FINANCIAL INTELLIGENCE *from* FHLBank Topeka

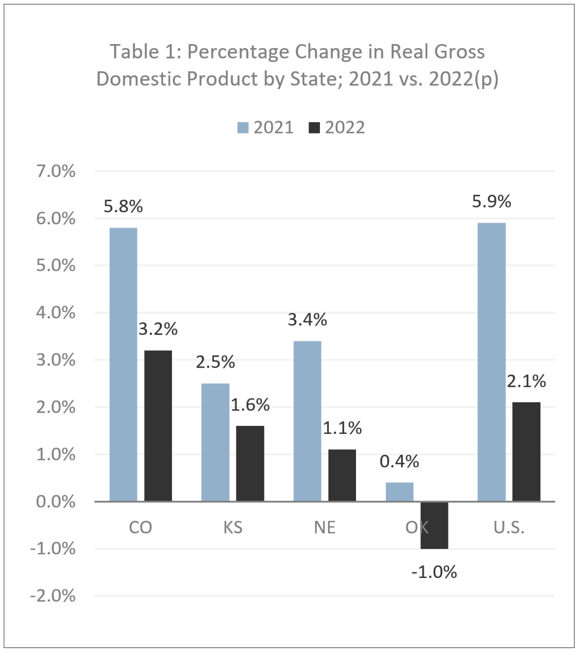
Tenth District Economic Update

Quarterly Report / Q4 2022

Prepared by: Corporate Strategy

Quarterly data as of fourth quarter 2022
Monthly data as of February 2023
Daily data as of March 31, 2023
See footnotes for source and data release information

Economic Growth



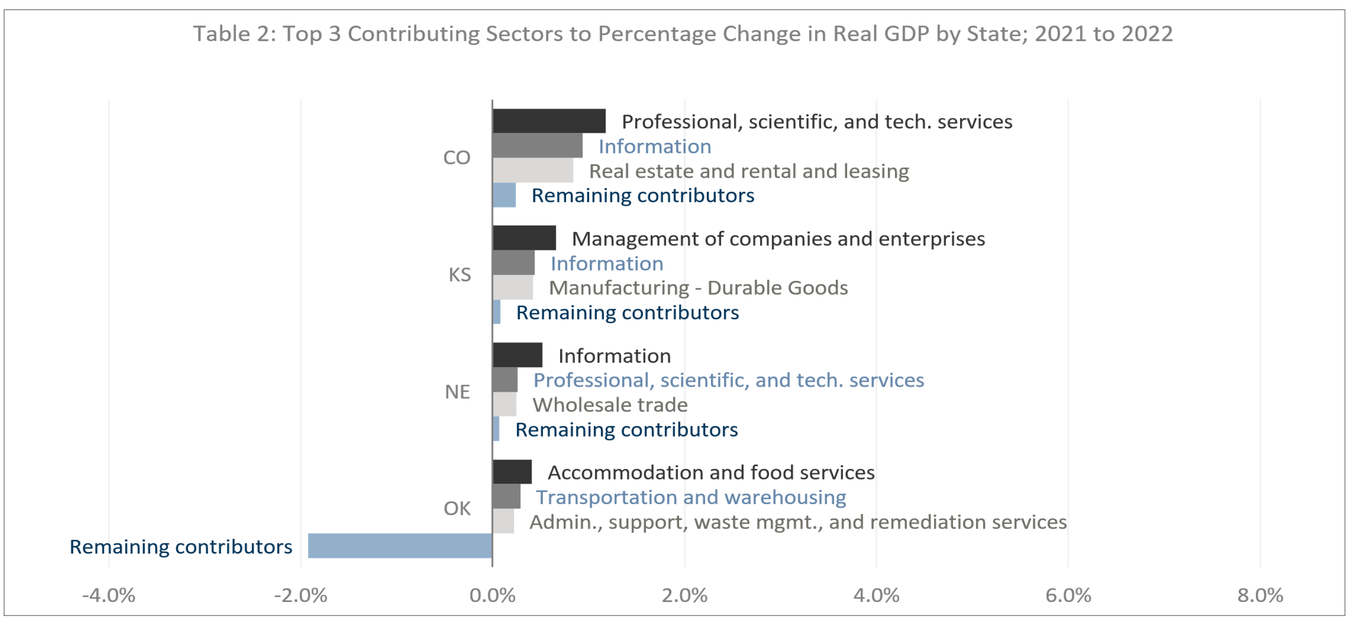
**Tenth District includes Colorado, Kansas, Nebraska and Oklahoma*

Given noticeable slowing in GDP growth, a drop in consumer confidence resulting from recent bank failures and consistent rate hikes from the Federal Open Market Committee (FOMC), the economy looks to be headed for recession (if not there already).

Business and consumer spending remains elevated given the excess of savings still in the market as well as a healthy labor situation. Overall, the U.S. economy grew by 2.1% in 2022. According to The Conference Board, a think tank, odds of a recession are near 99% with zero to negative real GDP growth rates in the first three quarters of 2023.

