



REEF REPORT

REAL ESTATE & ECONOMIC FORECAST

UNITED STATES

SUMMARY

Labor Market Trends:

The unemployment rate rose to 4.1 percent in June 2024, up from 4.0 percent in May, marking the third consecutive month of increase. This trend suggests a continuing shift in labor market dynamics, although the rate remains historically low.

Housing Market Indicators:

The housing market shows mixed signals. Building permit authorizations increased month-over-month to 1,446,000 in June, slightly above the 10-year historical average, but declined 3.2 percent year-over-year. Housing starts increased to 1,353,000 but remain 4.4 percent lower than the previous year. The supply of new housing rose to 9.3 months, a 34.8 percent year-over-year increase, indicating growing inventory. Residential construction employment grew by 2.4 percent year-over-year to 952,000 in June. Mortgage rates dropped to 6.86 percent in July but remain 2.2 percent higher than the previous year, continuing to suppress housing demand.

Affordability Concerns:

Housing affordability remains a significant issue. The percentage of median household income spent on annual mortgage payments increased to 36.7 percent in July, up 8.4 percent year-over-year, and has surged by 70.6 percent over the past five years. The Fair Value Variable suggests a potential overvaluation of 30.1 percent relative to historical income trends.

Inflation and Consumer Trends:

Inflation pressures continue to moderate. Headline CPI inflation decreased to 2.98 percent in June, while core CPI inflation stood at 3.28 percent. The CPI for average rent in U.S. cities increased by 5.1 percent year-over-year, outpacing overall inflation.

Economic Indicators:

The yield curve remains inverted, with the spread between 10-year and 2-year Treasury yields at -0.43 percent in June, marking the longest period of inversion on record. However, as of mid-July, the spread has decreased to -0.26 percent, approaching normalization. The Federal Funds Rate has remained unchanged since August 2023, with market expectations of a potential rate cut in September 2024.

KEY DEVELOPMENTS

The July Reef Report highlights three key developments: the continued rise in unemployment, a potential shift in the yield curve, and the growing supply of new housing. These factors collectively point to evolving economic conditions and changing dynamics in the housing market that could have significant implications for the broader economy.

I Unemployment Rate

The U.S. unemployment rate rose to 4.1 percent in June 2024, up from 4.0 percent in May, marking the third consecutive month of increase. This trend suggests a potential slowdown in the labor market, despite the rate remaining historically low. As the economy continues to navigate post-pandemic challenges and adapt to changing market conditions, this persistent rise in unemployment warrants close attention.

II Yield Curve

While the yield curve remains inverted, with the spread between 10-year and 2-year Treasury yields at -0.43 percent in June, there are signs of potential normalization. As of mid-July, the spread has decreased to -0.26 percent, approaching positive territory. This shift could signal changing investor expectations about future economic conditions and monetary policy, potentially impacting various sectors of the economy.

III Housing Supply

The supply of new housing, measured in months, increased to 9.3 months in May, representing a significant 34.8 percent rise compared to the same time last year. This growing inventory indicates a potential mismatch between supply and demand in the housing market, which could have implications for home prices and construction activity. The increase in supply, coupled with affordability concerns and elevated mortgage rates, presents a complex landscape for the housing market in the coming months.

FORECAST

On Rate Cuts...

In our last report, along with previous forecasts, we projected that there would be no rate cut from the Federal Reserve in Q3 of this year. Yes, that includes September. After having reviewed the latest unemployment and CPI data, we are now taking a more nuanced approach to the September meeting.

Starting with June unemployment data, this came in higher, 4.1 percent, than we expected. Given this accelerated timeline, we believe this will be a significant source of concern for the Fed, as the labor market has been, in their eyes, relatively strong this year, until this point. The second data point that has led to our revision is the recent CPI release. While CPI isn't the Fed's preferred measurement, it still is indicative of where PCE data will come in. Cooling inflation is most likely also going to build confidence at the Fed that a rate cut can be done sooner, maybe even in September. These data points increase the probability of the Fed cutting rates in September.

However, there are other factors at play that provide arguments for the Fed not cutting rates in September. First, PPI Final Demand came in way hotter than expected. This leads to two things when in tandem with falling CPI. Firstly, companies' profit margins are getting squeezed as the cost to produce increases and selling power weakens. Secondly, companies will try to regain that lost margin, which if successful, could lead to stickier consumer inflation from here. The second point is that if the Fed starts to cut in September, it could be seen as politically motivated, which we know Jerome Powell does not want to portray. These points decrease the probability of the Fed cutting rates in September.

This leads to our revised forecast on Fed rate cuts. We are assigning a 40 percent probability of a rate cut in September, heavily dependent on July data and any August data and expectations leading into the meeting. If the data accelerates in the wrong direction via an accelerating unemployment rate or stickier consumer inflation, this probability could shift dramatically. Looking at Q4, we think a November rate cut is more likely at 80 percent, and a December cut is highly probable.

FORECAST

Treasury Spread Turns Positive

The yield curve, specifically the spread between the 10-year and 2-year U.S. Treasury yields, has been inverted since July 2022, marking the longest period of inversion on record. We forecast that this inversion will cease by the end of 2024.

During periods when the yield curve has been inverted, the cessation of the inversion often coincides with a reduction in the Federal Funds rate. If a rate cut occurs towards the end of the year, this would likely lower the short-duration end of the yield curve, thereby reducing the spread between the two aforementioned yields. Additionally, if a rate cut does not occur, we still believe that the expectation of a rate cut or expectation of a recession would increase demand of short-term yields at current levels, which would also reduce the spread. We do not believe a likely scenario exists where the yield curve remains inverted by the end of the year.

