Economic Outlook and Trends for 2023 United States and Colorado



Noise in the 2022 Forecast

The first step in preparing a forecast is to look for the noise from the prior year and determine if it will be a problem in the coming year (see below). Rising interest rates, inflation, and related problems are the most significant obstacles to economic growth. Many of the other headwinds from 2022 will carry over into 2023.

At the start of 2022, the labor market (momentum) was battling significant headwinds - and winning.

As the year progressed, the headwinds increased in size and number. As a result, the rate of job growth tapered off.

The Federal Reserve took responsibility for not recognizing the magnitude of inflation when it became present. The fiscal policy of the legislative and administrative branches increased the problem.

The supply chain disruption happened because of bad luck, U.S. trade and labor policies, and Chinese COVID-19 lockdowns. In most industries, there will be fewer disruptions in 2023.

At the state and national levels, energy policy has been flawed and costly for consumers.

There are many disruptive policies associated with the Eastern European conflict in Ukraine.

For many years, water has been a problem for Colorado. In 2022, some metro communities, such as Aurora, placed water-related constraints on growth. Water policy will receive more attention in 2023.

Immigration policies become more problematic moving forward, nationally and statewide.

State funding will be a concern. After the recent election, Scott Wasserman of Bell Policy Institute stated in an email to supporters, "Colorado may finally be officially "blue!" Now, how do we pay for the vision that comes with the label? Bell board members have since released op-eds suggesting revisions to state funding.

Colorado's reputation as a place to live has deteriorated. On December 27, 2022, the Wall Street Journal editorial board published a commentary entitled the *Blue State Exodus Continues*. The article listed Denver, Seattle, and Portland as problem metro areas.

Drivers and Headwinds

Drivers

- Colorado employment strengths
 - Professional, scientific, and technical services
 - Healthcare
 - Transportation and warehousing
 - Construction for multi-family housing
- Colorado advanced technologies
 - Aerospace
 - Biology
 - Enabling technologies such as photonics (quantum), advanced materials and manufacturing, broadband, software
 - Chips Act may benefit Colorado
 - Continued funding for Federal and military facilities (NREL, NIST, NOAA)
 - Federal funding (NSF, DOD, NIH)
 - Major universities (where enrollment is increasing).

Headwinds

- Inflation
- Interest rates
- Public policy
- Fiscal policy that disrupts the Fed's monetary policy
- International conflicts in Asia, Europe, and Eastern Europe
- Immigration policy
- Lower fertility rates
- Colorado employment weaknesses
 - Leisure and hospitality and state and local government played catch up in 2022 – slower growth will occur in 2023
 - Retail sales is evolving, and employment is flat
 - Financial services, construction, manufacturing, and extractive industries are volatile

Legislative Agenda

This week the 74th General Assembly convened. This partial list of topics on the legislative agenda may directly or indirectly impact the economy in 2023.

- Affordability Affordable housing is a critical topic for many planners, developers, and governing bodies. Economists have conducted research that shows that some affordable housing does not create its desired impact.
- Land use This will be a contentious topic. Who should control what happens on a piece of land local, county, state, or the federal government?
- Poverty, drugs, homelessness, crime.
- Water policy.
- Education There are concerns that K-12 education is properly funding.

- Immigration policy.
- Childcare.
- Governor Polis presidential candidacy There is speculation that Governor Polis will run for President in 2024. What impact will that have on state legislation as he tries to put his best foot forward?
- Abortion.
- Climate change.
- Recession.

GDP and General Outlook

U.S. Real GDP Growth The Conference Board Forecast (December 14, 2022)

Real GDP and Economic Growth

The latest Conference Board forecast points to real GDP growth of 1.9% for 2022. There will be a change of 0.0% in real GDP in 2023. Real personal consumption deteriorated as the year progressed and increased by 2.7% in 2022. Residential investment declined in 2022, while nonresidential posted slower growth. Both will decline in 2023.

Other Economic Factors

The labor market reflected strong but decelerating job growth in 2022. This downward trend will continue into 2023; yet some industries and occupations will see labor shortages. The U.S. unemployment rate was 3.7% in 2022. It will be 4.1% in 2023. In Q2 2022, PCE inflation peaked. The annual rate was 6.3% in 2022. It will be 3.6% in 2023 – still a long way from 2.0%.

Real GDP	Q1 2022 -1.6% 10.6%	Q2 2022 -0.6%	Q3 2022 2.9%	Q4 2022	Q1 2023	Q2 2023	00.0000	04 0000	0004		
			2.9%	0 0 (Q3 2023	Q4 2023	2021	2022	2023
	10.6%			0.7%	-0.6%	-1.5%	-0.4%	1.2%	5.9%	1.9%	0.0%
Real Disposable Income		-2.3%	0.9%	1.0%	0.5%	0.2%	0.3%	0.6%	1.9%	-6.6%	0.4%
Real Personal Consumption	1.3%	2.0%	1.7%	1.2%	-0.5%	-1.5%	-0.4%	0.4%	8.3%	2.7%	0.1%
Residential Investment	-3.1%	-17.8%	-26.4%	-30.0%	-10.0%	-10.0%	-5.0%	-1.0%	10.7%	-10.9%	-16.0%
Nonresidential Investment	7.9%	0.1%	5.1%	0.9%	-2.4%	-4.0%	-1.4%	2.0%	6.4%	3.5%	-0.6%
Total Gov't. Spending	-2.3%	-1.6%	3.0%	2.7%	2.8%	3.0%	3.0%	2.7%	0.6%	-0.7%	2.6%
Exports	-4.6%	13.8%	15.3%	4.0%	-2.0%	-2.0%	0.0%	1.0%	6.1%	7.7%	2.5%
Unemployment Rate	3.8%	3.6%	3.6%	3.7%	3.7%	3.8%	4.2%	4.5%	5.4%	3.7%	4.1%
PCE Inflation (%Y/Y)	6.4%	6.6%	6.3%	5.7%	4.7%	3.6%	3.2%	2.8%	4.0%	6.3%	3.6%
Core PCE Inflation (%Y/Y)	5.3%	5.0%	4.9%	4.7%	4.0%	3.6%	3.1%	2.8%	3.5%	5.0%	3.4%

Source: The Conference Board and cber.co.

Source: The Conference Board, https://www.conference-board.org/publications/Economic-Forecast-US, cber.co.

