FIFTY-EIGHTH ANNUAL

COLORADO BUSINESS ECONOMIC OUTLOOK

2023

Leeds School of Business
UNIVERSITY OF COLORADO BOULDER

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2023 Colorado Business Economic Outlook Partner

WhippleWood places a high value on the information provided by the University of Colorado's *Business Economic Outlook.* We are a provider of accounting and advisory services to entrepreneurs, franchisees, franchisors, nonprofits, executives, real estate investors, family-owned businesses, and corporate chieftains. We find the insights provided by the *Colorado Business Economic Outlook* a great resource when navigating the ever-changing economic environment.

WhippleWood believes that access to insights on all sectors of the economy empowers the business community to make more informed business decisions. It is even more imperative during a time of high inflation, where the cost of capital is increasing and the inputs to business, from materials to labor, are squeezing profit margins. Further, managing costs and revenues to comply with your business's existing loan covenants becomes a precarious challenge when entering a potential recession. This is something our client accounting group understands very well.

When it comes to important financial decisions, WhippleWood has been a supporter and partner to our clients and the business community for more than 40 years. Professionals at WhippleWood have contributed to the forecast since 2005, that is why we are excited to support the University of Colorado in bringing these insights to you.

Rick Whipple, CPA, MTAX
CEO

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Leeds School of Business

Dear Colleagues in Business,

I am delighted to welcome you to the 58th annual Colorado Business Economic Outlook Forum.

If you're finding yourself confused or uncertain about what is next in these turbulent economic times, you have come to the right place. Not only are we confronting high inflation, rising interest rates, and rising geopolitical tension, we are doing so against the backdrop of new technologies that are shifting the landscape beneath our feet.

Fortunately, our Forum has a long track record of getting to the heart of the challenges and opportunities facing our state, while delivering useful insights that help businesses strategize for what is to come. Our team at the Business Research Division maintains close ties to business leaders around the state who help inform this and other reports that provide so much value to Colorado.

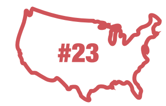
In fact, those close ties are a major part of Leeds' value proposition to our students, alumni, and the larger business community. We are extraordinarily fortunate to have so many partners in the Colorado business community who visit our classes, mentor our students, judge our competitions, and provide meaningful input on our programs and curricula. And the support we get from you has never been more valuable as we look to engage the new opportunities facing the business world—many of which will be discussed at the Forum, such as robotics, aerospace, and quantum computing. We will continue to count on your support in helping us identify practical areas of need where we can focus our teaching, so that our graduates continue to bring a cutting-edge skill set to a fast-changing business world. With your support, we are inspiring and educating the leaders of tomorrow.

I hope you find this year's forecast helpful as you navigate what the future holds. Thank you for your support of Leeds, our faculty, our research, and, most importantly, our students.

Sincerely,

Yonca Ertimur
Acting Dean, Leeds School of Business
Tandean Rustandy Esteemed Professor

#1 Business School
in Colorado



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U.S. News & World Report (2023)

#39 in the world
Leeds' faculty per capita research ranking

Our freshman class:
30.68 ACT average
49% women
31% students of color

Three-month placement rate (Class of 2022)

11 newly hired
tenure-track faculty

#36 best public MBA
U.S. News & World Report 2022

#49 in Entrepreneurship Full-Time MBA Program
Bloomberg Businessweek (2022-23)

Introduction

The Business Research Division (BRD) in the Leeds School of Business is proud to present the 58th annual Colorado Business Economic Outlook. This 2023 consensus forecast is a product of partnerships with individuals spanning numerous universities, businesses, nonprofits, and government entities. These individuals generously gift their time, sharing their unique expertise and perspectives about people, industry, and policy relating to the state of Colorado.

This forecast analyzes changes that have occurred in all economic sectors during the past year and looks at the opportunities and challenges that will shape population, employment, and the overall economy in the coming year. The information in this book is initially presented at the 58th annual Colorado Business Economic Outlook Forum in Denver, followed by approximately 50 forecast speeches that are held throughout the state during the year, ranging from presentations to industry associations and nonprofit organizations to the Federal Reserve Bank of Kansas City.

Methodology

We are fortunate to have more than 125 individuals from the business, education, and government communities who serve on 13-sector estimating groups. These groups convene at a kickoff meeting in September where members discuss trends and issues that are likely to affect economic growth during the upcoming year. During the second half of September and into October, the committees apply this information to their industry. The BRD simultaneously generates an econometric forecast by industry, which is given to each industry committee. From this series of meetings, the sector write-ups and forecasts are prepared and submitted to the BRD in early November, when they are edited and published in this book. The following July, the Steering Committee, which is made up of the sector chairs, meets to review their forecasts and identify factors that will positively or negatively drive change in their industry's economic performance during the second half of the year. These updates are published in the summer issue of our quarterly newsletter, the *Colorado Business Review.*

Related Economic Research

The BRD conducts customized business and economic research that expands the knowledge base of decision makers throughout the state and region. The annual *Colorado Business Economic Outlook* provides the foundation for much of the research the BRD conducts within the state. Among the other BRD research tools available to businesses and organizations is the Leeds Business Confidence Index, a forward-looking index that gauges Colorado business leaders' opinions about national and state economic trends and how their industry will perform in the coming quarter, and the *Colorado Business Review,* which explores current topics important to the state's economy. Visit www.colorado.edu/business/brd for more information about BRD offerings.

Acknowledgments

We are humbled and thankful to have dedicated partners in producing this forecast. A complete list of committee members appears at the back of this book. Their efforts are very much appreciated. We also thank the staff of the Colorado Department of Local Affairs and the Colorado Department of Labor and Employment who supply us with much of the employment and population data used in the forecast.

Finally, I would like to thank the many Leeds School of Business and CU Boulder personnel who have worked hard at preparing, presenting, and promoting this project. My sincerest thanks go to Brian Lewandowski, executive director; Adam Illig, data scientist; Shannon Furniss, project editor; Cindy DiPersio, guest editor; Kristin Weber, graphic designer; Denise Munn, senior print production manager; and Jayson Brubaker, Lucas Ericson, Lauren Gwyn, Robert Berkowitz, and Stanislaw Sieron, student research assistants, for their help in assembling and presenting the *2023 Colorado Business Economic Outlook.* The assistance provided by Leeds School staff member Ciera Izaguirre, program manager of Advancement Experience; and Carolyn Gleason, assistant dean for advancement, is greatly appreciated. The Leeds Marketing and Communications team—executive director Joshua Casto and team members Erik Jeffries, Justin Forbis, Anneli Gray, Joe Arney, Liz Draper, Jennifer Schuman, Kelsey Cipolla, and Cody Johnston—contributed marketing and promotion assistance. I also appreciate the help provided by Nicole Mueksch with CU Boulder Strategic Media Relations.

Colorado Economic Forecast for 2023

The sections that follow provide a summary of 2022, a forecast for 2023, and industry-specific data analysis and insight into the key factors influencing each sector. We believe this information will prove useful in your business and policy decision-making process.

Richard L Wobbekind

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Associate Dean Business and Government Relations
Faculty Director, Business Research Division
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Colorado Then and Now

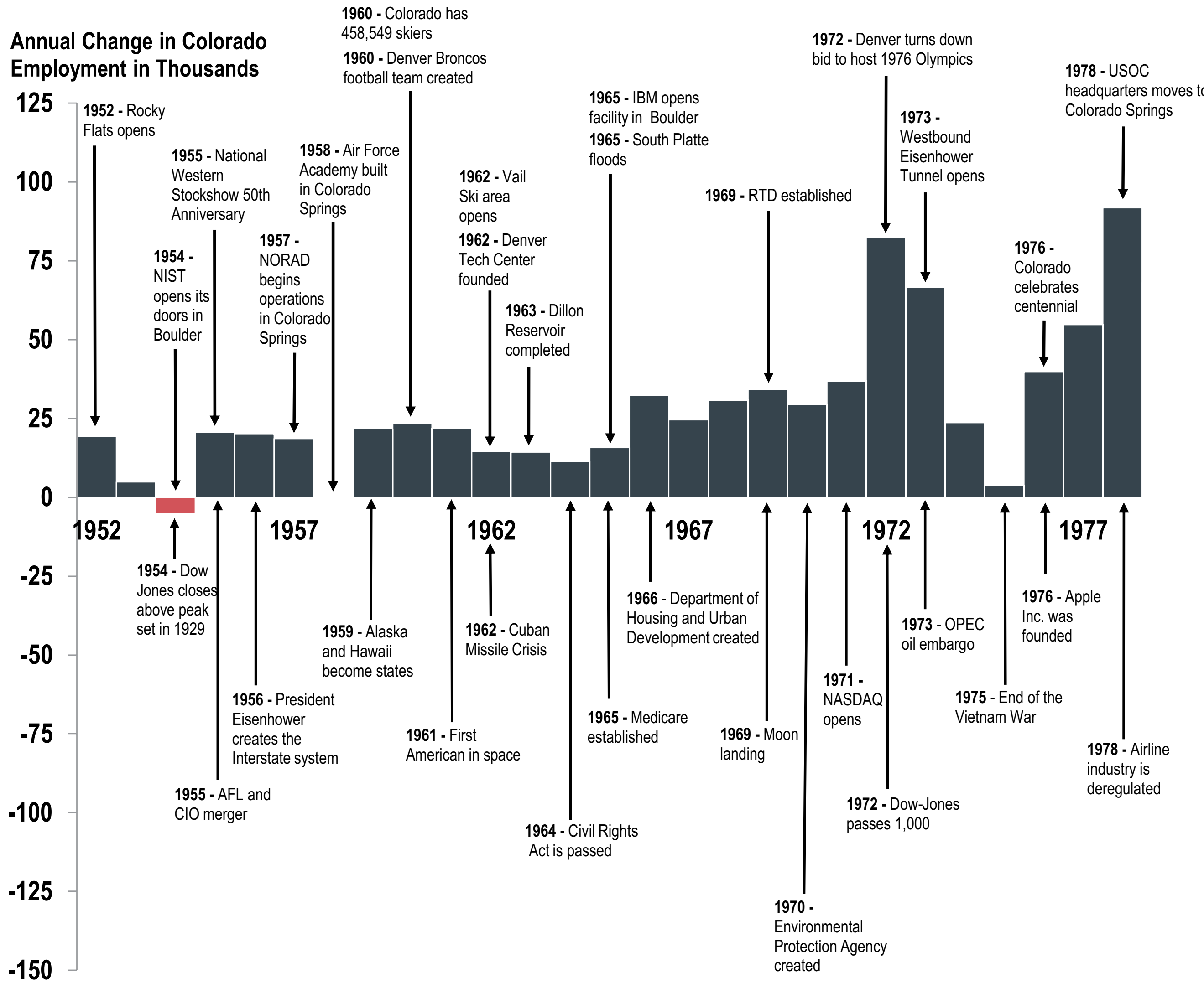
The timeline to the right provides a glimpse into the past, showing the annual change in state employment. Changes in employment have been accompanied by numerous social, economic, educational, and political changes. Colorado events are listed above the line; national events are noted below.

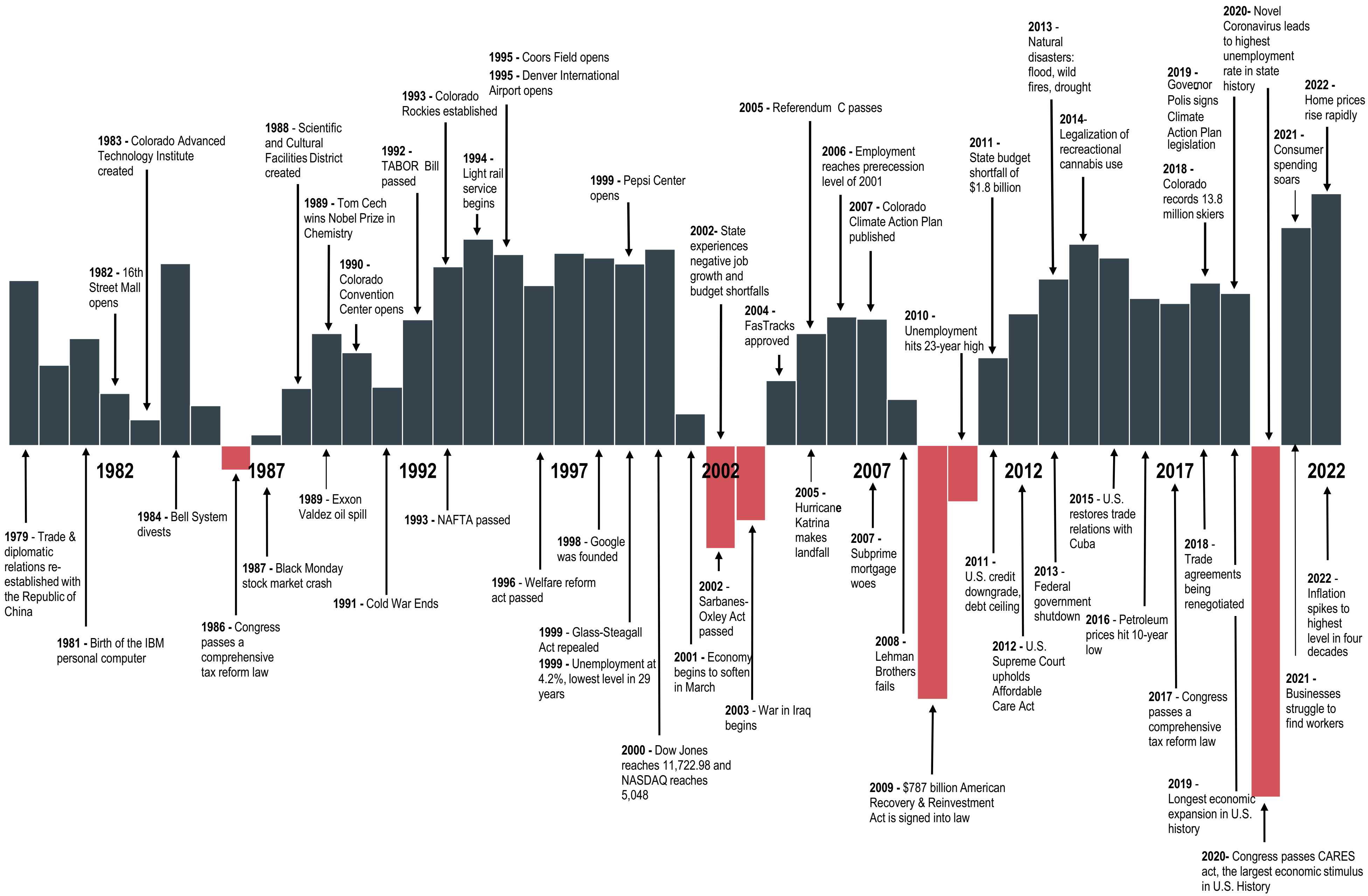
Over the past five decades, Colorado has experienced numerous economic booms and busts, dynamically changing industries and (mostly) unrelenting population growth. The timeline puts the COVID-19 recession and rebound into perspective, comparing the 2021 recovery to those following prior economic recessions through which Colorado has persevered.

In 1970, just over 1 million individuals were employed in Colorado, and the average annual earnings were under $6,700. Since then, wage and salary employment in the state has climbed to over 2.9 million (not including proprietor employment) and average annual pay for covered wage and salary earners grew to $72,097. In 2021, wage and salary employment increased to 2.9 million, and average annual pay grew to $70,563.

Goods-producing industries accounted for 24% of jobs and made up 26.7% of the Colorado GDP in 1970. By 2020, those sectors accounted for 12.9% of total jobs and 20.4% of the state's GDP. While proprietor employment represented less than 17% of total employment in 1970, it now represents 27%. The share of women in the state's labor force has increased to 47%, nearly a 11-percentage point increase from 1970.

Throughout the 1970s, the Colorado economy benefited profoundly from booms in petroleum and mining production. The state has undergone an enormous increase in college-educated population as the percent of Colorado residents 25 years or older with four or more years of college nearly tripled, from 14.9% in 1970 to 41.6% in 2021. With a larger base of highly qualified employees, high-tech industries have added significantly to Colorado's economy and the state's key industry clusters, specifically aerospace, biosciences, telecommunications, and IT software.





1979 - Trade & diplomatic relations re-established with the Republic of China
1981 - Birth of the IBM personal computer
1982 - 16th Street Mall opens
1982
1983 - Colorado Advanced Technology Institute created
1984 - Bell System divests
1986 - Congress passes a comprehensive tax reform law
1987
1987 - Black Monday stock market crash
1988 - Scientific and Cultural Facilities District created
1989 - Tom Cech wins Nobel Prize in Chemistry
1989 - Exxon Valdez oil spill
1990 - Colorado Convention Center opens
1991 - Cold War Ends
1992 - TABOR Bill passed
1992
1993 - Colorado Rockies established
1993 - NAFTA passed
1994 - Light rail service begins
1995 - Coors Field opens
1995 - Denver International Airport opens
1996 - Welfare reform act passed
1997
1998 - Google was founded
1999 - Pepsi Center opens
1999 - Glass-Steagall Act repealed
1999 - Unemployment at 4.2%, lowest level in 29 years
2000 - Dow Jones reaches 11,722.98 and NASDAQ reaches 5,048
2001 - Economy begins to soften in March
2002- State experiences negative job growth and budget shortfalls
2002
2002 - Sarbanes-Oxley Act passed
2003 - War in Iraq begins
2004 - FasTracks approved
2005 - Referendum C passes
2005 - Hurricane Katrina makes landfall
2006 - Employment reaches prerecession level of 2001
2007 - Colorado Climate Action Plan published
2007
2007 - Subprime mortgage woes
2008 - Lehman Brothers fails
2009 - $787 billion American Recovery & Reinvestment Act is signed into law
2010 - Unemployment hits 23-year high
2011 - State budget shortfall of $1.8 billion
2011 - U.S. credit downgrade, debt ceiling
2012
2012 - U.S. Supreme Court upholds Affordable Care Act
2013 - Natural disasters: flood, wild fires, drought
2013 - Federal government shutdown
2014- Legalization of recreactional cannabis use
2015 - U.S. restores trade relations with Cuba
2016 - Petroleum prices hit 10-year low
2017
2017 - Congress passes a comprehensive tax reform law
2018 - Colorado records 13.8 million skiers
2018 - Trade agreements being renegotiated
2019 - Governor Polis signs Climate Action Plan legislation
2019 - Longest economic expansion in U.S. history
2020- Novel Coronavirus leads to highest unemployment rate in state history
2020- Congress passes CARES act, the largest economic stimulus in U.S. History
2021 - Consumer spending soars
2021 - Businesses struggle to find workers
2022 - Home prices rise rapidly
2022
2022 - Inflation spikes to highest level in four decades

U.S. Economic Outlook

Present Situation and Short-Term Outlook

Gross Domestic Product

National real GDP increased 5.9% in 2021—the fastest pace of growth in nearly four decades. In 2022, growth slowed to an estimated 1.8% as the economy faced a number of headwinds, notably high inflation, rising interest rates, a disrupted supply chain, and a shortage of workers. While headwinds appear to be easing, the toll on 2023 will be measured in slow growth—just 0.2% based on Consensus Forecasts' projections in November 2022. The Business Research Division is modestly more bullish, expecting 0.6% growth, with the U.S. economy teetering on a recession in the first half of the year followed by faster growth in the second half.

Employment and Wages

The unique factor is employment growth. The U.S. added 4.1 million jobs from January through October 2022, an average of 407,000 per month. Adding to the supply of workers, the labor force grew, increasing 2% year-to-date in October 2022 compared to 2021. After averaging 61.7% in 2020 and 2021, the labor force participation rate increased to 62.3% through October 2022. At the same time, the demand for workers eased in the second half of 2022, but remained above historical levels—10.7 million job openings in October (6.5% rate) compared to 11.9 million in March (7.3%). This supply-demand imbalance has been a contributing factor to higher wages, which grew an average of 4.7% year-over-year through October. Job growth will revert to a slower pace in 2023 while wage growth remains elevated.

Consumption

Consumer spending on goods and services generally accounts for nearly 70% of total GDP. Personal consumer expenditures are estimated to increase 2.7% in 2022. Consumers have been resilient in 2022 in the face of high inflation chipping away at purchasing power. The pace of wage growth increased, albeit at a slower rate than the Consumer Price Index; the personal savings rate declined, and household debt increased. Despite the inflationary pressures, wholesale and retail trade both posted strong growth through the first three quarters of 2022. The Conference Board's Consumer Confidence Index and the Michigan Consumer Sentiment Survey have both posted weaker levels in 2022 compared to 2021. The resilience of consumers will outweigh the headwinds in 2023, leading to personal consumption expenditures of 1.4%.

Investment

The pace of gross private domestic investment cooled in 2022 as the cost of debt increased. Investment grew an estimated 4% in 2022 (compared to 9% in 2021), pulled down by a decrease in nonresidential and residential structures. Nonresidential fixed investment is poised to grow in 2023 with a boost in infrastructure spending, but residential fixed investment will continue to contract with the slowing housing market leading to a slightly negative number.

REAL GROSS DOMESTIC PRODUCT, 2013-2023
(In Billions of Chained 2012 Dollars)

Economic Indicator	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022[a]	2023[b]
Real Gross Domestic Product	$16,553.3	$16,932.1	$17,390.3	$17,680.3	$18,076.7	$18,609.1	$19,036.1	$18,509.1	$19,609.8	$19,970.6	$20,098.4
Percentage Change	1.8%	2.3%	2.7%	1.7%	2.2%	2.9%	2.3%	-2.8%	5.9%	1.8%	0.6%
Personal Consumption Expenditures	$11,211.7	$11,515.3	$11,892.9	$12,187.7	$12,478.2	$12,837.3	$13,092.3	$12,700.7	$13,754.1	$14,125.5	$14,328.9
Percentage Change	1.5%	2.7%	3.3%	2.5%	2.4%	2.9%	2.0%	-3.0%	8.3%	2.7%	1.4%
Gross Private Domestic Investment	$2,801.5	$2,959.2	$3,121.8	$3,089.9	$3,216.0	$3,398.9	$3,492.7	$3,306.5	$3,603.0	$3,747.1	$3,728.4
Percentage Change	6.9%	5.6%	5.5%	-1.0%	4.1%	5.7%	2.8%	-5.3%	9.0%	4.0%	-0.5%
Government Expenditures	$3,060.7	$3,033.2	$3,088.4	$3,148.8	$3,162.3	$3,215.3	$3,321.7	$3,406.7	$3,426.3	$3,392.0	$3,415.7
Percentage Change	-2.4%	-0.9%	1.8%	2.0%	0.4%	1.7%	3.3%	2.6%	0.6%	-1.0%	0.7%
Net Exports	-$519.31	-$575.27	-$721.71	-$757.08	-$796.95	-$865.40	-$892.58	-$922.64	-$1,233.38	-$1,310.00	-$1,390.00
Percent of Real GDP	-3.1%	-3.4%	-4.2%	-4.3%	-4.4%	-4.7%	-4.7%	-5.0%	-6.3%	-6.6%	-6.9%

[a]Estimate. [b]Forecast. Note: Excludes changes in inventories.

Sources: Bureau of Economic Analysis, Consensus Forecasts, and Colorado Business Economic Outlook Committee.

Government

Government consumption decreased an estimated 1% in 2022 as stimulus waned but will resume below-trend growth in 2023 (less than 1%).

Net Exports

Net exports continued to be a drag on U.S. economic growth. The deficit increased to record levels in 2021 as real net exports grew to -$1.2 trillion, with the growth in imports exceeding the growth in exports. Real net exports are projected to exceed -$1.3 trillion in 2023 and 2024, strained by a strong dollar that may weaken the competitiveness exports and strengthen imports.

The Headwinds

While the economic recovery in 2021 was substantial, it was disrupted in 2022. Several issues threaten economic growth, among them, inflation, rising interest rates, worker shortages, and the supply chain.

Inflation

Over the course of 2022, heightened inflation has been at the forefront of economic headwinds in Colorado and the nation. The Consumer Price Index (CPI), which measures a basket of products ranging from gasoline and health care to groceries and rents, began surging in the latter half of 2021 and remained elevated over the course of 2022. In June 2022, CPI jumped 9.1% year-over-year—the fastest pace in four decades. Stagflationary concerns were elevated in the first half of 2022, as persistently high inflation readings, coupled with two consecutive quarters of negative GDP growth, increased recessionary fears.

While inflation has remained persistently high, it has cooled in recent months, increasing 7.7% year-over-year in October 2022—a notable decrease from the September year-over-year growth of 8.2%, and the smallest 12-month increase since January 2022. While indexes for housing and airlines have persistently remained high, indexes that significantly contributed to surging national inflation in early 2022—including used cars and trucks, and gas—have declined year-over-year in recent months. While inflation remains historically high, recent declines may indicate that it has reached an inflection point.

Prices for all items in the Mountain Region (which includes Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming) increased 9.3% in October and rose 7.7% in the Denver-Aurora-Lakewood region, both representing the smallest 12-month increase since January 2022. In addition, the Producer Price Index (PPI), which measures price that companies get for finished goods in the marketplace, increased 0.2% in October 2022, down from 1.2% in January 2022, and lower than market expectations.

Interest Rates

Persistently high inflation has pressured the Federal Reserve to raise the Federal Funds interest rate at a historic pace in recent months. In early November, the Federal Reserve announced an additional 0.75% increase, which increased the Federal Funds rate to a target range of 3.75% to 4%, the highest since 2008. This hike reflects the 6th-consecutive rate hike in 2022, and the 4th-consecutive 0.75% increase.

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U.S. Economic Outlook

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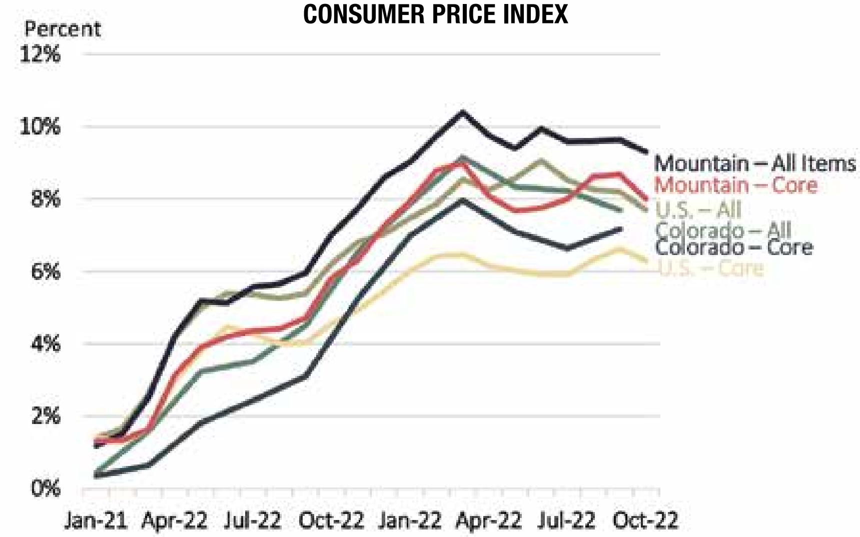
INTEREST RATES 2000-2022

Sources: Federal Reserve, Freddie Mac, and Moody's Analytics.

CONSUMER PRICE INDEX

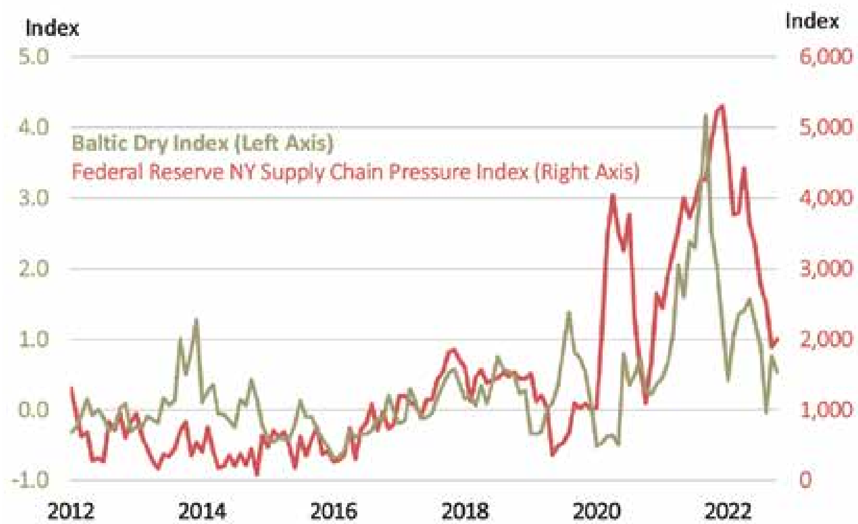


Source: Bureau of Labor Statistics.

JOB OPENINGS 2001-2022

Source: Bureau of Labor Statistics, JOLTS and Current Population Survey.

SUPPLY CHAIN INDICATORS 2012-2022



Sources: Federal Reserve Bank of New York, Bloomberg.

Over the first three quarters of 2022, the aforementioned interest rate increases caused the 10-Year Treasury Note to soar to 4.2%, its highest level since 2008. Concurrently, the 30-year fixed-rate mortgage steadily increased to its highest levels since 2002. In addition, the 60-month auto loan rate increased to 5.5% in August 2022, the highest rate since August 2011. In November, following the most recent decline in inflation, mortgage rates experienced their largest weekly drop since 1981.

While the Federal Reserve has repeatedly signaled the likelihood of additional interest rate hikes to tame inflation, they have also indicated that the pace of rate increases may slow, to curb the effect that higher borrowing costs are having on the economy.

Worker Shortage

A number of workforce issues that were exacerbated during the COVID-19 pandemic persist today. In 2022, businesses across the nation reported staffing issues. As businesses were temporarily closed due to pandemic lockdowns, the unemployment rate surged, reaching a peak of 14.7% in April 2020. National employment rebounded over the course of 2020 and 2021, with U.S. nonfarm employment at 153.3 million in October 2022, up 0.5% from February 2020. Concurrently, the national unemployment rate steadily declined in the latter half of 2021 and remained generally steady in 2022 and sat at 3.7% in October 2022.

As of September 2022, there were approximately 10.7 million job openings but only 5.7 million unemployed workers in the U.S., indicating elevated labor demand. In addition, the labor supply remains constrained nationally. The U.S. labor force participation rate, which is an estimate of the nation's active workforce, was listed at 62.2% in October 2022, down from 63.4% in February 2020, indicating that there are fewer workers participating in the labor force compared to prepandemic levels. In contrast, Colorado's labor force participation rate increased to 69.4% in September 2022 (most current data), indicating a more active workforce relative to the nation.

A survey of unemployed workers, conducted by the U.S. Chamber of Commerce in May 2022, revealed that multiple factors were potentially contributing to the ongoing worker shortage. A number of survey respondents cited that they had altered their livelihood—17% reported they had retired, and 14% reported that they were working part time. In addition, approximately 66% of respondents that became unemployed during the pandemic said they are only somewhat active or not very active at all in searching for a new job, but 52% also stated that it was essential to return to full-time work as soon as possible.

While several factors are likely contributing to elevated worker shortages, recent data suggest that job openings are cooling and declining in a number of sectors. Further, in Colorado, total job openings were 214,000 in October 2022, unchanged from the prior month, but down 9.3% from May 2022.

Supply Chain

While supply-side constraints had severe impacts in 2021, they have moderated over the course of 2022. In 2021, production in the economy was unable to keep up with the huge increase in consumer demand, coupled with a consistent shortage of labor and worsening supply chain bottlenecks. The increasing spending by consumers may have helped the economy bounce back from the recession in record time, but this spending put pressure on a supply chain battered with problems stemming from COVID-19. Many micro supply chain issues morphed into larger problems as modern supply chains are complex: full containers at ports sitting for weeks, a shortage of truck drivers and workers at major ports, a shortage of warehouse space, and factory production failing to meet demand. While these supply chain issues continue to persist, they have generally improved in 2022.

In 2021, according to Container xChange's Container Availability Index, the Port of Los Angeles recorded an average surplus of around 0.9 beginning in March 2021, indicative of a high surplus of full containers. A value of 0.5 means that the same number of full containers leave and enter a port in the same week; a value of more than 0.5 means that more containers enter than leave. The high surplus of full containers persisted through the first half of 2022, but decreased starting in August 2022, and averaged 0.8 in November 2022. Further, while the inactive container fleet reached record levels in 2020 due to COVID-19, with 9.8% of global container vessels idle in June 2020, normal levels returned in 2021 and have remained generally stable through 2022, sitting at 2.6% in March 2022 (most current data), according to the U.S. Department of Agriculture.

The nationwide shortage of truck drivers persisted in 2022, but did improve slightly, as the American Trucking Association estimated a shortage of 78,000 drivers, down 4.5% from 2021. In addition, freight rates have normalized, with the average cost of shipping a standard 40-foot container around $3,300, down from a peak of $11,100 in September 2021.

The Supplier Deliveries Index, tracked by the Institute for Supply Management (ISM), registered 56.2% in October 2022, up 2.3 percentage points from the prior month. A reading above 50% indicates slower deliveries as the economy improves and customer demand increases.

The national supply chain issues have not been absent to Colorado businesses, as they rely on input parts from not only around the U.S., but the world. Businesses in the state have had to grapple with increasing costs, a shortage of inputs, and increased wait-times on top of increasing consumer demand. According to the Q4 2022 Leeds Business Confidence Index, which gauges Colorado business leaders' outlook of the economy, 12% of panelists said supply chain most influenced their expectations, behind inflation (38%) and interest rates/fed policy (33%).

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Colorado Economic, Employment, and Population Outlook

Economy

Colorado's economy outperformed much of the country in 2022. The state's GDP increased 3% year-over-year in the second quarter, ranking the state seventh, compared to a national decline of 1.8% and the simple average growth of 1.3% for the 50 states. Colorado has the 10th-best employment recovery from the recession, recording job growth 2.9% above the prerecession peak; only half of the states recouped employment losses stemming from the pandemic. Year-over-year employment grew 4.2% in October 2022—the 7th-fastest nationally. Meanwhile, Colorado's unemployment rate continues to lag—ranking 28th-lowest at 3.6%, it remained just above the 3.4% average of the 50 states in October but a notch below the national rate of 3.7%. The state had the 2nd-highest labor force participation rate in the country, the 6th-highest labor force growth rate, and a labor force that grew 4.3% above January 2020 levels.

For more than half a century, the *Colorado Business Economic Outlook* has been compiled by industry leaders in the state and presented by the Business Research Division (BRD) of the Leeds School of Business at the University of Colorado Boulder. For 58 years, this book has served as a chronicle of the changing issues and opportunities facing

STATE AND NATIONAL ECONOMIC COMPARISON, 2012-2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Q2 2021	Q2 2022
Colorado												
Real GDP Growth (Percent Change)	1.9	3.4	4.3	4.6	2.1	3.4	3.9	4.6	-1.4	5.8	11.3	3.0
Personal Income Growth (Percent Change)	5.9	5.4	8.8	4.9	1.7	6.8	7.3	7.4	6.1	8.7	3.9	6.6
Per Capita Personal Income (PCPI) ($)	45,630	47,404	50,797	52,339	52,390	55,251	58,453	62,124	65,358	70,706	69,232	73,357
PCPI Growth (Percent Change)	4.5	3.9	7.2	3.0	0.1	5.5	5.8	6.3	5.2	8.2	3.3	6.0
Employment Growth (Percent Change)	2.4	3.0	3.5	3.2	2.4	2.2	2.5	2.3	-5.0	3.5	8.8	4.5
Unemployment Rate (Percent)	8.0	6.7	5.0	3.7	3.1	2.6	3.0	2.6	6.9	5.4	5.9	3.4
Labor Force Participation Rate (Percent)	68.8	68.0	67.6	66.7	67.0	67.7	68.5	68.6	67.4	68.2	68.5	69.5
CPI-All Items (Percent Change)	1.9	2.8	2.8	1.2	2.8	3.4	2.7	1.9	2.0	3.5	1.9	8.6
Core CPI (Percent Change)	2.0	3.2	2.9	3.3	4.0	3.1	2.5	2.5	2.3	2.5	1.0	7.4
Shelter (Percent Change)	2.7	4.5	5.0	5.7	7.3	5.1	2.7	3.6	2.8	1.1	-0.4	6.6
United States												
Real GDP Growth (Percent Change)	2.3	1.8	2.3	2.7	1.7	2.2	2.9	2.3	-2.8	5.9	12.5	1.8
Personal Income Growth (Percent Change)	5.0	1.3	5.5	4.8	2.6	4.6	5.0	5.1	6.7	7.5	2.2	3.4
Per Capita Personal Income (PCPI) ($)	44,548	44,798	46,887	48,725	49,613	51,550	53,786	56,250	59,765	64,143	63,018	64,993
PCPI Growth (Percent Change)	4.2	0.6	4.7	3.9	1.8	3.9	4.3	4.6	6.2	7.3	2.1	3.1
Employment Growth (Percent Change)	1.7	1.6	1.9	2.1	1.8	1.6	1.6	1.3	-5.8	2.8	8.5	4.4
Unemployment Rate (Percent)	8.1	7.4	6.2	5.3	4.9	4.4	3.9	3.7	8.1	5.3	5.9	3.6
Labor Force Participation Rate (Percent)	63.7	63.2	62.9	62.7	62.8	62.9	62.9	63.1	61.7	61.7	61.6	62.2
CPI-All Items (Percent Change)	2.1	1.5	1.6	0.1	1.3	2.1	2.4	1.8	1.2	4.7	3.4	8.3
Core CPI (Percent Change)	2.1	1.8	1.7	1.8	2.2	1.8	2.1	2.2	1.7	3.6	2.6	6.2
Shelter (Percent Change)	2.2	2.3	2.8	3.1	3.4	3.3	3.3	3.4	2.5	2.7	1.9	5.1

Sources: Bureau of Labor Statistics and Bureau of Economic Analysis. Notes: "Core CPI" is defined as All Items less Food and Energy; U.S. personal income represents the sum of the 50 states and the District of Columbia.

people and industry in Colorado. Presenting historical data and forward-looking estimates on employment for each sector of the economy, the book also offers discussion on other relevant economic metrics, ranging from sales and cash receipts to building permits and airport enplanements. This section lays the foundation for each of the North American Industry Classification System (NAICS) supersectors by providing an overview of labor force and wage and salary employment totals. Every five years, the NAICS system undergoes reclassification. Some of the code revisions will impact industry statistics over the coming year, but no adjustments have been made to data in this book in anticipation of the revisions.

Employment

After losing 375,200 jobs due to the pandemic, Colorado added nearly 455,700 jobs following the April 2020 trough (April 2020-October 2022). October 2022 employment was 2.9%, or 80,500 jobs, above the prepandemic peak recorded in January 2020 in Colorado. Annual job growth in 2022 is estimated at 120,800 jobs (4.4%), bringing the state to a total of nearly 2.9 million. Growth is projected to continue in 2023, adding another 57,100 jobs (2%).

Year-over-year employment growth was recorded in all of Colorado's seven metropolitan areas in October 2022: Denver-Aurora-Lakewood (4.1%), Boulder (4%), Fort Collins-Loveland (3.6%), Colorado Springs (3%), Pueblo (2.8%), Greeley (2.5%), and Grand Junction (2.3%). However, every MSA except Greeley is now above their respective prerecession levels.

Most businesses in the economy are small businesses—96.5% of wage and salary establishments have fewer than 50 employees. These small businesses represent just over half (50.2%) of jobs in Colorado.

Labor Force and Unemployment

The monthly unemployment rate improved from 11.8% in May 2020 to 3.3% in July 2022; the rate increased to 3.6% by October 2022. The annual rate increased from 2.6% in 2019 to 6.9% in 2020, to 5.4% in 2021, and an estimated 3.5% in 2022 and 4.1% in 2023. The rising unemployment reflects the delicate balance between a moving number of unemployed (numerator) and labor force (denominator) that sometimes produces nonintuitive results (e.g., a rising unemployment rate during periods of job growth). Colorado is projected to have both labor force growth and a higher number of people unemployed looking for work in 2023.

The labor force participation rate (LFPR) is important because it conveys the relative amount of labor resources available for the production of goods and services. The LFPR is the percentage of the civilian noninstitutional population 16 years and older either working or actively looking for work. This metric is calculated by dividing the labor force by the civilian noninstitutional population age 16 and older. The labor force is calculated as the sum of the number of employed and unemployed members of the civilian noninstitutional population age 16 and older, where "employed" is defined as someone who did any work for pay or profit during the week of the survey; did at least 15 hours of unpaid work in a business or farm operated by a family member they live with; or were temporarily absent from regular jobs because of illness, vacation, bad weather, labor disputes, or various personal reasons. Civilians within the noninstitutional population considered "unemployed" are those who did not have a job during the week of the survey, made at least one specific active effort to find a job during the past four weeks, and were available for work. Unemployed also includes those not working because they are waiting to be called back to a job they had been laid off from.

The average national LPFR was 63.1% in 2019, but the peak crested at 67.1% in 2000, driven down by structural demographic shifts as a generation of workers began to retire. Participation fell further to 60.2% in April 2020 during the recession, before rebounding to 62.2% as of October 2022. In 2019, Colorado's LPFR averaged 68.6%, and dropped to 66.1% in April 2020 but rebounded to 69.4% as of October 2022. Colorado ranks second in the nation in terms of the highest LFPRs, sitting behind Montana (69.9%).

Another measure of the labor market is the employment-to-population ratio. This measure of labor market performance is helpful because it tends to be less volatile than the unemployment rate, which has a fluctuating numerator (unemployed) and denominator (labor force). Colorado's employment-to-population ratio averaged 66.8% in 2019, fell to 58.4% in April 2020, and increased to 64.6% in 2021. The seasonally adjusted October 2022 rate was 66.9%.

Labor Data Sets Differ

The data for this forecast are derived from two U.S. Bureau of Labor Statistics (BLS) sources: Current Employment Statistics (CES) and Local Area Unemployment Statistics (LAUS).

The CES data set is the most frequently cited labor series and is typically used to evaluate sector trends. Compiled from a survey of companies, it includes full-time and part-time workers, temporary workers, employees on paid holiday or sick leave, and those who worked for only part of a pay period. It does not include sole proprietors. CES data for a particular year are revised twice—three months and 15 months after the end of the year—based on the Quarterly Census of Employment and Wages (QCEW) that all firms are required to submit.

The LAUS labor series provide an estimate of the size of the total labor force and is used to calculate the unemployment rate. The LAUS data consider the labor force as everyone of working age who is actively employed or looking for a job. Students, retirees, stay-at-home parents, institutionalized individuals, and discouraged workers are not included in the workforce. This data series, which is more inclusive than the CES data set, is compiled from a survey of households. It includes farm workers, self-employed individuals, and full-time or part-time employees.

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Colorado Economic, Employment, and Population Outlook

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COLORADO RESIDENT LABOR FORCE
2013-2023
(Not Seasonally Adjusted) (In Thousands)

Labor Force	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022[a]	2023[b]
Colorado Labor Force	2,766.1	2,800.7	2,825.8	2,894.2	2,963.8	3,049.6	3,100.6	3,087.3	3,156.1	3,238.0	3,310.0
Total Employment	2,579.6	2,661.1	2,720.0	2,803.5	2,886.0	2,957.7	3,019.9	2,874.9	2,986.7	3,124.0	3,175.0
Unemployed	186.6	139.6	105.8	90.7	77.8	92.0	80.7	212.4	169.4	114.0	135.0
Unemployment Rate	6.7%	5.0%	3.7%	3.1%	2.6%	3.0%	2.6%	6.9%	5.4%	3.5%	4.1%

[a]Estimated. [b]Forecast. Note: There are methodological differences between the LAUS data series and the CES employment data series that is used throughout the rest of this book.
Source: Colorado Department of Labor and Employment (LAUS data) and Colorado Business Economic Outlook Committee.

COLORADO NONAGRICULTURAL WAGE AND SALARY EMPLOYMENT
2013-2023
(In Thousands)

Sector	2013	2014	2015	2016	2017	2018	2019	2020	2021[a]	2022[b]	2023[c]
Natural Resources and Mining	30.6	34.1	30.7	23.7	25.8	28.6	28.8	21.8	19.8	20.7	23.7
Construction	127.5	142.2	148.8	155.3	163.7	173.2	179.1	174.9	176.8	183.0	181.0
Manufacturing	132.8	136.6	141.0	142.7	144.3	147.5	150.5	146.8	148.7	152.9	153.5
Trade, Transportation, and Utilities	420.1	432.7	445.7	453.9	461.3	470.4	477.9	469.2	485.7	501.2	507.6
Information	70.0	70.5	71.0	72.2	72.3	75.6	77.1	75.0	76.3	78.4	79.8
Financial Activities	151.0	153.9	159.0	163.9	168.1	171.6	174.6	172.8	177.7	178.7	174.7
Professional and Business Services	372.4	386.4	398.1	405.4	412.4	423.5	439.2	430.4	452.8	485.8	506.1
Education and Health Services	285.9	298.0	313.3	325.8	334.1	340.7	347.6	339.2	347.9	353.8	359.6
Leisure and Hospitality	289.4	300.4	312.8	323.6	333.2	339.7	345.4	272.0	306.4	339.1	350.1
Other Services	97.7	100.9	104.2	107.3	108.6	110.9	114.8	108.9	113.6	118.9	123.0
Government	403.2	407.9	416.5	428.1	436.7	445.6	455.1	440.2	438.3	452.2	462.8
Total[d]	2,380.6	2,463.6	2,541.1	2,601.9	2,660.5	2,727.3	2,790.1	2,651.2	2,744.0	2,864.8	2,921.9

[a]Revised. [b]Estimated. [c]Forecast. [d]Due to rounding, the sum of the individual sectors may not equal the total.Note: Nonagricultural self-employed, unpaid family workers, and domestics are excluded from the total. Sources: Colorado Department of Labor and Employment (CES Data) and Colorado Business Economic Outlook Committee.

Impact on Diverse Communities

Nationally, labor force participation and unemployment rates have long differed by community. Individuals with lower levels of educational attainment tend to have higher rates of unemployment than people who have earned post-secondary education; young cohorts tend to have higher rates than the middle-age population. By race, the Black or African American population tends to have higher rates of unemployment than Asian or White populations, and by ethnicity, the Hispanic or Latino population has higher rates of unemployment than non-Hispanic or Latino. Women tend to have higher rates than men. These observations held during the pandemic, with rising rates across all groups, with the highest rates in April 2020 for individuals 16 to 19 years, 20 to 24 years, for those with less than a high school diploma, and for Hispanic or Latino people. However, every cohort also improved within tenths of percentage points to their prepandemic, February 2020 level by October 2022, while just two of these 16 cohorts were above their prepandemic labor force participation rate, and eight of these 16 cohorts were above prepandemic labor force levels.

Population

Total Population Change

Colorado's resident population as of July 2021 was 5,814,707, ranking 21st in size in the United States. The 2021 population represents growth of 30,551, or a 0.5% increase, over Colorado's July 2020 population estimates. Colorado's 2020-2021 growth percentage was the 17th-highest among U.S. states. The growth rate of 0.5% is the slowest growth rate since 1989.

Over the same period, the United States reached 331,893,745, and increased by 392,665, a growth rate of 0.1%, the slowest on record. Seventeen states, plus the District of Columbia, declined in population. More than 73% (2,297) of U.S. counties experienced natural decrease in 2021, up from 45.5% in 2019 and 55.5% in 2020. In Colorado, 38 of the 64 counties, or 59%, experienced natural decrease. Natural decrease occurs when there are more deaths than births in a population over a given time period. The aging of the nation and Colorado, as well as increased mortality due to COVID-19 and fewer births, contributed to a rise in natural decrease.

Colorado's total growth comprised 61,976 births, 46,499 deaths, and 15,074 in net migration in 2021. Annual births were at their lowest levels since 1999, yet there are more women of childbearing age. Annual deaths were at the highest levels on record due to COVID-19 and aging. Most of the counties in a phase of natural decline were in the nonmetro parts of the state and ranged from -560 to -1. However, the metro counties of Pueblo and Mesa led the list of counties in natural decrease; the list also includes Jefferson County but with only with -2.

Births continued to slow in 2021. The slowing in births will continue to have long-run impacts on K-12 and higher education, as well as the labor force. It is important to note that data for every county is different. Most counties reached their peak births in 2007 but some counties, like Jefferson, reached their peak births in 2000. Weld is the only Front Range county that is continuing to see an increase in births. Early signs point to births leveling in 2022 and increasing slightly in 2023 and 2024 as the number of women in childbearing years increases in the state. Additionally, the largest group of millennials is entering their 30s, where Colorado has experienced increased birth rates.

Over time, the number of deaths in Colorado has increased, reflecting an increased number of older adults. COVID-19 caused an additional increase in deaths in 2020, 2021, and 2022. In 2021, deaths reached 46,499, an estimated 8,000 more than in 2019. Early indicators suggest that deaths will jump to over 49,000 in 2022.

Net migration in 2021 was estimated at its lowest levels since the tech bust during 2003-2005. Net migration included 13,400 in net domestic migration and 1,600 in international migration. In comparison, between 2010 and 2020, net domestic migration averaged 37,000 annually, and net international migration averaged 10,000 per year. Twenty of the 64 counties reported net out-migration, led by Denver, Jefferson, Arapahoe, Boulder, and Adams. In 2021, the metro counties reported out-migration for the first year since the tech bust in the early 2000s. These estimates will be revised in 2023.

Change by County

From 2020-2021, 73% of the population growth was along the Front Range, compared to 95% in the previous decade. Growth in the Front Range varied by county. Denver, Jefferson, and Boulder all declined but there were increases in Douglas, Weld, El Paso Larimer, and Adams. The Front Range still had the largest population gain, but the Central Mountains and Western Slope experienced faster growth.

Age

Population growth by age group continues to be a defining factor for Colorado due to two primary influences. First, births have been declining since 2007 in both the United States and Colorado. The second significant impact is the growth in the 65+ population. The growth in this group is primarily due to more people aging into the cohort rather than net migration. It is estimated that 66,000 Coloradans turned 65 in 2021, and 67,000 are turning 65 in 2022. The growth in the 65+ age group is impacting the labor

COLOADO POPULATION BY AGE 2020-2021

Age	2020	2021	Change
0 to 17	1,255,749	1,244,189	-11,560
18 to 24	561,243	564,194	2,951
25 to 44	1,657,073	1,667,944	10,871
45 to 64	1,437,494	1,435,048	-2,446
65+	872,581	903,297	30,716

Source: Colorado State Demography Office.