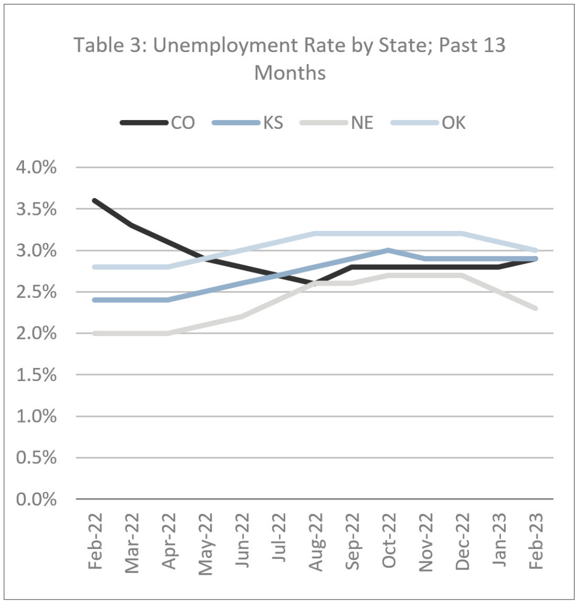
Compared to the U.S. average, Tenth District* (District) states' GDP growth figures vary significantly. Heavily reliant on the health of certain sectors, District states' economic growth typically ebbs and flows based on the situations in agriculture and energy. Captured in "Remaining contributors" in Table 2 below, 1.24% of Oklahoma's 1% drop in 2022 real GDP growth was the result of poor performance in mining, quarrying and oil and gas.

Other economic sectors of weakness in 2022 included ag, forestry, fishing and hunting, construction, manufacturing (nondurable goods) and trade while information, professional, scientific and technical services excelled. Among U.S. states, Colorado ranked seventh in 2022 real GDP growth, while Kansas, Nebraska and Oklahoma all ranked in the bottom half.



Source: U.S. Bureau of Economic Analysis (BEA) – Gross Domestic Product by State, Fourth Quarter 2022 and Year 2022 (Preliminary)
Next Release: June 30, 2023 – Gross Domestic Product by State (First Quarter 2023)

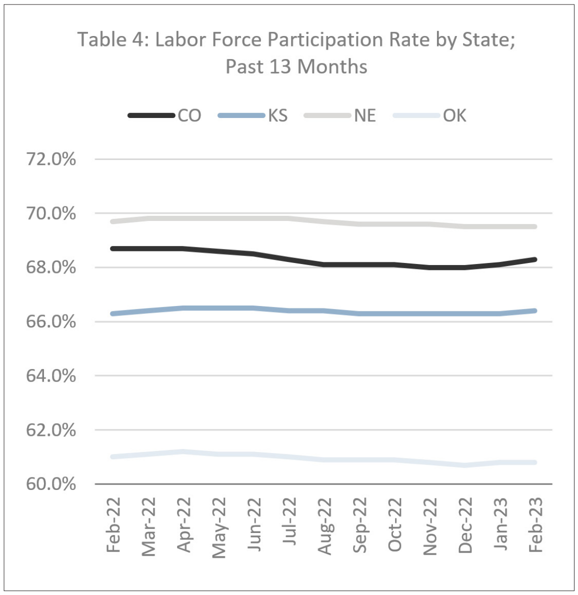
Employment & Labor



After several months of modest increases in District unemployment rates, upticks have noticeably slowed in late 2022 and early 2023. The only District state to buck this trend was Colorado, whose unemployment rate fell throughout the first half of 2022 before flattening over the past six months. All states remain well below the national unemployment rate of 3.6% in February 2023.

Despite a 0.3% increase year-over-year (YoY), Nebraska remains among the gold standard states in unemployment at 2.3%.

Colorado, Kansas and Oklahoma are also in the top half of the United States in unemployment at 2.9% (both Colorado and Kansas) and 3% respectively. Colorado is the only state of the three to drop in rate YoY, down 0.7% from February 2022.



As companies brace for recession in 2023, layoffs are seen in nearly every state, resulting in declining labor force participation (LFP) rates. On a whole, the U.S. rate for labor force participation in February 2023 sits at 62.4%, notably up 0.3% from January 2023.

YoY, Kansas is the only state to see an improved LFP rate among District states. At 66.4%, Kansas is up 0.1% from February 2022 and among the top 10 in the United States in overall rate.

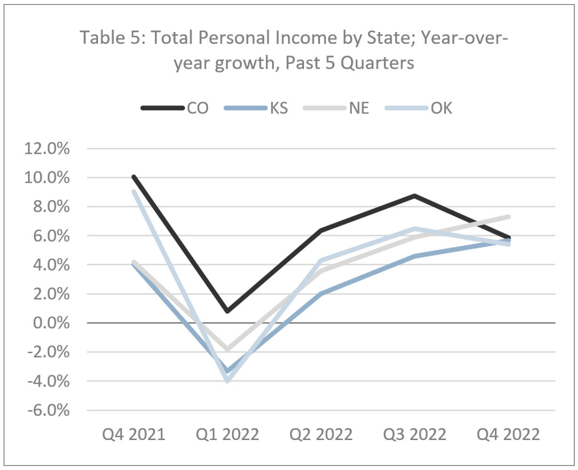
The two strongest states for labor force participation in the District are also the two strongest states in the United States. Though both down slightly YoY, Nebraska and Colorado sit at 69.5% and 68.3%, respectively.

YoY, Colorado has seen the greatest improvement in its LFP rate among District states. At 69.2%, Colorado is up 1% from its one-year low of 68.2% in December 2021 and second highest among U.S. states.

Oklahoma remains well below District peers in LFP at 60.8% in February 2023. This rate ranks 35th among U.S. states.