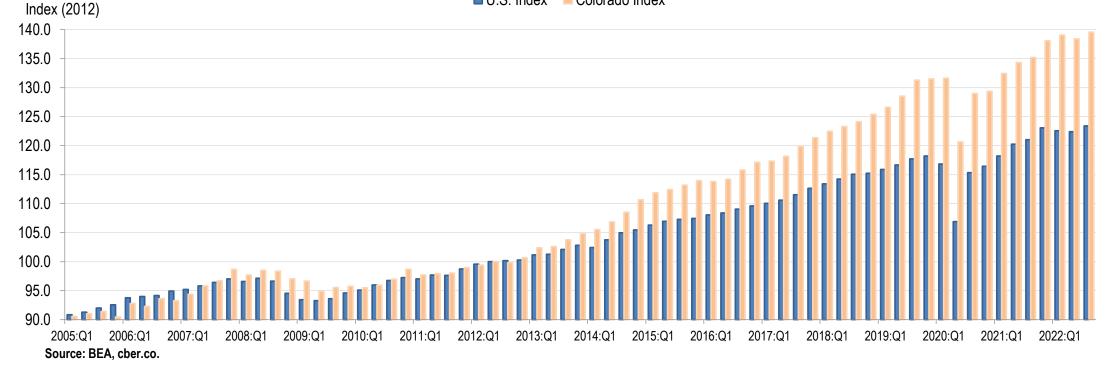
Colorado GDP Index vs U.S. GDP Index

Colorado/U.S. GDP

Since 2013, the Colorado Real GDP Index (orange) has outperformed the U.S. Index (blue). The index for both was 100 in 2012. In Q3 2022 the index for Colorado was 139.6 and 123.4 for the U.S.

Colorado vs. U.S. Real GDP Chained Indices (2012 Dollars)

U.S. Index Colorado Index



Change in Annual Nominal Colorado GDP

Change in Annual Colorado GDP (Not Adjusted for Inflation)				
	-	% Total 2	2021 – 2007	2007-2021
	2021 GDP	2021 GDP [Difference	% Change
Finance, insurance, real estate, rental, and leasing	89,886.3	20.6%	40,143.10	80.7%
Government and government enterprises	52,156.1	12.0%	22,364.80	75.1%
Professional, scientific, and technical services	44,949.2	10.3%	23,932.00	113.9%
Manufacturing	28,883.2	6.6%	9,543.90	49.3%
Information	27,315.0	6.3%	8,118.20	42.3%
Health care and social assistance	26,789.5	6.1%	13,607.50	103.2%
Wholesale trade	25,703.2	5.9%	11,979.40	87.3%
Retail trade	24,884.8	5.7%	10,746.20	76.0%
Construction	24,527.9	5.6%	10,250.70	71.8%
Accommodation and food services	15,272.5	3.5%	7,506.90	96.7%
Mining, quarrying, and oil and gas extraction	13,475.9	3.1%	2,192.80	19.4%
Administrative and support and waste management and remediation services	13,324.5	3.1%	5,337.90	66.8%
Transportation and warehousing	12,650.3	2.9%	5,883.90	87.0%
Other services (except government and government enterprises)	9,651.7	2.2%	3,794.20	64.8%
Management of companies and enterprises	9,385.8	2.2%	4,956.80	111.9%
Utilities	5,565.5	1.3%	2,482.30	80.5%
Arts, entertainment, and recreation	5,540.4	1.3%	2,941.90	113.2%
Educational services	3,602.0	0.8%	1,808.30	100.8%
Agriculture, forestry, fishing and hunting	2,795.9	0.6%	322.50	13.0%
Total	436,359.7	100.0%	187,913.30	75.6%

In 2021, about 43% of the Colorado GDP was in the FIRE, Government, and PST sectors. Between 2007 and 2021, the state GDP increased by 75.6%.

The fastest-growing sectors of *significant size* are PST, Health Care, and FIRE. The MCE, corporate headquarters, and AER sectors are the fastest growing sectors of small size.

Manufacturing and Information are segments of advanced technology; that have had minimal growth since 2007.

Source: BEA, cber.co.

Colorado Economic Forecast 2023

In 2023, the Colorado real GDP	Colorado Economic Forecast					
growth rate will be 1.5% compared to 0.0% for the U.S.	Real GDP Value (billions) % Change Real GDP	2020 \$353.35 -1.4%	2021 \$373.76 5.8%	2022 \$388.7 4.0%	2023 \$395.0 1.5%	2022 The a passe
Colorado job growth will be the strongest in Q4. Overall, it will be much weaker than in 2022.	CES Employment (thousands) Annual Change (thousands) % Change Unemployment Rate	2,651.1 -139.0 -5.0% 7.3%	2,744.0 92.9 3.5% 5.5%	2,863.0 121.0 4.3% 3.6%	2,887.0 24.0 0.8% 3.8%	The to permi althou
Retail sales for 2023 will increase more slowly than during the past two years.	Retail Sales (billions) % Change	\$228.8 1.9%	\$268.3 17.3%	\$308.7 12.8%	\$319.5 3.5%	for m input intere impac
Colorado businesses will continue	Consumer Price Index (CPI)	272.2 2.0%	281.8 3.5%	304.3 8.0%	317.4 4.3%	and fi
to face headwinds from increased inflation, interest rate hikes, labor	DIA Passengers (millions)	33.0	59.0	69.0	71.0	Crude 2021
shortages, and public policy. It will be 2024 before inflation slows to the Fed's target rate.	Single Family Permits Multi-family Permits	26,636 13,833	30,246 26,278	29,000 26,000	23,000 24,000	and resignt
	Oil Production (thousands) barrels	172,000	142,000	146,000	145,000	Sign

number of DIA passengers in 2 will remain strong in 2023. airport should top 70 million sengers in 2023.

total number of 2023 building nits will be less than in 2022, ough there will be solid demand nulti-family permits. Higher it costs, rising prices, and rest rate hikes have negatively acted construction, home sales, financial services.

de oil production declined in because of state regulations reduced demand. It increased ntly in 2022 and will post a nt decline in 2023.