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Colorado Economic, Employment, and Population Outlook

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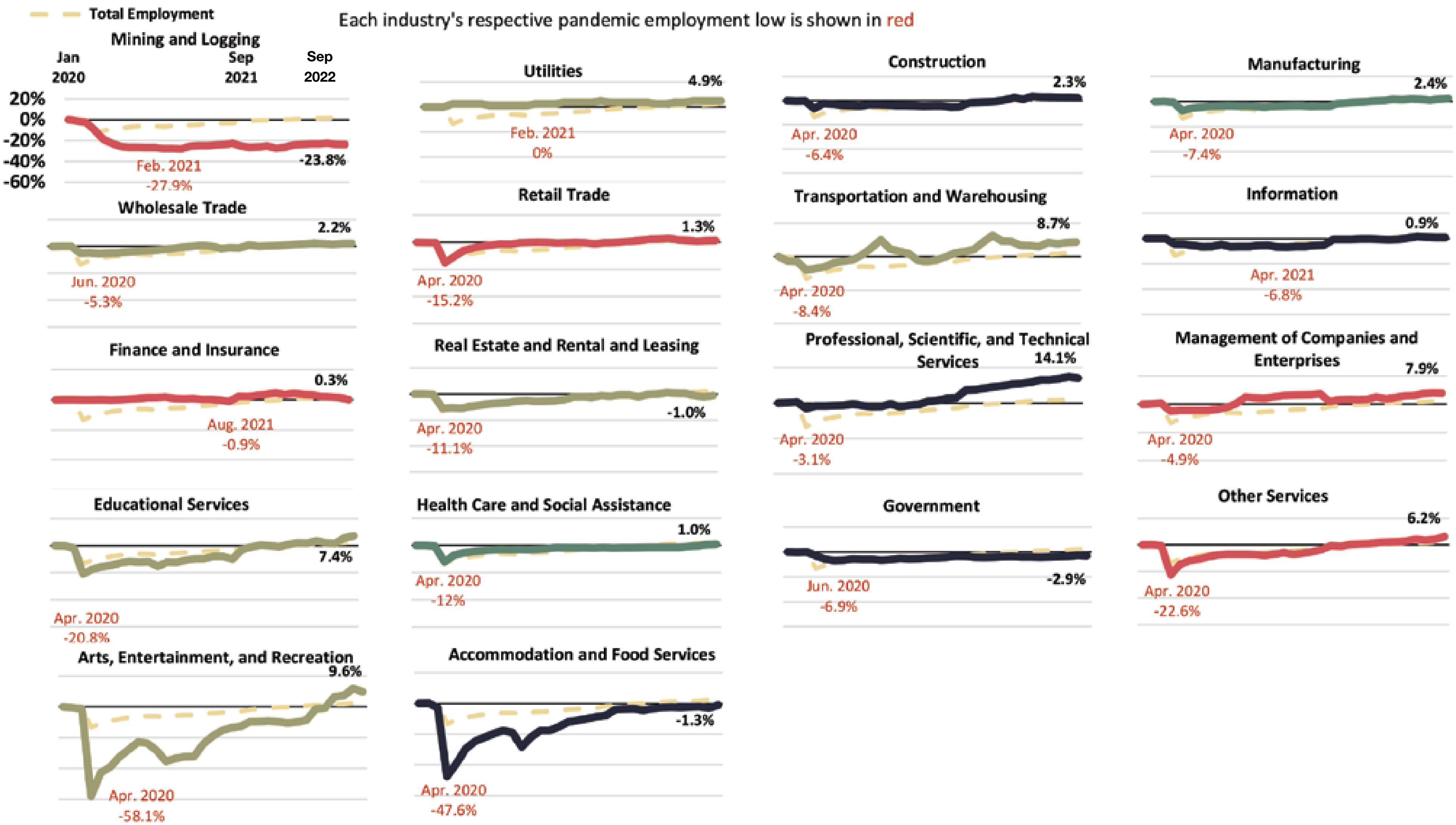
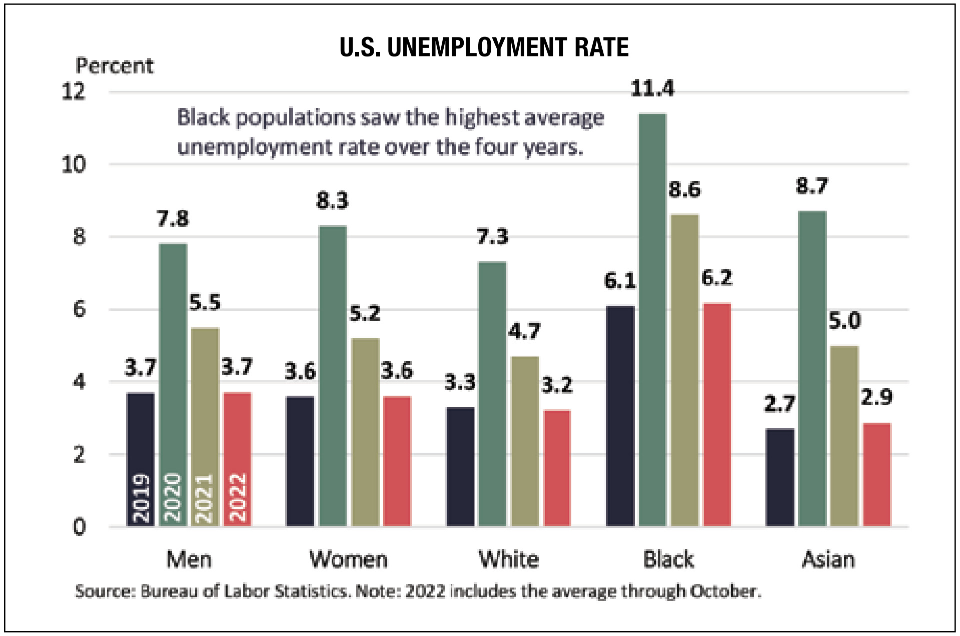
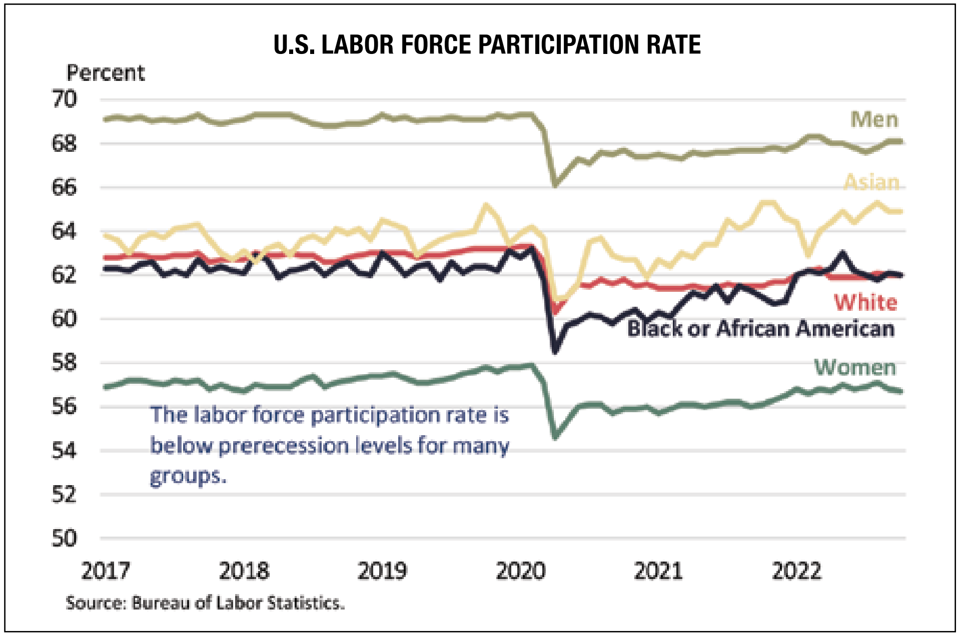
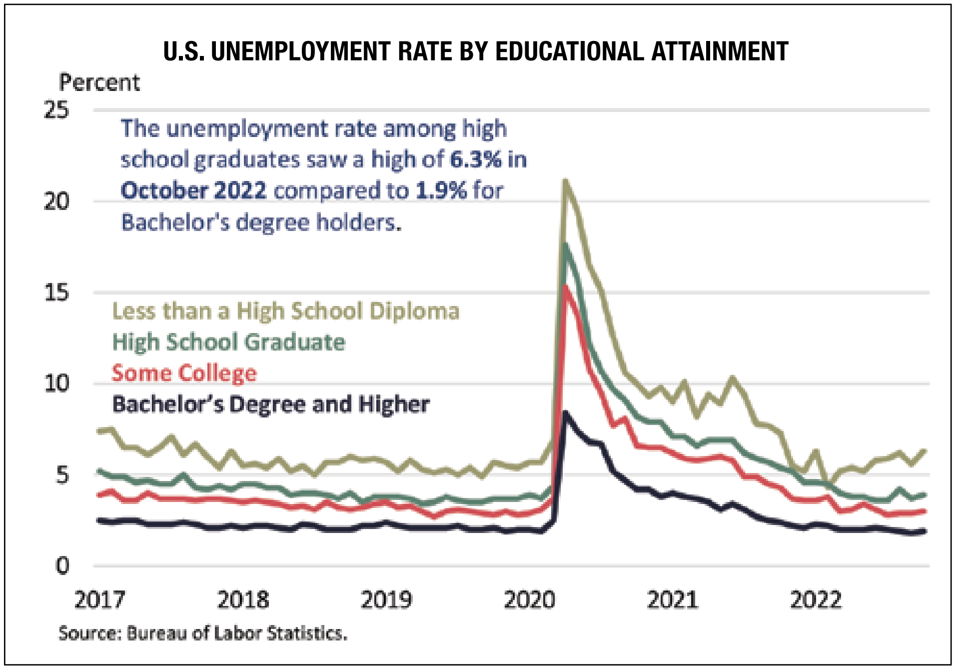
COLORADO EMPLOYMENT TRENDS BY SECTOR, PERCENT CHANGE FROM JANUARY 2020 - SEPTEMBER 2022

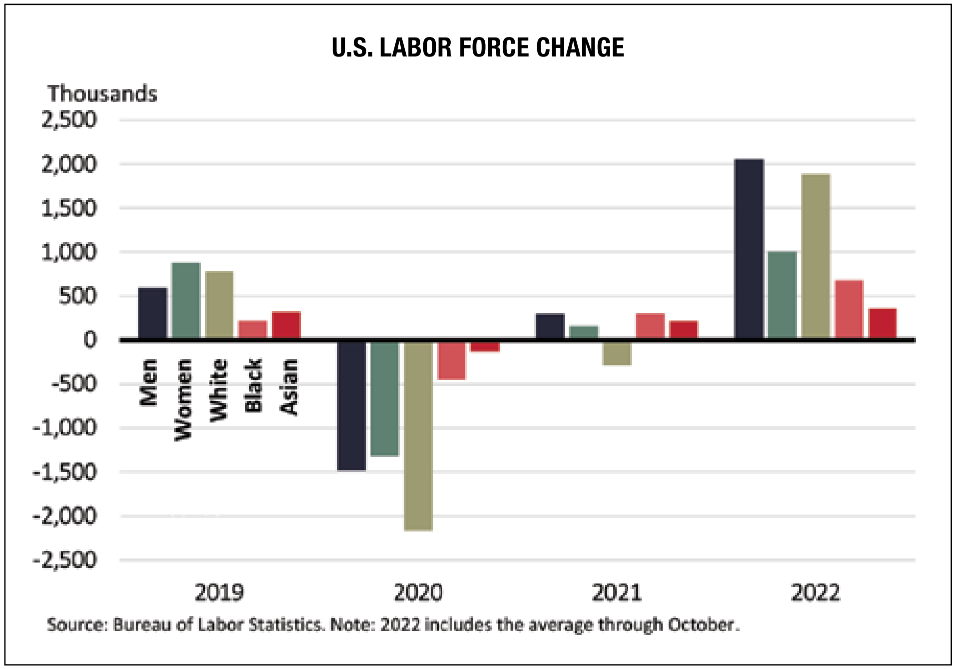


Notes: Employment differences taken from January 2020; the month and percent difference from January 2020 for each industry's pandemic bottom in employment is shown for each industry.
The CES employment data is susceptible to large revisions.
Source: Bureau of Labor Statistics, Current Employment Statistics (CES).









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Colorado Economic, Employment, and Population Outlook

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COUNTY POPULATION GROWTH, 2021

	Rank	County	2020-2021	County	Largest Population
Growth	1	Douglas	9,166	El Paso	738,532
Growth	2	Weld	8,851	Denver	711,973
Growth	3	El Paso	6,470	Arapahoe	655,581
Growth	4	Larimer	2,956	Jefferson	579,654
Growth	5	Adams	2,326	Adams	522,515
				Douglas	369,286
Percent Growth	1	Custer	7.0%	Larimer	362,771
Percent Growth	2	Mineral	6.3%	Weld	340,133
Percent Growth	3	San Juan	4.2%	Boulder	329,793
Percent Growth	4	Ouray	3.5%	Pueblo	169,504
Percent Growth	5	Elbert	3.5%	Mesa	157,323

Source: Colorado State Demography Office.

COMPONENTS OF COLORADO RESIDENT POPULATION CHANGE, 2013-2023 (In Thousands)

Year	Births (Resident)	Deaths (Resident)	Natural Increase	Net Migration	Population Change	Total Population
2013	64.7	33.6	31.1	45.1	76.2	5,270.9
2014	65.7	34.0	31.7	45.1	76.8	5,347.7
2015	66.3	36.2	30.1	68.8	98.9	5,446.6
2016	66.6	36.8	29.7	53.3	83.0	5,529.6
2017	65.3	37.7	27.6	42.4	70.0	5,599.6
2018	63.8	38.2	25.6	51.8	77.3	5,676.9
2019	62.5	38.6	23.8	34.2	58.0	5,734.9
2020	62.8	42.1	20.7	28.6	49.2	5,784.2
2021	62.0	46.5	15.5	15.1	30.6	5,814.7
2022[a]	62.3	49.5	12.8	30.0	42.8	5,857.5
2023[b]	62.5	42.0	20.5	35.0	55.5	5,913.0

[a]Estimated. [b]Forecast. Source: Colorado Department of Local Affairs, State Demography Office (November 2022 estimates).

force with a growing number of retirements; the economy by driving much of the demand for health services and leisure and hospitality; and housing with lower rates of mobility and smaller household sizes. By far, it is the largest and fastest-growing age cohort in the state. Between 2020 and 2021, Colorado experienced an absolute decline of 11,560 in the under 18 population due to slowing births since 2007.

Housing

Housing unit growth did not keep up with household formation during the last decade, creating the tight housing market and escalating home prices. In 2021, housing growth increased to 42,000, helping to ease some of the supply constraint. In 2022, housing unit completions are on pace to be above 45,000. Household formation fell to just under 11,000 in 2021. The increased supply and slowing demand will help alleviate the supply/demand mismatch and allow those who have had to "double up" on housing the potential opportunity to find independent housing. The ratio of housing units to households in 2021 was 1.12, improved from the 35-year record low of 1.08 reached in 2016. This ratio may still be a bit distorted due to the number of "doubled-up" households.

Household formation is forecast to continue to grow annually around 28,000-32,000—as long as job recovery and employment growth holds steady. The largest cohort of the millennials are in their 30s, the primary age for first-time home buyers. Future job growth, as well as future expected retirements from the baby boomers, will support demand for workers and the need for housing. The aging of the baby boomers into their 70s and 80s may create more turnover in larger, single-family homes as the boomers look to downsize. Of course, several factors, including location, availability, cost, and health needs, will also factor into these decisions.

Forecasts

Colorado's population growth has slowed in the short run, with continued slowing births, increased deaths due to both aging and COVID-19, and slowing migration. International migration contributes 20% of Colorado's total net migration, and it slowed significantly in 2020 and in 2021. There are signs that international migration will return to prepandemic levels in 2022. Students and the demand for labor should draw more individuals from abroad, depending on U.S. immigration policies and staffing in visa offices. Population growth in 2022 is projected to remain around 43,000, or a 0.7% growth rate, but then return to prepandemic levels, around 55,500, in 2023. Growth is expected to increase slightly to the low- to mid-60,000 range through 2025, with two-thirds from migration and one-third from natural increase. Through 2025, the forecast is for the natural increase to remain between 15,000 and 21,000 and net migration to remain in

AVERAGE ANNUAL PAY BY SECTOR COLORADO AND UNITED STATES (Q1 2022)

NAICS	Sector	Colorado	1-Year Growth	United States	1-Year Growth
11	Agriculture, Forestry, Fishing, Hunting	$44,086	4.6%	$42,374	6.2%
21	Mining	145,449	13.9	113,308	5.6
22	Utilities	122,263	8.0	121,109	3.4
23	Construction	72,309	5.8	70,681	4.8
31-33	Manufacturing	81,929	6.1	78,016	6.0
42	Wholesale Trade	105,320	11.2	92,472	8.8
44-45	Retail Trade	41,018	10.0	40,589	9.1
48-49	Transportation and Warehousing	63,855	12.3	59,123	8.1
51	Information	135,106	7.3	152,292	6.9
52	Finance and Insurance	122,176	7.1	135,087	8.4
53	Real Estate and Rental and Leasing	75,800	13.3	71,943	9.9
54	Professional and Technical Services	118,634	10.0	115,914	6.9
55	Mgmt of Companies and Enterprises	167,752	7.4	145,874	9.5
56	Administrative and Waste Services	54,429	10.1	51,802	10.0
61	Educational Services	50,629	3.6	58,696	1.1
62	Health Care and Social Assistance	59,935	7.1	59,080	6.5
71	Arts, Entertainment, and Recreation	45,059	1.4	46,637	-1.8
72	Accommodation and Food Services	29,446	16.0	26,304	15.6
81	Other Services	49,267	6.9	46,727	4.4
	Government	65,973	4.4	65,872	3.9
	Federal	91,532	4.4	89,960	4.5
	State	74,809	7.4	69,942	5.5
	Local	56,949	3.4	59,475	3.6
	Total, All Industries	72,097	7.0	68,726	5.9

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

the mid-40,000s. Population growth is forecast to remain fairly strong (50,000-60,000) from 2025-2030, driven by continued job growth, the retirement of baby boomers, and the need for their replacements.

After 2030, population growth is expected to slow significantly due to a slowing economy, continued slowing birth rates nationally, an aging population, slowing labor force growth, and slowing international immigration. Although Colorado's population growth is forecast to slow over the next few decades, it is projected to continue to outpace the nation, growing at roughly twice the national rate. Colorado is forecast to increase from 1.7% of the U.S. population in 2020 to 2% by 2050. The largest population growth is forecast to be along the Front Range. Between 2020 and 2030, the state's population is projected to increase by 632,000, with 88% of this increase projected for the Front Range and of that, 300,000 for the Denver Metro area. The North Front Range is expected to observe the fastest growth, at an annual average growth rate of 2%, or 140,000 people. The 2050 forecast for the state is nearly 7.5 million, with 6.3 million along the Front Range, or 85% of the total population. ✤

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Agriculture

Agriculture: A Record Year, but Not a Good Record

Colorado agriculture may be record years in 2022 and 2023—record prices outweighed by record expenses. And perhaps, a record drop in income, with Colorado's overall net farm income estimated to drop by more than $1 billion to $852 million for 2022. The 2023 is forecast to be even worse, as net farm income is projected to continue to fall to $772 million, the lowest Colorado net farm income in 20 years, according to the U.S. Department of Agriculture (USDA) Economic Research Statistics.

Market prices for corn, wheat, fed cattle, milk, hogs, and sunflower are all generally higher across the board than a year ago. Wheat, one of Colorado's staples, is substantially higher in large part due to the war in Ukraine, which is disrupting the capacity of one of the great agricultural regions of the world to produce and transport its wheat into market channels.

However, prices for feed, labor, and other inputs needed to raise livestock and grow crops will more than outweigh those gains. Almost every input for farmers and ranchers costs more today than it did a year ago. Fuel, seed, pesticides, and especially fertilizer have increased. Rising costs for farm labor, trucking and shipping, repairs, and equipment are all cutting into potential profit margins. The increase in interest rates will further impact producer operating expenses. In some instances, it will mean producers may even operate at a loss.

Photo courtesy of Shelby Chestnut.

INDUSTRY SNAPSHOT AGRICULTURE

Nominal GDP, 2021 ($ Billions)	2.8
Real GDP, 2021 ($ Billions, 2012 Dollars)	2.8
2021 Real GDP Growth Rate	-19.8%

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics.

In recent years, Colorado's agriculturalists have managed to save farm income by reeling back input costs. Will this year be the year that they can't cut any further? Has the limit been reached on what inputs can be reduced and still produce a viable crop? Next year, as fertilizer prices continue to increase, row crop farmers will weigh how little fertilizer they can apply to their wheat or corn without too much yield loss. Colorado's cattle producers will have to weigh whether they can still feed a smaller herd with higher prices for hay and corn, or whether they will need to sell more of their remaining stock. Growers will be seeking to manage inputs to minimize yield loss and maximize revenue per acre, rather than aim for the highest possible bushels per acre.

Colorado egg farms suffered record losses due to disease. Western Slope fruit farmers finally had friendlier spring weather, bringing abundant Palisade peaches. The nursery, greenhouse, and landscape industries enjoyed a strong year but watched housing starts slowing, concerned that demand for new plants, trees, and landscapes may slow in 2023. Colorado potato farmers were hopeful about the Mexico market finally opening up but were short on workers to help pack potatoes and trucks and drivers to transport them there.

Availability of water continues to be a headline. News stories about the state of the Colorado river and downstream reservoirs, Lake Mead and Lake Powell, are widespread. Colorado uses less than 40% of the streamflow that originates in the state, sending the rest downstream to seven other states and to Mexico because of interstate water compacts that date back to the early 20th century.

Agriculture is the largest water-user in Colorado, turning that water into food, fuel, and fiber, contributing approximately $47 billion annually to Colorado's economy and supporting about 5% of Colorado's workforce, according to the Colorado Department of Agriculture when considering upstream and downstream effects. Municipalities' past purchases and continued purchasing of water rights from Colorado farmers could permanently dry up farmland, greatly impacting ag production on this land in the future, if it even remains viable for this purpose.

All 64 of Colorado's counties have been designated as primary natural disaster areas for drought by the USDA. Farmers are paying close attention to Washington, D.C., as Congress begins serious work on the 2023 Farm Bill and to see how President Biden's climate change efforts will impact them. It is expected that conservation groups will lobby Congress to shift Farm Bill funds into climate-related priorities, according to Agri-Pulse. Farm groups are cautiously optimistic about possibilities for agriculture in helping sequester carbon but have also seen proposed federal carbon markets and other climate programs collapse in the past.

A significant swing in government farm payments will also hurt Colorado's overall net farm income. This swing is due to lower supplemental and ad hoc disaster assistance to farmers and ranchers related to the coronavirus (COVID-19) pandemic compared with 2021, according to the USDA.

The Inflation Reduction Act, signed into law in August, presents some new possibilities for agriculture. The Act authorized $26 billion nationwide in spending for conservation through 2026. The conservation funding primarily goes to already-existing conservation programs, such as the Environmental Quality Incentives Program (EQIP). The Agricultural and Food Policy Center at Texas A&M University described this program as a cost-share program for farmers to implement on-farm practices that address natural resource concerns or provide environmental benefits. Closer to home, the Colorado Department of Agriculture was recently awarded $25 million under USDA's Partnerships for Climate-Smart Commodities Project to scale-up its Saving Tomorrow's Agriculture Resources (STAR) program.

A terrible "'black swan" for Colorado's egg producers this year was the highly contagious avian flu. Several outbreaks necessitated euthanizing large numbers of Colorado's egg-laying hens, reducing numbers by nearly 2.8 million chickens from October 2021 to October 2022.

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COLORADO AGRICULTURAL VALUE ADDED, INCOME, AND EXPENSES, 2013–2023
(In Millions of Dollars)

Year	Livestock	Crops	Total Value of Production	Value of Services and Forestry[a]	Government Payments[b]	Gross Value of Farm Revenue	Total Farm Production Expenses	Net Farm Income
2013	$4,705.7	$2,320.3	$7,026.0	$1,345.5	$239.0	$8,610.5	$7,216.0	$1,394.5
2014	5,357.7	2,479.7	7,837.4	1,052.9	285.9	9,176.2	7,954.1	1,222.1
2015	5,551.8	2,224.7	7,776.5	929.3	218.6	8,924.4	7,309.2	1,615.2
2016	4,431.3	2,050.1	6,481.4	907.2	233.9	7,622.5	6,358.2	1,264.3
2017	4,732.2	2,207.0	6,939.2	1,058.3	268.7	8,266.2	7,226.9	1,039.3
2018	4,707.8	2,137.4	6,845.2	1,179.1	229.9	8,254.0	7,036.6	1,217.4
2019	4,963.0	2,395.9	7,358.9	948.2	278.5	8,585.6	6,855.1	1,730.5
2020	5,024.7	1,875.3	6,900.0	1,475.7	738.1	9,113.8	7,944.7	1,169.1
2021	5,652.7	2,810.1	8,462.8	1,009.5	475.0	9,947.3	7,941.3	2,006.0
2022[c]	6,062.0	2,740.0	8,802.0	1,000.0	300.0	10,102.0	9,250.0	852.0
2023[d]	5,747.0	2,775.0	8,522.0	1,000.0	250.0	9,772.0	9,000.0	772.0

[a]Includes sales of forest products, custom feeding fees, custom harvest fees, and other farm income. [b]Includes farm program payments directly to producers.
[c]Estimated. [d]Forecast. Source: Colorado Business Economic Outlook Ag Committee.

Agriculture

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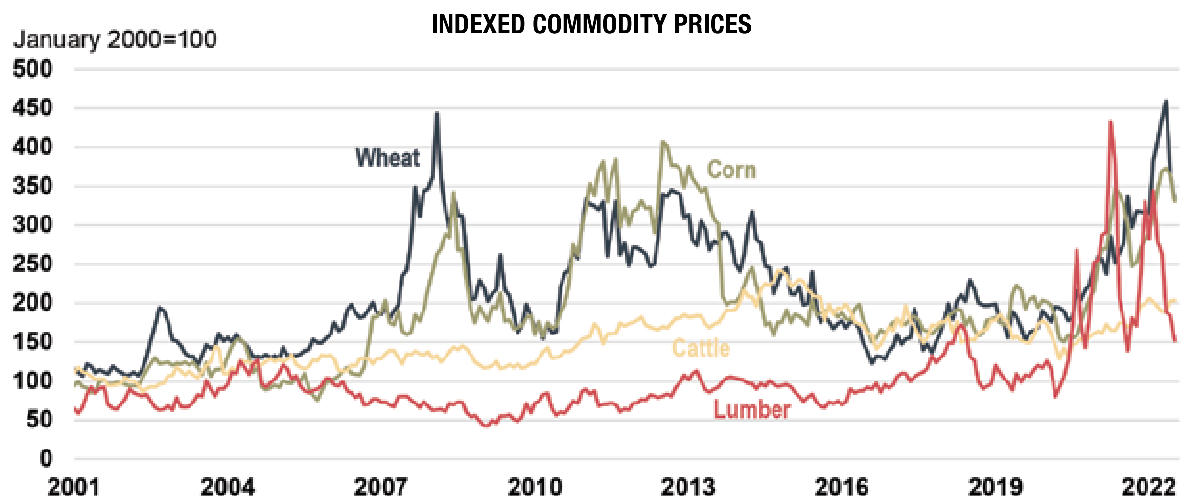

Sources: Bloomberg (USDA Toledo No.2 Yellow Corn Not on the River Spot Price; USDA No. 1 Hard Red Winter Wheat Spot Price/Kansas City Missouri; Generic 1st Live Cattle Future; Generic 1st Lumber Future). As of 11/11/2021.


Photo courtesy of Ursa Arnold Tyson.

Egg production fell by 61% in September 2022 compared to September 2021, according to the USDA.

Cattle ranchers continued to be hit hard by the drought. They had less grazing grass available on their ranches because of dry conditions. To supplement, they needed to purchase hay, which is also in short supply and more expensive because of the drought. Feed is the largest input for ranchers or cattle feeders raising cattle for beef. Consequently, ranchers continue to reduce their herds.

Typically, ranchers would keep many of their heifers (female calves) to mature into cows and become part of the herd producing new calves. According to Morning Ag Clips, as of October 2022, ranchers across the U.S. had sent 750,000 more heifers to market to be fed and harvested for beef than they had last year, indicating that there is little optimism that the drought will improve or that it will be less expensive to feed beef cattle next year. Data from the USDA National Agricultural Statistics Service show Colorado's cow herd (mother cows that ranchers keep year to year) has declined from 980,000 in 2018 to 840,000 in 2022, a low not seen since 2013.

Normally, consumers would benefit and see lower beef prices at the supermarket because of increased animals going to slaughter. However, inflationary pressures have kept the price of beef high, and the next few years will see a reduced supply because of the current sell-off. Retail prices are not expected to decrease.

Colorado grain farmers were also hit hard by the drought. Much of Colorado's wheat crop is grown on "dryland" acres, farms that rely on Mother Nature to provide all the moisture. Because of the drought, Colorado's winter wheat harvest was almost half of what it was in 2021—35.8 million bushels versus 69.6 million bushels the previous year. Wheat farmers did receive higher prices for their wheat, with a season average price (estimated) for 2022 of $6.84 per bushel versus $4.62 per bushel in 2021. That price may go higher next year if widespread relief from dry conditions is not seen across the U.S.

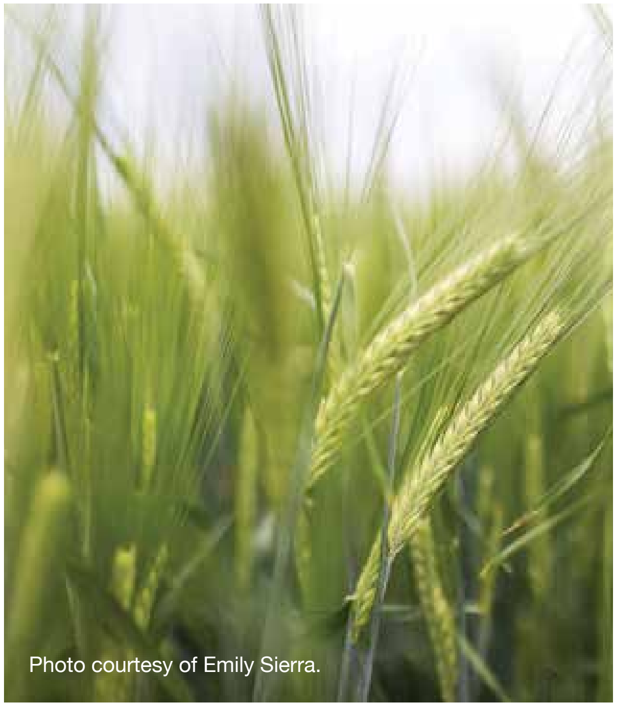

Photo courtesy of Emily Sierra.

Photo courtesy of Sapphira Pearce.

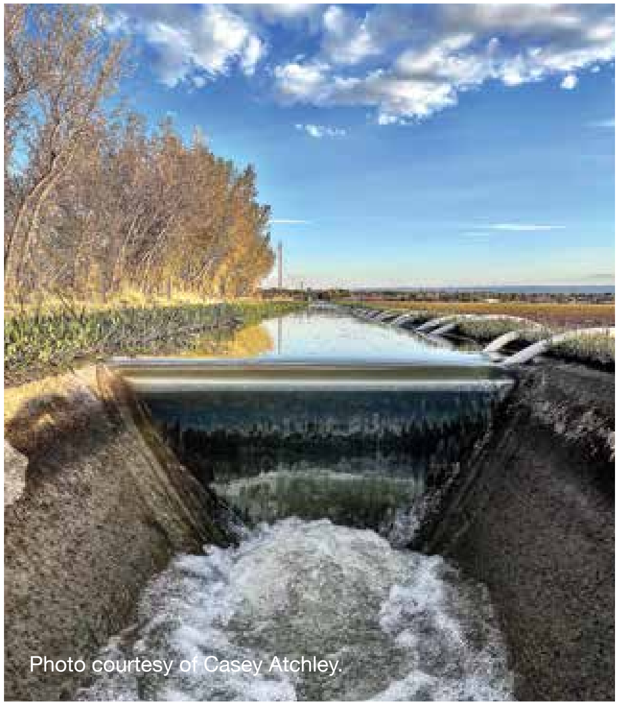

Photo courtesy of Casey Atchley.

While corn farmers planted more corn acres this year, the drought had a devastating impact, and a significant number of acres were abandoned. The forecast for harvest is 7% lower than in 2021. Average corn prices improved from $4.62 per bushel in 2021 to $5.70 per bushel in 2022, and they are forecast to increase to $6.85 in 2023 because of continued drought in the corn-growing regions of the country. Much of the corn grown in the U.S. is "field corn," which, unlike the "sweet corn" famously grown in Olathe and Brighton, Colorado, is used primarily to feed livestock and produce ethanol. Demand for corn in Colorado is higher than the supply because of the strength of the state's cattle feeding operations, and corn is being imported into Colorado from other states.

Hemp farming, once a booming new growth area, has retreated to 2014 levels, with a high of 2,532 registrations to grow the crop in 2019, down to 214 in 2022. This is approximately the same level as the first year of registrations. Growers had a difficult time finding processors for their crop, and hemp from previous years is still sitting in bales in some barns waiting to be processed. Most of the hemp grown in Colorado was processed for CBD, and that market quickly became saturated. Opportunities to turn hemp into fiber for paper, building materials, or animal feed are limited. Hemp farmers also faced the challenging situation that if their hemp crop's THC level was too high, it would need to be destroyed.

This November, Colorado ag employers will begin feeling the effects of SB-087, passed by the state Legislature in 2021, which instituted overtime requirements for agriculture. The new requirements for paying overtime will be phased in over a period of three years, with the new rules fully taking effect in 2025. This will affect a broad swath of Colorado ag production, from vegetable farms to row crops, nurseries, greenhouses, and dairies.

One of the bright spots for Colorado agriculture is that despite ongoing port congestion, rail concerns, and global logistics, Colorado food and agriculture exports remain strong. From January 2022 - August 2022, exports were reported at $1.7 billion, 10% greater than the same period of 2021 (and 2021 was a record-high at $2.3 billion). The increase is arising from incremental growth of beef and beef variety meat exports, primarily to South Korea, China, and Japan.

Colorado's farm and agriculture economy remains strong but there are multiple near-term risks. How will the war in Ukraine, the weather, high fertilizer and natural gas

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costs, and the drought affect Colorado next year? Inflation is at the highest level since the 1980s, and there are many things outside of agriculture's control. Beyond inflation, there are other big things happening in the same period—COVID, employment challenges, supply chain issues, and rising interest rates. Will they go as high as they were in the Farm Crisis of the 1980s? How will the high employment rate balance out what could be an approaching recession? It is a trying time to be in agriculture.

Social commentator and entertainer Will Rogers once said, "The farmer has to be an optimist or he wouldn't still be a farmer." In 2022 and 2023, the farmer may need to be both an optimist and a pessimist, weighing the costs of planning for a turn-around for agriculture with the risk that prices will drop while input costs remain high. For the next few years, input costs, and the way farmers manage them, will be the dominant factor in Colorado farm income.

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Photo courtesy of Jill Yardbury.

Natural Resources and Mining

Colorado's abundant energy and mineral resources continue to be a key component of the state's economy. The Natural Resources and Mining (NRM) sector, while comprising less than 1% of Colorado's workforce, generates some of the highest per worker income levels in the state. In the U.S. Energy Information Administration's (EIA) most recent assessment of 2020 proved reserves, Colorado ranked seventh in the U.S. for petroleum liquids and ninth for wet natural gas. For coal, the state was 10th in recoverable reserves and 11th in production in 2021. This same year, Colorado ranked 19th in total value of produced nonfuel minerals, according to the annual U.S. Geological Survey Mineral Commodity report.

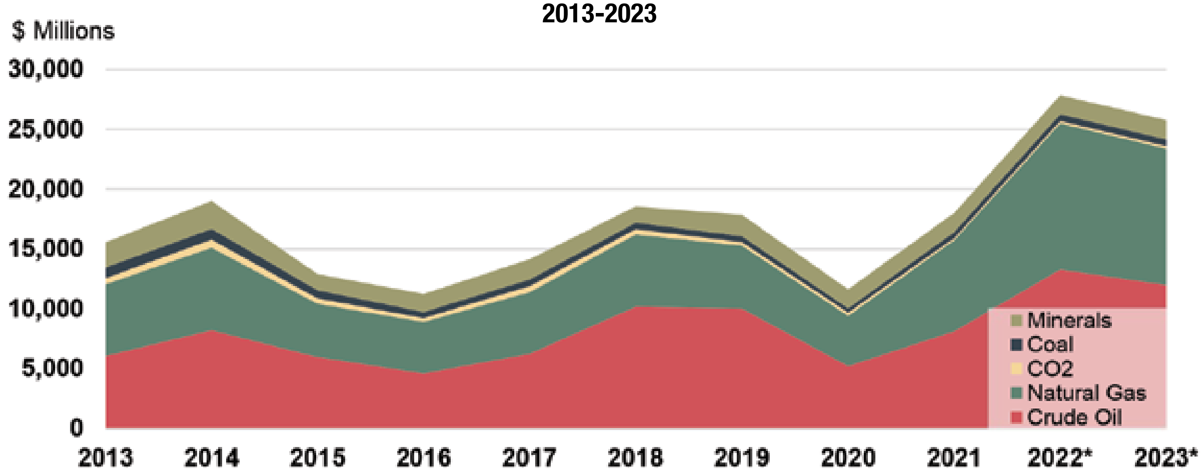
Increased oil and gas pricing during 2022 has resulted in an all-time high NRM sector valuation. With the COVID pandemic moving into the economy's rearview mirror, Colorado, like other energy-rich states, will benefit from an increased demand for more energy and mineral resources. Current employment in this sector (just over 20,000 jobs as of late-2022), has already seen some modest growth over the past 12 months. Notably, the sector is expected to continue adding jobs in 2023, thanks in part to the persistent higher oil and gas price environment nationally and globally. Uncertainties—geopolitical, economic, and regulatory—however, certainly have the potential to stagnate job growth. It is worth noting that while natural resource employment in the state is less than 1% of the state's total employment, this sector contributes around 4% to the state's GDP.

The estimate of Colorado's NRM sector value for 2022 is $27.8 billion. This represents a 55% increase from the 2021 sector valuation of $18 billion, and more than double the valuation of 2020. Assuming energy prices hold up over the next calendar year, the NRM sector will likely see a similar value in 2023.

Beyond 2023, there are many factors to consider when forecasting employment and value of Colorado's natural resource industry. These include the state of the national and global economies; the possibility of new pandemics; increased federal infrastructure and\or renewable energy spending; increased federal, state, or local regulation; and volatile oil and gas supply-demand dynamics in the United States and globally. These factors, of course, exist in the macrocontext of changing social attitudes toward natural resources, the environment, and climate change.

In 2020, at the start of the pandemic, the Natural Resources and Mining industry declined nearly 25% from the previous year. This drastic decline leveled out in 2021 at just under 20,000 jobs. The industry will see a gain of around 900 jobs (4.5%) in 2022, and potentially 3,000 jobs (14.5%) in 2023.

VALUE OF COLORADO NATURAL RESOURCES AND MINING, 2013-2023



*2022 estimated and 2023 forecast.
Sources: Colorado Geological Survey Mineral and Minerals Fuel Activity Reports, Colorado Oil and Gas Conservation Commission, Department of Minerals and Geology, and Colorado Business Economic Outlook Committee.

INDUSTRY SNAPSHOT NATURAL RESOURCES AND MINING

Nominal GDP, 2021 ($ Billions)	13.5
Real GDP, 2021 ($ Billions, 2012 Dollars)	16.7
2021 Real GDP Growth Rate	-28.6%
Total Employment, 2021 (Thousands)	19.8
2021 Employment Growth Rate	-9.2%
Employment Growth National Rank	44
Share of Colorado Employment	0.7%
Share of National Employment	0.4%
Average Wage, 2021	89,735
Percent of Statewide Average Wage	125.4%
2021 Average Wage Growth Rate	-2.3%

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics.

Oil and Gas

Colorado's total oil and gas production will have an estimated value greater than $25 billion for 2022—60% higher than in 2021 and a notable 160% higher than 2020. This all-time high production value is a reflection of the sustained higher crude oil and natural gas prices

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Natural Resources and Mining

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VALUE OF COLORADO NATURAL RESOURCES AND MINING, 2013–2023 (In Millions of Dollars)

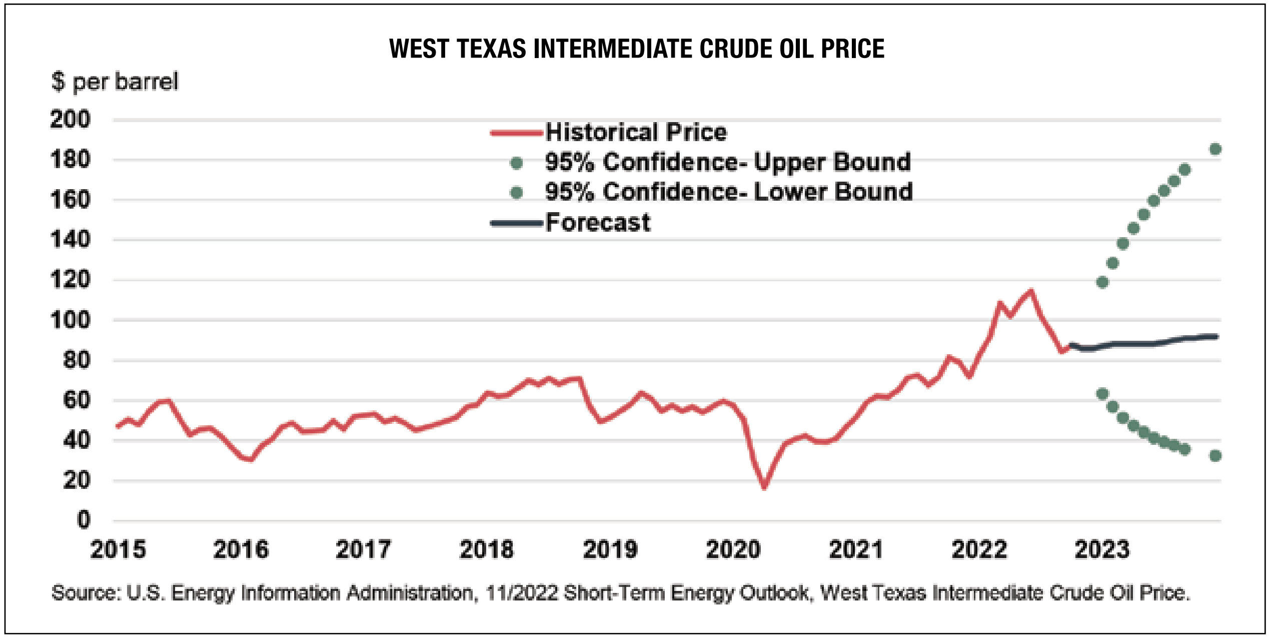
	Oil and Gas Extraction					Mining				
Year	Crude Oil	Natural Gas	Carbon Dioxide	Subtotal	Percent Change	Coal	Minerals	Subtotal	Percent Change	Total
2013	$6,057.0	$6,012.0	$500.0	$12,569.0	31.2%	$873	$2,110	$2,983	-2.5%	$15,552
2014	8,209.0	6,911.0	678.0	15,798.0	25.7	900	2,320	3,220	8.0	19,018
2015	5,975.0	4,437.0	467.0	10,879.0	-31.1	675	1,340	2,015	-37.4	12,894
2016	4,607.2	4,308.7	318.8	9,234.7	-15.1	481	1,510	1,991	-1.2	11,226
2017	6,259.0	5,137.3	517.2	11,913.5	29.0	536	1,680	2,216	11.3	14,130
2018	10,182.0	6,055.8	437.4	16,675.2	40.0	512	1,380	1,892	-14.7	18,567
2019	10,015.4	5,270.0	299.1	15,584.5	-6.5	490	1,790	2,280	20.5	17,865
2020	5,217.7	4,204.2	270.2	9,692.1	-37.8	332	1,620	1,952	-14.4	11,644
2021	8,108.9	7,627.6	181.6	15,918.1	64.2	493	1,610	2,103	7.7	18,021
2022[a]	13,302.4	12,226.3	200.0	25,728.7	61.6	557	1,560	2,117	0.7	27,846
2023[b]	12,000.0	11,400.0	200.0	23,600.0	-8.3	553	1,650	2,203	4.1	25,803

[a]Estimated. [b]Forecast. Sources: Colorado Geological Survey, United States Geological Survey (USGS), COGCC, Dept. of Minerals and Geology, and CO Business Economic Outlook Committee.

COLORADO PHYSICAL OUTPUT OF FOSSIL FUELS, 2013–2023

Year	Coal Millions of Short Tons	Crude Oil Millions of Barrels	Natural Gas Billions of Cubic Feet	Carbon Dioxide Billions of Cubic Feet	Index (Base Year: 2013 = 100) Coal	Crude Oil	Natural Gas	Carbon Dioxide
2013	24.2	65.1	1,567	268	100.0	100.0	100.0	100.0
2014	22.8	94.7	1,581	355	94.2	145.5	100.9	132.5
2015	18.7	122.8	1,691	409	77.3	188.6	107.9	152.6
2016	12.8	119.9	1,708	444	52.9	184.2	109.0	165.7
2017	15.2	134.8	1,721	464	62.8	207.1	109.8	173.1
2018	14.3	169.2	1,904	427	59.1	259.9	121.5	159.3
2019	13.6	192.4	2,058	453	56.2	295.5	131.3	169.0
2020	10.6	171.6	2,070	301	43.8	263.6	132.1	112.3
2021	10.0	153.7	1,958	279	41.3	236.1	125.0	104.1
2022[a]	12.1	158.8	1,879	299	50.0	243.9	119.9	111.6
2023[b]	12.3	160.0	1,900	300	50.8	245.8	121.3	111.9

[a]Estimated. [b]Forecast. Sources: CO Geological Survey Mineral and Minerals Fuel Activity Reports, COGCC, Dept. of Minerals and Geology, and the Colorado Business Economic Outlook Committee.



WEST TEXAS INTERMEDIATE CRUDE OIL PRICE

Source: U.S. Energy Information Administration, 11/2022 Short-Term Energy Outlook, West Texas Intermediate Crude Oil Price.

despite a marginal increase in Colorado's oil production and a decrease in natural gas production. Valuation of oil and gas is split almost evenly, with each worth roughly $12 billion to $13 billion in 2022. For 2023, Colorado oil and gas output and valuation are likely to be similar. The September 2022 economic outlook from the Colorado Office of State Planning and Budgeting (OSPB) reports that severance tax collections for FY2021–22 (July 1, 2021–June 30, 2022) increased to $325 million—a notable rebound from the $14.7 million collected in FY2020-21. Increased commodity pricing (and to a much lesser degree production) was the instigator of this dramatic shift. OSPB is forecasting a 28% drop in severance tax in FY2022-23 due to a rise in ad valorem credit claims. The ad valorem credit allows taxpayers to claim a credit of 87.5% of the real property taxes paid to a local government on oil and gas produced to offset their severance tax liability.

In March 2019, Colorado lawmakers voted to approve Senate Bill 19-181—legislation that significantly overhauls oil and gas regulation in the state. Changes included rewording the Colorado Oil & Gas Conservation Commission's (COGCC) mandate from "fostering" to "regulating" the oil and gas industry; providing local governments more regulatory oversight; restructuring the commission makeup; and creating new rules to prioritize public health, safety, and environmental concerns. On January 15, 2021, new COGCC rules went into effect that defined a new relationship between state and local governments regarding oil and gas activity, started collecting information on cumulative impacts, established larger setbacks, and overhauled the permitting process to pay more attention to operator planning and protection of the environment and wildlife. As of late-2022, the COGCC has nearly completed its implementation of its new rules—one of the last rulemakings being an overhaul of the financial assurance required for companies to operator oil and gas wells in the state.

Oil

Colorado crude production hit an all-time high in 2019 of 192 million barrels. In 2020, oil output fell 10.9% to 172 million barrels, and then dropped an additional 10% in 2021 to 154 million barrels. For 2022, the production level is estimated to end up only 3% higher at around 160 million barrels. In 2023, Colorado is expected to have a similar level of production. Recessionary headwinds in the U.S. and the state of global energy markets will likely come into play.

According to the EIA, Colorado accounts for roughly 4.2% of the total crude produced in the United States and ranks fifth among states in production as of June 2022. Development of the prime Niobrara shale assets in the Greater Wattenberg Area has been key to production growth in Colorado. Up until recently, new drilling was offsetting the rapid decline rates of lateral wells (estimated to be from 30% to greater than 50% in the first year). Estimates indicate the Niobrara shale play may contain as many as 2 billion barrels of oil, with the Denver-Julesburg Basin being the 5th-largest liquid play in the nation based on proved reserves.

After spending much of 2020 below $40 per barrel, the U.S. petroleum benchmark, known as West Texas Intermediate (WTI), recovered into the $50-$80 per barrel range in 2021. In 2022, the war in Ukraine triggered a dramatic increase, with WTI prices to over $100 per barrel for much of the spring and summer. The 2022 average price of $98 per barrel so far is 44% higher than the 2021 WTI mean daily price of $68 per barrel, and is 150% over the 2020 average price of $39 per barrel. The Denver Basin regional pricing, however, is typically at a 10-25% discount relative to WTI prices due to market demand and supply chain network constraints. For 2022, the average mean Denver Basin sales price is $85 per barrel through early-November. Looking toward 2023, the forecast is for pricing to come down a bit to the range of $65 to $95 per barrel on average. Volatility

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Natural Resources and Mining

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remains high, however, with prices beyond the upper end of the range possible. Political and economic events at both the national and global scale result in rapid swings in pricing and create supply-demand imbalances.

The International Energy Agency's (IEA) October Oil Market Report forecasts global oil demand of 99.6 million barrels per day (mb/d) for 2022, an increase of 1.9 mb/d from 2021. For 2023, the IEA is forecasting another increase of 1.7 mb/d to 101.3 mb/d. Deteriorations in the global economy, combined with higher prices, triggered by OPEC+ supply cuts, are slowing oil demand growth. Total global oil output as of September was 101.2 mb/d. IEA cites the cuts in OPEC+ oil supply increasing energy security risks worldwide even while taking into account lower demand expectations. Worth noting is that the United States now has little or no political influence over the OPEC+ position on oil supply and, ultimately, pricing. This paradigm should help domestic oil and gas producers in the near-term and accelerate the timeline for the United States to become a net oil exporter.

According to the EIA, the United States consumed 18.2 million barrels of oil per day in 2020 and 19.9 million barrels per day in 2021. The estimate for 2022 is 20.4 mb/d and 2023 is 20.5 mb/d. The U.S. domestic production has increased from an averaged 11.3 mb/d in 2020 to 11.8 mb/d in 2022. For 2023, the forecast is for the supply to increase again to 12.3 mb/d. EIA is estimating that WTI for 2023 will decrease modestly to an average $89 per barrel. These sustained higher prices will encourage U.S. operators to resume drilling against concerns of debt and increased capital expenses due to inflation.

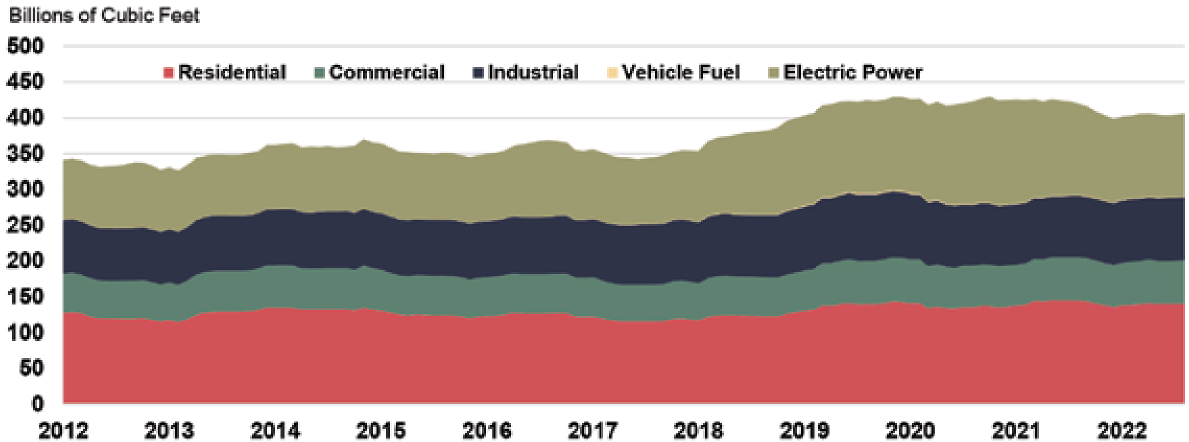
Retail Gasoline

The Colorado average retail price of automotive gasoline of all grades in 2022 (through October) was $4.03 per gallon, a 23% increase from the 2021 average price of $3.27. Nationally, EIA estimates the average for regular grade to end up at $4.02 per gallon in 2022 and decrease to $3.61 in 2023. The retail price for diesel nationally averaged $3.29 in 2021, and then increased 55% to $5.09 in 2022. Expectations are for Colorado gasoline to decrease in 2023 (between $3.25 and $3.80 per gallon average for all grades).

Natural Gas

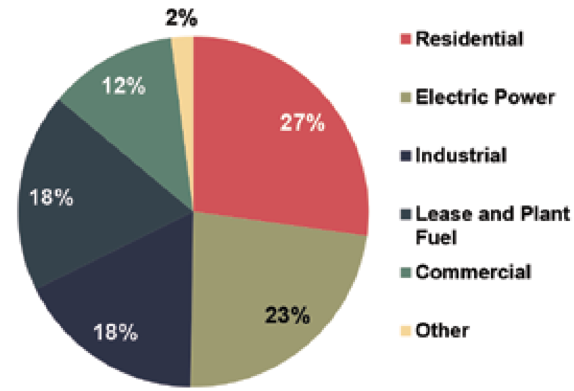
In 2021, Colorado ranked seventh in the nation for marketed natural gas production in the United States. EIA estimates that conventional and unconventional output from Colorado basins accounts for 4% of the total annual U.S. natural gas production. The state contains 11 of the largest natural gas fields in the country, leads the nation in gross withdrawals from coalbed methane wells, and contains almost a quarter of the economically recoverable coalbed methane in the country. Power generation has been shifting away from coal for many years. Currently, natural gas provides more than 23% of Colorado's electric power versus 18% a decade ago. Interestingly, the state's natural gas consumption for electric generation decreased roughly 20% in 2021 from the 2020 peak—most certainly due to higher natural gas prices. Colorado uses only about 20% of the natural gas it produces. There are more than 40,000 wells producing natural gas in Colorado. The total output (in combination with the associated gas generated from the state's "oil" wells) will be an estimated 1.88 trillion cubic feet (Tcf) in 2022. For 2023, production is forecast to remain flat or increase modestly.

COLORADO NATURAL GAS DELIVERED TO CONSUMERS BY END USE, 12-MONTH ROLLING SUM, 2012-2022



Source: U.S. Energy Information Administration.
Note: Vehicle fuel accounts for less than 1% of consumption of total natural gas delivered to consumers.

COLORADO NATURAL GAS CONSUMPTION BY END USE, 2021



Source: U.S. Energy Information Administration.
Note: Other includes vehicle fuel and pipeline and distribution use.

Of the 497,187 million cubic feet of natural gas consumed by Colorado in 2021, roughly a quarter (23%) went to electric power and another quarter (27%) went toward residential consumption. Other significant end-uses included industrial consumption (17%), lease and plant fuel (18%), and commercial consumers (12%). For 2022 (through August), the average monthly residential gas price in Colorado was $14.48 per thousand cubic feet— a 37% increase compared to the same period in 2021. As of July and August 2022, residential gas prices had spiked nationally, with Colorado having average prices above $22 per thousand cubic feet—still the 14th-lowest residential price in the country. Ultimately, higher wholesale rates the utilities pay are passed on to the consumer. Xcel Energy recently estimated customers could be paying 50% more for their fuel costs in December 2022 compared to December 2021.

For 2023, the expectation is that Colorado natural gas spot prices will range between $4 and $6 per thousand cubic feet. EIA is currently estimating the Henry Hub spot price average for 2022 to end up at $6.49 per thousand cubic feet, with prices to decline in 2023 ($5.46 per thousand cubic feet). High domestic demand for natural gas to generate electricity, strong global demand for U.S. liquefied natural gas (LNG) exports, and depressed natural gas inventory levels are all contributing to the increased price environment. EIA notes that the U.S. total working natural gas storage is currently 4% below the five-year (2017-21) average for this time of the year. This is, however, a higher-than-expected storage level going into winter and consequently the forecast is for lower Henry Hub spot prices than previously predicted.

EIA forecasts suggest the average U.S. household using natural gas for heating will see a total winter 2022–23 (October through March) household expenditure increase of 25% over winter 2021–22 on average. If there is a 10% colder-than-average forecast scenario, this expenditure could increase by 37%; if the weather is 10% warmer-than average, the expenditure will still be around 17% greater than last winter. Regionally, the Mountain Region is forecast to see residential gas prices 20% higher ($2.19 per thousand cubic feet) than last winter. The National Oceanic and Atmospheric Administration (NOAA) estimates that the total heating degree days for winter 2022–23 in the Mountain Region will be 4,090, very similar to last winter's 3,935. Just under half of all households in the United States depend on natural gas as a primary heating fuel; for Colorado, this number is more than 70%.

Carbon Dioxide

Colorado's carbon dioxide production is marketed almost exclusively for enhanced oil recovery (EOR) operations. In 2022, an estimated 300 billion cubic feet of CO2 will be produced in three counties (Montezuma, Dolores, and Huerfano), with the total production value estimated at $200 million.

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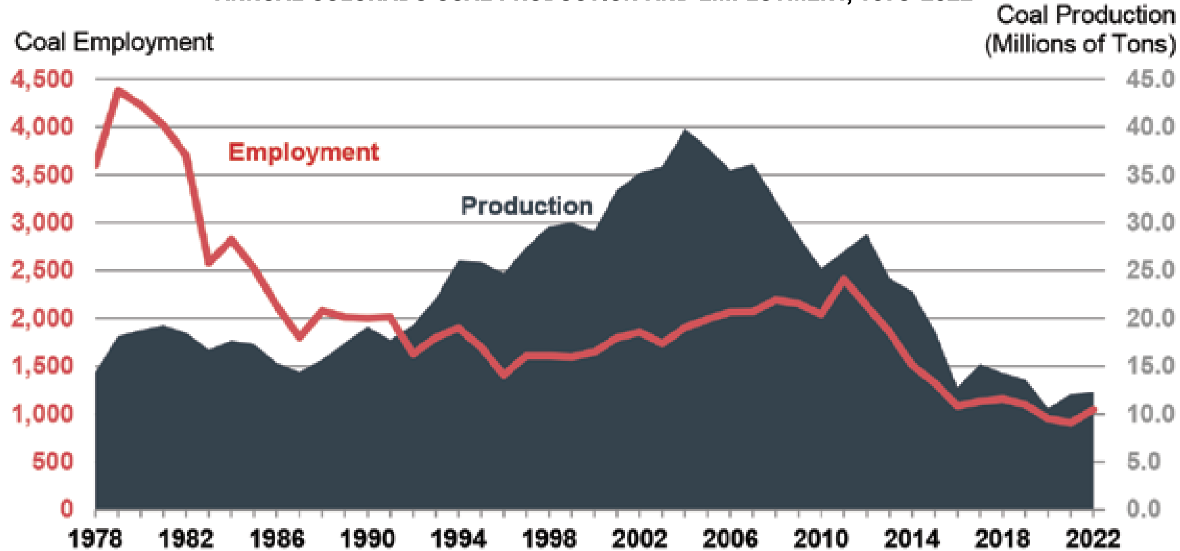
COLORADO NATURAL RESOURCES AND MINING EMPLOYMENT 2013–2023 (In Thousands)

Year	Employment	Percentage Change
2013	30.6	1.0%
2014	34.1	11.4
2015	30.7	-10.0
2016	23.7	-22.8
2017	25.8	8.9
2018	28.6	10.9
2019	28.8	0.7
2020	21.8	-24.3
2021[a]	19.8	-9.2
2022[b]	20.7	4.5
2023[c]	23.7	14.5

[a]Revised. [b]Estimated. [c]Forecast.

Sources: Colorado Department of Labor and Employment and Employment and the Colorado Business Economic Outlook Committee.

ANNUAL COLORADO COAL PRODUCTION AND EMPLOYMENT, 1978-2022



Source: Colorado Division of Reclamation, Mining, and Safety. Employment totals based on December levels, 2022 based on August.

Considering CO_2 in the context of climate change, the state Legislature recently passed a bill (SB21-264) that tasked the COGCC to examine the resources needed to ensure safe and effective regulation of the sequestration of greenhouse gases. Looking to the future, increased efforts to sequester CO_2 (and other greenhouse gases) could add a new significant economic dimension to valuation.

Drilling Permits and Rig Activity

The COGCC has received 1,085 Applications for a Permit to Drill (APDs) new wells in 2022 (as of November 14, 2022)—a 51% increase in the number of APDs received during all of 2021, but still 48% less than the 2,100 APDs received in 2019. For 2022, the commission had approved 961 permits as of November 10 versus 882 permits during the entire previous year. In 2022, 65% of the approved well permits were located in Weld County. The COGCC has recorded 848 spud notices in 2022 through mid-November. This is a 35% increase from 2021 yet 43% below the prepandemic year of 2019.

The 2022 average weekly active rig count for Colorado stood at 17 through the first week of November. By comparison, the average weekly active rig count in Colorado was 10 rigs in 2020 and 2021. Assuming prices remain elevated and capital available, the expectation is for rig activity to increase in 2023.

