FINANCIAL INTELLIGENCE *from* FHLBank Topeka

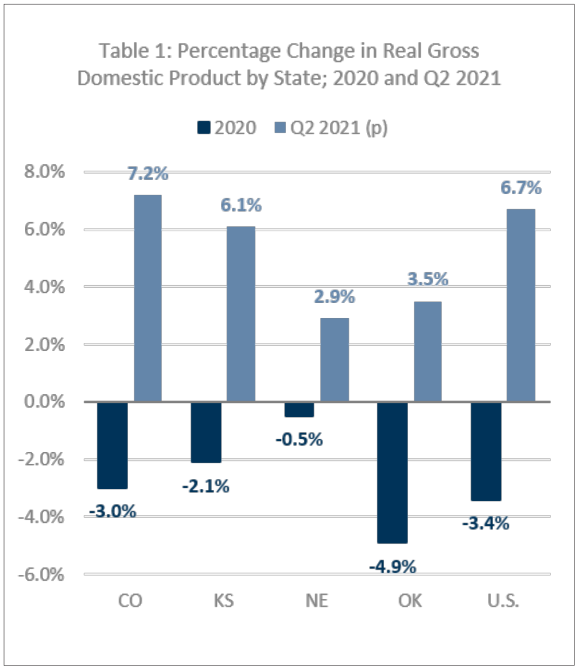
Tenth District Economic Update

Quarterly Report / Q3 2021

Prepared by: Corporate Strategies and Solutions

Data as of Tuesday, Dec. 14, 2021 — See footnotes for source and data release information

Economic Growth



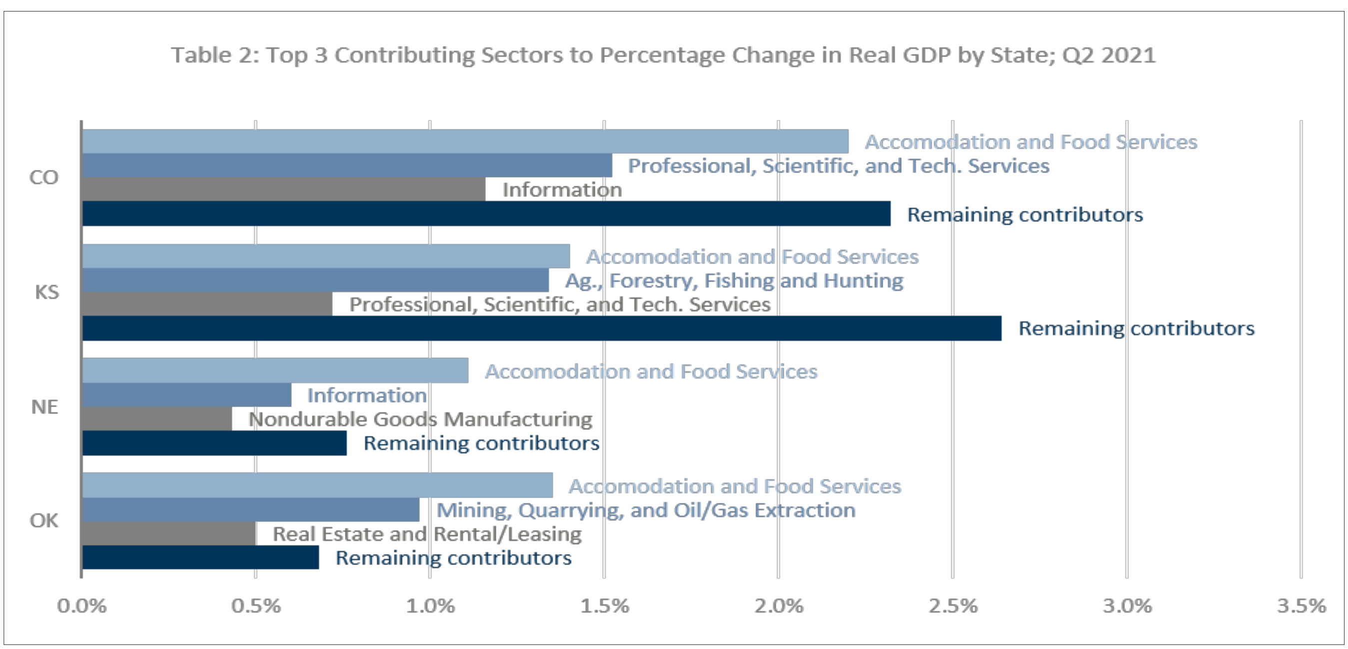
Tenth District includes Colorado, Kansas, Nebraska and Oklahoma

After a tumultuous 2020 with the pandemic ravaging state economies across the country, preliminary Real Growth Domestic Product (GDP) figures for 2021 second quarter indicate a major rebound. On average, Tenth District (District)* states have fared slightly worse than the rest of the U.S (see Table 1).

Despite the drag of the pandemic on the travel industry, Colorado has proven most resilient to the shutdown among District states. Housing and construction continues to boom, while tech and information-driven industries also kept Colorado afloat. 7.2 percent GDP growth was 11th among U.S. states in the second quarter of 2021.

