



Remote Work impact on Commercial Real Estate

Joanne Donohue, Baruch Gottesman,
Sal Sonmez, and Aaron Swan





Hypothesis

The shift towards remote work is changing commercial real estate markets in major U.S. cities by accelerating the decline of traditional office buildings and need for daily commuting.

1. Remote work could mean vacant office spaces:

- As more people work from home, companies will need less office space.
- With vacancies on the rise, landlords could be forced to lower rent to attract tenants.

2. Individual cities and varying outcomes:

- The impact of remote work may vary widely depending on each city's economy, transportation, and real estate market.

Key Markets:

Boston
Dallas
Miami
Atlanta
Tampa
Detroit
Philadelphia
Chicago
Manhattan
New Jersey
Austin
Denver
Orlando
Phoenix
Bay Area
Nashville
Charlotte
Washington DC
Houston
Los Angeles
Portland
Seattle
San Francisco
San Diego



Methodology

To evaluate our hypothesis, we will look at:

1. Commercial Real Estate Trends:

- o Office vacancies and pricing: We collected data from CBRE, JLL, and CoStar on office vacancy rates and prices in twenty-five major U.S. cities from 2015 to 2024.

- o Digging deeper: We will analyze the data carefully to understand how strong the relationship is between remote work and commercial real estate. We will consider other factors like local economies, the rise of remote work since the Coronavirus pandemic, and commercial real estate.
- o The big picture: What other things could influence our results? Things like population changes, the number of office buildings, the pandemic, and overall economic conditions.

2. The Shift to Remote Work:

- o Changing commute patterns: We will analyze U.S. Census data to see if people are commuting less often or for shorter distances, which could signal an increase in remote work.
- o Declining public transit use: We will examine Federal Transit Administration data to determine if fewer people are relying on public transportation, another potential indicator of remote work adoption.

Drawing Conclusions:

- o In Summary: Our findings will show whether remote work is affecting office vacancies and prices, is impacting and highlight key trends and differences between cities.



Data Sources

Commercial Real Estate Market Data

Scrape Pricing and Vacancy Rates from
Yardi Martrix:
<https://www.yardimatrix.com/Media/Downloads>

Public Transportation Trends ([data.gov](#), [bart.gov](#))

NYC MTA Daily Ridership

March 2020 - July 2024

<https://catalog.data.gov/dataset/mta-daily-ridership-data-beginning-2020>

NYC MTA Monthly Ridership

2008 - 2024

<https://catalog.data.gov/dataset/mta-monthly-ridership-traffic-data-beginning-january-2008>

SF BART Daily Ridership

March 2020 - July 2024

<https://www.bart.gov/news/articles/2023/news20230729#:~:text=Latest,Ridership%20Trends&text=Average%20weekday%20ridership%20was%20164%2C700,pre-COVID%20expectations%2C%20respectively.>





Scraping CRE Data

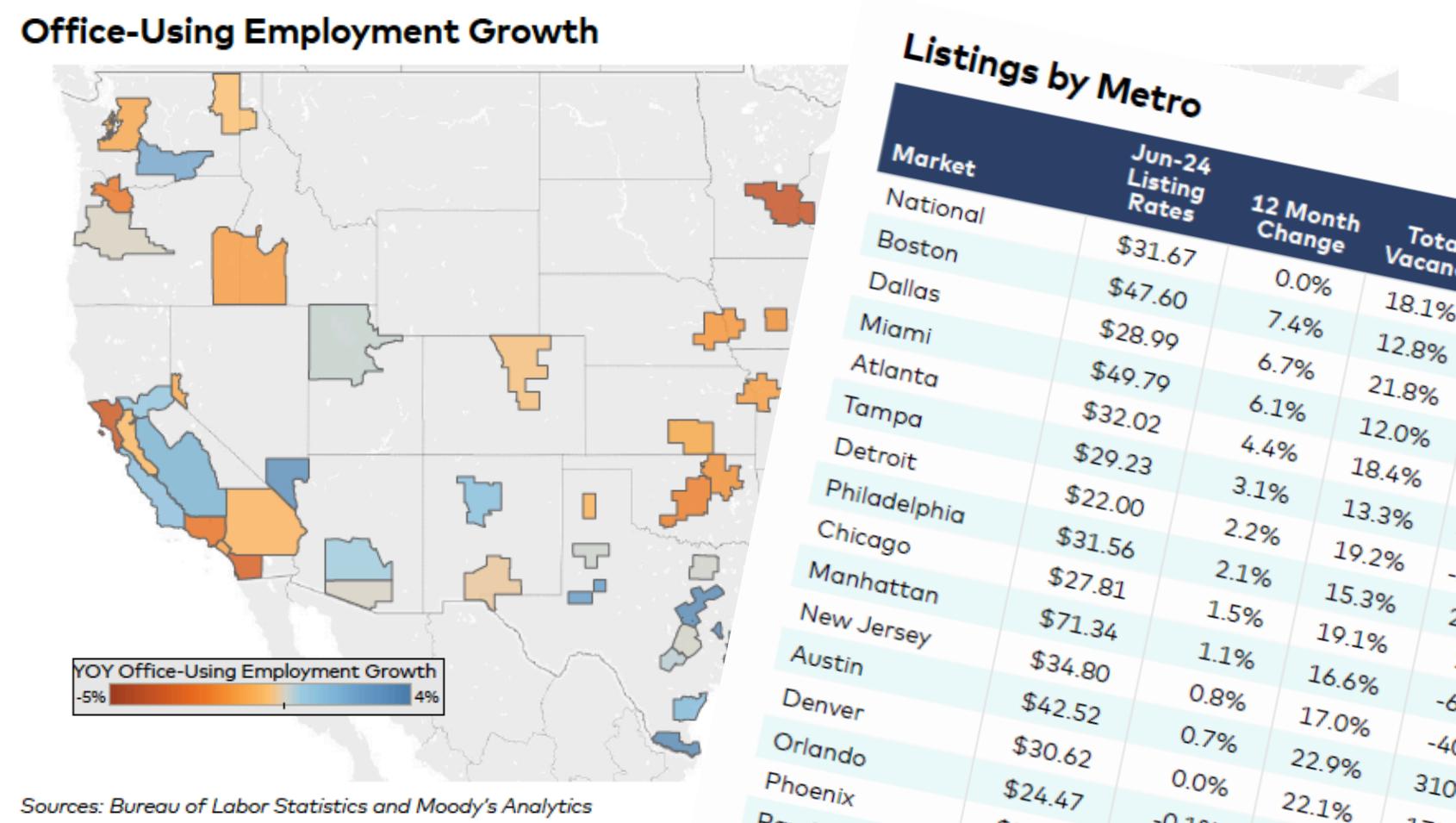
Challenges to Finding Open Source Data

- Data is Nonpublic
- Private Data Aggregators are Pricey
- Data is specific to individual CRE Markets (there is no single “Market”)





