

Reef Report

Real Estate & Economic Forecast
United States

February 2025

Executive Summary

Macro Context

- Inflation persists, putting Fed in difficult position
- Unemployment rate continues reversion lower
- Labor market shows further tightening
- A note on tariffs—construction materials face further inflation

Housing Market

- Mortgage costs remain elevated
- Affordability continues to be a non-starter
- Home prices continue lull in Q4

Supply & Construction

- Housing pipeline signal contraction and caution
- Construction spending flat amid inventory surge
- New and existing housing supply continues rise
- Job openings plummet amid shrinking pipeline

Market Risks & Outlook

- Relative overvaluation and FHA leverage risk
- Risk of federal leases on increasing vacancy rates
- CRE delinquencies climb higher



The background features a solid blue gradient with several sets of thin, white, wavy lines. These lines are arranged in a way that creates a sense of depth and movement, with some lines curving upwards and others downwards, resembling stylized waves or flowing ribbons.

Macro Context

Inflation Persists, Putting Fed In Difficult Position

Macro Context

Headline Inflation

- January came in at 3.0%, above the 2.9% expectations.
- Significant rise from September '24, which was 2.4%.
- Inflation is stickier than markets and the Fed would like.
- Nowcasts from the Fed show inflation reverting back to 2.8%, however the market is clearly not as optimistic.

While the Fed does not look at broad headline inflation, this is still a measure we can use to understand the impact to consumers. With inflation remaining resilient, households will continue to feel increased pressure on living costs.



Source: U.S. Bureau of Labor Statistics

Core Inflation

- Core came in at 3.3%, above 3.1% expectations.
- Month-over-month rise of 0.1% vs. 0.1% decline expected.
- Core indicates that even without the volatile food and energy, we are still seeing broad inflation persist.

These measures give us a decent idea of how the Fed's preferred PCE measurements will print, meaning that with inflation running hotter than expected and not improving as desired, it will be difficult for cuts to occur. Furthermore, the market pricing of 10-year Treasuries is likely to remain elevated.



Source: U.S. Bureau of Labor Statistics



Unemployment Rate Continues Reversion Lower

Macro Context

Unemployment Rate

- January unemployment came in at 4.0%.
- Decline from November (4.2%), however still a 50bps rise from January 2024.
- Sahm Rule hasn't been active since October 2024.
- Expected to rise this year, however the magnitude is very uncertain.

There are numerous factors at play that will impact how the measurement of the unemployment rate will translate to experienced reality. For example, the Current Population Survey (CPS) uses both legal and undocumented immigrants in its data collection, meaning that the data used in calculating the unemployment rate is going to undergo some atypical transformation. We will most likely need to dive deeper into the underlying metrics of employment to get the real understanding of the labor market.



Source: U.S. Bureau of Labor Statistics



Labor Market Shows Further Tightening

Macro Context

Job Openings

- Declined to 7.6 million in December.
- Year-over-year, job openings are down 14.5%.
- Tightening job market signals less hiring activity and lower confidence from employers.
- Lower openings makes it harder for those that lose their jobs to find suitable replacement work.

Lower job openings is a precursor to multiple events: people that lose their jobs can't find work, and certainly will be harder to find comparable compensation (i.e., software devs).

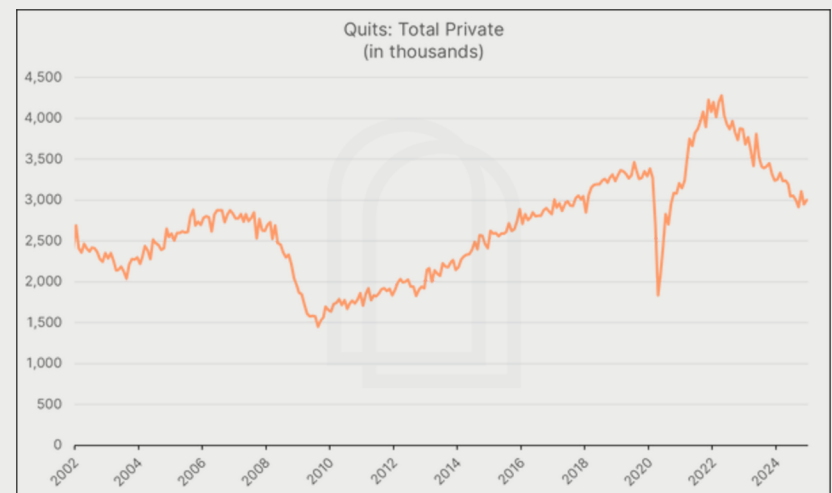


Source: U.S. Bureau of Labor Statistics

Quits

- Declined to 3.0 million in December.
- Year-over-year, quits are down 7.3%.
- Less people quitting is indicative of tighter job market and less movement.

Quits are an important metric to watch since it is indicative of how job holders are experiencing the market. With declining quits, this signals that upward movements from company-to-company are becoming sparser—notable since this is a favorable component of wage growth.



Source: U.S. Bureau of Labor Statistics



A Note on Tariffs

Macro Context

Construction Material	Inflation YoY	Tariff Impact Projection	Cumulative Effect
Aluminum Conduit	+ 12.5%	+ 9 – 11%	+ 21.5 – 23.5%
Lumber	- 6.2%	+ 25 – 30%	+ 18.8 – 23.8%
Steel Deck	+ 11.2%	+ 15 – 18%	+ 26.2 – 29.2%
Structural Steel	+ 1.3%	+ 8 – 10%	+ 9.3 – 11.3%

Sources: ConstructionDive, NAHB, WoodCentral

Tariffs are Expected to Contribute to Increasing Construction Costs

- The steel and aluminum tariffs are expected to add \$17 – 22,000 to new home build costs.
- Commercial and Industrial builds are expected to see a 14 – 18% material cost escalation from steel.

As building becomes more expensive, the market will need to support higher prices for builders to continue increasing supply. Otherwise, their margins will be squeezed, and they will have little incentive to keep filling their pipeline, which we discuss later.





Housing Market

Mortgage Costs Remain Elevated

Housing Market

Mortgage Rates

- Latest average mortgage rates at sitting at 6.95%
- This is about the same as last year and represents an almost 90% rise over the past 5 years.
- Rates are structurally higher, meaning that rate relief is going to be hard to come by in the near future. So much for “date the rate”.

After a year of continued disappointment for those wishing upon the Fed to cut and to see mortgage rates subsequently drop, we now have hit reality where rates are higher, and the 10-year doesn't care what the fed is doing to some degree as the Treasury market is still showing persistent long-end rates.