If this forecast comes to fruition, it would be notable because, historically, this often coincides with a recessionary period. There has been debate as to whether this will happen this time around, and economists do not agree on the degree of the yield curve's significance.

As for our opinion, we believe that a recessionary period is more likely than not. The dismissal of economic indicators while they are signaling is prominent throughout history, and these instances of dismissal are often met with reluctant acceptance when the signal proves its validity. With unemployment rising and the spread between the 10-year and 2-year U.S. Treasury trending towards being positive, we believe that these indicators are signaling a strong case for an upcoming recessionary period.



YIELD CURVE: 10Y - 2Y TREASURY RATE



Source: Federal Reserve Bank of St. Louis

YIELD CURVE: 10Y - 2Y TREASURY RATE

The yield curve, specifically the spread between the 10-year and 2-year U.S. Treasury yields, has been inverted since July 2022, marking the longest period of inversion on record. This persistent negative spread has historically been considered a reliable predictor of recessions, having been observed in the lead-up to nearly all recessions since 1955, with only one false signal during that period.

In June, the yield curve saw a month-over-month increase, with the spread between the 10-year and 2-year Treasury yields standing at -0.43 percent. On a year-over-year basis, the yield curve has decreased by 51.6 percent. However, since June, the yield curve has been approaching the territory of normalcy. As of July 18th, the spread has decreased to -0.26 percent.

The inversion of the yield curve occurs when short-term interest rates exceed long-term rates, suggesting that investors anticipate economic weakness and potential interest rate cuts in the future. This market signal has traditionally been viewed as a harbinger of economic downturns, as it reflects a shift in investor sentiment and expectations.

However, there has been growing debate among market experts regarding the yield curve's predictive power in the current economic environment. A recent Reuters poll conducted in March revealed that nearly two-thirds of surveyed bond market strategists believe that the yield curve's ability to forecast recessions may not be as strong as it once was.

Despite this divergence in opinions, the prolonged inversion of the yield curve warrants close attention. The negative spread between the 10-year and 2-year Treasury yields indicates that investors are pricing in the possibility of a future economic slowdown, even as other economic indicators may present mixed signals.

HOUSING SUPPLY



The supply of new housing is measured in months by comparing the number of new houses available for sale to those actually sold. In May, the supply increased to 9.3 months, indicating that if no new houses were added, it would take 9.3 months to sell all the available houses at the current sales pace. This is a month-over-month increase, and compared to the same time last year, there has been a 34.8 percent rise in the months' supply of new housing.

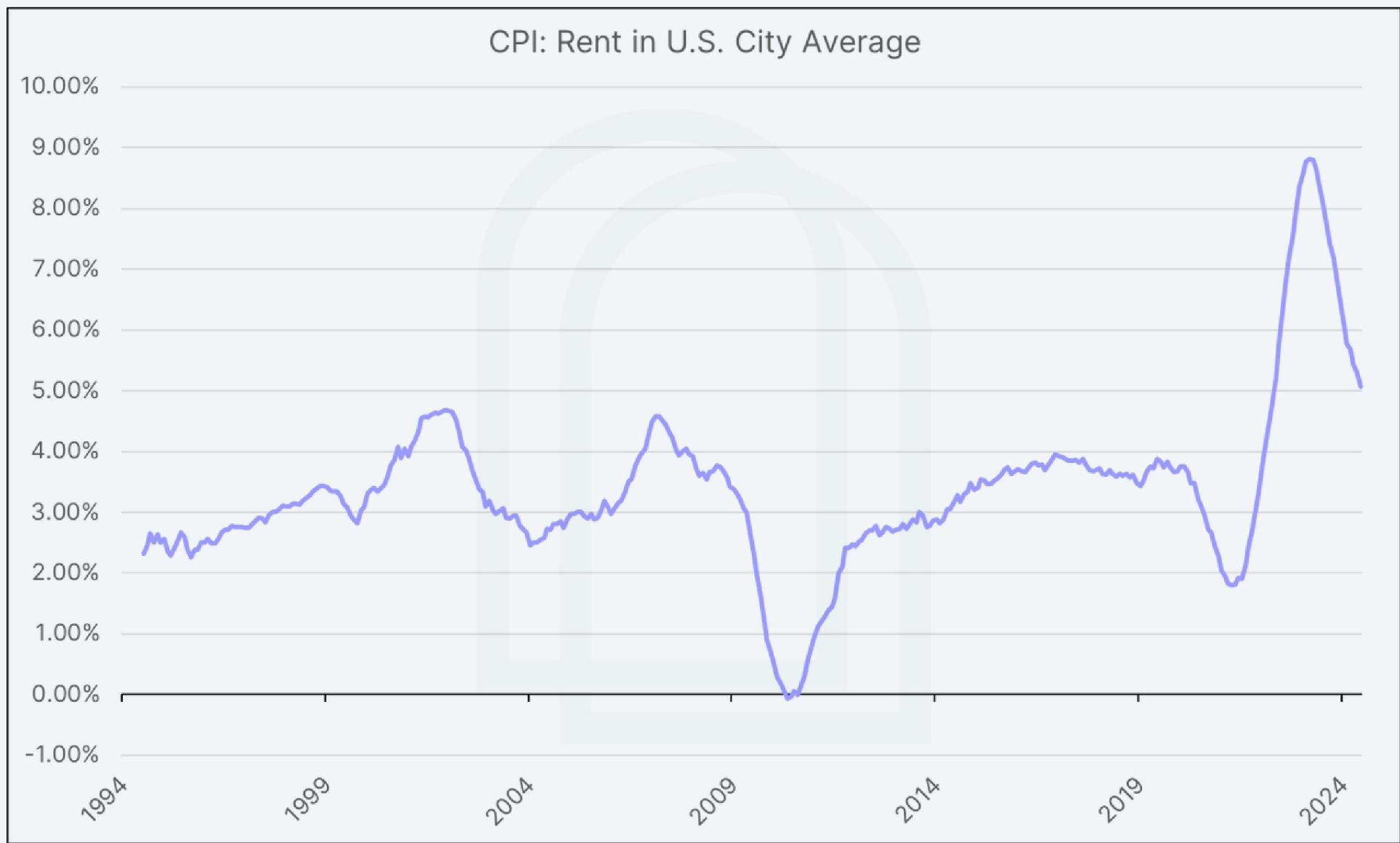
Although new housing is an important part of the overall housing market, it only makes up about 10 percent of total home sales.



