	2.80
Columbus	3	2	3	2	3	2.60
Huntsville	3	3	1	2	3	2.40
Nashville	3	3	2	2	2	2.40
Raleigh-Durham	3	2	3	1	3	2.40
Tampa	3	2	3	1	3	2.40
Denver	2	1	3	3	3	2.40
Boise	2	2	2	2	3	2.20
Indianapolis	1	2	2	3	3	2.20
Minneapolis	2	2	1	3	3	2.20
Oklahoma City	2	2	2	2	3	2.20
Omaha	3	1	3	2	2	2.20
Portland	2	2	2	2	3	2.20
Seattle	1	3	2	2	3	2.20
Tulsa	2	2	2	2	3	2.20
Charlotte	3	2	2	2	2	2.20
Grand Rapids	2	3	1	1	3	2.00
Madison	3	2	2	1	2	2.00
Miami	3	2	2	1	2	2.00
Orlando	3	2	1	2	2	2.00
San Diego	1	1	2	2	3	1.80
Dallas	1	2	1	3	2	1.80
Salt Lake City	1	2	1	3	2	1.80
Savannah	2	2	2	2	1	1.80
Atlanta	2	2	1	1	2	1.60
Austin	1	2	1	1	3	1.60
Colorado Springs	2	1	1	2	2	1.60
Kansas City	1	2	3	1	1	1.60
Philadelphia	2	2	2	1	1	1.60
Pittsburgh	2	2	1	1	2	1.60
Albuquerque	2	1	2	1	1	1.40
Houston	1	2	1	1	2	1.40
Phoenix	2	1	1	1	1	1.20

Source: Yardi Matrix

*Our full methodology document is available for Matrix clients

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Methodology: Infrastructure - Water

The markets were rated in terms of their school infrastructure based on five different categories, which included several different statistics and qualitative research.

Water statistics used:

- Average cost of water utility bill by state
- State water pressure based on use and availability

Qualitative research used:

- Water supply condition, quantity and quality:
  if nothing is done, can the water supply handle growth?
- Condition of existing water infrastructure:
  if nothing is done, can it handle growth?
- Efforts and/or funding to improve current conditions for future growth

Each market in each category was given a green (3), yellow (2) or red (1) score and the scores were weighted as follows:

Average score of all the following categories weighted at 40%:

- Average cost of water utility bill by state
- State water pressure based on use and availability

The following category was weighted at 60%:

- Water supply condition, quantity and quality:
  if nothing is done, can the water supply handle growth?
- Condition of existing water infrastructure:
  if nothing is done, can it handle growth?
- Efforts and/or funding to improve current conditions for future growth

Both scores were added together and the resulting weighted overall scores for each market were assigned a final color based on the all scores divided into 33rd and 66th percentiles as follows:

Green = overall water scores in the top 66th percentile
Yellow = overall water scores between the 33rd and 66 percentiles
Red = overall water scores in the bottom 33rd percentile

Source: Yardi Matrix
*Our full methodology document is available for Matrix clients

Methodology: Historical & Projected Supply/Demand

Historical Supply/Demand Balance*

Calculation of oversupply/undersupply (eight-year period):

- Annual Absorption – Annual Deliveries

Calculated the total oversupply/undersupply for an 8-year period & a 1-year period as a percentage of existing stock. For the markets experiencing an undersupply – the absolute value of the deficit was used.

Color Ranking:

- Green (3) = net surplus/deficit of units as a % of existing stock is 0 – 100 bps
- Light Blue (2) = net surplus of units as a % of existing stock is 101 – 200 bps
- Dark Blue (3) = net surplus of units as a % of existing stock is 201+ bps
- Light Red (2) = net deficit of units as a % of existing stock is 101 – 200 bps
- Dark Red (3) = net deficit of units as a % of existing stock is 201+ bps

Eight-year supply/demand imbalance = 40% of the overall ranking
One-year supply/demand imbalance = 60% of the overall ranking

Ex: A market was rated light red for the eight-year category & green for the one-year:

(2* 0.4) + (3 * 0.6) = 2.6 – final rating would be light red

*Not included in the weighting of the overall market rating – rather, it is used as a point of reference.

Projected Supply/Demand Balance

Calculated using an equally weighted average of historical absorption to completions and our most recent supply forecast to project absorption moving forward.

Calculated units absorbed as a % of completions in each market over the last five years (2015-2019).

Then, we averaged the ratios and came up with the average absorbed units as a % of completions for the last five years. We then applied that average to our forecasted completions to project net absorbed units per year:

Forecasted completions – forecasted net absorbed units = total supply/demand balance for each year (all five years were added to come up with a cumulative total)

Color Ranking:

- Green (3) = net surplus/deficit of units as a % of existing stock is 0 – 100 bps
- Light Blue (2) = net surplus of units as a % of existing stock is 101 – 200 bps
- Dark Blue (3) = net surplus of units as a % of existing stock is 201+ bps
- Light Red (2) = net deficit of units as a % of existing stock is 101 – 200 bps
- Dark Red (3) = net deficit of units as a % of existing stock is 201+ bps

Source: Yardi Matrix
*Our full methodology document is available for Matrix clients

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Methodology: Quality of Tech Labor & Affordability

Quality of Tech Labor Market

Based on six different categories (five for the emerging markets). Each market in each category was given a green (3), yellow (2) or red (1) score and the scores were weighted as follows:

1. Employment Growth vs. Unemployment Rate (tech hubs – 16%, emerging – 19%)
2. 2019 CBRE Tech Talent Analysis - not included in the emerging markets ranking (tech hubs – 16%)
3. Percentage of Workforce in Tech (tech hubs – 16%, emerging – 19%)
4. Percentage of Workforce in Office-Using Sectors (tech hubs – 16%, emerging – 19%)
5. Educational Attainment (tech hubs – 16%, emerging – 19%)
6. Projected Job Growth (tech hubs – 20%, emerging – 24%)

Affordability

Based on a survey conducted by the Joint Center for Housing Studies (JCHS) of Harvard University.