Sources: U.S. Bureau of Economic Analysis (Personal Income) and U.S. Bureau of Labor Statistics (Average Hourly Earnings)
Next Releases: June 30, 2023 – (Personal Income); April 21, 2023 – (Average Hourly Earnings)

Wage Measure

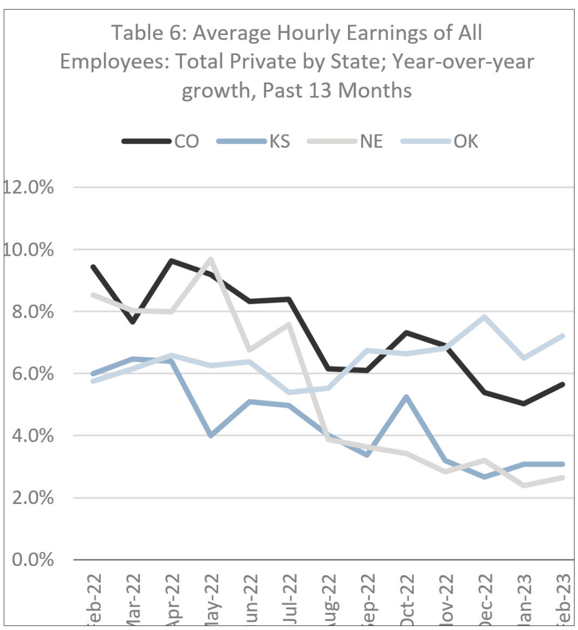


Total personal income is defined by the U.S. Bureau of Economic Analysis (BEA) as the income people receive from wages, proprietors' income, dividends, interest, rents and government benefits.

It is imperative that wages grow at or above inflation for workers to maintain purchasing power. With prices of essentials, like groceries, increasing at breakneck pace over the past year and remaining elevated, the downward trend in personal income growth to start the year was alarming.

Improvement in personal income in the second and third quarters of 2022 helped ease some fears, though a significant drop to close out the year has many states still barely keeping pace. Among District states, only Kansas saw YoY income growth above 6% in the fourth quarter. Meanwhile, headline inflationary figures remain between 5-6% (see additional inflationary measure detail on page 6).

The lingering difference between wages and inflation serves as further evidence that a recession is on the horizon.



Average hourly earnings (AHE), as defined by the U.S. Bureau of Labor Statistics (BLS), reflect not only changes in basic hourly and incentive wage rates, but also such variable factors as premium pay for overtime and late-shift work and changes in output of workers paid on an incentive plan. They also reflect shifts in the number of employees between relatively high- and low-paid work and changes in workers' earnings in individual establishments.

Earnings differ from wage rates. Earnings are the actual return to the worker for a stated period, while wage rates are the amount stipulated for a given unit of work or time. Earnings do not measure the level of total labor costs on the part of the employer as the following are excluded: benefits, irregular bonuses, retroactive items and payroll taxes paid by employers.

Apart from Oklahoma, earnings rates are starting to fall significantly across District states. Most notable is Nebraska, reaching a one-year high of 9.7% in May 2022 before tumbling to 2.6% in February 2023. Colorado and Kansas are also down over 3% from their one-year growth peak. The downward trend seen in states across the country is of major concern.

Sources: U.S. Bureau of Economic Analysis (Personal Income) and U.S. Bureau of Labor Statistics (Average Hourly Earnings)
Next Releases: June 30, 2023 – (Personal Income); April 21, 2023 – (Average Hourly Earnings)