Population – The Economy – It Begins with a Job

Population – It Begins with a Job

The Demographics of Colorado and the U.S. are Changing

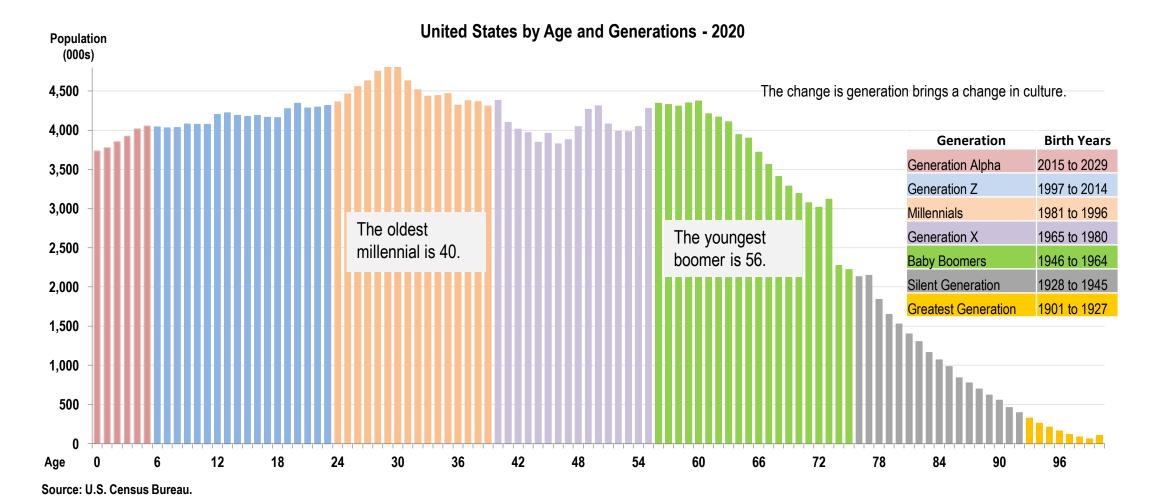
We have transitioned from Baby Boomers to Millennials.

Colorado does not have enough population (or the right population mix) to fill job vacancies.

The fertility rate is declining.

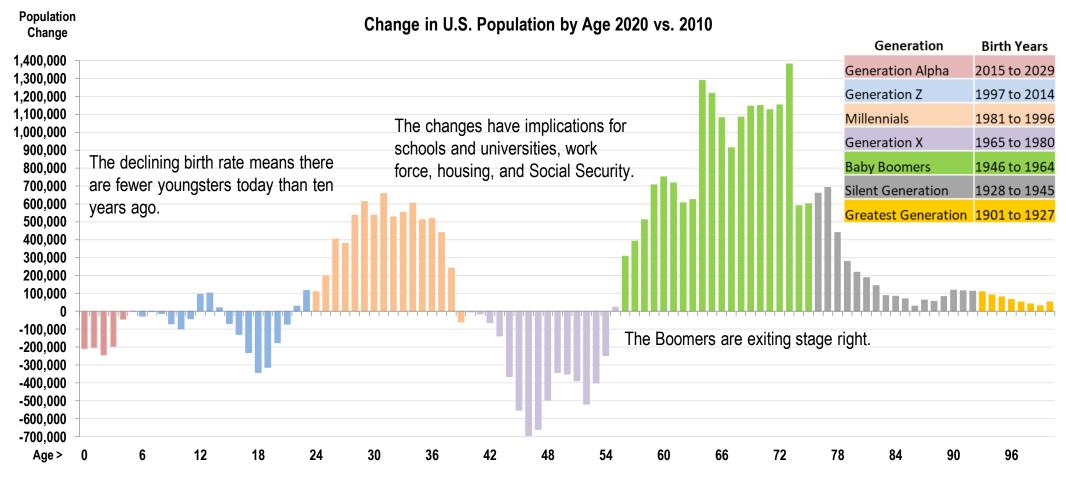
The racial and ethnic mix of the Colorado population is changing.

United States by Age and Generations - 2020



Colorado-based Business and Economic Research https:cber.co

Change in Population by Age 2020 vs 2010

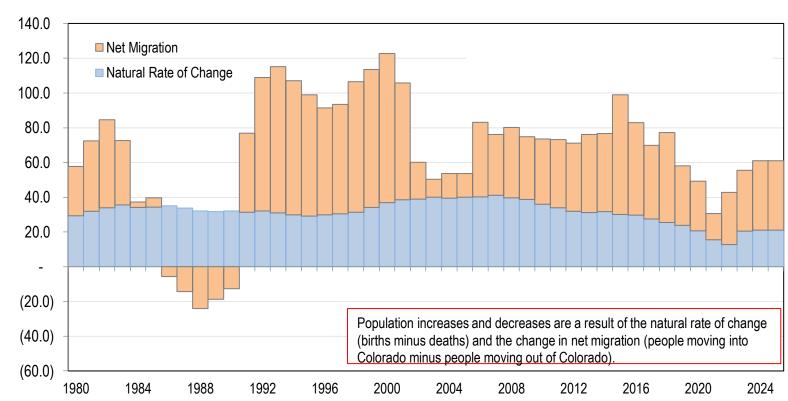


Source: U.S. Census Bureau.

Colorado Population Components of Change

Thousands

Change in Colorado Population 1980-2025



Since 2000, the Colorado population has increased at a decreasing rate. There are fewer than anticipated people because of higher death rates, a lower fertility rate, and lower net migration.

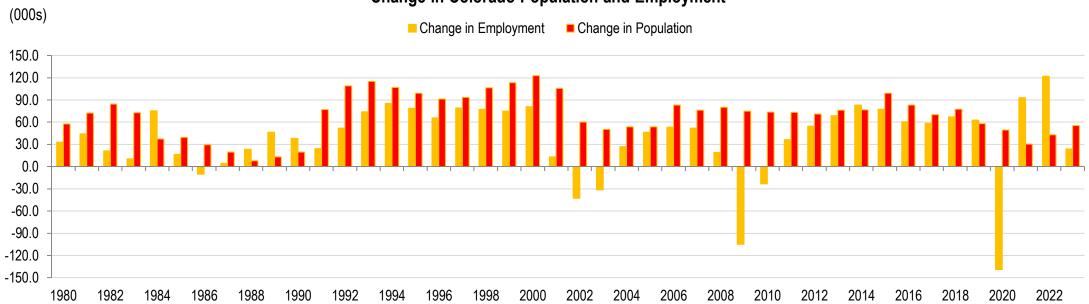
In 2020 and 2021, more significant population changes occurred because of the pandemic-related policies. There were altered migration patterns and fewer births.

In 2023, the level of net migration (orange) will increase by 20,500, the natural rate (blue) will increase by 35,000, and the population will increase by 55,500. The total Colorado population will be 5,913,007.

Change in Colorado Population and Employment

Change in Colorado Population and Employment

Generally, the change in population (red) moves in the same direction as the change in employment (yellow). From 1991 to 2013 the population increased more than the employment. Recently, that was not the case in 2021 and 2022. In part, this explains why there has been a shortage of workers in Colorado.



Change in Colorado Population and Employment

Source: Bureau of Labor Statistics, NSA, cber.co.