We based our ratings on the following statistics:

- % of cost-burdened (paying from 30% - 50% of their income) middle income households (earning $45,000 - $75,000 per year)
- % of severely cost-burdened (more than 50% of their income) middle income households (earnings $45,000 - $75,000 per year)

Markets were then color categorized corresponding to the percentage of middle income renters that were cost burdened or severely cost burdened.

Rating Scale – Moderately Burdened
-Green (3) = 0.0% - 19.9%
-Yellow (2) = 20.0% - 30.0%
-Red (1) = 30.0%

Rating Scale – Severely Burdened
- Green (3) = 0.0% - 2.9%
- Yellow (2) = 3.0% - 5.0%
- Red (1) = 5.0% +

Source: Yardi Matrix
*Our full methodology document is available for Matrix clients

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Methodology: Tax Burden/Pensions, Philosophy Toward Affordability & Urban Policing

TAX BURDEN/PENSION LIABILITY

Tax Burden
Based on the state rank score of each market from the Tax Foundation's 2020 State Business Tax Climate Index.

Major tax components and their weighting:
- Individual Income Tax: 30.2%
- Sales Tax: 24.0%
- Corporate Tax: 19.7%
- Property Tax: 16.6%
- Unemployment Insurance Tax: 9.5%

Pension Liability -
Unfunded pension liability data on the city level was collected through various resources including the official government city websites, comprehensive annual financial reports, and other local sources.
*When city data was available it was used in place of state data

PHILOSOPHY TOWARD AFFORDABILITY

Factors we based our ratings on:
- Rent control initiatives and laws
- Extended eviction moratoriums enacted due to the COVID-19 pandemic
- Inclusionary/exclusionary zoning policies
- Permitting and entitlement requirements
- Supply restrictions

Using the information found through this qualitative research, the market's stance on each focused topic was viewed as positively or negatively affecting the area's affordability.

*Each market was assigned a color and score. A **red color score** was assigned a value of 0.5 or 1 — differentiating the markets with stances negatively affecting affordability (E.g. rent control) that have also enacted long-term eviction moratoriums due to the pandemic with a 0.5 red score.*

URBAN POLICING/SECURITY RISK

The markets were rated in terms of their urban policing and security risk based on qualitative research.

Factors we based our ratings on:
- Police enforcement of public nuisances and low-level crimes
- The attitude of the local police force toward protests and maintaining general orderliness
- Public policy response to police funding
- Reform of policing policies
- Initiatives to improve police training and disciplinary process
- The public view of the police force
- Issues or events that have resulted in police officers not wanting to go to work

Source: Yardi Matrix
*Our full methodology document is available for Matrix clients

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Methodology: Overall Rating

The overall rating of the ability to handle future growth for each market was based on the calculated weighted average of the seven factors.

Each of the three different color ratings were assigned a consistent numerical value:

Green = 3
Yellow = 2
Red = 1*

**Philosophy Towards Affordability red color ratings may be assigned a value of 1 or 0.5*

Five factors considered to affect short-term risk: projected supply/demand balance, quality of the tech labor market, affordability, philosophy toward affordability and urban policing/security risk
(comprise 50% of overall rating & weighted equally)

One factor considered to affect medium-term risk: infrastructure (comprise 40% of overall rating)

One factor considered to affect long-term risk: tax burden/pension liability (comprise 10% of overall rating)

Markets with overall ratings in the bottom 25th percentile were categorized red, overall rating in the top 75th percentile were categorized green, and overall ratings that fell in the middle were categorized yellow.

Source: Yardi Matrix

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In Summary:

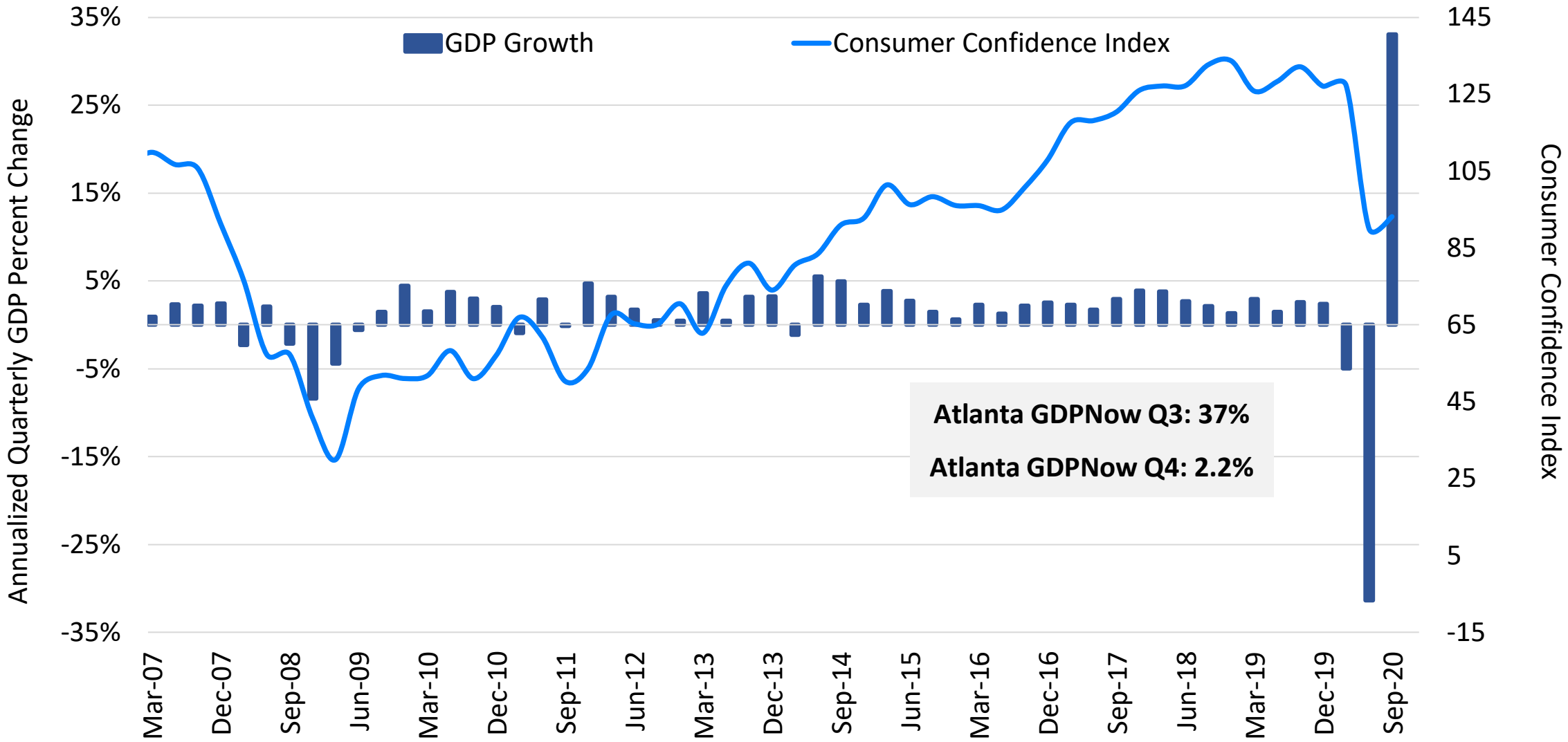
- Tech hub markets have experienced population growth over the past few years, mainly driven by employment and migration trends
- Development pipelines in secondary markets are more manageable compared to gateways – a positive for these markets that have healthy absorption already
- Most secondary tech hub markets still have healthy rent growth despite the state of the economy, however, occupancy remains fairly flat with a few exceptions
- Interestingly, Midwest markets (Indianapolis, Grand Rapids, Kansas City and Columbus) have been performing well since the pandemic – there has been an increase in migration into these markets and they have experienced healthy rent and occupancy growth
- We expect growth in secondary tech hub markets to continue – the potential hang ups are:
  - Supply being added
  - The market's ability to handle the current and future growth (and we've developed a way to rank cities based on this)

Source: Yardi Matrix

YARDI

2021 Outlook

GDP Growth Has Suffered Drastically Due to COVID-19



Source: Yardi Matrix; Moody's Analytics; Bureau of Labor Statistics (BLS); S&P Dow Jones Indices LLC; CoreLogic, Inc; Federal Housing Agency (FHFA); Freddie Mac; Fannie Mae; U.S. Bureau of Economic Analysis (BEA); U.S. Board of Governors of the Federal Reserve System (FRB); Investing.com; Federal Reserve Bank of Atlanta