Horizontal drilling and hydraulic stimulation continue to be integral to Colorado's oil and gas activity. In 2010, only 5.6% of all Colorado drilling permits issued were for horizontal wells. In 2021, that number reached greater than 83% of all issued permits; of these, close to 90% were located in Weld County. Noticed horizontal well starts totaled 848 through mid-November of 2022—86% of the state's total spud notices.

Coal

The state of Colorado contains extensive thermal and coking coal reserves that have been mined since 1864. A total of seven mines are currently operating in Colorado, with a combined recoverable reserve base of 284 million tons, according to EIA. Mining of Colorado's relatively clean, high-quality coal reserves has helped some utilities meet the stringent requirements of the Clean Air Act as well as providing a supply for industrial and steel-making industries. Coal production in the state peaked at almost 40 million tons in 2004.

Since then, there has been a steady decline in production bottoming at a low of 10 million tons in 2020. As a result of lower demand, coal sales fell to an estimated $332 million in 2020. The steady decline in production is the result of many factors including the closures of aging U.S. power plants, lower-priced natural gas power plant conversions, increasing environmental regulations, global climate change, CO2 reduction pledges and, more recently, the pandemic. However, in 2021, Colorado coal production increased by 8% to 10.7 million tons. Coal sales in 2021 increased to an estimated $493 million. This is attributed in part to the economy returning to normality following the pandemic as well as increasing natural gas prices and higher utilization rates at existing power plants. Production ending in the third quarter 2022 is at about 9.1 million tons, with the expectation that the year-end total could achieve 12.1 million tons. This equates to an increase of 13% over 2021 production. Colorado coal production in 2023 is forecast to be similar to, or slightly higher, than 2022, as mines such as Foidel Creek pursue this strong market demand opportunity.

Similar to Colorado, the drop in global coal demand in 2020 was more than offset by a strong uptick in 2021, according to the IEA. In 2021, IEA reported that in developed economies, where coal use had been declining, demand increased by nearly 10%. In emerging market and developing economies, which account for just over 80% of global coal use today, demand rose by 5%. Demand rebounded strongly in 2021 to 5,640 million metric tons of coal equivalent (Mtce) as economies recovered from the pandemic and coal-fired power generation reached a historic high in 2021. IEA further noted that both China and India have increased investment in domestic coal production, but global production struggled to keep pace with demand increases, causing coal prices to surge. Russia's invasion of Ukraine complicated coal market dynamics and brought additional pressure on coal prices. With Russia the world's 3rd-largest coal exporter, the overall result is that global coal prices reached historic highs in the first half of 2022, becoming sustainable for the short term. According to IEA, this surge in production and pricing is temporary, and the outlook for coal is heavily dependent on the strength of the world's resolve to address climate change.

The scheduled government-mandated closure or conversion to natural gas of over 1,000 megawatts (MW) of electricity generated by coal-fired plants along the Front Range and Western Slope will eventually phase out the mining of thermal coal in Colorado. Exceptions to this may include those mines that provide fuel for industrial markets, mines that produce coke (fuel) for the steel industry, and those that may extend out of state and feed international thermal demand. Other uses for coal are being researched, including the creation of carbon products developed with coal.

COLORADO ELECTRIC POWER INDUSTRY GENERATION BY PRIMARY ENERGY SOURCE, 2012-2021
(In Millions of Megawatt Hours)

Year	Coal	Natural Gas	Hydroelectric[a]	Wind	Solar	Biomass	Petroleum	Other[b]	Total
2012	34.5	10.5	1.5	6.0	0.2	0.1	0.0	0.1	52.6
2013	33.7	10.7	1.2	7.2	0.2	0.1	0.0	0.0	52.9
2014	32.5	12.0	1.8	7.4	0.3	0.1	0.0	0.0	53.8
2015	31.6	11.8	1.5	7.4	0.3	0.1	0.0	0.1	52.4
2016	30.0	12.7	1.6	9.4	0.5	0.2	0.0	0.1	54.4
2017	29.2	12.5	1.6	9.3	1.0	0.2	0.0	0.1	53.8
2018	26.4	16.4	1.6	9.8	1.1	0.2	0.0	0.1	55.4
2019	25.3	17.1	1.6	10.9	1.2	0.2	0.0	0.1	56.3
2020	19.5	18.2	1.5	13.4	1.5	0.2	0.0	0.1	54.1
2021	23.6	14.6	1.6	15.1	1.7	0.2	0.0	0.1	56.8

[a]Includes pumped storage.

[b]Includes blast furnace gas, propane gas, other manufactured and waste gases derived from fossil fuels, non-biogenic municipal solid waste, batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, tire-derived fuels, and miscellaneous technologies.

Source: U.S. Energy Information Administration.

Mines

Peabody and Arch Energy, two of the largest coal producing companies in the U.S., operate mines in Colorado. International firms have also invested in Colorado as shown by Australian firm Allegiance Coal Ltd. and Mexican firm Grupo Cementos that currently operate mines in Las Animas and La Plata counties, respectively. The Denver area is also the headquarters of several coal-mining companies, including Tri-State Generation and Transmission, Kiewit Mining, and Westmoreland Coal Company.

There are seven coal mines currently operating in Colorado that produce bituminous and subbituminous coal for electrical generation, and to a lesser extent, the cement and steel industries. Arch Energy operates the

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West Elk Mine, located in Gunnison County, which is the last remaining operation in a once-prolific area referred to as the Somerset Coalfield. It is an underground longwall operation and is Colorado's largest producer that mined 3.3 million tons in 2021. The mine produces export-quality coal and will soon transition to another seam that comprises even higher-quality coal. The King II Mine in La Plata County is owned by Grupo Cementos and is a small underground operation that extracts coal using continuous miners primarily for the production of cement. The mine extracted a total of 0.5 million tons in 2021 from a recently acquired federal lease. Deserado Mine, located near Rangely, is an underground longwall mine that is captive to Deseret's Bonanza Power Plant located across the border in Utah. It mined only 1.5 million tons of coal in 2021 due to a rock parting that generated excessive waste tonnage. Peabody's Foidel Creek Mine, located in Routt County, is an underground longwall mine that supplies coal to the nearby Hayden power station. The mine has increased its workforce due to the recent market surge to realize higher production and additional markets. The operation mined 1.7 million tons in 2021.

Colowyo and Trapper mines are the only operating surface coal mines in Colorado. Colowyo is located in Moffat and Rio Blanco counties, whereas Trapper resides in Moffat County. Both mines supply coal to the Craig Power Station. Colowyo ships the coal by rail, while Trapper is captive to the plant and hauls the coal directly by truck. The mines utilize draglines and shovels to strip the overburden. Approximately half of the coal production from each of the two mines originates from contract highwall mining operations. Approximately 2.1 and 1.5 million tons were mined by Colowyo and Trapper mines in 2021, respectively.

In 2020, it was announced that Tri-State Generation and Transmission would close its Colowyo mine by 2030. Colowyo recently opened their new pit at Collom, which is a federal lease acquired in 2016. Collom contains extensive reserves of low sulfur coal that comprise the lowest mercury content in the United States. The Trapper and Colowyo mines supply coal to the three-unit Craig Power Station that is currently set for a phased retirement by 2030. Unit 1 at the Craig plant is expected to retire as early as 2025.

VALUE OF COLORADO NONFUEL MINERALS AND URANIUM PRODUCTION, 2013–2023 (In Millions of Dollars)

Year	Nonfuel Minerals	Uranium	Total
2013	1,930	0.0	1,930
2014	2,110	0.0	2,110
2015	2,320	0.0	2,320
2016	1,340	0.0	1,340
2017	1,510	0.0	1,510
2018	1,680	0.0	1,680
2019	1,790	0.0	1,790
2020	1,620	0.0	1,100
2021	1,610	0.0	1,610
2022[a]	1,560	0.0	1,560
2023[b]	1,650	0.0	1,650

[a]Estimated. [b]Forecast.

Sources: U.S. Geological Survey, Mineral Survey Reports; U.S. Energy Information Administration.

Early in 2021, the Trapper Mine, which supplies coal to Unit 1 and 2 at the Craig plant, laid off about 12% of its workforce in anticipation of declining production requirements. However, the mine is now anticipating an increase in production. Both Colowyo and Trapper mines have been nationally recognized for their ongoing reclamation.

New Elk Mine began operations in the spring of 2021. The mine extracts coal underground by continuous miners and in 2021, produced 0.11 million tons of high volatile coking coal, according to the EIA. This coal is specifically used in the making of steel. The coal is hauled by truck to a rail, terminating at a Mobile, Alabama, port facility. The mine is located in the Raton Basin, which in the past, was a major supplier of coking coal for the CF&I steel mill in Pueblo, Colorado.

Value

The total value of coal sold by Colorado mines fell from $1.1 billion in 2012 to $332 million in 2020. Based on EIA data, the average sales price of coal in Colorado during 2021 was $46.02/ton. In comparison, the U.S. average for 2021 was $36.50/ton. The total value of coal sold by Colorado mines in 2021 is estimated at $493 million.

Royalties

The State of Colorado benefits from royalties and severance taxes paid by mining companies extracting coal on state-owned mineral leases. Federal royalties on Colorado coal production increased from $22.1 million in FY2020 to $23.6 million in FY2021, according to the Department of the Interior (DOI). About half of the royalties are returned to Colorado in support of public education and other community enhancements.

Employment

The number of employees at Colorado coal mines was 1,098 at the end of 2019, 901 at the end of 2020, and 1,063 at the end of 2021, according to the Colorado Department of Natural Resources (CDNR). EIA data report that coal mine average employee numbers for 2020 and 2021 were 1,118 and 1,068, respectively. The number should climb slightly in 2022 as some mines such as Foidel Creek increase their workforce. Services associated with coal mining areas account for significant local employment, especially in towns such as Craig, Meeker, Paonia, and Rangely.

Export Coal

In both 2020 and 2021, 45% of the coal produced in Colorado was shipped to 16 other states, with Utah receiving 1.6 million tons in 2021. The Deserado Mine is captive to the Bonanza Power Plant in Utah and is excluded in the above tonnage. Colorado received 4.5 million tons of coal from Wyoming.

Global coal production in 2021 struggled to keep pace with one of the largest ever annual increases in demand. Markets have been further impacted by Russia's invasion of Ukraine. Russia was responsible for about half of the coal imports in the European Union in 2021, but that trading relationship ended with the European Union ban on Russian coal imports. However limited short-term fuel, switching opportunities, and increases in imported coal has eased demand pressures. Colorado's West Elk Mine has realized exceptionally high prices for coal shipments into Europe during 2022.

Foreign exports from Colorado mines in 2020 totaled 0.69 million tons. Exports increased 59% in 2021, with 1.7 million tons shipped overseas.

Consumption and Generation

According to the EIA, 50% of the 18.1 million tons of coal delivered to electric utilities in Colorado during 2010 came from Colorado mines, with the remainder from Wyoming. In 2020, 8.55 million tons were delivered, while the percentage that came from Colorado mines was reduced to 36.3%. Coal-fired power plants in Colorado consumed 11.5 million tons of coal in 2020, supplying the state with 36% of its electricity, down from 68% in 2010. In 2021, the quantity consumed by the power-generation sector was 12.3 million tons in Colorado.

Annual electricity generated at Colorado's seven coal-fired power plants fell from 34.6 million megawatt hours (MWhs) in 2010 to 19.5 MWhs in 2020. However, it increased by 21% to 23.6 MWhs in 2021, providing about 40% of the state's power generation. About 1,164 megawatts of coal-fired generating capacity in Colorado is planned for retirement by 2025.

Minerals and Uranium

Nonfuel mineral resources include metals, industrial minerals, and construction materials (e.g., aggregate, cement, etc.). The U.S. Geological Survey estimates that the total U.S. 2021 nonfuel mineral production value was $90.4 billion. In 2021, Colorado produced primarily cement, gold, molybdenum, sand and gravel, and crushed stone, with an estimated production value of $1.61 billion, or approximately 1.8% of the estimated total U.S. production value.

Metals mined in Colorado include primarily gold and molybdenum, with some silver. The Colorado Geological Survey estimates that the 2021 production value of gold and molybdenum was about $874 million. This is a 26.4% increase compared to the 2020 estimated production value of $691 million. This increase in value was primarily due to the increase in molybdenum prices as well as molybdenum production at Freeport-McMoRan Inc.'s (Freeport) Climax and Henderson mines. Freeport is the world's largest producer of molybdenum, and in 2021, their Colorado operations accounted for approximately 36% of their North America molybdenum production. Molybdenum concentrate produced at the Colorado mines has high purity and is used in chemical products.

The combined molybdenum production at the Henderson and Climax mines increased from 24 million pounds in 2020 to 30 million pounds in 2021, an increase of 25%. Estimated average prices for molybdenum

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increased 83.2%, from $8.69 per pound in 2020 to $15.92 in 2021. Colorado was one of the largest producers of molybdenum in the United States in 2021. In 2021, 19% of Freeport's estimated consolidated recoverable proven and probable molybdenum reserves were from the Henderson and Climax mines. At the end of 2021, Freeport estimated proven reserves of 37 million metric tons, with 0.18% molybdenum at the Henderson Mine, and 138 million metric tons, with 0.15% molybdenum at the Climax Mine. At the end of September 2022, the total 2022 molybdenum production from both Colorado mines is comparable with last year at 24 million pounds.

Founded in 1921, Newmont is the largest gold-mining company in the world, with operations in Africa, Australia, North America, and South America. Its corporate headquarters is in Greenwood Village, Colorado. Production of gold at Newmont's Cripple Creek and Victor (CC&V) mine located in Teller County decreased from 272,000 ounces in 2020 to 220,000 ounces in 2021. The estimated average gold price was $1,774 in 2020 and increased slightly to $1,800 per ounce in 2021, with the average price trending about the same 10 months into 2022. Colorado was the 3rd-largest producer of gold in the United States in 2021, following Nevada and Alaska. Gold production at CC&V decreased by about 36% in the first nine months of 2022 when compared to 2021, primarily due to lower recoveries and decreases in ore milled due to a shut down and temporary idling of the mill.

In 2021, Colorado produced and consumed approximately 54 million tons of aggregate (sand, gravel, and crushed stone). The production of construction aggregate was approximately equal to or slightly higher than the previous year's levels. Forecasts for 2023 suggest somewhat lower levels of production in Colorado, as some construction slowdown in the residential segment is expected. An item that would positively impact this segment moving forward would be a federal aid package with dedicated funds for infrastructure.

Local zoning regulations and land-development alternatives continue to have an expanding negative impact on mining. These issues are expected to continue and to cause new crushed stone quarries and sand and gravel deposits to locate further away from large population centers, where the material is needed.

As reported for several years, there was no uranium production in Colorado in 2021. According to the EIA, the total 2021 U.S. production of uranium remained near all-time lows. Approximately 21,000 pounds of uranium concentrate was produced domestically in 2021, which is 88% less than in 2019. During the first two quarters of 2022, nearly 16,000 pounds of uranium concentrate were produced domestically. Most of this production is from in-situ recovery plants located in Wyoming and Nebraska.

Most of the uranium used by U.S. commercial nuclear power reactors over the last several decades was imported from foreign countries. In 2021, 46.7 million pounds of triuranium octoxide was purchased by owners and operators of these nuclear power plants. According to the EIA, about 95% was purchased from foreign suppliers. Average spot prices reported by the EIA for uranium increased slightly from $33.27 per pound in 2020 to $33.91 per pound in 2021. Uranium prices spiked in late-2021 and reached around $50 per pound due to purchases by a Canada-based investment fund. Spot prices spiked in March 2022 at $58.20 per pound and decreased to $52.28 per pound in October 2022.

Renewables

Colorado's abundance of renewable energy resources includes wind, solar, hydroelectric, geothermal, and biomass. Data from the Energy Information Administration (EIA) show clean electricity resources accounted for 35% of Colorado's net generation in 2021. According to the Sierra Club, at least 13 Colorado cities and two Colorado counties have pledged to reach 100% clean energy by 2050. At the end of 2019, before the COVID-19 pandemic, Colorado's clean energy sector employed more than 62,000 workers, including more than 36,000 in energy efficiency, roughly 1,700 in energy storage, more than 2,000 in clean fuels, and more than 3,000 in clean vehicles. About 18,000 of those jobs were in renewable energy, according to the E2: Clean Jobs Colorado report. As of September 2020, Colorado had lost roughly 10% of its clean energy workforce to the pandemic. However, by June 2021, approximately 1,500 Colorado workers returned to jobs in the clean energy industry, signaling Colorado is striving to restore its clean energy workforce.

The 2022 U.S. Energy and Employment Report found that Colorado has 146,238 energy workers (5.4% of total state employment), which includes 34,205 workers employed in energy efficiency. In 2021, Colorado ranked 18th nationally for clean energy jobs, with 58,182 Coloradans employed by the industry; 24% of Colorado's clean energy jobs are located in rural areas of the state. Data from E2 and the Colorado Public Utilities Commission (PUC) show, as of 2021, Colorado ranked third in the nation for employment in wind energy; ninth for bioenergy jobs; 11th for solar power employment; and sixth for overall renewable energy jobs.

Colorado was the first state to pass a voter-approved renewable portfolio standard (RPS) in 2004. The Legislature has increased requirements three times, with the present standard mandating that investor-owned electric utilities provide 30% of their generation from renewable energy resources by 2020, with 3% coming from distributed generation. This has been one of the most ambitious renewable portfolio goals in the nation, and the PUC states that the existing wind and solar installations achieved this electricity goal, mostly through purchases by Colorado's largest utility, Xcel Energy. Notably, in July 2015, the Tenth Circuit Court of Appeals upheld the constitutionality of Colorado's RPS, saying it would not harm interstate commerce as a 2011 federal lawsuit had alleged.

In 2019, House Bill 1261, Climate Action Plan to Reduce Pollution, was passed into law, which required the state to reduce 2025 greenhouse gas emissions by at least

26%, 2030 greenhouse gas emissions by at least 50%, and 2050 greenhouse gas emissions by at least 90% of the levels of statewide greenhouse gas (GHG) emissions that existed in 2005. In 2021, the legislation was strengthened by Senate Bill 264, which set greenhouse gas emissions reductions for gas utilities from a 2015 baseline: 4% by 2025 and 22% by 2030. It also required investor-owned gas utilities to file a "Clean Heat Plan" with the PUC to outline how they will meet these targets. Further, Senate Bill 236, passed in 2019, required the state's qualifying retail utilities to submit a "Clean Energy Plan" to meet the following clean energy goals: (1) reduce their carbon dioxide emissions 80% from 2005 levels by 2030; and (2) seek to provide energy generated from 100% clean energy resources by 2050. Numerous Colorado utilities have their own clean energy and emissions reductions goals. For example, Xcel Energy's Clean Energy Plan seeks to produce an estimated 85% reduction in carbon dioxide emissions from 2005 levels by 2030 in addition to being completely carbon-free by 2050.

As of August 2022, residential electricity rates in Colorado were 14.86 cents per kWh. This falls below the national average of 15.95 cents per kWh and is the second highest in the eight-state Mountain West Region, which averages 13.22 cents per kWh. As of August 2022, Colorado commercial rates are 12.65 cents per kWh, less than the national average of 13.45 cents per KWh. EIA data show Colorado's industrial rate averaged 9.91 cents for August 2022, which is slightly higher than the national average of 9.72 cents.

Governor Jared Polis campaigned on a platform to achieve 100% renewable energy by 2040, with a goal of addressing climate change and pollution. Specifically, the governor laid out a roadmap that includes growing renewable energy sector jobs, modernizing the PUC, increasing the push toward zero-emission vehicles and buildings, and supporting local governments and citizens in reaching 100% renewable energy through improved-energy efficiency. Due to the pandemic, Colorado lawmakers passed several consumer protection, bill assistance, and energy efficiency-related bills in 2020. Renewable energy bills including community choice and a biodiesel bill were postponed indefinitely. Climate and energy bills and seven electric vehicle (EV) bills were passed during the 2019 legislative session. These bills expanded Colorado's energy efficiency and EV programs. Senate Bill 261 of 2021 added renewable energy storage as an eligible technology to meet the state RPS. Further, in April 2021, Governor Polis signed House Bill 1052, to include some pumped hydroelectric energy generation in the definition of "eligible energy resources" for purposes of meeting Colorado's renewable energy standard.

Colorado continued to pass clean energy legislation in 2022, including House Bill 1193, a bipartisan bill that expanded the Coal Transition Workforce Assistance Program Account to support family members or other household members of coal transition workers and to test innovative coal transition work support programs through a pilot program. Further, Colorado enacted House Bill 1249, which created a microgrid roadmap for improving electric grids in the state, as well as numerous bills concerning reducing greenhouse gas emissions and improving air quality, such as House Bill 1362, Senate Bill 193, and Senate Bill 51.

Wind Energy

In 2020, Colorado ranked seventh nationally for total installed wind capacity, ninth in the nation for share of wind electricity generation at 23.5%, and third for wind industry employment. In 2021, wind power accounted for almost four-fifths of the state's renewable energy generation, according to the EIA. The Department of Energy's 2022 U.S. Energy and Employment Report showed that wind generation supported 7,649 jobs. Cumulative wind power generating capacity has more than doubled since 2010 to reach more than 4,000 MW. Colorado installed 59 MW of wind in 2019, 299 MW in 2020 (all from the new Bronco Plains wind farm by NextEra), and an additional 500 MW are currently under construction (as of fall 2021). Colorado wind farms include more than 2,250 wind turbines.

Most of Colorado's wind plants operate in rural areas with otherwise limited economic development opportunities, providing well-paying local direct and indirect jobs to hard-pressed areas. There are several reports on economic development from wind by the Department of Energy, including one on Xcel's 600-MW Rush Creek Wind Farm in eastern Colorado. Rush Creek Wind Farm was set to provide Colorado workers with 2,130 direct and supply-chain jobs during construction and 125 operational jobs that will last for the life of the project. The Rush Creek Farm is part of Xcel's goal to produce more than 50% of its power from renewable energy sources by 2026.

The wind industry adds to local economies through lease payments to landowners, local income from taxes, wages of wind farm employees, and sales and use taxes from spending by these workers. The American Clean Power Association found that total capital investment through 2019 was $7.6 billion, and annual land lease payments to landowners totaled $16.6 million in 2020.

In addition to jobs at wind farms, Colorado is home to one of the nation's largest wind-turbine manufacturers, with Vestas blade, tower, and nacelle factories. The Rush Creek Wind Farm uses turbines that were mostly manufactured in three Colorado plants. Colorado also hosts smaller component manufacturers that supply the wind industry, such as Aluwind and Creative Foam.

Solar Energy

Colorado is a leader in solar energy, with more than 300 sunny days per year. As of mid-2021, Coloradans get 4.18% of their electricity from solar, according to the Solar Energy Industries Association (SEIA). In terms of cumulative installed solar electric capacity, Colorado ranked 13th nationally in 2022, with more than 2,268

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MW of installed capacity as of mid-2022. Over the next five years, SEIA estimates the annual installed capacity will increase by another 3,946 MW, the 14th-fastest growth rate in the nation. SEIA reported a total of 330 solar companies operating in Colorado in 2022, employing approximately 7,426 people. According to SEIA, the total investment in Colorado solar is roughly $5 billion, and installation prices have dropped 53% over the last 10 years. In Pueblo, Colorado, the state's largest utility (Xcel Energy) is preparing to close two of three coal power units and replace 240 MW of the power with solar for the local steel mill. The solar plant is located on-site at one of Colorado's energy users—EVRAZ Rocky Mountain Steel—and is the largest behind-the-meter solar project in the United States.

As of 2021, Colorado had over 81,000 individual photovoltaic (PV) installations, capable of generating over 1,755 MW of power, according to ElectricRate. Like many states, the rooftop solar community in Colorado has been thriving. In 2022, Colorado had an estimated $3.13 per watt install price for residential PV systems (EnergySage, "How much do solar panels cost in 2022?"). According to a 2016 National Renewable Energy Laboratory (NREL) study, the total estimated installed capacity potential for rooftop PV in Colorado is 16.2 GW, and the annual generation potential is 23.5 terawatthours per year.

Hydroelectric Power

For the past decade, Colorado's hydroelectric plants have been providing between 2.3% and 4% of the state's total electricity. In 2021, hydropower comprised 8% of Colorado's net renewable energy electricity generation.

In 2022, the EIA reports about 3% of the state's total electrical output came from more than 70 hydroelectric generating stations. These facilities have the combined capacity to produce 1,272 MW of power. Most of these stations are owned by the U.S. Bureau of Reclamation, but some are privately owned or operated by local mountain towns such as Aspen, Nederland, Ouray, and Telluride. The Bureau of Reclamation owns 550 MW of hydropower in Colorado and estimates that there could be as many as 30 additional hydropower sites within the state, with the U.S. Department of Energy reporting 11 more potential sites. This renewable resource provides a predictable and seasonably variable source of electricity. The industry employs several hundred individuals for operations and maintenance. Colorado is second only to California in small hydro installations, and pumped storage hydropower is still the nation's number one source of energy storage, according to the Colorado Small Hydropower Association.

Geothermal Energy

Neither biomass nor geothermal energy provide even 1% of Colorado's electricity, but there is potential from both resources. The geothermal industry considers investment in Colorado a higher risk when compared to states with operating geothermal power plants and has stated that incentives are needed to reduce financial risks. Colorado offers state income tax credits that may help reduce risks associated with investment in renewable energy. Enterprise Zone Tax Credits are available in economically distressed areas of the state if projects were built before January 2021, which biomass and geothermal energy facilities could both take advantage of—as could other renewables.

Direct-use geothermal resources in the state continue to contribute to local economies on a very small scale and are used for heating domestic and commercial structures, including greenhouses and aquaculture, spas, and other bathing. The use of geothermal (also known as ground-source, or geoexchange) heat pumps continues to slowly grow in Colorado. While these heat pumps are not strictly an alternative energy source, they consume electricity very efficiently (using one-half to one-quarter of the electricity consumed by conventional heating and cooling systems).

Biomass Energy

Colorado has one generator using woody biomass exclusively—Evergreen Clean Energy's 11.5 MW project in Gypsum, Colorado, which generates electricity using beetle kill trees. Given Colorado's forest resources, there are other opportunities for electricity from woody biomass.

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Construction

Two different trends have emerged within the construction sector. Residential building—especially single-family—is quickly coming under high downward pressure while infrastructure ("nonbuilding") is growing into record volume. "Vertical" nonresidential building besides residential is holding its own. These trends will continue into 2023, but the extent of the residential adjustment is difficult to predict. With few exceptions, these patterns are consistent throughout the Front Range.

All construction subsectors continue to suffer from labor scarcity, delays in supplies of key components, and price increases in excess of average inflation. Businesses that previously were constrained in raising prices due to locked-in-place contracts are finally passing higher costs onto the market. Financing is harder to obtain, however, as banks are requiring more equity in construction deals. As a result, nominal increases in volume overstate the amount of new construction production when compared to results in recent years.

Overall, total construction activity is estimated at $23.7 billion in 2022, representing a decrease of about 1.5%. This figure likely overstates growth in 2022 because the entire value of many new infrastructure projects are counted, which will create construction put-in-place over several years. The 2023 construction activity will slip about 3.4% to $22.9 billion.

Government tracking of construction jobs shows a decline in the second half of 2022. However, construction workers across all industries seem to still be overwhelmingly busy. Even residential builders who may later retrench are staying busy in order to clear backlogs in excess of five months, leading to estimated annual employment of 183,000 in 2022. The tides will likely change next year when the slowing residential sector will be the dominant factor. Not all residential trades will transition easily into heavy equipment operators, and although nonresidential and nonbuilding are forecasted to increase in 2023, much of the value is captured in inflation and rising costs rather than additional projects. Therefore, 2023 employment will average about 2,000 less, at 181,000.

Residential

Single-Family Housing

The postpandemic housing rally of 2020 and 2021 will be remembered for its extremely low inventory, historically low mortgage rates, and skyrocketing home prices. Flushed with borrowed money and pent-up demand, new and existing home sales reached their highest levels since 2006.

Since the start of the pandemic, basic demand-supply fundamentals became sharply imbalanced. Resale housing markets across the state could not keep up with high demand levels, leaving consumers to face bidding wars and the waiving of some buyer protections. New home sales faced lengthy completion delays.

Based on the Federal Reserve's outlined path forward, the economy is expected to slow with policy focused on reducing inflation. Rising interest rates will reduce consumer confidence. Consumer confidence matters because consumer perceptions of circumstances will drive buying decisions. Mortgage rates have continued to rise, though they should begin to level off in 2023. Still, every uptick in interest rates will have a negative impact on affordability and consumer movement. Because housing is so sensitive to changing interest rates, it often slows before other industries; conversely, it is also among the first to recover.

Since 2020, new home prices have risen about 25% and resale prices jumped 35%. During much of this surge, the low mortgage rates, pandemic relief subsidies, and higher household savings shielded many homebuyers from the rising overall home prices. But in 2022, mortgage rates rose to the highest levels in over 20 years and are still rising. Consequently, many potential buyers are facing elevated monthly payments and are temporarily leaving the market to wait for affordability to improve.

INDUSTRY SNAPSHOT CONSTRUCTION

Nominal GDP, 2021 ($ Billions)	24.5
Real GDP, 2021 ($ Billions, 2012 Dollars)	17.2
2021 Real GDP Growth Rate	1.1%
Total Employment, 2021 (Thousands)	176.8
2021 Employment Growth Rate	1.1%
Employment Growth National Rank	41
Share of Colorado Employment	6.4%
Share of National Employment	5.1%
Average Wage, 2021	71,257
Percent of Statewide Average Wage	99.6%
2021 Average Wage Growth Rate	4.5%

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics.

Resale housing improved in 2022 to three months of inventory statewide, but levels have not yet returned to historic norms. Simultaneously, homebuilders are facing contract cancellation rates in excess of 40% since July. Supply and labor disruptions continue to delay home deliveries, translating to a record number of homes under construction. Homebuilders will slow their new production further to survive this slowing cycle. Elevated levels of housing inventory should be short-lived, which likely translates to a reset back to growth trends before the pandemic began. Homebuilders also are likely to focus on how to bring down the buyers' monthly costs by increasing density, such as building townhomes. Lot production should continue, with more than 29,000 new lots in excavation or later stages in the Front Range alone. Lot supplies are likely to rise during this pause, which will help prepare the industry for a rebound when the next upcycle begins.

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Construction

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RESIDENTIAL BUILDING PERMITS BY TYPE 2013–2023

Year	Single Family	Multifamily	Total Housing Units
2013	15,772	11,745	27,517
2014	17,104	11,594	28,698
2015	20,025	11,846	31,871
2016	21,577	17,397	38,974
2017	24,338	16,335	40,673
2018	26,134	16,493	42,627
2019	24,756	13,877	38,633
2020	26,636	13,833	40,469
2021[a]	30,246	26,278	56,524
2022[b]	25,700	27,500	53,200
2023[c]	24,000	22,000	46,000

[a]Revised. [b]Estimated. [c]Forecast.

Sources: U.S. Census Bureau and the Colorado Business Economic Outlook Committee.

The number of single-family permits issued in Colorado will total 25,700 in 2022, which is a decline of 15% from 2021, but still 4% above prepandemic 2019. Next year, 2023 will result in a further reduction to 24,000, another 7% dip. Homes built along the Front Range account for approximately 81% of Colorado's single-family permits. Affordability concerns may disperse some of the housing demand toward less expensive areas of the state. Along the Front Range, this may translate to increased construction levels in neighboring counties. Denver Metro may continue to push buyers further north into Weld and Larimer counties and south into Colorado Springs Metro, which in turn, will push into Pueblo and Fremont counties. Mountain and resort areas will continue to offer high-end and second-home options, which is noticeable between the Vail Valley and Garfield County.

In addition to higher density housing options, expect greater product standardization and increased construction efficiencies as current construction challenges persist as pressures continue to raise prices. Construction prices will continue to grow, albeit at more moderate paces as demand slows. The construction value per unit for 2022 is expected to reach $364,800 per home, a 12% increase over 2021. Nevertheless, statistics indicate a decline in total residential valuation from 2021 because of the drop in total permits and shift toward more multifamily residential construction, which cost less per unit. Supply chain issues should soften with slowing demand pressures, and we forecast a moderate 4% increase in permit value to $379,000 per unit in 2023. Despite the anticipated increase in value per unit for 2023, total valuation for single-family permits is expected to decline 3% due to the expected decrease in permits.

Long term, the future is still bright for Colorado housing. Millennials are in the typical home-buying phase of life. Colorado remains an attractive destination for primary and secondary home options. This expected short-term slowdown in demand should provide temporary relief to catch up the development timeline, reset designs, and find cost efficiencies.

Multifamily Housing

Multifamily construction in Colorado is overwhelmingly apartments, and construction reached record levels in the past year. People who were priced out of the home sales market supported continuing strong demand for apartments. By year's end, 27,500 multifamily units are projected to have been permitted, surpassing the previous record set in 2021 by nearly 5%. Since 2010, approximately 95% of multifamily permits were located along the Front Range between Colorado Springs and Fort Collins.

Apartment construction has been strong since the Great Recession. Historically, multifamily construction has accounted for less than 30% of total residential construction, which increased to approximately 40% from 2012 through 2021. In 2022, however, it is expected that multifamily construction will surpass single-family construction for the first time in Colorado and account for nearly 52% of total residential permits.

CONSTRUCTION EMPLOYMENT, 2013–2023 (In Thousands)

Year	Employment	Percentage Change
2013	127.5	10.1%
2014	142.2	11.5
2015	148.8	4.6
2016	155.3	4.4
2017	163.7	5.4
2018	173.2	5.8
2019	179.1	3.4
2020	174.9	-2.3
2021[a]	176.8	1.1
2022[b]	183.0	3.5
2023[c]	181.0	-1.1

[a]Revised. [b]Estimated. [c]Forecast.

Sources: Colorado Department of Labor and Employment, Bureau of Labor Statistics, and Colorado Business Economic Outlook Committee.

The committee forecasts a decline in multifamily construction in 2023, largely because apartment demand will be partially met by the abundance of units already under construction. Approximately 35,300 multifamily units are under construction statewide as of the third quarter of 2022, according to CoStar Group, and are at the highest levels since at least 2000. Although many of the supply constraints that originated during the pandemic are easing from extremes, they are still contributing to extended construction times. Expect 22,000 multifamily units to be permitted in 2023, a 20% decrease from 2022. Although this appears to be a steep drop, multifamily construction will still be stronger than any year from

1980 through 2020. The large supply of recently completed apartments have contributed to rising vacancy rates, but demand for multifamily housing is expected to be supported by the anticipated increase in migration—thanks in part to international migration resuming—and spillover from the weakening single-family market. However, considerable offsetting challenges persist, including increased regulatory constraints from local governments and neighborhood resistance in some communities. Furthermore, rising interest rates, increased construction costs, and lengthy approval processes will likely limit how many of the projects in planning are able to break ground next year.

Apartments make up about 95% of multifamily units built since 2010. The imbalance is a result of developers' concerns about potential construction defects litigation and related insurance costs of for-sale condominiums. Despite recent legislation intended to address the issue, condominium construction is slow to return, and builders report that financing for apartments is significantly easier to obtain than for condominiums.

Many households looking to buy are deterred by prices and interest rates, and so remain renters. In spite of the elevated demand, the large increase in apartment units completed in recent years has contributed to rising vacancy rates. During the third quarter of 2022, CoStar Group reported vacancy rates in Colorado that averaged 6.2%, up from 5.5% a year earlier. Despite rising vacancy rates, statewide rents continued to increase year-over-year averaging 5% to $1,679.

The construction value per unit is expected to surge this year, reflecting impacts from the strong inflation affecting many industries this year and other rising construction costs. For 2022, the average value per multifamily unit will increase about 14%, to $168,900, and the value per unit is expected to rise a moderate 4% in 2023, to approximately $175,700. Despite the modest per unit valuation increase in 2023, total valuation for multifamily construction is expected to decrease 17%, reflecting the drop in number of multifamily permits.

VALUE OF CONSTRUCTION BY TYPE
2013–2023
(In Millions of Dollars)

Year	Residential	Nonresidential	Total Building	Nonbuilding	Total Construction
2013	$7,089.2	$3,609.7	$10,698.9	$3,679.9	$14,378.8
2014	7,565.9	4,350.9	11,916.8	2,438.5	14,355.3
2015	8,659.0	4,990.8	13,649.8	3,036.3	16,686.0
2016	10,161.0	5,987.8	16,148.8	2,705.6	18,854.4
2017	10,361.8	6,154.9	16,516.7	2,975.8	19,492.5
2018	11,772.6	8,155.0	19,927.6	4,522.9	24,450.5
2019	10,853.2	5,113.4	15,900.9	3,140.9	19,041.8
2020	12,153.0	5,482.4	17,725.5	2,786.4	20,511.9
2021[a]	15,071.1	5,594.3	20,665.3	3,410.0	24,075.3
2022[b]	14,019.2	5,700.0	19,719.2	4,000.0	23,719.2
2023[c]	12,969.0	5,500.0	18,469.0	4,400.0	22,869.0

[a]Revised. [b]Estimated. [c]Forecast.
Sources: McGraw-Hill Construction Research and Analytics, and the Colorado Business Economic Outlook Committee.

Nonresidential Building

The nonresidential building sector tracks all the new construction activity that is not residential and not solely infrastructure, such as new and renovated offices, medical facilities, colleges and universities, retail outlets, churches, schools, and government buildings.

In 2022, nonresidential project starts are estimated to reach $5.7 billion, up 2% from 2021's nearly $5.6 billion, based on strong demand in the market coming out of the pandemic. Much of the increase over the prior year is inflation in both materials and labor costs, rather than an increase in actual construction projects. Prices of construction materials have increased 21.5% in the last 12 months, and labor prices increased in the 5% to 7% range for both field and office positions.

New project starts in Colorado in 2023 are projected at $5.5 billion, down 3.5% from the 2022 year-end projection of $5.7 billion. There are strong market forces on both sides of the forecast for 2023. Increased demand will come from net in-migration to the region, including a highly educated, working-age demographic that is desired by corporations. Economic development agencies report continued strong prospects that should lead to corporate expansion in and relocation to the Denver Metro area, driving more activity in the commercial and industrial subsectors. Another positive market force is robust bioscience and health care demand. State and local government capital budgets have been bolstered by federal funding during the pandemic, as well as strong sales tax revenue, and will be a continuing source of

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Construction

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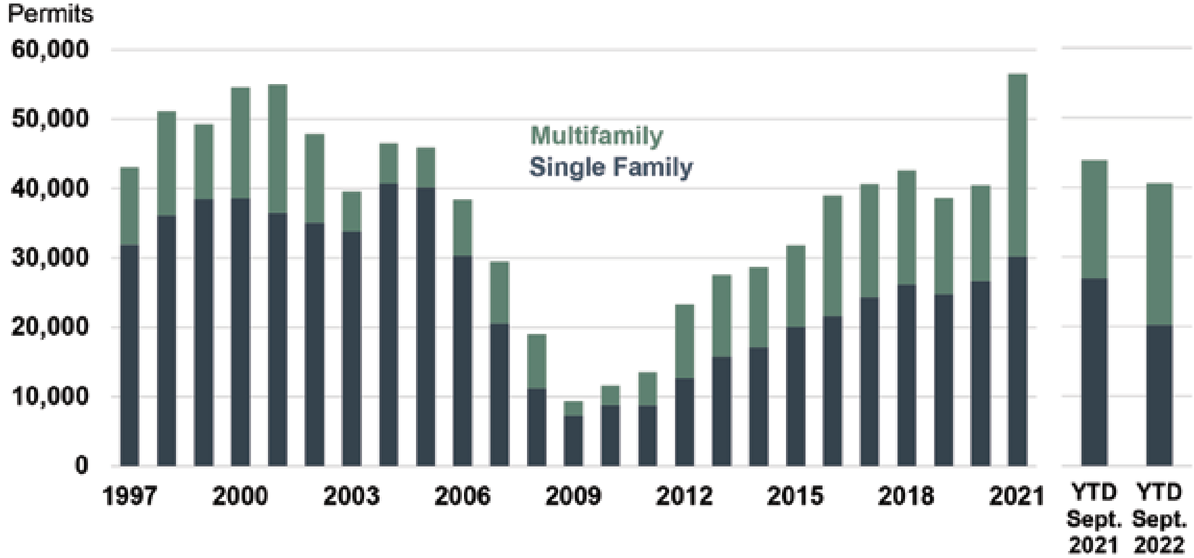
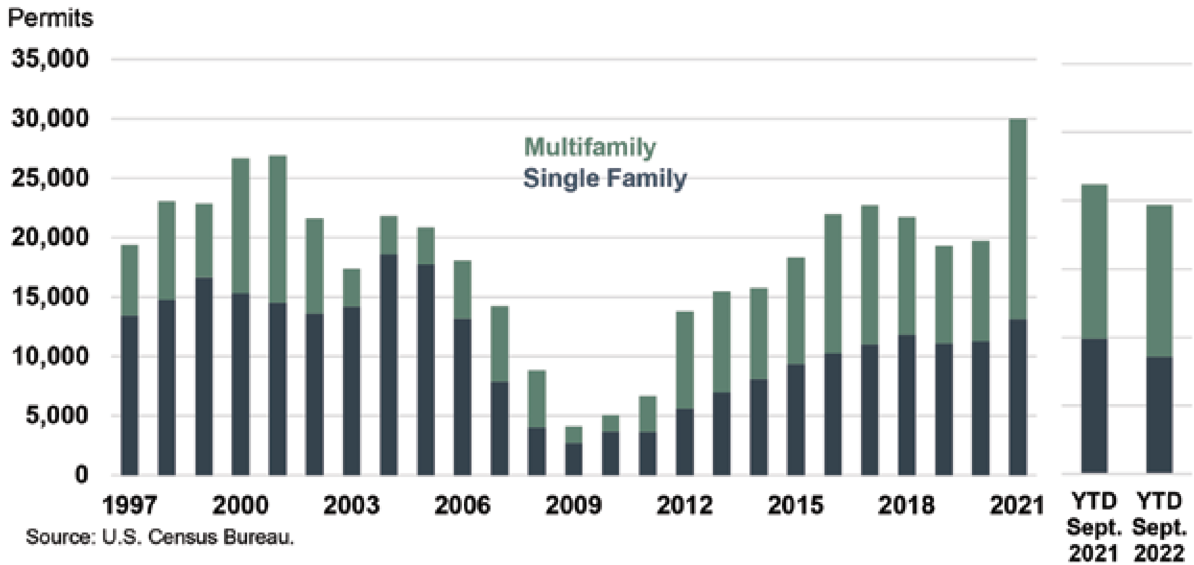
COLORADO RESIDENTIAL BUILDING PERMITS



DENVER-AURORA-LAKEWOOD MSA RESIDENTIAL BUILDING PERMITS



Source: U.S. Census Bureau.

work, such as the long-term projects remodeling the City of Longmont municipal complex. Other demand comes from large university construction budgets funded by research grants and donations.

Forces that run counter to increased demand include interest rate increases from the Federal Reserve, which have caused lenders to become far more cautious and to require more direct investment. Other headwinds are steep cost increases, uncertain and delayed availability and delivery of materials, a persistent skilled labor shortage, and the uncertainty surrounding the future of work in the office. Part of the labor shortage is caused by the retirement of many baby boomers in the trades, which has the effect of increasing the need for new labor even at a static amount of construction activity.

Demand for schools has been reduced by a fall in funding from the state government. The Building Excellent Schools Today (BEST) Grant program has decreased from $300 million annually to $100 million annually. The immediate cause is that the stream of income from taxes on marijuana has fallen as the industry has matured. BEST Grants match local bond issues, which typically range from $1 billion to $3 billion annually. School districts have requested fewer bond issues in reaction to voter reluctance to spend when faced with higher costs of living. In 2021, $816 million in local bond issues were approved including those with matching BEST Grants. The spending authorized that year is being spent during the time horizon of this forecast. In November 2022, a total of $856 million in bond and BEST Grant match projects were passed by voters. The largest bond issues approved were Boulder Valley School District ($350 million) and Weld RE-4 ($271 million).

Construction project activity remains at a good level, with numerous projects in Denver Metro subregions like RiNo and Brighton Boulevard, commercial areas around the Denver International Airport, in the Tech Center, and in Cherry Creek. Offsetting the increased Denver Metro activity, Colorado Springs and Fort Collins areas have declined in 2022 from their recent highs.

Much of the decrease from the recent 2017-19 highs of $6 billion to $8 billion in nonresidential construction volume is the lack of huge projects like the airport concourse and terminal expansions and the Gaylord Hotel. While there are no mega projects projected to start in 2023, there is potential for a number of mega developments on the horizon, such as the future River Mile in downtown Denver and River Walk in Glendale that would support nonresidential building values in future years.

Nonbuilding

The nonbuilding subsector measures new construction of infrastructure projects. It includes highways, roads and bridges, drainage and flood control, water and wastewater facilities, electric power generation and transmission, reservoirs, mass transit, and similar projects.

Infrastructure activity across Colorado in 2022 is expected to be nearly $600 million higher than the prior year, as spending by the Colorado Department of Transportation (CDOT) reached record levels, coupled with additional spending by local governments. Federal, state, and local funding for water and wastewater projects and new water storage also increased. Demand for infrastructure is an essential part of construction work these days, and the subsector is firing on all cylinders with robust activity and strong backlogs.

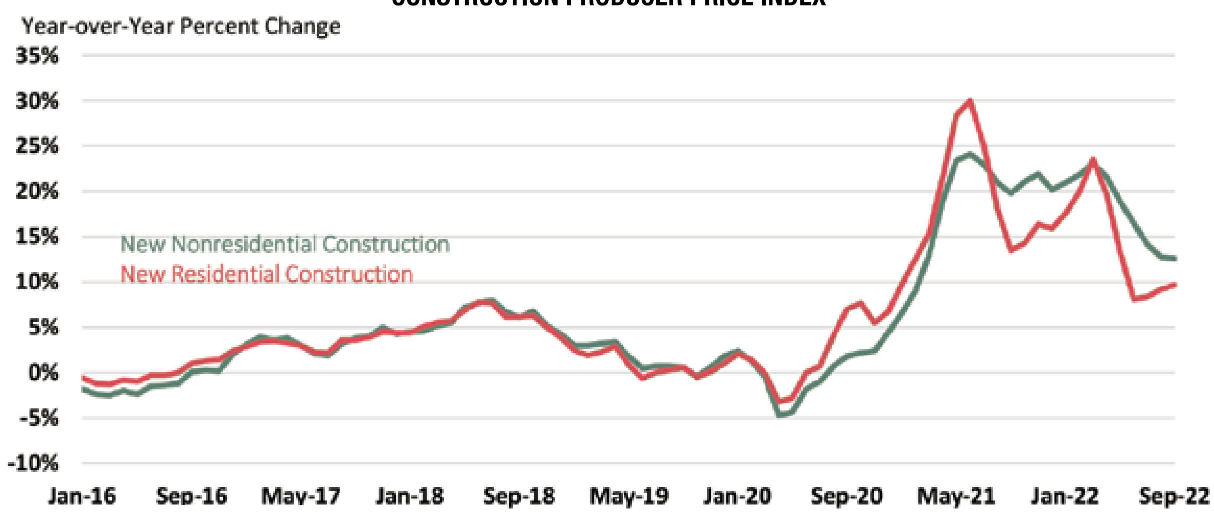
A caveat is that construction statistics are recorded on starts, that is, as projects receive permits. When a large multiyear project is begun, the volume of work is inflated in that year, while tracking volumes in subsequent years understate put-in-place activity.

We expect growth to continue at a fast pace in 2023. Funding from 2021 state legislative action is resulting in new projects, and more subsidies are still coming from the federal Infrastructure Investment and Jobs Act, also approved in 2021. Colorado is expected to spend a record amount on roads, bridges, and transit facilities next year. The CDOT construction program is expected to top $1 billion in project awards for the first time ever. Local government infrastructure budgets will also be buoyed by the increased funding in both the state and federal bills. The Central-70 project through north Denver is wrapping up, but new major highway projects will begin in 2023—Phase 5 of I-25 North to Fort Collins and I-270 through Denver. The $700 million I-70 Floyd Hill project will also generate a lot of construction.

The Arkansas Valley Conduit, a 130-mile water pipeline project will get $60 million from the 2022 federal infrastructure bill. The conduit could add another 97 miles and provide water to as many as 40 communities and 50,000 people east of Pueblo. It will deliver filtered water ready for treatment from Pueblo Reservoir. In addition, the Gross Reservoir project outside Nederland has begun and will add $100 million of construction in 2023.

A transmission project that Xcel Energy of Colorado plans to bring renewable energy to the grid has received a green light. The Colorado Public Utilities Commission has approved plans for the five segments of the company's Colorado's Power Pathway, a project that will cost up to $2 billion and will upgrade the state's high voltage transmission system. We expect about $400 million to be expended on the first segments of the transmission project in late 2023. This leads us to believe the nonbuilding sector will grow by 10% over 2022's historic level, to $4.4 billion.

CONSTRUCTION PRODUCER PRICE INDEX



Source: Bureau of Labor Statistics.

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Manufacturing

After nearly two years of recovery, the Manufacturing sector finally exceeded its prepandemic, February 2020 level of employment in January 2022. During the recovery, the sector was directly impacted by supply chain disruptions, rising costs, and like many other sectors, tight labor markets. Despite the economic pressures, the state's manufacturing employment fared better than the nation through the pandemic and subsequent recovery. As of September 2022, Colorado's Manufacturing sector was about 2.3% higher than prepandemic levels compared with 0.7% nationally. The state has benefited from strong growth in areas such as food products, beverages, electrical equipment, and computer products. Along with broad-based growth in several other nondurable and durable goods categories, Colorado's manufacturing employment is expected to grow by 2.8% in 2022. However, faced with ongoing pandemic-related challenges and headwinds from rising interest rates, inflationary pressures, and slowing demand for many goods, growth is projected to slow in 2023. Over the next year, manufacturing employment is projected to grow by 0.3% as losses in computer and electronics and other durable goods categories weigh on gains sustained in several other subsectors.

Nondurable Goods

Nondurable goods include the production of goods that generally last for less than one year and comprise about 38% of manufacturing employment. By year-end 2022, employment in the nondurable goods subsectors are expected to increase by 5% on average over 2021 levels and add about 2,800 jobs. Bolstered by robust growth in food manufacturing, beverages, pharmaceuticals, and

INDUSTRY SNAPSHOT MANUFACTURING

Nominal GDP, 2021 ($ Billions)	28.9
Real GDP, 2021 ($ Billions, 2012 Dollars)	26.6
2021 Real GDP Growth Rate	7.6%
Total Employment, 2021 (Thousands)	148.7
2021 Employment Growth Rate	1.3%
Employment Growth National Rank	30
Share of Colorado Employment	5.4%
Share of National Employment	8.4%
Average Wage, 2021	80,779
Percent of Statewide Average Wage	112.9%
2021 Average Wage Growth Rate	4.6%

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics.

COLORADO MANUFACTURING EMPLOYMENT BY INDUSTRY 2013-2023 (In Thousands)

Industry	2013	2014	2015	2016	2017	2018	2019	2020	2021[a]	2022[b]	2023[c]
Food	19.9	20.6	21.6	22.2	22.8	23.3	23.8	23.7	24.5	25.7	26.1
Beverage and Tobacco	5.9	6.4	7.0	7.8	8.3	8.7	8.9	8.4	9.3	10.2	10.4
Printing and Related	5.3	5.4	5.5	5.5	5.5	5.3	5.0	4.3	4.2	4.4	4.3
Other Nondurables	15.7	16.0	16.7	17.1	17.4	17.9	18.7	18.6	19.0	19.6	19.8
Subtotal, Nondurable Goods	46.8	48.4	50.8	52.6	54.0	55.2	56.4	55.0	57.0	59.8	60.6
Nonmetallic Minerals	7.3	7.7	8.1	8.1	8.5	8.6	8.4	8.1	8.3	8.4	8.5
Fabricated Metals	14.8	15.7	15.4	14.8	14.7	15.2	15.2	14.7	14.4	14.5	14.6
Computer and Electronics	21.9	21.5	21.6	21.4	21.8	22.4	22.8	22.8	23.2	23.3	22.8
Transportation Equipment	8.8	8.8	9.4	9.6	9.8	10.1	10.8	11.2	11.5	11.7	11.9
Other Durables	33.2	34.5	35.8	36.2	35.5	36.0	37.0	35.0	34.3	35.2	35.1
Subtotal, Durable Goods	86.0	88.2	90.3	90.1	90.3	92.3	94.2	91.8	91.7	93.1	92.9
Total, All Manufacturing	132.8	136.6	141.0	142.7	144.3	147.5	150.5	146.8	148.7	152.9	153.5

[a]Revised. [b]Estimated. [c]Forecast. Subsectors may not sum to the total due to rounding.

Note: There was a reclassification of employees from the Computer and Electronics sector in Manufacturing to the Computer Systems and Design Services sector in Professional and Business Services in 2013.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

plastics, employment growth is expected to grow 1.2% in 2023 with the addition of another 700 jobs.

Food Manufacturing

The largest nondurable goods subsector in Colorado is food manufacturing. Colorado food brands and co-packers manufacture candies, baked products, tortillas, burritos, coffee, and animal feeds. They also process meat, grains, sugar, milk, cheese, and other dairy products.

Colorado has both large food manufacturers as well as many boutique manufacturers, often specializing in niche natural and organic products. In 2022, there was a sudden loss of a significant manufacturer of plant-based proteins, which was surprising given the increased interest and growth in these products. This may help with labor supply issues for other similar manufacturers continuing to grow their meat-like products and vegan pet food.

Food manufacturers have fared better with some foot traffic returning to stores, while maintaining and expanding online sales directly to consumers. Supply chain hurdles continue to challenge food manufacturers that struggle to source items such as plastic containers and finding truck drivers to get items delivered. Further, inflation has impacted household spending power, which will likely limit future growth in more expensive boutique or sustainable food products.

In 2021, 96% of Colorado's food manufacturing exports were to Canada, Mexico, and Asia. Exports to China, Mexico, and South Korea increased the most in 2021, while Taiwan and Hong Kong were important markets that saw declines. Colorado food manufacturing exports totaled over $2.2 billion in 2021, made up 25% of all Colorado exports, and became the largest export category for the state. Between 2020 and 2021, exports to Asia rose $375 million and increased by $188 million to North America, primarily due to an increase in meat products.

As with many areas of manufacturing and all other sectors, finding employees and keeping them is a concern. However, food manufacturing did surprisingly well in 2021, gaining about 800 employees. Employment in this subsector is expected to continue to experience growth, adding about 1,200 jobs in 2022 and another 400 jobs in 2023, reaching 26,100 workers and representing 43% of the nondurable goods subsectors.

Beverage Manufacturing

Firms in the beverage subsector produce soft drinks, ice, bottled water, beer, wine, liquor, and specialty drinks like kombucha, wine-seltzer, zero-alcohol beer, hopped tea, and ready-to-drink cocktails. Most of the subsector employment is located along the Front Range. Craft brewers, however, reach even small groups of people across the state. According to the Brewers Association, in 2021 Colorado was fifth in the country for the number of craft breweries (428) and produced just over 946,000 barrels of craft brew, the 8th-highest production in the country.