Colorado-based Business and Economic Research https:cber.co

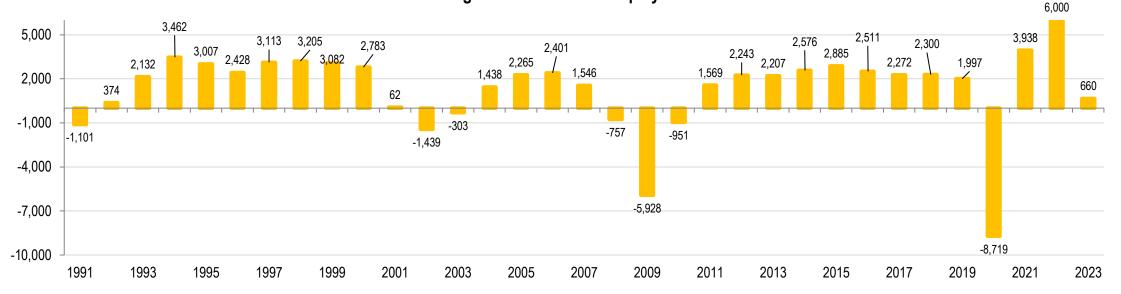
U.S. and Colorado Employment

Change in Employment United States

Change in U.S. Employment

The 2021 average annual U.S. employment (NSA) was about 6.0 million more than 2021. The YOY monthly level of change in employment (not shown) has decreased since March 2022. Employment is expected to increase at an uneven pace in 2023 and average 55,000 per month or 660,000 for the entire year.

(000s)



Change in United States Employment

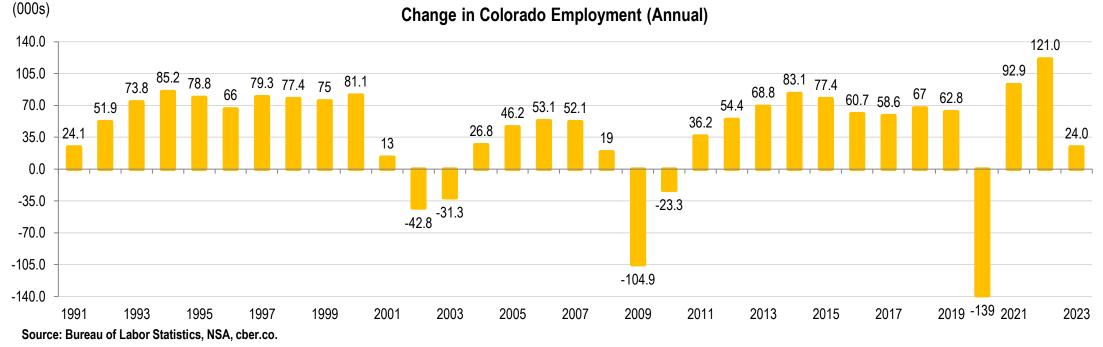
Source: Bureau of Labor Statistics, NSA cber.co.

Colorado-based Business and Economic Research https://doi.org/10.1011/j.com/10011/j.com/10011/

Change in Colorado Employment

Colorado Employment

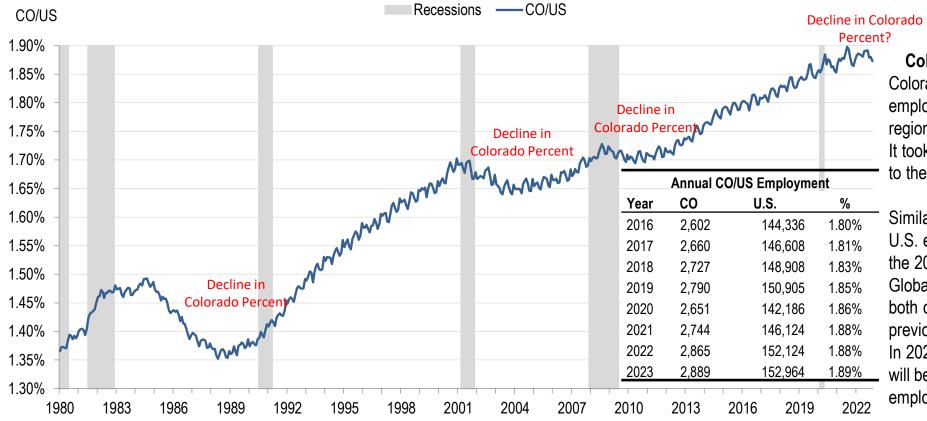
Despite extremely strong headwinds, job growth exceeded expectations in 2022 and 121,000 jobs were added. Most sectors have recovered from the effects of the COVID-19 policies. As a result, growth in those sectors will be diminished. In addition, inflation and the higher interest rates will cause the economy to grow at a slower rate than the past two years. Weak job growth has happened before. Between 2001 and 2010 (The Lost Decade) the net gain in employment was 7,900.



Colorado-based Business and Economic Research https://doi.org/10.1011/j.com/10011/j.com/10011/

Colorado Employment as a Percent of U.S. Employment

Colorado Employment as a Percent of U.S. Employment



Colorado/U.S. Employment Colorado's share of U.S. employment declined during the regional recession of the 1980s. It took almost a decade to return to the previous peak.

Similarly, Colorado's share of U.S. employment decreased after the 2001 recession and the Global Financial Crisis of 2008. In both cases, the return to the previous peak took several years. In 2023, Colorado employment will be about 1.89% of U.S. employment.

Source: BLS, cber.co.

Major Front Range County Employment

Recovery from COVID-19 Policies

Major Front Range County Employment

	-		• •	•
County	% Change	Change In Jobs	Return to 2019 Employment	June 2022 Employment
	•			
El Paso County	5.2%	14,824	Oct-20	298,194
Douglas County	9.0%	11,730	Nov-20	142,555
Adams County	6.0%	13,507	May-21	239,355
Boulder County	3.6%	6,812	Jun-21	195,264
Larimer County	4.7%	7,825	Jun-21	173,641
Broomfield County	5.5%	2,246	Jul-21	42,732
Denver County	4.9%	25,991	Aug-21	555,074
Arapahoe County	1.3%	4,305	Oct-21	339,138
Jefferson County	1.5%	3,626	May-22	246,706
Weld County	-1.7%	(1,946)	Not recovered	112,450
Colorado	3.7%	102,346	Jun-21	2,838,451

The above table uses QCEW County employment data to analyze employment change in the recovery from the COVID-19-related policies. The change is the difference between June 2022 employment (most current QCEW data) and the 2019 annual employment for ten metro counties. About 83% of the state's employment and 87% of the change in employment is in these ten counties.