The agricultural and manufacturing-focused states of Kansas and Nebraska have also managed more favorably than the rest of the country during the pandemic. Strength in those two areas (see Table 2) allowed Kansas and Nebraska to post positive growth figures in Q2 2021, with rates of 6.1 percent and 2.9 percent, respectively.

The fourth and final state in the District derives much of its growth potential from the energy sector. Typically, as the oil and gas industry goes, so too goes Oklahoma. With curbed demand resulting from hamstrung commercial and personal transportation, Oklahoma posted a -4.9 percent growth rate in 2020, among the bottom 20 percent in the U.S. The second quarter 2021 growth rate is third among District peers at 3.5 percent.



Source: U.S. Bureau of Economic Analysis (BEA) – Gross Domestic Product by State, Second Quarter 2021
Next Release: December 23, 2021 – Gross Domestic Product by State (Third Quarter 2021)

Employment & Labor

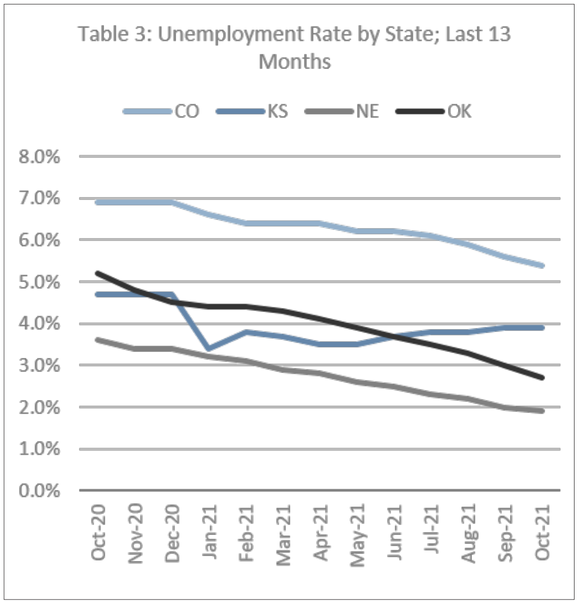


Table 3: Unemployment Rate by State; Last 13 Months

Colorado, with the lowest unemployment rate in the District throughout 2019, finds themselves at the top after the dust has settled from the COVID-19 pandemic. At 5.4 percent, Colorado's unemployment rate is down 1.5 percent year-over-year (YoY) and 1.2 percent year-to-date (YTD), but ranks 34th in unemployment among U.S. states.

Like their economic growth figures, Kansas and Nebraska have fared better than their national peers in terms of unemployment. Kansas ranks 19th in the U.S. at 3.9 percent, down 0.8 percent YoY but up 0.7 percent YTD.

With 1.9 percent unemployment, Nebraska is down 1.7 percent YoY and 1.3 percent YTD. Nebraska is tops in the U.S. for the lowest unemployment rate, ahead of second place Utah by 0.3 percent.

Despite their economic growth woes, Oklahoma has a relatively strong unemployment figure, down to 2.7 percent in October 2021. On a YoY basis, Oklahoma's unemployment rate is down 2.5 percent.

All but Colorado are below the national average of 4.6 percent (as of October 2021).

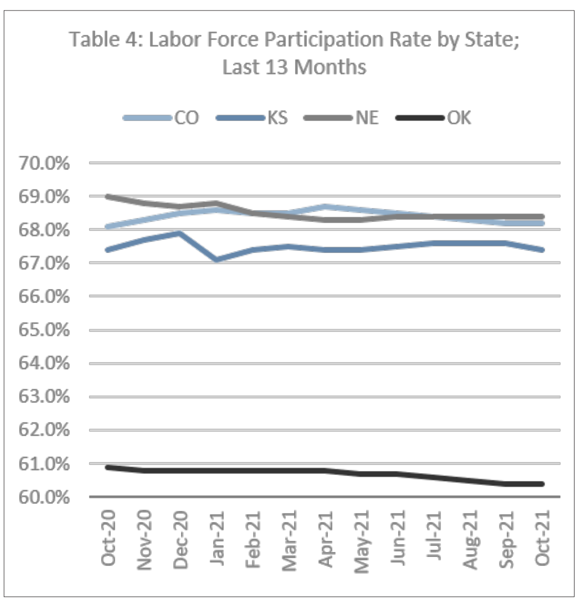


Table 4: Labor Force Participation Rate by State; Last 13 Months

In terms of labor force participation (LFP) rate, Colorado has seen the greatest increase in the District over the past year. At 68.2 percent in October 2021, Colorado is up 0.1 percent YoY, but down 0.4 percent YTD.

Kansas is the only other District state to not see negative growth over the past year, flat at 67.4 percent. Kansas currently ranks third in the District but seventh in the U.S.

Nebraska's strength in labor conditions is also reflected by a strong participation rate. Despite being down 0.6 percent YoY, Nebraska is first in the District and second in the U.S. at 68.4 percent.

Down 0.5 percent YoY, Oklahoma still trails the rest of the District by a wide margin at 60.4 percent.

The nationwide rate in October 2021 was 61.6 percent (flat YoY and up 0.2 percent YTD).