The supply of existing housing is measured in months by comparing the number of existing homes available for sale to those that have been sold. In May, the supply increased to 3.7 months, meaning it would take 3.7 months to sell all the available homes at the current sales pace if no new homes were added.

This is an increase compared to the previous month. Compared to the same time last year, there has been a 19.4 percent rise in the months' supply of existing housing. Existing homes make up about 90 percent of the total housing market. The current supply of 3.7 months matches the 10-year historical average.

CPI: RENT IN U.S. CITY AVERAGE



Source: U.S. Bureau of Labor Statistics

CPI: RENT IN U.S. CITY AVERAGE

In May, the Consumer Price Index (CPI) for average rent in U.S. cities increased to 418.8. This marks a month-over-month rise. Compared to last year, the CPI for average rent is up by 5.1 percent. Over the past decade, the average annual increase in the CPI for rent has been 4.2 percent, which is still well below the current level.

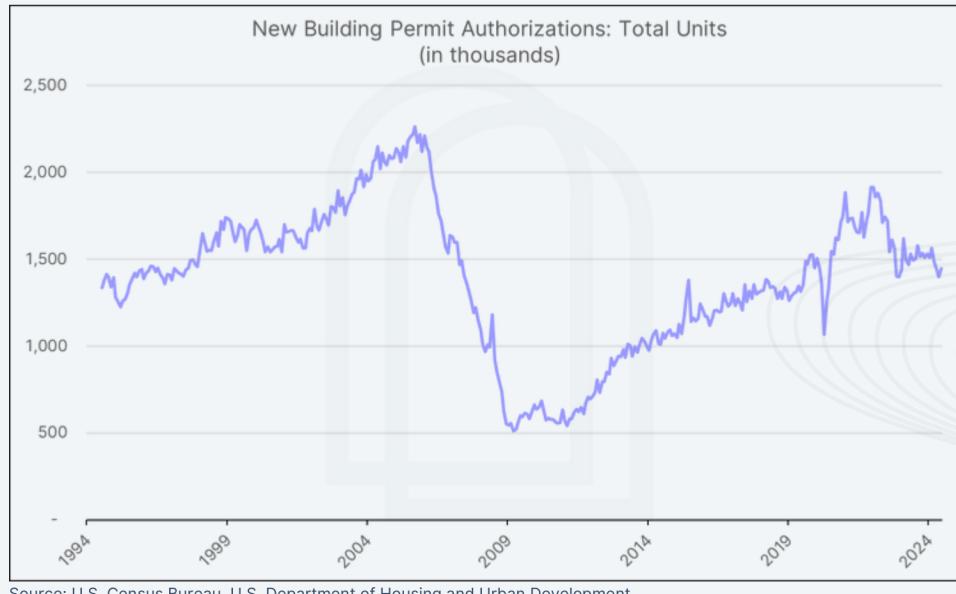
President Joe Biden unveiled a proposal to implement rent controls, aiming to reduce housing costs amid voter concerns over inflation and high home prices. The plan would withdraw tax credits from landlords who raise rents by more than 5 percent annually for the next two years, specifically targeting larger landlords with over 50 units. This policy excludes new constructions and substantially renovated buildings to encourage the development of new rental properties.

Biden emphasized that his plan contrasts with the previous administration's tax breaks for corporate landlords. Despite a slowdown in overall inflation, housing costs remain a significant burden, with 22.4 million renter households spending over 30 percent of their income on rent and utilities in 2022. Recent data shows housing price hikes outpacing overall inflation, with a 5.2 percent annual increase.

Critics argue that rent control reduces housing supply and fails to target those in need. The Housing Solutions Coalition stated that rent caps harm renters and communities. However, a senior administration official noted that the rent cap is a temporary measure until new rental units become available, with 1.6 million units currently under construction.