As taprooms and brewpubs gained more on-premises sales, the craft brewing industry began to bounce back in 2021 as production grew 8% over 2020, according to the Brewers Association. The return of people to taprooms and brewpubs has led to several expansion projects. However, small businesses that rely on canning have been challenged by the increasing cost of cans, storage space requirements, and the need to print and apply their own labels. Taprooms and brewers also struggle to adapt to shifting preferences such as lower demand for seltzers and attracting drinkers looking for sustainable

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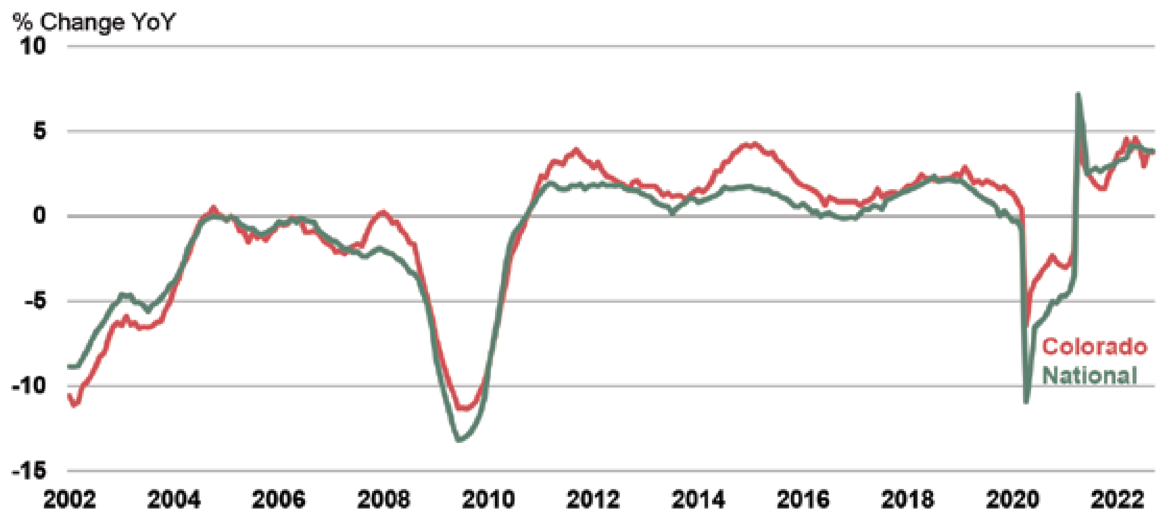
MANUFACTURING EMPLOYMENT GROWTH 2002-2022



Source: Bureau of Labor Statistics, Current Employment Statistics (Seasonally Adjusted).

Manufacturing

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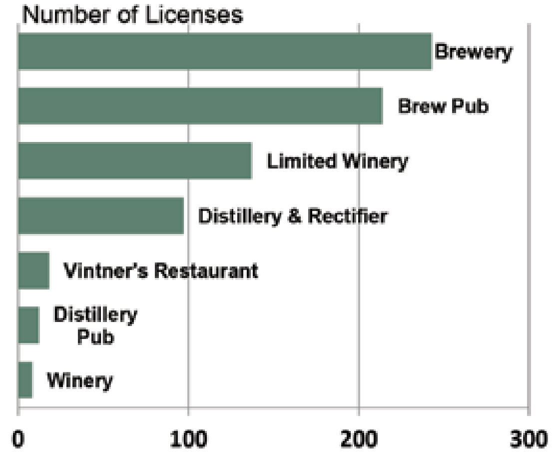
COLORADO BEVERAGE MANUFACTURING LICENSES, 2022



Source: Colorado Liquor Enforcement Division, All State Liquor Licenses. Total as of November 2022.

COLORADO BREWERIES 1862-2022

Sources: Colorado Brewers Guild and the Colorado Liquor Enforcement Division. Total includes brew pub and manufacturing brewery licenses. Total as of November 2022.

companies, trends causing the need to pivot toward new products and marketing.

A good harvest in 2022, along with policy changes, bode well for wineries and distilleries. Recent legislation reopened the export market to continental Europe without retaliatory tariffs, and state ballot measures could boost the industry in the year ahead. Distilleries have also benefited from successful capital campaigns and mergers and a shift in the market to spirits-based, ready-to-drink cocktails where revenue grew 42% from 2020 to 2021, according to the Distilled Spirits Council.

Colorado exports of beverages and tobacco products decreased 12.9%, from $13.4 million in 2020 to $11.7 million in 2021, as exports to Canada took a significant hit. Although export growth to South Korea and Japan helped offset these declines, Canadian exports went from 72% of beverage and tobacco product exports to just 33%. Fortunately, Canada ended its dairy tariffs near the beginning of 2022, allowing a significant increase in dairy sales across the border.

Overall, the beverage and tobacco products subsector saw surprisingly good employment growth in 2021, regaining the jobs lost in 2020. It is expected to grow by 900 jobs in 2022 and 200 jobs in 2023 to reach 10,400.

Printing and Related

Colorado employment in printing and related products did better than expected in recent years, losing fewer workers in 2021 and starting off 2022 with strong gains. Growth was likely due to print solutions to supply chain issues and a post-COVID resurgence, particularly in exports. In 2021, printed product exports positively contributed to the subsector, increasing 12.1% to $53.4 million, the highest since 2013. Asia accounted for 61% of printed product exports in 2021, with exports to Japan, China, and Taiwan increasing a combined $7.7 million. Printed product exports to Brazil also significantly increased in 2021 by over $3.3 million. However, emerging headwinds are expected to weigh on the subsector as employment grows about 200 workers in 2022 and declines by 100 in 2023.

Other Nondurable Goods

The other nondurable goods subsector includes textiles, textile products, leather and allied products, apparel, paper products, petroleum and coal products, chemicals, and plastics and rubber products.

In 2021, employment in the textiles, apparel, and leather and allied product subsectors averaged about 2,070 employees, up 3.7% from 2020. As of Q1 2022, employment in these subsectors averaged about 1,960 employees, slightly down from Q1 2021, with employment forecast to remain relatively flat through 2022.

Paper products manufacturers employed about 1,230 employees in Colorado in 2021, with employment forecast to remain relatively flat through 2022 and 2023. Paper products employment contracted steadily throughout the last decade, yet Colorado's sector has stabilized, supported by the manufacture of converted paper products into labels, laminates, and other packaging-related solutions, with growth attributable to the region's active food and beverage brands.

Petroleum and coal products manufacturing firms refine crude petroleum and coal into usable forms. This subsector has a small presence in Colorado, with just over 800 workers in 2020 and 2021. The sector was unscathed in the 2020 recession, and employment growth was flat year-over-year in 2021. Employment is expected to average just over 800 workers in 2022 and 2023.

Chemical products manufacturing firms employed over 9,000 workers in 2021 and was the largest of the other nondurable goods subsectors. The subsector has seen large gains in employment over the last few years. Bolstered by more cannabis and pharmaceutical manufacturing in the state, the subsector grew at an annual rate of 7.1% from 2016 to 2021 despite a temporary decline during the pandemic. In 2021, pharmaceutical and medicine manufacturing represented 62% of employment in the subsector and covered firms headquartered in Colorado such as Tolmar Inc. and Boulder Scientific Company. Positive company announcements have recently bolstered the state's pharmaceuticals industry following a year of high-profile mergers and acquisitions for companies such as Inotiv Inc. For instance, AGC Biologics, a Denmark-based biopharmaceutical company with facilities in Boulder, acquired an additional 622,000-square-foot manufacturing facility in Longmont, which began full-scale operations in Q1 2022.

Employment growth in the chemical products manufacturing subsector is expected to continue through the forecast period, albeit at a slower rate due to continued supply chain challenges and economic headwinds. Employment in chemical products manufacturing is expected to increase to 9,150 workers in 2022 (1.3%) and 9,280 workers in 2023 (1.3%), strengthened by expected continued growth in pharmaceutical and medicine manufacturing.

Colorado plastics and rubber products manufacturing firms make a diverse mix of goods ranging from transmission belts to cell phone cases to credit cards to dog toys. The subsector was impacted by the recession as firms lost more than 150 jobs between 2019 and 2020. In 2021, the subsector fully rebounded, with employment up 3.4%. Employment remained relatively stable in the first quarter of 2022 and is expected to steadily increase to about 6,000 employees for the year. Nationally, the subsector has also witnessed a full employment rebound and continued steady employment growth in Q1 2022. Colorado's subsector is expected to follow a similar path of steady growth, and employment is expected to increase to approximately 6,080 employees in 2023. A downside risk for the subsector is labor shortages as firms struggle with finding employees with the right skills. A positive anecdotal sign is that emerging additive technology classes are becoming more common in schools, which may boost local recruitment in the years to come.

Durable Goods

Durable goods comprise about 62% of employment in the Manufacturing sector and represent the manufacture of goods that generally last longer than one year. Emerging from the pandemic, durable goods employment is expected to expand by 1.5% in 2022 and record growth in nonmetallic minerals, fabricated metals, computer and electronics, transportation equipment, and several other durable goods categories. However, over the next year weakness in computer and electronics and consumer durables such as furniture, wood products, electronics, and appliances are projected to offset gains in nonmetallic minerals, fabricated metals, and transportation equipment. In 2023, employment is projected to fall slightly, declining 0.2% to 92,900 employees.

Nonmetallic Minerals

The nonmetallic minerals subsector employs approximately 8,300 workers in Colorado. Adjusted numbers for 2021 include a 2.5% increase from a low of 8,100 in 2020. Companies classified in this subsector in Colorado manufacture products largely made of glass and ceramics used in the electronics and construction industry. As most of the state's jobs in the industry produce plumbing fixtures, glass products, and concrete and stone products, employment in this subsector tracks closely with the health of the construction industry. The sector continued to strengthen in 2022 thanks in part to an increase in multifamily residential, health care, public buildings, data centers, warehousing, bridge/highway, and K-12 school projects. Projects not seeing as much cashflow included retail, private office, higher education, and power. Employment in this sector is expected to reach prepandemic levels of 8,400 by the end of 2022.

Concerns over material costs, rising labor costs, worker shortages, and supply chain disruptions will continue into 2023. However, most companies in this sector are proactively managing these challenges and the sector is expected to grow by 1.2% to 8,500 employees in 2023.

Fabricated Metals

The fabricated metals subsector is one of Colorado's largest in terms of jobs. The industry transforms metals into intermediate or end products, such as metal containers, tools and hardware, pipes and structural components, and other products used in construction and industry. The subsector manufactures goods for several sectors

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Manufacturing

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including the state's aerospace industry, beverage industry, medical devices, renewable energy, and oil and gas. The subsector fell to a nine-year low of 14,400 employees in 2021. It is on pace for a slight increase in 2022, but still far from prepandemic levels.

Machine shops, an industry that comprises nearly a quarter of jobs in the subsector, continued to struggle due in part to labor shortages, wage pressure, and supply chain disruptions. In 2022, employment is expected to increase less than 1% to 14,500 employees. Companies are expected to continue adding jobs in 2023 with favorable oil and gas prices, stronger export activity, increased activity in aerospace, and more beverage production. The subsector is expected to grow slightly to 14,600 employees in 2023.

Computer and Electronics

In 2022, employment in the computer and electronics subsector is expected to grow for the 6th-consecutive year and rise 0.4% to 23,300 jobs. However, tepid export activity and economic headwinds have impacted technology companies over the latter half of the year, challenges forecast to weigh on the subsector in the year ahead. In 2023, the subsector is expected to contract 2.1% to 22,800 jobs, with declines largely anticipated for the first half of the year before stabilizing through the latter half.

The computer and electronics subsector includes industries such as communications equipment, audio and visual equipment, semiconductors, navigational equipment, laboratory measuring instruments, and optical media products, among others. Nearly half of the employment in the subsector comprises navigational, measuring, electromedical, and control instruments, an industry group largely connected to Colorado's aerospace and health care companies. Historically, the subsector was the state's largest export industry, however, industry exports fell below food products in 2021 and are on pace to contract for the second consecutive year. In 2022, Chinese exports fell and compounded lagging activity for several of the state's other key trade partners. Adding to the subsector challenges, companies have reported slowing demand for personal computers at a national level, a trend expected to compound the impact of rising interest rates and deteriorated savings cushions that will weigh on business investment and household expenditures.

Transportation Equipment

Large aerospace companies dominate the transportation equipment manufacturing subsector, which includes the manufacture of spacecraft, satellites, and aircraft parts, as well as truck and auto parts, boat parts, and bicycles. The subsector is sensitive to international demand and federal spending on national defense and space exploration. Employment bounced back quickly from a dip early in 2020, and the subsector finished the year with job growth of 3.7%, a bright spot in manufacturing, with a further 2.7% growth in 2021. However, the subsector has been challenged as pandemic-related headwinds, including supply chain disruptions and high inflation, have abated more slowly than expected. Data indicate flat growth year-over-year in 2022. Lockheed Martin, which accounts for nearly half of Colorado's employment in the sector, recently reported that year-to-date sales are down in 2022 and expected to remain flat in 2023 as supply chain issues continue to delay some aerospace projects. Despite challenges, the state remains an attractive location for aerospace companies, and the subsector is expected to benefit as national defense spending ramps up in response to geopolitical tensions. Employment in the subsector is expected to increase about 1.7% in both 2022 and 2023, to 11,700 and 11,900 jobs, respectively.

Other Durable Goods

Six subsectors comprise the remainder of Colorado's durable goods employment, including machinery, furniture, wood products, electrical equipment, primary metals, and miscellaneous goods. Employment for this diverse group of subsectors is influenced by divergent factors that are expected to boost some industries but weigh on others in the year ahead. Overall, employment is expected to rise 2.6% to 35,200 jobs this year, fueled by surging exports, the drawdown of excess household savings, investments in renewable energy, and resurging demand for medical devices. However, negative pressures are expected to offset gains in 2023, and employment is projected to fall 0.3% to 35,100 jobs.

Over the past year, spending on durable goods overall has weakened following a pandemic-driven surge. Consumers are returning to many of the services that were postponed during the pandemic, impacting household goods such as furniture, electronics, and appliances. Further, interest rate hikes have impacted borrowing behavior and slowed the pace of home renovations, sales, and furnishings. These markets have also been impacted by weak investment in nonresidential buildings, a trend that is expected to continue through 2023. Despite projected weakness in these durable goods categories, gains for the state's renewable energy and medical devices industries are expected to partially offset losses. Renewable energy credits in the Inflation Reduction Act are expected to boost investment and jobs in businesses that manufacture solar and wind energy. Further, strengthening health care demand following the pandemic is expected to boost companies supplying health providers with goods and equipment over the next year.

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The Colorado Cannabis Market

Colorado was an early adopter when it came to cannabis legalization, and the state continues to be a trailblazer. Cannabis for medical use was legalized in the state in 2000, only one of eight states to allow medical marijuana use at that time. Colorado then legalized cannabis for recreational use in 2012 (went into effect in 2014), becoming one of the first states along with Oregon to do so. As of mid-2021, Colorado is one of 21 states in the U.S. that allows legal retail/recreational cannabis use and one of 37 states that allows for the medical use of cannabis. Now, Colorado is one of the few states in the U.S. to legalize recreational marijuana delivery and the consumption of social cannabis consumption onsite.

Since the first retail stores licensed to sell recreational marijuana legally opened in Colorado in 2014 (the first in the world at the time), recreational marijuana sales in the state have increased over six-fold since legalization to reach over $1.8 billion in 2021. Total annual marijuana sales (including both medical and recreational) have increased from $683 million in 2014 to $2.2 billion in 2021, observing a compound annual growth rate of 18.4% over the seven years, according to the Colorado Department of Revenue, Marijuana Enforcement Division. Approximately $185.7 million of marijuana products were sold in the state monthly in 2021, up from $56.9 million per month in 2014. Colorado had the 3rd-highest marijuana sales in the U.S. in 2021, behind California and Washington.

Total marijuana sales in 2021 totaled a record $2.2 billion, a 2.2% increase from 2020, according to the Colorado Department of Revenue, Marijuana Enforcement Division. This follows growth of 25.3% in 2020, 13.1% in 2019, and 2.5% in 2018. A closer look shows that recreational sales grew by 4.8% in 2021, and medical sales decreased 7.9%. Marijuana sales are decreasing in 2022, with total sales year-to-date in June 2022 down 21.5% over 2021 to $991 million.

Three-fifths of overall marijuana sales in Colorado occurred in five counties (total sales year-to-date through June 2022). Denver County led the way with 29.6% of total sales, followed by Arapahoe County (10.7%), Adams County (8.1%), Boulder County (7.4%), and Larimer County (6.7%). Although El Paso County does not allow license for recreational marijuana, it is in sixth place of total marijuana sales through medical distribution. As of June 2022, there were 41 counties in the state reporting recreational marijuana sales and 32 reporting medical sales.

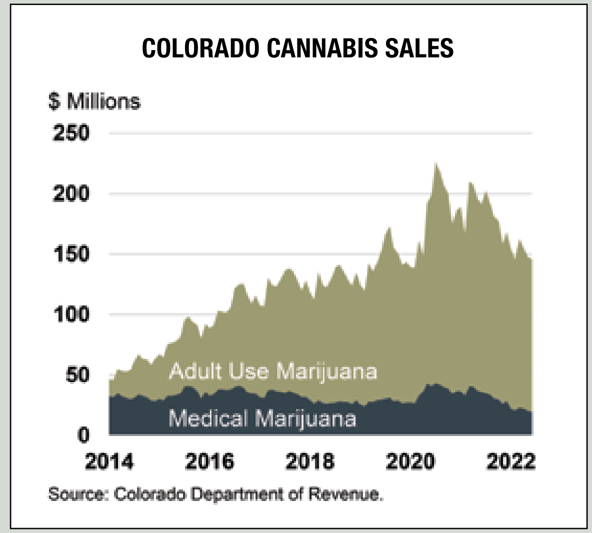
As of 2020, dispensaries, restaurants, hotels, and other businesses can apply for cannabis consumption areas, where cannabis products may be sampled or consumed on site. A few new cannabis-friendly businesses have popped up in Colorado where customers can socially consume, including The Coffee Joint, Bodega, and Tetra 9. As of June 2022, there are a total of 950 active retail establishment licenses. The top five retail establishments hold 17% of Colorado's cannabis market share, and the top 10 account for 22%.

Marijuana prices have been decreasing since the initial introduction of recreational marijuana in 2014. The COVID-19 pandemic resulted in an increase in prices by 9.6% year-over-year. The average price per gram of recreational marijuana flower was $4.38 in 2019, then jumped to $4.80 in 2020, and $4.83 in 2021. As of June 2022, the current average price is $4.03 per gram. This is an 8% decrease from prepandemic prices in 2019.

Medical cannabis delivery to patients began in January 2020, and retail cannabis followed in 2021. The legislation allows delivery by licensed retailers only during the first two years and allows third-party delivery companies starting in 2022. The delivery bill expands access and convenience to patients and adults, which can also serve to encourage market expansion. As of June 2022, there were 15 medical and 41 recreational delivery permits in the state, according to the Marijuana Enforcement Division. The first legal marijuana delivery to a residence in Denver occurred in August 2021.

In 2021, the General Assembly decided on new marijuana rules across Colorado. These rules went into effect on January 1, 2022. The rules include:

- A reduction of daily sales limits of medical concentration from 40 grams to eight grams. Patients between the ages of 18 and 20 are limited to two grams daily. The concentration limit for recreational sales remains unchanged at eight grams per day;



- All medical and recreational concentrate sales must be accompanied by an educational resource pamphlet at the time of distribution. The pamphlets must include a recommended serving size for concentrates;
- Creation of the Uniform Certification Form that allows medical marijuana shops to sell customers more than the statutory daily sales is limited to a single patient if signed by the patient's recommending physician; and
- Documentation is required of the patient's daily purchases into Colorado's marijuana inventory tracking system.

The overall cannabis industry outlook remains positive as additional states in the U.S. legalize and regulate cannabis, use is allowed in more public spaces, and it is generally more widely accepted. After experiencing a slowed rate of growth for the cannabis market in 2022, market growth is expected to increase in 2023.

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Trade, Transportation, and Utilities

The Trade, Transportation, and Utilities sector is the largest provider of jobs in Colorado. This industry includes wholesale trade, retail trade, utilities, warehousing, and multiple facets of transportation (air, truck, transit, rail, pipeline, etc.). More than one-sixth of Colorado workers are included in this industry. The industry lost an estimated 8,700 jobs in 2020, but added 16,500 in 2021, to a total of 485,700, surpassing prepandemic employment. The sector is estimated to have grown 3.2% in 2022 but will grow more slowly in 2023 (1.3%, 6,400 jobs) to total 507,600.

Trade

Wholesale

Wholesale businesses employed an estimated 109,700 Coloradans in 2021, with more than 95% working for merchant wholesalers—firms that sell to retail outlets. The remaining 5,000 employees are employed by electronic markets and agents and brokers. More than 67,000 are employed by firms selling durable goods, including computers, peripherals, and electronic equipment. Businesses selling groceries and related products account for the largest share of the 37,000 nondurable wholesale jobs. Several large Amazon warehouses are included among wholesale employers in Colorado.

Wholesale employment rebounded strongly from the pandemic, reaching new record levels in 2022 with growth expected to continue modestly in 2023. Industry pay in Colorado averaged over $102,000 in 2021—45% above the average pay for all industries. Signals from the Job Openings and Labor Turnover Survey (JOLTS) indicate a relatively smaller degree of labor demand in wholesale compared to other industries. The sector is expected to add 1,900 jobs in 2023.

Retail Trade

Colorado's retail sector accounted for over 272,000 jobs in 2021, or nearly one-tenth of the state total. It includes several of the state's largest employers as well as many mom-and-pop stores. Colorado retailers include grocery stores, auto dealers, big-box stores, gas stations, and many other stores that sell to households. Colorado's annual taxable sales totaled $131 billion in 2021. Retail trade is projected to increase 9.5% in 2022 and 3.7% in 2023 in Colorado.

Colorado retail trade sales in July 2022 were more than 6% ahead year-over-year. Between 2020 and 2021, all retail sectors in Colorado showed healthy growth. In addition, through August 2022, sales for the majority of retail sectors were up compared to same period from the prior year. National sales continued to exhibit strong growth year-over-year in October, but national retail trade is also expected to cool in 2023. Inflation has been an important contributor to sales growth. The Metro Denver consumer price index for commodities, which includes most items sold at retail, was up 7.9% in

INDUSTRY SNAPSHOT
TRADE, TRANSPORTATION, AND UTILITIES

Nominal GDP, 2021 ($ Billions)	68.8
Real GDP, 2021 ($ Billions, 2012 Dollars)	55.0
2021 Real GDP Growth Rate	5.1%
Total Employment, 2021 (Thousands)	485.7
2021 Employment Growth Rate	3.5%
Employment Growth National Rank	25
Share of Colorado Employment	17.7%
Share of National Employment	19.0%
Average Wage, 2021	59,567
Percent of Statewide Average Wage	83.3%
2021 Average Wage Growth Rate	6.9%

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics.

TRADE, TRANSPORTATION, AND UTILITIES EMPLOYMENT, 2013-2023
(In Thousands)

Year	Wholesale Trade	Retail Trade	Total Trade	Transportation and Warehousing	Utilities	Total TTU
2013	96.3	248.4	344.7	67.6	7.9	420.1
2014	99.7	254.5	354.2	70.4	8.1	432.7
2015	103.2	262.1	365.3	72.2	8.2	445.7
2016	104.7	268.1	372.8	73.0	8.2	453.9
2017	106.3	270.8	377.1	76.1	8.1	461.3
2018	108.2	273.2	381.4	81.0	8.0	470.4
2019	110.4	272.3	382.7	87.0	8.2	477.9
2020	107.4	262.1	369.5	91.4	8.3	469.2
2021[a]	109.7	272.2	381.9	95.4	8.5	485.7
2022[b]	114.0	277.1	391.1	101.6	8.5	501.2
2023[c]	115.9	279.0	394.9	104.1	8.6	507.6

[a]Revised. [b]Estimated. [c]Forecast.

Note: Components may not sum to total due to rounding.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

September 2022 over a year earlier. Third-quarter GDP estimates show consumer spending on goods declined after adjusting for price increases, while services consumption increased.

Colorado's new car registrations through September 2022 were down 14.5% year-over-year. The Colorado Auto Dealers Association reports that supply constraints, increasing inflation, and high interest rates are all contributing to lower registration counts in 2022. Despite decreasing registration counts in Colorado, the association believes pent-up demand (from vehicle purchases that were delayed during the pandemic) and an expected reduction in vehicle prices, will allow the market to uptick in 2023.

In 2021, the retail sales outlook was dominated by the lingering aftereffects of the COVID-19 pandemic. Hot labor markets, government payments under COVID relief programs, and strong appreciation in homes and financial assets left households in a very strong financial condition in 2021. In 2022, rising inflation and potential economic headwinds strained consumers and flattened retail sales. Colorado personal income increased significantly in the first half of 2021 and then dampened over the first half of 2022. Concurrently, national personal savings steadily declined in 2022. After experiencing four months of increases, The University of Michigan consumer sentiment index fell in November 2022 to 54.7 and is down 12.7 points year-over-year. All components of the index declined from October 2022, with buying conditions for durables declining most sharply.

Worker shortages and supply bottlenecks were heightened in 2021 but have moderated in 2022. National retail job openings, tracked by the BLS in the Job Openings and Labor Turnover Survey (JOLTS), are declining but still remain slightly elevated compared to prepandemic levels. Retail Trade employment is projected to grow 0.7% in 2023 in Colorado.

Colorado Auto Sales

Colorado new auto registrations have dropped by 14.5% through Q3 2022 due to inventory shortages, higher prices, and higher interest rates. Pent-up demand continues, with more autos on order than ever in history. Customers could cancel these pre-orders, but 90% are being delivered. Auto loans rates have not moved up as much as other interest rates, possibly due to their short duration and secured nature. Electric-vehicle sales (plug-in hybrid and fully electric) were up 35% through Q3 2022 to 15,261 units placing Colorado fifth in sales nationally. Rental-car companies are fighting to restock their inventories and are starting to purchase a lot of electric vehicles.

Consumers' market shift toward electric and hybrid vehicles has accelerated significantly in the last year or two, and the upward trend is steep. A recent story in industry publication, Automotive News, reported that national EV sales grew 57% through September 2022 year-over-year. However, there have been, and continue to be, some bumps in the road.

Some dealers are telling the Colorado Automobile Dealers Association that their manufacturers are not producing electric and hybrid vehicles fast enough. They're selling everything that comes in the door as fast as they get it, although many, if not most, of these vehicles are pre-sold. Supply chains continue to be a problem for automakers. The pandemic lockdowns in China have certainly had a large impact.

However, electric and hybrid vehicle sales are clearly climbing. In Colorado, for example, year-over-year (2020-21), plug-in hybrid (PHEV) sales soared 153%, while pure hybrids accelerated by 93%, and battery electric vehicles (BEVs) increased by 53%. Sales have not been quite as spectacular this year, largely due to supply problems, which have been reflective of the market as a whole.

It's likely that production will ramp up if consumer demand remains strong and even increases. Many automakers are pledging to significantly boost their product lines and production in the next several years. For instance, Korean manufacturer Hyundai, which includes Kia, is already ramping up production, and year-to-date, Kia has witnessed its best sales year ever. Ford and General Motors have also increased EV production.

Domestic production is very important because the Inflation Reduction Act (IRA) has onerous requirements for claiming the $7,500 tax credit promised automotive manufacturers in the bill. First, final assembly of the car must take place in North America. Many brands—even the foreign nameplates—now have North American manufacturing/assembly facilities. Notable exceptions include Porsche, Audi, Land Rover, and Jaguar.

Second, beginning next year, income caps will apply to purchasers, while luxury EVs—sedans costing more than $55,000, and vans, SUVs, or trucks costing more than $80,000—are not eligible.

Additional requirements that could reduce the tax credit by half include sourcing the battery's critical minerals and requiring manufacture and assembly of some of the battery components in North America. In summary, all these requirements certainly put a damper on what initially appears to be a nice tax credit. Some auto manufacturers have asked the government to clarify and perhaps reduce these requirements.

The numbers would argue that the American motoring public is sold on the electrification of personal mobility. However, new car dealers are seeing that while 40% or more of customers say they would strongly consider making their next vehicle an EV, when they actually go shopping, a large percentage will end up purchasing a gas-powered vehicle. Not only are these internal combustion engine (ICE)-powered vehicles less expensive, but they are also 99% cleaner than they were in the past.

As mentioned previously, new vehicles are getting better, both from an emissions standpoint but also in overall

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Trade, Transportation, and Utilities

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RETAIL SALES, 2013-2023
(In Billions of Dollars)

Year	Total Retail Trade Sales[a]	Percentage Change
2013	74.0	4.7%
2014	79.3	7.1
2015	83.3	5.1
2016	87.9	5.5
2017	91.1	3.7
2018	95.4	4.7
2019	99.8	4.6
2020	108.6	8.9
2021[a]	125.4	15.4
2022[b]	137.3	9.5
2023[c]	142.4	3.7

[a]Excludes food services. [b]Estimated. [c]Forecast.

Sources: Colorado Department of Revenue, Colorado Department of Labor and Employment, and the Colorado Business Economic Outlook Committee.

quality and safety. People hold on to their vehicles much longer than in the past, too. The average age of the U.S. fleet now is 13 years. A new car buyer in 2022 has many more things to consider than in the past: price, options, style, safety, efficiency, and availability.

Electric and hybrid vehicles, for the most part, have not reached price parity with gas-powered vehicles. Tax credits—when available—will help, and so will the rapid build-out of charging infrastructure, called for in both the Inflation Reduction Act and Colorado's recently passed transportation bill.

Transportation and Warehousing

The Transportation and Warehousing Sector includes air, railroad, and water transportation; trucking; taxi services; urban transit; couriers; warehousing; and pipeline companies. These industries are expected to contribute 101,600 jobs in 2022 and 104,100 in 2023, or growth of 2,500 jobs (2.4%).

Transportation

The Couriers and Messenger sector includes delivery entities such as FedEx and UPS, along with many smaller delivery companies. The subsector has seen the largest gains within the Transportation and Warehousing sector over the last few years, bolstered by the increase in online shopping and subsequent delivery needs. In each year since 2018, Couriers and Messenger employment observed annual employment growth of over 9%. Employment increased an astounding 25.2% in 2020 year-over-year, driven by increases in online shopping stemming from the COVID-19 pandemic. This growth continued throughout 2021, albeit at a slower pace, with annual employment up 9.2% year-over-year from 2020. This trend continued in 2022, with employment in September 2022 up 5.2% year-over-year. Employment in the sector is projected to continue to observe moderated, but steady growth—an increase of 0.8% in 2022 to reach 19,100 employees, then an increase of 0.5% in 2023 to reach 19,200 employees.

While Couriers and Messenger employment surged during the COVID-19 pandemic, employment activity in the support activities for the transportation subsector was heavily impacted by COVID-19 in 2020. In 2021, the subsector declined 9.3% year-over-year. However, employment steadily grew in 2021, ending the year up 8.7% from 2019, and as of Q1 2022, was up 2.1% from its prepandemic peak in Q1 2021. Employment in this subsector is expected to see a gradual increase in 2022 and 2023, as the travel industry recovers. Pipeline transportation and ground transportation employment is expected to remain stable in 2022 and 2023.

Air Transportation

According to the Bureau of Transportation Statistics (BTS), airlines carried more than 528 million passengers year-to-date in July 2022, 48% above the same period in 2021 and 14% below 2019 levels. Recovery continues each month. Data provided by the Transportation Security Administration (TSA) show that volume through screening checkpoints at U.S. airports in October 2022 was just 5% below October 2019, the best performance since the pandemic began.

The four largest U.S. carriers—American, Delta, Southwest, and United—all recorded profits in the third quarter of 2022, which is typically the busiest quarter of the year for travel. While leisure demand continues to lead the travel recovery, a September 2022 survey by the Global Business Travel Association (GBTA) estimates that business travel revenue will not recover to prepandemic levels until 2026, 18 months slower than a previous GBTA survey had predicted. Factors slowing the recovery go beyond the pandemic itself and include inflation, energy prices, ongoing supply chain challenges, and labor shortages. Business travel recovery is also uneven across regions of the world, with China lagging due to COVID-19 lockdown policies as well as impacts resulting from the war in Ukraine.

Colorado has a total of 14 commercial service airports. All 14 airports had scheduled commercial passenger service in 2022, although in July 2022, Northern Colorado Regional Airport (FNL) was once again left without service after the exit of ultra-low-cost carrier Avelo. Three of Colorado's airports, Alamosa (ALS), Cortez (CEZ), and Pueblo (PUB), remain under the federally subsidized Essential Air Service (EAS) program.

Colorado is experiencing a strong travel rebound for July year-to-date 2022, outpacing the U.S. overall, with enplanements down just 4.1% as compared to the same period in 2019. Passenger traffic at Denver International Airport (DEN) in September year-to-date was down just 1.2% compared to the same period in 2019. Traffic at the Colorado Springs Airport (COS) in September year-to-date was up 30% compared to the same period in 2019, boosted by the entrance of Southwest Airlines in March 2021; Southwest now ranks as the largest carrier at COS, accounting for 48.4% of

COLORADO AIRPORT STATISTICS, 2012-2021
(In Thousands)

Passengers and Cargo	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Passengers (in thousands)[a]										
Denver International Airport (DEN)	53,156	52,556	53,473	54,015	58,267	61,379	64,495	69,016	33,741	58,829
Colorado Springs Municipal Airport (COS)	1,639	1,300	1,250	1,179	1,298	1,675	1,725	1,672	728	1,864
Grand Junction Regional (GJT)	439	422	428	429	465	481	488	549	294	518
Aspen-Pitkin County Airport (ASE)	430	413	435	467	509	490	571	608	359	493
Eagle County Regional Airport (EGE)	336	334	330	314	328	309	348	380	286	404
Durango-La Plata County Airport (DRO)	372	382	386	375	376	372	379	391	198	397
Montrose Regional Airport (MTJ)	145	169	175	205	230	245	268	316	202	377
Yampa Valley Airport (HDN)	120	184	184	188	215	193	200	212	176	300
Gunnison-Crested Butte Regional Airport (GUC)	62	62	63	69	70	65	73	72	58	78
San Luis Valley Regional/Bergman Field (ALS)	14	14	8	6	8	13	14	20	9	24
Pueblo Memorial Airport (PUB)	20	13	14	7	5	8	21	24	11	19
Telluride Regional Airport (TEX)	16	13	7	0	0	5	4	11	7	13
Cortez Municipal Airport (CEZ)	15	16	8	5	9	16	16	17	11	12
Northern Coloardo Regional Airport (FNL)	70	5	4	7	9	6	5	6	2	10
Total Passengers	56,835	55,888	56,767	57,264	61,788	65,262	68,607	73,293	36,083	63,339
Cargo, Freight, and Air Mail (in millions of lbs.)										
DEN Freight and Express	488	470	487	491	504	525	559	628	661	673
DEN Air Mail	34	29	33	55	47	60	54	44	47	58
DEN Total	522	499	519	546	552	585	614	672	708	732

Note: Excludes airports with few passengers.

[a]Passengers include enplanements and deplanements. For airports that do not report passenger traffic, enplanements from the Federal Aviation Administration are doubled to reflect estimated total

Sources: Denver International Airport, Colorado Springs Municipal Airport, Grand Junction Regional Airport, Eagle County Regional Airport, Durango-La Plata County Airport, and the Federal Aviation Administration.

enplanements for year-to-date September 2022. COS passenger traffic is 3.1% of DEN volume.

Across the state, recovery has been uneven in 2022 for the July year-to-date period. Mountain airports including Telluride (TEX), Steamboat Springs/Hayden (HDN), Montrose (MTJ), and Gunnison (GUC) have recorded enplanement volumes well above 2019 levels and lead recovery of all Colorado airports. Alamosa (ALS) and Vail/Eagle (EGE) also recorded enplanement increases compared to 2019. Remaining airports, including Durango (DRO), Aspen (ASE), Grand Junction (GJT), Cortez (CEZ), and Pueblo (PUB) have recorded declines compared to 2019.

Denver International Airport

DEN is owned and operated by the City and County of Denver. The City's Department of Aviation employs approximately 1,300 people at the facility. Year-to-date through September 2022, DEN's three largest carriers by total passenger traffic were United (47%), Southwest (30%), and Frontier (10%). Through November 2022, carriers have operated nonstop service to 215 destinations worldwide from DEN: 190 domestic airports in 46 states and 25 international airports in 14 countries.

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Trade, Transportation, and Utilities

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COLORADO ELECTRIC POWER CONSUMPTION 2013-2023 (In Millions of Kilowatt Hours)					NATURAL GAS (In Billions of Cubic Feet)	
Year	Nonresidential	Residential	Total	Percentage Change	Total Gas Consumption	Percentage Change
2013	34,913	18,529	53,442	-0.5%	467.8	5.4%
2014	35,304	18,093	53,397	-0.1	479.0	2.4
2015	35,731	18,385	54,116	1.3	466.9	-2.5
2016	35,968	18,834	54,802	1.3	441.0	-5.5
2017	36,215	18,615	54,830	0.1	438.1	-0.7
2018	37,163	19,287	56,450	3.0	485.7	10.9
2019	37,116	19,405	56,521	0.1	514.0	5.8
2020	35,567	20,483	56,050	-0.8	517.6	0.7
2021	35,726	20,625	56,351	0.5	497.2	-3.9
2022[a]	35,723	20,246	55,969	-0.7	511.0	2.8
2023[b]	35,624	19,982	55,606	-0.6	509.3	-0.3

[a]Estimated. [b]Forecast.

Sources: Energy Information Administration, Xcel Energy, and Colorado Business Economic Outlook Committee.

DEN served 69 million passengers in 2019, ranking it the 5th-busiest airport in North America and the 16th-busiest in the world. The impact of the pandemic caused passenger traffic at DEN to drop 51.1% in 2020, reaching an annual total of 33.7 million passengers. In 2021, DEN's passenger traffic improved to 58.8 million, 74.4% above 2022 and just 14.8% below 2019. This strong rebound propelled DEN to rank as both the 3rd-busiest airport in North America and the 3rd-busiest in the world in 2021, the highest ever rankings for DEN.

In January 2022, DEN passenger traffic declined by 13.2% versus January 2019, marking the poorest monthly performance versus 2019 since May 2021. This was the direct result of the Omicron variant, which severely impacted the aviation industry, and DEN was no exception. However, improvement came quickly; February, March, and April 2022 were the first three months to record passenger volumes higher than the same months in 2019. Volume during the spring and summer months of April, May, June, July, and August once again fell short of 2019 levels, but the trend reversed in September 2022 when DEN recorded its busiest September in history, with nearly 6.3 million passengers, an increase of 5.6% over September 2019. For the year-to-date August 2022 period, DEN continues to rank as the 3rd-busiest airport in North America and the 3rd-busiest airport in the world; only Atlanta (ATL) and Dallas-Fort Worth (DFW) have processed more passengers than DEN.

Key factors continuing to drive DEN's above-average recovery include continued strong demand for domestic travel, as well as DEN's central geographic location, which allows for convenient connections. In addition, due to an easing of border closures and travel restrictions in late-2021 and through 2022, international travel demand has seen consistent recovery over the past year. In fact, DEN saw record levels of international passenger traffic for four consecutive months in 2022—June, July, August, and September. Although international traffic for year-to-date September 2022 is 2.3% higher than the same period in 2019 and is fully recovered, the makeup of the demand has shifted. Large countries in Asia, including China and Japan, have lagged in terms of reopening, and DEN travel to Asia is nearly 65% below 2019 volumes. However, DEN benefits from strong international passenger demand to Mexico, which has recovered more quickly than other markets. Through September 2022, DEN-Mexico travel demand has increased by 32%, and DEN-Mexico travel accounted for 35% of DEN's international travel demand, up from 22% for the same period in 2019. With the reopening of Japan in October 2022, United is scheduled to resume nonstop flights between DEN and Tokyo/Narita (NRT) on January 4, 2023, once again connecting DEN nonstop with Asia.

A trend that has clearly developed is a higher percentage of passengers using DEN for connecting flights. In 2019, 64% of DEN passengers were origination/destination (O&D) passengers—beginning or ending a trip at DEN—while 36% were using the airport to connect to another flight. For the year-to-date September 2022 period, 59% of DEN passengers were O&D while 41% were connecting. This is primarily driven by a shift in the makeup of Southwest Airlines passengers at DEN. In 2019, 28% of Southwest passengers were connecting to another flight. This has increased by 12 percentage points to 40% for year-to-date September 2022.

In 2022, DEN ranked as the largest operation in terms of seat capacity for three airlines—United, Southwest, and Frontier. DEN is accommodating the growth of these carriers through facility expansion. In May 2022, DEN opened 16 new gates on Concourse C, and in November 2022 the final phase of the Concourse Expansion Plan was completed when 22 additional were opened—12 on Concourse A and 10 on Concourse B. A ground-load facility (GLF) broke ground in August 2022. When completed in 2024, the facility will be home to 14 gates for Frontier Airlines.

Utilities

Colorado retail natural gas rates rose 34% with higher wholesale prices in 2022. Nevertheless, favorable weather and rebounding economic growth boosted natural gas consumption compared to 2021.

Electricity rates rose 8% in 2022 with higher fuel costs. Electricity consumption dropped, with higher commercial consumption partially offsetting lower residential consumption as more workers returned to the office.

The Colorado Legislature passed a slate of new laws designed to lower greenhouse gas emissions and improve air quality. The legislative package devotes more than $340 million to policies that enhance building energy efficiency, increase the use of renewable energy, make communities more resilient, reduce emissions from transportation, and expand public transit. Transit agencies across Colorado, including RTD, provided free transit fares in August under the new law, which is expected to reduce traffic, expand access to public transit, and save people money.

The Colorado Public Utilities Commission (PUC) approved Xcel Energy's clean energy resource plan to cut carbon dioxide emissions by 85% by 2030 as compared to 2005. The plan accelerates the closure of Unit 3 of the Comanche Generating Station by 2030, transitions the Pawnee generating station from coal to natural gas by 2026, and includes 2,400 megawatts of wind and 3,000 megawatts of large scale and distributed solar resources.

The PUC also approved the $1.7 billion 560-mile Colorado Pathway transmission expansion, enabling 5,500 megawatts of renewable generation.

Colorado natural gas consumption grew by 2.8% in 2022, to an estimated 511 billion cubic feet. Electricity consumption moved down by 0.7% in 2022, to an estimated 55,969 million kWh. Utilities employment was flat in 2022 but is expected to move up slightly in 2023 as utilities continue to prepare for the adoption of more electric vehicles.

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Tim Jackson, Colorado Automobile Dealers Association
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Pulling Back the Curtain: Recession-Proofing the Fabric of Our Communities

Holiday shopping in Olde Town Arvada. Photo courtesy of Arvada Economic Development Association.

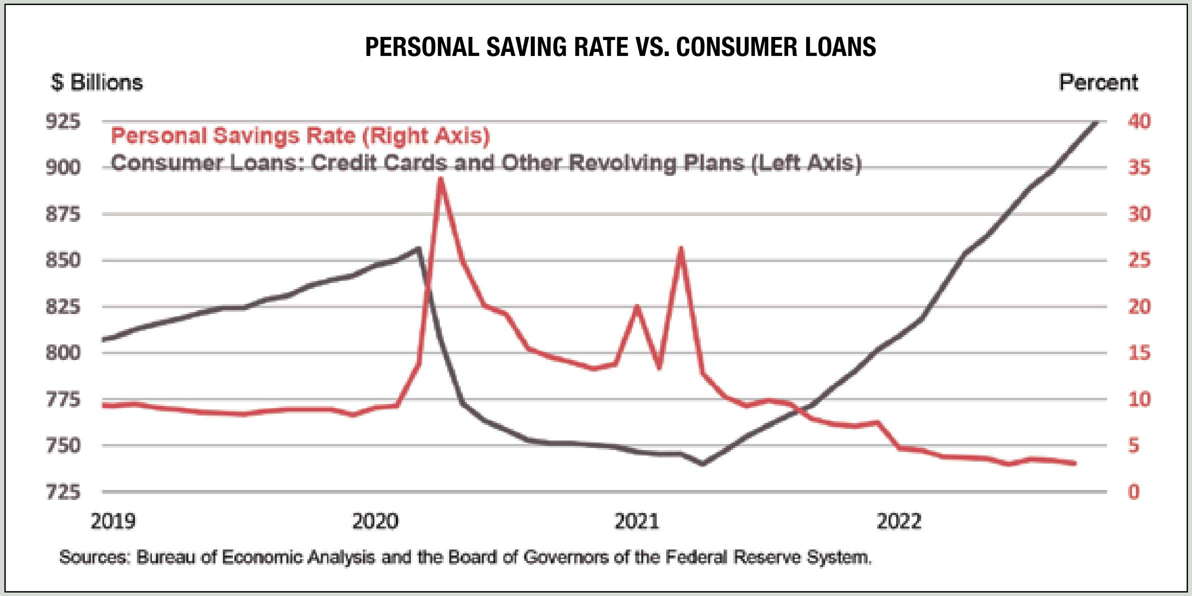
Evolving dynamics in the retail industry have placed a spotlight on independent retailing and its importance within a community, including its ability to engage with the community in ways national retailers usually cannot. Local independent retailers and restaurants play a much more vital role to cities than just revenue. The existence of unique, small businesses creates a high sense of place, fosters diversity, adds to the eclectic nature of streets, and reinforces differentiation from one community to another, often creating a large part of a neighborhood's attractive appeal to residents, visitors, and workers—an aspect that is only increasing as retail looks to reinvent itself. As part of Arvada Economic Development Association's core mission, the organization invests heavily in strategies to support and retain all meaningful retail, but recently it has intensified its focus on this independent retail activity in the community.

In the spring of 2020, municipalities within the Denver Metro region began bracing for impact when mandated business closures became imminent as most of the revenue in Colorado cities is generated by sales tax. Much to the surprise of many, though, revenue dips were brief, a blip at most. Just as quickly as restaurants and retailers shut down, in-person patronage, delivery, takeout, and ecommerce transactions exploded. Federal stimulus checks compounded by Americans' desire for in-home comforts spurred a flurry of spending on taxable goods, and all seemed to be well, or at least much less worse than expected revenue-wise.

Despite a significant dip that spring, the City of Arvada actually experienced an average year-over-year net annual sales tax growth of over 9% from 2019 through the latter part of 2022. Pent-up demand created by the pandemic resulted in spending at an all-time high, making revenue generation for the city seem rosy. But before getting too excited, it is important to take a closer look at what conditions are driving that growth. Retail sales increases in Arvada appear to be benefiting all sizes of retailers, from large corporate grocery and home improvement stores, to small, independent, and locally owned restaurants. But if the main drivers of the Arvada's sales tax growth are examined, it is the larger corporate side of the business community, including mainly online sales and to some degree large grocery stores, home improvement stores, wholesale stores, and drive thru fast-food chains.

Peeling back the onion a bit further reveals that small, independent, and locally owned retailers are being negatively impacted more significantly than their larger corporate peers. Sentiments from ongoing survey responses distributed by the Arvada Chamber suggest smaller businesses are not as poised to respond to changing economic conditions due to lack of capital, cash flow, and economies of scale. Relentless waves of new business costs are more difficult for single-entity and mom and pop retailers to withstand, such as increasing pay and benefits, lease renewals, hiring and turnover costs, inflation on supplies, and barriers to new technology and automation implementation. With Arvada retail sales growth outpacing inflation by a small margin of 1.6% in 2022, and most of that growth attributed to corporate entities like Amazon that are not locally owned, it is clear that small, independent retailers are facing difficult times.

According to Chris Myers, CEO of B:Side Capital, Colorado's leading nonprofit commercial lending institution, there are indications that small business health in Colorado is waning. "One major trend that has me very nervous is the explosion of personal credit card debt from mid-2021 through today. When consumers pile on debt this quickly, it indicates they're using it to supplement income for everyday necessities. As interest rates continue to rise, this represents a ticking time bomb that will impact small businesses first," says Myers. Organizations like B:Side are already



thinking about innovative ways to inject more capital into small businesses in 2023 should conditions lead to a continued environment of higher costs and less cash. Myers believes that small business vitality is directly impacted by consumer health, and this sector is a leading indicator for the economy as a whole.

The sustained loss of local shops and their market share will, over time, strip away the very fabric of communities. Independent retail, including food and beverage establishments, are uniquely designed to provide the space where people gather, celebrate, network, and build memories, and also act as destinations and must-stops for outside visitors. Deterioration of independent retailers generally results in lower-tiered replacements that often impact the vitality of the overall area negatively. Finding opportunity to sustain not only the independent retailers but also the areas they are part of is a key element in community and economic development, and local government revenue sustainability.

One example supporting the community fabric of local retail is the Arvada Resiliency Taskforce (ART), a collaborative and strategic partnership between key business resource organizations, such as the Arvada Chamber, Arvada Economic Development Association, and the City of Arvada, among others. The ART was established to quickly evaluate and respond to needs across the Arvada business and nonprofit community due to the COVID-19 pandemic and respective business closures, but quickly identified ongoing value to support emerging and ongoing needs, such as workforce shortages, mental health, optimizing technologies, and advocacy for sustainable retail land-use policies. In a postpandemic environment, these types of partnerships can be critical in both the marketing and accessibility of existing programs and resources to encourage small business vitality, but also in creating programs that fill current gaps.

In addition to forming new strategic partnerships, communities can also engage with multiple business resource organizations to deliver much-needed education and tools for small companies to bolster their own internal sophistication and resilience. A few examples include Colorado's Small Business Development Centers (SBDCs) that provide free consulting across multiple disciplines and industries to small businesses owners and nonprofit commercial lending organizations, such as B:Side Capital and Colorado Enterprise Fund, both with missions focused on delivering capital into disadvantaged businesses. Local economic development organizations can serve as both a resource concierge for small businesses to efficiently connect and activate these resources, but also to develop meaningful collaborations that foster resilience and competitiveness based on the community's specific needs.

With continual and increasing strain on the small, local business sector exacerbated by growing economic uncertainty, it is imperative that communities be proactive in engaging and encouraging small businesses owners to implement effective tools, including small business development resources, and promotion of vibrant retail centers and areas. By not only protecting, but also by nurturing and growing this sector, there will be continual and reciprocal benefits for municipalities far beyond the revenue impact on paper. Timing is critical for small businesses to reinforce their models and shore up deficiencies. Focused support from communities will give businesses the best shot at withstanding ongoing external forces while preserving the unique retail appeal that is the community's fabric.

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Information

Companies in the Information industry are responsible for creating, distributing, and transmitting information. In 2021, the Information industry added 1,300 jobs to total 76,300 jobs as the sector recovered from pandemic-induced shutdowns in 2020. In 2021, in-person operations resumed, movie theaters reopened, and the digital transformation continued, elevating the number of jobs in publishing, media, and data processing industries. These gains more than offset long-run employment declines in print publishing and telecommunication industries. The Information industry is expected to gain 2,100 jobs (2.8%) in 2022 and 1,400 jobs (1.8%) in 2023 as electronic and online publishing, software publishing, and data services add jobs at a pace that has more than offset long-run declines in traditional publishing and telecommunications industries.

Publishing Sector

The Publishing sector includes any firm that issues print or electronic copies of original works for which they own a copyright, excluding internet firms. Products include software, newspapers, periodicals, books, directories, databases, calendars, and greeting cards. Over the past two decades, the types of products produced by the publishing industry have diversified to include an increasing number of electronic and internet-based products, such as audio, downloadable files, digital books, podcasts, and mobile device applications. Along with increased consolidation and automation, the digital transformation of the publications industry has impacted employment trends in significant ways. As of 2021, software publishers recovered to peak employment levels experienced during the dot.com boom of the early 2000s, while publishing industries outside of software saw their collective workforces shrink to less than a third of the workforce 20 years prior. Software publishing is expected to lead growth in the publishing sectors in 2022 as all other publishing industries either hold steady or continue long-term declines.

Newspaper Publishing

Colorado continues to experience a long-run decline in the number of establishments and employees in the newspaper publishing industry as the industry consolidates and migrates to digital consumption. The industry has been challenged by lagging advertising sales and an unwillingness among many consumers to pay for digital news as free options for consuming news abound. The COVID-19 pandemic exacerbated these longer-term challenges, causing the industry to undergo temporary layoffs, additional downsizing, and further migration toward the digital provision of news. After employment levels decreased 12.1% in 2020, Colorado's newspaper publishing industry shed another 6.3% of jobs in 2021, bringing the number of employees in the industry to 1,924. This marks the 16th-consecutive year of job losses. Additional consolidation in the industry is expected in 2022 and 2023, though at a slower pace.

Book Publishing

The book publishing industry experienced a boost in activity at the end of 2020 and into 2021 as consumers turned to reading as an indoor leisure option amid pandemic-related health concerns. As the pandemic has eased, industry activity has slowed in 2022. According to the Association of American Publishers, nationwide revenues to book publishers are down in 2022. After rising 12.1% in 2021, revenues fell in the first half of 2022, with year-to-date revenues in July down 4.1% year-over-year. Revenues are down across all major categories of publications, including consumer, religious, and professional books.

The largest Colorado book publishing employers are concentrated along the Front Range, with most establishments in Denver, Boulder, and Colorado Springs. The industry had 673 employees in 2021, down 29 employees (4.1%) from 2020 levels. While employment fell, the number of establishments in the industry rose from a historical low of 88 establishments in 2019 to 94 in 2020 and rose again to 107 in 2021, reflecting a rise in niche and self-publisher establishments.

INDUSTRY SNAPSHOT INFORMATION	
Nominal GDP, 2021 ($ Billions)	27.3
Real GDP, 2021 ($ Billions, 2012 Dollars)	30.7
2021 Real GDP Growth Rate	9.7%
Total Employment, 2021 (Thousands)	76.3
2021 Employment Growth Rate	1.7%
Employment Growth National Rank	30
Share of Colorado Employment	2.8%
Share of National Employment	1.9%
Average Wage, 2021	131,631
Percent of Statewide Average Wage	184.0%
2021 Average Wage Growth Rate	6.6%

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics.

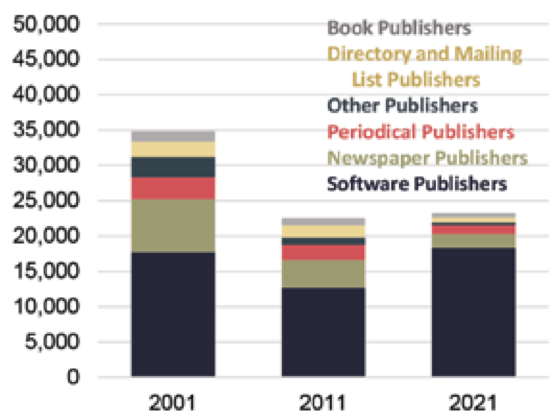
Directory Publishing

The directory publishing industry includes companies that publish not only directories, but also mailing lists and collections of facts both in print and electronically. The largest employers in Colorado provide marketing services through the collection of consumer data and consumer credit and loyalty programs. Employment losses have accelerated in the industry in recent years, with employment in 2021 at 652, half the size it was five years earlier. After more than a decade of declines, the number of establishments in the industry held steady at 22 in 2021. Ongoing consolidation in the industry is expected to continue into 2023.

Software Publishing

The software publishing industry includes a wide range of products, including business analytics and enterprise software; database, storage, and backup software; design, editing, and rendering software; operating systems and

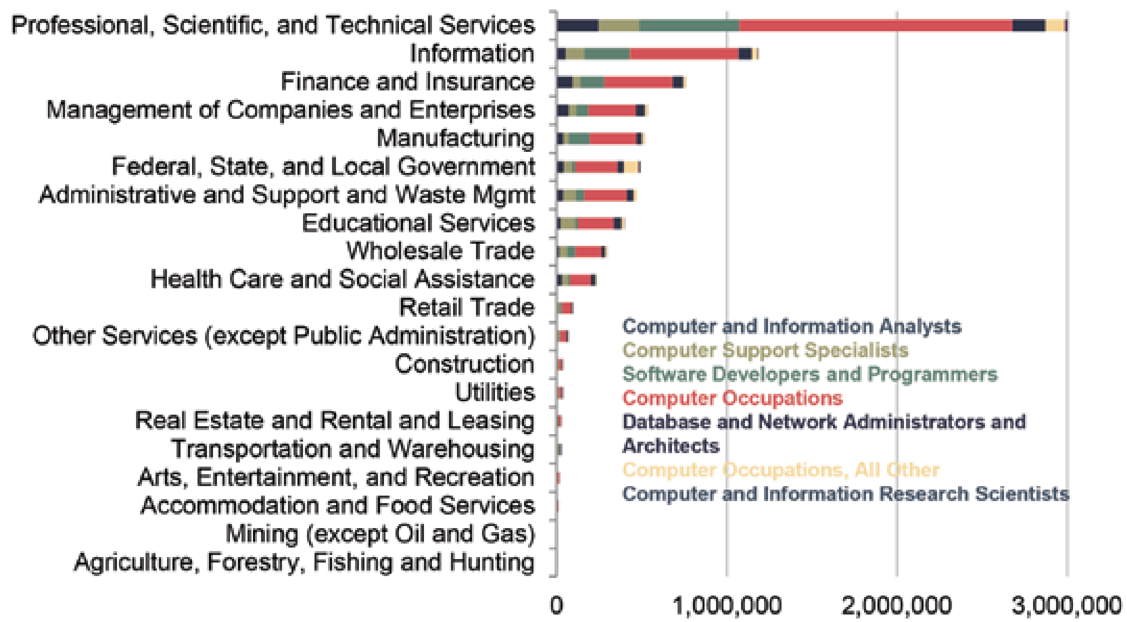
COLORADO PUBLISHING INDUSTRY EMPLOYMENT



productivity software; smartphone apps; and video games. (Note: The closely related custom computer programming services sector is included in Professional and Business Services.) Fueled by organic, homegrown growth, as well as through acquisitions and company relocations, the sector expanded by 11% in 2021 to 18,400 jobs. The industry has experienced rapid growth since 2015, with employment levels nearly reaching the peak level experienced during the early 2000s' dot.com boom in 2022. The industry is expected to continue to grow through the remainder of the year and into 2023, though labor shortages may constrain growth as the sector competes with other industries for programmers and other talent.