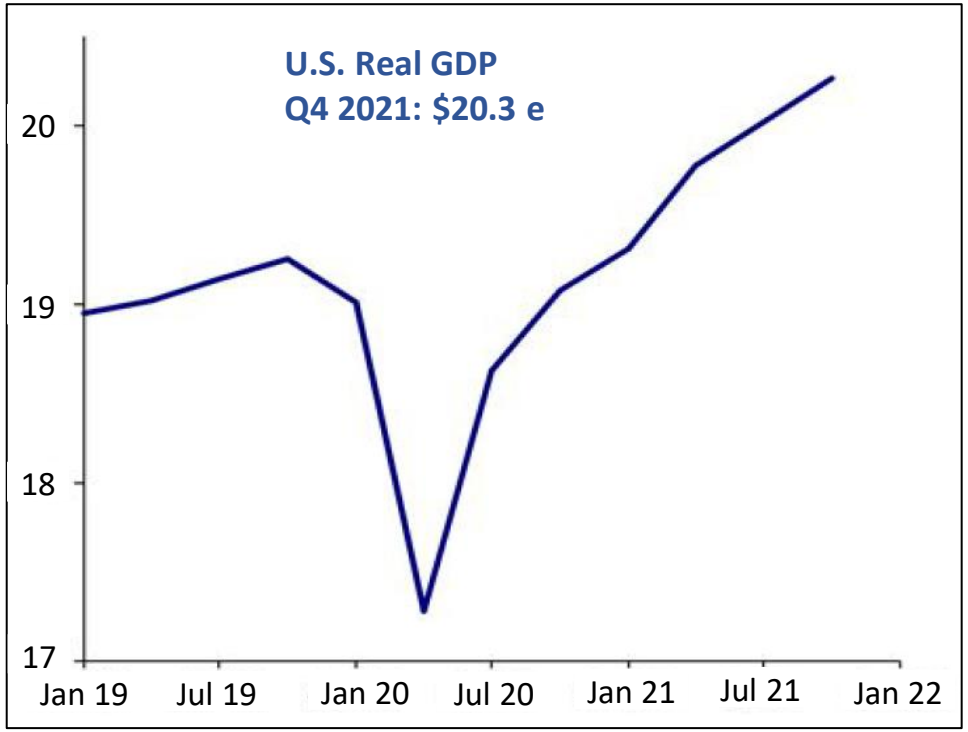
YARDI

U.S. GDP Forecast: A "V" or "U"-Shaped Recovery

We share Evercore ISI's view, that the recovery in GDP looks like a V/U-shaped rebound…

- In **Q3 2020**, GDP will probably increase **+35%** (quarter-over-quarter, QoQ)
- Slowdown of GDP growth to **+4% in Q4 2020**
- In **Q1 2021**, GDP growth likely to continue to slow to **+5%**
- Potential **uptick of +8% in Q2 2021** due to vaccine, but this forecast is variable
- The **last two quarters of 2021** are both projected to see roughly **+5% growth** in GDP
- **If this forecast is accurate, the recovery will be V/U-shaped**

U.S. Real GDP Forecasted Growth QoQ % A.R.					
2020		**2021**			
Q3	Q4	Q1	Q2	Q3	Q4
+35%	+4%	+5%	+8%	+5%	+5%

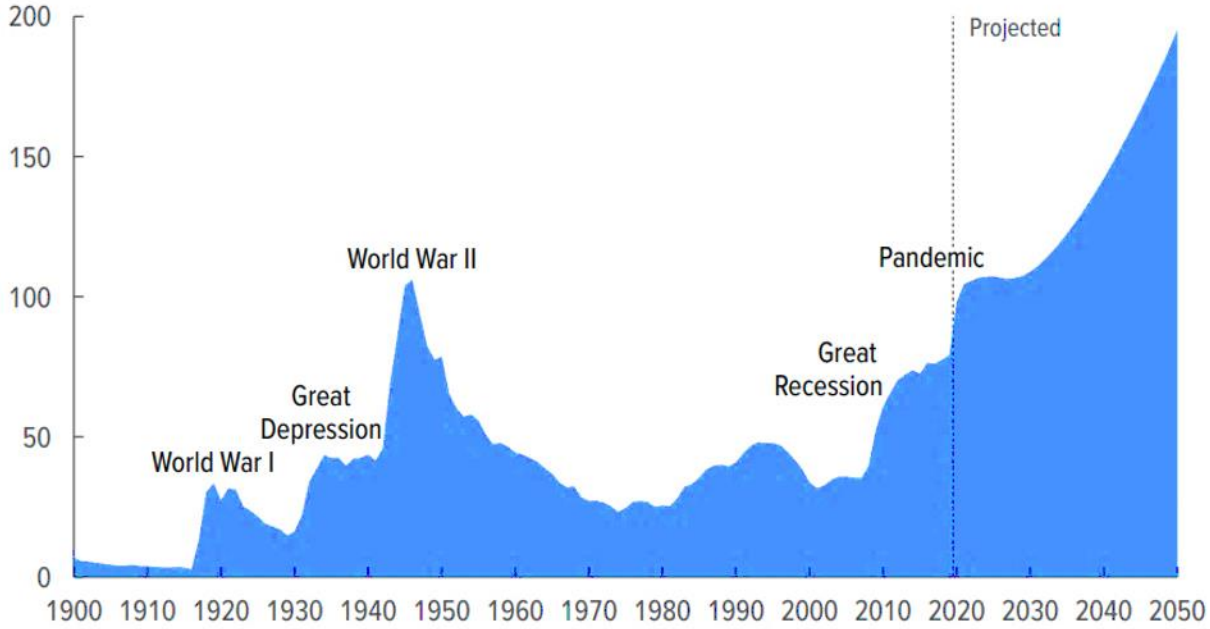


Source: Yardi Matrix; Evercore ISI, Economic Report, "V-Shaped Recovery," September 15, 2020

Federal Debt to GDP Projected to Rise to 104% in 2021

- Congressional Budget Office projects federal debt held by the public to grow to **98% of GDP in 2020**
- Federal debt to GDP ratio projected to increase to **104% in 2021,** to **107% by 2023,** and to **195% by 2050**
- Federal debt held by the public estimated to surpass its historical high of 106% of GDP in 2023 and continue to climb in most years thereafter

