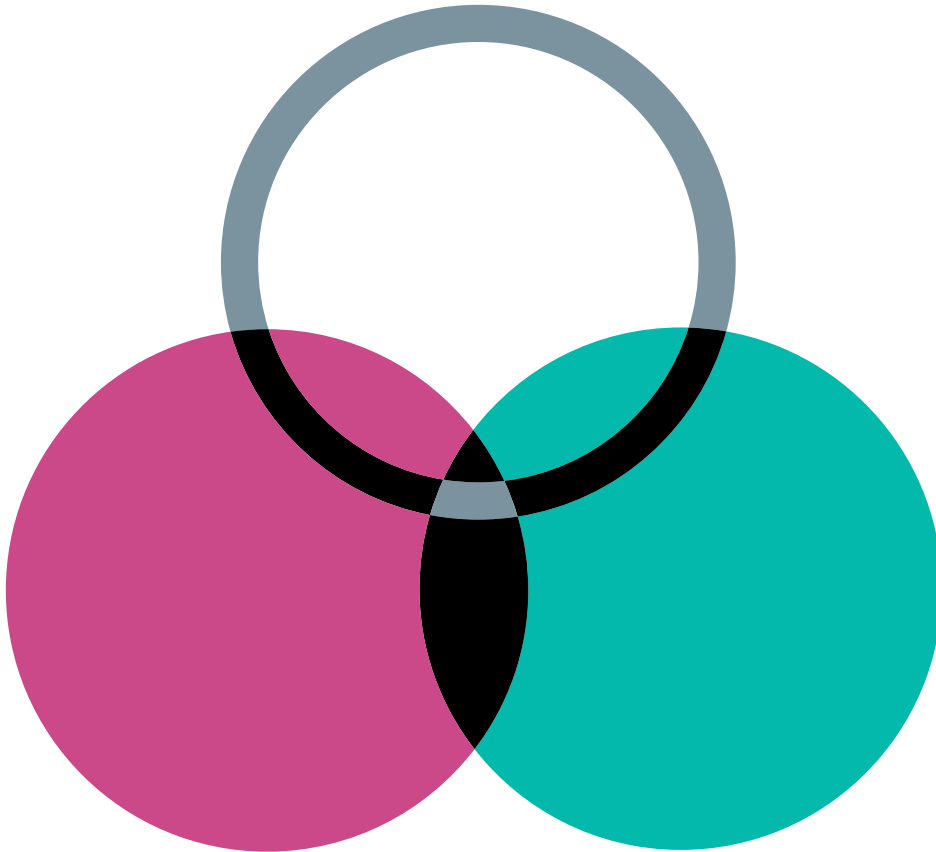


VACANT SPACE



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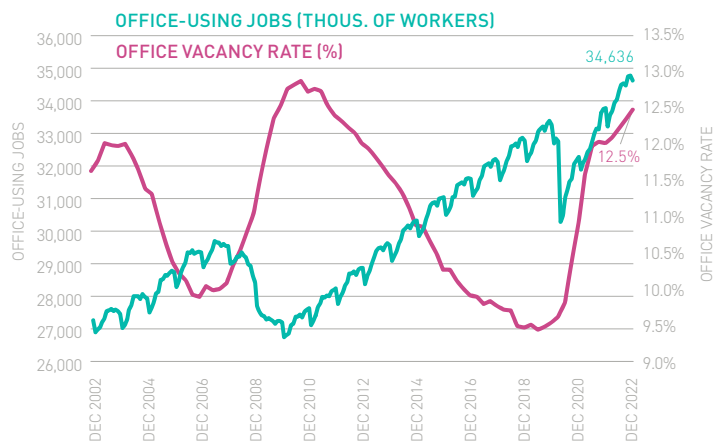
Although there used to be a logical inverse relationship between the change in office-using jobs and office vacancy rates, that relationship broke down in the wake of COVID.