Source: U.S. Bureau of Labor Statistics (BLS) – Civilian Noninstitutional Population and Associated Rate and Ratio Measures for Model-Based Areas, October 2021
Next Release: December 17, 2021 – State Employment and Unemployment (November 2021 data)

Wage Measures

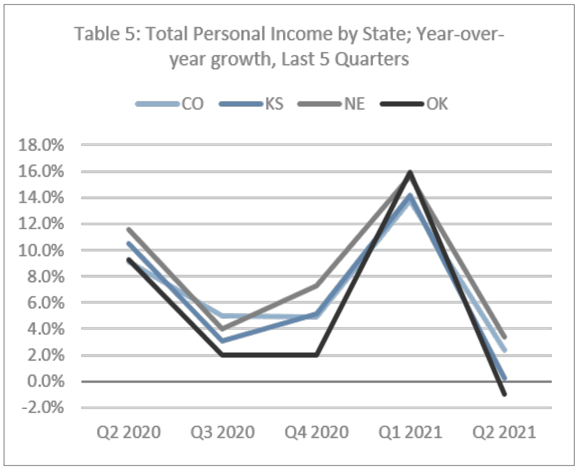


Table 5: Total Personal Income by State; Year-over-year growth, Last 5 Quarters

Total personal income is defined as the income from wages, proprietors' income, dividends, interest, rents and government benefits.

Knowing that the Fed's target inflation rate is 2.0 percent, any personal income growth less than that would be problematic for the workers in that state.

Fortunately for the District, all four states have trended at or well above the Fed's target for four of the last five quarters. However, recent trends are problematic, with persistently above-target inflation and a major downturn in personal income growth in the second quarter of 2021.

All four states in the District are down compared to one year ago, with Colorado dropping from 9.1 percent growth in Q2 2020 to 2.4 percent growth in Q2 2021. Kansas and Nebraska are down 10.3 percent and 8.2 percent to 0.2 percent and 3.4 percent, respectively. Oklahoma was the only District state with negative income growth in Q2 2021 at -1.0 percent, down 10.2 percent YoY.

YoY growth for the U.S. in Q2 2021 was 3.1 percent.

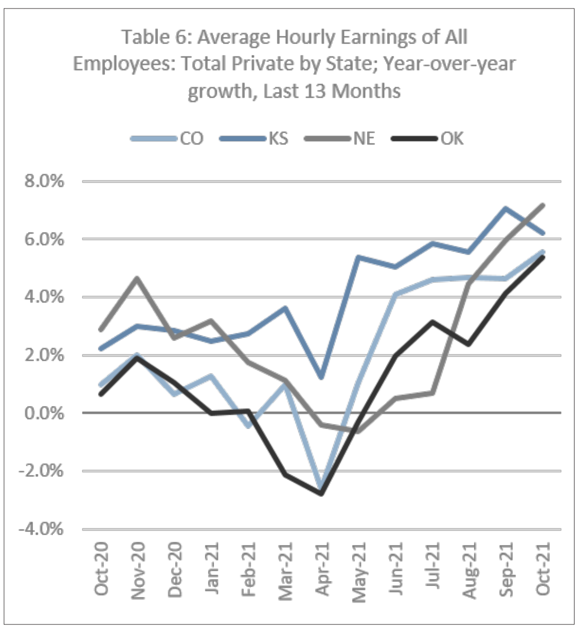


Table 6: Average Hourly Earnings of All Employees: Total Private by State; Year-over-year growth, Last 13 Months

Average hourly earnings (AHE), reflect not only changes in basic hourly and incentive wage rates, but also variable factors like 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 high-paid and low-paid work and changes in workers' earnings in individual establishments.

Earnings differ from wage rates in that earnings are the 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.

Again, understanding the Fed adjusts monetary policy based on a 2.0 percent interest inflation target, maintaining 2.0 percent growth or greater in respect to AHE is paramount for workers. Prior to the pandemic, all four District states were generally trending above 4.5 percent. In all District states, AHE generally trended downward until April 2021 when growth reversed. All four District states have annual growth well above 2.0 percent, with Nebraska tops at 7.2 percent, Kansas at 6.2 percent, and Colorado and Oklahoma close together at 5.5 percent and 5.4 percent. All four states have improved their annual growth figures by more than 4.0 percent YoY.

The YoY growth rate for U.S. AHE in October 2021 was 4.8 percent.

Sources: U.S. Bureau of Economic Analysis (Personal Income) and U.S. Bureau of Labor Statistics (Average Hourly Earnings)
Next Releases: 12/17/2021 (Personal Income); 12/17/2021 (Average Hourly Earnings)