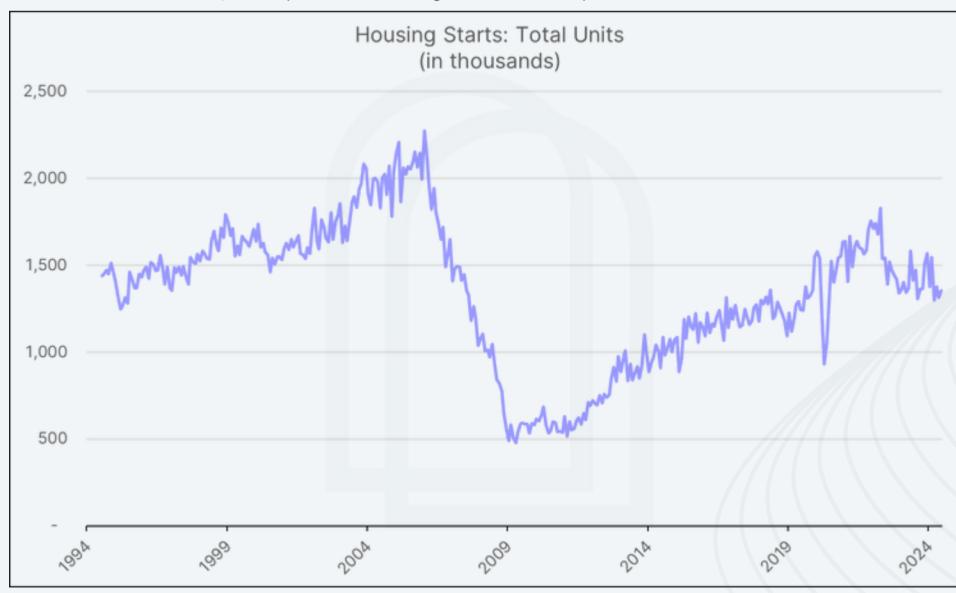
Despite the urgency, it is unlikely Congress will pass the proposal before the presidential election. Nonetheless, housing affordability remains a critical issue for voters, with economic concerns and the high cost of living ranking high in recent polls.

BUILDING ACTIVITY



The number of new building permit authorizations is an important indicator of forthcoming construction activity. In June, we observed a month-over-month increase, with 1,446,000 new permits authorized. On a year-over-year basis, the number of total new building permit authorizations declined by 3.2 percent.

It's worth noting that the current level of 1,446,000 new permits has risen slightly above the 10-year historical average of 1,407,000.



Typically, housing starts tend to decline during a recession. In June, there was a month-over-month increase in the number of housing starts, with a total of 1,353,000 reported. Compared to the same time last year, this number is down by 4.4 percent.

Despite the month-over-month increase, permits and starts have not risen to be in-line with previous levels, so these will be important to monitor as the year progresses.

CONSTRUCTION EMPLOYEES AND MORTGAGE RATES



Source: U.S. Bureau of Labor Statistics

The number of residential construction employees serves as a leading indicator, often exhibiting declines before housing prices experience a downturn. In June, we witnessed a slight month-over-month increase, with 952,000 residential construction employees reported. On a year-over-year basis, the number of residential construction employees grew by 2.4 percent.

Historically, a reduction in the residential construction workforce has preceded softening in housing market conditions. Interestingly, housing starts have been declining, so an uptick in construction employees is surprising as it often moves correlatively with housing starts.



Source: Freddie Mac

The current average mortgage rate, based on loan applications submitted to Freddie Mac by lenders nationwide, has dropped month-over-month, reaching 6.86 percent in July. However, compared to the same time last year, this rate has increased by 2.2 percent.

Demand for housing has been suppressed due to heightened rates and home values. The Fed has signaled that rate cuts would see further delays, so relief on this front may continue to be in the distant future.

REAL RESIDENTIAL CONSTRUCTION SPENDING



The Real Residential Construction Spend Index is calculated by dividing the total residential construction spending by the Producer Price Index (PPI) for residential construction. During the Great Recession, this index experienced a significant decline. In May, the index increased slightly from the previous month to 107.87. Additionally, compared to the same time last year, the index has risen by 4.6 percent.

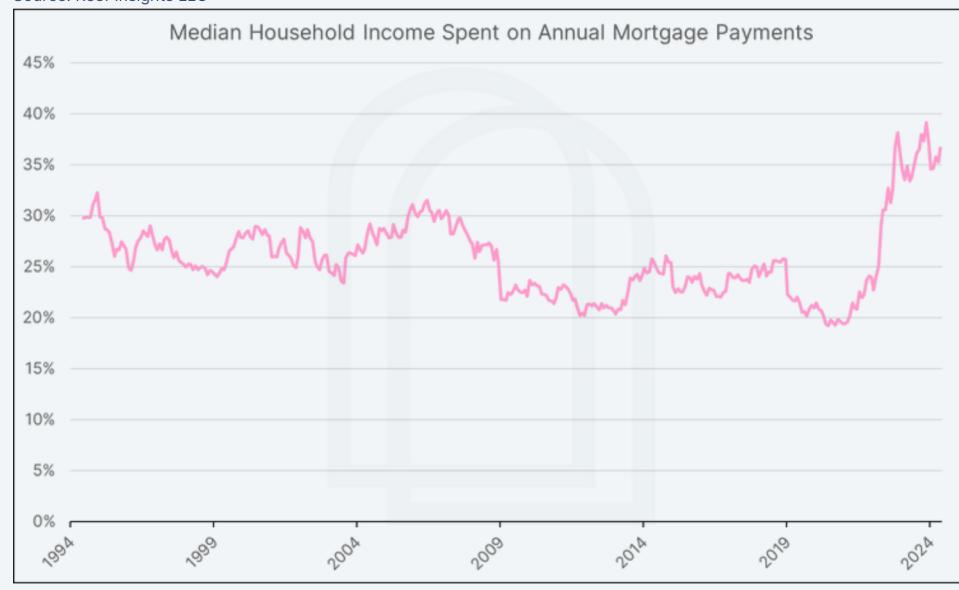
HOUSING COSTS

The nominal monthly mortgage payment is calculated assuming a 20 percent down payment, a 30-year mortgage term, and a fixed interest rate. This calculation uses the current mortgage rate and the median sales price of houses. In July, the estimated monthly mortgage payment decreased to \$2,208. Additionally, compared to last year, the monthly payment is down 1.9 percent.