When it comes to office usage, in place of citing the examples of *incongruity or incongruous* put forth by the Merriam Webster dictionary, we will give our own example: Incongruity has manifested when there is a positive change in office-using jobs over a given time period, accompanied by an *increase* in office vacancy and a simultaneous *decrease* in office inventory per office-using job.

Although in the past there was the logical inverse relationship between the change in office-using jobs (OUJ) and change in office vacancy rates, that relationship broke down in the wake of COVID lockdowns.

EXHIBIT 1: US OFFICE-USING JOBS AND OFFICE VACANCY RATES:

Source: BLS; as of December 2022. CoStar Group, as of Q4 2022.

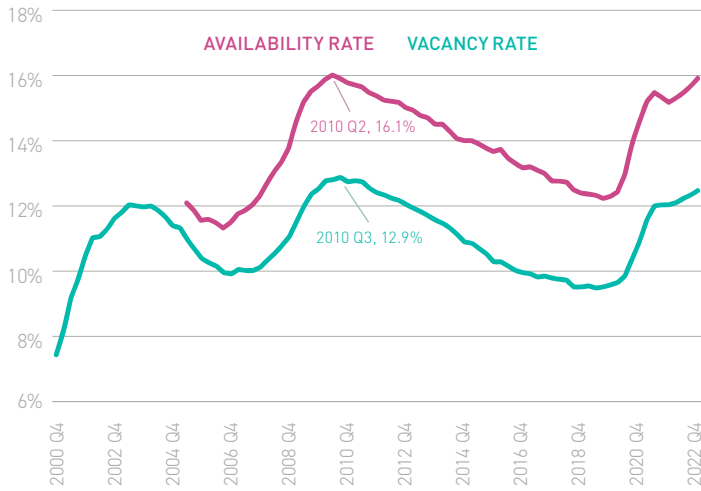


The number OUs increased from 32,743,000 as of March 2020 to 34,636,000 as of December 2022; a 12.8% increase in 33 months' time. Historically, that has signaled greater office demand and a lower vacancy rate. But not this time.

The office vacancy rate increased from 9.6% as of Q1 2020 to 12.5% by the end of Q4 2022, according to CoStar data. A starker manifestation of this trend was in the availability rate (includes space for sublease) which increased from 12.4% to 16% during the same period. Office leasing volume, including new leases and renewals, for full year 2022, was 71% of the pre-COVID 2019 average. Additions to inventory did not account for the higher vacancy rate. According to CoStar data, office inventory per office-using job decreased by 3.3% during roughly the same time.

EXHIBIT 2: US OFFICE VACANCY RATE AND AVAILABILITY RATE

Source: CoStar Group, as of Q4 2022



The numbers become more interesting when analyzed on the metro level. We have divided the top 75 metro areas into six categories and found the following: of the top 75 office markets analyzed by the Strategy and Research Group (SRG) of New York Life Real Estate Investors, forty office markets¹, plus the US national average, meet the following conditions:

1. **Positive** change in *office-using jobs* from 2019 average to December 2022
2. **Increase** in *office vacancy rates* from 2019 average to Q4 2022
3. **Decrease** in *office inventory per office-using job* from 2019 to 2022 Q4

As detailed in *Exhibit 3*, this group of forty office markets will be referred to as Category 1 and it constitutes 79% of total office space across the 75 largest US markets. Categories 2 and 3 represent a similar dynamic, and constitute another 6% and 5%, respectively. Combined, these three categories constitute 90% of total office space. The following table summarizes the findings in this report.