In 2021, there were 1,041 software publishing establishments in Colorado, 208 establishments (25%) higher than 2020. Software publishers in Colorado range in size from small startups to major corporations with offices in the state, such as Cisco Systems, Google, Hitachi, IBM, and Oracle. Colorado has a high concentration of employment in the software industry (nearly twice the national average).

NATIONAL COMPUTER AND IT JOBS BY OCCUPATION ACROSS INDUSTRIES, 2021



Source: Bureau of Labor Statistics, Occupational Employment Statistics, May 2021.

Telecommunications

Employment in the Telecom sector declined by -4.8% (1,270 jobs) in 2021, after falling by -2% (530 jobs) in 2020. The 2021 employment loss marks the largest job loss since 2017. Approximately 24,940 people worked in the Telecom sector in 2021 across 755 establishments throughout Colorado. Nearly 53% of these establishments are located in the Denver Metropolitan Statistical Area (MSA); however, with many larger companies based in the metro area, over 72% of all telecom jobs are in the Denver MSA. The sector includes large Colorado-based companies such as DISH Network and Zayo.

The Telecom sector was significantly affected by the pandemic-induced recession, much like other sectors, with employment falling by 500 jobs from March to April 2020. Employment continued to fall throughout 2021 and is still generally trending downward in 2022. Employment in the Telecom sector is projected to decrease through the end of 2022 and continue declining, albeit at a slower pace, in 2023.

Broadcasting and telecommunications are combined for real GDP reporting; this combined sector expanded 1.9% in 2021 after observing a 9.9% increase in 2020. The sector contracted 9% in 2015, 9.6% in 2016, 11.2% in 2017, but expanded a whopping 27.8% in 2018. In 2021, GDP in the telecom and broadcasting sector accounted for just 2.9% of the state total, up from 2.3% of the 2017 statewide GDP.

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Employment in the Telecom sector has been on the decline since a high of 46,800 in 2001 and has observed a five-year compound annual growth rate (CAGR) of -1.9% and a 10-year CAGR of -1.2% (2021). Earlier in the decade, from 2001 to 2006, the sector's employment experienced a 39.7% decline as the industry shed 18,600 jobs. This trend was reversed for three years, from 2006 to 2009, as 2,000 jobs were added over this period. Job losses were again the norm from 2009 to 2012, with payrolls falling a combined 3,000, or 9.9% (with a considerable portion of this loss due to the cuts at CenturyLink after its merger with Qwest). Since 2013, Telecom employment has fluctuated, with three years of job growth and five of decline.

The Wired and Wireless Telecommunications subsector, created in 2017 when wired and wireless carriers were collapsed into the same component sector, accounted for a majority of the telecom job losses, with employment falling 1,049 in 2021 after falling 307 in 2020. Satellite telecommunications employment declined 6.2%, and other telecommunications employment declined by 7.9% in 2021 year-over-year.

INFORMATION EMPLOYMENT 2013–2023 (In Thousands)

Year	Publishing	Telecom	Other	Total
2013	20.8	27.4	21.8	70.0
2014	20.5	27.5	22.5	70.5
2015	20.5	27.0	23.5	71.0
2016	20.5	27.4	24.3	72.2
2017	21.0	26.1	25.2	72.3
2018	21.6	27.1	26.9	75.6
2019	22.0	26.7	28.4	77.1
2020	22.3	26.2	26.5	75.0
2021[a]	23.2	24.9	28.2	76.3
2022[b]	23.9	23.9	30.6	78.4
2023[c]	24.2	23.7	32.0	79.8

[a]Revised. [b]Estimated. [c]Forecast.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

Broadband

Broadband has emerged as a critical component of economic development and is ever more important with increased remote work, online education, and health care. Economic research shows that the introduction and improvement of broadband services boosts employment growth, reduces unemployment rates, and helps attract and retain high value-added firms and workers. These impacts are particularly large in rural areas.

Approximately 91% of Coloradans have access to broadband at speeds of 100 Mbps or faster, ranking the state 28th in broadband access, according to BroadbandNow. However, only 40.8% of Coloradans have access to fiber-optic services. Additionally, unequal access to broadband across the state has created a digital divide. Broadband provisions in Colorado communities located outside the Front Range present unique challenges, and nearly 84% of the state's population lives in urban areas along the Front Range. Approximately 93% of rural Colorado had broadband access in April 2022, up from 70% in 2017; the Funding for Broadband Deployment bill (HB 1289), which was signed by Governor Polis in 2021, is expected to get the state to 100% rural broadband coverage. Still, an estimated 348,720 people do not have access to a wired connection capable of 25 Mbps. The divide in broadband access between rural and urban communities has had even more implications during the pandemic, as remote schooling and work are more difficult.

Smaller communities have been slower to engineer and deploy broadband utilities infrastructure, but they are catching up. Successful deployment in small towns, such as Red Cliff, Meeker, and Wray, provide innovative and inspiring examples for other communities to follow.

For example, a 481-mile fiber line from Georgetown to Rangely that serves a 10-county region and is run by the Northwest Regional Council of Governments became operational in May of 2020. In November 2019, residents in smaller municipalities like Edgewater, Rico, and Mead, along with larger towns including Lakewood, Greenwood Village, and Parker, voted to approve the provision of municipal broadband or partner with the private sector to provide the service. In June 2021, Mountain View Electric Association, in partnership with Conexon Connect, announced a $190 million expansion of broadband services by bringing fiber broadband to rural portions of Arapahoe, Crowley, Douglas, Elbert, El Paso, Lincoln, Pueblo, and Washington counties. In July 2022, the Colorado Broadband Office (CBO) launched a new $170 million grant program to support broadband expansion and modernization through the state. The grant program was created as part of the American Rescue Plan Act (ARPA) for broadband expansion across the country.

Expanding broadband provision is a key focus of Colorado economic development, information technology, and local government capacity-building efforts. Colorado has developed a program through the Colorado Department of Local Affairs (DOLA) that has awarded over $20 million in matching grants since 2016 for a statewide investment of $34 million to numerous rural communities throughout the state, including Estes Park, Red Cliff, Park County, and Rio Blanco County, to help with strategic broadband planning and deployment of middle-mile broadband projects. There are two broadband grant programs currently available in Colorado, including the Broadband Interconnectivity (HB21-1289) Grant Program with $5 million available to provide public institutions, private businesses, and citizens access to reliable broadband service, as well as the Broadband Planning and Infrastructure Set-Aside with $3.6 million available to support local governments in improving broadband services.

Broadband access allows many rural communities the potential to attract remote workers and location-neutral businesses that can help diversify the economic base, but

there are many other benefits, including public safety and health care. Many rural areas of the state would benefit greatly from telemedicine and remote health care monitoring, which have the promise to reduce health care costs while improving health outcomes. The United States Department of Agriculture (USDA) announced in October 2020 the investment of $6.3 million in high-speed broadband in rural Colorado, and another $10.5 million in August 2021. This funding is part of the effort to provide broadband services to unserved and underserved rural areas and is part of the $550 million Congress allocated to the second round of the ReConnect Program.

In November 2021, the Infrastructure Investment and Jobs Act allocated $65 billion to expand broadband in communities across the U.S, create more low-cost broadband service options, and subsidize the cost of service for low-income households. Under the funding, each state is designated to receive a minimum of $100 million, with a focus on broadband expansion and affordability. In September 2022, the USDA announced $502 million in loans and grants to provide high-speed internet access for rural residents and businesses in 20 states. In Colorado, approximately $13.8 million will be allocated to the Delta-Montrose Electric Association to deploy fiber and connect 3,577 residents, 148 businesses, one educational facility, and 765 farms to high-speed internet in the counties of Delta, Montrose, and Gunnison.

Telephone

Telephone, the legacy business for telecom providers, has been experiencing a protracted decline since the turn of the century. The Centers for Disease Control and Prevention, which tracks landline use to assure representative samples in its health studies, reported that 68.7% of U.S. households had only cellphone service in 2021, up from 65.8% in 2020, and from the 59.2% reported in 2019. According to this study, fewer than 29% of all households still had a landline, and about 1.7% had only a landline. According to Leitchman Research, the top telephone companies lost nearly 500,000 subscribers between Q3 2021 and Q3 2022, compared to a loss of 405,000 subscribers in 2020 and a loss of 630,000 in 2019. Improvements in VoIP services have allowed internet and cable TV providers to compete with traditional wireline telephone services. Additionally, many of these legacy providers have lost landline subscribers to wireless and other competitors that offer free or lower cost long-distance calling. The most viable telecom companies focus on higher margin business-to-business sales and have diversified into separate wireless, wireline, internet, cable TV, and providers of emerging cloud-based and data center technologies.

Television

Similar to the decline in land telephone subscriptions, pay-TV companies have been losing subscribers at a continued steep rate due to the uptick in video-on-demand services. A report from Leitchman Research revealed that major pay-TV providers in the U.S. lost about 4.7 million subscribers in 2021, compared to a loss of 4.9 million in 2020, continuing the declining trend observed over the last couple years. As internet speeds have become faster and more affordable in many markets, customers have been “cord-cutting” and

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leaving traditional cable and satellite services. Leitchman reported that 83% of U.S. households have at least one streaming video service from 15 top direct-to-consumer and subscription video services in 2022 (up from 79% in 2019), with 64% of households subscribing to multiple services.

Telecom companies are trying to stem this decline by using new technologies like high-definition, on-demand, online, mobile, multicasting, and bundling services like Disney+ with Verizon subscriptions or including Apple TV+ with hardware purchases from Apple. These technologies help develop alternative revenue streams for traditional cable companies; telecoms that provide both cable and internet might lose a cable subscriber through cord-cutting but can continue to sell internet services to the same household. Coincidentally, the top cable and telephone providers in the United States (which represent 96% of the market) added 670,000 net additional broadband internet subscribers in Q2 2022, compared to 1 million in Q2 2021. There are now nearly 110 million broadband subscribers in the U.S.—an increase of 2.4% year-over-year; cable companies provided broadband service to 75.5 million while telephone companies provided service to 34.4 million.

Wireless

The pandemic, coupled with ongoing advances in wireless communications, has caused consumers to continue to move away from landlines and pay-TV providers. As more content is delivered wirelessly, and with 5G (fifth-generation) mobile networks now being rolled out, telecoms are fighting to expand their spectrum to meet the demands of bandwidth-intensive consumers. Wireless providers invested $35 billion in 2021 to power these wireless networks, an all-time high. Over 315 million Americans are now covered by 5G, up from 300 million last year, according to CTIA. By 2030, 5G networks are estimated to contribute between $1.4 and $1.7 trillion to the U.S. economy and create between 3.8 million and 4.6 million jobs.

According to the FCC, the number of connected devices exceeds 442.5 million, or 1.3 devices for every resident in the United States. While a survey by Deloitte found that 38% of Americans added internet-connected devices to their homes during the beginning of the pandemic, the average number of devices per U.S. household decreased from 25 to 22 devices in 2022, as the effects of the pandemic eased. In addition, 45% of surveyed consumers said at least one household member was working from home at least some of the time, down from 55% in 2021. The pandemic also saw the number of messages exchanged over wireless networks increase by over 119 billion, driven by a 28% increase in GIFs, memes, videos, and other MMS messages. According to Pew Research Center, 97% of Americans own a cell phone and 85% own smartphones (up from just 35% reported in the first smartphone ownership study in 2011). Additionally, tablet computers are owned by 53% of Americans (up from just 3% in 2010), but this share has plateaued over the past four years perhaps due to the increased size of many smartphones. The uptick in ownership of these data-hungry devices and the increasing prevalence of smart-home Wi-Fi connected devices like thermostats, doorbells, and appliances has resulted in increased demand for spectrum, especially high-band.

COMPETING WESTERN STATES OFFERING FILM INCENTIVES (FY 2022)

State	Incentive	Allocated Funds (Millions)
California	20 - 30% Tax Credit	$330
New Mexico	25 - 30% Tax Credit	110
Montana	15 - 35% Tax Credit	12
Utah	20 - 25% Tax Credit / Rebate	7
Oklahoma	20 - 38% Rebate	30
Arizona	15 - 20% Tax Credit	75

Source: Colorado Office of Film Television and Media.

INCENTIVIZED VIDEO GAME PROJECTS 2013-2022

Number of Completed Projects	16
Incentives Paid	$4.2M
Number of Jobs Created	541

Source: Colorado Office of Film Television and Media.

COLORADO FILM INCENTIVE PROGRAM 2013-2022

Number of Completed Projects	127
Incentives Paid	$30.3M
Total Cast and Crew Positions Created	6,077

Source: Colorado Office of Film Television and Media.

The rollout of 5G networks will take some time to cover all of Colorado's population, but Denver and Colorado Springs residents now have 5G coverage. These 5G networks have the promise to be 100 times faster than the current 4G networks and about 10 times faster than 4G LTE networks. The deployment of 5G networks will likely take a number of years to build out; these networks are designed to work on an extremely high bandwidth above 20 GHz, but this high-spectrum band cannot travel more than a mile versus the current 4G LTE that can reach devices within a 20-mile radius. The build out of 5G networks will require numerous small cells/antennas installed 30 feet above the ground, likely on existing utility poles or streetlights. A number of these towers went up in 2019 throughout Denver in public right-of-ways that run between sidewalks and roads. The deployment of these small cells has been occurring a few blocks at a time; it will take a few years before most big population centers in Colorado are covered.

Data Processing

The Data Processing, Hosting, and Related Services industry is made up of companies that provide infrastructure for hosting or data processing services, which may include web hosting, streaming services, or application hosting. With the booming Internet of Things (IoT) taking over every aspect of life, the increasing popularity of AI, big data, and data analytics, skyrocketing data usage, and the accelerated need of businesses to digitize business models, data centers and cloud services are in high demand. Some examples of Colorado companies include Pax8, Ibotta, and Equinix.

The industry is quite large in Colorado, with 1,334 firms employing almost 15,400 people in 2021, and wages are above average, at $147,040. With the ongoing increase in data usage and cloud services, industry employment in the state increased 3.8% in 2021 year-over-year, one of the few bright spots in the Information sector. The industry has observed a five-year employment CAGR of 9.5%, and employment in 2021 was 57.7% above 2016 levels. The growth in firms is more significant, with 14.4% growth in 2021 year-over-year and a five-year CAGR of 17.5%. Pax8, headquartered in Greenwood Village, Colorado, saw three-year revenue growth of 1,131%, ranking it No. 552 on the 2022 Inc. 5000. The outlook for the Data Processing industry is strong, as spending on public cloud services is projected to grow by 20.4% in 2022 worldwide (according to Gartner). According to JLL, Denver is expected to see continued growth in data center usage and space acquisition by technology and finance institutions. The majority of data center demand in the Denver market is driven by technology, health care, banking and financial services, telecom, and retail and e-commerce companies.

Film, Television, and Media

Impact of Colorado Film Incentive

In May 2012, the Colorado Legislature passed a law providing an incentive that allows for a performance-based rebate of up to 20% of qualified Colorado expenditures for films, television series, commercials, and video games produced in Colorado. Since the incentive's inception, the increase in inquiries and applications has been palpable; as of October 2022, $30 million in incentives has been paid or conditionally approved to productions. The Colorado Office of Film, Television & Media (COFTM) reports $183.7 million in actual and predicted production spend and 6,077 cast and crew hires from the start of the program in 2013 through 2022.

Using a multiplier effect, it is estimated that approved productions have (and will) generate over $330 million in economic impact to 55 counties in Colorado. The multiplier effect was extrapolated from the University of Colorado's Leeds School of Business 2011 study "Economic and Fiscal Impact Analysis of Actual Film Budget Scenario on Colorado" and the 2015 study "Colorado Film Incentives and Industry Activity," which were more recently updated to include more contemporary data.

Film Incentive Process

Funding for the Colorado Film Incentive is allocated through the Colorado State Legislature. COFTM receives funding for the film incentive program at the beginning of the fiscal year, which starts on July 1, and funding gets allocated to projects on a first-come, first-served basis. To receive a film incentive, projects must meet

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statutory requirements during the application process, including meeting minimum spends and hiring at least 50% Colorado resident cast and crew members. After completing an internal review process by COFTM, each project is presented to the Economic Development Commission (EDC). The EDC was created by the Colorado General Assembly to promote economic development in Colorado. It consists of 11 Colorado business leaders, with three members appointed by the Senate, three appointed by the House, and five appointed by the governor. This group must vote to approve each project before a purchase order or contract is initiated and principal photography may commence. After completion of the film, television show, commercial, or video game, a Colorado licensed certified public accountant, who has completed training with COFTM, must review and sign-off on the project's qualified expenditures. After an additional review by the COFTM analyst, a check up to the approved incentive amount will be issued to the production company.

Over the last decade, Colorado's content creation scene has benefited from high profile productions from major film studios and reputable independent production companies, such as Universal Studios and Netflix. A few notable films include the Netflix original films "Our Souls at Night" (Robert Redford, Jane Fonda); "Amateur" (Josh Charles, Michael Rainey Jr.); "The Hateful Eight" (Quentin Tarantino); "Furious 7" (Vin Diesel, Paul Walker); "Cop Car" (Kevin Bacon, Cameron Manheim); "Dear Eleanor" (Jessica Alba, Luke Wilson); and "Heaven Sent," a family friendly Christmas film directed by Michael Landon Jr. In television, Colorado received notable screen time with the incentivized Bravo TV series, "Top Chef," which showcased the state's agricultural landscape in addition to scenery in Denver, Boulder, Aspen, and Telluride. Since 2018, we've seen a continued trend in unscripted television productions, with COFTM incentivizing 16 projects produced locally to air on Food Network, PBS, Facebook Live, HGTV, and Velocity Channel.

Growth of the Gaming Industry

Colorado's video game industry has also been boosted by 16 incentives for video game projects since the inception of the program, including various series produced by Deck Nine in Westminster and Project Blue Tree currently being produced in Boulder by Serenity Forge. Deck Nine's most recent release, "Life is Strange: True Colors," debuted in the top 10 highest selling games on Xbox in September 2021, according to the NPD Group, a global market information company, and has since gone on to win a prestigious Video Game Award and was nominated for multiple BAFTA (British Academy of Film and Television Arts) awards. Since the inception of the film incentive program, incentivized gaming projects alone are estimated to have spent (or will spend) $27 million in local qualified expenditures. The vast majority of this spending is made up of wages and payroll spending, and most jobs in the local video game industry have low turnover and pay above-average wages.

In 2023, the video game industry can be expected to continue its exponential growth, both among consumers and producers. Consumers had more opportunity for screen time during the COVID-19 pandemic, and many continue to look to video games as both an escape and a hobby. Local video game companies are part of the multi-billion dollar gaming industry. Because of the COVID-19 pandemic, they became adept at working remotely in a profitable industry, and many local companies are expanding their output and local workforce. The option for working remotely is also creating opportunities for local companies to find and work with talent outside of the Front Range. Deck Nine Games is currently working on a program to hire talent in rural Colorado, expanding their reach and bringing in skilled workers from other areas of Colorado.

Colorado Film and Television Industry in Decline

Production of commercials has become a large part of the state's film market due to Colorado's beautiful natural landscapes and reputable commercial crew base. Thanks to partnerships across the state with 13 COFTM-activated Regional Film Commissions and local film liaisons, the office now has a better scope of commercial activity. Since FY19, Colorado has remained a key location for the commercial industry including content for Skullcandy (Denver) and Harley-Davison (Leadville and Pueblo), Subaru (Telluride), as well as local campaigns for Colorado Great Outdoors (Durango) and the Colorado Lottery (Jefferson County). Additionally, Colorado was a popular music video location for musicians Enrique Iglesias ("Después Que Te Perdí" filmed in Park County), Dan + Shay ("Tequila" filmed in Frisco), and Brooks Forsyth ("Cast My Dreams to the Wind" filmed in Victor). However, as our crew base continues to shrink due to the inconsistent nature of the state's incentive program, it is likely that we will begin to lose this, typically unincentivized, business.

Colorado's infrastructure is also declining. Rental houses, which supply commercial and film productions with camera, lights, electrical equipment and more, and soundstages, which provide adaptable filming locations, are key to any community's film industry and allow access to gear and space for both in- and out-of-state companies. Rental houses are attractive to out-of-state companies because they do not incur the added expense of renting gear that must then be shipped from and returned to another state. Soundstages provide controlled, professional filming spaces that can be manipulated and made to look like any environment a production wants to create or could not find locally. Unfortunately, due to reduced and inconsistent General Fund allocation for the incentive program, Colorado rental houses are seeing a decline in business, and many rental houses and soundstages have downsized or closed in recent years.

In the first five years of the state's performance-based rebate, steady incentive funding led to a substantial increase in film and television crew. At the same time, with fewer incentive dollars and a decrease in larger, out-of-state productions, Colorado's film and television

workforce has begun to look for opportunities in other film-friendly states such as New Mexico and Georgia. Increases to film incentives in Utah and Montana have also attracted projects looking to film in the region.

From the inception of the 20% performance-based rebate through FY22, the Colorado Office of Film Television & Media has been allocated a total of $19.9 million in General Fund funding for incentives. Though continued funding reflects the success of the program thus far, COFTM must compete annually for General Fund dollars. COFTM was allocated $750,000 in FY22, a return to FY20's funding level, though nowhere near competing western states. The COFTM allocation continued to shrink since the office was allocated $5 million in the third year of the program. As a result of lower funding allocations, COFTM made an effort to support Coloradans who live and work within the state by only awarding incentive dollars to in-state applicants between FY18 and FY20. Fewer funds have resulted in fewer incentivized productions and a lower impact on both the state's workforce and economy.

In November of 2020, the Economic Development Commission awarded the film incentive program an additional $2 million in funding. In June 2021, thanks to the passage of HB-1285, COFTM was allocated another one-time infusion of $6 million. This funding, paired with receiving an increase in the long bill allocation to $1.25 million, resulted in COFTM entering FY22 with $7.25 million in available incentive funds. In May of 2022, COFTM received an additional $2 million from HB 22-1408. Thanks to these additional funds, COFTM has had an unprecedented amount of incentive funding available in recent years. This has led to an unprecedented number of projects being supported through the film incentive and the attraction of various larger scale and higher profile projects including George Nolfi's "Elevation," an $18 million feature film, and two HGTV reality projects: "Hometown Takeover" and "Rock the Block". The effects of increased incentive funding are clear; however, the effectiveness of the program is dependent on maintaining a consistent level of funding that can be relied upon by Colorado crew members and both in- and out-of-state producers. If the incentive continues to fluctuate year after year, productions will continue picking other states over Colorado for their projects, the local industry will not be able to support local talent, and the crew will continue to leave the state and not return, gutting Colorado of its skilled workforce and diminishing opportunities for future productions to film in the state.

The total Colorado expenditure associated with projects incentivized by COFTM dropped drastically in years in which the budget was cut. Similarly, the number of cast and crew positions associated with projects incentivized by COFTM dropped in years with decreased incentive funding. Productions that were funded in years with fewer incentive dollars available tended to be smaller, with budgets that could only support smaller crews. Both cast and crew positions and overall local production spending have increased in recent years, as compared to years with lower incentive budgets, thanks to additional funding for the incentive program from the Economic

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Development Commissions' Strategic Fund (in October 2019) and the Colorado Legislature in 2021 and 2022.

Changes to the Colorado Film Incentive and Its Future

The film industry is incentive-driven. Production companies regularly make filming location decisions based on the production budget's bottom line and any financial support they may receive from local governments. Colorado is constantly in competition with nearby states such as New Mexico, Montana, Arizona, and Utah for film production opportunities, and other western states receive much higher levels of incentive funding. As a way to make Colorado more competitive, HB 22-1408 was passed in May 2022. The bill did three things: it provided $2 million in additional incentive funding, it allowed the executive director of the Office of Economic Development (of which OEDIT is part) to authorize the approval of an incentive in an amount that exceeds 20% of local expenditures, and it created a Film Incentive Task Force.

The Film Incentive Task Force includes state legislators, representatives from local SAG-AFTRA and IATSE unions, a representative from the Motion Picture Association, a representative from a Colorado business school, and the state's film commissioner. The purpose of the task force is to determine how to make Colorado's film incentive more effective. The task force will be putting out a study with recommendations by the end of 2022, and based on that study, the structure, funding level, and consistency of the Colorado Film Incentive may change during the 2022-2023 legislative session.

Limited and inconsistent funding for Colorado's incentive program puts the local industry at risk and takes away opportunities from Coloradans. Inquiring production companies with budgets too large to be fully supported by Colorado's limited funds move their films to neighboring states that offer similar scenery and larger funding opportunities. The chart on page 59 details incentives from competing western states, all of which have significantly more funding available than Colorado. Many other states also have various additional incentives for productions that meet certain requirements including filming in rural or economically disadvantaged areas, filming in certain cities or municipalities that have their own additional incentives, and relocating a television show to the state, among others. Some states have, at this point, well-established film incentive programs, while others are still catching up. Arizona is one of the latest states to create a film incentive program, funding their program at $75 million for 2023, $100 million for 2024, and $125 million per year from 2025 though at least 2043, when the bill is set to sunset.

The film industry is incentive-driven. Colorado's content creation activity will continue to reflect the incentive program's annual allocation. ✜

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Financial Activities

The Financial Activities industry consists of two sectors that comprised 6.2% of statewide employment in 2022: (1) Finance and Insurance, and (2) Real Estate and Rental and Leasing. Financial Activities underperformed other industries in 2022, growing at just 0.6%. Growth is expected to falter in 2023, decreasing 2.2% or 4,000 jobs.

Approximately 69% of the employees in the Financial Activities industry work in the Finance and Insurance sector (i.e., banks, credit unions, securities and investment firms, insurance carriers, etc.). About 31% of the workers are employed in the Real Estate and Rental and Leasing Sector, which includes real estate-related payroll jobs and companies that lease anything from real estate to equipment to formal wear.

FINANCIAL ACTIVITIES EMPLOYMENT 2013-2023 (In Thousands)

Year	Finance and Insurance	Real Estate and Rental and Leasing	Total
2013	106.8	44.2	151.0
2014	107.8	46.1	153.9
2015	110.6	48.4	159.0
2016	113.6	50.2	163.9
2017	116.0	52.2	168.1
2018	117.6	54.0	171.6
2019	118.0	56.6	174.6
2020	118.6	54.2	172.8
2021[a]	121.2	56.5	177.7
2022[b]	121.7	57.0	178.7
2023[c]	117.9	56.8	174.7

[a]Revised. [b]Estimated. [c]Forecast.

Note: Sum of the sectors may not equal the total due to rounding.
Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

Finance and Insurance

Capital Markets

Price action in the capital markets reflects the prevailing economic environment. The capital markets are a discounting mechanism that respond to every piece of data, every policy that influences the value of an asset or a future cashflow. Consequently, at times when the environment is in turmoil, when society and/or economic fundamentals are in flux, volatility ensues. We are in such a period with U.S. stock indices down double digits heading into year-end 2022, Bitcoin's value has fallen by more than half, and the rate for a 30-year fixed mortgage has more than doubled. Ergo, it is worth revisiting a quote from famed economist and investor Benjamin Graham: "In the short run, the market is a voting machine but in the long run, it is a weighing machine."

The capital markets are being buffeted by a three-ring circus consisting of world events, economic events, and political events. On the world events front, that includes Russia's invasion of its neighbor Ukraine in violation of the 1994 Budapest Memorandum that Russia signed promising to never invade Ukraine if it gave up its nuclear capabilities. We also find China attempting to assert its will. Before the British handed over Hong Kong in 1997, China agreed to allow the region significant political autonomy for 50 years under a policy known as one country, two systems. However, in 2020, China imposed a national security law that gave it broad powers to punish critics and dissension. Now China appears to be focused on asserting its will upon Taiwan, which it deems a renegade province, despite having separate governments since 1949. Important to world trade, Taiwan is home to more than 90% of the manufacturing capacity for the world's most advanced semiconductors, according to a 2021 Boston Consulting Group report. A world in conflict is not conducive to global trade.

How did we get here? China was admitted into the World Trade Organization in 2001 and that marked a shift to globalization. China became the low-cost provider of goods to the world. At first, the goods were simple items like trinkets and apparel. Then they evolved to provide more complex manufacturing. More and more electronic components began to be manufactured and assembled in China. Despite a distance of more than 18,000 nautical miles, it was cheaper to source products from China than the United States.

INDUSTRY SNAPSHOT FINANCIAL ACTIVITIES

Nominal GDP, 2021 ($ Billions)	89.9
Real GDP, 2021 ($ Billions, 2012 Dollars)	69.8
2021 Real GDP Growth Rate	6.0%
Total Employment, 2021 (Thousands)	177.7
2021 Employment Growth Rate	2.8%
Employment Growth National Rank	12
Share of Colorado Employment	6.5%
Share of National Employment	6.0%
Average Wage, 2021	104,280
Percent of Statewide Average Wage	145.8%
2021 Average Wage Growth Rate	7.2%

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics.

When the Berlin Wall fell in 1989, followed by the collapse of the USSR, the U.S. and NATO countries benefited from the war dividend. No longer did we have to expend significant resources to build thousands of tanks and other military hardware and fund the deployment of troops across the European continent to face the threat of a Soviet invasion. We went from a world that was effectively divided between the two superpowers of the U.S. and the USSR to one in which the U.S. was the sole superpower. Global trade began to flourish.

The prevailing wisdom was that an economically entwined world would support peace. Russia became

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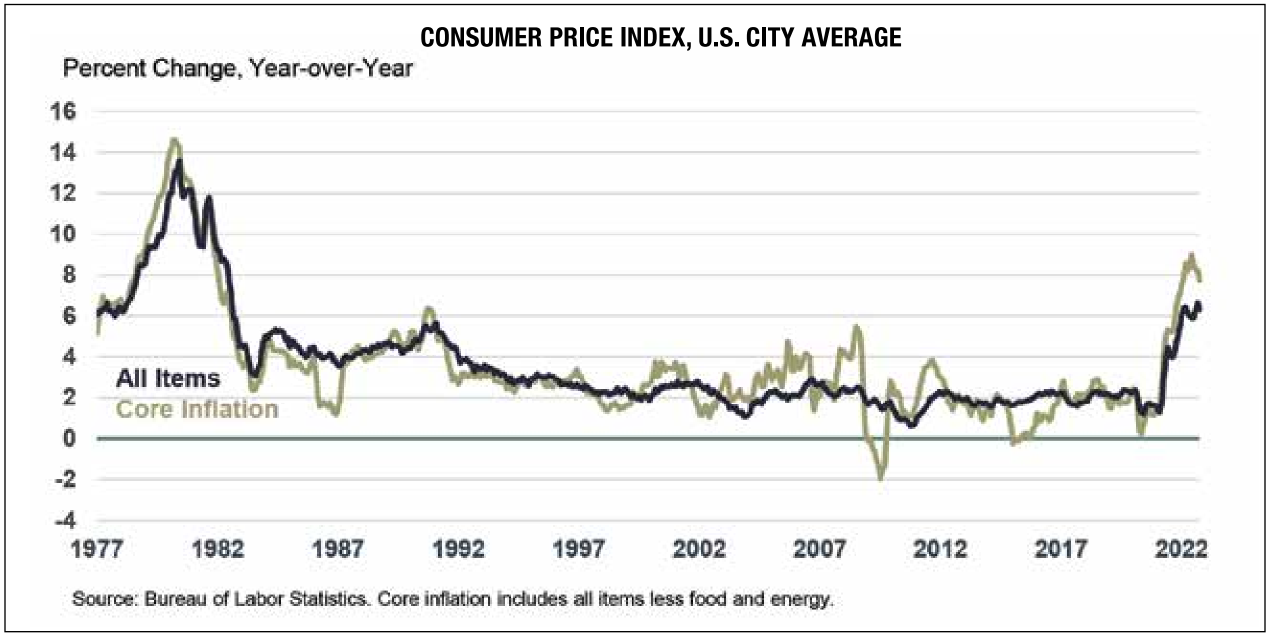

a leading producer of petroleum products. In the same vein as global trade muting the potential for war when countries are economically tied, Germany began purchasing natural gas from the Soviet Union in 1970. At the time, Germany's economics ministry assured NATO that there was no cause for alarm. Germany would never rely on Russia for even 10% of its gas supplies. Fast forward half a century later and Germany was importing over 50% of its natural gas from Russia. Germany became dependent upon cheap natural gas from Russia, leveraging that cheap economic input to power their factories and steel manufacturing, which expanded their GDP.

As Russia's petroleum industry developed and grew, one of the byproducts was fertilizer. In fact, Russia is the world's largest exporter of fertilizers, accounting for 23% of ammonia exports, 14% of urea exports, 10% of process phosphates, and 21% of potash exports, according to data from the Fertilizer Institute. This created a dependency upon Russia for key inputs to the global agriculture industry.

On the economic front, specifically monetary policy, we have experienced significant distortions in asset values and capital allocation as a result of the unprecedented actions to stabilize the economy in the aftermath of the Great Financial Crisis in 2008. While the Fed Funds rate (overnight lending rate that banks charge each other to borrow or lend excess reserves) hit a peak of 20% in 1980 to fight double-digit inflation, it went to zero for the first time in 2008 to fuel the post Great Financial Crisis recovery and again in response to COVID in 2020. During that 12-year period there was a gradual rise to a 2.5% Fed Funds rate in 2018, then less than robust economic growth compelled the Fed to start cutting again in 2019. In 2008, when this key interest rate was first taken to zero, the Federal Reserve also implemented quantitative easing (QE) whereby it purchased assets under the pretext of supporting the financial system. Over time, the Federal Reserve balance sheet grew from less than $900 billion to nearly $9 trillion. These actions were taken in response to disinflation and fears of deflation with the hope that these efforts would stimulate the economy. Low interest rates resulted in increased risk taking by investors. No longer was it possible to generate a palatable low risk return by purchasing U.S. government debt or highly rated corporate bonds. The 10-year U.S. Treasury had languished below 4% since 2008 (and fell to a record low of 0.32% in March 2020). In 2021, the U.S. High Yield Index (below investment grade, aka "junk") fell below 4% (high yield would be a relative term in this context). As a result, growth stocks became an attractive proxy for duration (aka, long-term bonds) where the 30-year U.S. Treasury has yielded less than 4.5% for more than a decade. When attempting to value a company or a project, analysts discount expected future cashflows using the appropriate discount yield. If prevailing market yields are exceedingly low, this distorts the time value of money and virtually any value assumption can look compelling. This inflated asset values, driving the NASDAQ to return over 35% in 2019, over 40% in 2020, and over 21% in 2021. Meanwhile, U.S. GDP in 2019 was 2.3%, in 2020 it was -3.4%, and in 2021 it was 5.7%.

Capital was cheap and abundant and gave birth to companies like WeWork, Uber, and Lyft, which were subsidized with cheap and abundant capital from their private equity sponsors. Rather than focusing upon competing with existing businesses head-to-head to determine the most efficient users of capital and profit generation, their business model was to capture market share from legacy businesses while providing their services below cost, subsidized by cheap capital and willing investors overreaching for a large return. The question still to be answered is, after years of operating losses, starving their competitors and capturing market share, can companies like these raise their prices to a profitable level and retain enough users at those prices for long-term viability?

Enter COVID, a global pandemic that briefly collapsed GDP. Past economic crises had seen government intervention that supported financial institutions and inflated financial assets. During COVID, in addition to a return to zero interest policy (ZIRP), economic stimulus was

FINANCIAL MARKETS: STOCKS
2012-2022 YTD

	Index				Annual Percent Change			
Year-End Close	S&P 500	Dow Jones	NASDAQ	Russell 2000	S&P 500	Dow Jones	NASDAQ	Russell 2000
2012	1,258	12,218	2,605	741	0.0%	5.5%	-1.8%	-5.5%
2013	1,426	13,104	3,020	849	13.4	7.3	15.9	14.6
2014	1,848	16,577	4,177	1,164	29.6	26.5	38.3	37.0
2015	2,059	17,823	4,736	1,205	11.4	7.5	13.4	3.5
2016	2,044	17,425	5,007	1,136	-0.7	-2.2	5.7	-5.7
2017	2,239	19,763	5,383	1,357	9.5	13.4	7.5	19.5
2018	2,674	24,719	6,903	1,536	19.4	25.1	28.2	13.1
2019	3,231	28,538	8,973	1,668	20.8	15.5	30.0	8.7
2020	3,756	30,606	12,888	1,975	16.3	7.2	43.6	18.4
2021	4,766	36,338	15,645	2,245	26.9	18.7	21.4	13.7
YTD Nov. 18, 2021	4,705	35,871	15,994	2,364	31.9	21.9	35.5	33.6
YTD Nov. 18, 2022	3,965	33,746	11,146	1,850	-15.7	-5.9	-30.3	-21.7

Source: Yahoo! Finance. Note: YTD represents the growth year-to-date from the prior end-of-year close.

delivered in four tranches across two administrations directly to individuals. Just as we learned in the run-up to the Great Financial Crisis, if you provide abundant credit to individual consumers, many will take advantage and borrow to their credit limit as they repeatedly spend. When COVID economic stimulus in the form of cash was delivered to individuals, many spent it nearly as fast as they received it. Knowledge workers had successfully made the pivot to work-from-home (WFH), so their income was not in jeopardy and the government stimulus checks were seen as a windfall. Capital and liquidity were cheap and abundant. Supply chains had been stretched due to COVID and remain stretched in the face of China's ongoing zero-COVID policy that shuts down factories and entire towns when a COVID outbreak is detected. Many consumers were flush with cash thanks to the aforementioned stimulus. Consequently, consumer demand remained while supply was constrained, and the result was increased prices. Many assumed, including members of the Federal Reserve, that this inflation would be transitory and would resolve itself as supply chain disruptions were rectified.

Enter Putin, Russia's president, who ordered the invasion of his neighbor Ukraine at the end of February 2022. Now Europe is the stage for a hot war, evoking bad memories of the start of prior world wars. Although Ukraine is not a member of NATO, it shares borders with four NATO countries—Hungary, Poland, Romania, and Slovakia—that were eager to join NATO due to fear of past Russian aggression. Suddenly the western world learned that global trade had not eliminated the animosity that former Soviet KGB Colonel Putin felt for the western world, and it did not dissuade his territorial aspirations as countless displaced families and thousands of casualties can attest. In fact, it would appear that Putin was counting on the greed of the western world and Europe's dependence upon Russian energy to enable him to take control of Ukraine with minimal consequences. That might have been the case were it not for the fact that the rapid collapse of Ukraine did not happen. Not only did Kyiv, Ukraine's capitol, not fall within the first 72 hours, but Russian troops suffered one humiliating loss after another. As the war drags on, it was the spark that ignited the inflationary kindling that had been smoldering, sending inflation rocketing to levels not seen in decades. Eurozone inflation for the month of October was reported at 10.7%, the highest ever monthly reading since the Eurozone's formation in 1999.

The gas pipeline, Nord Stream, that delivered cheap Russian natural gas to Europe below the waters of the Baltic Sea suffered an explosion of unknown origin (not that Europe wanted to purchase Russian gas that would have funded the war and suffering in their backyard). The world has undergone a crash course in the economic importance of Russia and Ukraine and learned that Russia is one of the largest exporters of fertilizers to the global agriculture industry and that Ukraine is one of the top producers and exporters of sunflower meal, oil, and seed. People also learned how dependent Europe had become on Russian energy. Ukraine was also a large exporter of corn and wheat. One of the effects of war is that global trade is disrupted. When supply is disrupted or cut off while demand remains, higher prices ensue. Without key agricultural inputs, global shortages ensue. Raise the cost of energy, a key industry input, and prices must increase, and that ripples across the economic landscape.

The Federal Reserve has a dual mandate—stable prices and full employment. The Federal Reserve's stated inflation target is 2%. At the start of 2022, the inflation rate exceeded 7%. In March 2022, the Fed moved the Fed Funds target rate off zero with a 25 basis points (bps)

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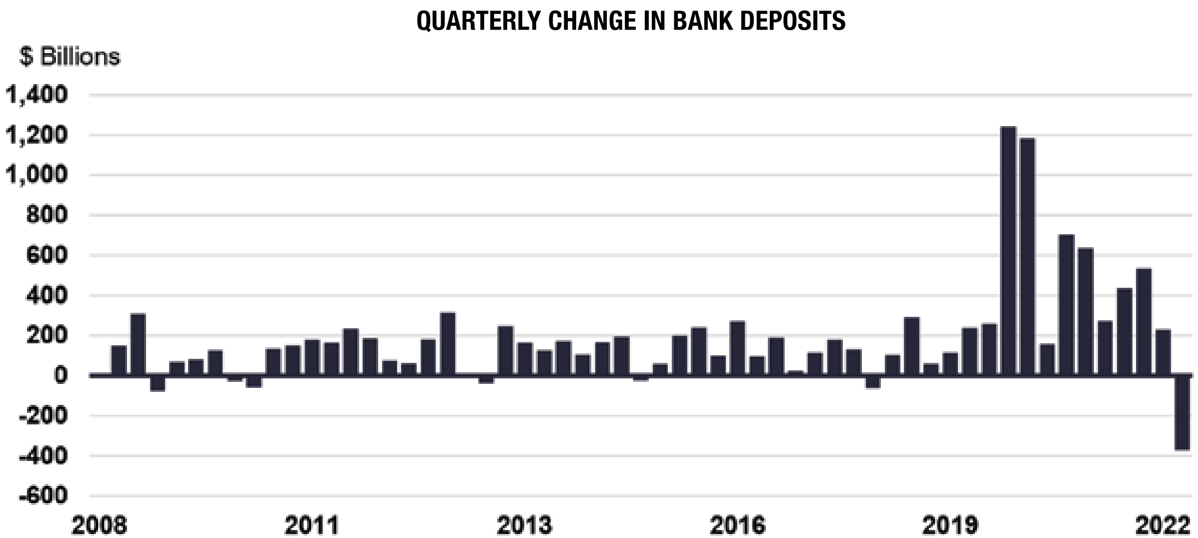
Source: Board of Governors of the Federal Reserve System.

increase, taking the target 0.25% to 0.50%. In May 2022, they raised rates by 50 bps. Inflationary pressure continued to increase. This prompted the Fed to accelerate, or front-load, their rate increases with an increase of 75 bps. This took the Fed Funds target to 1.75%. In June, inflation was reported at more than 9%. Over the next few months, inflation has moderated but has remained stubbornly above 8%. Subsequently, the Fed increased rates by 75 bps at their next two Federal Open Market Committee (FOMC) meetings, taking the target rate to 3.25%. At the time of this writing, the November 2022 FOMC meeting has not yet occurred. The expectation is for another 75 bps increase, taking the target rate to 4%. Presently, the Fed is expected to be nearing their terminal-rate target. The assumption is for a 50 bps increase at the December meeting and a 25 bps increase to cap this process in February 2023, reaching a 4.75% terminal rate. While we are nowhere near the 20% Fed Funds rate peak of the former chair of the Federal Reserve Paul Volcker years, this inflationary cycle has witnessed a nearly 20-fold increase given a starting point of 0.0% to 0.25%. Needless to say, the stock market has experienced extreme price pressure and volatility as a result.

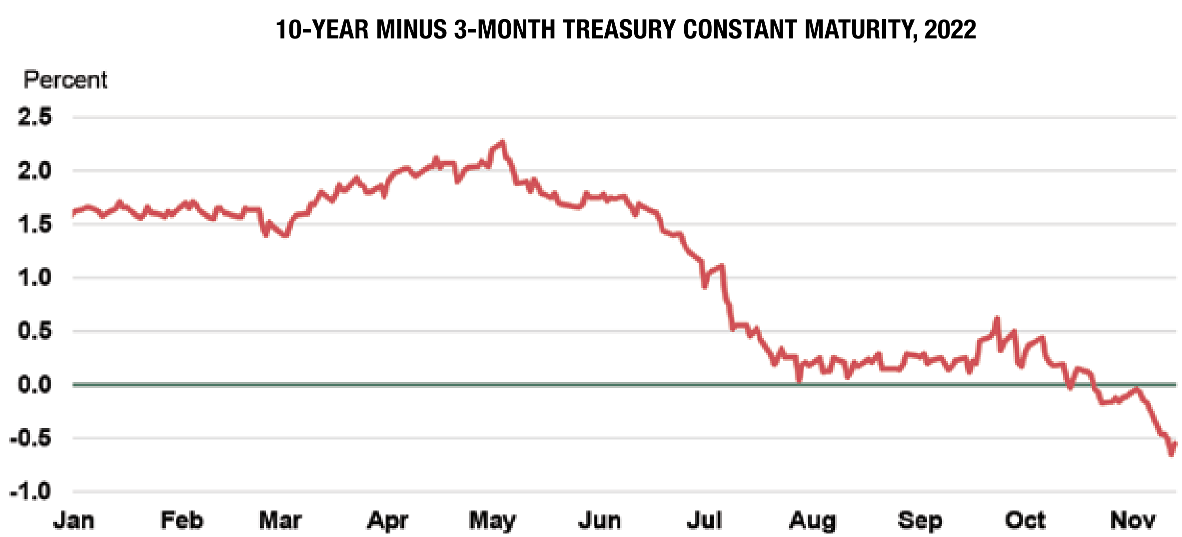
The question for the capital markets and the economy at large is what will the terminal rate be and how long will the Fed hold it at said rate? We must recognize that most market participants are in very unfamiliar territory. Anyone under the age of 60 has little, if any, experience with the war footing of a central bank focused on defeating inflation. The double-digit inflation of the 70s was finally defeated in the early 1980s only after the Fed Funds rate peaked at 20%, sending the economy into a deep recession—a recession that many consider to have been the worst since World War II. Forty years later and market participants have only known an accommodative Fed that comes to the rescue at the first sign of economic stress.

Following the June 2022 FOMC meeting, the stock market began to rebound under the misperception that the Fed would not do anything to damage the economy or further stress the capital markets. In short, they were expecting the "Fed Put" was still in play; at the first sign of economic distress or further erosion in the stock market, the presumption was that the Fed would be accommodative. Under this belief, the S&P 500 rallied more than 17% from June 16 to August 16. During this time, countless Fed speakers emphasized that this time was in fact different. This is an inflation-fighting Fed. The emphasis is on defeating inflation before inflationary assumptions begin to be anchored into the economy. The intent is to raise the Fed Funds rate to economically restrictive territory and hold it there for a significant period to ensure that inflation does not reignite like a smoldering wildfire as happened during the high inflation experience in the 1970s to early 80s. Ultimately, that implies demand destruction.

Getting inflation to the Fed's stated target of 2% will take time. Roughly 30% of the consumer price index, CPI, is driven by shelter. Housing costs have been inflated by low interest rates. Now, with the rate for a 30-year fixed rate mortgage exceeding 7%, home prices are beginning to crack and move lower. Elevated mortgage rates proved a shock to home buyers that just a year ago could have secured a 30-year fixed mortgage for less than 3%. Nevertheless, we all need shelter, and as such, demand is constant while the housing supply continues to be insufficient to meet demand and a higher cost of capital will inhibit new construction. As such, rents may remain resilient despite the likelihood that real estate prices will decline in the face of higher interest rates. The labor market is also at historically tight levels, and comments from the Fed suggest they see the labor market as too tight. A tight labor market puts upward pressure on wages and further fuels demand, which fuels inflationary pressure. Fed speakers have said that the risk of undershooting on rate hikes is greater than the risk of overdoing it. This paints a picture of a very different Federal Reserve than we have become accustomed. Essentially, it



Source: Federal Deposit Insurance Corporation. Includes all FDIC-insured institutions.



Source: Federal Reserve Bank of St. Louis.

sounds like they will tighten until something breaks, and assuming we have seen peak inflation, they will then hold at that rate until satisfied that inflation is contained.

Thus far, the economic data have supported this approach. Inflation has remained stubbornly above 8%, the labor market has remained robust, and although Q1 and Q2 2022 GDP was reported as negative, Q3 GDP was reported at +2.6%. In late September, we saw signs of financial distress in the UK pension system. This prompted an emergency meeting of the Bank of England, which announced a round of quantitative easing to stabilize their bond market. When this happened, U.S. stocks wavered but then started to move higher on hopes that the Fed might be prompted to pause. Some Fed speakers made reference to being aware of global financial system stress; however, the emphasis for the Fed continued to be on fighting inflation. Will we see additional signs of financial stress in the months ahead? With such a rapid, front-end loaded increase in interest rates, that would be a reasonable assumption. It generally takes a minimum of six to nine months for changes in monetary policy to be felt throughout the economy, and it can take as long as one to two years. Consequently, at the earliest, we will feel the consequences of these rate increases as we head into year-end 2022 and more likely as we head into the prime home sales season in the summer of 2023.

At the time of this writing, we have started to receive Q3 2022 earnings reports. Earnings erosion and margin compression is evident as is the impact of higher interest rates, a robust U.S. dollar, continued supply chain issues, higher consumer prices, and geopolitical stress are showing in the quality of earnings of mega-cap companies. Alphabet, GOOG, reported that their ad revenue fell by nearly $2 billion, and in the aftermath, their stock price fell approximately 7%. Microsoft, MSFT, reported their slowest earnings growth in five years and also fell approximately 7% in the aftermath. Meta, formerly known as Facebook, shares fell approximately 25% when they reported lower revenues and margin compression.

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The expectation is that there will be further deterioration in corporate earnings and that stock prices will have to adjust to reflect a more challenging operating environment with higher interest rates and cost of capital. Look at the term spread between the 10-year Treasury bond rate minus the three-month T-bill rate, one of the leading recession indicators tracked by the New York Federal Reserve. We find that spread has begun to turn negative in the final days of October, ahead of an expected 75 bps rate increase on November 2, 2022, by the Fed. This suggests the probability we will enter a recession in 2023 is increasing. Many think it is a foregone conclusion as the Fed has a poor track record of engineering a soft economic landing.

By the time this is published, we will know the results of the mid-term elections. Whether the GOP takes control of the House, or if they can retain control of the Senate, or if the Democrats increase their control is moot. The level of divisiveness and vitriol that has defined our political system, is sadly, unlikely to go away soon. Capital markets often rally when political control is split between parties because the markets have learned it is unlikely that significant legislation will pass. The status quo is a known quantity. Investors and corporate leaders can plan when they don't have to worry about the rules changing every election cycle. But what happens if the Federal Reserve's monetary policy, in the quest to quell inflation and reset asset values, brings about economic pain? Will the Federal Reserve, under the leadership of Chair Jerome Powell have the fortitude to stay the course in the inflationary battle? Will elected leadership pressure the Federal Reserve to ignore inflation and pivot to accommodative policy as happened in the 1970s? Will we have to repeat the past with a series of pivots that enabled inflation to reappear time and again as it did in the 70s? Federal Reserve Chair Paul Volker was appointed in 1979 with a promise that he would free us from the corrosive effects of inflation, but the cure was painful. The cure was a 20% Fed Funds rate and a deep recession. However, his success led us to this juncture where after 40 years, most in the U.S. don't remember how detrimental inflation is to an economy and society itself.

Political antics are not unique to the United States. Turkey's President Recep Tayyip Erdogan has called high interest rates the "mother of all evil." Turkey's inflation rate in 2022 has exceeded 80%! Yet Erdogan has pledged not to raise interest rates, and in October, surprised analysts by cutting interest rates. The value of the Turkish lira is at an all-time low and has lost more than 50% vs. the U.S. dollar. He claims that rising interest rates causes inflation and has indicated he will lower interest rates again in November. In Europe, Italy has elected a fan of Mussolini. The UK seems to have its challenges, with Liz Truss resigning after six weeks in office and becoming the shortest-serving prime minister in British history. The political pendulum is swinging rapidly around the globe, and the impact is multifaceted, leading to erratic price action in the capital markets as countless variables are in play.

Looking ahead to 2023, all eyes will be on the inflation data and the jobs data. In the case of inflation, the first question will be if we saw the U.S. inflation peak in June 2022 when it eclipsed 9%. The next question is, how quickly will core inflation decelerate? Could we see a return to disinflation or even deflation were geopolitical tensions to cease? What if Putin were no longer in power and his replacement leaned more toward glasnost and perestroika (openness and political reform)? The alternative is horrific to contemplate. What if Putin follows through with his threat to take the Ukraine war nuclear? What if China's Xi decides to invade Taiwan or further exerts his will in the contested areas of the South China Sea? The calculus of possibility vs. probability is constantly shifting in the current environment.

The jobs data may be the crux to divining the Fed's plans. A slackening in the labor market is seen by many as necessary to reduce inflation-causing demand while global supply chains are disrupted, and the U.S. and its allies shift to on-shore or near-shore production. Were we to see a steady decline in core inflation, coupled with a slackening in the labor market, we could reasonably expect the Fed to pivot to a less restrictive posture. The Fed's unemployment forecast is for a 4.4% unemployment rate in 2023 and 2024, up from September 2022's 3.5% unemployment rate. Meanwhile, each utterance from the Federal Reserve will be dissected with a fervor for any indication of a pause or pivot in monetary policy. Analysts will be combing corporate earnings reports to determine which industries and companies are most impacted by the increased cost of capital as a result of the dramatic increase in interest rates. They will also be watching to see how consumer behavior is impacted. During Amazon's Q3 earnings call, they warned about weak holiday sales as their e-commerce and cloud services business growth had slowed. Just as we've seen during periods of elevated gasoline prices, the impact of higher prices upon consumers is regressive in that it impacts lower wage earners more so than high wage earners. This could make the Fed's inflation-fighting job that much more difficult if demand remains elevated, supported by higher wage consumers.

When we find ourselves at an inflection point, opinions can become polarized, which feeds into market volatility. We have witnessed this already in 2022 as market volatility has increased, whipsawing some investors as they attempt to pick market tops and bottoms. At the end of October 2022, the Dow Jones was down -9.9% YTD, the Russell 2000 was down -17.7% YTD, the S&P 500 was down -18.8% YTD, and the NASDAQ was down -29.8% YTD. The two-year U.S. Treasury started 2022 at approximately 0.75%, and at the start of November, was trading at more than 4.5%. The 10-year U.S. Treasury started 2022 at approximately 1.65% and has been as high as 4.33% in mid-October. The U.S. bond market has had one of its worst years ever, with the U.S. Aggregate index down nearly -16% YTD at the end of October. (Understand that as bond yields go up, prices go down.) The fact that elevated inflation has fueled increased performance correlation between asset classes has resulted in historically bad performance for the classic 60% stocks/40% bonds portfolio with a YTD return as of the end of

October 2022 of approximately -17%. This begs the question: If consumers see their home values decline and the value of their retirement funds decline, how will this hit to wealth impact consumer spending, regardless of household income?

The outlook for 2023 is one of lowered expectations. We will hope for the best, but prudence calls for caution. Interest rate sensitive sectors have already begun shedding jobs, like those in the home mortgage space. Lenders in other market segments have also become cautious, and we may see a loss of jobs or at least a reshuffling of jobs as loan demand moderates in the face of interest rates that have more than doubled. There may be a demand for those experienced in working with stressed borrowers and troubled loans. The pressure on home prices could improve affordability for first-time homebuyers who have been frustrated by high prices that went dramatically higher in the wake of COVID amid a shift to work-from-home where extra space and a tranquil yard became a must have. Colorado may also benefit from the insecurity the world feels as the Russian war against Ukraine drags on and China flexes its military muscles. A tremendous amount of military hardware and ordinance has been expended in the Ukraine war, and this will likely keep defense contractors busy for years to come. A look at the Glassdoor jobs website shows a number of defense contractors hiring in the Colorado Springs area. Colorado is host to many companies in the defense and aerospace industry, with Lockheed Martin's facilities in the southwest metro and Ball Corp in the north metro area leaping to mind. The energy sector is also a bright spot for Colorado. At the end of October, the energy sector of the stock market was up approximately 69% YTD in contrast to the double-digit negative return for the S&P 500. Renewable energy sources are also expected to see increased demand, both due to environmental and climate issues and by virtue of the fact that offshore sources of petroleum are increasingly hostile towards the West. For investors with a multiyear horizon, a Warren Buffett-ism comes to mind—focus upon profitable, quality companies and when the market pulls back, consider it a "sale." Quality is often what bounces back first in a recovery. This next year is expected to be defined by slower growth and a reset in asset prices as long as the Federal Reserve remains focused upon inflation.