Supply Pipeline (by metro)				
Market	Under Construction	Under % Stock	Planned % Stock	Plus
National	76,901,509	1.1%	10.8%	4.0%
Boston	12,496,569	5.0%	12.1%	
Dallas	4,957,647	1.8%	10.8%	
San Francisco	4,908,974	3.1%	14.8%	
Austin	4,331,499	4.6%	6.7%	
San Diego	3,858,410	4.0%	2.9%	3.5%
Miami	2,876,200	0.6%	4.0%	6.0%
Manhattan	2,775,832	0.9%	4.0%	4.7%
Los Angeles	2,627,599	0.7%	6.0%	
Washington DC	2,522,594	1.7%	4.0%	
Seattle	2,479,539	1.2%	3.6%	9
Bay Area	2,444,768	1.1%	1.0%	
Nashville	2,125,600	1.0%	0.8%	
Philadelphia	1,982,424	1.0%	0.9%	
New Jersey	1,948,689	0.8%	0.9%	
Houston	1,875,765	0.9%	2.2%	
Atlanta	1,832,803	2.2%	1.1%	
Charlotte	1,766,657			
Denver	1,747,432			



Listings by Metro					
Market	Jun-24 Listing Rates	12 Month Change	Total Vacancy	12 Month Change	Top Listing
National					
Boston	\$31.67	0.0%	18.1%	100 bps	Alexandria Center at Kendall Square-75 Binney
Dallas	\$47.60	7.4%	12.8%	220 bps	McKinney & Olive
Miami	\$28.99	6.7%	21.8%	430 bps	701 Brickell
Atlanta	\$49.79	6.1%	12.0%	-70 bps	1180 Peachtree
Tampa	\$32.02	4.4%	18.4%	-100 bps	Central, The
Detroit	\$29.23	3.1%	13.3%	-150 bps	Orchestra Place
Philadelphia	\$22.00	2.2%	19.2%	-550 bps	Two Liberty Place
Chicago	\$31.56	2.1%	15.3%	230 bps	Innovation and Research Park
Manhattan	\$27.81	1.5%	19.1%	20 bps	One Vanderbilt
New Jersey	\$71.34	1.1%	16.6%	-60 bps	Harborside Financial Plaza 10
Austin	\$34.80	0.8%	17.0%	-40 bps	Indeed Tower
Denver	\$42.52	0.7%	22.9%	310 bps	200 Clayton Street
Orlando	\$30.62	0.0%	22.1%	170 bps	Wells Fargo Tower
Phoenix	\$24.47	-0.1%	15.6%	-30 bps	Camelback Collective
Bay Area	\$27.68	-0.2%	18.3%	-60 bps	245 Lytton Avenue
	\$53.28	-0.6%	20.8%	260 bps	

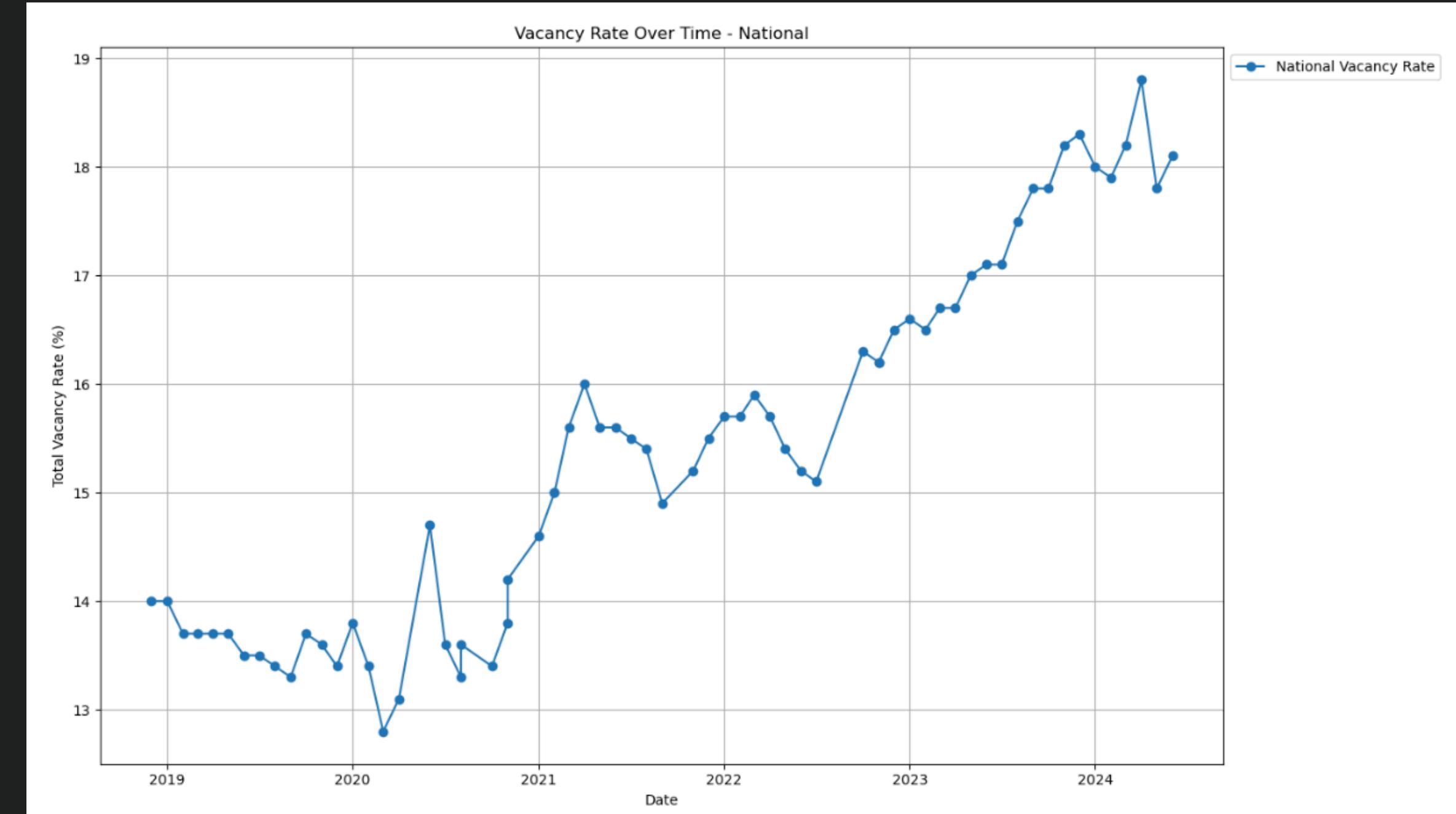
Scraping CRE Data

Solution and Learnings

- Exploit Market Data provided in Monthly Updates by Yardi Matrix (*use their research*)
- Developed Python Code to download ~8 years of monthly pdfs (including CAPTCHA workaround)
- Claude/Anthropic better option to turn PDF charts into Database because Python too rigid