Positive change in office-using jobs from 2019 average to December 2022



Increase in office vacancy rates from 2019 average to Q4 2022



Decrease in office inventory per office-using job from 2019 to 2022 Q4

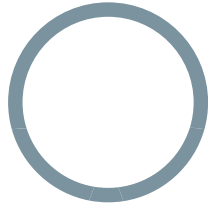
EXHIBIT 3: OFFICE MARKET CATEGORIZATIONS

	1	2	3	4	5	6
Change in Office-Using Jobs 2019 average to December 2022	+	+	-	-	+	-
Change in Vacancy Rate 2019 average to 2022 Q4	+	+	+	+	-	-
Change in Office Inventory per Office-Using Job 2019 to 2022 Q4	-	+	+	+	-	+
Incongruous (I), Moderately Incongruous (MI), Congruous (C), or Anomaly (A)	I	I	MI	C	C	A
# of Markets in Each Category	40	7	6	13	6	3
% of Top 75 U.S. Market Total Office Inventory	79%	6%	5%	6%	3%	1%

**EXHIBIT 4: CATEGORY 1 TABLE
(FORTY MARKETS; INCLUDES 79% OF TOP US MARKET OFFICE SPACE)**

Source: U.S. Bureau of Labor Statistics data as of December 2022. CoStar Group data as of Q4 2022.

OFFICE-USING JOBS		OFFICE VACANCY RATE			OFFICE INVENTORY PER OFFICE-USING JOB (SF)		
Metro	% Change	2019 Avg.	2022 Q3	% Difference	2019 Inventory Per OUJ	2022 Inventory Per OUJ	% Change 2019-2022
AUSTIN, TX	26.2%	8.1%	13.7%	5.5%	382	332	-13.1%
JACKSONVILLE, FL	19.3%	8.3%	9.1%	0.7%	361	312	-13.4%
RALEIGH, NC	18.4%	4.9%	8.6%	3.7%	416	366	-12.0%
DALLAS-FORT WORTH, TX	17.9%	14.6%	17.2%	2.6%	389	339	-12.8%
CHARLESTON, SC	14.0%	5.6%	7.2%	1.7%	400	362	-9.3%
ATLANTA, GA	11.5%	11.6%	14.1%	2.5%	392	363	-7.4%
TAMPA, FL	11.4%	7.3%	8.9%	1.6%	317	291	-8.3%
CHARLOTTE, NC	11.4%	7.0%	11.8%	4.8%	369	349	-5.5%
SEATTLE, WA	11.0%	5.8%	10.6%	4.8%	406	383	-5.8%
NASHVILLE, TN	10.7%	5.8%	11.3%	5.6%	353	337	-4.7%
DENVER, CO	10.1%	9.8%	14.6%	4.8%	404	375	-7.2%
MIAMI, FL	9.6%	8.3%	9.4%	1.1%	159	149	-6.4%
SAN JOSE, CA	9.6%	9.2%	12.0%	2.8%	347	335	-3.4%
KNOXVILLE, TN	9.1%	4.0%	4.2%	0.3%	415	377	-9.0%
ORLANDO, FL	8.3%	6.4%	8.2%	1.9%	294	281	-4.4%
SAN DIEGO, CA	8.0%	9.3%	10.9%	1.6%	329	311	-5.7%
HOUSTON, TX	7.4%	15.9%	18.8%	2.8%	483	460	-4.7%
BOSTON, MA	6.9%	7.1%	9.6%	2.6%	582	560	-3.7%
SAN ANTONIO, TX	6.8%	8.8%	11.8%	3.0%	339	329	-3.1%
PHOENIX, AZ	6.5%	11.8%	15.0%	3.3%	306	297	-3.1%
INDIANAPOLIS, IN	6.1%	7.6%	8.7%	1.1%	420	401	-4.6%
PORTLAND, OR	6.0%	7.1%	11.8%	4.7%	381	369	-3.2%
SAN FRANCISCO, CA	6.0%	6.3%	16.4%	10.1%	235	229	-2.6%
UNITED STATES	5.3%	9.5%	12.5%	3.0%	249	241	-3.3%
PHILADELPHIA, PA	4.1%	8.3%	10.3%	2.0%	437	421	-3.8%
LEHIGH VALLEY, PA	3.6%	7.7%	8.2%	0.5%	450	441	-2.0%
MEMPHIS, TN	3.4%	9.6%	10.7%	1.1%	443	432	-2.5%
PROVIDENCE, RI	3.1%	5.1%	5.5%	0.5%	504	489	-3.1%
BIRMINGHAM, AL	3.1%	9.1%	11.1%	2.0%	483	466	-3.6%
LOS ANGELES, CA	2.9%	10.1%	14.4%	4.3%	276	271	-1.9%
LOUISVILLE, KY	2.9%	5.5%	7.1%	1.6%	420	413	-1.6%
PITTSBURGH, PA	2.9%	7.5%	11.0%	3.6%	503	499	-0.7%
NEW YORK, NY	2.7%	8.0%	12.3%	4.3%	358	353	-1.4%
COLUMBIA, SC	2.4%	5.8%	8.4%	2.6%	393	390	-0.7%
DETROIT, MI	2.1%	9.7%	12.3%	2.6%	363	358	-1.3%
SAINT LOUIS, MO	1.7%	7.1%	10.2%	3.1%	432	428	-0.9%
CHICAGO, IL	1.5%	11.7%	15.1%	3.4%	407	407	-0.1%
ALBANY, NY	1.5%	3.9%	4.3%	0.4%	625	620	-0.8%
WASHINGTON, DC	1.2%	12.7%	15.5%	2.8%	507	506	-0.1%
CINCINNATI, OH	0.2%	8.9%	10.1%	1.1%	405	401	-1.1%
BALTIMORE, MD	0.0%	10.2%	11.4%	1.2%	444	442	-0.5%