Federal Debt as Percent of GDP

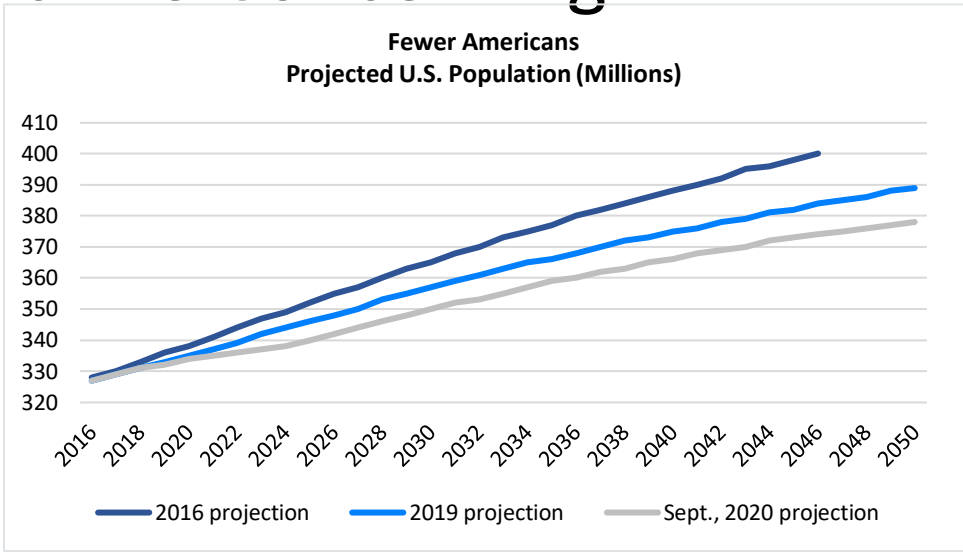


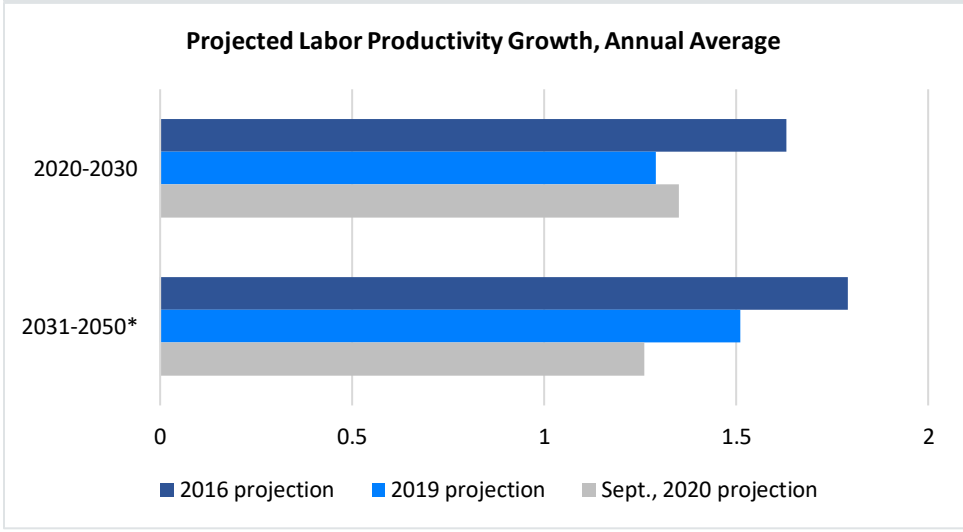
- Even after the increased spending associated with the pandemic ceases, **the growth in spending for Social Security and major health care programs due to the aging of the population, combined with recent tax cuts lowering government revenues, will cause federal debt to GDP ratio to continue to swell**

*CBO most recent publication as of October 13, 2020
Source: Yardi Matrix; Congressional Budget Office (CBO), The 2020 Long-Term Budget Outlook, September 21, 2020

Overlaid with Current Trends, the Long-Term Consequences of the Pandemic Are Concerning

- The Congressional Budget Office expects annual economic growth to average just 1.6% over the next three decades
- The U.S. hasn't had growth that low since the 1930s, however, it is only partially due to the pandemic, but is also heavily impacted by demographics and productivity
- A recent research study shows births decline when unemployment rises. The study also says uncertainty and anxiety associated with the 1918 flu pandemic coincided with a plunge in births the next year — *in both cases, births aren't just postponed; women end up having fewer babies*
- **Combining these results, they think the current pandemic and recession could reduce births by 300,000 to 500,000**
- This is similar to the CBO's projection that total fertility will drop to 1.6 next year, the lowest in at least a century and well below the 2.1 rate at which each generation exactly replaces itself— ***Low birth rates translate into fewer people entering the labor force 20 years later***
- The U.S. could make up for falling fertility with immigration, but the CBO notes that coronavirus-related travel restrictions, reduced visa-processing and fewer foreign entrants without legal status, have already reduced immigrant inflows – as a result, projecting 2.5 million fewer immigrants in the coming decade than predicted last year
- **The net result is fewer Americans: 374 million in the year 2046, 10 million fewer than what CBO thought last year and 34 million fewer than in 2012**





*For 2016, through 2046; For 2019, through 2049

Source: Yardi Matrix; WSJ, "Demographics and Debt Hang Over Long-Term U.S. Growth;" Congressional Budget Office (CBO), The 2020 Long-Term Budget Outlook

We Updated Our New Supply Forecast for Q4

Key Takeaways:

- **National:**
  - Deliveries are expected to be significantly higher in 2021 and 2022 than our 3Q forecast, with 318,000 units completed in 2021 and 337,000 units in 2022 as the result of a strong national under construction pipeline.
  - In 2020, we're expecting 285,000 units to deliver, approximately 2,000 more than in Q3.
  - The construction industry seems to have bounced back from the recession quicker than we expected and it looks like deals under construction are moving along more or less on schedule.
- **Gateway Markets:**
  - The urban cores are expected to experience an overall decline in deliveries over the previous six years, with total development increasing slightly in San Francisco, DC, and Los Angeles as new projects retreat to the suburbs.
  - Boston, Chicago, and New York are expected to see net declines in completions.
  - **The Bay Area and San Francisco** are forecasted to see 57,000 units completed through 2025; while this is contrary to prevailing expectations, with over 35,000 units already under construction, a significant pullback in the Bay Area seems unlikely to be realized in the next five years.
- **Seattle:**
  - We're anticipating 17,000 more units delivered from 2020 through 2022 than our previous forecast. This is the direct result of Seattle's robust development pipeline which includes over 23,000 units currently under construction.
- **Phoenix:**
  - Our total 2020 forecast for Phoenix in Q3 was quickly exceeded within the first few weeks of July. To address, we've made significant adjustments and are now predicting over 9,100 units in 2020 along with 9,500 units and 10,000 units in 2021 and 2022, respectively.