Commercial Banking

Currently, there are 129 banks in Colorado; 52 are state state-chartered banks and 77 are federally chartered. Commercial banks have total assets of $84.7 billion. Over the year, there has been no significant change in market share. While a shift took place, the three largest banks continue to hold 45.3% of the market share. Their Colorado deposits range from $23.9 billion to $40.9 billion. This is a 7% increase in deposits from the previous year.

State-chartered banks realized a 17.6% increase in deposits from the previous year. Deposits were bolstered by federal stimulus support.

Going into a season of economic uncertainty, Colorado commercial banks remain economically sound.

Capital, Earnings Loans and Reserves – U.S. Data

Commercial banks continue to be the most financially sound in the world. In 2022, U.S. banks held more than $2.25 trillion in capital to support all banking activities. This is a slight reduction over the previous year. Banks chartered in Colorado had about $6 billion in capital. Reserves for loan losses provide an additional buffer. That financial soundness has helped bolster the country's FDIC-insured institutions.

Over the year, commercial banking has seen loan growth strengthen, net interest income grow, and most asset quality measures improve. Further, the industry remains well-capitalized and highly liquid. At the same time, the banking industry reported a moderate decline in quarterly net income from one year ago, primarily because of an increase in provision expense at the largest institutions.

The banking industry continues to face significant downside risks. The increase in provision expense—the amount set aside by institutions to protect against future credit losses—reflects the banking industry's recognition of risks related to persistent economic uncertainties, and slowing economic growth, as well as the increase in loan balances. Banks continue to prepare for future risks, including the effects of high inflation, rapidly rising market interest rates, and continued geopolitical uncertainty. Taken together, these risks, may reduce profitability, weaken credit quality and capital, and limit loan growth in coming quarters.

Higher interest rates may also erode real estate and other asset values as well as hamper borrowers' loan repayment ability.

A Glimpse at Community Banks

Community banks represent 91% of insured institutions and have reported net income of $7 billion in first quarter 2022, down $1.1 billion (14%) from a year ago. Lower net gains on loan sales and higher noninterest expenses offset growth in net interest income and lower provisions. The community bank pretax return on average assets ratio decreased 33 bps from one year ago and 14 bps from one quarter ago to 1.25%, as asset growth continued, and net income declined.

Interest Rates

The net interest margin (NIM) increased 26 bps over the previous quarter and 29 bps from the previous year-ago quarter to 2.8%. The year-over-year growth was the largest reported increase in quarterly NIM since second quarter 2010. Despite this improvement, NIM remains below the prepandemic average of 3.25%.

The Federal Reserve Board has enacted measures to dampen inflation with four interest rate hikes. While the

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Federal Reserve Board rushed to cut interest rates during the pandemic, it has now launched the most aggressive effort to raise borrowing costs in 40 years. As of November 2022, the U.S. Central Bank had raised benchmark interest rates that influence almost all borrowing costs to 3.75%. This is a historic high since 2008. The Federal Reserve has signaled that they are not done raising rates in response to the economy.

Customer Debt

Household debt saw a significant increase in Q2 2022 involving mortgage loans and auto loans. Reports show that household debt in Q2 increased by over $312 billion (2%) to $16.2 trillion. This is a $1 trillion increase over a one-year period.

Mortgage balances rose with the robust housing market in Q2 2022 by $207 billion. Outstanding mortgage debt in the United States is now $11.4 trillion. This is a net year-over-year increase of $1.4 trillion. Mortgage originations slightly declined in the second quarter and stood at $758 billion.

Credit card balances continue to rise with an alarming increase of $46 billion from Q1 2022 to Q2 2022. This is a 13% cumulative increase in credit card balances since Q2 2021 and reflects the largest in more than 20 years. This is driven in part by rising prices.

Outstanding student loan debt is $1.6 trillion. This is an increase of 6% increase from the previous year. Delinquency levels remain low at 5% due to the help of the CARES Act, which provided emergency relief for federal student loans and loan forbearance from the Department of Education. Federal and private loans not owned by the U.S. Department of Education are not covered under the CARES Act or loan forbearances.

Loan Demand and Fee Income

Net operating revenues (net interest income and noninterest income) rose 6.2% to $228 billion in Q2 2022, with strong net interest income growth and a slight increase (0.3% or $232.2 million) of noninterest income.

Banking is impacted by deteriorating economic conditions and the implementation of the current expected credit losses (CECL) accounting methodology that requires banks to allocate expected losses over the life of the loan. CECL adopters reported aggregate provisions of $4.6 billion in first quarter, $5.8 billion more than fourth quarter 2021, and $19.1 billion more than one year ago. Provision expense for banks that have not adopted CECL accounting totaled $652.8 million (up $94.5 million from a quarter ago and up $585 million from one year ago).

Consumer Behavior

Consumer spending has remained high, in part a reflection of higher prices but also continued demand for goods and services.

Total household debt increased in the second quarter of 2022 by $312 billion. Balances are now $2 trillion higher than at the end of 2019 prior to the pandemic. The share of current debt transitioning into delinquency increased modestly (0.5%) for all debt types but remains historically very low.

Deposits in the first quarter of 2022 grew but at a slower rate, reflecting cost of living. Deposits grew $230.7 billion (1.2%) in first quarter. This was the slowest rate of deposit growth since third quarter 2020.

Mergers and Acquisitions

The number of FDIC-insured commercial banks and savings institutions declined from 4,978 to 4,796 year-over-year from Q2 2020 to Q2 2022. Mergers account for the biggest decrease in these numbers.

A 2022 Deloitte report on activity in banking says, "In the United States, deal activity in 2022 should surpass the pre-pandemic volume. Low interest rates, excess liquidity, and competition from fintechs, digital-only banks, and bigtechs will likely pressure profitability, creating a sense of urgency among sellers. Meanwhile, attractive stock multiples and healthy capital levels could fuel buyers' appetites."

Mergers and acquisitions (M&A) activity in Colorado slowed over the last several years. Regulation has dampened once-favorable drivers for continued mergers and acquisitions in banking. Mergers often result in increased capital and the ability to offer new services.

Regulation

The financial services industry did not know what to expect with the new presidential administration. A year later, the industry has spent significant effort advocating for regulations that represent safety and soundness and protect the consumer.

The U.S. Chamber of Commerce, American Bankers Association, and five other banking and business groups filed a lawsuit against the Consumer Financial Protection Bureau (CFPB) and its director, Rohit Chopra, in U.S. District Court for the Eastern District of Texas, challenging the agency's recent update to the Unfair, Deceptive, or Abusive Acts or Practices section of its examination manual.

"The Consumer Financial Protection Bureau is operating beyond its statutory authority and in the process creating legal uncertainty that will result in fewer financial products available to consumers," said U.S. Chamber Executive Vice President and Chief Policy Officer Neil Bradley in a press release. "The CFPB is pursuing an ideological agenda that goes well beyond what is authorized by law, and the chamber will not hesitate to hold them accountable."

The banking industry was successful in its opposition of congressional efforts to require banks to report all deposits $600 and greater to the Internal Revenue Service as an intrusion in customers' privacy and accounts.

Marijuana Banking in Colorado

The banking industry supports Colorado Rep. Ed Perlmutter's Secure and Fair Enforcement (SAFE) Banking Act, a bill aimed at allowing banks to serve the legal cannabis businesses. In April 2021, the Secure and Fair

Enforcement (SAFE) Banking Act passed the house once again with a vote of 321-101. This makes the fifth time it has passed in the House. The SAFE Act has been added as an amendment to the National Defense Authorization Act (NDAA). In late September 2021, the NDAA passed the House with a vote of 316-113. The Act has failed in the Senate, and efforts to include it as an amendment to other legislation have failed as well.

The SAFE Banking Act will need a new sponsor when Congressman Ed Perlmutter retires in January 2023.

U.S. Small Business Administration

While exhibiting unequaled resiliency, small businesses across the country and the state faced lingering difficulties related to ongoing economic disruption, recovery, and reconstitution created by the COVID-19 health crisis starting in 2020 and global uncertainty, impacting exporters. The ecosystem was further challenged by disruptions in supply chains, access to workforce, and rising costs of conducting business through 2021 and 2022.

According to the SBA Office of Advocacy, recent trends show many small firms have weathered the pandemic shock. However, the demand for small business capital has outpaced supply, indicating that financial institutions may not have fully recognized this resilience yet.

In 2022, the U.S. Small Business Administration (SBA) continued to serve its nearly 70-year mission to assist the nation's 33.2 million small businesses, which represent 99.9% of all U.S. businesses. The SBA continued its work to provide critical technical and financial resources to the founders, entrepreneurs, innovators, and small businesses that power the U.S. and the Colorado economy.

COVID Disaster Relief Assistance

Through pandemic relief programs authorized and implemented under several pieces of federal legislation between 2020-2021, the SBA delivered more than $1 trillion in economic aid to over 22 million applicants nationwide.

The CARES Act established and authorized activation of several temporary measures to address the COVID-19 outbreak: Section 1112 SBA Debt Relief; Economic Injury Disaster Loans (EIDL) and EIDL Advance; Paycheck Protection Program (PPP); and SBA Express Disaster Bridge Loans. Additionally, the Act appropriated funds for expanded outreach and technical assistance by SBA, its partners, and other federal channels. The Economic Aid Act and the American Rescue Plan each created and capitalized new funding sources associated with the COVID EIDL Program: Targeted EIDL Advance (TEA) and Supplemental Targeted Advance (STEA). The Shuttered Venue Operators Grant (SVOG) program was also established by the Economic Aid Act and amended by the American Rescue Plan Act. The American Rescue Plan Act established the Restaurant Revitalization Fund (RRF), which provided direct economic relief funds to restaurants and other hard-hit food establishments that experienced economic distress and significant operational losses due to the COVID-19 pandemic.

The delivery of a few of these programs continued into 2022 in the form of increases and supplemental approvals. Ultimately at different intervals from 2021 through mid-2022, all SBA-administered COVID disaster relief programs, plus all deferments of disaster loans payments, effectively came to an end. In Colorado, SBA delivered nearly $22.5 billion in aid to almost 340,000 awardees across all its economic relief packages, not including debt relief payments. Borrowers are now faced with repayment of any unforgiven loan amounts, plus full debt service associated with non-COVID and COVID disaster loans.

In addition to SBA disaster relief sources, there was an unprecedented amount of financial support from other local and federal sources. In 2022, many state and local governments began developing and implementing further small business resiliency funds and incentives courtesy of capital from the American Rescue Plan, although the provisions are finite, and many are temporary.

Non-Covid Disaster Relief Assistance

SBA's low-interest federal disaster loans were made available to Colorado businesses, residents, and certain private nonprofit organizations through Presidential Disaster Declaration #17299, resulting from the wildfires and straight-line winds that began on December 30, 2021, in Boulder County, also known as the Marshall Fire.

Disaster loans up to $200,000 were made available to homeowners to repair or replace damaged or destroyed real estate. Homeowners and renters were also eligible for up to $40,000 to repair or replace damaged or destroyed personal property. Additionally, SBA lent funds to businesses and homeowners to help with the cost of improvements to protect, prevent, or minimize the same type of disaster damage from occurring in the future. The declaration covered physical damages to homes and property in Boulder County. The deadline to apply for physical damage disaster loan assistances was March 1, 2022.

Homeowners recovering from the wildfires reported that local contractor estimates for the actual cost of construction were coming in much higher than SBA's initial damage estimates, leaving them with reduced or no disaster loan eligibility after insurance recoveries. There can be several contributing factors that drove up the actual cost of construction. Some of these included significant changes in the availability and cost of labor, scarcity of materials and the pricing of materials. Additionally, the costs to address local code required building upgrades could also play a large factor in the costs to rebuild.

In April, an evaluation was conducted of the local building costs in Boulder County to give disaster survivors increased access to the affordable loan funds needed to fully repair and replace damaged properties. SBA adjusted its lending calculations to meet local rebuilding costs and increased loan eligibility for Boulder County property owners affected by the wildfires and straight-line winds.

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Colorado's Next Startup Hub

The story of "rural" is typically told from an urban perspective, casting "rural" as a homogenous landscape, forever lagging behind the urban ideal, where prosperity, growth, and progress seem to consistently fall behind. Even the Old French origins of the word rural have helped build in this sense of otherness—"rural was a place for the lowly, unlearned, and uncouth."

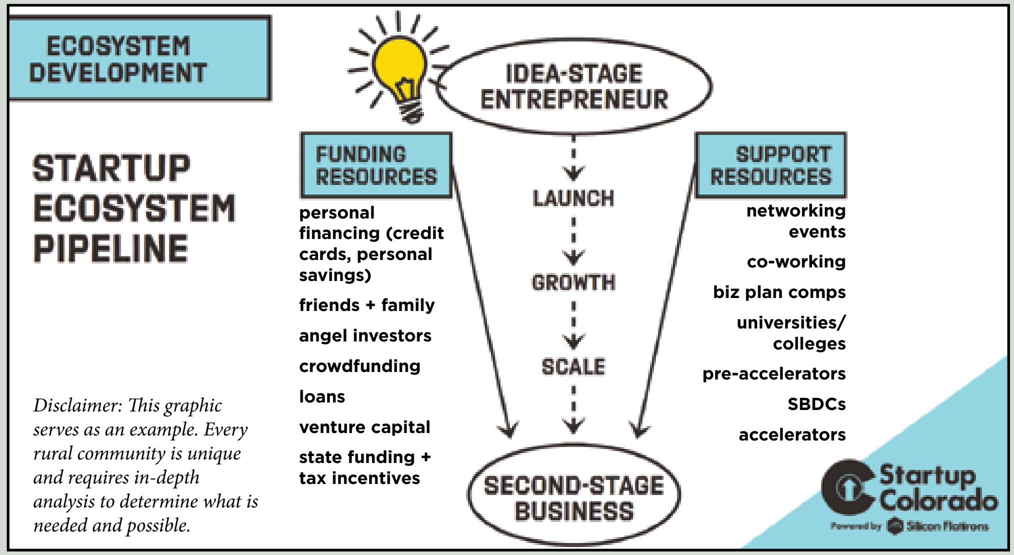
However, at Startup Colorado—a 501(c)3 nonprofit that cultivates entrepreneurial ecosystems outside of the urban Front Range—we prefer telling the story of rural, by rural. Because, while Denver and Boulder are internationally known startup hubs, the rest of Colorado is carving out their own piece of the pie, demonstrating what's possible for thriving startup scenes in unexpected places.

Our mountain communities are not only fostering outdoor industry startups like Oveja Negra in Salida and Geyser Systems in Montrose, but also innovative tech startups like AGILE Space Industries in Durango. In the east, we're seeing ag-tech startups like Barn Owl Precision Agriculture in La Junta, and foodpreneurs and consumer goods businesses are cropping up in communities like Sterling and Fort Morgan. There are towns that once relied on extractive industries now emerging as tech centers, attracting remote workers and startup founders.

"Colorado's entrepreneurial landscape is as diverse as the state's geography, and our ability to empower and enable these communities to support their unique founders hinges on a collective, cross-pollinated effort," says Executive Director Taylor Grande.

Developing a healthy environment for entrepreneurs to thrive requires a type of work known as "startup ecosystem building." When it comes to rural, there's a tendency for urban support organizations to tackle this type of work with a top-down, centralized approach. At Startup Colorado, however, we've seen the most successful initiatives come through partnerships with local business support organizations.

In fact, over the last five years, Startup Colorado has established trusted partnerships with over 250 business support organizations across the state, ensuring those local champions have what they need to develop, deploy, and sustain traditional startup programming in not-so-traditional places. These accelerators, incubators, coworking spaces, innovation centers, business plan competitions, founder meetups, Small Business Development Centers, economic development organizations, and capital partners are the backbone of rural entrepreneurship.



Chaffee County, for example, was recently named "Emerging Startup Community of the Year" by the Rockies Venture Group, resulting from years of strategic startup ecosystem development by groups such as the Central Mountain SBDC, Chaffee County EDC, Startup Colorado, and local startup founders.

Many rural communities that appear to be having a "startup boom" have only reached this point after years of startup ecosystem building efforts, empowering local leaders and organizations to maintain full ownership of their community's startup scene.

The early stages of this process can be witnessed in communities like Trinidad, which has suffered from poverty and population loss for decades but is now seeing an arts and outdoor recreation revival, using entrepreneurship as the vehicle to develop these emerging industries.

Meanwhile in Fremont County, a group of local startup founders have spearheaded an effort to develop the region as a centralized tech hub. The region was recently named "South Central Tech Sector," thanks in part to the efforts at Emergent Campus, a multipurpose coworking space that houses remote workers for the federal government, cloud marketplace Pax8, and numerous startup founders.

"We think of Boulder as the ultimate use-case, but in reality, it's just one page in the book of case studies. Creating environments for people to start and scale businesses in rural Colorado requires density where density doesn't exist—a network of mini-Boulders, per se, that may look a bit different from their neighbor but are eager to learn, lend, and collaborate with one another on behalf of the entrepreneur," Grande says.

Of course, it's tough to create that type of density in rural communities transected by major mountain ranges and sweeping plains. To help solve for this, Startup Colorado launched an online Entrepreneur Network platform that connects entrepreneurs, mentors, funders, and business support organizations, regardless of where they live.

The online network allows us to bridge the gap of an average of 60 miles between towns with populations ranging from 60 to 65,000. Together with our ecosystem partners, Colorado's rural entrepreneurs have access to an invaluable statewide network of the human, social, and financial capital they need to start and scale businesses in the places they call home. Together, we are redefining rural.

Contributor: *Margaret Hedderman, Startup Colorado*

Businesses of all sizes and private nonprofit organizations were approved to borrow up to $2 million to repair or replace damaged or destroyed real estate, machinery and equipment, inventory, and other business assets. For small businesses, small agricultural cooperatives, small businesses engaged in aquaculture, and most private nonprofit organizations, SBA offered Economic Injury Disaster Loans (EIDL) to help meet working capital needs caused by the disaster. Economic injury assistance was available to businesses regardless of any property damage. These low-interest federal disaster loans were made available in Boulder, Broomfield, Gilpin, Grand, Jefferson, Larimer, and Weld counties. The deadline for most entities to apply for an SBA federal disaster loan for economic injury was September 30, 2022.

As of mid-October 2022, there were 748 loans totaling $105,824,700 approved under the disaster declaration. Of that amount, 699 approvals valued at $98,094,900 were made as home loans and 49 totaling $7,729,800 were made to businesses and under the EIDL program.

Core (Traditional) Programs

Coming out of two years of pandemic relief focus and after a banner year of approvals in 2021, in 2022 the SBA continued to bolster efforts to maintain momentum in its core programs through the three main finance programs and through its Surety Bond Guarantee (SBG) Program.

The flagship guaranteed loan program, also known as the SBA 7(a) loan program, provides government guarantees to authorized private-sector and community lenders to help mitigate risk and encourage more of those lenders to make loans to small businesses that otherwise may not qualify for conventional commercial financing at reasonable rates and terms.

The SBA 504 loan program is a low fixed interest rate, public-sector/private-sector partnership financing tool that assists small businesses owners with financing long-lived assets, such as real estate and capital equipment associated with their business operations.

The SBA also facilitates microloans in smaller increments up to $50,000 through designated intermediary mission-based nonprofit lenders to assist emerging small businesses that may be unable to secure financing from conventional sources to help those businesses start and grow.

In addition, SBA also guarantees bid, performance, and payment surety bonds issued by certain surety companies. Surety bonds help small businesses win contracts by providing the customer with a guarantee that the work will be completed. Many public and private contracts require surety bonds, which are offered by surety companies.

Through its loan programs, the agency delivered nearly $35 billion in funding to almost 62,000 small businesses nationwide for fiscal year (FY) 2022. This represented an overall decrease of 7% in volume and 22% in dollars compared to FY 2021.

Across all three SBA core finance programs: 7a, 504, and Microloans, at FYE 2022, a total of 1,527 loans were approved in Colorado for nearly $989.4 million. This was a decline of over 22% in volume and almost 29% in dollars compared to FY 2021. However, due to the availability of pandemic relief incentives, SBA-guaranteed loan approvals across the country had a notable year in FY 2021. Colorado's production followed that trend. In fact, the total in SBA Core Program dollars provided to Colorado small businesses in FY 2021 was the largest amount ever approved in the district's history.

Temporary higher loan maximums, 90% guaranties, and fee waivers motivated lenders and small businesses to borrow prior to fund exhaustion or legislative expiration of the incentives. Another factor that likely impacted loan activity in FY 2021 was the Small Business Section 1112 Debt Relief incentive authorized under the CARES Act. The SBA paid several months of principal and interest owed by borrowers for existing and new 7(a), 504, and Microloans. Most of these incentives either sunset or were fully tapped in 2021, which may have impacted FY 2022 loan production.

While experiencing an overall decrease in approvals compared to FY 2021, the FY 2022 loan approvals in Colorado were more in alignment with prepandemic activity. They compared favorably with activity in 2019 where 1,560 loans valued at over $839.4 million were approved in the state.

The utilization of SBA programs in Colorado was widely dispersed geographically. SBA 7(a) loans were originated in 43 of Colorado's 64 counties. The top five counties in terms of 7(a) approvals were: Denver, Arapahoe, El Paso, Jefferson, and Adams counties. SBA 504 loans were originated in 28 Colorado counties. In order of number of approvals: Jefferson, El Paso, Denver, Larimer, and Weld counties were the top five in 504 loan production.

7(a) Loan Program

Through the SBA's nationwide distribution network of participating lenders, the 7(a) loan program originated a total of 47,678 loans providing almost $25.7 billion in capital to small businesses throughout the country. In comparison to 2021, this was an 8% decrease in volume and a 30% decrease in dollars.

Colorado production experienced a year-over-year decrease in 7(a) loan approvals from $1.15 billion in FY 2021 to $770.4 million (-33%) in FY 2022. The absolute number of 7(a) loans approved in Colorado also decreased from 1,450 to 1,128 (-22%). The average 7(a) loan size in Colorado decreased from $792,245 to $682,947 (-13.8%). But once again, in comparison to prepandemic times, the FY 2022 7(a) volume was comparable, if not slightly better than 2019 activity, when 1,297 loans valued at approximately $700 million were originated.

A total of 129 different lenders made 7(a) loans in FY 2022 in the state. Huntington Bank was the No. 1 SBA 7(a) loan volume lender in the state, with 90 approvals. Live Oak Banking Company Bank led the state's lender rankings in loan dollars with over $89.7 million.

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Building A Resilient Small Business Ecosystem in Colorado

Photo courtesy of Energize Colorado.

Across Colorado, you're bound to find a little main street in most towns and cities. Which one are you closest to—Pearl Street in Boulder, Larimer Square in Denver, or maybe in the historic districts of Grand Junction, Fort Collins, or Pueblo? Towns and neighborhoods around the state are defined and celebrated by the small businesses in them. However, they're facing a massive challenge ahead of them, which has been accelerated by COVID-19. Our smallest businesses, especially those with fewer than 25 employees and making less than $500,000 per year in revenue, are still struggling to recover from initial closures during the pandemic and limited access to federal stimulus funds. While we observe record-fast job recovery and GDP growth, the coffee shop down the street is having trouble keeping up.

Even after all the progress Colorado has made in attracting new capital, the state is facing a massive shortage. Colorado is missing more than $500 million in small business investments, ranging from SBA loans to Community Reinvestment Act (CRA) dollars. This is not because Colorado businesses don't want or need the dollars, but because the infrastructure for delivering these dollars is broken. When Energize Colorado first opened applications for funds in 2020, more than $240 million in aid was requested, ranging from small grants to larger low-interest loans. Yet, the state has only been able to address less than $50 million.

Experiencing this situation firsthand inspired a team of 100+ active volunteers and 65+ capital and nonprofit partners, along with the Colorado Office of Economic Development and the Colorado Housing and Finance Authority, to act. Starting in April, Energize Colorado undertook a bold new effort to become Colorado's newest nonprofit lender. The program now has the capacity to deploy $12 million of new capital here in Colorado.

This capital had to be different though, as the need was too great and too unique to approach it the traditional way. In partnership with the Leeds School of Business, McKinsey Consulting, and a team of volunteer researchers, we decided we would craft an index that defined what "resiliency" means to a small business. This index now serves as a measure for the impact of these dollars and the future resiliency of our smallest and most underserved businesses. Particularly noteworthy is that 60% of the index is based on the mindset and motivations of the owner/operator of these firms and not on their operational or technical capabilities.

Energize Colorado deploys these funds under the "Energize Community Program," an ecosystem-driven approach that brings together municipal governments, nonprofit assistance providers, and community leaders to address the underlying challenges that the community is facing. Energize Colorado purposefully pairs these loan dollars with a 10-week resiliency accelerator, where the curriculum is driven by the index measures and provided directly by organizations already on the ground in that community.

In the first 90-days under this program, $1.4 million in capital has been developed to nearly 100 businesses across three regions and one industry. Forecasts for next year indicate these efforts are on pace to more than triple the current value.

By conducting a series of pre- and post-resiliency assessments, it is easier to understand the impact this supercharging effort has on these communities with one goal in mind: leave the ecosystem better than when it started. Seeing the engagement from people across Colorado, most especially in Pueblo and in the childcare industry, has provided and early insight into the impact of this work.

Follow us at EnergizeColorado.com to stay up to date with new findings and resources, and if you're interested in joining us on this journey as a volunteer, you will become part of an incredible community of generous and innovative Coloradans.

Contributor: *Scott Romano, Energize Colorado*

A subset of the 7(a) program are the loan programs focused on supporting international trade and primarily export activities. In FY 2022, 235 loans valued at nearly $419 million were approved for U.S. small exporters, supporting $1.62 billion in export sales and 3,970 jobs. Mainly due to global uncertainty caused by many factors, including the pandemic, there was decline from FY 2020 and FY 2021 activity in exporting finance programs nationally.

In Colorado, there were four loans made totaling nearly $5.3 million, supporting $3.8 million in export sales and 36 jobs in FY 2022. However, this approval rate is consistent with prepandemic levels for the state. Per the Census, a total of 5,481 identified firms exported goods worth $7.8 billion from Colorado in 2020. Of those exporters, 87.5% were small. Exports by small firms reached $2.3 billion, making up 29.6% of exports by identified firms. These figures suggest that there is an opportunity to bolster international trade efforts by small businesses in the state, once barriers are lessened.

The SBA Office of International Trade is working to recruit additional lenders and provide small businesses with the resources needed to expand into trading and exporting. In support of the State of Colorado's global business development strategy, the SBA annually provides financial awards under the State Export Promotion Program (STEP). This funding can be used by state and territory governments to assist small businesses with export development. Individual small businesses can then apply for STEP awards from the State to be used to increase small business exports and their sales in international markets.

504 Loan Program

The 504 loan program continued to see high demand across the country and in the state. Long-term interest rates tend to impact SBA 504 volume. With 20-year and 25-year fixed rates remaining relatively low during the first half of 2022, the program appeared to have a broad appeal to small businesses looking to own rather than lease their space and/or purchase long-lived equipment.

Working through authorized Certified Development Companies (CDCs), the SBA's 504 program delivered 9,254 loans worth more than $9.2 billion to small businesses throughout the country. This was only a slight decrease of 4% in volume, but an increase of 12% in dollars.

In Colorado, the total 504 loan approvals decreased from $238.6 million to $216.6 million (-9.2%) from 2021 to 2022. A total of 233 loans were made in FY 2022, compared to the 303 made in FY 2021 (-23%). The average size of an SBA 504 loan in Colorado increased from $787,515 to $929,752, likely attributable to the higher costs of both real estate and construction. Although in FY 2022 there was a year-over-year decrease in 504 loan approvals in the state, the demand for this product still greatly exceeded prepandemic levels. In FY 2019, 146 loans totaling $137 million were obligated.

Five different CDCs and 69 first mortgage lenders participated in 504 loans in the state in FY 2022. B: Side Capital (formerly Colorado Lending Source) was the No. 1 SBA 504 CDC lender with 172 approvals totaling approximately $149.8 million. The first mortgage participation loans required as part of the 504 total financing packages added an additional $322.3 million in capital for Colorado small businesses. There was a tie in 2022 for the most active first mortgage bank partner in the SBA 504 loan program between Bank of Colorado and FirstBank, each participating in 26 unique 504 projects. Bank of Colorado ended the year as the top first mortgage lender in dollars at nearly $38.4 million in obligations.

Mission-based Lending

Nationally, the demand increased once again for capital from the SBA microlending program. In FY 2022, $80.5 million in microloan funding went to 4,884 small businesses. This was an 8% increase in both volume and dollars over the previous year.

Colorado saw a decrease in approvals in SBA microlending in FY 2022. Colorado has four approved SBA designated intermediary lenders. In FY 2022, 166 microloans totaling $2,358,843 were accessed by Colorado small businesses, a decrease in volume by 21.7% and 29% in dollars, year-over-year. However, the number of jobs created and retained slightly increased from 1,127 to 1,138 in FY 2022. Some of the decrease was likely attributable to the availability of competing disaster relief from multiple sources across the state, specifically offered to the same target markets. An important initiative for the SBA in 2022 is increasing the number of small loans. Efforts are being made to recruit new mission-based lenders to participate in the SBA programs such as the SBA Microlending and Community Advantage programs.

Surety Bond Guarantee

The Surety Bond Guarantee Program made some positive strides in FY 2022 despite the enduring challenges facing small businesses. Yet demand for SBA's Surety Bond Guarantee Program dropped nationwide and in Colorado in FY 2022. Increased material prices, supply chain challenges, and reduced public and private contract awards created fewer opportunities for small businesses to compete for bonded contracts. Greater competition from surety companies for fewer bonded contract opportunities added to the challenge.

Nationally, SBA provided 8,305 bond guarantees totaling $6.3 billion in contract value to more than 1,600 small businesses. While that represented a 13% decrease in bond guarantee volume over FY 2021, total jobs created by small businesses increased 8% through new bonded work. SBA helped small businesses bond more than $2 billion in awarded contracts for the first time in decades.

The total number of surety bond guarantees in Colorado for FY 2022 was 148, a decrease from 215 in FY 2021. The total contract value in Colorado at fiscal year-end 2022 was $117,008,013 in bond guarantees to 45 Colorado small businesses consisting of over 40 HUBZone

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businesses, two certified 8(a) firms, and five veteran-owned small businesses.

Generally, a healthy construction industry has fueled demand in the past. This suggests that the surety and construction industries are still recovering from the COVID pandemic, continuing supply chain challenges, and material cost increases. SBA expects need and demand for its bond guarantees to increase in FY2023 as the construction and surety industries strive to return to prepandemic condition. The forecast is for improvement in the coming years, especially as infrastructure projects funded under the Bipartisan Infrastructure Law (Infrastructure Investment and Jobs Act) come to fruition. SBA also increased the contract limit for its streamlined QuickBond Application to $500,000 to increase access to more small businesses.

Looking Ahead

Small businesses are the driving force of economic stability in the U.S. and will lead the way to allow the nation to rebound. They account for 44% of U.S. GDP, create two-thirds of net new jobs, and employ nearly half of America's private workforce. They also reinvest 68% of revenues to build and sustain communities.

In encouraging news, applications to start new employer business locations have maintained a high level since 2020. In 2021, applications for new small businesses reached record levels and continue to climb. Average quarterly business birth applications in 2021 were up 37% compared to 2019 levels. Despite the devastating economic impacts of the COVID pandemic on many of our small businesses, there has been a significant silver lining—millions have embraced technology like never before, adopting digital sales strategies, virtual platforms, and other online tools at high rates.

Use of technology and especially virtual platforms was basically made essential by the pandemic. An encouraging circumstance born out of the pandemic is that many small businesses pivoted operating models to e-commerce platforms or changed product offerings to meet unique pandemic market demands and have found that this diversification will have long-term benefits.

The main major concerns likely to impact full recovery and potential growth for small businesses in the coming year are inflationary pressures; continuing supply chain issues; workforce shortages; difficulty accessing affordable capital, coupled with debt capacity after two years of acquiring disaster relief related debt. According to some national surveys by trade organizations, a significant number of small business owners have experienced a decline in customer demand. Small businesses have increased their prices to offset the negative impact. Exporters may also have a slower recovery. They have been impacted by geopolitical conditions and a strong dollar, which makes U.S. products more expensive. This makes export promotion and financial support even more important.

SBA technical assistance through the network of resource partners and guaranteed programs can be utilized to help offset access to capital concerns. Disaster relief programs have brought many new lenders into the guaranteed lending ecosystem. If new and prepandemic low volume lenders maintain SBA participation to help mitigate some of their loan risk going into the new year, there could be resurgence of approvals in the finance programs in 2023. Many factors affect lending in the commercial sector. One of them is interest rates. If long-term interest rates continue to increase, one benefit of using guaranteed programs is that SBA regulates the maximum interest rates that can be charged in exchange for the full faith and credit of the federal government backing these loans. Additionally, to try to increase the number of smaller loans and offset the cost of borrowing due to interest rate hikes, the SBA recently reinstated the incentive of fee-free lending for SBA loans under $500,000 for FY 2023.

Colorado is home to approximately 691,230 small businesses, which is 99.5% of all Colorado business. Data from the SBA Office of Advocacy 2022 Small Business Profile may not yet fully reflect the total impact of the pandemic on the number of establishments and net jobs. However, as reported between March 2020 and March 2021, 29,709 Colorado establishments opened and 20,641 closed, for a net increase of 9,068. Employment expanded at 39,342 establishments and contracted at 44,472. Small businesses accounted for 28,555 openings and 19,231 closings. Opening and expanding Colorado establishments added 261,683 jobs, while closing and contracting establishments lost 338,568, for a net decrease of 76,885 jobs. Small businesses gained 198,433 jobs and lost 229,018, for a net decrease of 30,585 jobs.

In prepandemic times, small businesses had historically been a major source of new jobs. In Colorado, small businesses employ 1.2 million people, or 47.6% of Colorado employees. Therefore, the recovery of this group is vital to the state's economy.

Colorado Credit Unions

COVID-19 cases surged in the third quarter of 2021 as the Delta variant raged, dashing hopes of a quick return to pre-crisis economic and social norms. Economic activity slowed substantially but the employment picture brightened, and quarter-end job openings exceeded the number of individuals looking for work by the widest margin in history. Supply chain disruptions remained pervasive as reflected in a historically low inventory-to-sales ratio, which fueled inflation pressures.

While those nagging global supply chain disruptions were showing definite signs of improvement by the start of the fourth quarter in 2021, hopes of any return to normal were dashed by the combination of the Federal Reserve's aggressive policy pivot and the appearance of COVID's Omicron variant.

Indeed, October ended with a big jump in the employment cost index. And that troubling news was quickly followed by both a strong employment report (with big job creation numbers and a rapidly falling unemployment rate), which drove an obvious surge in year-over-year inflation. The Fed responded with increasingly hawkish public statements.

The first Omicron case was reported on November 9, 2021, in South Africa, and the variant arrived in the U.S. immediately after the Thanksgiving holiday. The associated human tragedy was obvious. And the wave of new cases extended many of Delta's economic disruptions—most notably because many front-line employees were either unwilling or unable to show up for work.

Rapid transmission of the COVID Omicron variant, combined with Russia's February invasion of Ukraine, continued to batter supply chains, disrupt important segments of the labor market, and drive inflation, with commodities (especially food and energy prices) spiking dramatically in the first quarter of 2022. The effects of COVID-related lockdowns in many Chinese cities (most notably the port of Shanghai) extended through mid-year, and these also played a key role in price pressures.

Inflation, measured by the Consumer Price Index, rose 9.1% in the year ending June—the fastest 12-month increase since November 1981.

Federal Reserve policymakers responded by increasing the Federal Funds interest rate target by 1.5 percentage points in the first half of 2022.

Between mid-year 2022 and the end of October 2022, the Federal Reserve has increased that target Federal Funds interest rate range by an additional 1.5 percentage points (to a mid-point of 3%). Looking forward, Credit Union National Association (CUNA) economists expect the Fund's rate to rise another percentage point this year, and by an additional quarter- to half-percentage point in 2023, pushing the policy target to a cyclical high of between 4.5% and 5%.

These policy responses will almost certainly result in a recession—though CUNA's baseline forecast reflects a comparatively short and shallow downturn. The terminal unemployment rate associated with the Fed's expected policy response is likely to be roughly 4.5% at year-end 2023. If so, that suggests the national unemployment rate will be a full percentage point higher than its mid-year 2022 level and implies that nearly 1.5 million Americans will be put out of work over the coming year or so. Importantly, Colorado unemployment trends have generally been following national norms.

Colorado credit unions entered the pandemic in great shape overall, with all key financial shock absorbers in place, and despite more pronounced volatility and greater uncertainty over the past year, many financial indicators in the sector improved or held steady.

Asset quality data remained near modern-day highs in 2022. The Colorado credit union loan delinquency rate improved over the year, with the 60+ day dollar delinquency rate falling from 0.35% at the end of June 2021 to a modern-day low of 0.27% by mid-year 2022. In other words, roughly 99.6% of all credit union loan balances were being paid on time. In addition, the credit union loan loss rate (measured as charge-offs net of recoveries) averaged 0.17% in the first half of 2022—essentially unchanged compared to the second-half 2021 reading—and about one-third the 0.55% 30-year average rate in the state.

Both delinquency rates and net chargeoff rates are predicted to increase during 2023 from this mid-year 2022 low; however, both measures of credit union credit quality are expected to remain below longer term historical norms. Sensitivity risk—the likelihood that credit union earnings and market value of portfolio equity will change as market interest rates change—has increased among Colorado credit unions. At mid-year 2022 the state's credit unions reported a net long-term asset ratio of 46%, up from 36% at the start of the COVID crisis. This reflects the massive wave of mortgage refinancings that took place as long-term mortgage rates fell to all-time lows. On the other hand, rate-insensitive deposits (so-called "core deposits") have also increased—to 52% of mid-year 2022 total deposits—from 46% of total deposits at year-end 2019. Both credit union professionals and supervisory authorities are tracking these trends closely, measuring, monitoring, and controlling this risk. In short, the industry reflects manageable exposures to interest rate risk as long as core deposits remain interest rate insensitive.

Liquidity grew significantly during the pandemic. Massive federal and state stabilization programs had Colorado credit union members making large deposits throughout the last several years. Large segments of credit union memberships were reluctant to spend or borrow during the crisis—both due to extreme uncertainty and to low inventories arising from supply chain issues. Putting off those purchases meant that pent-up demand in the consumer sector rose dramatically.

However, as the Federal Reserve began raising market interest rates in 2022, many consumers (including many credit union members) who had put off big-ticket purchases for durable goods jumped into the game with a "get while the getting is good" attitude. The Fed made it clear that rates were going to rise dramatically. Locking in affordable financing meant making (and financing) purchases sooner rather than later.

The resulting very strong loan demand (+20% loan growth at Colorado credit unions in the year ending June 2022) is now pushing liquidity closer to prepandemic levels. At year-end 2019 credit union total loans were equal to over 90% of total savings balances. This loan-to-savings ratio—a key indicator of liquidity—started 2022 at 79% and has since increased to 86%. We are anticipating that liquidity will become much tighter throughout the first half of 2023 due to continued strong loan demand, lower share balances due to consumer spending, and large deposit migration seeking yield.

Earnings rates, (net income as a percent of average assets), averaged 0.76% during 2021 and have eased to 0.62% in the first half of 2022. With rising market interest rates, it is reasonable to expect a bit more pressure on bottom-line results in 2023, though we expect that Colorado credit unions will have positive earnings in 2023.

Colorado credit union aggregate capital as a percent of assets started 2022 at 9.8%—very close to its all-time

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high—and finished mid-year 2022 at an identical 9.8% of total assets reading. The sector's aggregate capital ratio thus remains nearly three percentage points higher than the level deemed to be "well capitalized" by regulatory authorities. We expect this ratio will improve in 2023 due to positive earnings and deposit outflows.

Colorado's 75 credit unions report membership growth continues to outpace state population growth by a wide margin. Overall, memberships increased at a 2.8% pace in the year ending June 2022, and that pace of change is over 5.5 times faster than the state's 2021 population growth rate, according to the Census Bureau. Colorado credit union memberships now totals 2.25 million, or 39% of the state's population.

The number of full-time equivalent employees at Colorado credit unions increased by 371 from June 2021 to June 2022. This represents an increase of more than 6.8% as Colorado credit unions continue to open new branches, which should continue to drive employment growth.

Insurance

Inflation seems to have replaced COVID as the word of the year most likely to impact the insurance sector. Key indicators such as claims payment and expense inflation, geopolitical uncertainty (Ukraine war), and increasing maximum probable loss of natural catastrophes support the premise that the hard market (increased pricing) will continue well into 2023 as cited in the June 13, 2022, *Goldman Sachs Reinsurance Review*. COVID seems to have had limited impact on coverage lines, including health care premium pricing, and the overall markets seem to be smoothing out any feared price increases as the companies have gained further understanding of the exposure over the past few years, according to the Peterson KFF healthcare tracker October 17, 2022: "An early look at what is driving health costs in 2023 ACA markets." It may take time for the financial and insurance markets to gain similar understanding and comfort with the present inflationary and political risks portrayed in the daily media.

Based in part on inflationary pressures, average replacement costs on property claims were up 16.3% by mid-year 2022—nearly twice the Consumer Price Index rise, according to Deloitte Insights (September 14, 2022). Further, litigation frequency and a trend toward more plaintiff-friendly jurisdictions resulting in higher settlements and final adjudications will continue to detrimentally impact the overall insurance pricing infrastructure, according to an Insurance Information Institute article, "Social inflation: Hard to measure, important to understand," July 17, 2022. There is some good news, however, relative to workers' compensation, which is showing some evidence of premium pull backs and Directors and Officers Liability that may be smoothing out prior volatility with expectations of premium increases in the modest 5% - 10% range year-over-year (Amwins 2022 Q3 State of the Market review).

Property and Casualty Insurance

The mid-size Denver insurance and general business market is not immune from global pressures regarding property insurance pricing as it has become a hotbed for wildfires, most recently exemplified through the devastation of the Marshall fire in late 2021. In the Marshall fire, 1,084 structures were destroyed at an estimated cost just under $600 million. The general liability market, while seeing lower percentage increases than in the property market, is being hit in certain areas of business prominent in Colorado. This includes real estate and hospitality where terms and conditions for sexual misconduct and molestation (SML), wildfire and communicable diseases, based, in part, on unwieldy national jury verdicts, are being constricted, if offered at all (Amwins 2022 Q3 State of the Market review).

Insurance carriers should continue the trend of shifting away from volatility as they reduce limits allocated toward high hazard or riskier categories, such as hurricanes or wildfires, thus tightening markets on catastrophic and nonstandard risk exposures even further. In high exposure jurisdictions, property insurance rate increases in the 25%-35% will not be uncommon (Amwins 2022 Q3 State of the Market review).

Inflation may play a material role in Denver's booming construction industry as the increased cost of goods and difficulty in procuring limited supplies will have an upward impact on Builder's Risk insurance pricing, thus having an ancillary impact on overall project costs as the pass-through pricing of insurance may erode margins.

The increasing Fed Rate should open-up investment options for the carriers to supplement their underwriting losses. Rising interest rates are good for insurance companies in the long term by allowing them to earn a greater return on their fixed income investment portfolios (Amwins State of the Market 2022 Q3 review). As insurers generate their income through underwriting and investments, additional investment options may, over time, loosen underwriting restrictions and show downward modification in premiums in certain general market classes.

Cyber Insurance: The pandemic led to a material rise in ransomware, leading to a heightened concern among insurers resulting in highly competitive pricing. Companies marketing their cyber insurance programs will be challenged to keep increases under 50% year-over-year as cyberattacks have become prevalent across the globe. Companies will be expected to invest in cybersecurity protection systems merely to remain insurable as insurance industry participants are questioning whether the risk can be properly priced (Goldman Sachs Reinsurance Review, June 13, 2022). Albeit minor, a potential diamond in the rough, according to the Q2 2022 Marsh Global Insurance Market Index, is that the anticipated upcoming price increases seem to be trending less than the prior year's price targets of over 100% in some cases.

Health Care Insurance Market: Colorado health insurance prices are rising, on average, for private purchasers. However, according to state regulators, the Colorado Option, a lower cost health insurance plan designed by state regulators but sold by private insurance companies in the individual and small group markets, will provide pricing relief. Inflation and increased utilization of non-COVID-related services are deemed to be the most significant drivers of the proposed rate hikes (*Colorado Sun,* October 19, 2022).

Cannabis: Colorado maintains its reputation as an innovator in the cannabis space. Demand for cannabis continues to increase with more than half of U.S. states legalizing medical or recreational marijuana (Amwins 2022 Q3 State of the Market review). However, with the federal government refusing to codify legislation, the larger and mainstream insurers remain reticent to enter the market, thus leaving underwriting to the often-costlier specialty carriers. This higher cost can leave the local businesses with the choice of taking on higher retentions or procuring less insurance than may be needed to provide adequate financial protection for the risk exposures. The legal environment is unlikely to change in 2023.

Insurance Operational Dynamics

Employment and Staff Retention: The competition to attract talent away from arguably more exciting and innovative areas such as crypto start-ups will continue as insurance companies and brokers will need to innovate to create a culture that will inure to the post-COVID workforce. Improvements in technology, greater flexibility, expedient upward mobility, and strong and credible ESG (environmental, social, and governance) and DEI (diversity, equity, and inclusion) could become competitive differentiators over the next few years for recruiting talent (Deloitte Insights, September 14, 2022).

Another trend ubiquitous to office environments will be a trend toward uprooting centralized office structures for smaller and geographically attractive suburban centers. As leases in downtown Denver expire, the trend may lean toward companies reevaluating the higher metropolitan costs while also gauging where their workforce resides. One major insurance broker has recently opted out of their Union Station lease for a smaller south Denver location closer to their employees.

Mergers and Acquisitions (M&A): Inflation and global economic uncertainty will continue to slow the consolidation within the insurance industry (Deloitte Insights, September 14, 2022). As the Colorado market is not home to major insurance companies or brokers, the cessation of widescale merger activity should inure to the Denver market as the acquiring company tends to consolidate toward larger geographic hubs where they have existing infrastructure. The wild card is that the post-COVID workplace model permits broadened geographic flexibility for the office workforce.

Real Estate and Rental and Leasing

Commercial Real Estate

Commercial real estate in Colorado posted generally positive growth trends through the first half of 2022—albeit at varying rates—and withstood macroeconomic pressures well in the second half of the year. Colorado's competitive advantages of continued population and job growth will support further expansion in the industrial and retail sectors in particular while the office sector undergoes adjustments to incorporate more hybrid work environments and a flight to better quality product. The increased cost of capital brought on by inflation will moderate demand for commercial real estate from both an occupier and investor standpoint while also dampening construction activity until volatility, and relatedly, interest rates come down.

Metro Denver

Metro Denver is well positioned to navigate a widely expected recession in 2023 after emerging from the pandemic with favorable economic conditions. Population and job growth continue to drive widespread and diverse economic activity, thereby broadly supporting market fundamentals in the commercial real estate sector despite headwinds from the increased cost of capital. Unemployment decreased to 3.2% in September 2022, down from 4.8% a year earlier, while population growth for the Denver-Boulder combined MSA registered 19.6% from 2010 to 2022. Net migration in Metro Denver, according to Oxford Economics, is expected to reach 19,400 residents in 2022, the best performance since 2017, but slightly below the robust 33,800 annual average witnessed between 2010 to 2015. Household incomes reached an average of $130,821 in 2022 and are expected to grow another 17.3% over the next five years.

Additionally, a long list of accolades and high rankings attest to Metro Denver's diverse and innovative economy, talented labor pool, and high quality of life. The Denver Metro area is home to 10 Fortune 500 companies representing a broad range of industries. Notable companies on the list include Arrow Electronics, Dish Network, Ball, DaVita, and VF Corporation. Nearly 50% of residents in the Denver-Boulder combined MSA have a bachelor's degree or higher, with 49% of the population being from the Millennial or Generation Z demographic.

The commercial real estate market has largely performed well over the past year, with the office market being the notable underperformer.

Metro Denver's office market has struggled to emerge from the hardships faced during the pandemic and additionally faces macroeconomic headwinds. Office flexibility remains a top priority for occupiers, prolonging and solidifying the presence of the hybrid-work model. According to the Downtown Denver Partnership, employees' return to office ratio in downtown Denver office was 51% in September 2022 of prepandemic levels (September 2019) and slightly stronger than the 47.5% 10-city average produced by Kastle Systems. Looking ahead, CBRE's November 2022 Global Occupier Survey indicates 71% of respondents plan to expand their hybrid program over the next three years, while 90% of respondents are gathering workplace utilization data, up from 11% in 2021, to help inform business decisions about the workplace.

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HIGH-TECH SOFTWARE/SERVICES JOB GROWTH

		Growth Rate		Number of New Jobs	
		Current Period	Previous Period	High-Tech	Office-Using (less high-tech)
Rank	Market	2020 & 2021	2018 & 2019	2020 & 2021	2020 & 2021
1	Vancouver	44.2%	29.6%	28,300	12,500
2	Toronto	37.0%	16.5%	60,400	47,800
3	Austin	25.0%	22.9%	15,718	44,347
4	Seattle	18.6%	21.9%	37,563	18,482
5	Montreal	15.8%	-2.5%	13,700	44,700
6	Denver	14.2%	14.2%	11,483	10,970
7	Raleigh-Durham	13.3%	6.2%	5,433	16,552
8	Atlanta	13.0%	11.4%	11,833	-2,734
9	New York	12.8%	18.4%	16,457	-82,610
10	Charlotte	12.1%	8.8%	3,223	9,551

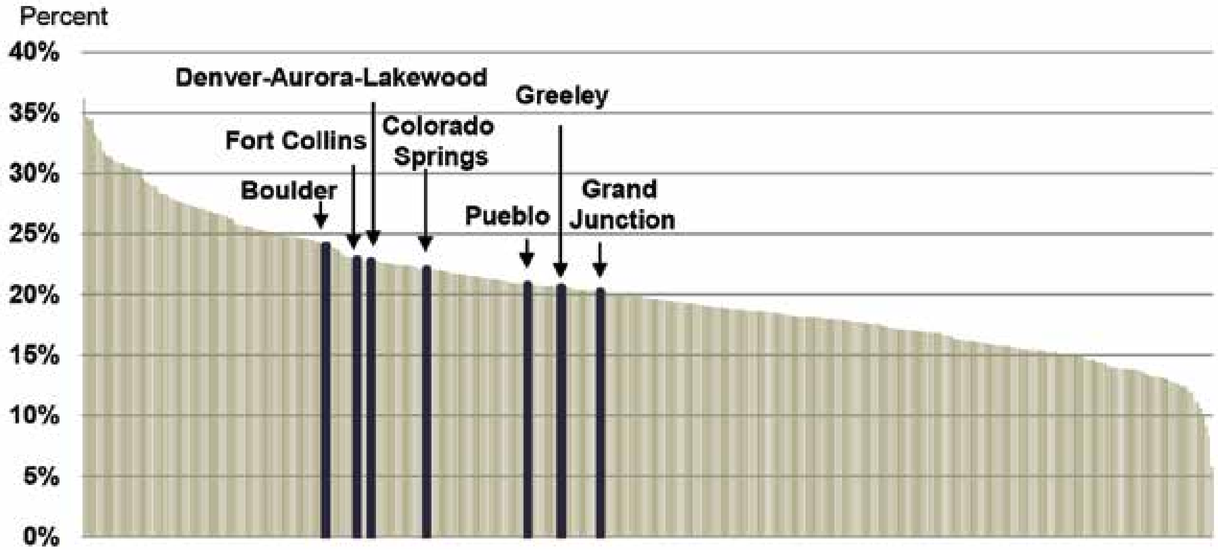
Source: CBRE.

As many companies evaluate their long-term real estate amid hybrid work trends, some occupiers are downsizing, which has resulted in negative 27,000 square feet of net absorption posted through the first three quarters of 2022. However, this marks a significant improvement from the Q3 2021 YTD total of negative 2.1 million square feet of net absorption. Total office vacancy increased 70 bps year-over-year to 20%. Vacancy rates are expected to remain elevated above pre-COVID-19 levels until industries, such as technology, see a greater return-to-office headcount and lean more on a hybrid versus remote work model. Sublease availability climbed to 5.4 million square feet in Q3 2022, increasing 13.9% quarter-over-quarter and surpassing the previous peak of 5.1 million square feet recorded in Q2 2021. The direct asking lease rate has remained relatively unchanged in recent quarters, increasing 1.6% year-over-year to $32.07 per square foot full service gross (FSG). The development pipeline totaled 2.2 million square feet across 14 properties as of Q3 2022. Speculative development accounts for 85.9% of new development underway, with only 16.2% of the 1.9 million square feet having been preleased.

Class A properties have outperformed other property classes due to their overall stronger fundamentals. Nearly 70% of all deals transacted in Q3 2022 were located at Class A buildings, proving that tenants who are committed to returning to the office prioritize newer, premium space in convenient locations and with amenities. Leasing activity within newly constructed properties in downtown Denver, such as McGregor Square and Block 162, remains strong, but delays in tenant build-outs due to supply constraints and high costs are delaying occupancies. Leasing activity has remained steady through 2022, with over 1 million square feet of transactions each quarter but is down 9% year-over-year on a year-to-date basis. Downsizes are currently outpacing expansions across the Metro, and the market is seeing fewer inbound requirements and slower larger tenant activity than in previous years, a trend that is expected to continue as companies navigate the current economic landscape. In addition to having a strong cadre of finance, communications, health care, and energy companies in the Metro area, Denver ranks as the No. 6 Best Market for Tech Talent, according to CBRE's 2022 Tech 30 report, and the 10th-largest U.S. Life Sciences market.

Following a record-breaking 2021, Denver's industrial market experienced solid growth through the first three quarters of 2022. Metro Denver posted over 1.6 million square feet of positive net absorption in Q3 2022, pushing the year-to-date total to 3.5 million square feet, which is roughly 20% off the record-breaking pace set at this time in 2021. The total volume was heavily impacted by large speculative move-ins that were delayed from earlier in the year due to rising costs for construction materials and supply chain disruptions. Sustained tenant demand fueled strong leasing activity in Q3 2022 with over 3.9 million square feet transacted—the 3rd-highest quarterly total in the past five years and a 23.7% increase from Q3 2021. While demand for new industrial product persists in Denver, leasing activity is expected to moderate slightly as the cost of capital and other macroeconomic headwinds come into play for occupiers and developers alike. The industrial development pipeline remained elevated through the third quarter, with a total of 43 projects bringing 8.9 million square feet under construction, including large build-to-suits for Dollar General, Pepsi, and Home Depot. Just under 70% of the construction pipeline is speculative, and further moderation is likely. Nearly 3.8 million square feet of speculative space was delivered to the market in the third quarter, with 9.6% of that space being leased at the time of delivery. Due to these larger spaces coming onto the market, direct vacancy and total availability both climbed 80 bps quarter-over-quarter to 6.7% and 7.3%, respectively. Comparably, lease rates for industrial space were

FHFA YEAR-OVER-YEAR HOME PRICE CHANGE BY METROPOLITAN STATISTICAL AREA, Q2 2022



Source: Federal Housing Finance Agency, All Transactions Index (Not Seasonally Adjusted).