Interest Rates

Table 7: Select Treasury Rates; Last 13 Months

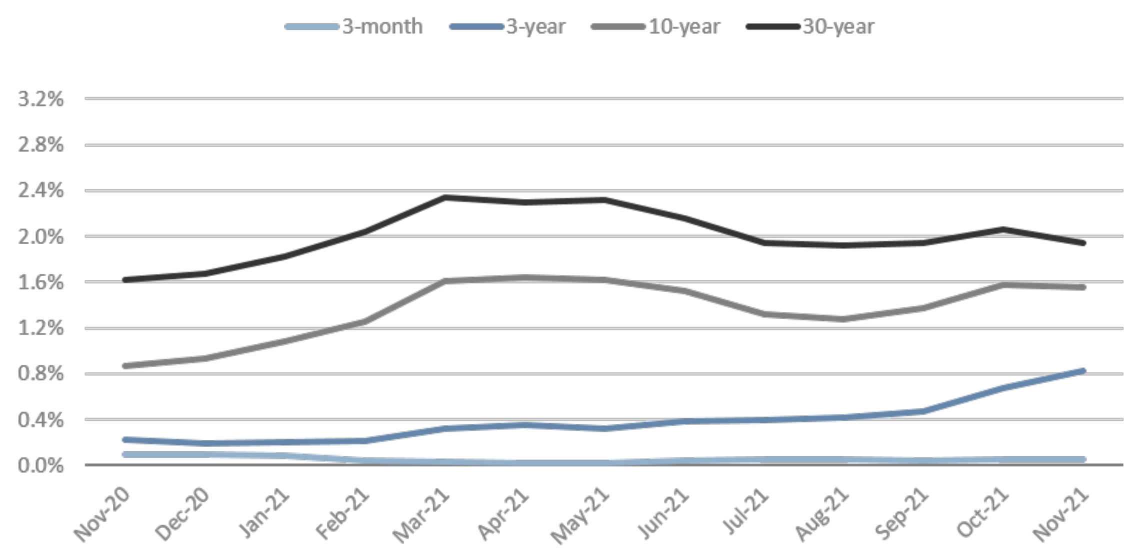


Table 8: Federal Funds Rate: Midpoint of target range or target level (Percent)	2021	2022	2023	2024	Longer Run
3.000					2
2.875					
2.750					
2.625				1	
2.500					9
2.375				1	1
2.250					4
2.125				6	
2.000					1
1.875				1	
1.750					
1.625			3	2	
1.500					
1.375					
1.250					
1.125			6	3	
1.000					
0.875			1	3	
0.750					
0.625		3	3	1	
0.500					
0.375		6	4		
0.250					
0.125	18	9	1		
0.000					

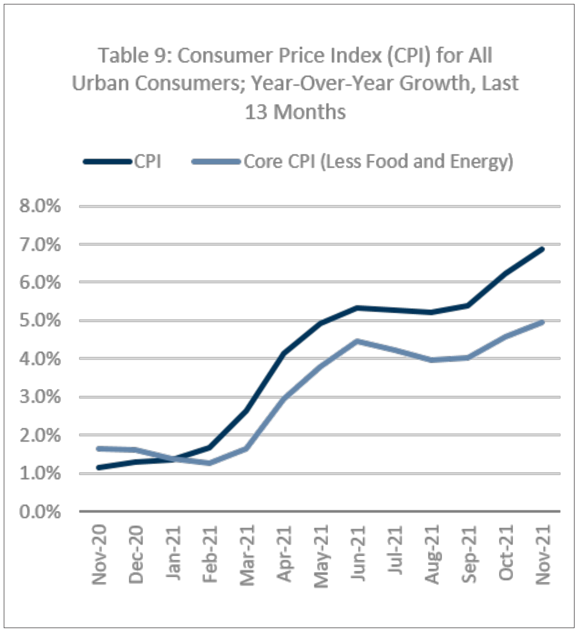
Following the longest expansion in U.S. history (10 years, eight months), the recession resulting from the COVID-19 pandemic lasted about four months, during which Treasury rates dropped by over 100 bps across all tenors. Since bottoming out, the curve has seen very little movement on the lower end while long maturities creeped up then fell back down in recent months.

The key spread economists follow is between the 2- and 10-year Treasuries. The relationship between these two rates speaks to the market's sentiment regarding the economy's long-term health. Once negative in August 2019 and as low as 0.12 percent in 2020, the spread has improved to as high as 1.59 percent in March 2021 before dropping back down to 0.77 percent in its latest reading (December 14, 2021).

The Federal Open Market Committee (FOMC) does not like to trick the market, so fed funds rate moves are typically signaled and priced in well before the announcement date. As detailed in Table 8, the majority of committee members do not expect to leave zero-bound rates until 2023 (as of their most recent summary of economic projections provided at the September 21-22, 2021 meeting).

Source: Board of Governors of the Federal Reserve System – Interest Rates & FOMC Projections materials, November 2021 Next Summary of Economic Projections Release: December 14-15, 2021

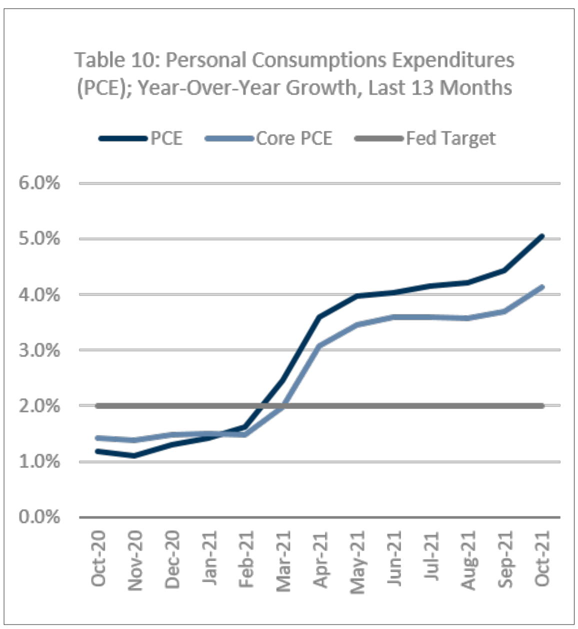
Prices: Consumer Inflationary Measures



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 weights applied to different items in the basket, accounting 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.