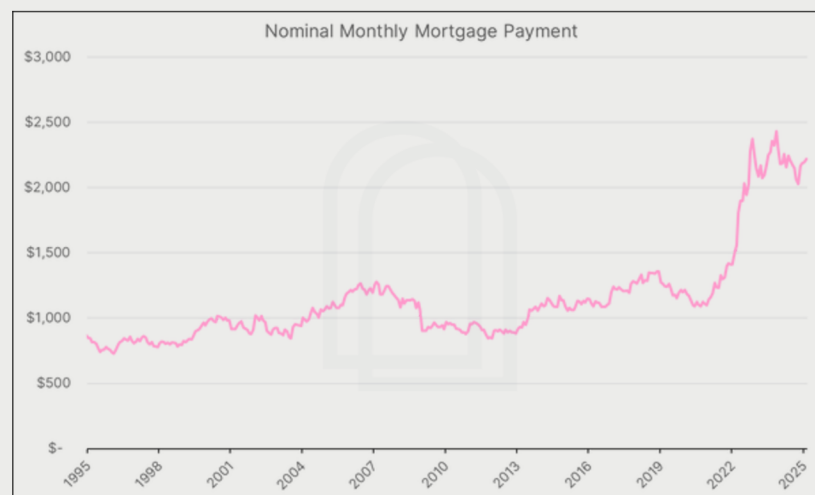
Nominal Monthly Mortgage Payment

- February calculated value at \$2,220 per month.
- Flat year-over-year, however is also up about 90% in the past 5 years.
- The flat YoY figure is due to rates and median home price also showing no change over the last year.

One thing to note with this metric is its relationship to rents. While this is somewhat location-dependent, a broad analysis of metros will likely reveal a trend of oversupply and flat-to-lower rents, as people make this trade-off on a monthly basis.



Source: Freddie Mac



Source: Reef Insights



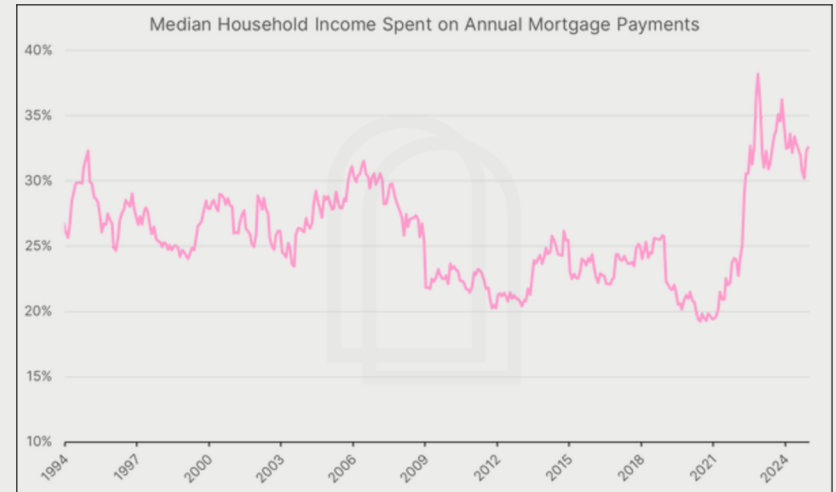
Affordability Continues to be a Non-Starter

Housing Market

Mortgage Payments to Household Income Ratio

- Rose month-over-month to 32.6% of household income.
- Year over year, this has declined; however, over the past five years, the ratio has increased by 51.7%.

Household income has not kept pace with home prices. Furthermore, rising mortgage rates have created an environment where the median household looking to buy a median-priced home would need to spend almost 33% of their pre-tax income on a mortgage, excluding taxes and insurance. See our note on FHA lending on page 19.

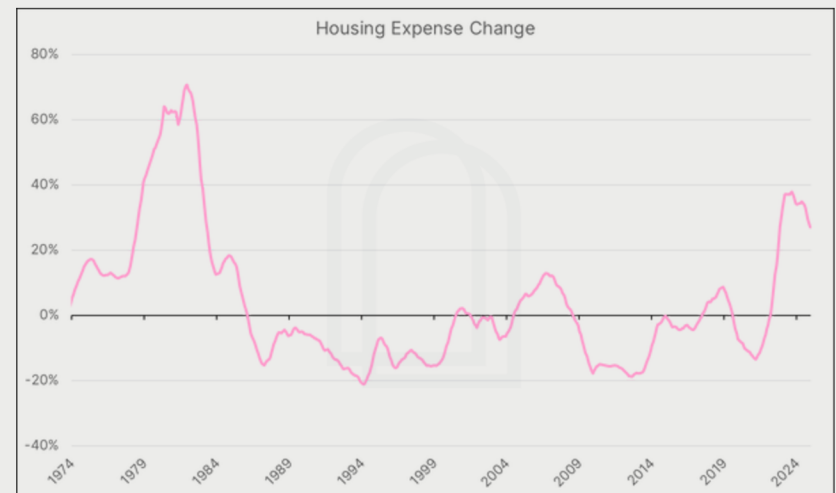


Source: Reef Insights

Housing Expense Change

- Declined slightly from recent spike. However, current levels are similar to the levels seen in the early '80s.
- Current value of 27%.

Housing expense change is a metric we use to illustrate how homebuyers experience changes in the cost of housing. The rate and magnitude of this change are typically greater drivers of behavior, whereas shifts in cost levels tend to normalize over time. Given the elevated levels, it makes sense that we are seeing reluctant buyer behavior in the market.



Source: Reef Insights



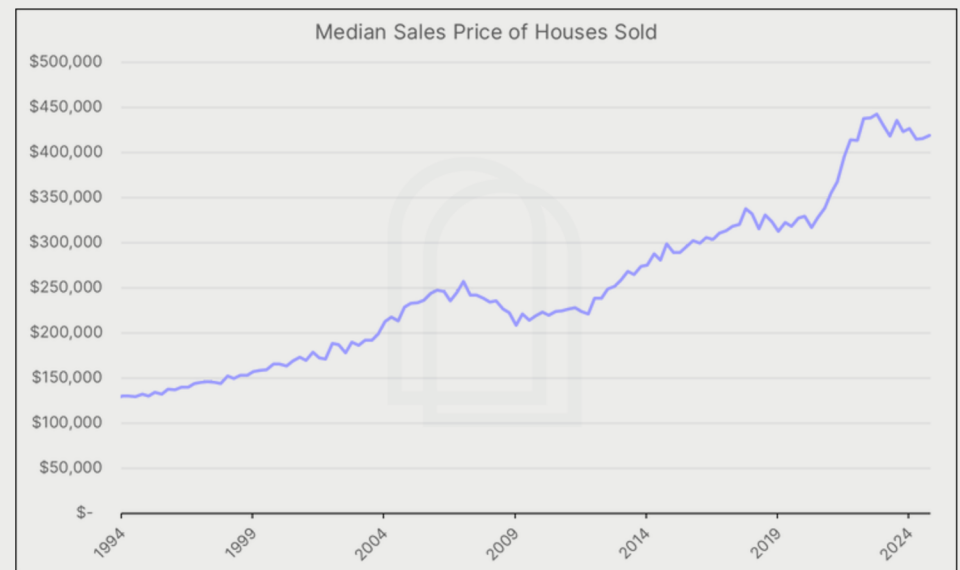
Home Prices Continue Lull in Q4

Housing Market

Median Sales Price of Houses Sold

- Median sales price of \$419,200 in Q4 '24.
- Year-over-year, only a 1% decline.