Key Points

- El Paso and Douglas County returned to their 2019 employment level in the fall of 2020. Through July 2022, they have added about 26,000 jobs.
- Adams County passed its 2019 average in May 2021. In June 2021, Colorado returned to the 2019 employment level, along with Boulder and Larimer Counties.
- In July and August 2021, Broomfield and Denver returned to the 2019 level. Although Denver County was slower to recover, it has had above-average job growth.
- Arapahoe and Jefferson Counties were slow to recover. Both are home to significant metro centers.
- Finally, Weld County has not recovered. It has suffered from a drop in demand related to COVID-19 and state and federal regulatory policies.
- In 2023, the sources of job growth will be El Paso, Douglas, and Adams Counties.

Summary of Colorado Seasonally Adjusted Employment November 2022 less December 2021

	November 2022	Nov 2022 less	Percent
NAICS Sector	SA (000s)	Dec 2021	Change
Total Employment	2,901.9	95.1	3.4%
Healthcare	317.4	13.8	4.5%
Food and Accommodation (AFS)	283.4	5.6	2.0%
Professional, Scientific, and Technical Services	281.1	18.2	6.9%
Retail Trade	277.2	3.4	1.2%
Local Government	273.7	9.8	3.7%
Construction	183.5	4.6	2.6%
Financial Activities	178.5	-1.5	-0.8%
Administrative Services	167.2	7.6	4.8%
Manufacturing	156.6	5.4	3.6%
State Government	127.3	1.2	1.0%
Other Services (Personal)	122.8	6.1	5.2%
Wholesale Trade	114.2	2.3	2.1%
Transportation, Warehousing, and Utilities	110.9	4.8	4.5%
Information	78.9	1.2	1.5%
Arts, Entertainment, Recreation (AER)	60.2	6.7	12.5%
Federal Government	53.2	-0.7	-1.3%
Management of Corporations and Enterprises	47.8	3.2	7.2%
Education (Private)	47.3	2.5	5.6%
Extractive Industries	20.7	0.9	4.5%

PST and healthcare were leaders in absolute job growth. About 21% of all employees work in these two sectors and they accounted for about 34% of all jobs added.

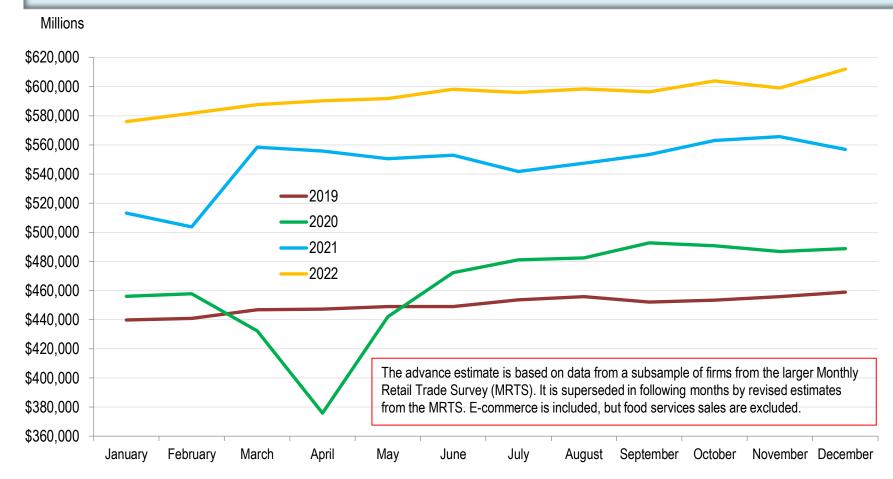
By comparison, retail and AFS accounted for 19% of employees. Slightly less than 10% of jobs added are in these sectors.

The state and local government employment remains below the prepandemic peak. These sectors employ about 14% of total workers, but almost 12% of the jobs added were in these sectors.

TWU is a small sector with a number of jobs added in the warehousing subsector. Construction, manufacturing, and financial activity employment are volatile.

Retail Sales

U.S. Advance Retail Sales Monthly



Advance Retail Sales

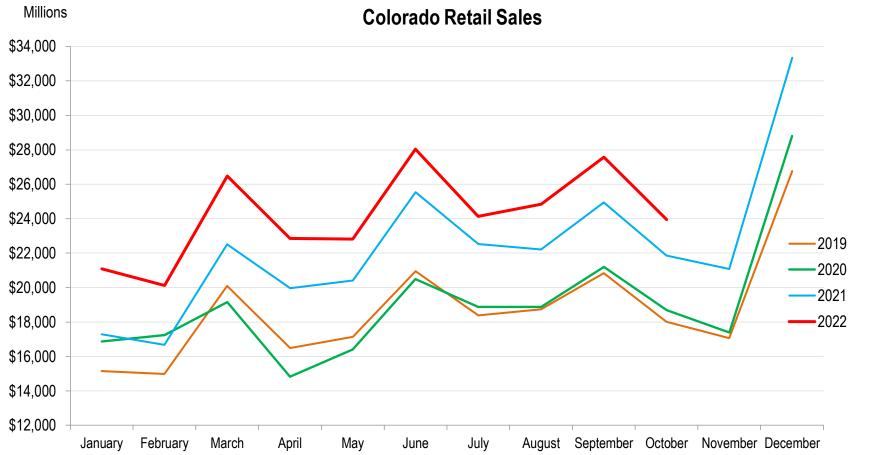
Retail sales for 2022 (yellow) will be 8.4% greater than in 2021 (blue) and holiday sales growth (November and December) was 7.9% greater than the prior year.

Sales for 2023 will be 2.5% greater than in 2022 as buyers are more cautious.

Annual	Retail Sales	(Trillions)
2017	\$5.05	4.4%
2018	\$5.26	4.2%
2019	\$5.40	2.7%
2020	\$5.56	2.9%
2021	\$6.56	18.0%
Source: Ce	nsus, cber.co	

Source: U.S. Census Bureau, cber.co. Note: Not adjusted for inflation. Colorado-based Business and Economic Research https:cber.co

Colorado Retail Sales Monthly



Colorado Retail Sales

Average retail sales for the first ten months of 2022 (red) were 13.1% greater than the same period in 2021 (turquoise). Sales have increased at a decelerating rate starting in April and will end the year at 12.8% greater than 2021. Look for sales to increase by 3.5% in 2003 as buyers become more cautious.