Interest Rates and FOMC Policy

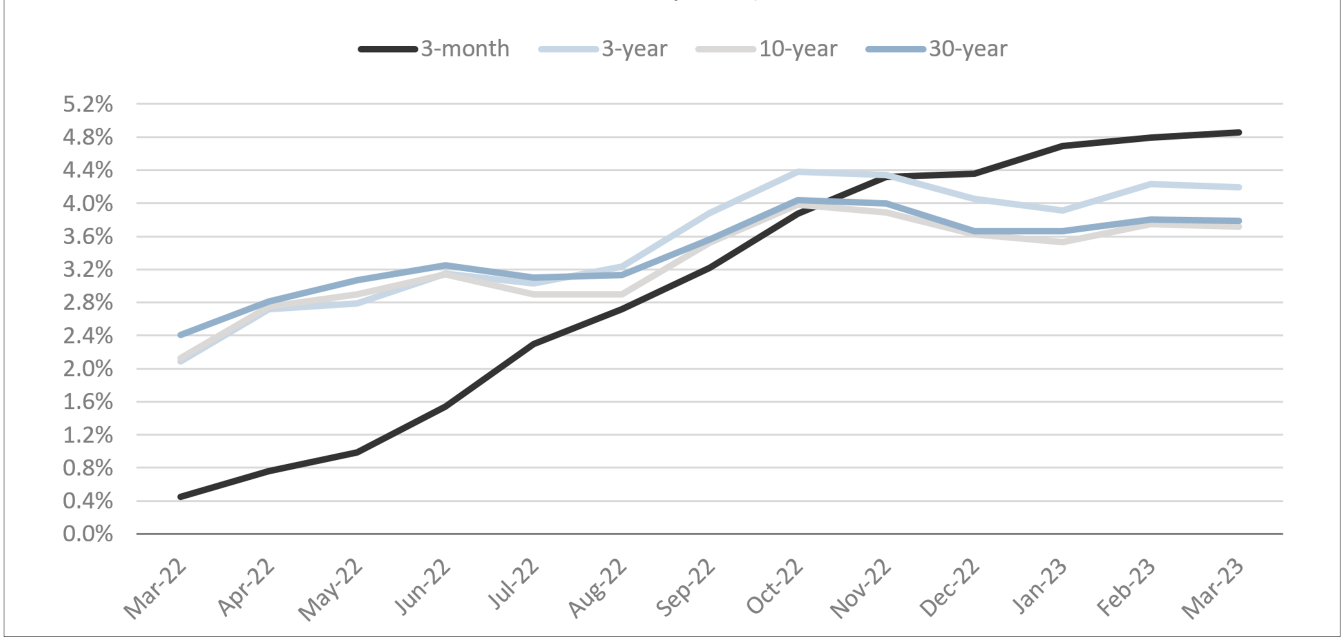


Table 7: Select Treasury Rates; Past 13 Months

Table 8: Federal Funds Rate: Midpoint of target range or target level (Percent)	2023	2024	2025	Longer Run
5.875	1			
5.750				
5.625	3	1	1	
5.500				
5.375	3	1		
5.250				
5.125	10	2		
5.000				
4.875	1			
4.750				
4.625		3		
4.500				
4.375		2	1	
4.250				
4.125		5	1	
4.000				
3.875		2	1	
3.750				
3.625		1	1	1
3.500				
3.375		1	2	
3.250				1
3.125			4	
3.000				1
2.875			4	
2.750				
2.625			2	1
2.500				8
2.375			1	2
2.250				3

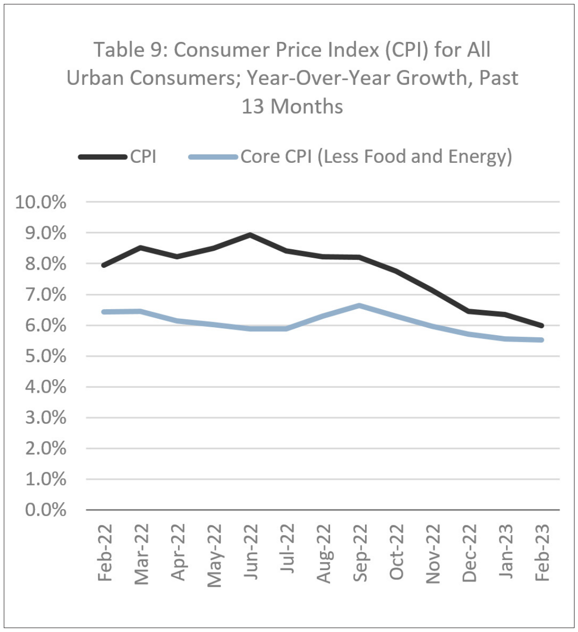
In efforts to quell the rapid and sustained increase in inflation, the Federal Open Market Committee (FOMC) has adopted an extremely aggressive monetary policy. After four straight 75 basis point increases through November, an additional 50 basis point increase in December and 25 basis point increases in February and March, borrowing costs are now higher than they were before the Great Recession.

Shorter-term rates have expectedly risen in line with FOMC rate hikes, while longer-term rates have been slightly more reluctant to change, even falling from October 2022 peaks. The 10-year Treasury rate (often cited as a barometer for the market's long-term expectations for economic growth) sits below the rates for one month through seven years, causing a noticeable inversion in the yield curve and yet another indicator of a looming recession.

As shown in Table 8, the FOMC shows signs of slowing related to the recent tightening. With a Federal Funds Rate target range midpoint currently at 5.375%, the majority of the committee sees 2023 finishing with a net drop in rates. Balancing interest rate movement without throwing the economy into a major recessionary period will remain a difficult task for the FOMC in the months to come.

Source: Board of Governors of the Federal Reserve System – Interest Rates & Federal Open Market Committee (FOMC) Projections materials, March 2023
Next Summary of Economic Projections Release: June 14, 2023

Prices: Consumer Inflationary Measure

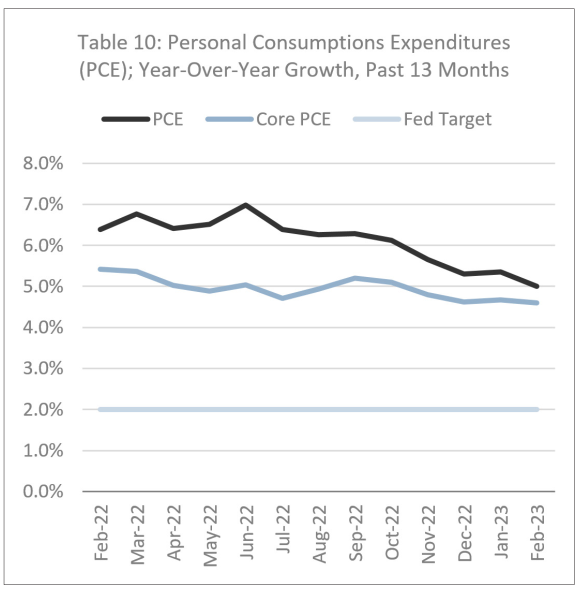


In measuring the purchasing value of the U.S. dollar, two indices rise above the rest. Both track the price level of a basket of goods, but differ in a myriad of ways, including the weight of different items in the basket, accounted for changes in the basket, and simply what items are included in the basket.

Historically the higher of the two rates, the Consumer Price Index (CPI) attempts to capture the cost of what households are buying. Once the preferred measure of the FOMC, CPI is tracked by the U.S. BLS.

Two types of inflation are reported, with "headline" CPI down to 6% YoY growth in February 2023 after peaking at 8.9% in June 2022. This index differs from the "core" measure in that it includes the typically more volatile prices of food and energy.