Some might look back at past corrections, such as the GFC, and point to only a 20% decline in values. This decline coincided with the Fed slashing rates to zero and implementing massive bailouts to counteract the fallout. While similar bailouts could occur in the future, the rate side of the equation remains uncertain. We have already seen that long-duration yields have been somewhat agnostic to the Fed Funds Rate, as volatility and the inflation-debt crisis loom. So, even if the Fed pulls the rate lever, it remains to be seen how the Treasury and subsequent lending markets would react.



Source: U.S. Census Bureau, U.S. Department of Housing and Urban Development



The background of the slide is a dark blue field filled with intricate, white, wavy line patterns. These lines form concentric, flowing shapes that resemble stylized waves or topographical contours, creating a sense of movement and depth. The patterns are most prominent in the corners and along the sides, framing the central text.

Supply & Construction

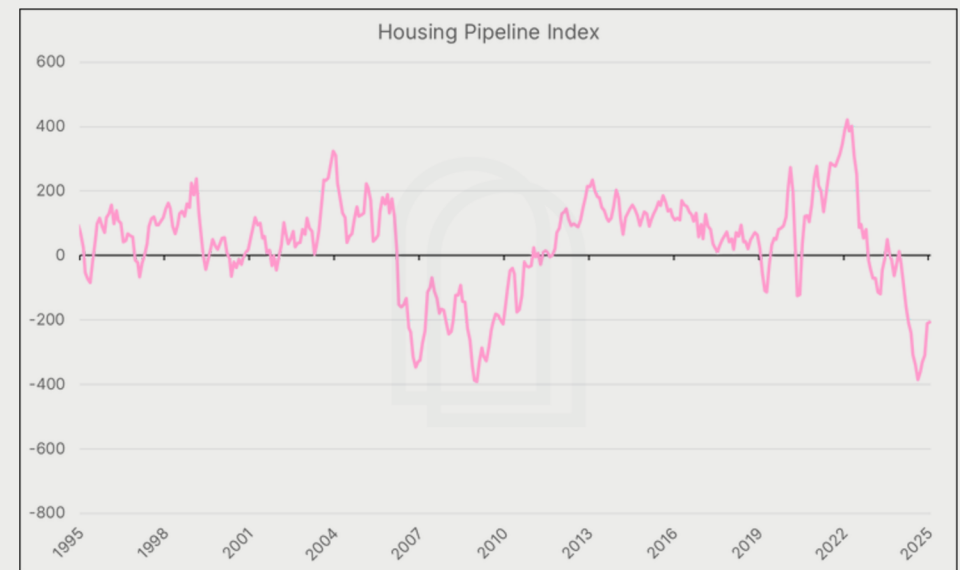
Housing Pipeline Signal Contraction and Caution

Supply & Construction

Housing Pipeline Index

- The January pipeline index value of -207,000 indicates that as completions take place, they are not being balanced by new starts.
- Starts are at 1.37 million while completions are at 1.65 million units.

The housing pipeline index is a simple metric used to track the broader builder cycle. When this metric sustains negative values, it indicates negative sentiment among builders and an unhealthy market for new inventory. Of course, this overlooks the nuances of regional activity differences, but it still paints a bleak picture, with values in the same negative range as those seen during the GFC.



Source: Reef Insights



Construction Spending Flat Amid Inventory Surge

Supply & Construction

Real Residential Construction Spend

- December figures saw a slight increase MoM to 111.
- Over the past year, there was a modest 3.4% increase.
- Over the past 5 years, spending has remained relatively flat when adjusted for construction cost inflation.

As the construction pipeline dwindles and active builds are completed, construction spending will likely trend downward. By adjusting for inflation, we can gauge overall building activity independent of unit type, size, or other factors that may affect other metrics.

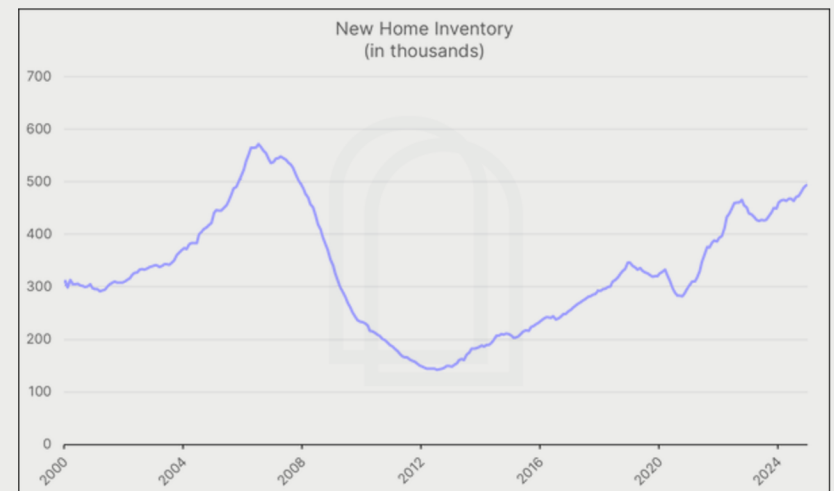


Source: Reef Insights

New Home Inventory

- New home inventory rises to 494,000 units.
- Inventory has increased 10% over the past year.

As affordability continues to remain a challenge for prospective homebuyers, the number of new homes for sale continues to rise. With mortgage rates likely to remain elevated, clearing this build up of inventory will most likely require some significant concessions from homebuilders.



Source: U.S. Census Bureau, U.S. Department of Housing and Urban Development



New and Existing Housing Supply Continues Rise

Supply & Construction

New Housing Supply

- Increased MoM to 9.0 months' supply.
- Still a 8.4% increase over the year and a significant rise from a few years ago.

The months' supply of new housing shows that the increase in new home inventory is also not being met with adequate sales volumes. This level of supply was last seen during the GFC, which saw a wave of supply that was met with plummeting demand.



Source: U.S. Census Bureau, U.S. Department of Housing and Urban Development

Existing Housing Supply

- Month-over-month increase to 3.5 months' supply.
- Year-over-year, we have seen a 16.7% increase.
- 10-year historical average is 3.6 months' supply.

The same trend is occurring in the existing housing supply, although it remains at a lower level. This difference is primarily driven by the supply side, as current homeowners aren't finding offers that make sense to move to amid rate differentials, which impact the size and price range they could afford with the same payment.



Source: National Association of Realtors



Job Openings Plummet Amid Shrinking Pipeline

Supply & Construction

Construction Job Openings

- Job openings continue to plummet to 217,000.
- Year-over-year, construction openings are down 50%.
- Openings are a signal of how builders are viewing the future of the new housing market.

As builders continue to see their inventory climb and rely on buy-downs and incentives to move properties, it is understandable that their pipeline is shrinking and, subsequently, the demand for workers has slowed.