Another seven office markets² meet the first two criteria...

1. **Positive** change in office-using jobs from 2019 average to December 2022
2. **Increase** in office vacancy rates from 2019 average to 2022 Q4
3. ... but experienced an **increase** in office inventory per office-using job of less than 2.7%.

Effectively, in these markets, vacancy rates remain elevated despite a nominal increase in office inventory.

**EXHIBIT 5: CATEGORY 2 TABLE
(SEVEN MARKETS; 6% OF TOP US MARKET OFFICE SPACE)**

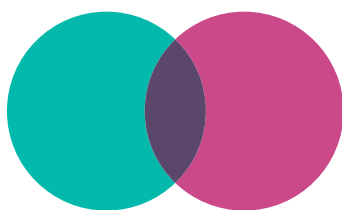
OFFICE-USING JOBS		OFFICE VACANCY RATE			OFFICE INVENTORY PER OFFICE-USING JOB (SF)		
Metro	% Change	2019 Avg.	2022 Q3	% Difference	2019 Inventory Per OUJ	2022 Inventory Per OUJ	% Change 2019-2022
SALT LAKE CITY, UT	4.6%	6.0%	10.3%	4.3%	355	365	2.7%
GREENVILLE, SC	1.9%	6.4%	7.8%	1.4%	341	341	0.1%
OKLAHOMA CITY, OK	1.5%	7.9%	9.6%	1.7%	533	533	0.0%
SACRAMENTO, CA	1.3%	8.8%	10.5%	1.7%	531	536	0.9%
GRAND RAPIDS, MI	1.3%	5.1%	6.7%	1.7%	373	374	0.3%
EL PASO, TX	0.6%	4.8%	5.6%	0.8%	448	452	0.9%
MINNEAPOLIS, MN	0.1%	7.8%	10.8%	3.0%	382	384	0.6%

An additional six office markets³ meet the following criteria:

1. **Negative** change in office-using jobs
2. **Increase** in office vacancy rates greater than the decline in office-using jobs
3. **Increase** in office inventory per OUJ

**EXHIBIT 6: CATEGORY 3 TABLE:
(SIX MARKETS; 5% OF TOP US MARKET OFFICE SPACE)**

OFFICE-USING JOBS		OFFICE VACANCY RATE			OFFICE INVENTORY PER OFFICE-USING JOB (SF)		
Metro	% Change	2019 Avg.	2022 Q3	% Difference	2019 Inventory Per OUJ	2022 Inventory Per OUJ	% Change 2019-2022
DAYTON, OH	-0.3%	7.0%	7.7%	0.7%	542	543	0.2%
KANSAS CITY, MO	-0.9%	6.7%	10.1%	3.4%	443	453	2.4%
HARTFORD, CT	-1.1%	8.1%	10.0%	1.9%	510	515	1.0%
RICHMOND, VA	-1.2%	6.6%	8.2%	1.6%	381	384	0.8%
TULSA, OK	-1.3%	9.6%	11.4%	1.8%	558	571	2.3%
COLUMBUS, OH	-1.9%	6.9%	10.0%	3.1%	399	414	3.8%