When gauging the general direction of the economy, the core figure is more often used. However, milk and gasoline are essential purchases in every household, so it's important to monitor both versions of the index.



The second and more often cited inflationary measure is the Personal Consumption Expenditures index (PCE).

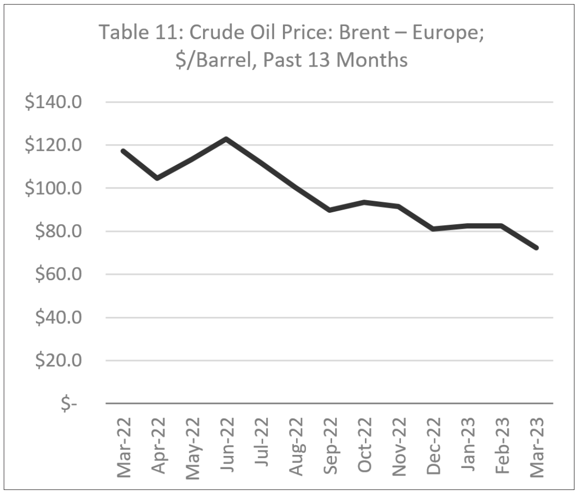
Based on surveys of business sales, the Fed targets 2% for the core measure when setting monetary policy. In August 2020, an adjustment was made to how the measure is interpreted, allowing for inflation to run higher than the standard 2% target before hiking interest rates. The new approach has been coined "average inflation targeting."

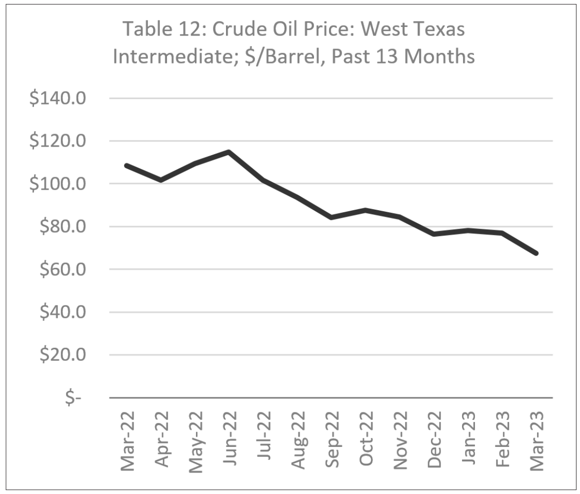
After trending up to near the 2% line in early 2021, core PCE inflation ramped up in late 2021 and early 2022. Though dropping at 4.6% in February 2023, core PCE is still more than double the rate once targeted by the FOMC and has trended at or above 4.7% over the past year.

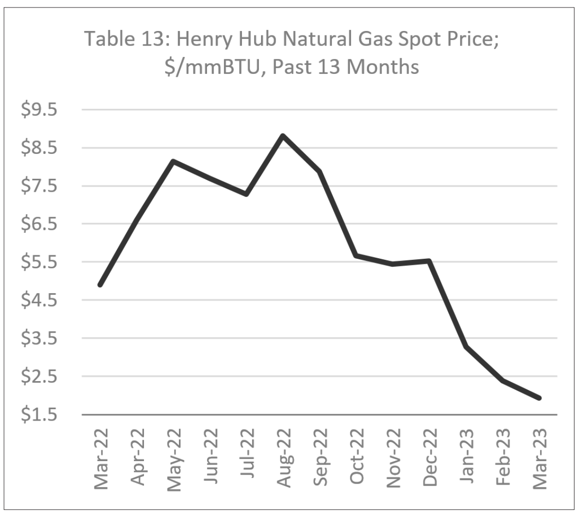
The persistently high level is of major concern to the FOMC, reflected by the continued aggressive rate hike policy.

Source: U.S. Bureau of Labor Statistics (CPI) and U.S. Bureau of Economic Analysis (PCE), February 2023 release
Next CPI Release: April 12, 2023 (March 2023 data)
Next PCE Release: April 28, 2023 (March 2023 data)

Prices: Energy







Two different prices of crude oil are generally tracked by those monitoring the energy sector — Brent (European) and West Texas Intermediate (WTI). A number of factors can contribute to differences between the prices, including extraction and production, shipping and storage costs, content quality, and politics such as trade tensions. Thus, it is important to look at both figures rather than the global price of oil alone to get an accurate depiction of the energy landscape.

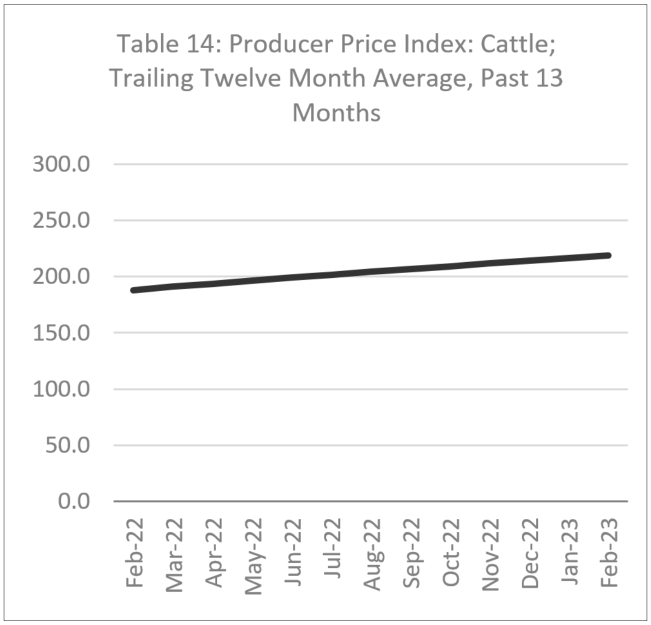
After trending up for much of 2022 due to (1) lack of supply resulting from sanctions placed on Russia and (2) increased demand following the COVID-19 pandemic, oil prices are seeing some much-needed relief. Currently, Brent is trading at about a $5 premium to WTI.