Annual	Retail Sales	(Billions)
2017	\$194.6	5.4%
2018	\$206.2	5.9%
2019	\$224.6	9.0%
2020	\$228.8	3.9%
2021	\$268.3	17.3%
2022f	\$295.2	10.0%

Source: Colorado Department of Revenue, https://cdor.colorado.gov/retail-sales-reports, cber.co. Note: Not adjusted for inflation. Colorado-based Business and Economic Research https://cber.co

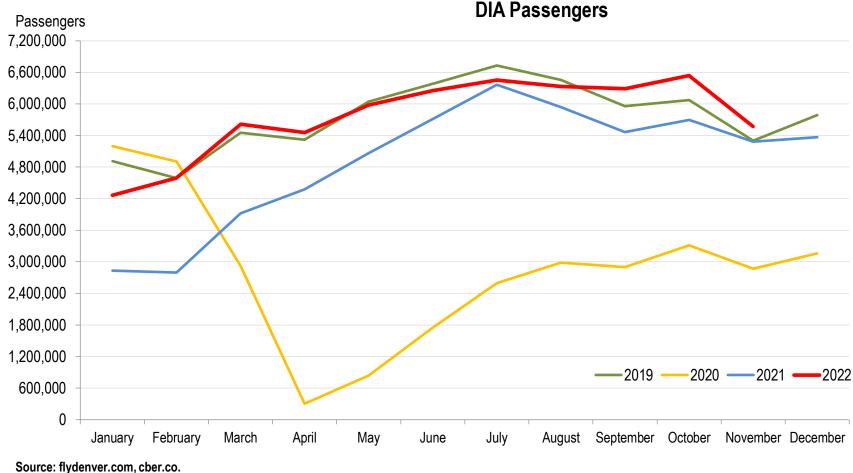
Other – Transportation, Building Permits, ISM

Colorado Residential Building Permits Units

Units	Colorado Building Permits	Year	Single Family	Multi-Family
6,500 🗌		2000	38,588	16,008
6,000 -	Multifamily For the first eleven months of 2022, the YOY total number of authorized single-family	2001	36,437	18,570
	Single Family permits changed by -9.4%. The number of multi-family permits for the first eleven	2002	35,042	12,878
5,500 -	months of 2022 was 5.3% greater than the same period in 2021. Demand for single-	2003	33,894	5,732
5,000 -	family homes has fallen sharply. During the first half of 2023, multi-family housing	2004	40,753	5,746
1 500	increased in popularity because units are more affordable. Between 2016 and 2021,	2005	40,018	
4,500 -	more than 100,000 MF units were authorized (right column).	2006	30,365	
4,000 -		2007	20,516	
3,500 -		2008	11,147	7,851
		2009	7,261	2,094
3,000 -		2010	8,790	
2,500 -		2011 2012	8,729	,
2,000 -		2012	12,618 15,773	
		2013	17,100	
1,500 -		2014	20,025	
1,000 -		2016	21,577	17,397
500 -		2017	24,338	
500 -		2018	26,134	
0 -		2019	24,756	13,877
20	00 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022	2020	26,636	13,833
Source:	TAMU Real Estate Center, U.S. Census Bureau, cber.co.	2021	30,246	26,278

Source: TAMU Real Estate Center, U.S. Census Bureau, cber.co.

Denver International Airport Passengers Monthly



DIA Passengers

The number of DIA passengers during the first eleven months of 2022 (red) is slightly above the YTD total for 2019 (green) but significantly above the YTD total for 2021 (blue). Business travelers have not returned to pre-COVID levels. There were 63.4 million DIA passengers during the first eleven months of 2022 and a record may be set in 2022 (barely).

Year	Passengers	% Change
2022f	64,000,000	8.8%
2021	58,828,552	74.4%
2020	33,741,129	-51.3%
2019	69,015,703	7.0%
2018	64,494,613	5.1%
2017	61,379,396	5.3%
2016	58,266,515	7.9%

Spending and the Wealth Effect

Confidence, Consumption, Savings, Credit, and The Wealth Effect

The Michigan Consumer Sentiment Index shows that consumers began losing their appetite for spending 18 months ago.

Consumption has continued, the personal savings rate has decreased, and credit has increased.

The wealth effect for many consumers took a hit in 2022. In turn, their confidence in spending will decrease.

The equities market was volatile and down most of the year.

The value of national and Colorado housing prices declined sharply in 2022.

Consumer Sentiment Index University of Michigan

Michigan Consumer Sentiment Index

Recessions — Index – – – Current Value



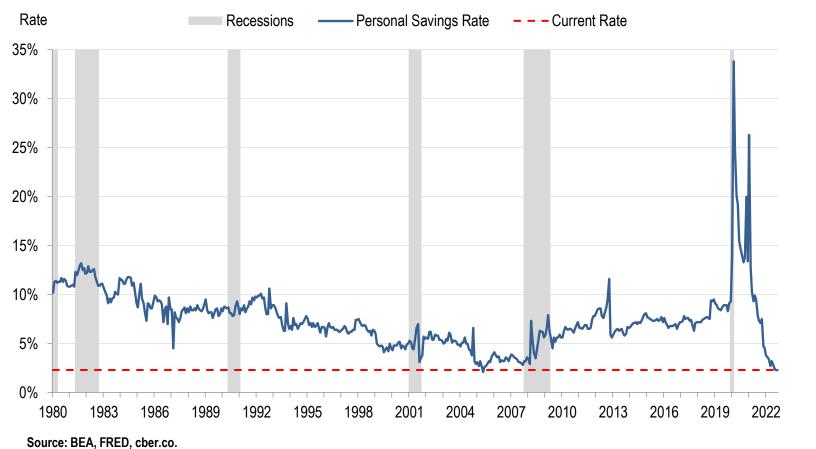
Source: University of Michigan, cber.co.

1966 Q1=100

U.S. Personal Savings Rate

Percentage of Disposable Personal Income

Personal Savings Rate



Personal Savings

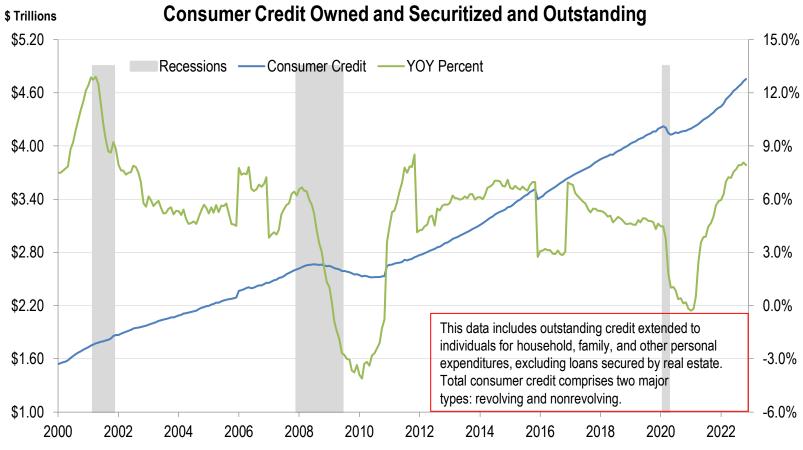
The personal savings rate jettisoned to 33.8% in the early stages of the pandemic. It fell to 13.0% in November 2020, then rose to 26.6% in 2021.