At the height of the COVID-19 pandemic, "headline" CPI had seen a sharp decline, but has since skyrocketed to over 6.9 percent. 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.

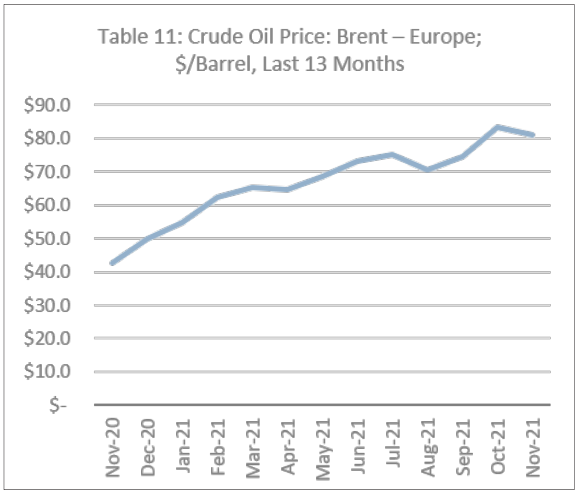


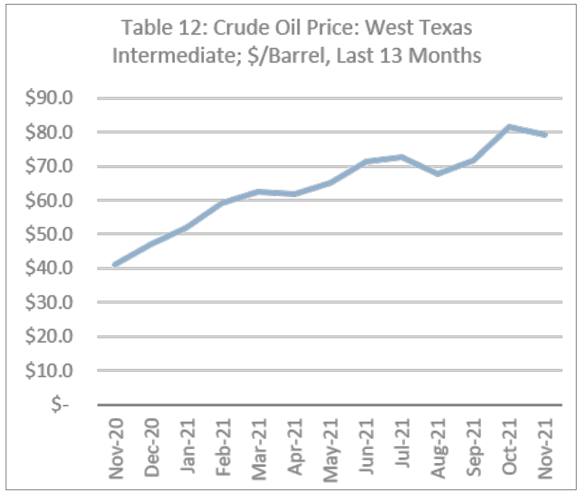
The second and more often cited inflationary measure is the Personal Consumption Expenditures index (PCE). Based on surveys of business sales, the Fed targets 2.0 percent for the core measure when setting monetary policy. In August 2020, an adjustment was made to how the measure is interpreted, allowing for inflation to run higher than the standard 2.0 percent target before hiking interest rates. The new approach has been coined as "average inflation targeting."

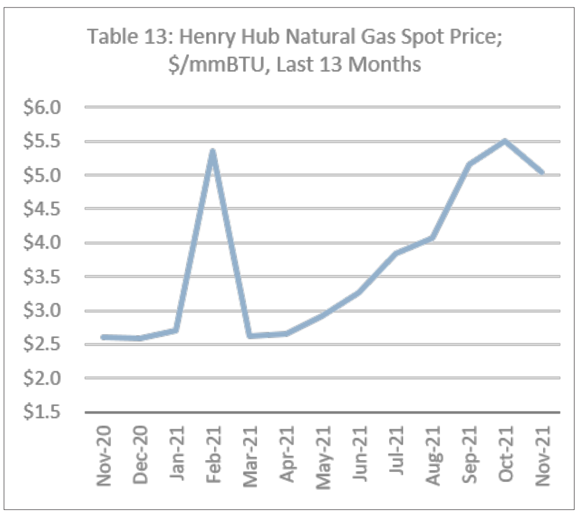
After trending up to near the 2.0 percent level in early 2020, core PCE dropped significantly in mid-2020 to 0.9 percent. However, like its CPI counterpart, PCE inflation has boomed in 2021. At 4.1 percent in October 2021, core PCE is more than double the rate targeted by the FOMC, and has trended at or above 3.1 percent since April 2021. The persistently high level should be of major concern to an FOMC signaling a split decision to adjust the fed funds rate by year-end 2022.

Source: U.S. Bureau of Labor Statistics (CPI) and U.S. Bureau of Economic Analysis (PCE), November 2021 and October 2021 releases, respectively
Next CPI Release: January 12, 2022 (December 2021 data)
Next PCE Release: December 23, 2021 (November 2021 data)

Prices: Energy







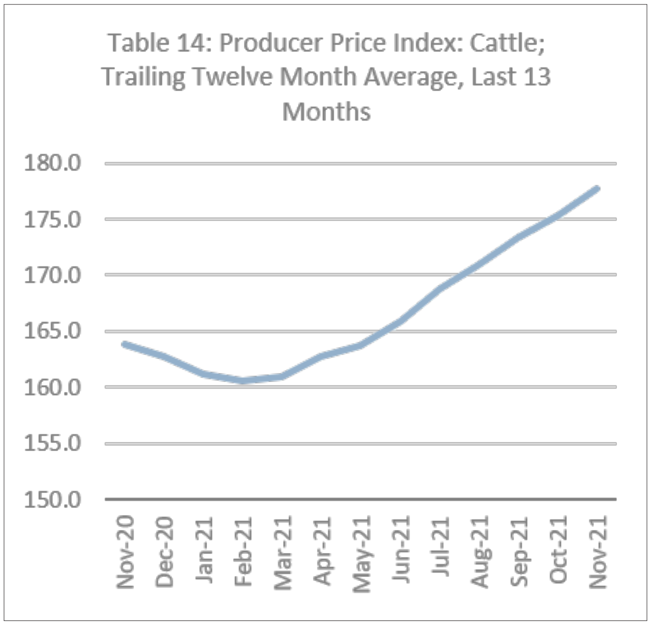
Two different prices of crude oil are generally tracked by those monitoring the energy sector: Brent (European) and West Texas Intermediate (WTI). A number of factors can contribute to differences between the prices, including extraction and production, shipping and storage costs, content quality, and 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.