With a pending recession resulting in lessened demand for gas, prices at the pump look to remain near current levels around $3 per gallon. In general, crude oil prices have been bouncy but will expectedly decline as global economic activity weakens.

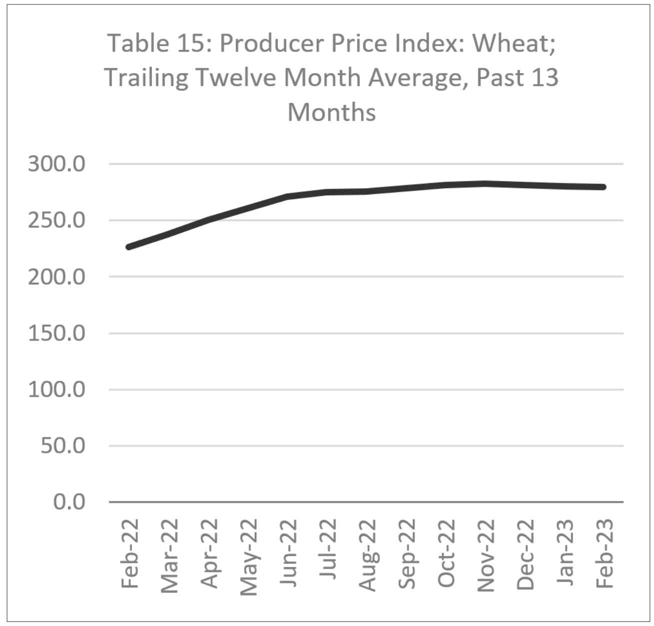
Often reflective of simple market dynamics, the price of natural gas typically peaks in the winter months and idles in the summer. Yet, given Russia's invasion of Ukraine and the resulting swings in natural gas supply, traditional market fluctuations have gone out the window. The price per million British thermal units peaked in August 2022 at $8.80, but has since fallen over 350% to $1.90 in March 2023 with no end to the falloff in sight.

Source: U.S. Energy Information Administration – Spot Prices (available daily)

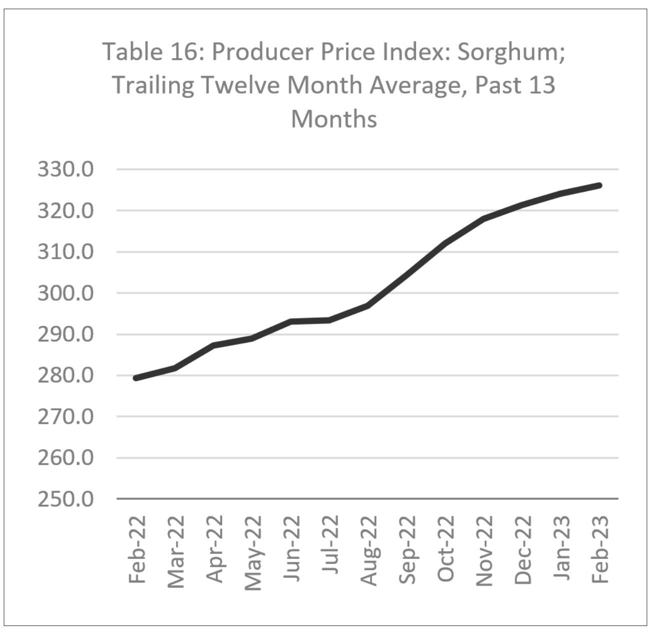
Prices: Farm & Agriculture



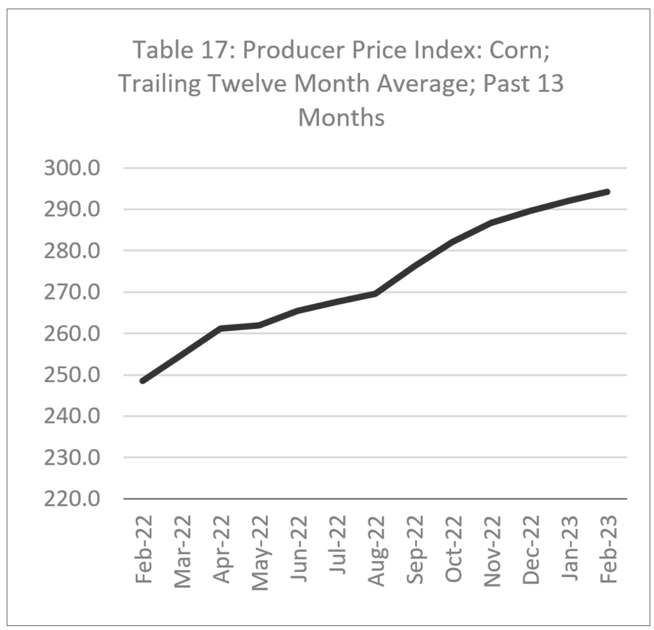
District state rankings in 2022 U.S. cattle production — 2nd Oklahoma, 4th Nebraska, 6th Kansas, 17th Colorado