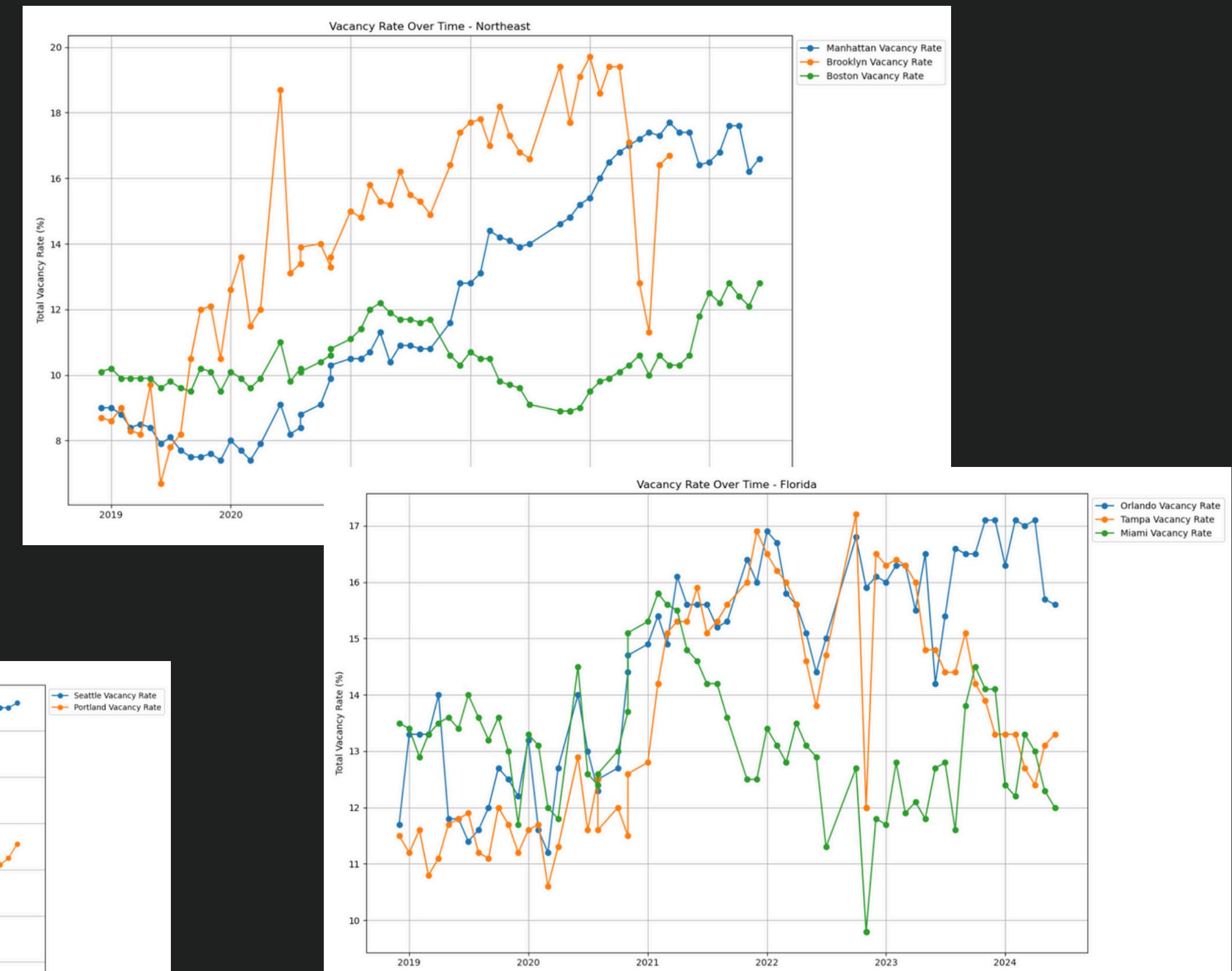


What the Data Shows



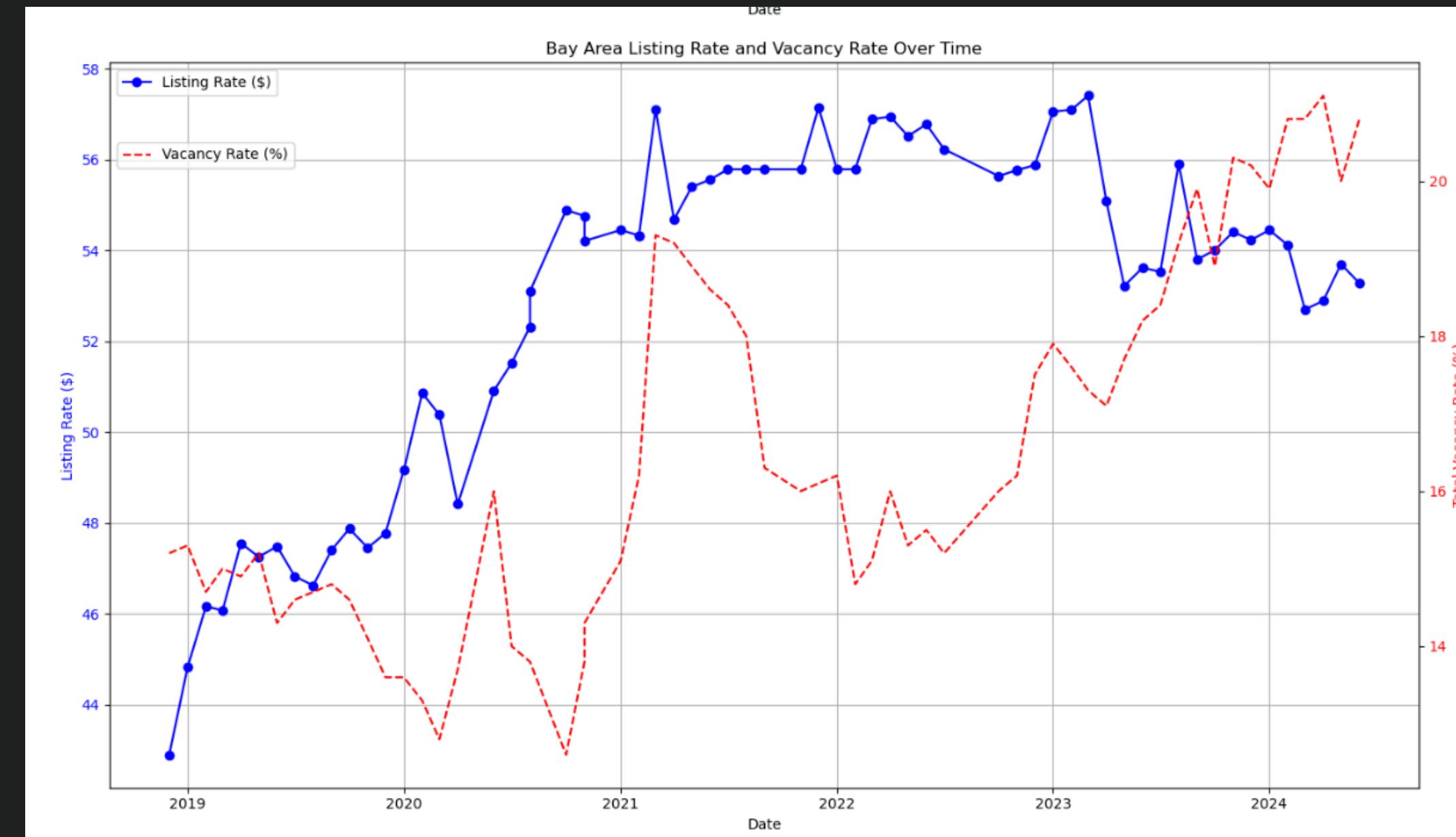


Markets Operate as Regions



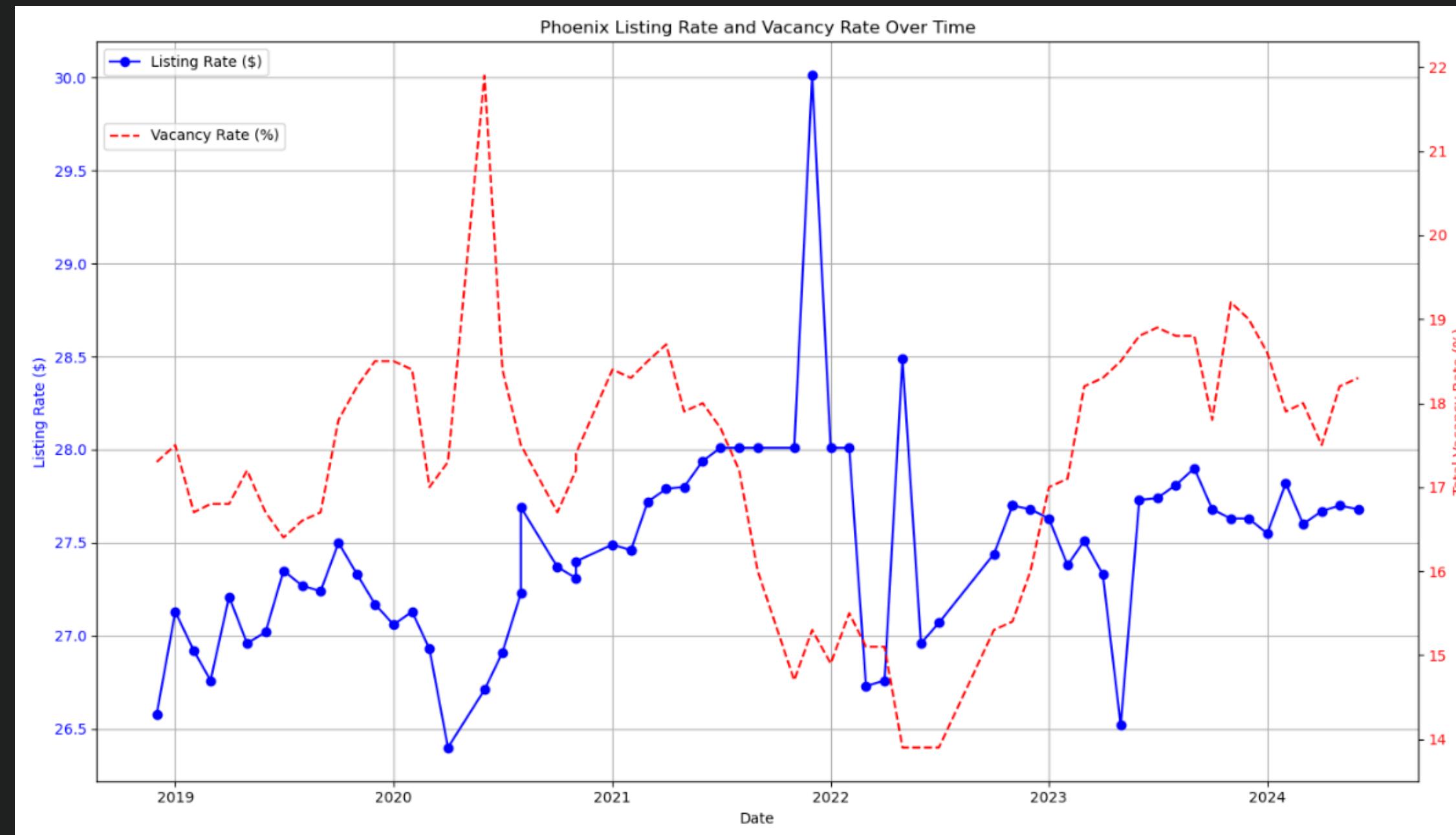