An additional number of office markets (currently 13 markets)⁴ performed in a generally expected manner and meet the following criteria:

1. **Negative** change in office-using jobs
2. **Increase** in office vacancy rates less than the decline in office-using jobs
3. **Increase** in office inventory per office-using job

**EXHIBIT 7: CATEGORY 4 TABLE
(THIRTEEN MARKETS; 6% OF TOP U.S. MARKET OFFICE SPACE)**

OFFICE-USING JOBS		OFFICE VACANCY RATE			OFFICE INVENTORY PER OFFICE-USING JOB (SF)		
Metro	% Change	2019 Avg.	2022 Q3	% Difference	2019 Inventory Per OUJ	2022 Inventory Per OUJ	% Change 2019-2022
VENTURA, CA	-1.0%	10.5%	11.1%	0.6%	339	339	0.0%
CLEVELAND, OH	-2.1%	7.2%	8.3%	1.1%	455	461	1.2%
GREENSBORO, NC	-2.4%	8.1%	8.6%	0.5%	455	470	3.3%
MILWAUKEE, WI	-3.3%	8.3%	10.2%	1.9%	412	427	3.7%
STAMFORD, CT	-3.6%	10.6%	13.4%	2.7%	599	623	4.1%
NORFOLK, VA	-3.7%	7.5%	7.7%	0.2%	334	353	5.9%
HONOLULU, HI	-3.9%	6.3%	7.1%	0.8%	354	369	4.2%
OMAHA, NE	-4.0%	5.7%	7.7%	2.0%	352	383	8.8%
FRESNO, CA	-4.5%	6.8%	8.5%	1.7%	533	570	6.9%
ROCHESTER, NY	-5.6%	9.2%	9.4%	0.2%	529	563	6.5%
BUFFALO, NY	-6.2%	7.2%	7.3%	0.1%	422	450	6.6%
BAKERSFIELD, CA	-7.0%	7.0%	8.2%	1.2%	423	462	9.3%
TUCSON, AZ	-7.6%	7.9%	10.4%	2.6%	386	425	10.1%

An additional relatively small office markets (currently 6 markets)⁵ performed in the expected manner and meet the following criteria:

1. **Positive** change in office-using jobs
2. **Decrease** in office vacancy rates
3. **Decrease** in office inventory per office-using job

**EXHIBIT 8: CATEGORY 5 TABLE
(SIX MARKETS; 3% OF TOP US MARKET OFFICE SPACE)**

OFFICE-USING JOBS		OFFICE VACANCY RATE			OFFICE INVENTORY PER OFFICE-USING JOB (SF)		
Metro	% Change	2019 Avg.	2022 Q3	% Difference	2019 Inventory Per OUJ	2022 Inventory Per OUJ	% Change 2019-2022
MCALLEN, TX	13.3%	5.3%	4.6%	-0.7%	454	409	-10.1%
INLAND EMPIRE, CA	12.3%	6.9%	6.0%	-0.9%	355	320	-9.9%
SARASOTA, FL	6.8%	4.8%	3.5%	-1.3%	430	409	-4.9%
NEW ORLEANS, LA	4.4%	6.6%	6.4%	-0.2%	466	444	-4.6%
LAS VEGAS, NV	3.1%	11.5%	9.4%	-2.1%	307	303	-1.2%
BATON ROUGE, LA	2.1%	7.6%	6.8%	-0.8%	374	370	-0.8%