District state rankings in 2022 U.S. wheat production — 2nd Kansas, 7th Oklahoma, 10th Colorado, 14th Nebraska



District state rankings in 2022 U.S. sorghum grain production — 1st Kansas, 4th Colorado, 5th Nebraska, 6th Oklahoma



District state rankings in 2022 U.S. corn production — 3rd Nebraska, 6th Kansas, 17th Colorado, 28th Oklahoma

Source: U.S. Bureau of Labor Statistics – Producer Price Indices, February 2023
Next Release: April 13, 2023 (March 2023 data)

Prices: Housing

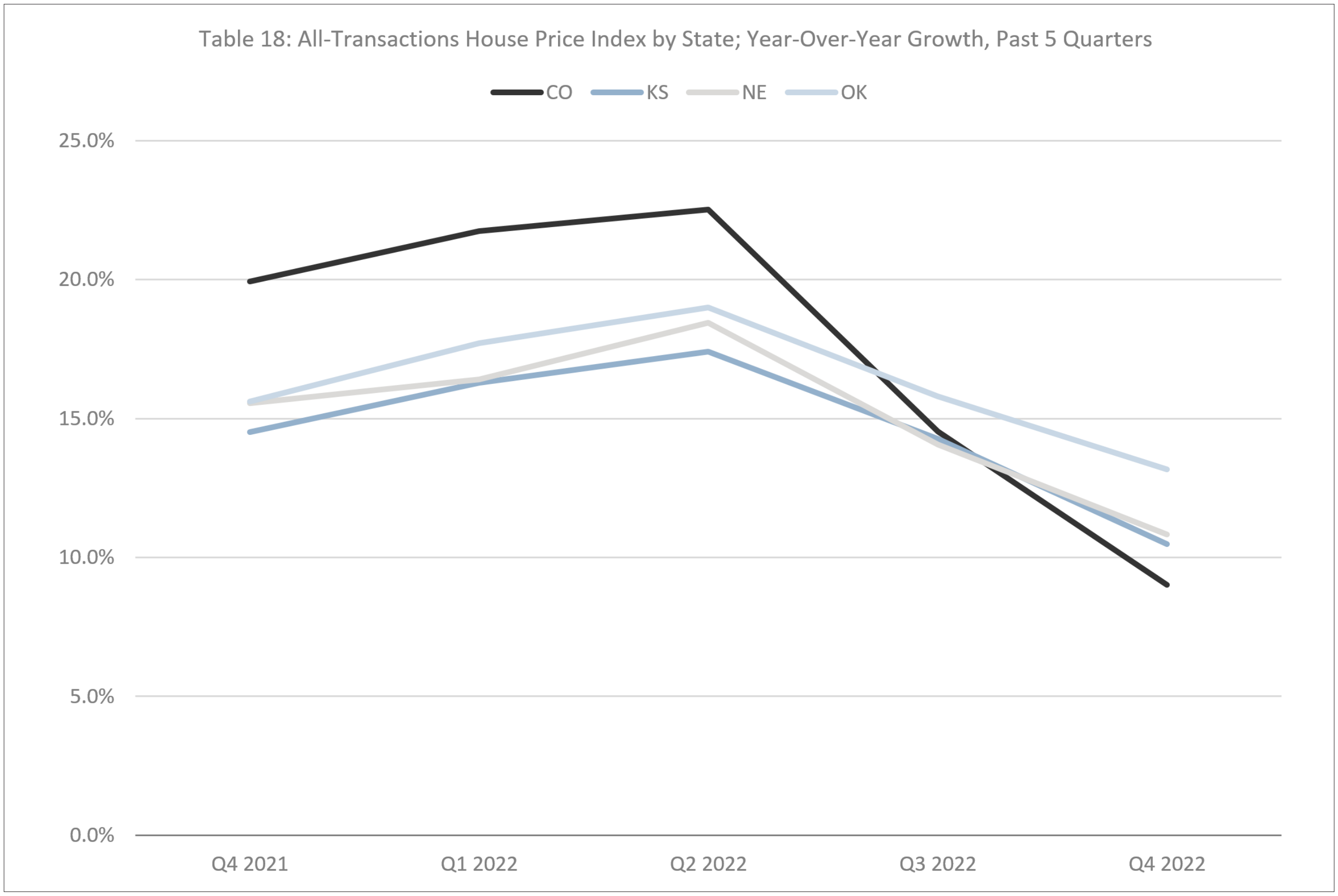


Table 18 depicts the All-Transactions House Price Index (HPI) by state for the District. According to the Federal Housing Finance Agency, the HPI is a broad measure of the movement of single-family house prices. The HPI is a weighted, repeat-sales index, meaning that it measures average price changes in repeat sales or refinancing on the same properties. Data is obtained by reviewing repeat mortgage transactions on single-family properties whose mortgages have been purchased or securitized by Fannie Mae or Freddie Mac since 1975.