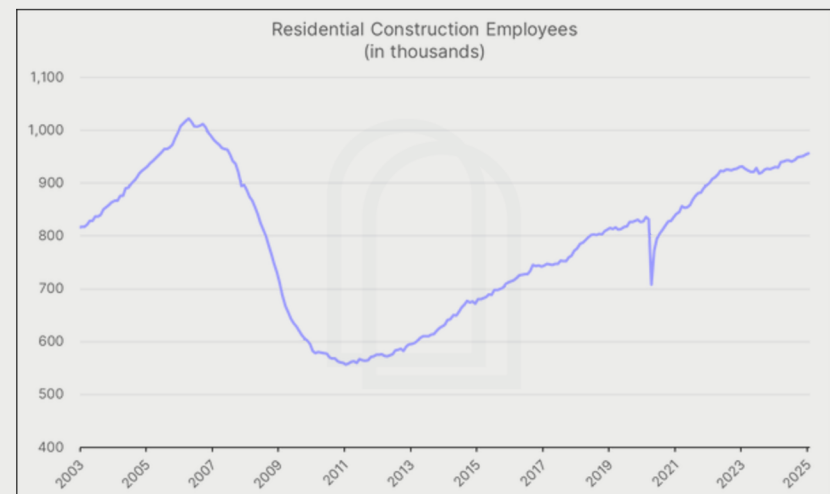


Source: U.S. Bureau of Labor Statistics

Residential Construction Employees

- Despite the decline in openings, employees continue to rise, reaching 956,000 employees in January.
- Increased 2.74% year-over-year.

One thing to consider is how many people have not been counted in this category—individuals who will either need to be replaced or, as openings suggest, will simply not be backfilled over time. This means that construction employment measurements could remain steady while the industry still faces challenges.



Source: U.S. Bureau of Labor Statistics



The background features a dark blue field with intricate, flowing white lines that create a sense of movement and depth. These lines form large, organic shapes that resemble stylized waves or the folds of fabric, with some areas where the lines are more densely packed, creating a textured effect. The overall composition is dynamic and modern.

Market Risks & Outlook

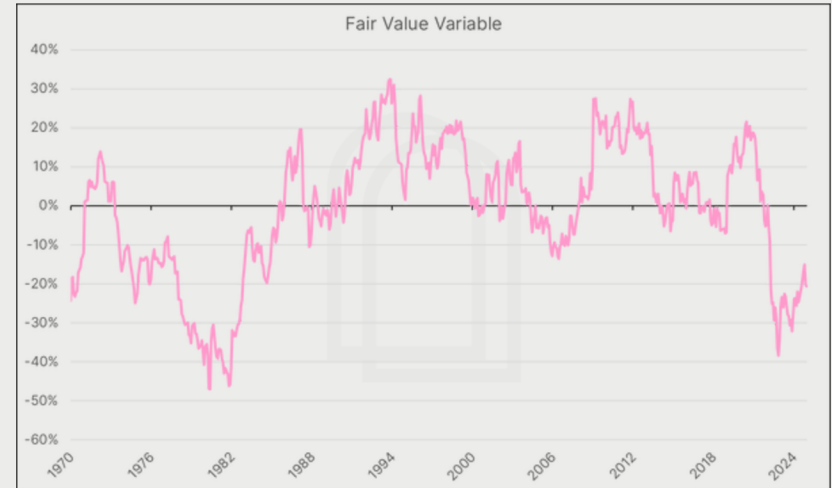
Relative Overvaluation and FHA Leverage Risk

Market Risks & Outlook

Fair Value Variable

- The FVV is a benchmark indicator to show if the residential housing market is under- or overpriced in relation to historical metrics.
- Currently, the FVV is at -20.6%, showing overvaluation.
- While there has been some improvement over the last year, mainly driven by slightly lower prices and rates and wage growth, it is still at a significantly overvalued level.

Given that rate cut expectations have fizzled out and overall fiscal uncertainty continues, affordability improvements will have to come through lower home prices or wage growth.



Source: Reef Insights

Average Debt-to-Income for FHA Mortgages

- The percentage of FHA buyers with DTI ratios above 50% has increased from 6%, in 2000, to 31% today.
- At the peak of GFC, the average DTI ratio for FHA buyers was 41%.
- 7.05% of FHA mortgages issued last year became seriously delinquent, eclipsing levels in the GFC.

Leverage and financial strain on homeowners using FHA mortgages to purchase a home have increased to borderline predatory levels. It is hard to imagine this leading to a sustainable trend, particularly with inflation persisting and taxes and insurance costs rising.