The remaining relatively small office markets (currently three markets)⁶ performed in the expected manner and meet the following criteria:

**EXHIBIT 9: CATEGORY 6 TABLE
(THREE MARKETS; 1% OF TOP US MARKET OFFICE SPACE)**

OFFICE-USING JOBS		OFFICE VACANCY RATE			OFFICE INVENTORY PER OFFICE-USING JOB (SF)		
Metro	% Change	2019 Avg.	2022 Q3	% Difference	2019 Inventory Per OUJ	2022 Inventory Per OUJ	% Change 2019-2022
WORCESTER, MA	-0.6%	8.4%	8.0%	-0.3%	684	692	1.1%
ALBUQUERQUE, NM	-1.2%	6.5%	4.9%	-1.6%	435	441	1.3%
NEW HAVEN, CT	-1.8%	8.0%	7.4%	-0.5%	774	786	1.5%

1. **Negative** change in office-using jobs
2. **Decrease** in office vacancy rates
3. **Increase** in office inventory per office-using job

CATEGORY 1 MARKETS ACCOUNT FOR 79% OF US OFFICE INVENTORY

Categories 1–3 represent 53 of the 75 markets and constitute 90% of the presented US office inventory. Categories 1–4 are 66 of the 75 markets. Those 66 markets constitute 96% of the presented US office inventory. Markets that fall into category 5 are mostly small, less consequential office markets. The automobile commutes in most category 4 and 5 markets are relatively short and therefore commuting to the office is relatively easy. Accordingly, these markets are likely to have lower work-from-home rates and higher occupancy levels. Anomalies are more likely in small markets. That is the case with category 6 in which there was a negative change in office-using jobs, a decrease in office vacancy rates and an increase in office inventory per office-using job.

Physical office occupancy is only 50.4% of pre-Covid levels. This number has barely improved from the 47.5% level recorded in September 2022. Many companies do not have the need to lease as much office space as in the past and others have gone fully remote.

PRIMARY REASON FOR INCONGRUITY

Office-using jobs growth and occupancy decline incongruity manifested in metros representing 90% of US office inventory which includes categories 1– 3. These metros generally include the largest and most important office markets in the US.

So, what is the reason this historically reliable relationship, which had office vacancy declining when OUJ increased, broke down in the wake of the pandemic? Remote Work.

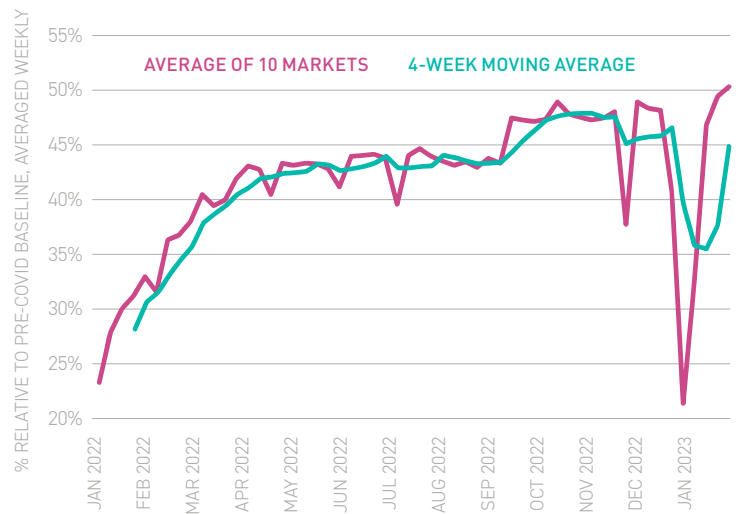
According to data from Kastle Systems, physical office occupancy is only 50.4% of pre-Covid levels.⁷ This number has barely improved from the 47.5% level recorded in September 2022. Many companies do not have the need to lease as much office space as in the past and others have gone fully remote.