Source: Yardi Matrix

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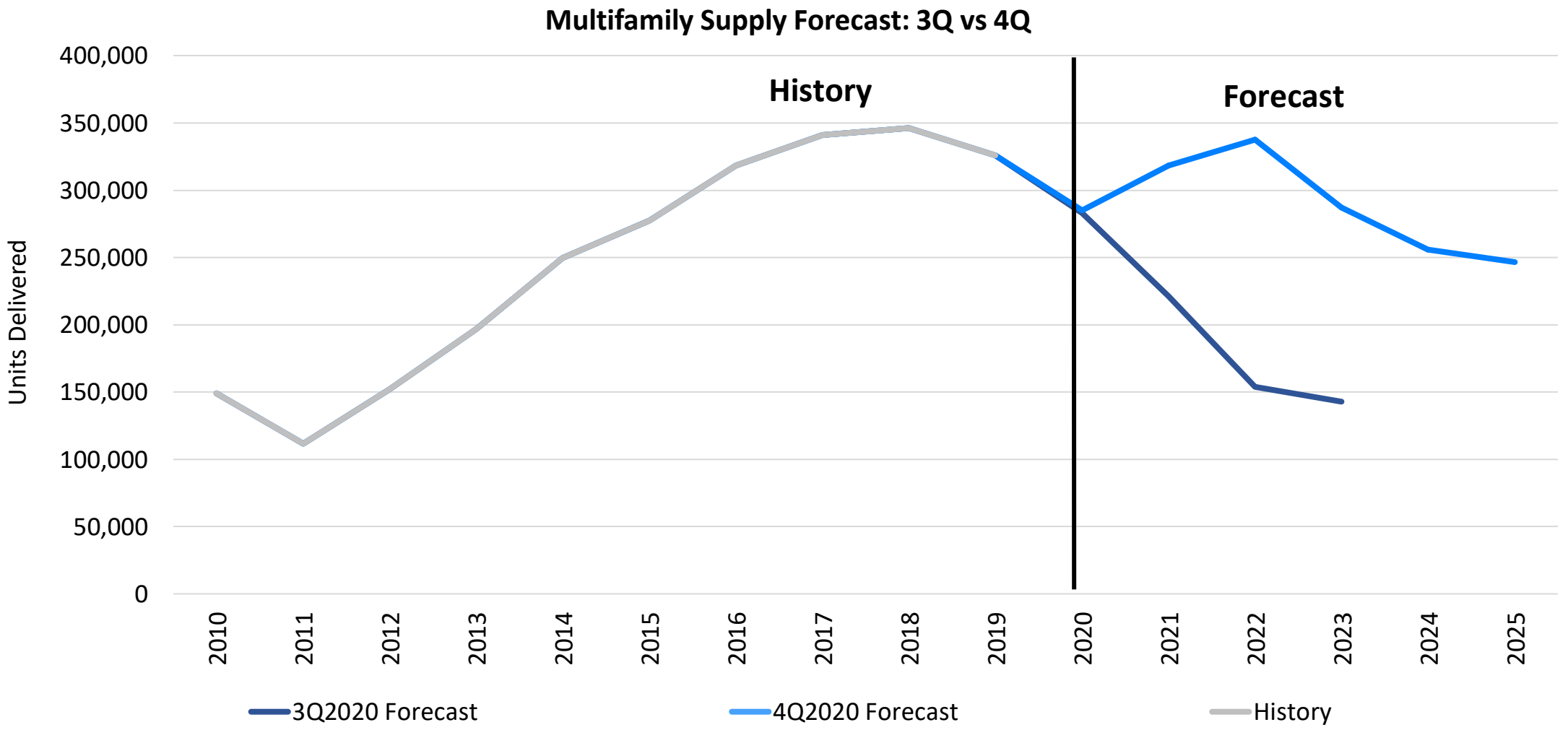
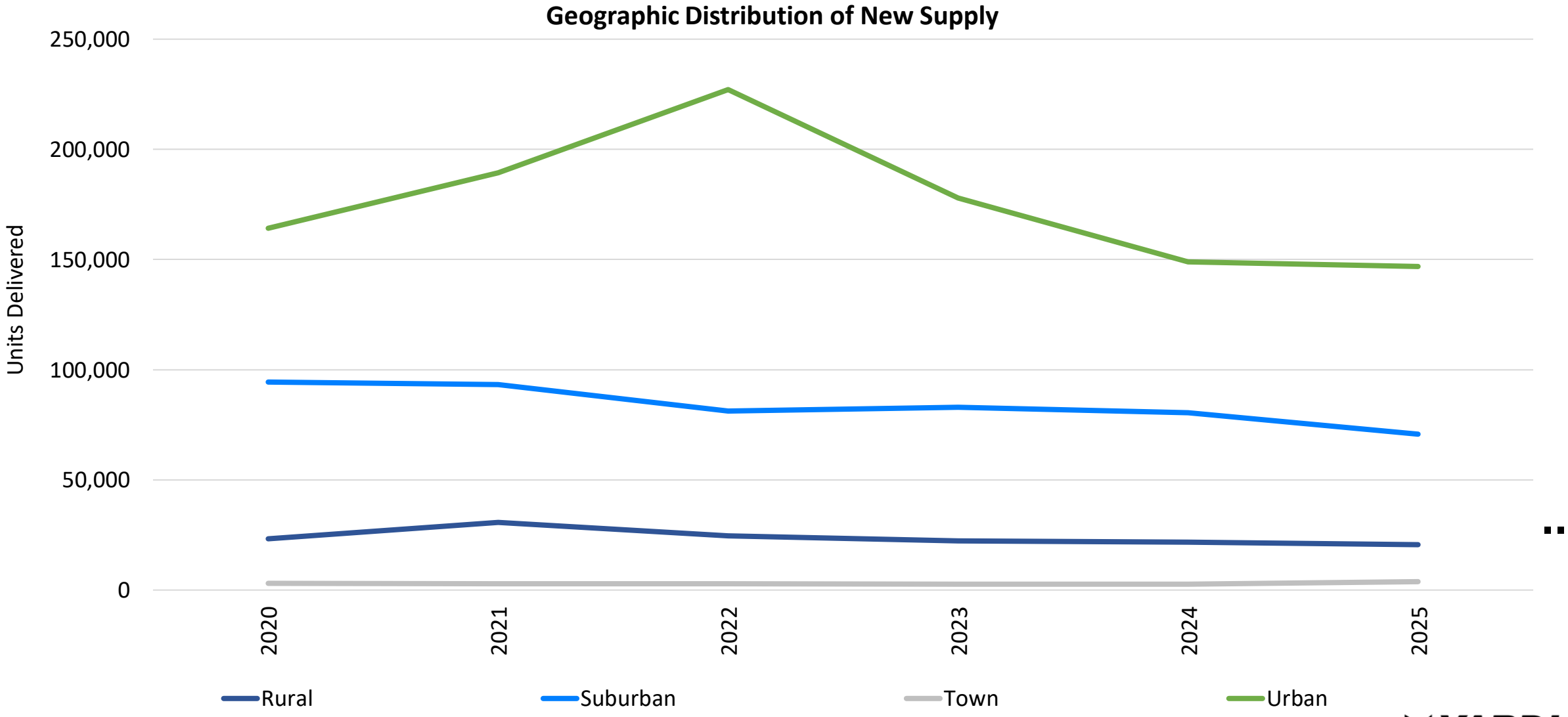
Higher Deliveries Expected in 2021 & 2022 Than Our Previous Forecast