FHFA HOME PRICE INDEX Q2 2022

	Compound Annual Growth		
Colorado MSA	1-Year	5-Year	10-Year
Boulder	24.0%	9.4%	9.4%
Colorado Springs	22.1%	12.6%	9.2%
Denver-Aurora-Lakewood	22.8%	10.5%	10.4%
Fort Collins	22.9%	9.4%	9.3%
Grand Junction	20.3%	11.6%	8.0%
Greeley	20.6%	10.3%	10.2%
Pueblo	20.8%	13.0%	8.9%
Colorado	22.5%	10.6%	9.8%

Data Source: Federal Housing Finance Agency, All Transactions Index (NSA), through Q2 2022.

impacted by the newly delivered availabilities coming onto the market. Direct asking rates slightly decreased 1.4% quarter-over-quarter to $8.61 per square foot NNN. Quarterly achieved rates saw a 13.6% year-over-year increase to $8.62 per square foot NNN. (NNN refers to triple net leases, net of property taxes, insurance, and operating expenses.)

Denver's retail sector has witnessed its biggest revival in years despite the numerous uncertainties brought on by the pandemic. The pandemic deterred in-person shopping and drove consumers to internet-based shopping, a trend that is recurring, but recent activity indicates an exponential uptick in tenant demand and the surprising strength of brick-and-mortar retail. For the first time in years, vacancies are down, rents are up, and more stores are opening than closing. Retail real estate's reversal of fortune follows a decades-long adjustment that included vendor bankruptcies and widespread vacant storefronts. Retail within office clusters and downtown continues to be impacted by fewer employees returning to work, but the pandemic-induced migration to the suburbs has accelerated activity among local retailers and smaller vendors that has pushed vacancy rates down to prepandemic levels.

The average retail asking rate in Metro Denver was up 0.4% year-over-year in Q3 2022 to $20.53 per square foot NNN. Direct vacancy and total availability have both trended downward over the past year, reaching 6.6% and 7.7%, decreases of 50 bps and 80 bps, respectively. The retail development pipeline remained highly active through the end of Q3 2022, with over 894,000 square feet of space under construction. Activity is being heavily driven by shopping centers with pre-committed big-box retailers, whereas nearly 90% of the space underway is pre-leased. Delivery volume doubled from the previous quarter, posting over 188,000 square feet of new space. Q3 2022 activity was driven largely by the completion of the 111,00-square-foot Lowe's located in the Nine Mile Corner complex at 10700 Arapahoe Road in Erie. Over 275,000 square feet of net absorption was recorded in Q3 2022, the 6th-consecutive quarter of positive net absorption. Retail's encouraging performance coming out of the pandemic indicates the industry is more capable than it has been in years of overcoming rigid market conditions. High inflation, rapidly rising interest rates, and the prospect of a recession could potentially shift retail sector fundamentals once more in the coming future.

Southern Colorado

Southern Colorado's real estate market remained mostly strong two years after the pandemic took hold, driven by population growth and an influx of millennials and businesses attracted to the area's highly educated workforce, job growth, wage increases, quality of life, cheaper rents compared to Denver, reputation as a desirable place to live, and increased downtown activity and amenities. Industrial and retail properties benefited strongly,

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Financial Activities

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Office Myth Busting

Office will always be office. Prepandemic, tenants sought out office space that was energy efficient (i.e., LEED certified). As a result of the pandemic, the demand for office space has slowed due to remote or hybrid work arrangements, but also, tenants are now focused on wellness attributes, such as access to fresh air; improved space functionality, like small collaboration rooms; high-performing HVAC systems to filter out viruses and pathogens; and touchless systems, such as in elevator cabs. Second and third generation office buildings are being reimagined and adaptively reused into distribution centers, schools, data centers, hospitals, and most prominently, apartments. One sector that is growing rapidly due to the pandemic is biotechnology and life sciences. Commercial real estate services firm Newmark is tracking nearly 17 million square feet in office to lab conversions and another 25 million square feet of new lab space under construction in top U.S. life science markets. That's roughly equivalent to more than 20 football stadiums and would make up about a quarter of all the lab space already in existence.

The office of the future will be virtual. This outcome depends on the perspective of the user. In a survey conducted by CBRE, it found that 84% of respondents want their employees in the office at least 2.5 days per week. Workers, however, largely prefer flexibility both in terms of when they work and how often they go to the office. CBRE also found that while office occupiers remain cautious and leasing activity is still below prepandemic levels, there is some evidence that more companies are prepared to make long-term lease commitments and are planning for expansion. In doing so, companies are spending to make their leased space more attractive and productive for their employees, including more collaborative space, wellness design and services, and upgrading video-conferencing technology. Moreover, mentoring of junior associates is nearly impossible in a virtual environment. Tacit knowledge can't be read in a book, put in a training manual, or communicated through a Teams meeting or on screen. Tony Julianelle, CEO of Atlas Real Estate, observed that tacit knowledge is gained in two ways: experience and apprenticeship. Experience takes time. Apprenticeship takes desire and commitment. Apprenticeship is the way you gain tacit knowledge without experiencing it yourself, and you get it through regular, sustained, contact, likely in the office, with your mentor/senior associate.

The purpose of an office is to be productive. For some people, working remotely is isolating. While it's possible to be productive in isolation, creativity stagnates without collaboration. Remote work has gotten a robust trial period, and this large experiment has proven that the office is not necessarily about getting work done. Recently, *Wall Street Journal* reporter Ben Cohen wrote about his visit to the offices of Zoom, the company that led the way in remote working through their technology. He learned that Zoom believes that offices have become a place to be social. They are no longer for doing good work, so much as making good work possible, and their primary functions are facilitating collaboration and fostering camaraderie. Matthew Saxon, Zoom's chief people officer, posited that it's possible that remote work would prove harmful in the long term in that those who work from home are lonelier and (mentally) unhealthier than those that return to the office. Moreover, Mr. Saxon wondered about office dwellers getting promoted faster and earning higher salaries than the ones Zooming into meetings. Finally, fostering company culture doesn't happen in a virtual environment; colleagues need to share physical space to grow company culture.

while certain segments of the office market struggled, like larger offices and call centers, whereas small offices leased to service-oriented businesses with fewer employees remained in demand. In the first half of 2022, CBRE reported that the office market posted positive net absorption of 150,000 square feet, which drove vacancy down to 9%, while rents remained flat at $16.41 per square foot NNN. A diminished development pipeline should help stabilize the office segment. Industrial and retail properties recorded over 300,000 square feet of positive net absorption, with vacancy flat or down, at 4% and 5.5%, respectively, and lease rates stable. Development activity has remained active. From a cost standpoint, Southern Colorado remains competitive compared with Denver, Phoenix, and Las Vegas, and in-migration is expected to continue. Rising interest rates will dampen investment and construction activity, but commercial leasing and residential rentals will remain robust catering to demand.

Northern Colorado

Northern Colorado's real estate markets continued to recover from the pandemic's disruption, including the office sector. The most active sectors include industrial, quick-serve restaurants, and rest stops, while brick-and-mortar retail is slowing down. The unemployment rate through August remained extremely low at 2.8%, although economists expect companies to grow slower in 2023, cooling demand for workers. One positive note, in August, the $280 billion CHIPS and Science Act was signed into law, which will keep Northern Colorado's semiconductor manufacturing industry busy, including Broadcom Inc., Intel Corp., Advanced Micro Devices Inc., and startup Rivos Inc. The consumer shift to e-commerce as a result of the pandemic has large retailers, such as Walmart, Target, Dollar General, and Bed, Bath and Beyond, focusing on expanding distribution capacity and buying up developable land for large warehouses. In March, Amazon purchased a 151.8-acre site north of the Northern Colorado Regional Airport for $9.4 million to construct a 3.87 million-square-foot distribution facility.

SUPPLY VS. DEMAND

Metric	September 2022	September 2021	Prior Month
New Listings	3,772	5,298	2,803
Active Listings	5,798	5,298	6,939
Pending	2,753	3,253	3,761
Days in MLS	18	5	12

Source: Denver Metro Association of Realtors (attached homes).

Across the three asset classes, CBRE notes that year-over-year direct vacancy decreased marginally, while lease rates increased. New construction was most active for the industrial sector, as supply is finally catching up to demand. In the short term, high inflation and rising rates will slow real estate activity; however, in the long run, one key concern for Northern Colorado and the Front Range in general is the availability of water, which is beginning to impact the area's ability to grow due to rapidly rising tap fees.

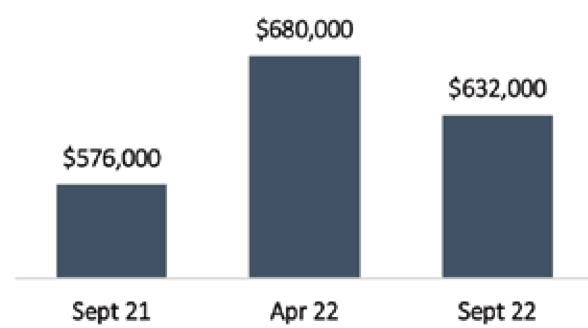
Western Slope

Western Slope officials aided by the state government have collaborated successfully in the past few years on innovative tax credit incentives aimed at attracting a diverse business base and thus transitioning away from a historically strong reliance on the energy sector that predictably produces boom-and-bust cycles. As a result, the region has experienced steady economic growth with companies involved in advanced manufacturing and technology, agriculture, education, health care, and outdoor recreation. Mesa County has become a popular place for relocation and recreation. One recent example is MotoMinded, an outdoor recreation manufacturing company that relocated from Colorado Springs to Mesa County given the growth of the outdoor recreation economy and better quality of life for its employees. By 2020, the population of Mesa County reached 155,700, a 7.5% increase from 2010, surpassing a key metric that attracts regional and national franchises. Bray and Company reports that industrial, retail office, and land development are all still very strong, and median rents in the multifamily market are up 22% in 2022. While there's pressure to add rooftops to match the growth, challenges to the commercial real estate sector include rapidly rising inflation, rising interest rates, labor shortages, and supply-chain issues.

Residential Real Estate

The year 2022 has been a tale of two markets for residential real estate. The first half of the year was largely a continuation of 2021, where buyers were chasing a limited supply of homes and accepting terms typical of a strong sellers' market. Toward the end of Q1, homes were still selling quickly but agents could sense the impending shift as the number of showings declined and the number of competitive offers slowly waned. At the beginning of the Q3, buyers became more discerning due to rising interest rates and declining customer sentiment (result of rising inflation and the war in Ukraine). Interest rates climbed significantly in Q3, driving existing buyers to quickly make their purchase decisions while fewer new buyers entered the market.

DENVER METRO MEDIAN PRICE SINGLE-FAMILY DETACHED



Source: Denver Metro Association of Realtors.

The median price for a detached single-family home in September 2022 in Colorado was $632,000, relative to $576,000 in September 2021. The median price peaked in April 2022 at $680,000 and has been trending down to the current level of $632,000.

For the doomsayers in the media that are calling for a meltdown in the real estate market, it is important to note that median price levels are still above price levels one year ago.

Conflicting competitive forces are creating market dynamics we have not seen. Rising interest rates and socioeconomic conditions are causing many perspective buyers to step out of the market while the buyers left in the market are still encountering a limited supply of homes. The waning demand, coupled with the restricted supply, creates an interesting set of circumstances. The economic forces in today's housing marketing include: interest rates, supply/demand, and customer sentiment.

Interest Rates

Historically low interest rates have been fueling real estate prices since the Great Recession of 2008. This year started off with low interest rates, but rates started to rise in Q2 and have risen sharply from 3.5% to 6.75%. This has had a tremendous impact on buyers' purchasing power.

For example, in the table below a hypothetical buyer's income can support a monthly payment of $2,600. At

INTEREST RATE IMPACT ON AFFORDABILITY

Approved Monthly Payment	Interest Rate	Target Home Price	Loan Amount
$2,600	3.5%	$630,000	$504,000
$2,600	6.75%	$430,000	$360,000

Note: Assumes annual taxes of $3,000 and property insurance of $2,000.

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Financial Activities

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DENVER METRO ATTACHED HOMES

Metric	September 2021	Prior Month	September 2022
New Listings	5,298	2,803	3,772
Active Listings	5,298	6,939	5,798
Pending	3,253	3,761	2,753
Days in MLS	5	12	18

Source: Denver Metro Associaton of Realtors.

a 3.5% interest rate he/she can be approved for a loan of $504,000, thus can afford to buy a $630,000 house (assuming 20% down payment). At an interest rate of 6.75%, holding the monthly payment constant, that same buyer can now afford a home worth $430,000. This obviously creates downward pressure on home prices.

Supply vs. Demand

Home inventory has increased, but we are still technically in a sellers' market as buyers out-number sellers, particularly at lower price points. As a result, we are not seeing prices fall below 2021 price levels. The table above depicts a handful of supply metrics, which all suggest that the market is cooling off but is not in a free fall.

Factors Impacting Supply

As the table above suggests, home inventory is rising, and it is taking longer for listings to go under contract. Single-family homes spent a median 18 days on the market relative to five in 2021. It is important to note that the jump from five days to 18 days actually occurred in the last three months, which clearly shows the impact interest rates have had on this market.

Additionally, developers and builders are slowing the pace at which they bring new housing units online. Prior to Q3 builders had been slow getting product to market due to scarcity of materials and labor. Now they are cutting production as they see demand wane. Furthermore, we are also seeing the following trends in builder behavior, which should also result in diminished supply.

- Per the *Wall Street Journal*, builders are offering to sell completed and planned homes to institutional investors at a 20% discount. The investors will then add these units to their rental pools. A representative from one of the institutional investors said he receives as many as 10 calls per week from national home builders offering to sell thousands of units. Again, per the *WSJ*, builders are quoted as saying "nobody is going to qualify for financing. We're going to suck wind on this. Let's contact investors and see if they want an entire subdivision."
- Developers of condominium projects are electing to convert condos to rentals. Per the *Denver Business Journal,* POP Denver (a new 123-unit development in Santa Fe Art District) has ceased sales and is now looking to sell the entire building to a multifamily investor. This is a new trend as developers have not experienced difficulty selling condos into the Denver market over the last eight to 10 years. Once again, this trend will limit supply of new housing units relative to buyers in the market and should provide some support for current home prices.

Demand Indicators

- Showings Per Listing—The average showings per listing in September 2021 was 7 while September 2022 showings per listing is 3 (source Showing Time). Fewer showings should translate to fewer offers for homes. This in turn should result in less upward pressure in pricing going forward.

- Mortgage Applications—Applications for mortgages to purchase homes are down 42% from last October per the *Wall Street Journal*. This drastic drop should result in fewer buyers entering the real estate market in Q4 and into 2023. Fewer buyers should lead to less demand for homes. It is important to note, however, that diminished housing supply should provide support and keep prices from dropping drastically.

Customer Sentiment

Buyers are increasingly wary of economic and socioeconomic conditions. Many economists are now predicting a recession in 2023, which is impacting the psychology of real estate buyers. Additionally, buyers have seen their net worth diminish with recent stock market declines. This is commonly referred to as the "wealth effect," which tends to drive the market up or down depending on the direction of the stock market.

To summarize 2022 activity, the residential real estate market continued appreciating in Q1 and Q2 of 2022. The median home price in Denver at the beginning of 2022 was $575,000. Home prices appreciated to $680,000 (end of April) and have since receded to $632,000 (as of the end of September). It is critical that we do not lose sight of the fact that median home prices are still up 5% for the year and there seems to be price support given the limited supply.

Predictions for 2023 Residential Real Estate Market

The committee expects the market to be a mixed bag in 2023. Houses that meet buyer expectations and are priced correctly will sell quickly, while houses that are missing important elements such as updated kitchens and bathrooms may sit on the market and/or experience price erosion.

We should experience our typical seasonality with increased activity this spring, but we do not expect the frenetic pace of the last few years. Next year should be relatively flat. Updated homes that are priced correctly will sell quickly while homes that do not meet buyer demands will see price reductions and weigh down on the market.

Overall, we expect the market to be flat or possibly depreciate 3-5% in the 2023.

Rental Market

Renters will continue to face a competitive market as fewer renters will be moving into home ownership, thus more renters will be vying for fewer properties. We may see some softness in the luxury rental market as condo projects are converted to rentals and new rental properties come online in areas such as RiNo and The Golden Triangle.

Overall, we do not see much changing from a renter or landlord perspective in 2023.

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Professional and Business Services

Professional and Business Services (PBS) is a uniquely diverse supersector, aggregating activity across Professional, Scientific, and Technical Services; Management of Companies and Enterprises; as well as Administrative and Support, Waste Management and Remediation Services. Collectively, these sectors have consistently produced solid employment growth across Colorado, adding over 100,000 jobs since 2011. Nationally, job openings per the Job Openings and Labor Turnover Survey (JOLTS) program reached 10.7 million in September 2022, down from 11.6 million in April 2022. PBS accounts for 17.9% of national job openings as of September 2022, down from 19.9% in April 2022.

Uniquely, PBS emerged from the pandemic far stronger than other sectors and is poised to continue its long-standing tradition of robust growth. The business-to-business focus inherent to PBS means productive work generally does not need to be face-to-face but can increasingly be sourced and managed remotely. During the pandemic shift to work-from-home and now the gradual return to offices, PBS employers have generally kept trusted talent to serve clients and generate revenue, while purposely avoiding any layoffs because they have been acutely aware of the difficulty of recruiting and retention in this very tight market. That said, some PBS sectors are at risk due to emerging macroeconomic headwinds across Colorado, particularly labor-cost inflation and the increasing cost of living as well as automation, outsourcing, and restructuring. As before, recruiting and retention will remain considerable challenges in most sectors, reflecting the tight labor market, with a sustained high level of unmet job openings.

Overall, PBS employment grew by 5.2%, or 22,400 jobs, in 2021. Keeping with that trend, the committee projects PBS employment will grow another 7.3% to average 485,800 jobs in 2022. Despite any headwinds, growth will continue at a more moderate 4.2% in 2023, to total 506,100.

Colorado's PBS companies and jobs remain clustered largely along Colorado's Front Range, particularly in and between Fort Collins, Boulder, Denver, and Colorado Springs. This concentrated strip results from a strong networking effect between the client businesses situated there, as well as the increasing supply of highly educated talent choosing to move to and reside in nearby areas.

The PBS subsector employers generally hire and retain highly skilled and highly educated workers who are compensated at above-average salaries. This is particularly true for the Professional, Scientific and Technical (PST) as well as Management of Company sectors, where average salaries remain in the $100,000 to $200,000 range. A precondition of PBS employment is often higher education. According to the U.S. Census Bureau, educational attainment is increasing in Colorado. Between 2016 and 2021, the percentage of Colorado residents with at least a bachelor's degree increased from 39.9% to 44.4%, retaining Colorado's 2nd-place ranking in the United States.

While Colorado ranks extremely high on college attainment, particularly among people who have migrated to the state, challenges remain for Colorado's own high school graduates. According to the Colorado Department of Higher Education's 2022 legislative report, "Pathways to Prosperity: Postsecondary Access and Success for Colorado's High School Graduates," 50.5% of Colorado's 2020 high school graduating class went on to enroll in a postsecondary institution immediately after graduation. This is down a full 5% from the prior year, largely due to the pandemic lockdowns and difficult life choices that resulted. Even so, this is more than 10 percentage points below the 2020 national average of 62.7%. Of those who did enroll, 73% attended a four-year institution, but 25% enrolled in schools out of state—the same as in prior years. This dynamic undermines the talent-base for STEM and other skills needed to compete for the highest-paying PBS jobs.

Because most PBS work performed is not arduous physical labor, many engineers, technologists, accountants, attorneys, enterprise managers, and others can and do opt to work even well past normal retirement age, helping ensure the stability of long-term employment in these positions across the state.

INDUSTRY SNAPSHOT
PROFESSIONAL AND BUSINESS SERVICES

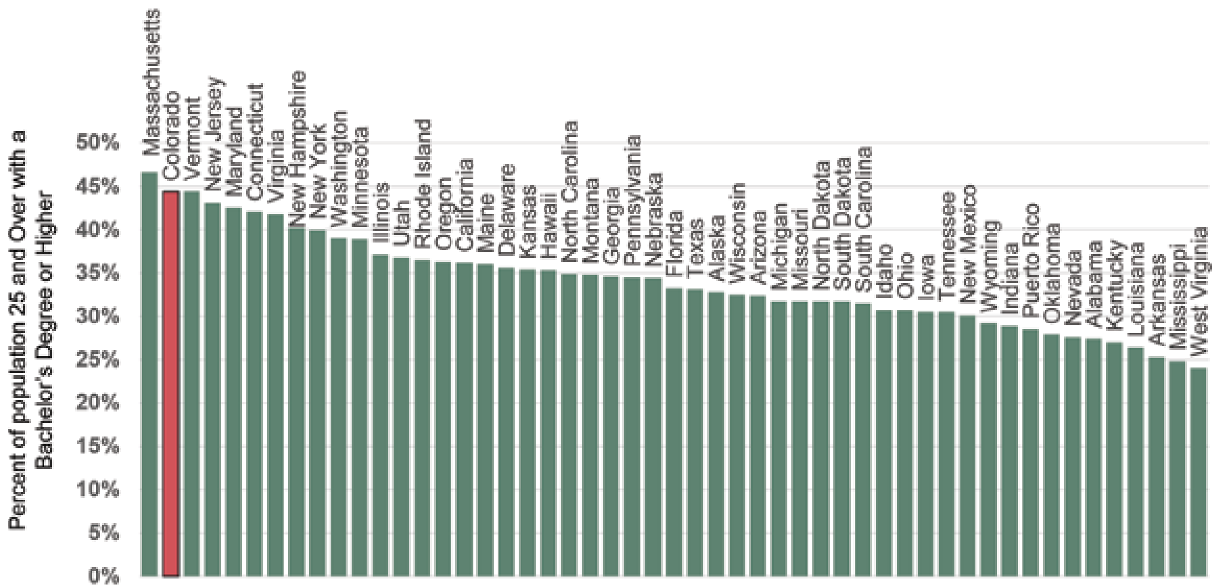
Nominal GDP, 2021 ($ Billions)	67.7
Real GDP, 2021 ($ Billions, 2012 Dollars)	63.6
2021 Real GDP Growth Rate	13.0%
Total Employment, 2021 (Thousands)	452.8
2021 Employment Growth Rate	5.2%
Employment Growth National Rank	13
Share of Colorado Employment	16.5%
Share of National Employment	14.5%
Average Wage, 2021	99,060
Percent of Statewide Average Wage	138.5%
2021 Average Wage Growth Rate	9.2%

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics.

PBS clients and revenue sources are largely businesses, so the number of new business filings has proven a useful predictor of future PBS job growth. The Q2 2022 Quarterly Business and Economic Indicators report from the Colorado Secretary of State's Office shows new entity filings increased 0.5% year-over-year but decreased 9.7% quarter-over-quarter, reflecting the strong seasonal pattern from Q1 to Q2 each year. A total of 39,464 new entities were filed in Q2 2022, most of which were limited liability companies (LLCs).

While forecasting the overall employment for Colorado is proving as challenging as ever, expectations for PBS are for continued, if moderated, job growth. These services sectors have generally avoided the ripples from macroeconomic challenges facing other sectors, including: disrupted physical supply chains, record

EDUCATIONAL ATTAINMENT BY STATE, 2021



Source: U.S. Census Bureau, American Community Survey (2021 1-Year Estimates).

inflation, dollar appreciation, geopolitical risks, labor disruptions, etc. Nonetheless, challenges to businesses in other industries ultimately reduce the number of resources available, and the aggregate demand for professional services and related technologies. As has been the case over the last decade, the committee expects PBS to successfully manage the challenges of globalization, automation, and commoditization.

In short, despite the cost-of-living headwinds, Colorado's quality of life, climate, outdoor recreation, and other benefits are still driving net in-migration, particularly among PBS millennials coming from more populated areas around the country. These newcomers are disproportionately bringing the PBS skills required for the knowledge-based workforce of the future. Colorado companies remain ideally positioned to take advantage of the rapid growth of business professionals, scientists, technologists, and engineers in the state.

Professional, Scientific, and Technical Services

The Professional, Scientific, and Technical Services (PST) Sector comprises establishments that provide services that often require high levels of expertise and training, including legal, engineering, computer design, and advertising services, among others. Employment in the PST sector increased 6.2% in 2021 year-over-year—the strongest sector within the overall PBS. Through September 2022, the sector averaged around 270,900 workers, an increase of 7.6% over the average through September 2021. While employment growth has been muted, the sector is one of the strongest sectors in Colorado's job market. The committee expects the full year's growth rate to stay on trend, at 8.1%. Continued employment growth across PST is anticipated for 2023, with an increase of 6% to average 291,100 jobs.

Legal Services

Legal Services jobs in Colorado have remained stable over the last 10 years despite the increase in Colorado's population and business activity. Coming out of the pandemic, the legal industry remains resilient with another strong year: however, the industry has not been shielded from all challenges. These include increasing efficiency, adoption of technology, outsourcing, and innovation in delivery models. Legal Services employment increased 2% in 2021, and average employment through September 2022 stood at 20,900, a 3.3% increase versus the same period last year, which saw a 1.4% increase over the same period in 2020.

With most popular areas of law—corporate and real estate—seeing higher demands than in prepandemic times, the legal industry is booming, and with that, so is the demand for talent. Like most industries, the legal world has entered a highly competitive, complex, and evolving workplace market resulting in incredibly high turnover in attorneys, with some firms losing a quarter of their associates last year (2021). Studies show that this turnover isn't quite what you would expect. Workload and compensation are generally the trending metrics studied in this space, but in the postpandemic world, attorneys are focused on intangible factors like appreciation, recognition, and work-life balance.

Law firms continue to grapple with return-to-office planning, but roughly 40% of firms have permanently adopted a hybrid-work policy. However, the challenges every firm faces are project management and assignments, mentorship, and maintaining firm culture,

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Professional and Business Services

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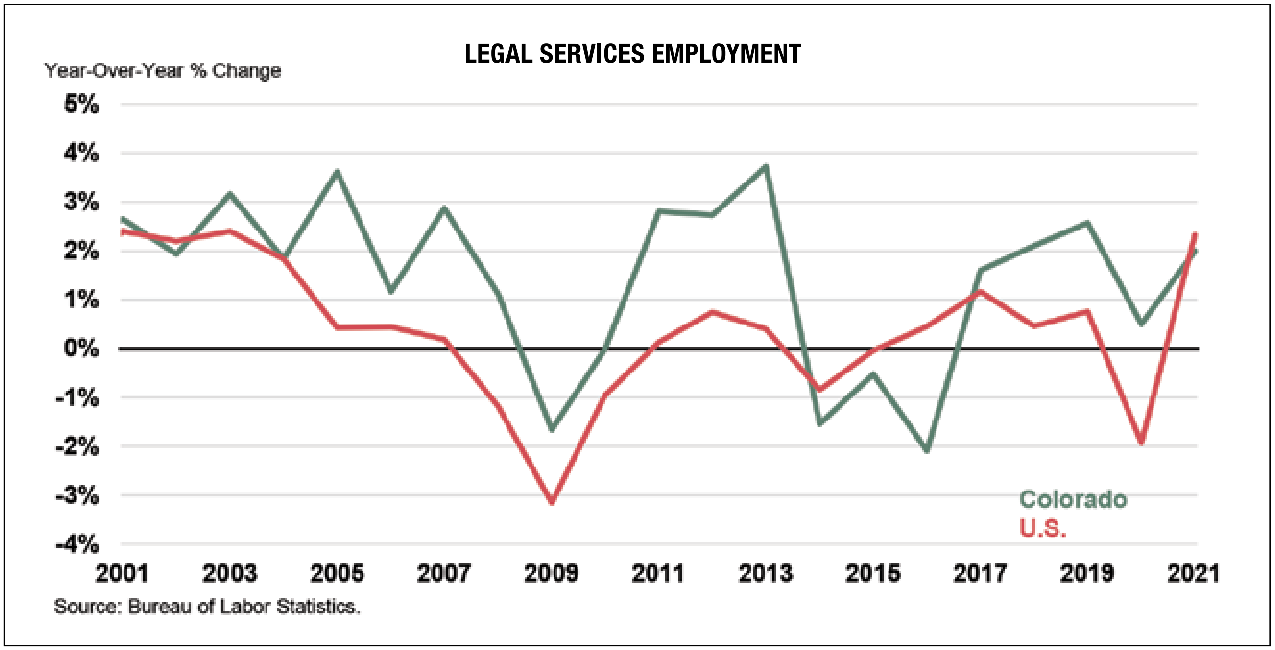

especially in a hybrid or fully remote workplace. The legal system has evolved with the pandemic in 2022. In short, while the pandemic increased activity related to commercial real estate, employment law, and compliance, the broader forces of automation, globalization, and outsourcing are holding down the need for additional hiring across Legal Services in Colorado. That said, 2022 saw an uptick in employment, likely related to the return to office dynamic and other related matters as the economy and businesses adjust to a new normal.

Over the past five years, Legal Services employment growth has fluctuated, from 0.5% to 2.6%. In this context, the committee expects this subsector to grow at 3.3%, averaging 21,000 positions in 2022. The committee expects moderating growth of in excess of 1.5% in 2023.

Architectural, Engineering, and Related Services

Employment in the Architectural, Engineering, and Related Services (AES) sector has exhibited steady growth from 2016-2021, averaging 3.1%. The 2021 year-over-year increase in employment of 3.9% was a strong rebound from 2020. Steady growth has occurred from January 2022 through September 2022 with an average 55,900 AES positions versus 52,400 in the same period in 2021, a 6.7% change year-to-date versus 3.2% in 2021. As a result of overall conditions, challenges with staffing, and project delays, the committee expects continued growth of 6.7%, or an average of 56,300 jobs in 2022. While growth will increase as projects come online, the challenge of filling open positions will moderate potential growth in the year ahead. However, there is an active spring-bidding season supporting steady staffing in this subsector. The committee expects continued 5% growth in 2023, resulting in an average 59,100 positions over the full year.

Even with the record employment of this subsector, employers are still searching for employees in specific job roles. Some companies have been advertising for certain positions for months and, in many cases, over a year. Of significant concern for companies looking to add employees is the lack of qualified engineers and technicians that can be hired in 2023. This restriction is anticipated to temper the increase of employment for this subsector in 2023.

One national 12-month leading indicator for vertical construction activity is the Architecture Billings Index (ABI), which registered a score of 53.3 in August 2022, up from 51 in July and the 19th-consecutive reading above 50, an encouraging sign for engineers and related fields.

Appropriations for public infrastructure projects, such as environmental mitigation, roads, transit, bridges, water, wastewater, and drainage will continue from last year. The General Assembly passed SB21-260, along with the federal Infrastructure Investment and Jobs Act (IIJA), which will provide additional state appropriations for transportation projects over the next 10 years. These laws will slightly increase funding for highway, road, and bridge projects. Their focus is to increase funding for electric vehicles and to develop more robust charging station infrastructure, with the intent to increase the number of personal and commercial electric vehicles, new electric transit, and new school buses, as well as converting diesel school buses to electric.

Starting a few years ago, and emphasized even more in the recent infrastructure appropriations, the mining and production of materials for highways, bridges, and buildings must lower carbon emissions and reduce the energy usage to produce all materials used in construction. Design specifications are being tailored to conform to these new requirements for all construction. The impact on the cost of materials produced in this way is still being determined.

Projects from the various Colorado municipal agencies are expected to continue and to be more focused on repurposing and enhancing existing infrastructure, rather than adding new buildings, roads, and bridges. More emphasis is being placed on developing multimodal pathways on existing vehicle corridors, along with combining disconnected hiking trails in municipal areas to motivate people to use their vehicles less. In November 2021, Denver passed a bond issue which will develop major corridors to be more multimodal with some of the projects starting fall 2022.

Private-sector projects are continuing in residential single- and multifamily housing. Material cost increases and shortages, coupled with labor shortages, are affecting contractors' costs and schedules, which are anticipated to delay project occupancies. Design and construction starts in warehouses, industrial, manufacturing, retail, data centers and other commercial buildings are continuing in 2022. Design and construction of hospitality properties, commercial retail, and office buildings are declining and expected to decline for some years.

TOTAL PROFESSIONAL AND BUSINESS SERVICES SUPERSECTOR EMPLOYMENT, 2013-2023
(In Thousands)

Year	Professional, Scientific, and Technical Services	Management of Companies and Enterprises	Administrative and Support and Waste Management and Remediation Services	Total[a]
2013	189.2	34.6	148.7	372.4
2014	196.7	35.5	154.1	386.4
2015	204.4	36.6	157.1	398.1
2016	209.8	37.4	158.2	405.4
2017	215.4	39.2	157.7	412.4
2018	224.4	40.8	158.3	423.5
2019	235.3	42.3	161.6	439.2
2020	239.2	41.9	149.3	430.4
2021[a]	254.1	43.5	155.1	452.8
2022[b]	274.6	46.9	164.3	485.8
2023[c]	291.1	48.3	166.8	506.1

[a]Due to rounding, the sum of the individual items may not equal the total. [b]Estimated. [c]Forecast.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

Most firms continue to work a hybrid schedule comprising a few days in the office with the rest of the week at home. Productivity also seems to remain at levels high enough for companies to continue this type of work. Some companies have gone completely remote when their leases ended, and this trend appears to be causing more vacant office space throughout portions of the Denver Metro area.

Optimism for funding public agency projects continues in 2021 and 2022. The most notable projects are those that are funded by multiple agencies and special districts. The Colorado transportation budget is expected to increase because of the new transportation funding law, along with the national infrastructure bill. This federal transportation bill also contains a significant amount of funding for electrical vehicles and charging station infrastructure.

Continuation of visible projects that will involve engineering design services and subsequent construction include interstate and state highway work around the Denver Metro area and the state. A Denver bond issue passed last year will continue the improvements at the Denver Stock Show Complex. Other infrastructure

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projects include the Central 70 Corridor, the I-25 upgrade south of Colorado Springs, and the I-70 West Vail Pass Rest Area Replacement and Auxiliary Lane projects. Denver is just kicking off the Broadway multimodal improvement project from 7th Avenue to Center Avenue. The Regional Transportation District (RTD) eliminated fares in August 2022 as an experiment to observe changes in ridership during the month and for the months afterward to determine if ridership increases remained. Early results showed that ridership increased 22% in August, and the final report is due in November 2022. RTD is also working on last mile and Autonomous Vehicle (AV) corridors around several light rail stations. This is a multiyear program funded mostly by federal grants. Three new hangers are under construction at Centennial Airport in Arapahoe County, with others being planned in the future to expand operations.

As anticipated years ago, many of the elementary school districts in the Denver Metro area are consolidating schools as a result of declining enrollment due to the declining birth rate since 2012. Middle schools and high schools around the state will likely be seeing a reduction in students in a few years, and the school boards will have to deal with additional consolidation. It is anticipated that colleges will be challenged by the end of the decade to maintain student levels as they are prone to the headwinds of fewer students due to lower birthrates and greater competition from trade schools and lower-tuition community colleges.

Students are returning to colleges in the fall 2021 and 2022 after declining enrollment in 2020. A few enrollment statistics at Colorado universities include:

- Colorado School of Mines: Total undergrad and graduate students increased 2.2% from 2019 (6,607) to 2020 (6,754), increased 6.2% in 2021 (7,172), and increased 3.3% in 2022 (7,408). The percentage of female students also increased from 30.7% in 2019 to 30.9% in 2020 and then to 31.4% in 2021 and 31.3% in 2022.

- CU Boulder: Total students declined 1.6% from 35,528 in 2019 to 34,975 in 2020, increased 2.6% in 2021 to 35,897, and increased 0.6% in 2022 to 36,122. The percentage of female students was 44.9% in 2019, 45.4% in 2020, 45% in 2021, and 45.5% in 2022. The total number of students at the College of Engineering were 7,438 in 2019, 7,616 (+2.4%) in 2020, 8,115 (+6.6%) in 2021, and 8,264 (+1.8%) in 2022. The percentage of female students at the College of Engineering was 29.2% in 2019, 29.1% in 2020, 29.7% in 2021, and 30.3% in 2022.
- CSU Fort Collins: Total students declined 3.2% from 35,466 in 2019 to 34,326 in 2020, then declined 0.5% in 2021 to 34,162, and declined again in 2022 to 33,948 (-0.6%). The percentage of female students was 53.4% in 2019, 54.7% in 2020, 55.7% in 2021, and 56.5% in 2022. The total number of students at the College of Engineering was 3,325 in 2019, 3,130 (-5.9%) in 2020, 3,102 (-0.9%) in 2021, and then decreased again to 3,017 (-2.7%) in 2022. The percentage of female students was 26.1% in 2019, 26.3% in 2020, 26.6% in 2021, and 27.9% in 2022.

Computer Systems Design and Related Services

The Computer Systems Design (CSD) subsector has averaged 5.5% employment growth over the past nine years. Employment in the subsector increased significantly by 8.9% in 2021 year-over-year, and average employment through September 2022 is 12.5% higher than the same period in 2021. Businesses within this subsector are primarily engaged in planning and designing computer systems that integrate computer hardware,

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The Importance of Optics and Photonics in Colorado

Photonics is the physical science and application of light (photon) generation, detection, and manipulation through emission, transmission, modulation, signal processing, switching, amplification, and sensing. Photonics is a cross-cutting technology that enables many of Colorado's advanced industries, including bioscience, aerospace, electronics, energy/renewable energy, quantum technologies, military/defense equipment, measuring and analytical instruments, automotive, telecommunications, and others. Some companies are based on a photonics product or service, while other have a segment of the company that designs, develops, or utilizes a photonics/optics component in their product.

The Colorado Photonics Industry Association (CPIA) is a 25-year-old nonprofit dedicated to promoting the use of optics and photonics technologies, educational programs that ensure a future photonics workforce, and the overall growth of the industry. The over 70-member organizations cover a range of industries, sizes, and stages of development and often have sophisticated supply chains and international orientation.

The past year was action-packed for the CPIA. The James Webb Space Telescope launched, proof-of-concept and early-stage companies received grants from the Colorado Office of Economic Development's Advanced Industry Program, quantum gained new ventures in Colorado, local leaders met with members of Congress, and local aerospace business increased dramatically. Current business projections for 2023 are very optimistic. Following are some examples of key events that occurred in the photonics cluster during 2022:


Photo courtesy of Ball Aerospace.

- Congressman Neguse joined the Optics and Photonics Caucus—U.S. Congressman Joe Neguse, representative for Colorado's 2nd District, announced in October that he will join the bipartisan, bicameral Optics and Photonics Caucus. He joins representatives and senators from New York, Florida, Montana, and Arizona.
- Atom Computing opens new Boulder facility—New CPIA member Atom Computing Inc. opened a new research and development facility in Boulder that the quantum computing company will use to house future generations of its computers. Colorado Governor Jared Polis led the ribbon cutting with the statement "Atom's expansion is another proof point that we are the quantum computing hub in the U.S."
- Ball-supported James Webb Space Telescope shares first images—NASA's James Webb Space Telescope, with an assist from optical technology and lightweight mirror systems developed by CPIA Member Ball Aerospace, transmitted its first images of the universe back to Earth. Webb's mission is to capture faint light from the very first objects that illuminated the universe after the Big Bang.
- Quantinuum sets new record with highest ever quantum volume—CPIA Member Quantinuum achieved three new milestones that will accelerate advances in the quantum computing ecosystem: (1) record quantum volume of 8192 on H-Series hardware, (2) new arbitrary angle gate capability enabling higher fidelity, and (3) over a half-million downloads of TKET.
- Research collaboration explores multiple methods for brain imaging—Researchers at the University of Colorado Boulder and Anschutz Medical Campus are exploring several imaging techniques aimed at creating miniature microscopes that are lightweight enough to be worn by freely moving mice as they navigate a maze or socialize with other mice.
- Orion Space Solutions wins satellite contract from U.S. Space Force—CPIA Member Orion Space Solutions LLC, a Louisville aerospace company, has inked a deal, along with a group of other contractors, to develop satellite technology for the U.S. Space Force. The $44.5 million deal is for the Tetra-5 mission, a Space Force effort to put commercial technologies to work in space-observation scenarios.

Contributor: *Damon Lenski, Board President, Colorado Photonics Industry Association*

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software, and communication technologies. Nearly all businesses rely on computer and information technology to effectively operate. Many businesses, however, lack the resources and knowledge to perform these functions internally so they hire out these services to firms within the CSD industry. Firms offering these services may also provide training and support for the users of the system, including on-site management and operation for clients.

The CSD industry is largely made up of highly educated and technically skilled workers. Many workers in the CSD industry are working as computer systems analysts, computer software engineers, and computer programmers. A strong talent pipeline is required to enable growth in this industry. Colorado continues to be a net importer of young, talented labor, contributing to faster CSD employment growth in Colorado compared with national CSD growth over the past four years.

According to CBRE's 2022 Scoring Tech Talent report, Denver ranked 10th nationally for the best market for tech talent, with over 117,000 active positions, moving up from 12th the prior year. The report analyzes 13 metrics, including tech talent supply, growth, concentration, cost, completed tech degrees, industry outlook for job growth, and market outlook for both office and apartment rental growth.

Several factors across the CSD world are clearly driving company performance and strategy. Artificial intelligence, the cloud, and cybersecurity remain critical areas for new talent development and hiring across the sector. Companies are fiercely battling for the best and brightest resources here, and the committee expects both hiring and compensation for these in-demand skills to continue to grow. That said, other areas, particularly hardware and services related to personal computers, are likely to see a drop in demand as the pandemic binge on new hardware wanes and inflation curbs these outlays. Even so, critical enterprise software investments will continue apace, at least to remain current with the overall business-to-business functionality that is now critical for most firms to interact and efficiently operate.

CSD experienced extraordinary employment growth of 8.9% in 2021, with 6,000 more jobs year-over-year. Monthly employment fluctuated over the first half of 2022 but accelerated over the latter half of the year. As of September 2022, the CSD subsector had accounted for 83,100 jobs, growing 11.4% year-over-year. These growth rates seem unsustainable over the coming year given the macroeconomic headwinds that are challenging big technology firms, their clients, and their suppliers. In this context, the committee anticipates a 12.5% increase of 82,400 jobs by the end of 2022. Growth is expected to moderate in 2023 at a rate of 5.5% to average 86,900 jobs.

Subsector Activity

Cognizant has 32 open positions across the Front Range in technology and engineering, corporate, digital, and IT infrastructure. Similarly, Oracle is currently posting 14 open positions across Colorado, with an emphasis on Denver, Broomfield, and Colorado Springs. Key positions include business development consultants, tax analysis, technical analysts, and consulting managers.

Management, Scientific, and Technical (MST)

Management, Scientific, and Technical (MST) Consulting Services remains one of the highest-growth subsectors in PBS, averaging 7.2% growth over the last 10 years. Employment increased by a record 11.2%, or 3,900 jobs, in 2021. Through September 2022, the sector increased 7.9%, adding 3,000 jobs on average. Moderating this trend, MST employment is projected to grow an additional 5% in 2023.

Management consultancies are currently enjoying a strong period of growth, both in headcount and revenue, with companies engaging outside experts for advice on adjusting to the new normal of return to work, hybrid, and remote-working arrangements. These changes impact several areas of the workplace, including human resources and process management, and influence workplace culture. Many companies were forced to go completely digital during the pandemic but made those choices without significant input from staff and stakeholders. Now that the immediate pressure is off, many organizations are taking the time to reevaluate these arrangements with more input and deliberation, which has opened the door for consultancies and advisors to provide input as well. That said, inflation and a potential recession pose a risk to these professionals, particularly in the second half of 2023 when financial pressures may mean that cutting costs is more important than managing operational challenges.

Metro Denver is now the top location in the nation when it comes to adding jobs in science, technology, engineering, and mathematics (STEM), according to the 2021 STEM Job Growth Index from RCLCO and CapRidge Partners. RCLCO has released the STEM Job Growth Index (STEMdex) as a tool to highlight the top locations for current STEM employment and where STEM employment is anticipated to be concentrated in the future. Denver ranked eighth on the index in 2018, fifth in 2019, and third in 2020, and this year ended ahead of tech havens Seattle, Austin, and San Francisco. The Colorado Economic Council has committed more than $10 million in tax credits to stimulate additional growth in technology and technology education.

The *Denver Post* recently reported that Sierra Space, a subsidiary of Sierra Nevada, has been funded by NASA to develop the Dream Chaser to ferry its first cargo to the International Space Station in 2023. Sierra Space has teamed with Blue Origin to design and build this commercially owned and operated venture, which is expected to be up and operating by 2027. The company plans to start training astronauts in 2023 to provide this platform for the development and production of pharmaceuticals, materials, and other commercial ventures in the low gravity of space, which is considered advantageous over the development in Earth's gravity. Based on recent trends, over 50% of additional positions from Sierra are in Colorado.

Subsector Activity

Maxar, a Westminster-based space technology company, continues to play an outsized role in Colorado's Professional, Scientific, and Technology sector. To offset a downturn in commercial satellite sales, Maxar is positioning itself to compete in the national security area, the head of Maxar's satellite manufacturing operations, Chris Johnson, told *SpaceNews*. The company scored a big win as a subcontractor to L3Harris Technologies, which won a $700 million contract from the Pentagon's Space Development Agency (SDA) to produce 14 satellites to launch in 2025. SDA is building a low-earth orbit constellation of data transport and missile-tracking satellites for the Department of Defense.

Aerospace company Blue Origin unveiled its new Highlands Ranch office in October 2022. It occupies the sixth floor of one of the office towers off Lucent Boulevard overlooking C-470. Nearly 200 employees work in the facility, and there are plans to double in size. The Highlands Ranch crew are involved in every mission Blue Origin is working on, including the mission to the moon.

Management of Companies and Enterprises

Management of Companies and Enterprises (MCE) includes a very broad cross section of company headquarters and regional offices for businesses. The sector, which continues to represent less than 2% of Colorado's overall employment, has generally produced 2% to 5% job growth over the previous five years. This sector represents 9.5% of overall PBS industry employment. Diverse industries and products are represented by companies in this sector, including VF Corporation, Antero Resources, Prologis, Ball Corporation, Arrow Electronics, Johns Manville, and Newmont Mining.

Employment in the sector increased 3.8% in 2021 year-over-year, and employment in 2022 through September averaged 45,700, up 5.9% over the same period in 2021. This strong growth appears to continue the rebound from lower employment levels during the pandemic and returning to the earlier growth trends. The committee believes the sector is anticipated to continue growth of 7.8% through 2022 and another 3% in 2023, resulting in an average employment of 48,300.

Job growth in this sector is driven by national and international economic conditions, as well as corporate headquarter relocations. Some of these relocations are driven by corporate officer preference, others by Colorado's business climate, while some follow preferences to locate in Colorado due to perceived recruiting benefits offered by our lifestyle and outdoor recreation opportunities.

Subsector Activity

Vail Resorts has invested $175 million in 2022 in its employees, increasing minimum wage at all its North American ski areas to $20 an hour and investing in housing, employee training, and human resources, according to a *Colorado Sun* article by Jason Blevens. The company was planning to be fully staffed for the 2022-23 season.

Administrative and Support and Waste Management and Remediation Services

This sector comprises establishments that perform routine support activities for the day-to-day operations of other organizations. It includes office administration, hiring and placing personnel, cleaning, document preparation and clerical services, and waste disposal, among others. Sector employment represents 34% of overall PBS industry employment, with 155,100 employees in

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2021, up 3.9% from 2020. Employment has rebounded from the pandemic low when the sector lost 7.3% of its workforce. Sector employment has grown in 2022 with average employment through September up 5.9% over the same period in 2021. That said, employment is projected to stay on trend in 2022 to average 164,300 jobs in 2022. Further growth of 1.5% is expected in 2023 to total 166,800.

Employment Services

Employment Services jobs are related to hiring and placing personnel. The unsettled labor market in the United States and in Colorado has proven to be a barrier to hiring in this sector. While this sector typically served as an early indicator of future hiring trends, recent changes have made it particularly difficult to foresee the cumulative impact over the next year. Overall, this sector is fundamentally changing as companies are relying more on automation and internal recruiting resources versus the traditional path of outsourcing.

A key trend for this sector is an increase in competition both directly from other companies and from the numerous web services including Indeed, LinkedIn, and public-sector job boards.

The Employment Services sector observed a gain of 5,300 jobs (13%) to average 46,100 positions in 2021. The sector has fully recovered from the pandemic, with average employment through September 2022 up a startling 20.2% over the same period in 2021 to average 54,100. Given this mini-boom, the subsector is projected to continue strong growth but moderate to 15% by year-end 2022. However, assuming a broader, statewide weakening in 2023, growth of just 2% is expected in 2023, with employment expected to average 54,000 jobs for the year. This strong but slowing growth reflects the structural changes to the economy as employers shift to more temporary workers ahead of a potential recession in 2023, overriding the longer-term trends toward internal recruiting and web-based services eroding the role of traditional recruiting companies. This may also reflect the growing trend of seniors working on a part-time basis to help adjust to the recent reduction in retirement plans due to the stock market and the kitchen table impacts of inflation.

Services to Buildings and Dwellings

The Services to Buildings and Dwellings subsector comprises establishments primarily engaged in providing services to buildings and dwellings to include extermination, fumigation, cleaning, transportation, landscape care, and maintenance services. Employment averaged 46,500 in 2021, an increase of 2.6% year-over-year. However, average employment through September 2022 was down 0.6% over the same period in 2021, indicating an end to the brief rebound in employment in 2021.

The increase in modern technology to support new buildings requires new skills and talents that are driving the hiring of a younger, more technically oriented workforce. With the expectation of the impact from the pandemic receding, the PBS Committee expects employment in the subsector to decrease 0.6% in 2022 year-over-year to average 46,200 jobs. Continued moderate job losses are expected in 2023, with the subsector projected to shrink 0.5% to average 45,900 positions across the state. Despite the relative increase in economic activity that might warrant more hiring, the challenges around recruiting and retention of the technical positions in this sector are apparent headwinds.

Subsector Activity

Hospitality at Work (HAW) is a full-service commercial real estate company, overseeing buildings across the Front Range. Per T.J Tarbell, senior vice president of HAW, “In many ways we’ve moved beyond COVID into a new normal, which has its own set of opportunities and challenges. On a positive note, we continue to see increases in physical occupancy across our portfolio. However, leasing demand has slowed as companies figure out how to deal with rising inflation, supply chain challenges, higher interest rates, and fears of a looming recession. In addition, the labor market remains top of mind for many executives given the challenges faced following the onset of COVID. The shortage in skilled labor—particularly facilities/maintenance positions—has kept me up many nights over the last two years. However, I expect job growth to slow in 2023 as more people return to the workforce and we deal with the overall economic slowdown. The increase in labor availability will be one positive to a slowing economy for companies like ours—we plan on taking advantage and hiring some of the skilled trades we couldn’t find this year.”

Support Services

Support Services aggregates outsourced professional services such as advisory, security, payroll, logistics, and other professional office functions. Employment in this sector declined 7.7% in 2021 year-over-year, marking the eighth year of continuous employment declines. The number of business support services jobs remains pressured by industry consolidations, globalization, automation, and programmed configured software as a service (SaaS), all of which saw increases during the pandemic. Given this dynamic, Support Services employment is projected to grow 1.8% in 2022, to average 18,200. A continued reduction in employment of 1% is expected in 2023.

Subsector Activity

One bright spot in the sector may be a resumption of business travel as the pandemic recedes. A rapidly growing Denver corporate travel management company, Hotel Engine, is adding 400 workers in 2022. The company is coming off a $65 million funding round that pushed it into unicorn status.

Waste Management and Remediation Services and Other

Jobs in this subsector include local hauling of waste materials; recyclable materials recovery facilities; remediating contaminated buildings, mine sites, soil, or ground water; and providing septic pumping and other miscellaneous waste management services. Waste management volumes generally trail demographic and consumer trends, aggregate societal activity, housing, and commercial growth.

This subsector is expected to see employment growth as these services are a trailing indicator of overall population growth and development. However, consolidation may be taking a toll as well as the shift to commercial from residential activity following the pandemic. Given this context, a 4.9% increase in employment is projected for 2022 to total 46,900. A reversion to more traditional growth patterns of 2.1% is expected in 2023.

Subsector Activity

On November 8, 2022, Denverites approved Initiated Ordinance 306, which will require Denver’s businesses, apartments, construction sites, permitted events, and more to phase in recycling and composting services. According to the city’s 2022 Sustainable Resource Management Plan, 82% of Denver’s waste comes from these locations, yet there is currently no policy to require recycling and composting at these sites.

Along with the requirement to provide recycling and composting services, the “responsible parties” defined in the ordinance will provide bilingual waste diversion information and instructions to employees and tenets. The ordinance will also require responsible parties to complete an Annual Diversion Plan, which will be created by and submitted to Denver’s Department of Transportation and Infrastructure.

PBS Sector Summary

The many subsectors of Professional and Business Services will continue to collectively support employment across Colorado’s Front Range in 2022. Overall, the committee projects PBS employment will grow another 7.3% to average 485,800 jobs in 2022. Despite all the headwinds, growth will likely continue at a rate of 4.2% in 2023, to total 506,100.

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Education and Health Services

The Education and Health Services (EHS) supersector comprises private-sector education, as well as four private-sector health care and social assistance sectors, including ambulatory care, hospitals, residential and nursing facilities, and social assistance. This industry represents almost one in every eight jobs in the state of Colorado. More than 87% of industry employment is made up of Health Care and Social Assistance, while about 13% is related to Educational Services. EHS was impacted early in the pandemic as it faced similar shutdowns as the broader person-to-person services industry. Educational and Health Services employment increased 2.6% in 2021 and grew an estimated 1.7% in 2022. The industry is projected to increase another 1.6% in 2023 to total 359,600 employees.

COLORADO EDUCATION AND HEALTH SERVICES EMPLOYMENT, 2013–2023 (In Thousands)

Year	Educational Services	Health Care and Social Assistance	Total
2013	36.1	249.8	285.9
2014	37.2	260.9	298.0
2015	38.6	274.7	313.3
2016	39.8	286.0	325.8
2017	40.5	293.6	334.1
2018	41.9	298.8	340.7
2019	43.5	304.1	347.6
2020	41.0	298.2	339.2
2021[a]	43.2	304.7	347.9
2022[b]	46.4	307.4	353.8
2023[c]	47.9	311.7	359.6

[a]Revised. [b]Estimated. [c]Forecast.

Note: Due to rounding, the sum of the individual sectors may not equal the total.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

Educational Services (Private)

Private-sector educational services can be classified as private not-for-profit, private for-profit, religious exempt, and private occupational, as well as private companies delivering training and development and other ancillary and support services. Public elementary and secondary educators are accounted for in local government; public higher education employees are accounted for in state government. Contributions to Colorado's employment come from many schools within the state's private K-12 and post secondary institutions, the latter accounting for approximately one-third of all postsecondary enrollments. The largest employers in the private education services subsector come from private postsecondary education. Among Colorado's more prominent private nonprofit schools are the University of Denver (DU), Regis University, and Colorado College. As of October 2022 (compared with 2021), Colorado had a net loss of only one private college and school; 17 institutions left the state while Colorado gained 16 new schools. The most noticeable loss was the final campus closure of the University of Phoenix. The gains were predominantly small schools with six operating under the authority of the Degree Authorization Act (DAA) and 10 schools operating under the Division of Private Occupational Schools (DPOS). These changes should result in a relatively flat to low growth expectation for 2023.

Changes in Profit and Nonprofit Private Colleges and Universities

As the nation's colleges and universities have lost 1.1% of total undergraduate and graduate enrollment from last fall (2021), primarily online institutions grew 3.2% from last fall. The *Business Journals* ("Here's where most of America goes to college," *Denver Business Journal* [bizjournals.com]; October 20, 2022) analyzed Department of Education data and found that students are flocking to universities that offer the most online courses. Most students at the nation's five largest universities (measured by total 2021 enrollment) learned online last year; the University of Phoenix is in that group of five ("Here's where most of America goes to college," *Denver Business Journal* [bizjournals.com], October 20, 2022). However, the move to a greater focus in online learning resulted in the closure of the University of Phoenix's final campus in Colorado, a move that has been the result of a measured retrenchment by the University of Phoenix, which at one time, had three campuses in Colorado. In fact, "The University of Phoenix, once the nation's largest university by student enrollment, recently confirmed plans to shutter all but one of its remaining physical campuses across the country and move to a completely online model" ("University of Phoenix President George Burnett shares new plans for online college, adult learners," *Denver Business Journal* [bizjournals.com], May 16, 2022).