EXHIBITS 10 AND 11: KASTLE SYSTEMS OFFICE BACK-TO-WORK BAROMETER

Source: Kastle Systems Back-to-Work Barometer

KASTLE SYSTEMS – OFFICE BACK TO WORK BAROMETER % RELATIVE TO PRE-COVID BASELINE, AVERAGED WEEKLY FOR WEEK OF:												
CITY	Sep 14 2022	Nov 2 2022	Nov 9 2022	Nov 16 2022	Nov 23 2022	Nov 30 2022	Dec 7 2022	Dec 14 2022	Jan 4 2023	Jan 11 2023	Jan 18 2023	Jan 25 2023
AUSTIN	60.5	61.9	62.2	62.7	48.2	65.7	65.1	63.7	43.8	65.1	65.1	67.7
HOUSTON	56.8	56.9	56.6	58.5	46.1	58.6	59.6	58.8	43.9	60.0	60.9	60.3
DALLAS	54.9	52.9	53.8	54.0	42.9	56.0	53.0	53.7	40.7	53.1	54.3	53.5
CHICAGO	45.0	45.4	46.0	46.0	35.1	48.7	48.1	48.5	33.2	48.1	50.7	50.6
AVERAGE OF 10 MARKETS	47.5	47.3	47.5	48.1	37.8	49.0	48.4	48.2	32.8	46.9	49.5	50.4
LOS ANGELES	45.6	45.0	44.7	46.1	38.2	45.9	45.3	44.8	32.9	43.5	47.3	48.0
NEW YORK	46.6	46.7	47.2	47.6	36.7	49.6	47.8	48.1	30.9	45.6	47.2	47.5
WASHINGTON, D.C.	44.7	43.9	44.7	44.6	34.0	45.1	45.2	45.3	30.7	44.7	45.7	46.9
SAN FRANCISCO	40.7	40.6	41.6	43.1	32.7	42.2	41.8	42.5	20.8	35.8	43.3	45.9
PHILADELPHIA	40.7	40.3	40.9	41.2	35.3	42.7	41.1	41.5	32.2	42.1	42.8	42.7
SAN JOSE	39.5	39.8	37.5	37.0	29.1	35.7	36.6	35.5	18.8	31.0	38.2	41.1



Source: Kastle Systems Back to Work Barometer.

The Kastle System data is supported by looking at public transportation ridership levels in New York, Washington, DC, Chicago, Boston, and San Francisco. The ridership data tracks well directionally with the data provided by Kastle Systems. Public transportation ridership data shows that the commuter rail systems in New York are outperforming those in other cities in terms of percentage of riders returning since the start of the pandemic.

The average weekday ridership of Metro North and the LIRR in November were 68% and 67% of the levels noted in November 2019, respectively.⁸ Ridership levels of the MBTA in Boston reached 60% for the same period.⁹ However, ridership levels in Washington D.C.,

Chicago, and San Francisco are not as positive. During November 2022, the ridership levels in these three cities averaged only 42% of their pre-pandemic levels, with San Francisco performing the worst at 34%.¹⁰

The resulting landscape has shifted and according to CoStar, there is more than 400 million square feet of “missing” demand for office space based on expected leasing activity had historical trends prevailed. In addition, office tenants are focused on high-quality, newly constructed space. The office market is not only challenged by remote work, but also from functional obsolescence in older class B buildings, environmental mandates, and higher interest rates.

THE TRUE IMPACT OF REMOTE WORK

The incongruity manifested in the positive change in office-using jobs, combined with the increase in office vacancy rates and the decrease in office inventory per office-using job is a glaring indicator of the impact of remote work on the office market.

Increased Remote Work appears to be a consequential secular change – but the full scope of the outcome is still not known, and the true magnitude may not be known for years. As elevated levels of Remote Work extends in to its fourth year, it appears clear—at the very least—that it will be difficult to reverse completely.

ABOUT THE AUTHOR

Stewart Rubin is Senior Director and Head of Strategy and Research, and Dakota Firenze is a Senior Associate, for New York Life Real Estate Investors, a division of NYL Investors LLC, a wholly-owned subsidiary of New York Life Insurance Company.