Source: HUD FY 2024 Report



Risk of Federal Leases on Increasing Vacancy Rates

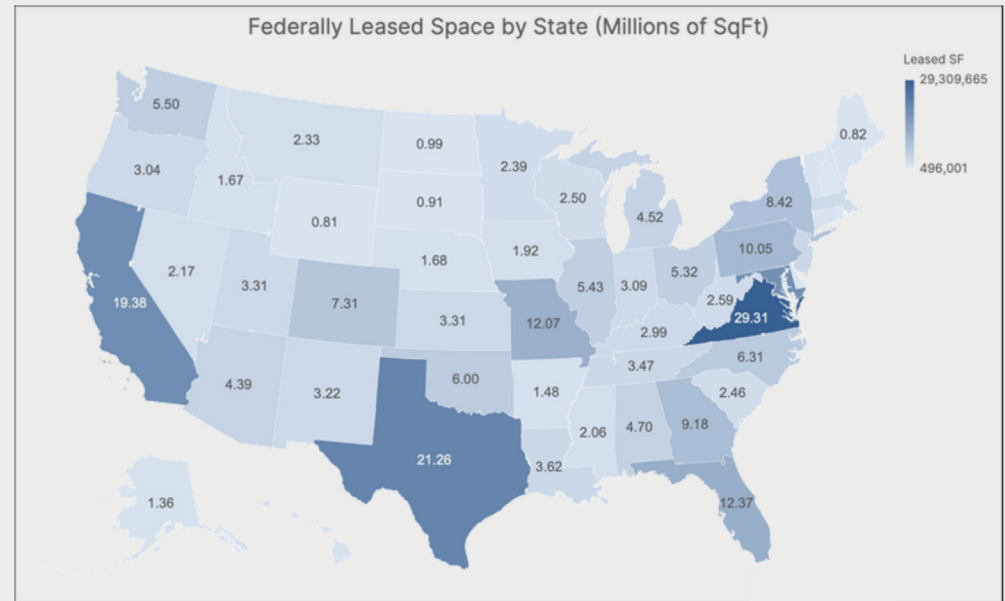
Supply & Construction

A Note on Federal Leases

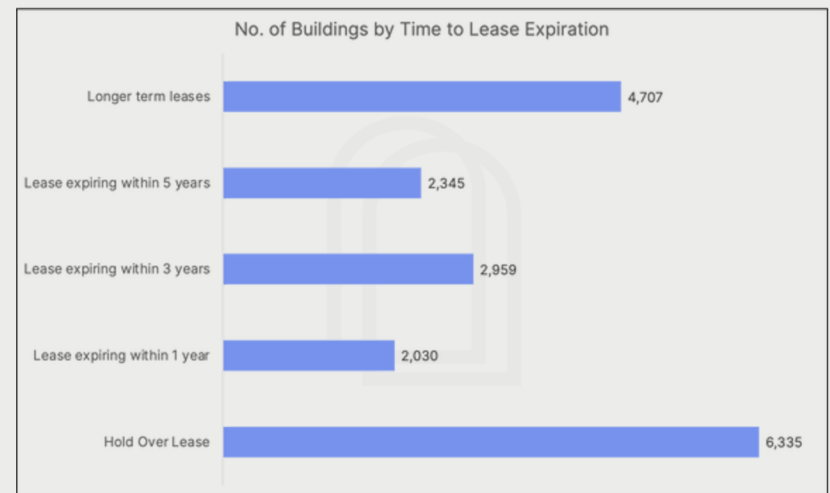
- Virginia, Texas, and California have significant exposure to federal leases.
- Florida, Missouri, and Georgia also have substantial amounts of federally leased square footage.
- 6,335 buildings have leases held over expiration.
- Total leases at risk of not being renewed under this administration is 13,669 buildings.

Whether you are a fan of the administration's efforts and methods to cut waste or not, one thing is for sure—volatility is upon us.

If the agenda of reducing waste—such as empty office buildings and workforce reductions—succeeds, there could be a reckoning for pockets of CRE with a significant amount of space leased to the federal government.



Source: Federal Real Property Profile (FRPP) FY 2023, excludes DoD



Source: Federal Real Property Profile (FRPP) FY 2023, excludes DoD



CRE Delinquencies Climb Higher

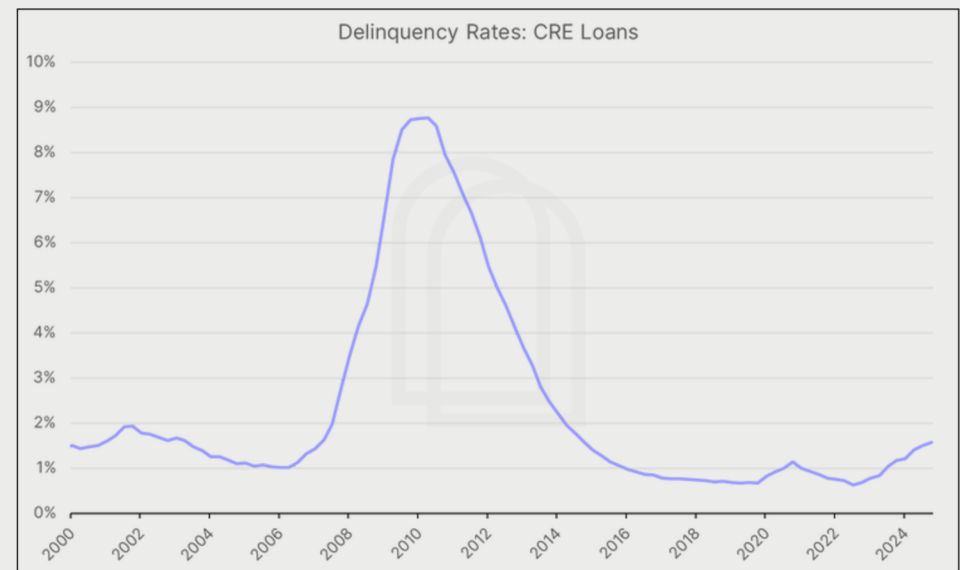
Market Risks & Outlook

CRE Loan Delinquency Rates

- Q4 '24 delinquency rate of 1.57%.
- 34.2% rise year-over-year.
- For banks with less than \$10 billion in assets, CRE loans represent about 38% of their total loan portfolios.
- Many regional banks have CRE exposures exceeding 300% of their equity, with some reaching 600%.
- Across all U.S. banks, CRE loans account for approximately 18% of total bank loans.

While delinquency rates are still relatively low, the rate of increase is a cause for concern. Remember, local and regional banks have disproportionate exposure to commercial real estate, which matters because they may not have the balance sheets or influence that large GSIBs typically have.

With risks across the board—including office space consolidation, comparable buildings selling at steep discounts, federal leasing impacts, and higher rates for the foreseeable future—the outlook isn't great. This week, the news of Microsoft's softening stance on data centers won't sit well either. We will certainly see in real time how much lift a little pretending and a dose of extending can provide to buoy the asset class.



Source: Board of Governors of the Federal Reserve System



Forecasts

No Rate Cuts in 2025

- Uncertainty surrounding tariffs and the impact they will have on the price of goods.
- Persistent inflation above the Fed's 2.00% target rate.
- Unemployment remaining subdued, highlighting the need to focus on inflation rather than labor.

Further Decline in New Housing Starts

- Large build-up in inventory leaves homebuilders struggling to offload supply.
- Demand for new housing remains low due to affordability.
- Affordability improvements will likely not come from lower mortgage rates.
- Starts have already begun to decline relative to completions.

Commercial Real Estate Delinquencies to Rise

- Refinancing will continued to be burdened by heightening mortgage rates.
- Office and multifamily face higher vacancy rates.
- Pretend and extend strategies cannot smooth over every situation.
- Job openings are seeing declines, which showcase a need for less office space.



Data Table

Metric	This Period	Last Period	Year Ago	Latest Release
Housing Starts: Total Units	1,366	1,515	1,376	Jan-25
New Housing Supply	9.00	8.00	8.30	Jan-25
Existing Housing Supply	3.50	3.20	3.00	Jan-25
Nominal Median Sales Price of Houses Sold	\$ 419,200	\$ 415,300	\$ 423,200	Oct-24
New Building Permit Authorizations: Total Units	1,473	1,482	1,508	Jan-25
Case-Shiller Index	323.22	323.69	311.02	Dec-24
Residential Construction Employees	956	954	931	Jan-25
Nominal Mortgage Rates	6.95	6.85	6.63	Feb-25
Delinquency Rates: Single-Family	1.77	1.74	1.70	Oct-24
Delinquency Rates: Commercial	1.57	1.51	1.05	Oct-24
PPI: Residential Construction	325	323	314	Jan-25
Construction Spending: Residential	\$ 952	\$ 938	\$ 897	Dec-24
Housing Inventory: Median Days on Market	73	70	61	Jan-25
Nominal Monthly Mortgage Payment	\$ 2,220	\$ 2,197	\$ 2,187	Feb-25
Real Mortgage Payment Index	588.44	586.04	584.53	Jan-25