The November 2022 personal savings rate was 2.3%, and savings were \$461.2 billion, down from \$6.4 trillion in April 2020.

Year End Personal Savings (Billions) and Rate			
2017	\$948.5	6.3%	
2018	\$1,511.9	9.4%	
2019	\$1,381.3	8.3%	
2020	\$2,402.8	13.8%	
2021	\$1,372.3	7.5%	
Source: Bl	EA, cber.co		

Colorado-based Business and Economic Research https:cber.co

U.S. Consumer Credit Outstanding



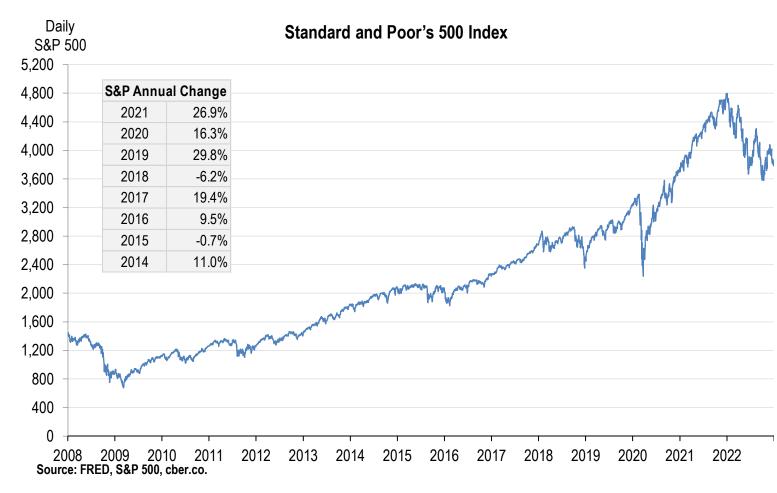
Consumer Credit

From Q3 2008 to Q4 2010, consumers deleveraged and decreased the amount of outstanding consumer credit (blue),
including consumer defaults on loans. The amount of credit authorized increased in 2018 and 2019 and declined in 2020 as consumers reduced expenditures and paid off debt during the pandemic. In January 2022, the YOY rate of consumer debt increased by 6.0% (green). In November 2022, debt increased by 7.9%.

	nding Credit (d Percent Cha	• •
2017	\$3,830.8	5.3%
2018	\$4,007.0	4.5%
2019	\$4,192.2	4.6%
2020	\$4,184.9	-0.3%
2021	\$4,431.9	5.9%
Source: FF	RED, G-19, cber.c	0

Source: FRED, Federal Reserve, G.19, SA.

Standard and Poor's 500 Index



COVID-19 Policies Bear Market - 2020

After reaching 3,386 on February 19, 2020, the S&P 500 slipped to 2,237 on March 23, 2020, a loss of 34% or 1,148 points. On August 18, 2020, the S&P returned to 3,386. The bear market of 2020 was short-lived (149 days).

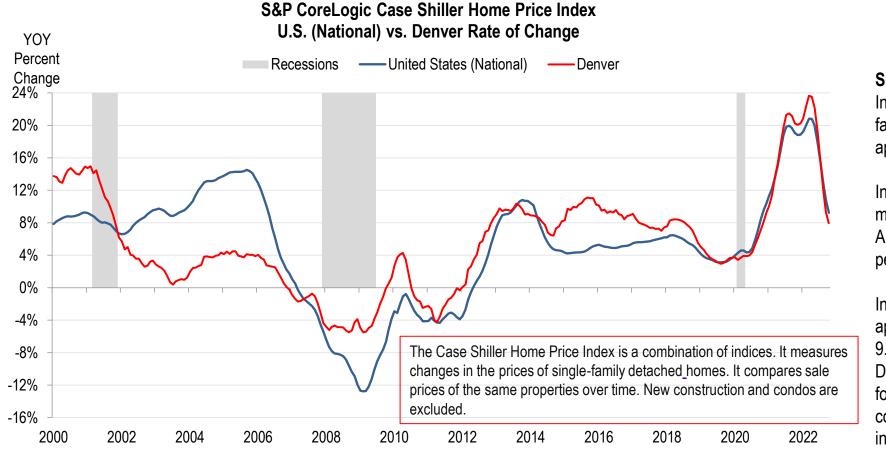
Year-End 2021

The S&P index increased at a steady rate for most of 2021. On December 31, it was 4,766 or 26.9% greater than the December 2020 closing value.

YTD Change - 2022 Bear Market

On July 16, 2022, the S&P 500 closed at 3,667, a change of -23.1%, or 1,099 points off the December 31, 2021 value. The S&P value on December 20, 2022 (the last day of trading), posted a change of -19.4% from the closing value for 2021. The closing value was 3,839.50

Case Shiller Home Price Index YOY National vs. Denver Rate of Change



S&P CoreLogic Case Shiller In 2019, the housing market favored buyers, and the U.S. YOY appreciation rate was about 4.0%.

In the summer of 2020, the market began to favor sellers. In August 2021, YOY appreciation peaked above twenty percent.

In October 2022, the YOY appreciation for the U.S. was 9.2% (blue) and 7.9% (red) for Denver. The level of appreciation for the U.S. and Denver will continue to decelerate as the interest rate hikes continue.

Source: S&P Case Shiller, cber.co.