Mostly Negative Correlation with Pricing



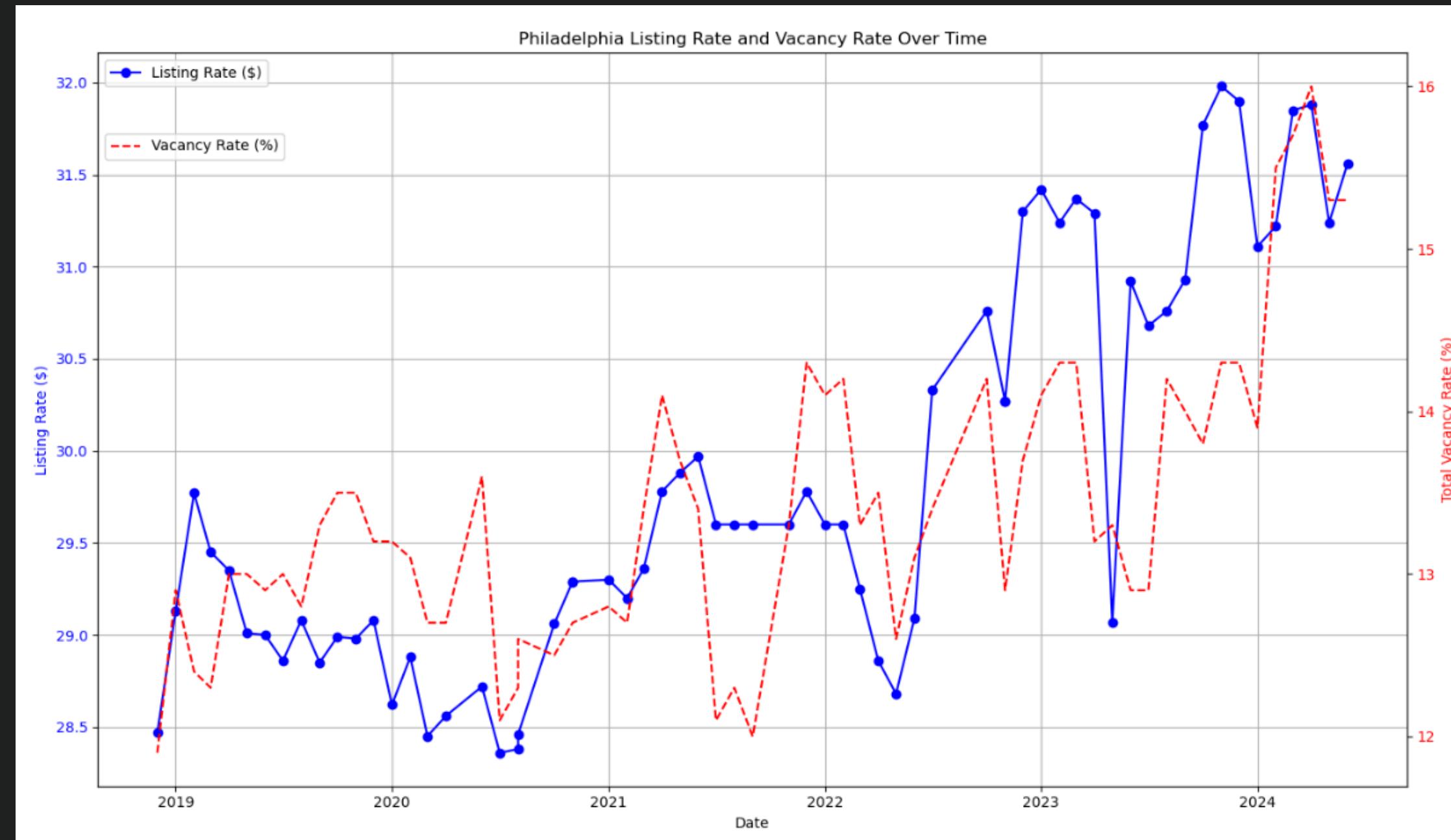


Mostly Negative Correlation with Pricing





but not everywhere . . .