Data Table

Metric	This Period	Last Period	Year Ago	Latest Release
Median Household Income Spent on Annual Mortgage Payments	32.58	32.28	34.28	Dec-24
Fair Value Variable	(20.63)	(20.22)	(28.05)	Dec-24
Housing Expense Change	27.01	27.96	34.40	Dec-24
Nominal Median Household Income	\$ 80,610	\$ 74,580	\$ 74,580	2023
Headline Inflation	3.00	2.87	3.11	Jan-25
Core Inflation	3.29	3.21	3.87	Jan-25
Unemployment Rate	4.00	4.10	3.70	Jan-25
Federal Funds Rate	4.33	4.48	5.33	Jan-25
Personal Savings Rate	3.80	4.10	4.40	Dec-24
Jobless Claims	219,000	214,000	200,000	Feb-25
10-Year U.S. Treasury Yield Minus 2-Year U.S. Treasury	(0.34)	(0.26)	(0.92)	Feb-25
Residential Rental Vacancy Rate	6.90	6.90	6.60	Oct-24
Real Residential Construction Spend Index	111.09	109.34	106.48	Dec-24
Household Savings	\$ 1,162	\$ 711	\$ 711	2023
Bank Credit: All Commercial Banks	\$ 18,115	\$ 18,091	\$ 17,441	Feb-25



Data Table

Metric	This Period	Last Period	Year Ago	Latest Release
Delinquency Rates: Credit Card	3.08	3.20	3.10	Oct-24
Gross Domestic Product (GDP)	\$ 29,701	\$ 29,375	\$ 28,297	Oct-24
M2 (Money Supply)	\$ 21,534	\$ 21,448	\$ 20,725	Dec-24
Federal Reserve's Balance Sheet	\$ 6,782	\$ 6,814	\$ 7,582	Feb-25
PCE: Headline Inflation	2.55	2.45	2.70	Dec-24
PCE: Core Inflation	2.79	2.82	3.04	Dec-24
Debt-to-GDP	120.73	120.04	118.59	Jul-24
Real GDP	\$ 23,531	\$ 23,400	\$ 22,961	Oct-24
Trucking Employees	1,522	1,518	1,532	Jan-25
Industrial Production	104	103	101	Jan-25
Credit Card Interest Rates	21.47	21.76	21.47	Nov-24
Charge-Off Rate: Credit Card Loans	4.48	4.37	4.07	Oct-24
Charge-Off Rate: Business Loans	0.50	0.55	0.41	Oct-24
Charge-Off Rate: Commercial Real Estate Loans	0.26	0.23	0.24	Oct-24
Yield Curve	0.17	0.10	(0.44)	Jan-25



Data Table

Metric	This Period	Last Period	Year Ago	Latest Release
Total Assets: Money Market Funds	\$ 6,839,054	\$ 6,548,352	\$ 6,142,962	Jul-24
Federal Government Interest Payments	\$ 1,124	\$ 1,117	\$ 1,031	Oct-24
CPI: Rent in U.S. City Average	430	428	412	Jan-25
Consumer Loans: Credit Card Debt	#N/A	\$ 1,091	\$ 1,049	Feb-25
New Single-Family Home Sales	698	674	654	Dec-24
New Housing Units Completed	1,651	1,534	1,504	Jan-25
Job Openings: Construction	217	272	434	Dec-24
New Homes: Median Square Footage	2,157	2,169	2,199	Oct-24
Median Sales Price of New Houses Sold	\$ 427,000	\$ 402,500	\$ 418,300	Dec-24
Job Openings: Total Nonfarm	7,600	8,156	8,889	Dec-24
Housing Inventory: Active Listing Count	829,376	871,519	665,603	Jan-25
New Home Inventory	494	488	449	Dec-24
Quits: Total Private	3,001	2,947	3,237	Dec-24



Sources

Metric	Frequency	Sources	Notes
Housing Starts: Total Units	Monthly	U.S. Census Bureau, U.S. Department of Housing and Urban Development	As provided by the Census, start occurs when excavation begins for the footings or foundation of a building. All housing units in a multifamily building are defined as being started when this excavation begins. Beginning with data for September 1992, estimates of housing starts include units in structures being totally rebuilt on an existing foundation.
New Housing Supply	Monthly	U.S. Census Bureau, U.S. Department of Housing and Urban Development	The months' supply is the ratio of new houses for sale to new houses sold. This statistic provides an indication of the size of the new for-sale inventory in relation to the number of new houses currently being sold. The months' supply indicates how long the current new for-sale inventory would last given the current sales rate if no additional new houses were built.
Existing Housing Supply	Monthly	National Association of Realtors	The National Association of Realtors monthly housing indicators are based on a representative sample of local boards and multiple listing services. Sales volume, inventory, and price levels for existing homes are measured for the US in aggregate and by census region. Existing homes, unlike new homes, are homes that are owned and occupied before coming onto the market. Inventory indicates the number of properties marked as "active" on the market or those pending sales. When a seller lists a property, it becomes counted as inventory.
Nominal Median Sales Price of Houses Sold	Quarterly	U.S. Census Bureau, U.S. Department of Housing and Urban Development	The purpose of the Survey of Construction (SOC) is to provide national and regional statistics on starts and completions of new single-family and multifamily housing units and statistics on sales of new single-family houses in the United States. The United States Code, Title 13, authorizes this survey and provides for voluntary responses. The Department of Housing and Urban Development partially funds this survey. The SOC also provides statistics on characteristics of new privately-owned residential structures in the United States. Data included are various characteristics of new single-family houses completed, new multifamily housing completed, new single-family houses sold, and new contractor-built houses started.
New Building Permit Authorizations: Total Units	Monthly	U.S. Census Bureau, U.S. Department of Housing and Urban Development	Starting with the 2005-02-16 release, the series reflects an increase in the universe of permit-issuing places from 19,000 to 20,000 places.
Case-Shiller Index	Monthly	S&P Dow Jones Indices LLC	The S&P CoreLogic Case-Shiller Home Price Indices measure the price level of existing single-family homes in the U.S.
Residential Construction Employees	Monthly	U.S. Bureau of Labor Statistics	Construction employees in the construction sector include: Working supervisors, qualified craft workers, mechanics, apprentices, helpers, laborers, and so forth, engaged in new work, alterations, demolition, repair, maintenance, and the like, whether working at the site of construction or in shops or yards at jobs (such as precutting and preassembling) ordinarily performed by members of the construction trades.