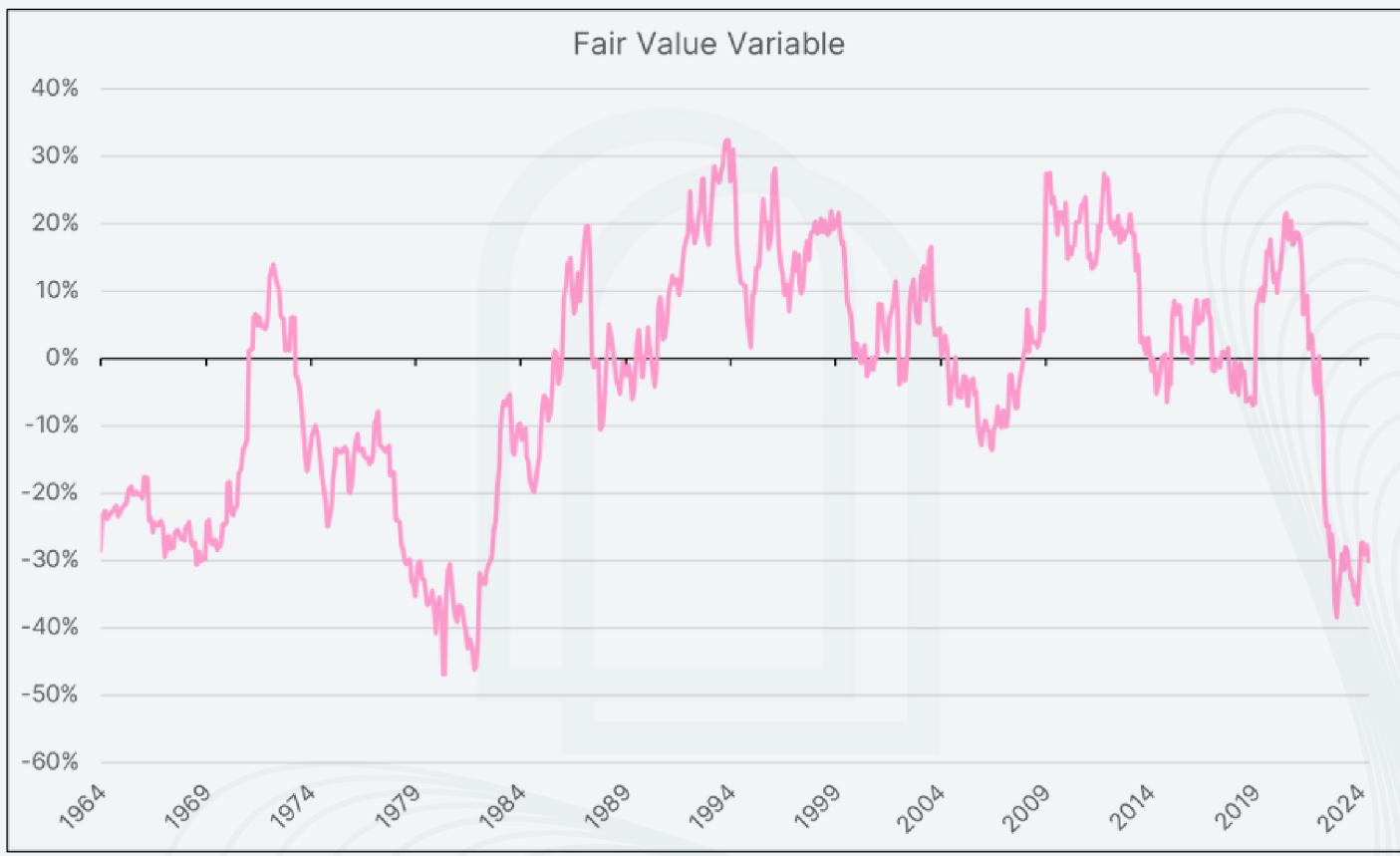
Over the past five years, the monthly mortgage payment has surged by 87.2 percent, reflecting rapidly declining affordability as more household income goes towards mortgage costs amidst higher interest rates and home prices.

To find out how much of the median household income goes towards annual mortgage payments, we calculated the yearly cost based on the current monthly mortgage payment and compared it to last year's median household income.

In July, the portion of median household income spent on mortgage payments increased to 36.7 percent. Additionally, compared to the same time last year, it has increased by 8.4 percent. Over the past five years, this figure has jumped by 70.6 percent.



FAIR VALUE VARIABLE (FVV)



Our proprietary Fair Value Variable methodology evaluates housing affordability by calculating rolling 5, 10, and 15-year averages of the percentage of median income spent on mortgage payments. Dividing these averages by current income-to-payment ratios yields premiums/discounts which are then averaged and applied to median home prices.