Currently, Brent is trading at about a $2 premium to WTI. Both have followed a similar trend, topping $40/barrel in November 2020 before rapidly increasing through the winter and spring before moderating in the summer and fall. Improved economic conditions combined with low inventories have prices booming, a welcome development for energy dependent economies like Oklahoma and Colorado.

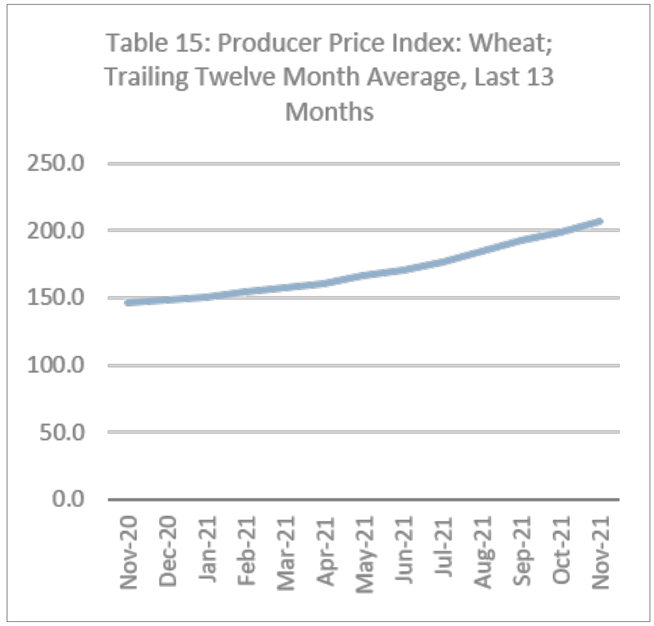
Often reflective of simple demand dynamics, the price of natural gas typically peaks in the winter months and idles in the summer. The last year has been indicative of this trend, with the spot price per million BTU's dropping to $2.60 in spring 2021 before ramping up to $5.50 by October. Prices should remain elevated as colder months loom on the horizon.

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

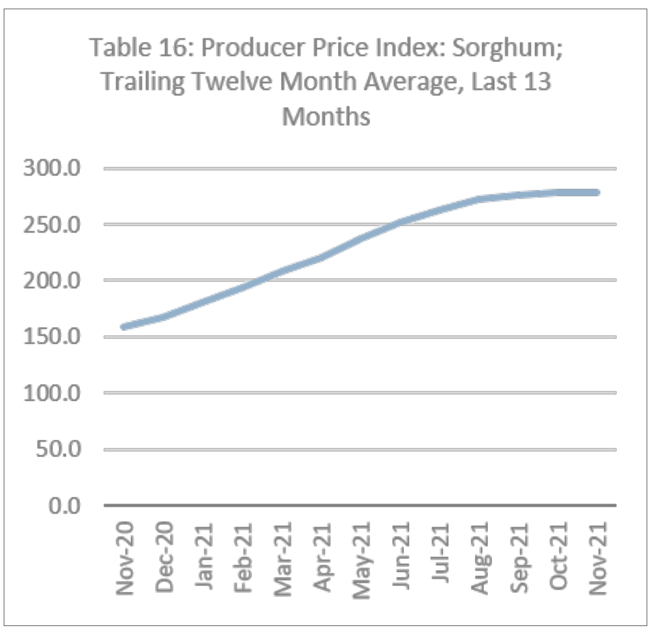
Prices: Farm & Agriculture



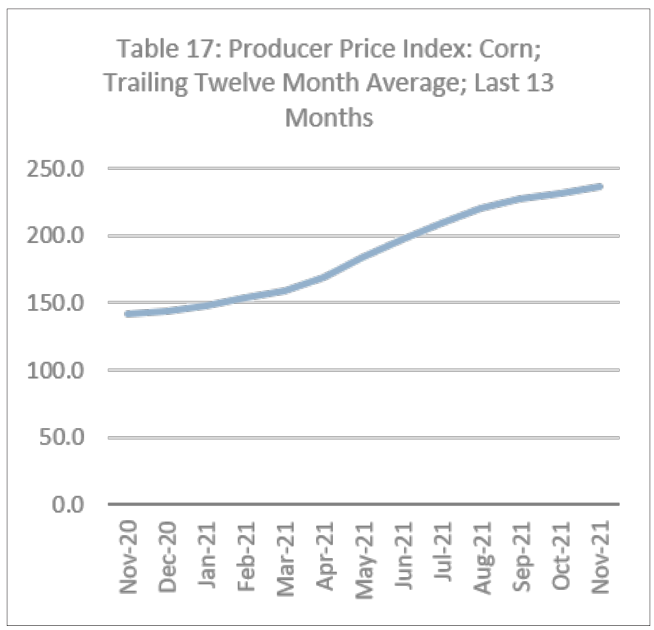
District state rankings in U.S. cattle production: 2nd Nebraska, 3rd Kansas, 5th Oklahoma, 10th Colorado