Sources

Metric	Frequency	Sources	Notes
Nominal Mortgage Rates	Weekly	Freddie Mac	On November 17, 2022, Freddie Mac changed the methodology of the Primary Mortgage Market Survey® (PMMS®). The weekly mortgage rate is now based on applications submitted to Freddie Mac from lenders across the country. For more information regarding Freddie Mac's enhancement, see their research note.
Delinquency Rates: Single-Family	Quarterly	Board of Governors of the Federal Reserve System	The charge-off rates are annualized and are calculated net of recoveries. Delinquent loans and leases encompass those that are past due by thirty days or more and are still accruing interest, as well as those in nonaccrual status. This comprehensive approach provides insight into the financial health and performance metrics of these major banks, considering both charge-offs and delinquencies in their loan portfolios.
Delinquency Rates: Commercial Real Estate	Quarterly	Board of Governors of the Federal Reserve System	The charge-off rates are annualized and are calculated net of recoveries. Delinquent loans and leases encompass those that are past due by thirty days or more and are still accruing interest, as well as those in nonaccrual status. This comprehensive approach provides insight into the financial health and performance metrics of these major banks, considering both charge-offs and delinquencies in their loan portfolios.
PPI: Residential Construction	Monthly	U.S. Bureau of Labor Statistics	The Producer Price Index (PPI) program measures the average change over time in the selling prices received by domestic producers for their output. The prices included in the PPI are from the first commercial transaction for many products and some services.
Construction Spending: Residential	Monthly	U.S. Census Bureau	Construction work done each month on new structures or improvements to existing structures for private and public sectors (in 50 states and the District of Columbia).
Housing Inventory: Median Days on Market	Monthly	Realtor.com	With the release of its September 2022 housing trends report, Realtor.com® incorporated a new and improved methodology for capturing and reporting housing inventory trends and metrics. The new methodology updates and improves the calculation of time on market and improves handling of duplicate listings. Most areas across the country will see minor changes with a smaller handful of areas seeing larger updates. As a result of these changes, the data released since October 2022 will not be directly.
Nominal Monthly Mortgage Payment	Monthly	Reef Insights LLC	The nominal monthly mortgage payment is determined based on the current prevailing mortgage rate and the median sales price of houses sold. Our calculations are grounded in the following assumptions: a 20 percent down payment, a 30-year maturity period, and a fixed interest rate.
Real Mortgage Payment Index	Monthly	Reef Insights LLC	The real mortgage payment index is calculated by dividing the nominal monthly mortgage payment by the prevailing CPI index value.
Median Household Income Spent on Annual Mortgage Payments	Monthly	Reef Insights LLC	To determine the median household income spent on annual mortgage payments, we have annualized the prevailing nominal monthly mortgage payment and divided that payment by the prior years' median household income.



Sources

Metric	Frequency	Sources	Notes
Fair Value Variable	Monthly	Reef Insights LLC	The analysis incorporates three distinct rolling averages signifying the percentage of median household income allocated to annual mortgage payments. These averages span 5 years, 10 years, and 15 years, respectively. In the determination of a 'fair value' premium or discount for each period, the established averages are divided by the prevailing percentage of median household income dedicated to annual mortgage payments. The resultant values are subsequently averaged to ascertain a premium or discount, which is applicable to the prevailing median sales price of houses sold.
Housing Expense Change	Monthly	Reef Insights LLC	The computed values have been obtained through the division of the rolling 1-year average for the percentage of median household income allocated to annual mortgage payments by the rolling 10-year average.
Nominal Median Household Income	Annually	U.S. Census Bureau	The median divides the income distribution into two equal parts: one-half of the cases falling below the median income and one-half above the median. For households and families, the median income is based on the distribution of the total number of households and families including those with no income. The median income for individuals is based on individuals 15 years old and over with income. Median income for households, families, and individuals is computed on the basis of a standard distribution.
CPI: Headline Inflation	Monthly	U.S. Bureau of Labor Statistics	The CPIs are based on prices for food, clothing, shelter, and fuels; transportation fares; service fees (e.g., water and sewer service); and sales taxes. Prices are collected monthly from about 4,000 housing units and approximately 26,000 retail establishments across 87 urban areas. To calculate the index, price changes are averaged with weights representing their importance in the spending of the particular group. The index measures price changes (as a percent change) from a predetermined reference date. In addition to the original unadjusted index distributed, the Bureau of Labor Statistics also releases a seasonally adjusted index. The unadjusted series reflects all factors that may influence a change in prices. However, it can be very useful to look at the seasonally adjusted CPI, which removes the effects of seasonal changes, such as weather, school year, production cycles, and holidays.
CPI: Core Inflation	Monthly	U.S. Bureau of Labor Statistics	The "Consumer Price Index for All Urban Consumers: All Items Less Food & Energy" is an aggregate of prices paid by urban consumers for a typical basket of goods, excluding food and energy. This measurement, known as "Core CPI," is widely used by economists because food and energy have very volatile prices.
Unemployment Rate	Monthly	U.S. Bureau of Labor Statistics	The unemployment rate represents the number of unemployed as a percentage of the labor force. Labor force data are restricted to people 16 years of age and older, who currently reside in 1 of the 50 states or the District of Columbia, who do not reside in institutions (e.g., penal and mental facilities, homes for the aged), and who are not on active duty in the Armed Forces.



Sources

Metric	Frequency	Sources	Notes
Federal Funds Rate	Monthly	Board of Governors of the Federal Reserve System	The federal funds market consists of domestic unsecured borrowings in U.S. dollars by depository institutions from other depository institutions and certain other entities, primarily government-sponsored enterprises.
Personal Savings Rate	Monthly	U.S. Bureau of Economic Analysis	Personal saving as a percentage of disposable personal income (DPI), frequently referred to as "the personal saving rate," is calculated as the ratio of personal saving to DPI. Personal saving is equal to personal income less personal outlays and personal taxes; it may generally be viewed as the portion of personal income that is used either to provide funds to capital markets or to invest in real assets such as residences.
Jobless Claims	Weekly	U.S. Employment and Training Administration	An initial claim is a claim filed by an unemployed individual after a separation from an employer. The claim requests a determination of basic eligibility for the Unemployment Insurance program.
10-Year U.S. Treasury Yield Minus 2-Year U.S. Treasury	Weekly	Board of Governors of the Federal Reserve System	This particular yield curve is derived by subtracting the 10-year U.S. Treasury by the 2-Year U.S. Treasury.
Residential Rental Vacancy Rate	Quarterly	U.S. Census Bureau	The rental vacancy rate is the proportion of the rental inventory that is vacant for rent.
Real Residential Construction Spend Index	Monthly	Reef Insights LLC	This index is constructed by dividing the Total Construction Spending: Residential by the CPI: Residential Construction.
Household Savings	Annually	U.S. Bureau of Economic Analysis	To calculate the amount of household savings, the BEA starts with personal income, and then subtracts from that personal taxes to derive disposable personal income. Then, personal outlays are subtracted from disposable income. This results in an estimate of household savings.
Bank Credit: All Commercial Banks	Weekly	Board of Governors of the Federal Reserve System	The H.8 release provides an estimated weekly aggregate balance sheet for all commercial banks in the United States. The release also includes separate balance sheet aggregations for several bank groups: domestically chartered commercial banks; large domestically chartered commercial banks; small domestically chartered commercial banks; and foreign-related institutions in the United States
Delinquency Rates: Credit Card	Quarterly	Board of Governors of the Federal Reserve System	For more information, check out the Charge-Off and Delinquency Rates on Loans and Leases at Commercial Banks release.
Gross Domestic Product (GDP)	Quarterly	U.S. Bureau of Economic Analysis	Gross domestic product (GDP), the featured measure of U.S. output, is the market value of the goods and services produced by labor and property located in the United States.
M2 (Money Supply)	Monthly	Board of Governors of the Federal Reserve System	Beginning May 2020, M2 consists of M1 plus (1) small-denomination time deposits (time deposits in amounts of less than \$100,000) less IRA and Keogh balances at depository institutions; and (2) balances in retail MMFs less IRA and Keogh balances at MMFs. Seasonally adjusted M2 is constructed by summing savings deposits (before May 2020), small-denomination time deposits, and retail MMFs, each seasonally adjusted separately, and adding this result to seasonally adjusted M1.
Federal Reserve's Balance Sheet	Weekly	Board of Governors of the Federal Reserve System	For more information, check out the H.4.1 release.