In May, the FVV decreased month-over-month to negative 30.1 percent, suggesting potential overvaluation relative to historical income trends.

CPI INFLATION



The Consumer Price Index (CPI) for headline inflation, which measures the overall increase in prices for goods and services, provides insights into broader inflationary pressures faced by consumers. In June, headline inflation saw a month-over-month decrease, with the year-over-year percent change standing at 2.98 percent, down from 3.35 percent in May.

Compared to the same period last year, when headline inflation was reported at 3.05 percent, the current level of 2.98 percent represents a slight moderation in the pace of price increases on a year-over-year basis.



Core inflation, which strips out volatile food and energy prices, is closely monitored as a key measure of underlying inflationary pressures. In June, core inflation exhibited a month-over-month decrease, with the year-over-year percent change standing at 3.28 percent, down from 3.41 percent in May.

When compared to the same period last year, when core inflation was reported at 4.86 percent, the current level of 3.28 percent represents a significant moderation in the pace of price increases, excluding the more volatile components.

UNEMPLOYMENT RATE



Source: U.S. Bureau of Labor Statistics

UNEMPLOYMENT RATE

The U.S. unemployment rate rose slightly to 4.1 percent in June 2024, up from 4.0 percent in May, according to the latest data from the Bureau of Labor Statistics. This marks the third consecutive month of increase after the rate reached a relative low of 3.7 percent in January 2024.

Looking at the recent trend, the unemployment rate has been gradually increasing over the past few months:

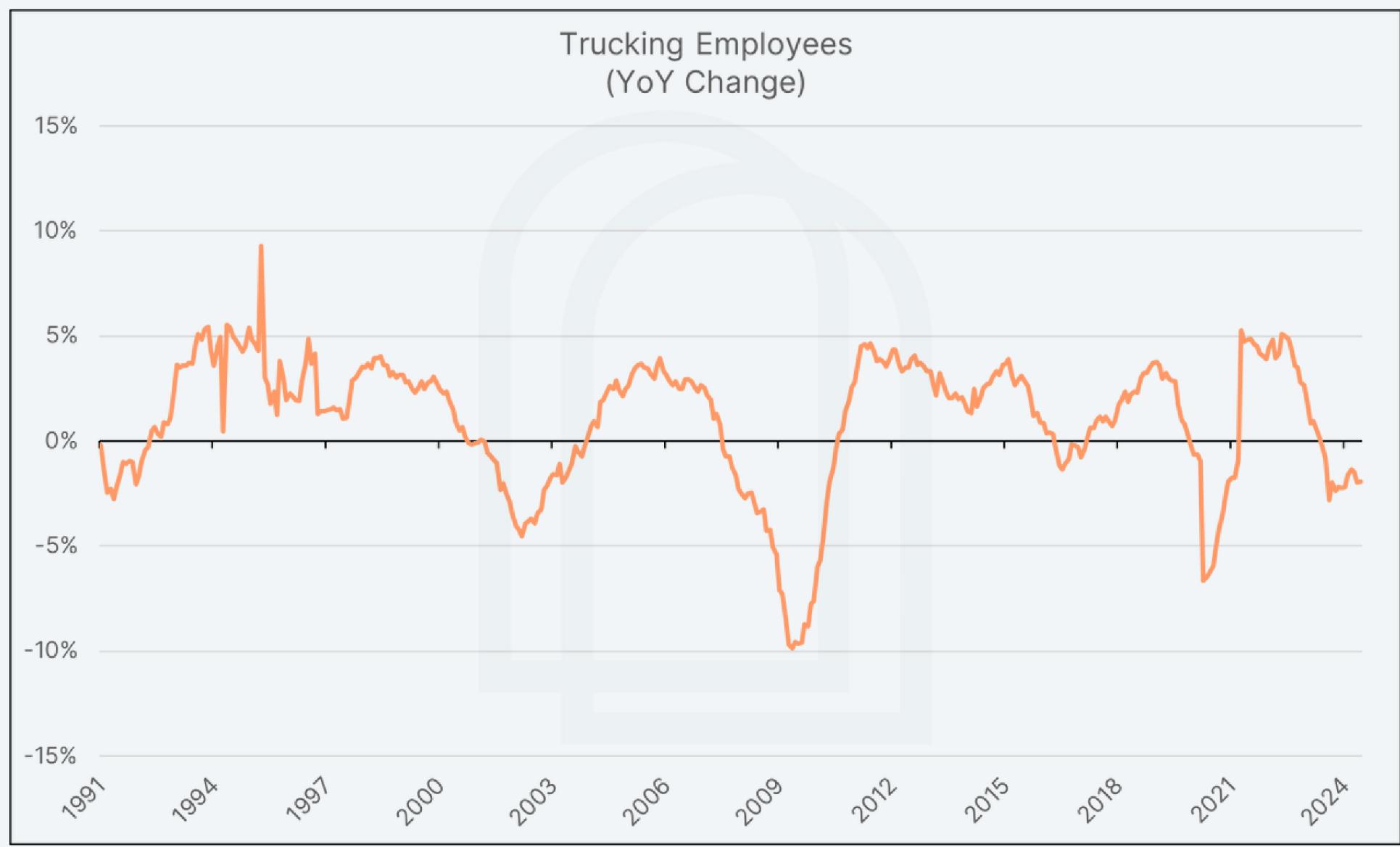
Jan 2024: 3.7 percent
Feb 2024: 3.9 percent
Mar 2024: 3.8 percent
Apr 2024: 3.9 percent
May 2024: 4.0 percent
June 2024: 4.1 percent

Despite the uptick, the current unemployment rate remains historically low, hovering around levels last seen in early 2020.