District state rankings in U.S. wheat production: 1st Kansas, 3rd Oklahoma, 4th Colorado, 8th Nebraska



District state rankings in U.S. sorghum production: 1st Kansas, 3rd Nebraska, 5th Oklahoma, 6th Colorado



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

Source: U.S. Bureau of Labor Statistics – Producer Price Indices, November 2021
Next Release: January 13, 2022 (December 2021 data)

Prices: Housing

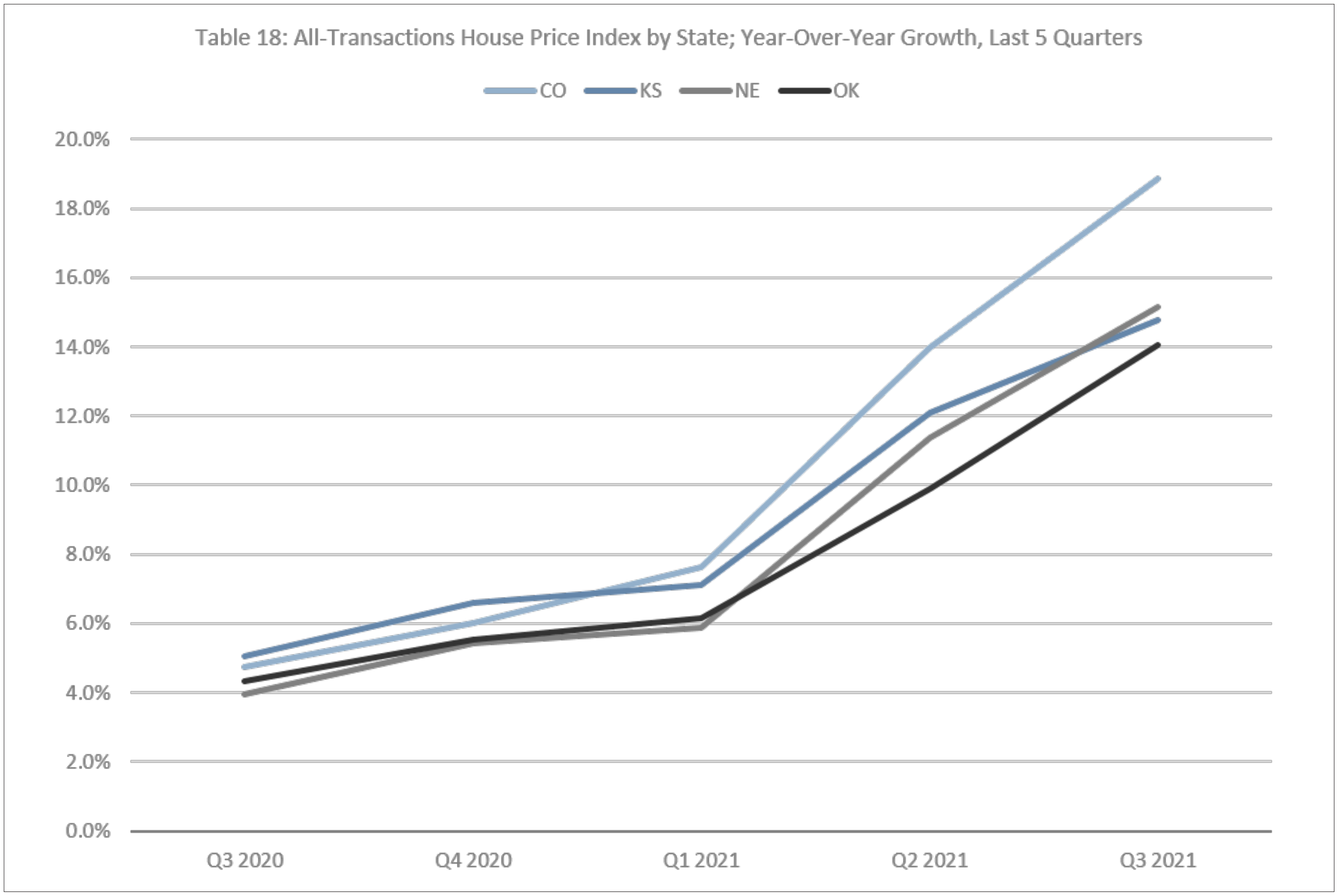


Table 18 depicts the All-Transactions House Price Index (HPI) by state for the District. According to the U.S. Federal Housing Finance Agency, the HPI is a broad measure of the movement of single-family house prices. The HPI is a weighted, repeat-sales index, meaning that it measures average price changes in repeat sales or refinancings 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.