Further Exploration

Confounding Factors

- “Tech Companies” (Bay Area) may have easier time adapting to remote work than traditional businesses
- Population Movements impact vacancy rates (*into Florida, out of San Francisco*)
- Quantity and Quality of CRE Stock



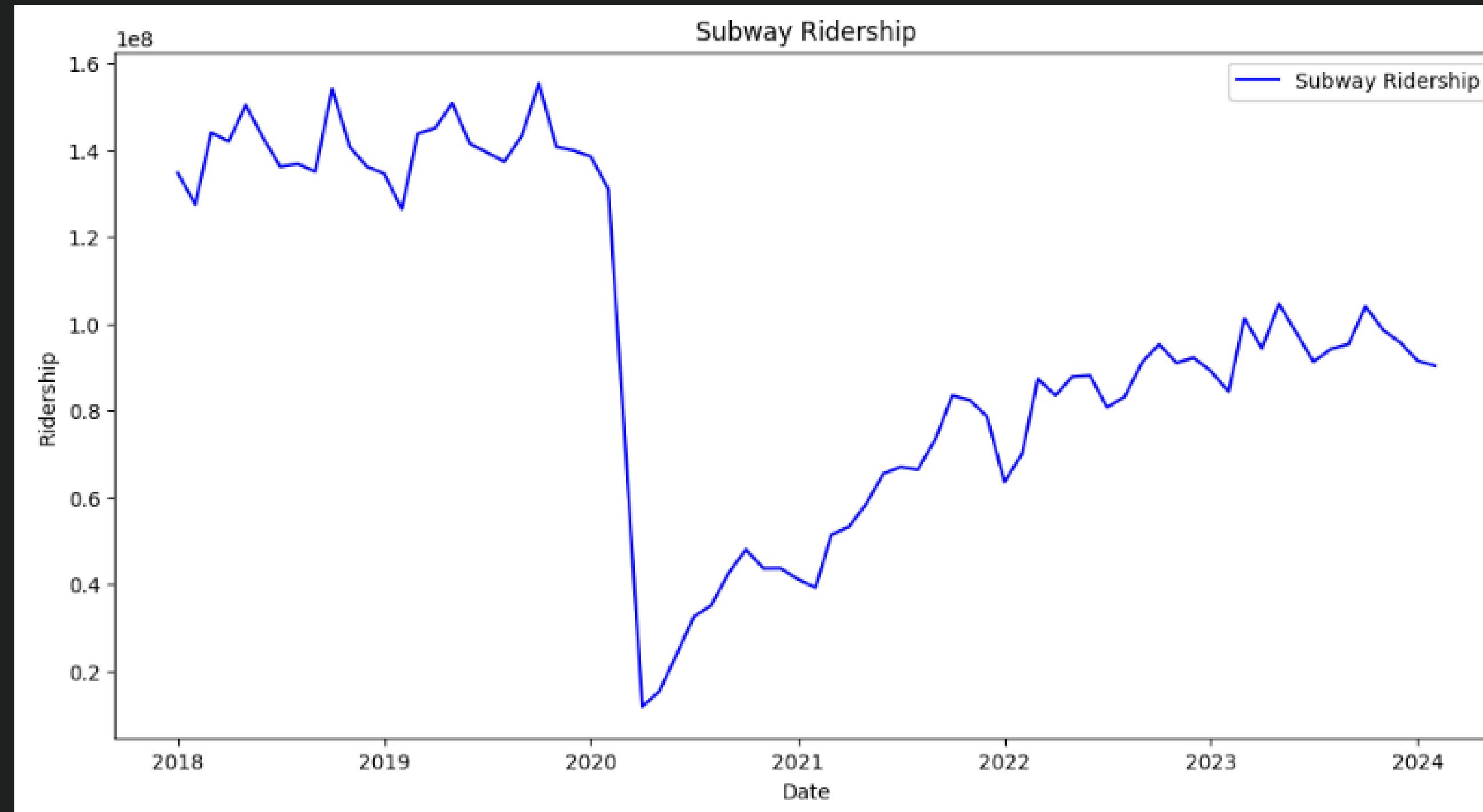
Public Transportation Ridership as a proxy for commuting trends

- Commuting patterns influence local economies, commercial activities, and urban planning
 - Real-time data vs. CRE vacancy rates and prices, which can be locked in for years or even decades
- NYC and San Francisco offered the best opportunity to measure the flow of traffic around a major metro area
- Easy to locate on data.gov - free, reliable data source
 - MTA data via CSV files
 - BART historic data presented challenges, 403 Forbidden error and odd structuring (resolved using Claude image to table feature)
 - both contained comps for pre-pandemic day