NOTES

¹ In Q3 2022, forty-four of the top seventy-five markets fell into this category, while forty-two markets qualified in Q2 2022, and in twenty-four markets in Q1 2022. Overall, more markets were classified as Category 1 than at the beginning, indicating the incongruity became starker in 2022.

² In Q3 2022, four of the top seventy-five markets fell into this category, while six markets qualified in Q2 2022, and nine markets in Q1 2022.

³ In Q3 2022, six of the top seventy-five markets fell into this category, while six markets qualified in Q2 2022, and eleven markets in Q1 2022.

⁴ In Q3 2022, sixteen of the top seventy-five markets fell into this category, while fourteen markets qualified in Q2 2022, and twenty-five markets in Q1 2022.

⁵ In Q3 2022, five of the top seventy-five markets fell into this category, while six markets qualified in Q2 2022 and Q1 2022.

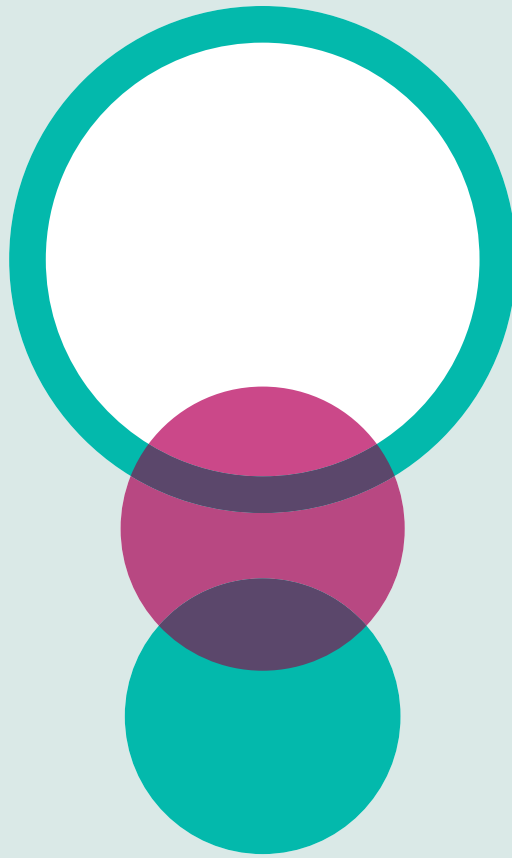
⁶ In the first three quarters of 2022, three of the top seventy-five markets fell into this category as well.

⁷ Data as of January 30, 2023. Kastle Systems data is collected by keycard, fob and KastlePresence app access data from the 2,600 buildings and 41,000 businesses that Kastle Systems secures across 47 states. The Barometer weekly report summarizes access control data among Kastle System's business partners in ten major metro areas, not a national statistical sample. Charted percentages reflect unique authorized user entries in each market relative to a pre-COVID baseline, averaged weekly.

⁸ MTA. "COVID-19 Ridership Trends." Metropolitan Transportation Authority, accessed May 2, 2023. <https://new.mta.info/coronavirus/ridership>.

⁹ MBTA. "Performance Dashboard: Ridership." MBTA Back on Track, 1 Nov. 2022, <https://mbtabackontrack.com/performance/#/detail/ridership/2022-11-01///all>.

¹⁰ Washington Metropolitan Area Transit Authority. "November 2022 Ridership Snapshot." WMATA Ridership Portal, accessed May 3, 2023, <https://www.wmata.com/initiatives/ridership-portal/upload/November-2022-Ridership-Snapshot.pdf>; Chicago Transit Authority. "Ridership Reports." TransitChicago.com, <https://www.transitchicago.com/ridership/>; San Francisco Bay Area Rapid Transit District. "Ridership Reports." Bay Area Rapid Transit, <https://www.bart.gov/about/reports/ridership>.



Increased Remote Work appears to be a consequential secular change – but the full scope of the outcome is still not known, and the true magnitude may not be known for years.