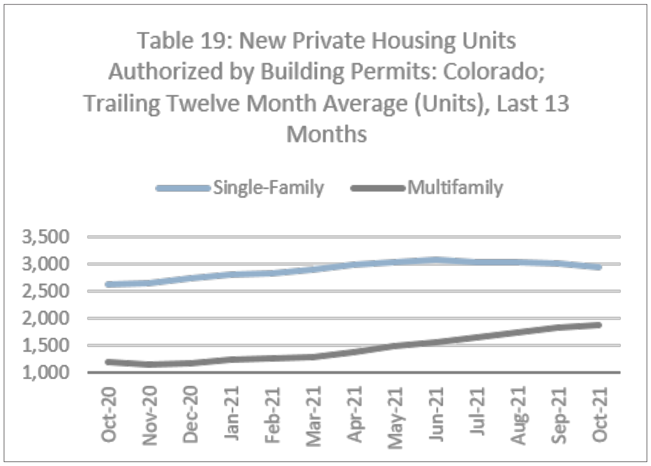
Much like the rest of the U.S., housing prices in District states have seen an uptick in recent quarters. High demand resulting from record-level savings rates has combined with low supply to create a very hot housing market.

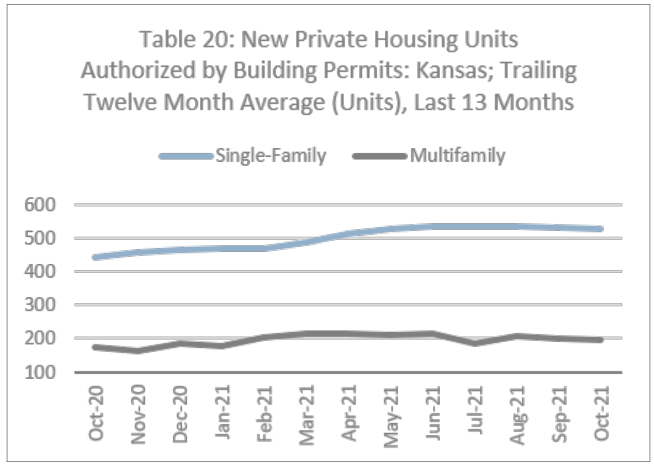
Colorado, currently the hottest housing market in the District, had been surpassed by Kansas for most of 2020. All four District states posted YoY price growth above 14.0 percent in the third quarter of 2021, a seemingly unsustainable figure given the trends in wage measures.

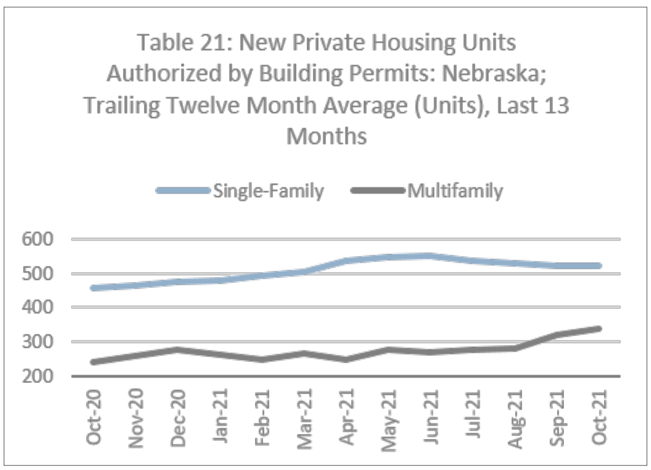
In the third quarter of 2021, the U.S. on a whole saw 16.4 percent YoY growth, higher than all but Colorado in the District.

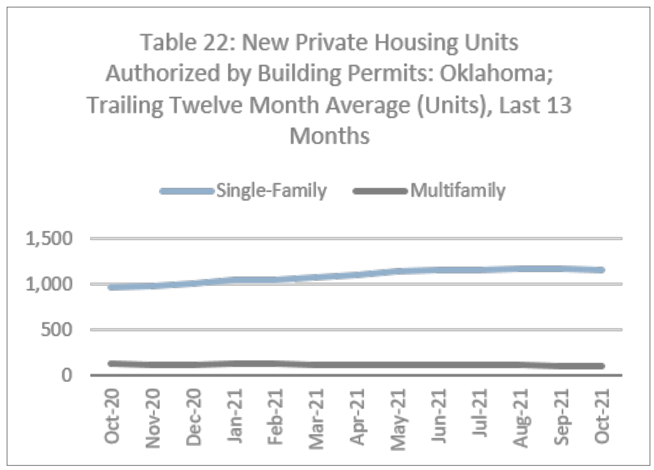
Source: U.S. Federal Housing Finance Agency – House Price Indices, Q3 2021
Next Release: February 22, 2022 (Q4 2021 data)

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 twelve-month average is used to provide a general trend.

Most notable among the four District states is Colorado, accounting for more than half of all building permit authorizations in the District on both a single- and multifamily basis over the past year.

Another notable trend is the differing disparity between single-family and multifamily housing. YoY, the difference between single-family and multifamily permits has grown in Kansas and Oklahoma, while shrinking in Colorado and Nebraska. The biggest disparity in percentage of total authorized permits between single- and multifamily exists in Oklahoma, where more than 91% of all permits comes from single-family authorizations.

Source: U.S. Census Bureau Building Permits Survey – October 2021
Next Release: December 16, 2021 (November 2021 data)