Overall Commuting Trend - NYC Subway '18 - '24

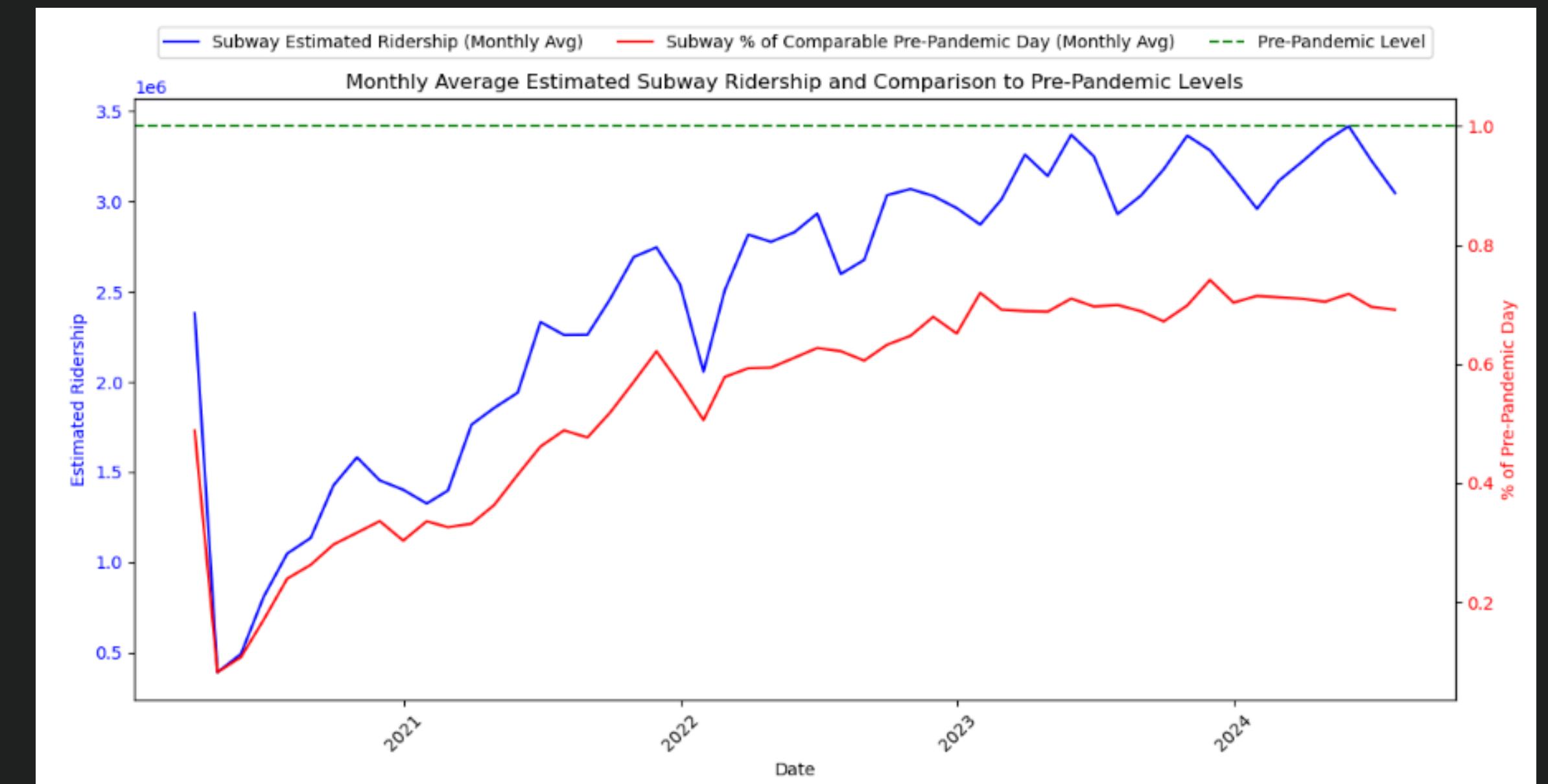


MTA Monthly Subway Ridership (data.gov)



Deep dive into post-COVID levels

Ridership has only recovered to 2/3rds of pre-covid levels...

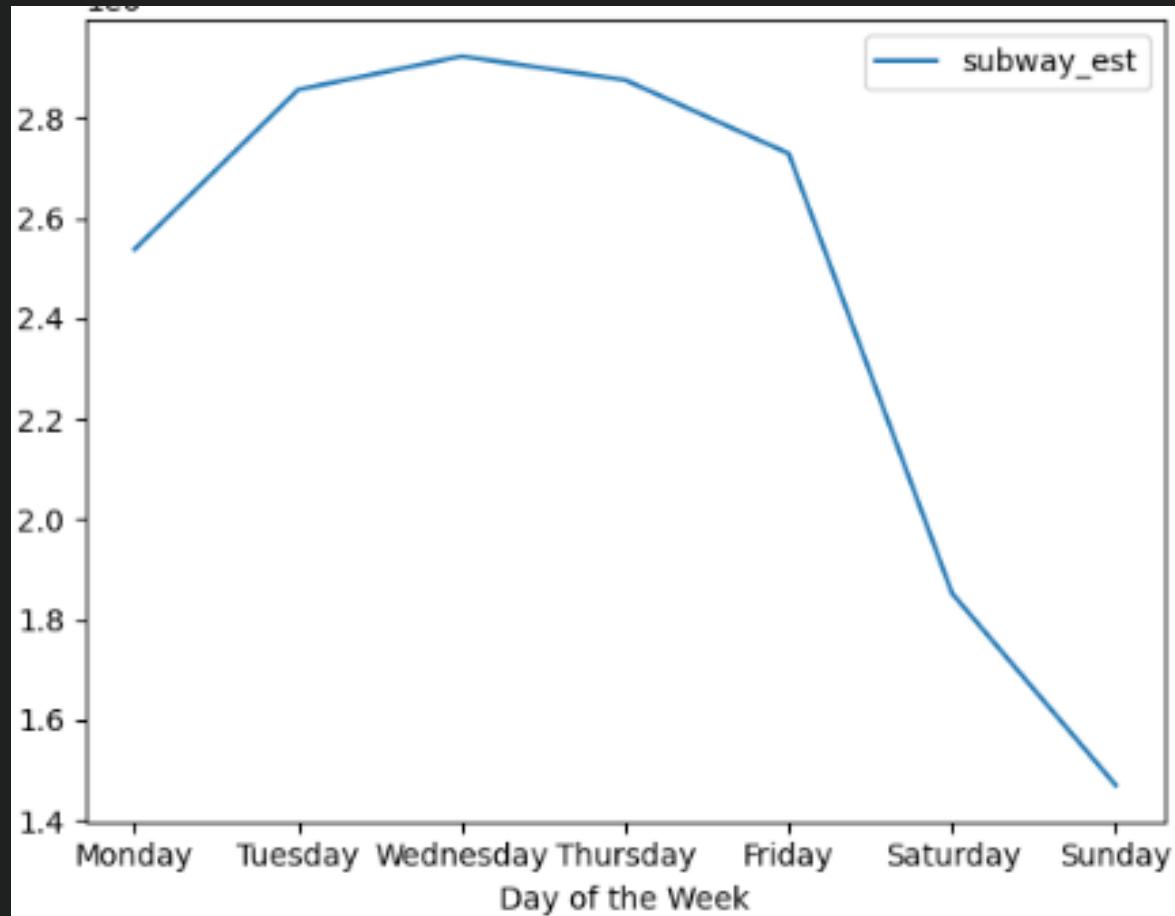


MTA Monthly Subway Ridership (data.gov)