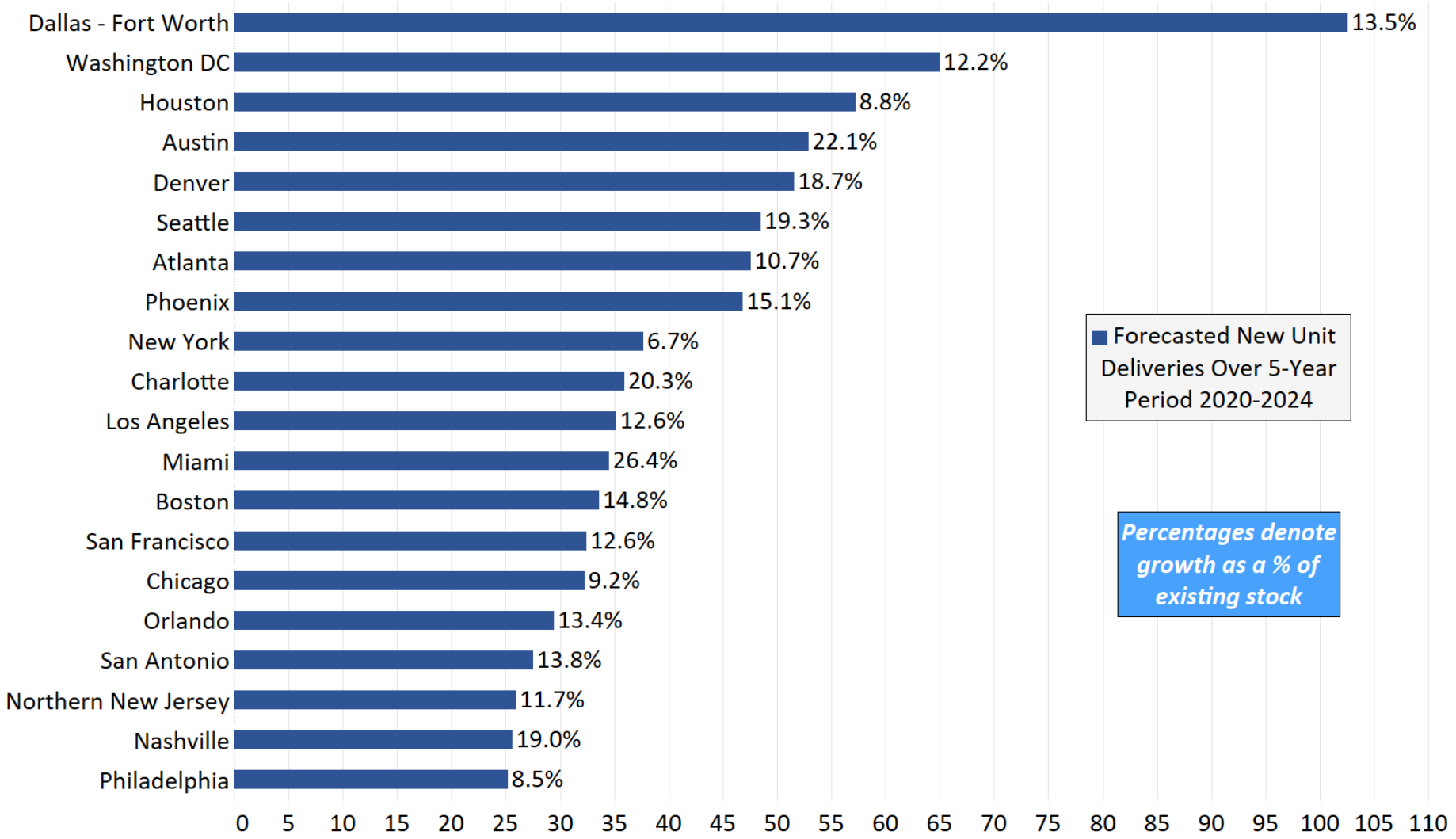
Source: Yardi Matrix

New Supply Remains Concentrated in Urban Areas



Source: Yardi Matrix

Our New Supply Forecast Still Show Significant New Supply Coming in the Next Five Years



Source: Yardi Matrix

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Rent and Occupancy Forecasts

Market	YoY Rent Growth YE 2020	YoY Rent Growth YE 2021	Occupancy YE 2020
San Francisco	-9.3%	-1.6%	95.0%
San Jose	-8.5%	1.0%	94.6%
Austin	-3.4%	4.4%	94.1%
Boston	-2.9%	3.1%	95.6%
Los Angeles	-2.6%	2.3%	95.0%
Portland	-2.6%	1.6%	94.9%
Washington DC	-2.5%	0.7%	94.9%
Miami	-2.4%	0.5%	95.5%
Orange County	-2.1%	2.5%	95.9%
Orlando	-2.1%	1.1%	94.3%
Nashville	-1.8%	2.1%	94.8%
Houston	-1.7%	2.6%	92.4%
San Antonio	-1.7%	1.1%	92.6%
Chicago	-1.3%	2.2%	93.5%
Denver	-0.8%	3.5%	94.5%

Market	YoY Rent Growth YE 2020	YoY Rent Growth YE 2021	Occupancy YE 2020
Seattle	-0.4%	0.5%	94.8%
Dallas	-0.4%	2.4%	93.9%
Raleigh - Durham	0.3%	3.1%	94.4%
Twin Cities	0.7%	2.1%	96.1%
Philadelphia	1.1%	0.5%	95.4%
Atlanta	1.4%	3.0%	93.8%
Las Vegas	1.4%	3.6%	94.7%
Tampa	1.6%	2.4%	94.8%
Baltimore	1.8%	2.1%	94.7%
Indianapolis	2.1%	2.0%	94.1%
Kansas City	2.4%	2.9%	94.7%
Charlotte	2.5%	2.8%	94.7%
Phoenix	2.9%	3.9%	95.1%
Inland Empire	3.2%	3.6%	96.0%
Sacramento	3.6%	3.3%	96.0%

Source: Yardi Matrix

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Rents Expected to Rebound in 2021

Market	YoY Rent Growth YE 2021	Occupancy YE 2021