Sources

Metric	Frequency	Sources	Notes
PCE: Headline Inflation	Monthly	U.S. Bureau of Economic Analysis	Table 9.1U - Comparison of the PCE Price Index with the CPI reconciles the changes in the personal consumption expenditures (PCE) chain-type price index, prepared by the Bureau of Economic Analysis (BEA), with changes in the consumer price index for all urban consumers (CPI), prepared by the Bureau of Labor Statistics (BLS).
PCE: Core Inflation	Monthly	U.S. Bureau of Economic Analysis	Table 9.1U - Comparison of the PCE Price Index with the CPI reconciles the changes in the personal consumption expenditures (PCE) chain-type price index, prepared by the Bureau of Economic Analysis (BEA), with changes in the consumer price index for all urban consumers (CPI), prepared by the Bureau of Labor Statistics (BLS).
Debt-to-GDP	Quarterly	U.S. Office of Management and Budget	Federal Debt: Total Public Debt as Percent of Gross Domestic Product (GFDEGDQ188S) was first constructed by the Federal Reserve Bank of St. Louis in October 2012.
Real GDP	Quarterly	U.S. Bureau of Economic Analysis	Real gross domestic product is the inflation adjusted value of the goods and services produced by labor and property located in the United States.
Trucking Employees	Monthly	U.S. Bureau of Labor Statistics	Each month, CES surveys approximately 119,000 businesses and government agencies, representing approximately 629,000 individual worksites.
Industrial Production	Monthly	Board of Governors of the Federal Reserve System	The industrial production (IP) index measures the real output of all relevant establishments located in the United States, regardless of their ownership, but not those located in U.S. territories.
Credit Card Interest Rates	Monthly	Board of Governors of the Federal Reserve System	This release is generally issued on the fifth business day of each month.
Charge-Off Rate: Credit Card Loans	Quarterly	Board of Governors of the Federal Reserve System	The 100 largest banks are measured by consolidated foreign and domestic assets. Charge-offs are the value of loans and leases removed from the books and charged against loss reserves. Charge-off rates are annualized, net of recoveries. Delinquent loans and leases are those past due thirty days or more and still accruing interest as well as those in nonaccrual status.
Charge-Off Rate: Business Loans	Quarterly	Board of Governors of the Federal Reserve System	The 100 largest banks are measured by consolidated foreign and domestic assets. Charge-offs are the value of loans and leases removed from the books and charged against loss reserves. Charge-off rates are annualized, net of recoveries. Delinquent loans and leases are those past due thirty days or more and still accruing interest as well as those in nonaccrual status.
Charge-Off Rate: Commercial Real Estate Loans	Quarterly	Board of Governors of the Federal Reserve System	The 100 largest banks are measured by consolidated foreign and domestic assets. Charge-offs are the value of loans and leases removed from the books and charged against loss reserves. Charge-off rates are annualized, net of recoveries. Delinquent loans and leases are those past due thirty days or more and still accruing interest as well as those in nonaccrual status.



Sources

Metric	Frequency	Sources	Notes
Yield Curve	Daily	Federal Reserve Bank of St. Louis	Starting with the update on June 21, 2019, the Treasury bond data used in calculating interest rate spreads is obtained directly from the U.S. Treasury Department. Series is calculated as the spread between 10-Year Treasury Constant Maturity (BC_10YEAR) and 2-Year Treasury Constant Maturity (BC_2YEAR). Both underlying series are published at the U.S. Treasury Department.
Total Assets: Money Market Funds	Quarterly	Board of Governors of the Federal Reserve System	For more information about the Flow of Funds tables, see the Financial Accounts Guide.
Federal Government Interest Payments	Quarterly	U.S. Bureau of Economic Analysis	For more information about this series, please see http://www.bea.gov/national/ .
CPI: Rent in U.S. City Average	Monthly	U.S. Bureau of Labor Statistics	The Consumer Price Index (CPI) is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services. Indexes are available for the U.S. and various geographic areas. Average price data for select utility, automotive fuel, and food items are also available.
Consumer Loans: Credit Card Debt	Monthly	Board of Governors of the Federal Reserve System	For further information, please refer to the Board of Governors of the Federal Reserve System's H.8 release.
New Single-Family Home Sales	Monthly	U.S. Census Bureau	For further further information, please refer to the New Residential Sales report that is published by the U.S. Census Bureau.
Hew Housing Unit Completed	Monthly	U.S. Census Bureau	This metric's official title is New Privately-Owned Housing Units Completed: Total Units, and further information can be found on the New Residential Construction report that is published by the U.S. Census Bureau.
Job Openings: Construction	Monthly	U.S. Bureau of Labor Statistics	This data can be found in the Job Openings and Labor Turnover Survey report that is published by the U.S. Bureau of Labor Statistics.
New Homes: Median Square Footage	Quarterly	U.S. Census Bureau, U.S. Department of Housing and Urban Development	For further information, please refer to the Quarterly Starts and Completions by Purpose of Design release.
Median Sales Price of New Houses Sold	Monthly	U.S. Census Bureau	For further further information, please refer to the New Residential Sales report that is published by the U.S. Census Bureau.
Job Openings: Total Nonfarm	Monthly	U.S. Bureau of Labor Statistics	Total Nonfarm Job Openings are a measure of all jobs that are not filled on the last business day of the month. A job is considered open if a specific position exists and there is work available for it, the job can be started within 30 days, and there is active recruiting for the position.
Housing Inventory: Active Listing Count	Monthly	Realtor.com	The count of active single-family and condo/townhome listings for a given market during the specified month (excludes pending listings).
New Homes For Sale	Monthly	U.S. Census Bureau, U.S. Department of Housing and Urban Development	For further information, please refer to the New Residential Sales release.
Quits: Total Private	Monthly	U.S. Bureau of Labor Statistics	For further information, please refer to the Job Openings and Labor Turnover Survey release.



About

Changing the Future Requires Understanding the Present.

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We also send out a daily newsletter called, Reef Daily, which provides a quick summary of notable real estate transactions across the country and highlighting any notable events in real estate and economics.

The Team

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