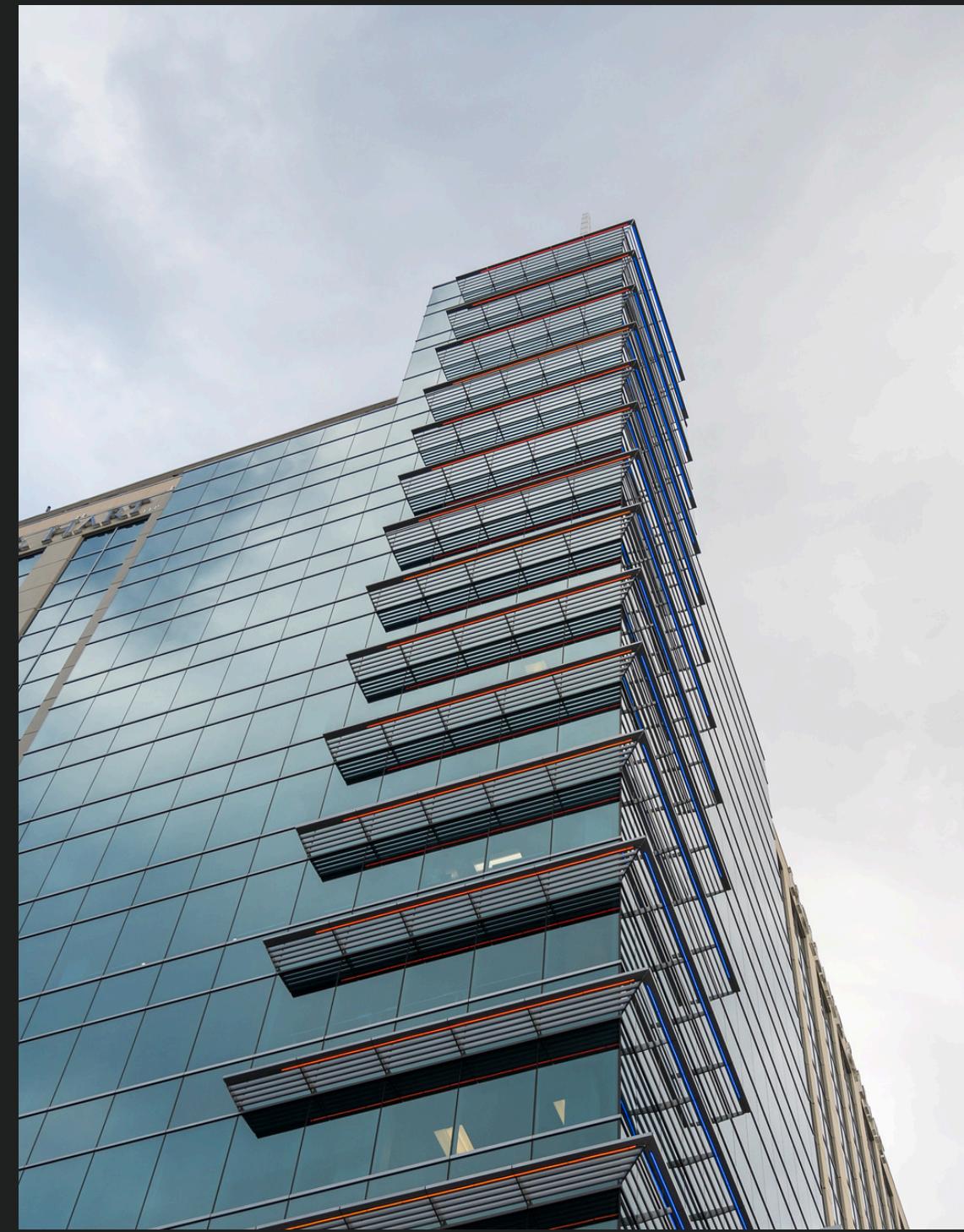
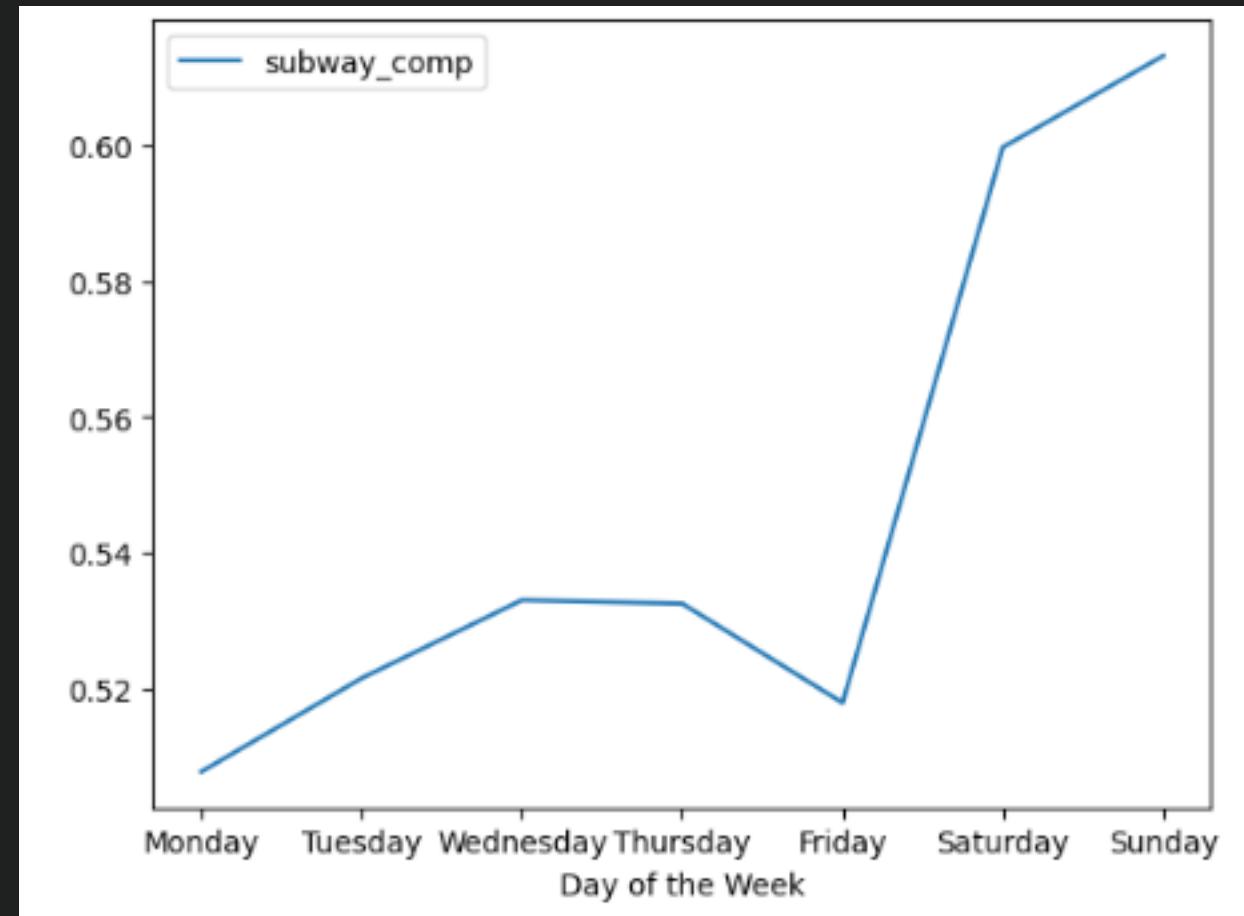


Commuter volume peaks during the week, however, weekends show strongest comps to pre-COVID, indicating non-work trips to the city.