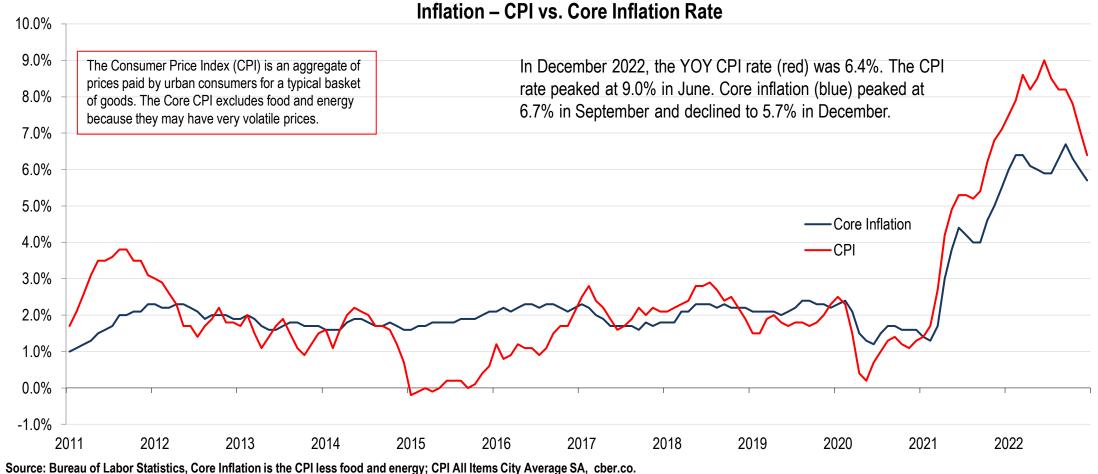
Inflation

U.S. Inflation CPI vs. Producer Price Index (Final Demand)

12.0% -		Inflation – CPI vs. PPI Rate
12.0% -	The Consumer Price Index (CPI) is an aggregate of prices paid by	In December 2022, the YOY CPI rate (red) was 6.4%. It was 7.7%
10.0% -	urban consumers for a typical basket of goods. The Core CPI excludes food and energy because they may have very volatile	in the second half of 2022. The November PPI Final Demand rate
9.0% - 8.0% -	prices. The Producer Price Index (PPI) measures the average change over time in the selling prices received by domestic	(green) was 7.4%. Inflation peaked at 9.0% in June, and the PPI peaked at 11.7% in March. The consumer price index rate will
7.0% -	producers for their output.	remain high in 2023.
6.0% - 5.0% -		Final Demand PP
4.0% -	Both the CPI and PPI increased 2007-2008 Global Financial Cris	— CPI
3.0% - 2.0% -		
1.0% -		
0.0% -		
-1.0% - -2.0% -		\checkmark V
20	011 2012 2013 2014 2015	2016 2017 2018 2019 2020 2021 2022
Source: Bui	reau of Labor Statistics, PPI Commodity Data, Final Demand SA; CPI All Item	ns City Average SA, cber.co.

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U.S. Inflation CPI vs. Core Inflation



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Inflation Denver-Aurora-Lakewood 2022

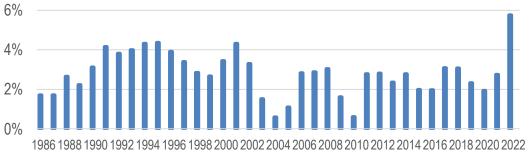
Consumer Purchasing Index for Denver-Aurora-Lakewood and the U.S.							
	Half 1	Half 2	Annual		Half 1	Half 2	Annua
Colorado CPI	8.6%	7.5%	8.0%	Colorado Core CPI	7.4%	6.8%	7.1%
Alcoholic Beverages	4.2%	6.8%	5.5%	Housing	6.9%	8.4%	7.6%
Apparel	4.2%	2.2%	3.2%	Meats, Poultry, Fish, Eggs	14.5%	10.8%	12.6%
Dairy	6.4%	15.0%	10.6%	Medical	10.1%	9.4%	9.7%
Food and Beverage	8.8%	10.9%	9.9%	Motor Fuel	38.4%	7.2%	21.1%
Food at Home	9.0%	13.2%	11.1%	Non-Alcoholic Beverage	7.5%	14.1%	10.8%
Food Away From Home	9.5%	8.7%	9.1%	Recreation	6.1%	3.5%	4.7%
Fruits and Vegetables	5.1%	11.5%	8.3%	School Fees/Childcare	-0.3%	1.0%	0.3%
Household Energy	12.4%	12.3%	12.3%	Transportation	19.3%	6.8%	12.7%
Household Furnishings	9.6%	8.6%	8.1%	Used Vehicles	28.6%	3.9%	15.1%

The Colorado CPI declined during the second half of 2022. Inflation increased in many areas, with significant increases in food products. The CPI means something different to everyone because their consumption patterns are different.

The CPI measures changes in an index for the cost of a basket of goods. That index has increased by more than 7.1% over the past year. The Colorado CPI has increased at an annualized rate of 5.8% over the past two years, from 2021 to 2022. In other words, the high rate of inflation has been in place for an extended period.

Source: BLS, cber.co.

Two-Year Annualized CPI rate for Colorado



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Schedule of Data Releases

Throughout the year, the BLS releases monthly employment data during the second half of each month. The schedule is different during the first quarter (see below). As a result, the next major cber.co report will follow the state benchmarked data in mid-March.

U.S. Employment – March 10th Producer Price Index – February 18th The February U.S. 2023 employment data will show a continued The PPI will continue to decline gradually. decline in the rate of growth in U.S. employment data. State Employment – January 24th State Employment – March 13th The December 2022 employment data is released, but not totals for The January 2023 and benchmarked 2022 data will be released. 2022. Job growth will increase at a slower rate. Consumer Price Index – March 14th U.S. Employment – February 3rd February inflation will continue to slowly decrease. The January U.S. 2023 employment data is released. Expect a Producer Price Index – March 15th decline in the rate of growth from the December data. Consumer Price Index – February 14th The PPI will continue to decline gradually. Inflation will continue to slowly decrease. Producer Price Index – February 16th The PPI is projected to report a lower rate of inflation for producers.

cber.co Economic Outlook and Trends 2023 Colorado and the United States

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Gary Horvath has produced annual employment forecasts of the state economy for over 30 years. They have been supplemented by monthly economic updates and indices that track economic performance over the short term. In addition, he has directed three statewide analyses that included reviews of all 64 county economies.

Horvath was the principal investigator for a state and federally funded project to prepare a nanotechnology roadmap for Colorado. As well, he was a co-founder of the Colorado Photonics Industry Association, a trade group for Colorado's Photonics cluster. Horvath has been an active board member of the group since its inception.

Horvath has also served on the Board of Directors for the Economic Development Council of Colorado, Northwest Denver Business Partnership, Adams County Economic Development, and Broomfield Economic Development Corporation. Horvath has also been the chair of the photonics/electronics committee in the Governor's Office of Economic Development and International Trade early stage and proof of concept grant program, and he served on the 2021 Colorado Legislative Redistricting Commission.