Austin	4.4%	93.5%
Phoenix	3.9%	94.0%
Inland Empire	3.6%	94.5%
Las Vegas	3.6%	95.9%
Denver	3.5%	94.6%
Sacramento	3.3%	93.3%
Boston	3.1%	94.2%
Raleigh - Durham	3.1%	94.7%
Atlanta	3.0%	92.4%
Kansas City	2.9%	94.0%
Charlotte	2.8%	96.0%
Houston	2.6%	94.3%
Orange County	2.5%	94.5%
Dallas	2.4%	94.9%
Tampa	2.4%	95.6%

Market	YoY Rent Growth YE 2021	Occupancy YE 2021
Los Angeles	2.3%	94.9%
Chicago	2.2%	95.5%
Twin Cities	2.1%	93.9%
Baltimore	2.1%	95.5%
Nashville	2.1%	94.7%
Indianapolis	2.0%	95.0%
Portland	1.6%	94.5%
Orlando	1.1%	95.8%
San Antonio	1.1%	92.3%
San Jose	1.0%	95.2%
Washington DC	0.7%	94.9%
Philadelphia	0.5%	95.1%
Miami	0.5%	95.0%
Seattle	0.5%	95.7%
San Francisco	-1.6%	94.5%

Source: Yardi Matrix

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Prognosis 2021

- The recovery will not be universal – will vary based on metro and level of income (K-shaped recovery)
- Just because GDP comes back does not mean that employment will – pandemics of this nature have a long-term impact
- Key indicator we will be following closely: How much of the migration out of the core cities will be permanent?
- With all the noise, multifamily seems to be holding up fairly well. Rent collections have been in line with previous years and rents have not declined as much as initially feared (except for select Gateway markets)

Source: Yardi Matrix

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