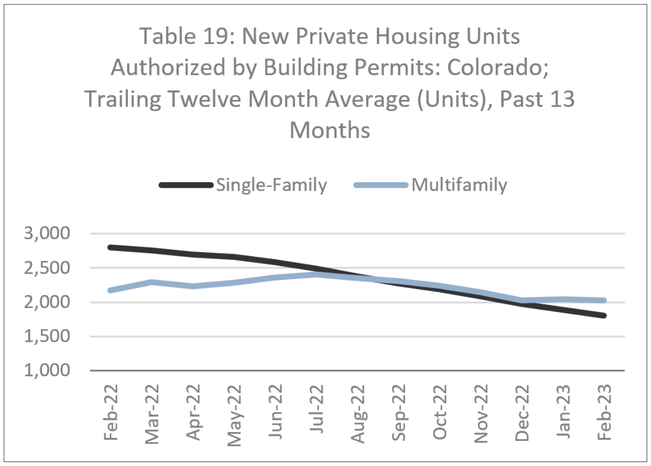
With the cost of building a new home still extremely high given the elevated price of inputs like lumber and labor, demand for resales remains strong. Coupled with an exodus of workers out of major metropolitan areas and into neighboring suburbs, the value of existing homes continues to grow.

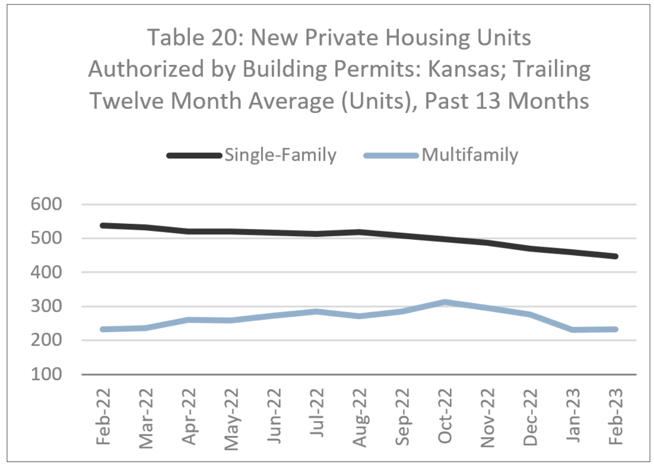
In the fourth quarter of 2022, Oklahoma surpassed Colorado as the fastest growing housing market by price in the District, up 13.2% YoY. All four District states posted YoY price growth above 9% for the seventh straight quarter in Q4 2022.

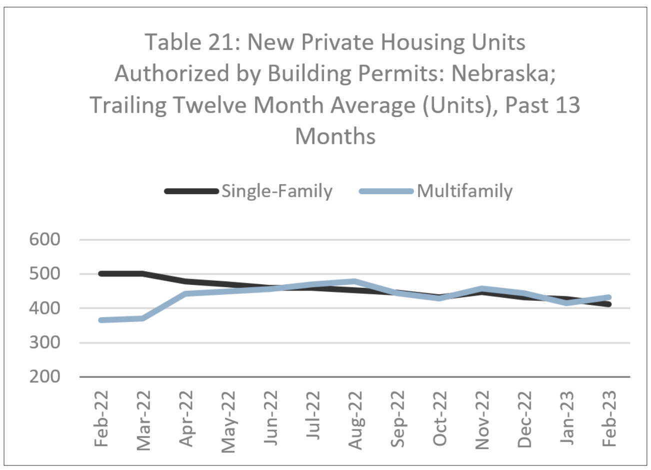
In the fourth quarter of 2022 the United States as a whole saw 11.8% YoY growth, higher than all but Oklahoma in the District.

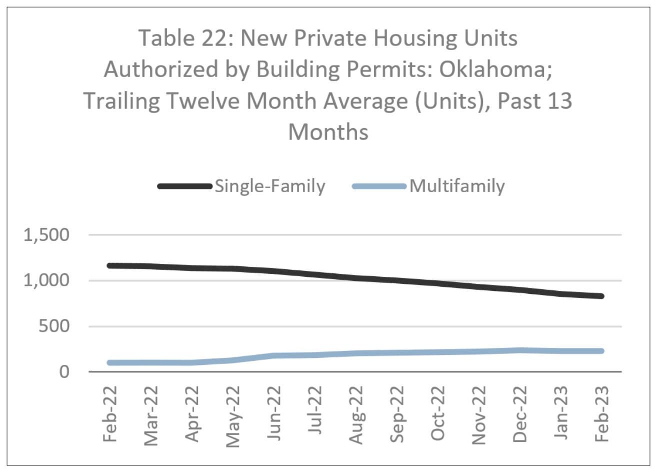
Source: U.S. Federal Housing Finance Agency – House Price Indices, Q4 2022
Next Release: May 30, 2023 (Q1 2023 data)

Housing Numbers









Tables 19-22 depict single-family and multifamily housing units authorized by building permits for each state in the District. According to the U.S. Census Bureau, these numbers provide a general indication of the amount of new housing stock that may have been added to the housing inventory.

Since not all permits become actual housing starts, and starts lag the permit stage of construction, these numbers do not represent total new construction but should provide a general indicator on construction activity and the local real estate market. Authorized permits can vary greatly from month to month, so a trailing 12-month average is used to provide a general trend.

With mortgage rates rising and supply chain bottlenecks continuing to negatively impact construction of single-family homes, multifamily permitting has seen a revival. Low vacancy rates and high rents have developers focusing on apartment building in large suburban markets.

Though relatively flat in Kansas and Oklahoma, the difference between single-family and multifamily permits has flip-flopped in Colorado and Nebraska.

One year ago, multifamily permits accounted for 44% of authorizations in Colorado and 42% in Nebraska. Today, those numbers have risen to 53% and 51%, respectively.

Source: U.S. Census Bureau Building Permits Survey – February 2023
Next Release: April 25, 2023 (March 2023 data)