NYC Subway ridership by day of week since March 2020



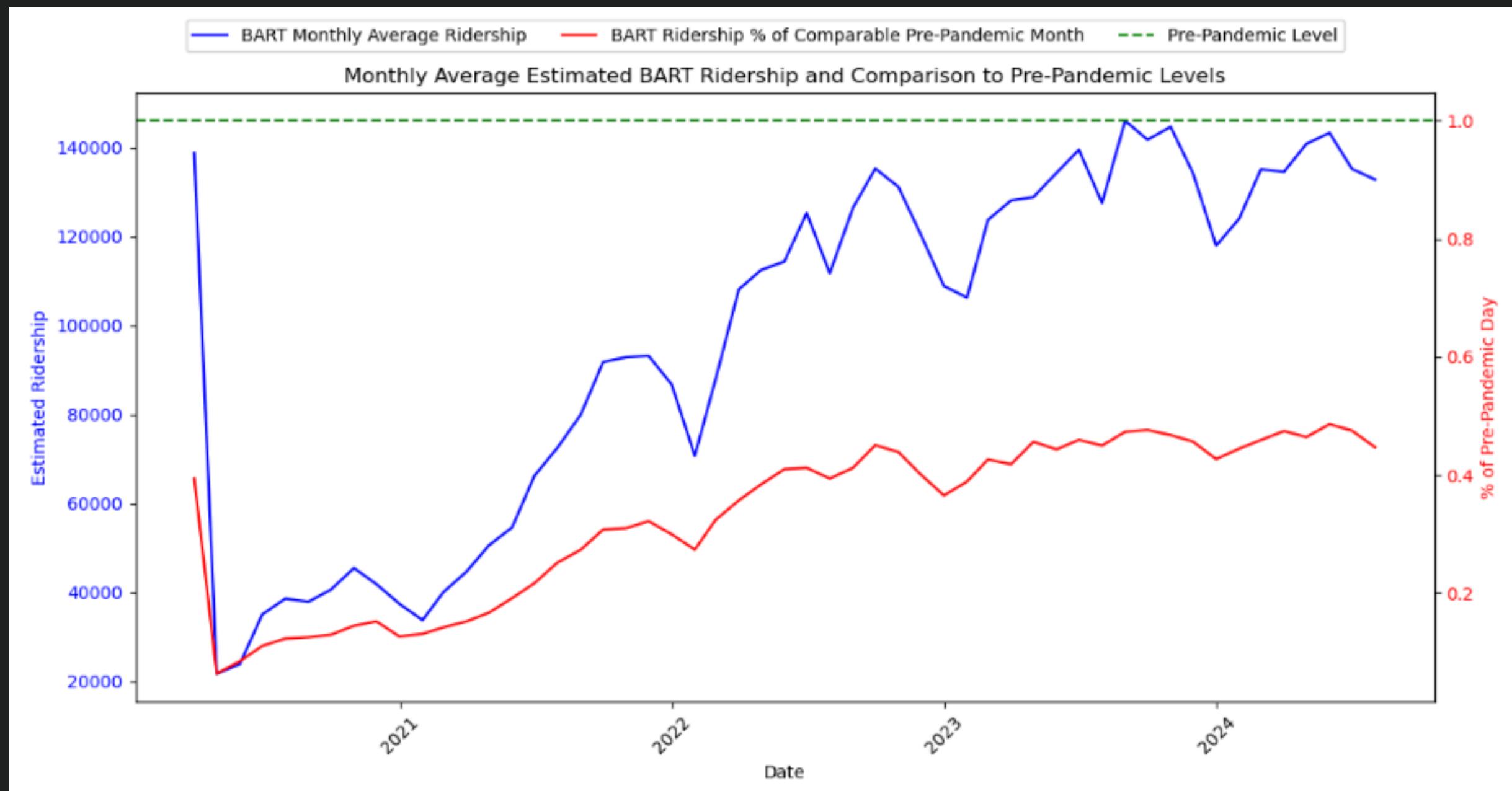
vs. Pre-Pandemic baseline, weekends show most improvement



The MTA bus data echos this trend...



We see the same trend in San Francisco, where commercial vacancy is among the highest in the country

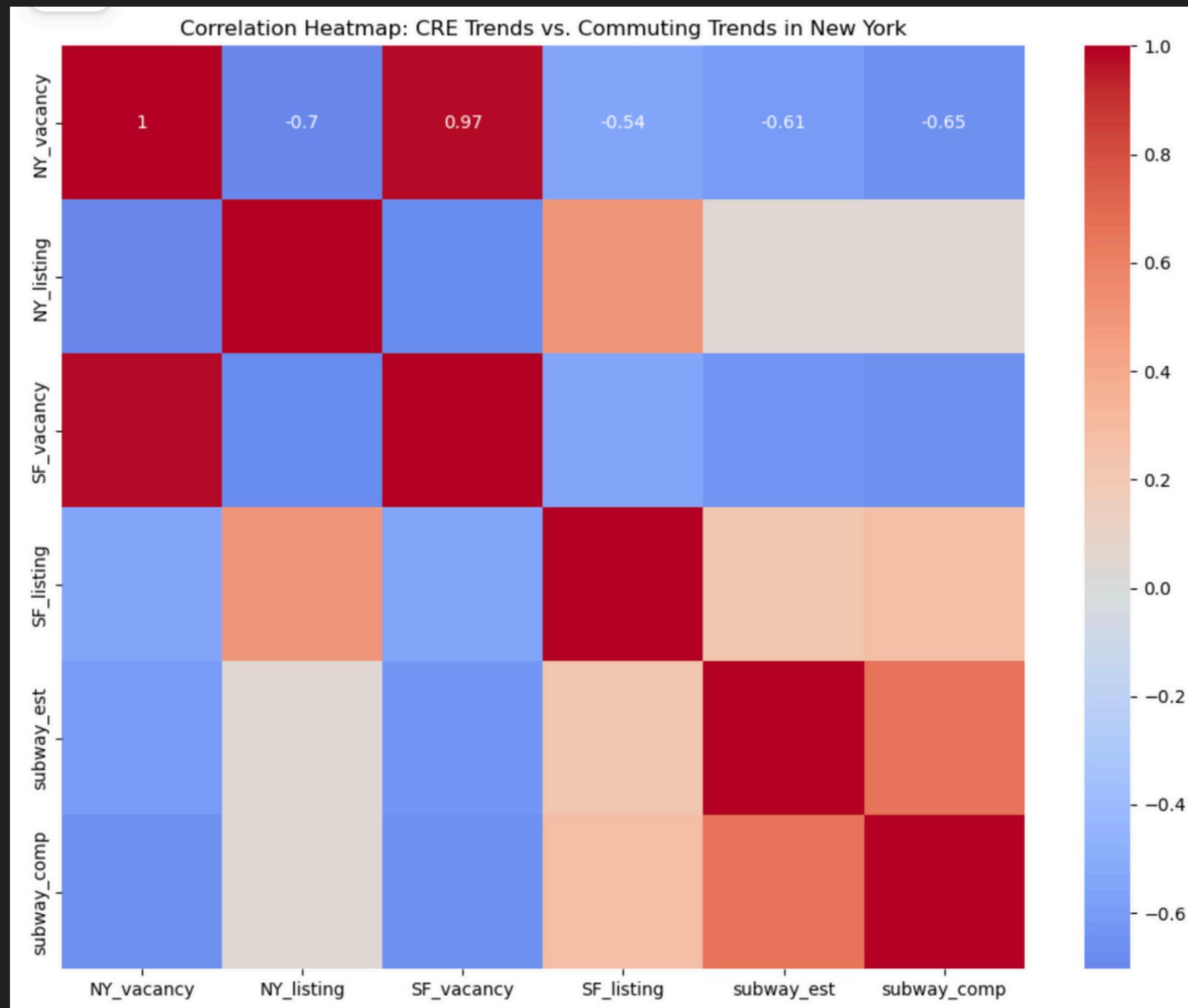


BART SF Daily Ridership (bart.gov)





Correlation Rate between Vacancy, Price & Commuting post-pandemic





Our take...

- Although prices are stagnant, they have not come down as quickly as vacancy rates have increased
- This may be due to the “extend and pretend” policy among banks to keep the CRE market afloat
- Low commuter rates into major metro areas of NYC and SF paint a scary picture for the CRE industry and local business that rely on commuters

THE WALL STREET JOURNAL.
Banks Are Extending Office Loans. Are They Also Pretending?

Many 2023 maturities were pushed into 2024, giving lenders more time for rates to drop and other investors to come in

By [Telis Demos](#) [Follow](#)
April 4, 2024 9:00 am ET

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Pushing out the maturities of commercial real-estate loans can be the right move. PHOTO: AARON



Our Team



Joanne Donohue



Baruch Gottesman



Sal Sonmez



Aaron Swan



Thank You