However, the consistent rise in the unemployment rate over the past few months may signal a potential slowdown in the labor market. As the economy continues to navigate through post-pandemic challenges and adapt to changing market conditions, it will be crucial to monitor the unemployment rate and other key labor market indicators.

As we move further into 2024, it remains to be seen whether the unemployment rate will continue to rise or stabilize.

TRUCKING EMPLOYMENT



Source: U.S. Bureau of Labor Statistics

TRUCKING EMPLOYMENT

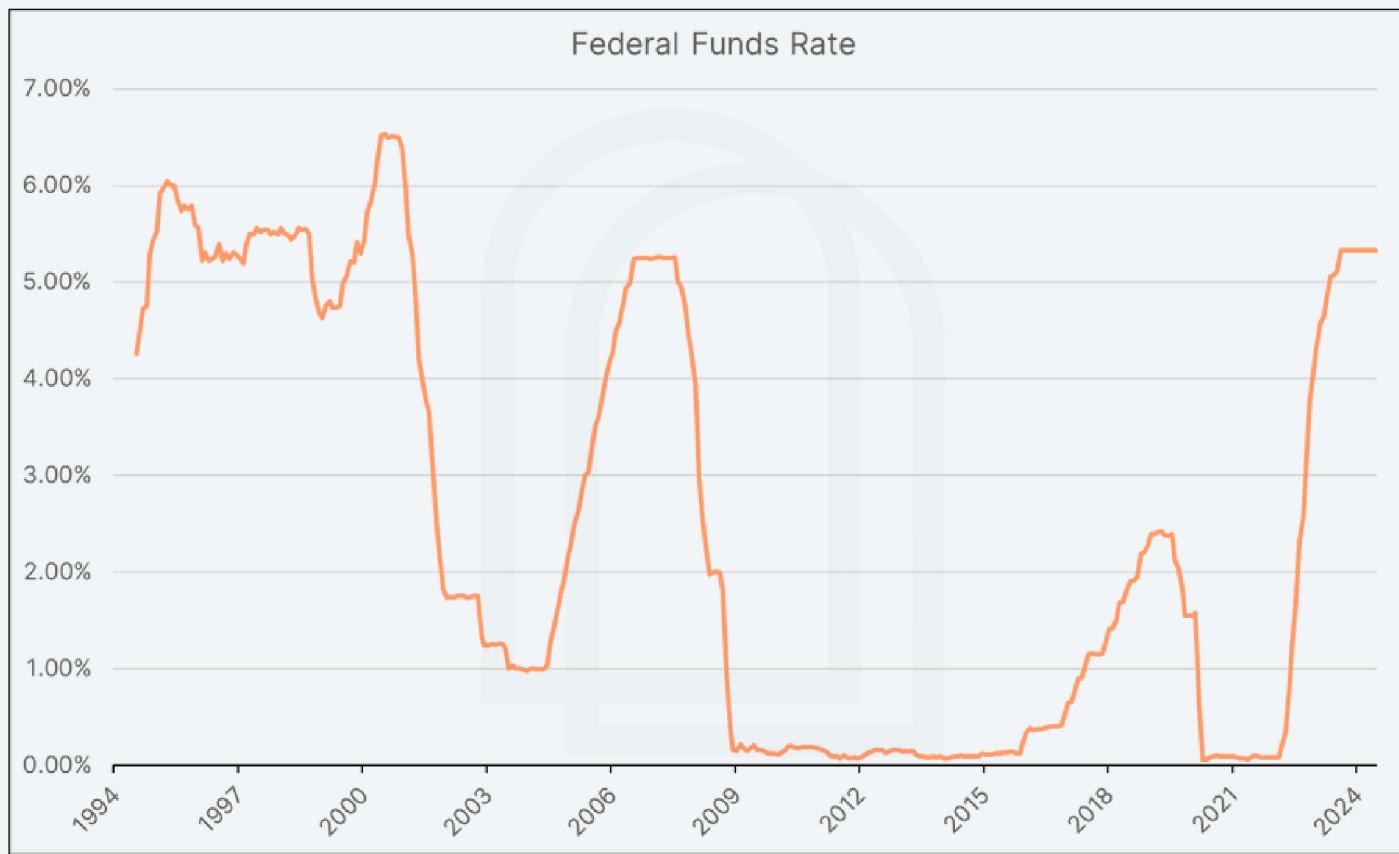
The fluctuation in trucking employment is a crucial economic indicator. In June, the number of trucking employees declined month-over-month, reaching a total of 1,548.6. This represents a 1.91 percent decrease compared to the same period last year.

Although the trucking industry has been in a recession, the industry is recovering, driven by a significant increase in restocking activities. Data from Motive shows a 30 percent year-over-year rise in trucking visits to major retailers in June. Hamish Woodrow from Motive notes strong restocking trends, particularly among discount retailers, despite longer Red Sea transit times due to geopolitical threats.

Retail orders have surged across various sectors, with notable increases in department stores, electronics, and home improvement. Tightened trucking capacity, resulting from recent industry bankruptcies, is expected to push freight rates higher by the end of the third quarter. Early back-to-school shopping has front-loaded freight volumes, highlighting the need for timely deliveries.

Discount retailing is thriving, with bundled back-to-school kits gaining popularity for their perceived value. The CNBC Supply Chain survey indicates a consumer shift towards mid-priced deals over luxury items. Globally, transportation and manufacturing activities are picking up, particularly in Asia, signaling broader economic recovery.

FEDERAL FUNDS RATE



Source: Board of Governors of the Federal Reserve System

Since August 2023, the Federal Funds Rate has remained unchanged. At the beginning of the year, market expectations saw seven rate cuts occurring over the course of 2024. As of July, none of these rate cuts have come to fruition.

With that being said, there has been a growing expectation that the Federal Reserve will make their first cut at their September FOMC meeting. As of July 18th, the market places a 98.1 percent chance that a rate cut will accompany the aforementioned meeting.

DATA TABLE

Metric	This Period	Last Period	Year Ago	Latest Release
Housing Starts: Total Units	1,353	1,314	1,415	Jun-24
New Housing Supply	9.30	8.10	6.90	May-24
Existing Housing Supply	3.70	3.50	3.10	May-24
Nominal Median Sales Price of Houses Sold	\$ 420,800	\$ 423,200	\$ 429,000	Jan-24
New Building Permit Authorizations: Total Units	1,446	1,399	1,493	Jun-24
Case-Shiller Index	320.42	316.71	301.47	Apr-24
Residential Construction Employees	952	949	930	Jun-24
Nominal Mortgage Rates	6.86	7.03	6.71	Jul-24
Delinquency Rates: Single-Family	1.71	1.70	1.74	Jan-24
Delinquency Rates: Commercial	1.18	1.16	0.68	Jan-24
PPI: Residential Construction	318	318	308	Jun-24
Construction Spending: Residential	\$ 930	\$ 932	\$ 873	May-24
Housing Inventory: Median Days on Market	45	44	45	Jun-24
Nominal Monthly Mortgage Payment	\$ 2,208	\$ 2,246	\$ 2,250	Jul-24
Real Mortgage Payment Index	7.41	7.13	6.92	May-24
Median Household Income Spent on Annual Mortgage Payments	36.66	35.28	33.80	May-24
Fair Value Variable	(30.07)	(27.73)	(28.56)	May-24

DATA TABLE

Metric	This Period	Last Period	Year Ago	Latest Release
Housing Expense Change	43.53	43.09	40.88	May-24
Nominal Median Household Income	\$ 74,580	\$ 70,780	\$ 70,780	2022
Headline Inflation	2.98	3.25	3.05	Jun-24
Core Inflation	3.28	3.41	4.86	Jun-24
Unemployment Rate	4.10	4.00	3.60	Jun-24
Federal Funds Rate	5.33	5.33	5.08	Jun-24
Personal Savings Rate	3.90	3.70	5.30	May-24
Jobless Claims	243,000	223,000	231,000	Jul-24
10-Year U.S. Treasury Yield Minus 2-Year U.S. Treasury	(0.34)	(0.26)	(1.00)	Jul-24
Residential Rental Vacancy Rate	6.60	6.60	6.40	Jan-24
Real Residential Construction Spend Index	107.87	107.14	103.15	May-24
Household Savings	\$ 807	\$ 2,207	\$ 2,207	2022
Bank Credit: All Commercial Banks	\$ 17,690	\$ 17,686	\$ 17,266	Jul-24
Delinquency Rates: Credit Card	3.16	3.08	2.45	Jan-24
Gross Domestic Product (GDP)	\$ 28,269	\$ 27,957	\$ 26,814	Jan-24
M2 (Money Supply)	\$ 20,963	\$ 20,870	\$ 20,838	May-24
Federal Reserve's Balance Sheet	\$ 7,208	\$ 7,224	\$ 8,275	Jul-24

DATA TABLE

Metric	This Period	Last Period	Year Ago	Latest Release
PCE: Headline Inflation	2.56	2.68	3.96	May-24
PCE: Core Inflation	2.57	2.78	4.69	May-24
Debt-to-GDP	122.35	121.62	117.32	Jan-24
Real GDP	\$ 22,759	\$ 22,679	\$ 22,112	Jan-24
Trucking Employees	1,549	1,549	1,579	Jun-24
Industrial Production	104	103	102	Jun-24
Credit Card Interest Rates	21.51	21.59	20.84	May-24
Charge-Off Rate: Credit Card Loans	4.65	4.07	3.02	Jan-24
Charge-Off Rate: Business Loans	0.43	0.41	0.28	Jan-24
Charge-Off Rate: Commercial Real Estate Loans	0.23	0.24	0.10	Jan-24
Yield Curve	(0.37)	(0.33)	(0.56)	Jun-24
Total Assets: Money Market Funds	\$ 6,440,699	\$ 6,357,551	\$ 5,692,567	Jan-24
Federal Government Interest Payments	\$ 1,059	\$ 1,026	\$ 874	Jan-24
CPI: Rent in U.S. City Average	419	418	399	Jun-24
Consumer Loans: Credit Card Debt	\$ 1,060	\$ 1,058	\$ 993	Jun-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.
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.

SOURCES

Metric	Frequency	Sources	Notes
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.
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.

SOURCES

Metric	Frequency	Sources	Notes
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.
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.

SOURCES

Metric	Frequency	Sources	Notes
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.
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.

SOURCES

Metric	Frequency	Sources	Notes
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.
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 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.

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