In fall 2022, a total of 342 private schools and colleges operated in Colorado. Of that group, 76 private accredited colleges were listed under the DAA on the Colorado Department of Higher Education website (down from 78 in fall 2021); 58 of those are nonprofit and 18 are for-profit, 36 are private seminary schools, and 24 are headquartered outside of Colorado. Under

INDUSTRY SNAPSHOT EDUCATION AND HEALTH SERVICES

Nominal GDP, 2021 ($ Billions)	30.4
Real GDP, 2021 ($ Billions, 2012 Dollars)	25.9
2021 Real GDP Growth Rate	3.9%
Total Employment, 2021 (Thousands)	347.9
2021 Employment Growth Rate	2.6%
Employment Growth National Rank	12
Share of Colorado Employment	12.7%
Share of National Employment	16.2%
Average Wage, 2021	57,747
Percent of Statewide Average Wage	80.7%
2021 Average Wage Growth Rate	4.6%

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics.

the DPOS are a total of 342 schools, with 21 of those having their headquarters outside of Colorado, down from 343 schools in 2021.

Employment in the private education sector is driven by both business demand for continuing education programs and consumer demand for training that improves employment prospects and/or general quality of life. In the corporate and business sector, skill development of employees through learning curricula continues to play a critical role in developing competitive competencies of businesses, especially in the high tech and consulting arenas. Corporations consider reinvestment in their employees a required business-development function. Furthermore, certification within specific industries drives both corporate and consumer consumption of learning to remain competitive.

Career Schools and Colleges

The private education sector also includes career schools and colleges that provide training in the trades and crafts, helping to meet a growing national demand. The Career Education Colleges and Universities (CECU) provides training for high demand occupations being met by private schools, such as skilled commercial drivers, surgical technologists, electricians, nurses, construction workers, manufacturers, and others.

Among Colorado-based private accredited colleges approved by the DPOS are schools as diverse as Auguste Escoffier School of Culinary Arts, Embry Riddle Aeronautical University, and Lang Institute for Canine Massage. CompTIA Tech Career Academy from Illinois and WyoTech from Wyoming are out-of-state schools that are approved to operate in Colorado.

Private Secondary Education in Colorado

In 2019-20, the Colorado Department of Education listed 442 nonpublic-sector school locations (the term "nonpublic schools" applies to private, parochial, and independent schools) that provide education to children in kindergarten and compulsory school age grades 1-12. Currently there are over 4,000 nursery, preschool, and day care centers operating under the Colorado Department of Early Childhood (CDEC). Approximately half of those schools accept the Colorado Child Care Assistance Program (CCCAP), which helps families who are homeless, working, searching for work, or in school find low-income child care assistance; these schools could be considered public institutions, while the remainder could be considered private. Note that this definition is not specifically spelled out on the CDEC website.

Cautious Growth

Driving the cautious optimism for growth over the near-term are several hurdles, including the following:

- The ability of all schools, private and public, to adjust to the changing demands of increased online coursework and reduced seat time following changes due to the pandemic.
- Closures related to legal and financial difficulties will limit growth. Johnson & Wales University announced in June 2020 the closure of their Denver Campus, which fully closed in the summer of 2021. Ashford, American Sentinel, University of Phoenix, and University of the Rockies are other examples of notable schools to close operations in Colorado in the last 10 years.

Educational Support Services

Colorado's private education sector includes educational support services. One example is Pearson Education, which is a subsidiary of a multinational company headquartered in London. Among other software businesses in the learning and education delivery sector in Colorado is Amplifire, which focuses on a results-based learning platform for education, as well as health care and Fortune 500 companies.

As education companies such as these continue to create more content, learning technologies, and educational analytics opportunities, Colorado continues to be a strong player in the educational support field.

Summary

Education is in the midst of significant transformation and reform, including an accelerated increase in the adoption of online learning for all age levels. This heavy reliance on technology requires more strategic thought specific to pedagogy and instructional design and also provides tremendous opportunities for data-driven education. When big data can provide at-risk reports on behaviors, such as dropped classes within a week of course starts, an understanding of how students learn best, and the development of courses that are tailored to student needs in real-time, personalized learning is very close to becoming reality.

Health Care and Social Assistance

The private-sector Health Care and Social Assistance Sector is a significant contributor to Colorado's economy. The sector employed an estimated 307,400 workers in 2022. However, the impact of COVID-19 to the various health care sectors has not been consistent. Growth in the ambulatory health services sector is offsetting job losses in hospital, nursing facility, and social assistance.

Population Trends

Aging

The State Demography Office estimates that Colorado was home to 5.8 million people in 2021. This number is expected to grow to 6.4 million by 2030. Colorado's population growth continues to be driven by individuals in the 65+ demographic, and by 2030, 18.4% of the population is expected to be Medicare eligible, up from 15.5% in 2021. Colorado's population of children between the ages of 0 and 17 is expected to drop to 19.4%, down from 21.4% in 2020. By 2035, it is projected that the number of seniors in Colorado will surpass the

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number of children. This has significant ramifications to the health care landscape within the state, according to the Colorado State Demography Office.

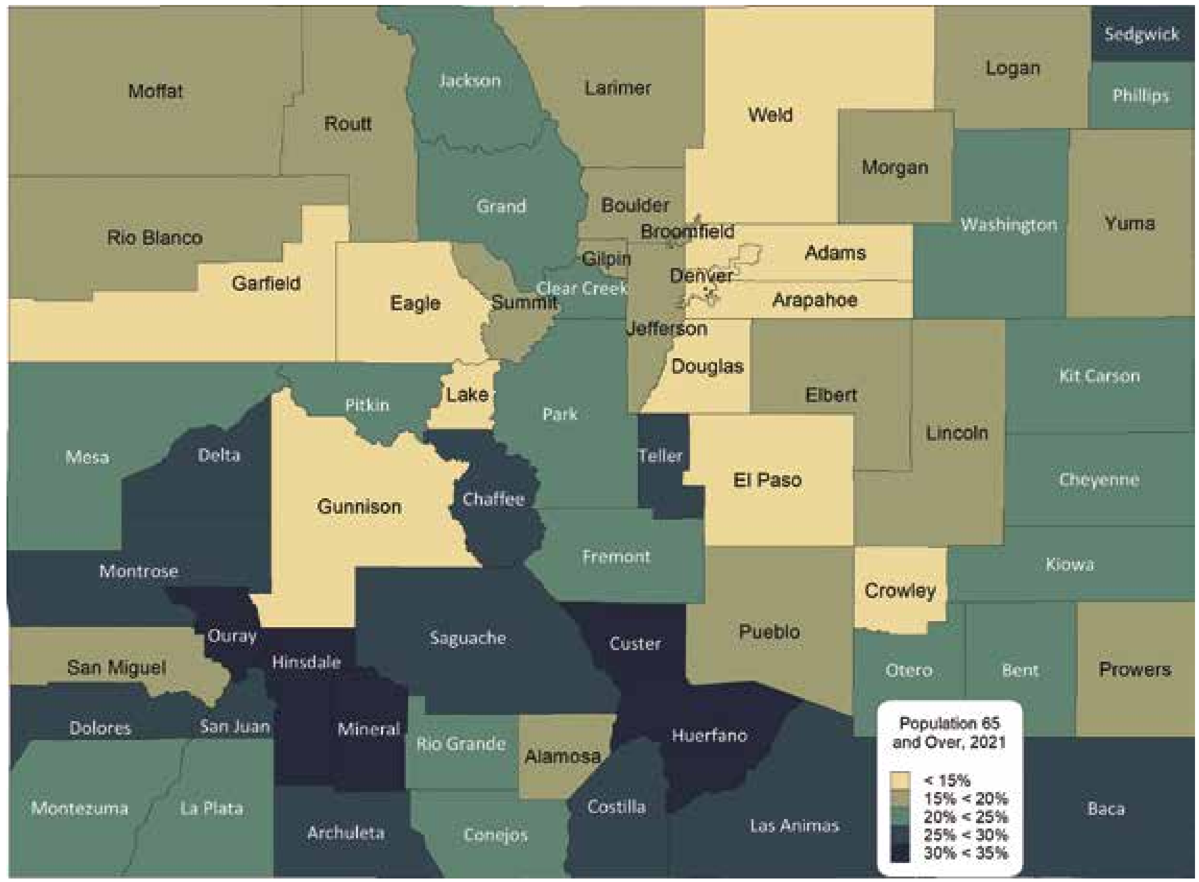
Select Populations and Health Status

America's Health Rankings model identifies several factors that influence overall health outcomes, including clinical care, behaviors, physical environment, social factors, and economic factors. In the *2022 Health of Women and Children Report,* Colorado is ranked as the 11th-most healthy state. Most notably, Colorado women and children rate highly in behavior and physical environment. Coloradans are physically active, and there is a relatively low prevalence of obesity for women. Cigarette smoking has dropped 6.3 percentage points for women ages 18 to 44 between 2013-2014 and 2019-2020. Physical environmental factors impacting the population include air and water quality, climate change policies, transportation energy use, housing, and transportation. Climate change and transportation energy use rates most highly while severe housing problems appear to be the most significant concern. Clinical care also rates relatively poorly particularly for women. This is driven by lack of adequate prenatal care and well-woman visits relative to other states. Only 67.1% of Colorado women are identified as having adequate prenatal care, 7.6 percentage points below the U.S. average of 74.7%. Colorado women receive well-women visits at a rate of 66.2%, 5.8 percentage points below the U.S. average of 72%.

Behavioral Health

The pandemic strained the existing behavioral health landscape and revealed many gaps in its infrastructure. In response, the state of Colorado passed HB22-1278 during the 2022 legislative session to create a new state entity, the Behavioral Health Administration (BHA). The BHA is tasked with unifying and expanding behavioral health services across the state. One of the primary goals of this new entity will be to address shortfalls in workforce that cannot meet the current demand for behavioral health services. Resolving these issues will require additional legislation, investment, stakeholder engagement, and/or administrative rule changes.

PERCENT OF POPULATION 65 AND OVER, 2021



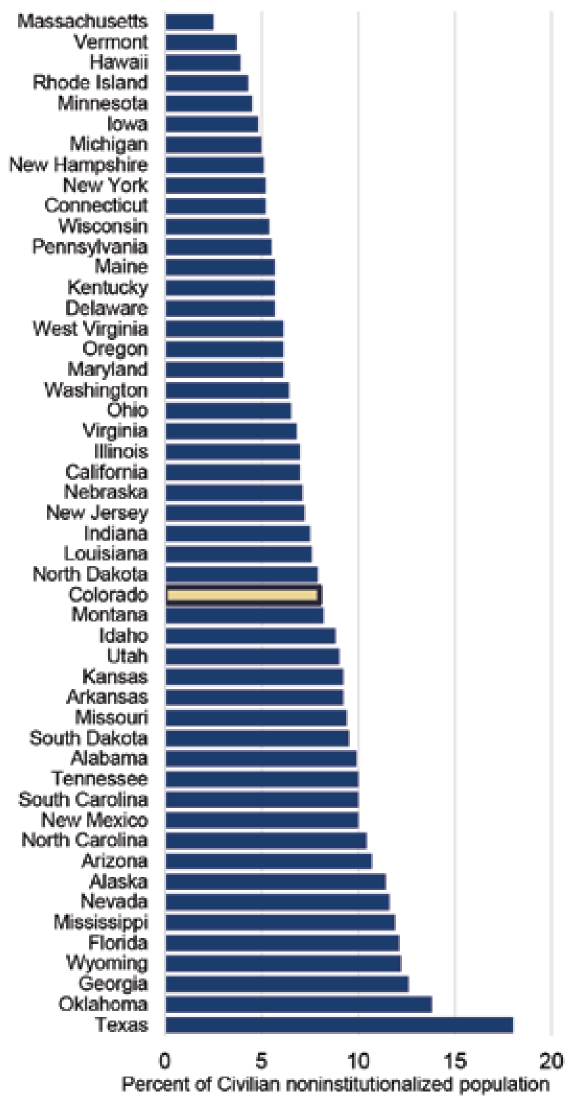
Source: Colorado Department of Local Affairs, State Demography Office.

Substance Abuse

In 2020, 1,477 Coloradans died of drug overdoses—the most overdose deaths ever recorded in the state, and a 38% increase from 2019, according to data from the Colorado Department of Public Health and Environment. This represents an age-adjusted death rate of 24.87 residents per 100,000, up from 18 per 100,000 in 2019. Colorado recorded a large increase (54%) in the number of overdose deaths due to opioids, a category that includes opioid analgesics and heroin. These deaths made up nearly two-thirds of all drug-poisoning deaths in Colorado in 2020.

Fentanyl, a synthetic opioid 50 times more potent than heroin, can be deadly in small amounts and is a major contributor to fatal overdoses, according to the Centers for Disease Control and Prevention. In 2020, overdoses

UNINSURED RATE, 2021



Source: U.S. Census Bureau, ACS 1-year Estimates.
Note: Estimates from Colorado Health Institute differ slightly from Census estimates due to methodology.

involving fentanyl made up about 68% of all opioid analgesic deaths. Between 2019 and 2020, the number of overdose deaths involving fentanyl more than doubled, from 222 to 540. The Colorado Health Institute reports that there were 10 times as many overdoses involving fentanyl in 2020 than in 2016. Colorado legislators passed House Bill 22-1326 that lowers the amount of fentanyl eligible for a felony possession charge from 4 grams to 1 gram, requires jails to offer medication-assisted treatment, and directs resources to treatment and harm reduction strategies including testing strips and overdose reversal drugs.

Health Insurance Coverage

The 2021 Colorado Health Access Survey published by the Colorado Health Institute indicates the uninsured rate has remained low at 6.6%. This is only an increase of 0.1 percentage points from 2019. However, many people lost jobs over the pandemic and their coverage shifted from employer-sponsored coverage to Medicaid. Medicaid coverage increased from 18.7% in 2019 to 24.8% in 2021, an increase of 6.1 percentage points. Over that same period, employer-sponsored coverage fell from 52.7% to 49.8%, or 2.9 percentage points, and Medicare fell from 13.7% to 11.5%, or 2.2 percentage points. The individual market decreased from 7% to 6.3% of health insurance coverage.

Commercial Group

Commercial group or employer-sponsored insurance provided health insurance for 49.8% of Coloradans in 2021. This number has dropped 7.9 percentage points from the high of 57.7% reported in the 2021 Colorado Health Access Survey, but still remains the primary avenue through which Coloradans receive coverage. Major insurers in Colorado include Aetna, Anthem, Cigna, Humana, Kaiser, and UnitedHealthcare. There have been a number of companies attempting to disrupt the health insurance industry, but no significant changes have occurred in this space. Most notably Amazon, JPMorgan Chase, and Berkshire Hathaway created a partnership called Haven, but this disbanded in 2020. The intent of such disruptors is to reduce costs, increase access, and improve customer relationships, according to a report by the American Hospital Association.

Commercial Individual

The commercial individual market includes health plans for individuals who are not able to participate in state Medicaid or Children's Health Insurance Program due to income, are not Medicare eligible, and do not receive group insurance through their employer. This makes this health market responsive to factors influencing the other health insurance coverage options. In 2023, the anticipated end of the public health emergency declaration extending Medicaid coverage during COVID-19 could shift more Coloradans into the individual market.

The individual market expanded in 2010 with the Affordable Care Act and became effective in 2014. The original law included an individual mandate requiring citizens to obtain qualifying health coverage. It also forced insurance companies to cover individuals with preexisting health conditions. Individuals can buy individual insurance on exchange through Connect for Health Colorado or off exchange through agents, brokers, or directly from the insurance providers. The individual market covered 6.3% of the addressable Colorado market in 2021, according to the Colorado Health Institute Colorado Health Access Survey.

Since 2014, the individual market in Colorado has gone through several changes as insurance carriers have dropped in and out of the market. Market share and profitability have been key concerns for these carriers. In 2023, six companies will offer insurance in Colorado including Anthem (HMO Colorado), Cigna, Denver Health, Friday Health, Kaiser Permanente, and Rocky Mountain HMO. Two companies will exit the market–Bright Health with 55,000 people covered, and Oscar Health with fewer than 5,000 covered. Both companies cited financial considerations in their decision to leave the Colorado market.

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Medicare

Medicare covers individuals 65 and older and younger individuals who have specific medical needs. Traditional Medicare includes Part A and Part B. Individuals also have the option to purchase supplemental benefits (Medicare Advantage or Part C) through health insurance carriers.

The Medicare-eligible population has increased significantly in Colorado with Medicare age-in of baby boomers. The Medicare market covered 11.5% of the addressable Colorado market in 2021, according to the Colorado Health Institute Colorado Health Access Survey.

Medicaid

Colorado's Medicaid program, known as Health First Colorado, covers approximately 1.5 million people, which represents slightly more than one of every four people in the state. Among the enrollees, approximately 577,000 are children, 837,000 are adults without disabilities, and 144,000 are seniors and people with disabilities. Colorado also covers an additional 55,000 higher-income children and pregnant women through a stand-alone Children's Health Insurance Program (CHIP), known in Colorado as the Child Health Plan Plus (CHP+). The Department of Health Care Policy and Financing, which administers the Medicaid and CHIP programs, is the largest state department by appropriation in Colorado, with expected expenditures of approximately $14.1 billion in state fiscal year 2021–22, including $2.9 billion from the state's General Fund.

Since the beginning of the COVID-19 pandemic, Medicaid caseload has changed rapidly. Between March 2020 and June 2022, Medicaid caseload grew by over 400,000 people, an increase of more than 25%. A significant portion of this change has been due to a change in federal law. The Families First Coronavirus Response Act (Section 6008) conditioned a temporary increase in Colorado's federal funds rate on a commitment by the state to maintain eligibility for every person on the program through the duration of the public health emergency, regardless of changes in income or circumstances. As a result, the state is generally unable to disenroll any person from Medicaid until the COVID-19 public health emergency ends. The public health emergency was most recently renewed on October 13, 2022.

Once the public health emergency ends, there will be a significant change in Medicaid caseload, which may have a disruptive effect in health insurance enrollment in Colorado. The state projects that approximately 220,000 people will lose Medicaid coverage in the year immediately following the end of the public health emergency, as many people who are currently enrolled in Medicaid have only retained coverage due to the federal prohibition against disenrolling people until the public health emergency ends. Individuals who lose coverage would need to seek coverage through employer-sponsored insurance, on Colorado's health care exchange, or through other options—or drop coverage entirely. The timing of this is uncertain; the secretary of the federal Department of Health and Human Services may further extend the public health emergency in the future. In addition, federal legislation in late 2022 or early 2023 may contain provisions that materially alter the continuous coverage requirements.

While Medicaid caseload has increased, the caseload in the Children's Health Insurance Program (CHIP) has decreased; since the beginning of the pandemic, the caseload has decreased by nearly 30%. This is consistent with prior economic recessions; CHIP serves higher-income populations, and as people lose their jobs, their income can quickly fall to zero, which makes them eligible for Medicaid, not CHIP. In addition, the Medicaid continuous coverage requirements are preventing individuals whose income increases from moving from Medicaid to CHIP.

Uninsured

In 2021, Colorado's uninsured rate was 6.6%, essentially unchanged since major Affordable Care Act provisions went into effect in 2021, according to the Colorado Health Access Survey. The uninsured rates varied across the state, from 3% in Douglas County to 13.2% in the Upper Arkansas Valley.

Job loss impacts access to health insurance, with 42.7% of uninsured Coloradans reporting that they did not have coverage because someone in their family who had health insurance had lost or changed their job. At the same time, just one in nine Coloradans cited the loss of eligibility for Medicaid or CHP+ as the reason for being uninsured, down from one in three (29.1%) in 2019—an indication that the Medicaid continuous coverage provision implemented during the COVID-19 pandemic kept people from losing eligibility.

The Health Care Workforce

Health care jobs are not restricted to doctors and nurses. The health care system is tremendously complex and involves many support roles in IT and insurance. For every doctor in the United States, there are eight clinical professionals and eight nonclinical workers, according to one national estimate. Health care, therefore, drives employment across a wide range of occupations and skill levels. The primary employment segments in health care include ambulatory, hospitals, nursing and residential care facilities, and social assistance. In 2022 Q1 the private health care workforce was 304,000.

Key occupations across these groups include:

- Physicians
- Registered Nurses
- Licensed Practical and Licensed Vocational Nurses
- Home Health Aides
- Reception/Information/Office Services
- Dental Assistants
- Substance Abuse, Behavioral Disorder, and Mental Health Counselors
- Physical Therapists

Employment by Sector

Employment in the Ambulatory Health Services sector was approximately 147,000 employees in Q1 of 2022. This sector was one of the hardest hit employment sectors early in the pandemic. The workforce decreased 9.9% in Q2 2020 from Q1 2020. However, it quickly rebounded in Q3 and Q4 of 2020 and continued to grow in 2021 and 2022. Between Q1 2020 and Q1 2022, this sector grew 3.6% despite the volatility in Q2 2020 related to COVID-19.

Employment in the Hospital sector was 59,000 in Q1 of 2022. This sector was significantly impacted by COVID-19 in 2020. However, unlike the Ambulatory Health Services sector, hospital employment numbers have not rebounded. Employment in this sector has decreased 3.7% between Q1 2020 and Q1 2022. This may reflect problems that many hospitals are facing with margins. Health systems, including some in Colorado like Adventist, have been laying off employees due to low margins.

Employment in the Nursing and Residential Care sector was 39,000 in Q1 of 2022. This sector experienced an 11.9% decrease between Q1 2020 and Q1 2022. A drop in employment occurred in Q2 2020 because of COVID-19, and it has been steadily declining since the onset of the pandemic. This sector consists of many low-paying, low-skill, and high-stress jobs that have had to compete for employees with other sectors that are seeking entry-level skillsets.

Social assistance is the last sector to make up Health Services. There were 60,000 employees in this sector in Q1 2022, a 2.9% decrease in employment from Q1 2020. Like the other sectors in Health Services, Social Assistance saw a significant drop in employment in Q2 2020 because of COVID-19. Employment has been slowly picking up since that initial drop but has still not recovered to prepandemic employment levels.

Other Trends in the Health Workforce

The COVID-19 pandemic had significant and lasting impacts on the health care workforce. Definitive Healthcare recently reported on health care providers that left the workforce in 2021. Of the 334,000 clinicians who left the workforce, 117,000 (34%) were physicians. Key factors influencing these departures include retirement, burnout, and other stressors related to COVID-19. Even without the impacts associated with the pandemic, the United States already faces an aging physician population. In 2018, 46% of physicians were 56 years or older, according to Statista.

Health Care Delivery

Hospitals

Colorado hospitals are significant contributors to the state's economy, employing thousands of people in communities throughout the state each year. According to the Colorado Hospital Association, the state's hospitals inject more than $18 billion into Colorado's economy each year.

Colorado's hospital systems are profitable, according to the Colorado Department of Health Care Policy and Financing's March 2022 *Hospital Insights Report,* through patient services, operating activities, and nonoperating activities. Rural hospitals in Colorado, however,

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depended on federal stimulus funding from the COVID-19 pandemic to avoid financial devastation.

There is a national trend in hospitals of closing children's beds to make room for more financially profitable adult beds. This can create problems with access for children, particularly in rural areas with fewer health service locations and longer travel times to obtain necessary health services. The first pediatric unit to close in Colorado was in Colorado Springs, and Penrose-St. Francis closed its inpatient pediatric unit in 2019.

In 2022, nonprofit health systems SCL Health and Intermountain Healthcare merged. This new organization operates 33 hospitals (including one virtual), runs 385 clinics across seven states, and employs more than 59,000 caregivers.

Pharmacy

Pharmaceutical expenditures grew in 7.7% in 2021 from 2020 levels. This growth is attributed to an increase in utilization of 4.8%, price increases of 1.9%, and increases of 1.1% for new drugs entering the market. Total drug expenditure for 2021 in the United States was $576.9 billion. The costliest drugs in terms of overall expenditures include Adalimumab (arthritis and skin disorders), Apixaban (blood clotting), and Dulaglutide (high blood sugar, diabetes). Major drivers that continue to increase pharmacy expenditures include specialty drugs and cancer drugs. In addition, the COVID-19 pandemic continues to influence the overall pharmacy expenditures.

Public Policy

Colorado's 2022 legislative session saw a significant number of health care and services bills covering a wide range of topics. Even with major pieces of legislation with appropriations ranging from a few thousand dollars to several hundred million dollars, based on the Legislative Council's most recent revenue projections, the General Fund ended FY 2021-22 with a reserve of $3.14 billion, or 26.1% of appropriations. The outlook for FY 2022-23 includes modest General Fund growth but not enough to keep up with inflation. The General Fund is expected to end FY 22-23 with a 13.2% reserve, $250.6 million below the statutorily required 15% reserve.

A significant number of bills passed by the General Assembly focused on health care, health insurance, behavioral health, and public health. Bills included:

- Healthcare and Health Insurance: HB 22-1008, HB 22-1269, HB 22-1284, HB 22-1289, HB 22-1279, SB 22-040, HB 22-1285, HB 22-236, HB 22-1344, HB 22-1370, SB 22-027
- Behavioral Health: HB 22-1278, SB 22-177, SB 22-181, HB 22-1302, HB 22-1303, 22-1283, HB 22-1281, SB 22-148, SB 22-147, SB 22-102, HB 22-1052, HB 22-1256, HB 22-1065, HB 22-1369, HB 22-1214, HB 22-1221, SB 22-196.
- Public Health: HB 22-1285, SB 22-053, HB 22-1199, HB 22-1251, SB 22-079, SB 22-225, HB 22-1352, SB 22-186, HB 22-1358, HB 22-1134, HB 22-1159, HB 22-1355, HB 22-1157, HB 22-1244, HB 22-1157, SB 22-193.

Conclusion

Health Services continues to be impacted by the vestiges of COVID-19 as the industry manages ongoing transmissions within the state. Ongoing impacts that Colorado is working to address include:

1. The demand for behavioral health services surged as the result of the pandemic. While the state has begun to try to tackle systemic shortfalls in this health service, significant expansion in supply is needed to meet the demand.
2. While the Ambulatory Health Services sector has rebounded since Q2 2020, hospital and nursing facilities continue to lose jobs while Social Assistance has been slow to recover jobs.
3. The pandemic was a significant stressor for health care professionals, and the industry is seeing increased turnover, including a significant number of physicians. These are individuals leaving the profession rather than job changers.

Colorado has begun to try to address some of these issues through legislation. However, needed fixes require significant changes to the health care infrastructure and cannot be resolved quickly.

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Leisure and Hospitality

Employment Overview

Over the course of 2021, demand for leisure and hospitality services returned as vaccination rates increased and public health restrictions eased. The rapid return to demand for these services led to historic increases in job openings in 2021 and 2022 as employers attempted to hire workers in the industry. However, workplace conditions that were exacerbated by the pandemic have decreased the supply of labor that lags the elevated demand for employees. Consequently, while employment in the Leisure and Hospitality industry has recovered to its prepandemic levels, it lags the respective growth witnessed in a majority of other industries in Colorado over the same time period.

After the Leisure and Hospitality industry lost 73,400 jobs in 2020, the industry regained 34,400 jobs, increasing 12.6% in 2021. Employment in the Leisure and Hospitality industry is expected to average 339,100 jobs by year-end 2022 (10.7%) and is expected to gain 11,000 jobs (3.2%) in 2023, surpassing the prepandemic peak.

LEISURE AND HOSPITALITY EMPLOYMENT 2013-2023 (In Thousands)

Year	Arts, Entertainment, and Recreation	Total Accommodation and Food Services	Total Leisure and Hospitality[a]
2013	47.3	242.1	289.4
2014	49.0	251.4	300.4
2015	50.8	262.0	312.8
2016	52.9	270.8	323.6
2017	55.4	277.8	333.2
2018	56.9	282.8	339.7
2019	59.1	286.3	345.4
2020	44.4	227.6	272.0
2021[a]	50.4	256.0	306.4
2022[b]	59.2	279.9	339.1
2023[c]	61.7	288.4	350.1

[a]Revised. [b]Estimated. [c]Forecast.

Note: Due to rounding, the sum of the individual sectors may not equal the total.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

Demographics

As businesses, individuals, and policymakers discuss and analyze the industry's employment trends and potential solutions for headwinds compared to other industries, it is important to understand the demographics of the leisure and hospitality labor force. Identifying the "who" of the leisure and hospitality industry enables businesses to more effectively appeal to employees and allows policymakers to more effectively design programs that support the hiring of these groups, each of which is critical to employment recovery and retention. Accordingly, workers in leisure and hospitality are significantly more likely to identify as Hispanic than workers in other industries nationally, according to 2021 data from the Bureau of Labor Statistics. That is, 24.2% of workers are Hispanic as compared to 18% across all industries. In addition, workers in leisure and hospitality are also much younger than the average worker nationally; the median age for workers in leisure and hospitality is 32 years old as compared to 42 years old across all industries.

Tourism in Colorado

The Colorado Tourism Office's (CTO) mission is to drive traveler spending through promotion and the development of compelling, sustainable travel experiences throughout the state. The CTO is proud to incorporate destination stewardship as a part of its tourism work and programming. Tourism is managed through a transformational, holistic approach that seeks to find harmony between quality of life for residents and a strong visitor economy while protecting the cultural and natural resources.

The Destination Development team inspires Colorado tourism industry partners to develop, manage, and promote visitor experiences that align with their competitive advantage as a destination and help protect their unique sense of place. Through this work, the team seeks to collaboratively broaden the scope of tourism investments across economic, ecological, and social impacts and position the tourism industry as one that benefits quality of life for all Coloradans.

CTO fields a national marketing campaign that targets high-value travelers; places Colorado travel stories in top national media; engages a national audience through social channels and Colorado.com; and publishes *Explore Colorado,* a free statewide vacation guide publication, in addition to the Official State Highway Map and a seasonal magazine titled *Love, Colorado.* CTO operates an advertising program, with more than 500 industry partners sharing messages with travelers in addition to paid and social media co-op programs.

INDUSTRY SNAPSHOT LEISURE AND HOSPITALITY

Nominal GDP, 2021 ($ Billions)	20.8
Real GDP, 2021 ($ Billions, 2012 Dollars)	15.6
2021 Real GDP Growth Rate	29.0%
Total Employment, 2021 (Thousands)	306.4
2021 Employment Growth Rate	12.6%
Employment Growth National Rank	12
Share of Colorado Employment	11.2%
Share of National Employment	9.7%
Average Wage, 2021	31,096
Percent of Statewide Average Wage	43.5%
2021 Average Wage Growth Rate	9.4%

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics.

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Leisure and Hospitality

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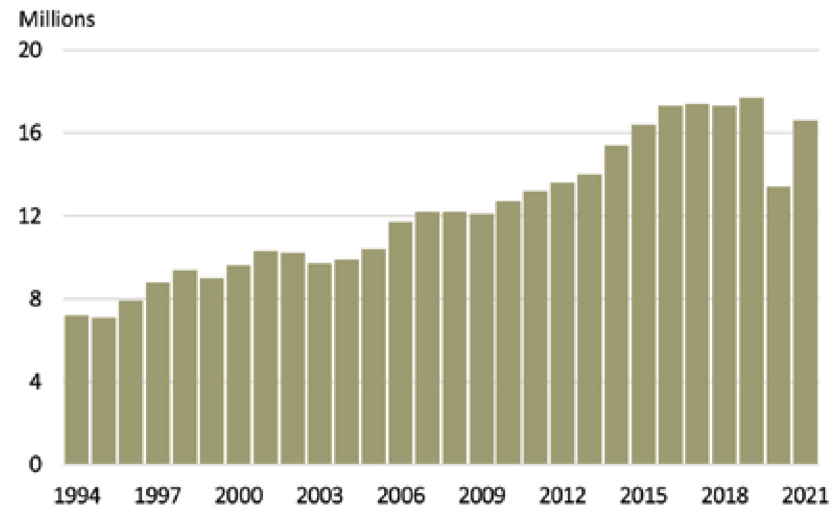
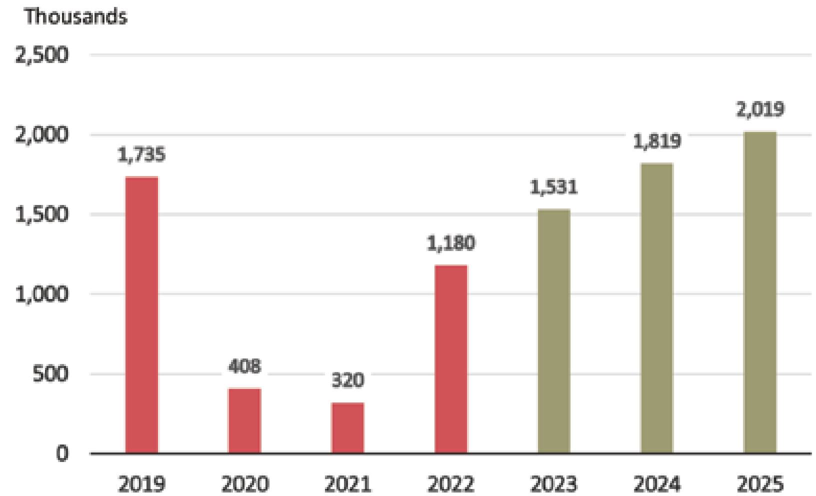
NUMBER OF OVERNIGHT LEISURE VISITORS



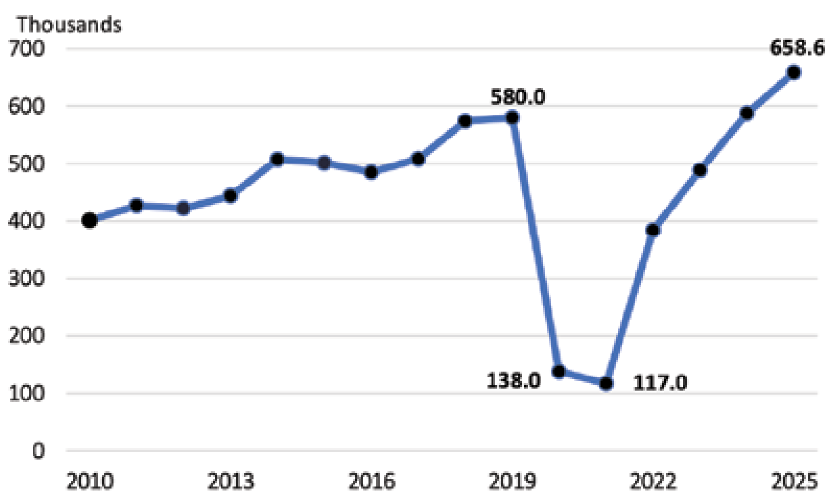
Source: Longwoods International.

INTERNATIONAL NIGHTS IN PAID ACCOMMODATION DENVER



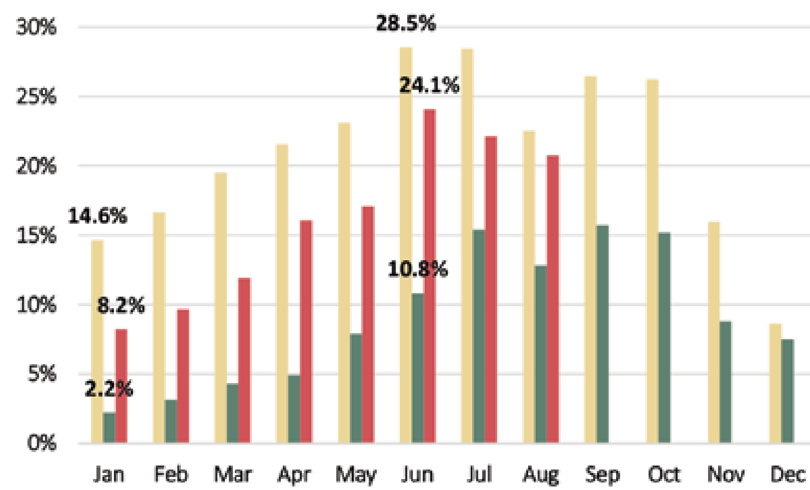
Source: Tourism Economics.

TOTAL INTERNATIONAL DENVER VISITS

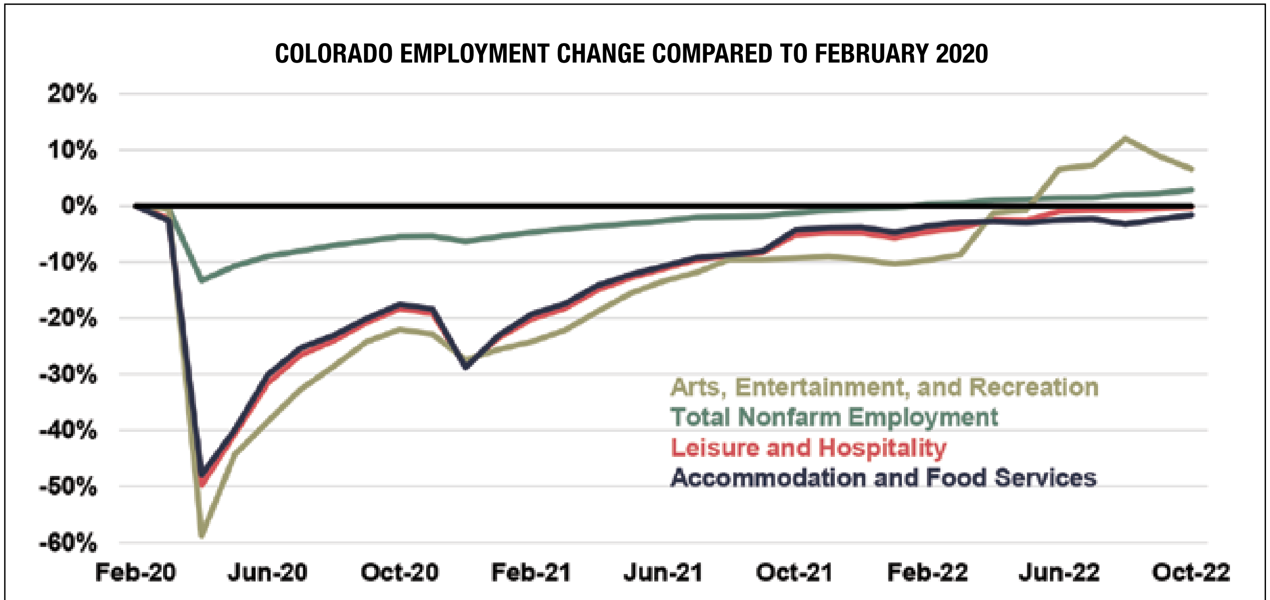


Source: Tourism Economics.

METRO DENVER AREA GROUP OCCUPANCY RATES



Source: Visit Denver analysis using STR data.



Source: Bureau of Economic Analysis.

Strategic Plan Update: Roadmap 2.0

In 2017, CTO developed the Colorado Tourism Roadmap, a comprehensive strategic plan to build the Colorado tourism industry's competitive advantage through closer collaboration, creation of new traveler experiences across the state, and a fresh focus on sustainable tourism. To address the changing landscape of the Colorado tourism industry, CTO created the Roadmap 2.0 using input from staff members, industry stakeholders, tourism partners, board members, and the general public. This refreshed strategy document addresses the office's newfound approach, and the updated plan provides a new vision, goals, and continued guidance to CTO and its stakeholders. The CTO Roadmap 2.0 has been refined to focus on three strategic pillars: economic vitality, destination stewardship, and industry leadership.

COVID-19 Impacts on Colorado Travel

In 2021, total Colorado travel spending was $21.9 billion compared with $15.4 billion in 2020, a 41.8% increase. This is still 9.5% down from 2019 spending ($24.2 billion).

In 2021, Colorado welcomed a combined 84.2 million overnight and day visitors (57% were day trips, 43% overnights). This is up 13.6% from 2020's 74.1 million visitors.

Overnight leisure marketable trips in 2021 (trips influenced by advertising) rose 18% from 2020. Overnight leisure trips to friends/relatives increased 22% from 2020.

Direct travel-generated employment grew by 14,800 jobs in 2021, with a total of 161,000. This is a 10% increase from 2020, but still down from the 184,000 jobs in 2019. In 2021, every $1 million in travel-related spending resulted in eight jobs for the industry.

Direct travel-generated tax revenue increased from $1.1 billion to $1.5 billion in 2021, an increase of 37.8% from 2020 and matching 2019's numbers.

All five of the travel regions that generate the highest travel spending in Colorado grew in 2021. Visitors spent approximately $11.6 billion in the Denver and Cities of the Rockies region alone in 2021, which is 52% of the state total.

Research from the U.S. Travel Association indicates a full recovery of domestic leisure travel spending in 2023, a full recovery of domestic business travel spending in 2024, and a full recovery of international spending and visitation in 2024.

CTO Recovery Response

CTO received a $2.4 million Coronavirus Aid, Relief, and Economic Security Act (CARES) Recovery Assistance grant in January 2021. Activities within the grant include the Colorado Tourism Roadmap to Recovery; a new five-year strategic plan for the Colorado tourism industry to drive near-term recovery and foster long-term industry resilience; and the Colorado Recovery Assistance For Tourism program (CRAFT), a new series of industry programs to support adoption of the Colorado Tourism Roadmap to Recovery through 2023.

In spring 2021, CTO launched the Restart Destinations Program and the Restart Industry Associations Program as part of CRAFT. Each program includes a mix of background research, community visioning, and action planning workshops, free consulting from tourism experts, and direct marketing support from the CTO. In 2023, CTO will be working with 28 destinations and 19 industry associations across the state with these programs.

Colorado Tourism Highlights

CTO led a strategy for building Colorado's reputation as a low-impact, or sustainable, travel destination. This

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Leisure and Hospitality

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work resulted in additional outputs, including the compilation of a low-impact travel inventory that identified more than 300 existing Colorado tourism experiences that can be used in future promotions.

CTO, the Colorado Department of Transportation, and the Colorado Energy Office partnered to create criteria for designation of individual Colorado Scenic & Historic Byways as ready for electric-vehicle travel. As a result of this work, two new byways were designated in 2022: Guanella Pass Scenic and Historic Byway and Alpine Loop Backcountry Byway. There are now 10 total electric scenic byways across the state.

As a result of HB22-1382, CTO and the International Dark-Sky Association Colorado Chapter (IDA-Colorado) are seeking to partner with tourism destinations across the state, via a mentorship program, that are interested in advancing strategies that help achieve International Dark Sky Place (IDSP) certification and enhance Colorado's visitor experience. Participants in the Colorado Dark Sky Certification Mentor Program will receive 50 hours of free consulting from the IDA-Colorado to implement activities that reduce light pollution and protect access to Colorado's night skies. Successful implementation will increase Colorado's competitive edge as a destination and provide a wealth of benefits for Colorado communities.

Program objectives include:

- Increased collaboration between state and local tourism leaders
- Reduced energy consumption and economic impact from cost savings and increased property value
- Increased local and regional quality of life through enhanced health and well-being, cultural heritage, and sense of place
- Increased awareness of the value of visible night skies and their benefit to local wildlife and ecology
- Increased number of IDSP certifications in Colorado

Program participants will collaborate with IDA-Colorado representatives to develop a scope of work that details how they will use the 50 hours of free consulting provided through the program. This mentorship program has a completion timeline of June 2023.

CTO's website, Colorado.com, attracted 9.9 million users in 2021 and is among the top-performing state websites in the United States. Colorado welcomed 887,410 guests in FY21 through the state's 10 welcome centers. In FY22, the CTO granted $999,988 to cultivate local tourism development and promotion across the state.

Care for Colorado Coalition

CTO and Leave No Trace Center for Outdoor Ethics continued to broaden its partnership and bolster the Care for Colorado Program into a Coalition of Stewardship Partners and Members. Beginning with six partners in 2020, this coalition currently encompasses 90+ other statewide organizations and agencies committed to spreading awareness of destination stewardship through materials produced by CTO.

International Travel to Colorado

International visitors remain Colorado's highest-value travelers, spending an average of $1,706 per person per trip while visiting the state in 2019. U.S. borders were closed to overseas visitors in March 2020 and reopened in November 2021 to international travelers. In-market representatives were retained during this time in the top spending overseas markets of Australia, Germany, and the United Kingdom to keep awareness of Colorado in those countries for the time when travelers were able to book again.

During FY23, CTO's International Tourism Program is focusing on keeping Colorado top-of-mind in Australia, Germany, Mexico, and the United Kingdom, with expansion into the markets of France and Canada planned for January 2023. The international program will continue to support the international flights currently coming into Denver with the expectation of these six markets being among the first to return. A full recovery of visitors from North America is expected in 2023, with recovery from European travelers expected in 2024, and all other overseas travel expected to recover by 2025.

Tourism and Conventions in Denver

Continued resilience of the leisure travel market has surpassed yearly prepandemic levels even in terms of inflation-adjusted spending. The domestic leisure visitor volume is projected to be 101% of 2019, and inflation-adjusted domestic leisure travel spending is projected to be 103% of 2019. The market experienced significant headwinds in the first quarter of 2022 as a result of the Omicron variant and steep increases in travel prices due to inflation. However, this market is considered fully recovered in the United States and in Denver.

According to Longwoods International, overnight visitors to Denver increased 24% in 2021 versus 2020 (the latest figures available), with 16.6 million visitors spending the night in 2021, inching back to the record 17.7 million visitors of 2019. Spending by visitors also nearly returned to 2019 levels, totaling $6.6 billion, including $5.5 billion from overnight guests.

Key numbers for 2021 include:

- Denver welcomed 31.7 million total visitors in 2021, including 16.6 million overnight visitors and 15.1 million day visitors, a 14.5% increase over 2020.
- Overnight leisure visitors totaled 14.8 million in 2021, a 27% increase over 2020.
- There were 7.1 million "marketable" leisure visitors in 2021, a 26% increase over 2020. This segment has the most discretion on where to vacation and responds to tourism marketing. This audience is the primary focus of much of VISIT DENVER's marketing efforts and spends more time and money in-market than any other leisure visitor type.
- Denver visitors spent $6.6 billion in 2021, including $5.5 billion from overnight visitors and an

additional $1.1 billion in spending from day visitors, a 26.2% increase over 2020.

- Denver overnight visitors spent more than $1.5 billion on accommodations and $974 million on food and beverages.
- Expenditures by overnight visitors on transportation reached more than $1.8 billion. Retail purchases were $700 million, while overnight visitors spent nearly $500 million on paid attractions and other recreational and sightseeing activities.
- On average in 2021, the biggest spenders were business travelers, who spent $173 per day, followed by marketable visitors, who spent $158 per day. Day visitors spent $73 per day.
- Out-of-state overnight leisure travelers accounted for 78% of visitors (up from 76% in 2020).

In addition, arts and attractions came roaring back in 2021 and are approaching normal attendance figures in 2022 with Broadway shows like "Mean Girls," "To Kill a Mockingbird," and "Fiddler on the Roof" and the world premiere of "Theater of the Mind," cocreated by Talking Heads front man, David Byrne, that opened in September in Denver. Plus, Red Rocks Amphitheatre returned to full-capacity seating, and renovations were completed at the Denver Art Museum. Some of the new attractions and projects include:

- **Martin Building and Sie Welcome Center at the Denver Art Museum:** The building's $150 million renovation and upgrades were designed by Machado Silvetti and Fentress Architects and opened October 24, 2021. The work includes the addition of 33,328 square feet of new gallery and public space, fulfilling original architect Gio Ponti's original vision for visitor access to stunning 7th-floor views.
- **Meow Wolf:** Opened in September 2021, Convergence Station is Meow Wolf's third permanent installation. In less than a year since the exhibition opened, Meow Wolf Denver has welcomed more than 1 million visitors. More than 300 artists, including 110 from Colorado, worked for three years on this highly anticipated cultural experience.
- **McGregor Square:** Opened in time for the Major League Baseball All-Star Game in July 2021, the new square includes the Rally Hotel, a giant TV screen for viewing of sports events, a beautiful new Tattered Cover Bookstore, new restaurants and bars, and outdoor seating and lawn-style seating for events, and the entire area is licensed for drinks. This area became the unofficial hub for Avalanche fans during the 2022 Stanley Cup Finals.
- **The New National Western Center:** This 246-acre campus will preserve the National Western Stock Show & Rodeo as Denver's largest event for the next 100 years and add state-of-the-art spaces to hold concerts and festivals, farmers' markets, sporting events, trade shows, and conventions, as well as office space, business incubators, classes, public art, cultural events, family activities, shops, and more. More than 2.2 million square feet of indoor and outdoor space is being developed, including 20 acres of public plazas and flexible stockyards.
- **Rocky Mountaineer:** The addition of this luxury Denver-to-Moab train product, modeled after a successful Canadian version that has run for decades, has been instrumental in raising Denver's profile among high-spending international visitors and increasing the number of domestic and international travel groups coming into Denver.
- **16th Street Mall Project:** The 16th Street Mall Project is the first major renovation of this vital downtown corridor since its opening in 1982. The renovation is a component of Denver's overall financial plan for an equitable and sustainable economic recovery, and according to denvergov.org is anticipated to support more than 1,800 jobs, generate more than $155 million in income for workers and nearly $380 million in sales for businesses, and have a regional economic impact of as much as $4 billion throughout the duration of the project.
- **Pop up stores:** COVID forced many stores along the 16th Street Mall to close, leaving vacant storefronts. In order to fill these empty spaces, the Downtown Denver Partnership and the Denver Economic Development and Opportunity launched the Popup Denver retail activation program. Small businesses received grant funding and a three-month lease to open in the Upper Downtown area.

Domestic Business Travel

According to the U.S. Travel Association, recent improvements have occurred in the domestic business travel market, with a slight upgrade to the previous forecast. That said, an inflation-adjusted spending recovery is still beyond the range of its most recent forecast. For 2022, domestic business travel volume is projected to be 81% of 2019, and inflation-adjusted domestic business travel spending is projected to be 74% of 2019. This market is expected to recover in 2024.

International Inbound Travel

International visitation to the United States fell from 79 million in 2019 to just 19 million in 2020 and is projected to total 57 million in 2022, 29% below 2019 levels, according to the U.S. Travel Association.

An expected surge in international inbound travel occurred in summer 2022 after this market struggled through the first part of the year. Modest growth in international travel in 2022 was made possible when the U.S. lifted the COVID travel ban in November 2021, but it did not truly gain peak momentum until inbound testing requirements were lifted in June 2022. All of these factors lead to the conclusion that 2022 will be another year of transition and recovery in this market that will hopefully continue to gain strength in 2023 and beyond despite ongoing uncertainty. International leisure visitor volume in 2022 is expected to be 60% of 2019's volume, and inflation-adjusted international leisure visitor

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Leisure and Hospitality

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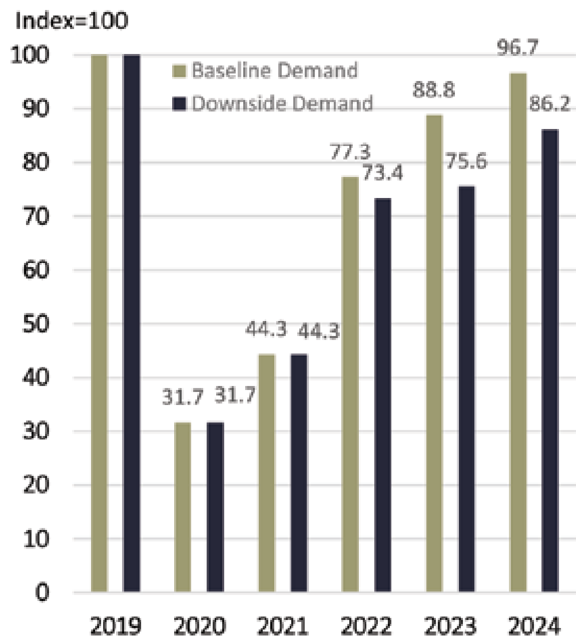
GROUP VISITATION DEMAND FORECAST



Source: Tourism Economics.

spending is expected to be 56% of spending in 2019. This market is expected to fully recover in 2025.

International visits to Denver are expected to grow 228.2%, to 400,000, in 2022 as forecast by Tourism Economics. This equates to an additional 267,000 arrivals compared to 2021. International travel spending in Denver is forecast to grow 345.5% in 2022, to $400 million, an increase of $299.9 million compared to 2021.

Tourism Economics is forecasting Denver will recover its international visitor volume to 2019 levels by 2024, and is projecting growth of 498% from 2021 to 2026 in international visits. This forecast assumes that all things remain the same (that there are no changes to COVID, such as a stronger variant, or economic or geopolitical forces that make traveling not viable for key markets in Europe, for example).

In addition, Tourism Economics is forecasting international nights in paid accommodations in Denver will grow 71% from 2022 to 2025, to a total of 2 million room nights.

Convention and Group Market

The convention industry has been slower to recover than leisure travel, with fewer meetings attracting fewer delegates, but indications are that this will change in 2023. According to MMGY Travel Intelligence, some 86% of meeting planners state that in-person meetings are essential and extremely important.

Simpleview, a national sales management platform company used by many destination marketing organizations (DMOs) across the country, combines a U.S. lodging sector forecast prepared by Tourism Economics in partnership with Smith Travel Research Report (STR), to create a forecast model that calculates demand and consumption benchmarks for the industry. These reports are created from future-looking data and serve as a tool for DMOs to share a realistic picture of market pressure and to help support hotels' pricing and inventory initiatives to attract certain groups. The bookings, provided by participating DMOs in markets across the United States and Canada, are aggregated, analyzed, and configured into the FuturePace Report, which has become an industry standard.

Group demand has been slow to recover from the pandemic and there remain downside risks, such as more turbulent public health conditions, lower attendance levels, and greater hesitancy to plan group events, resulting in a slower recovery in group demand.

Denver hosted 414 meetings in 2021 booked by VISIT DENVER, attracting 151,070 delegates who spent a combined $313 million. This included 26 groups that used the Colorado Convention Center (CCC) and 388 individual hotel groups. After a dismal first quarter 2022, short-term small- and mid-size corporate and association business was strong. At the convention center, groups that have been booked for years continued to meet, but with mixed attendance results. The economy, employees working from home, and company travel bans are impeding attendance at shows that have been booked in the center for years.

In terms of volume, 2022 was an improvement over 2021.

Total Groups

- 2022 - 802 meetings, 281,593 attendees, and 594,861 room nights
- 2021 - 414 meetings, 151,070 attendees, and 252,116 room nights

Denver

- 2022 - 59 meetings, 153,611 attendees, and 306,718 room nights
- 2021 - 26 meetings, 78,108 attendees, and 117,638 room nights

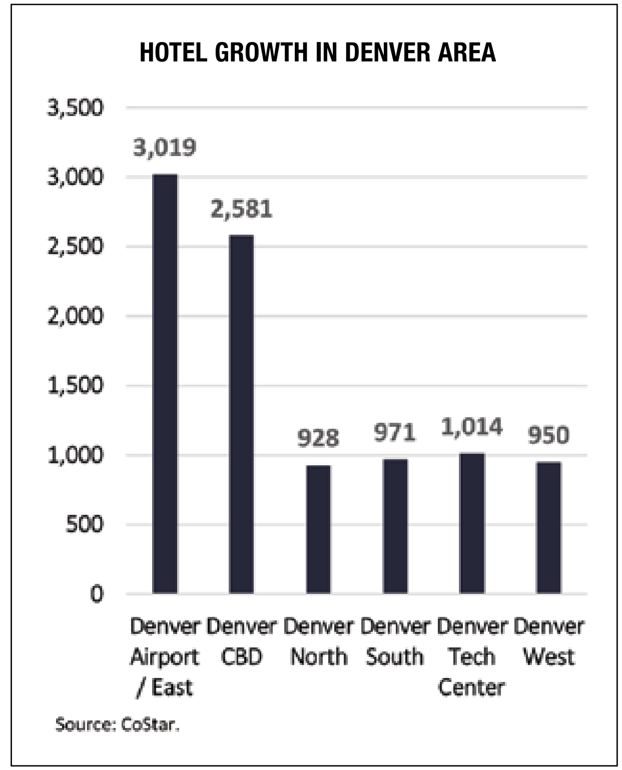
As illustrated in the chart, group occupancy was better year-over-year, but still lagged 2019.

Colorado Convention Center Expansion

The expansion of the Colorado Convention Center (CCC) remains on track. Voters approved the project in 2015, and in July 2020 the City of Denver selected Hensel Phelps and TVS Design as the design/build team for the project. City Council approved the contract in fall 2020. Construction started in June 2021, and a "Raise the Roof" kickoff ceremony and press conference took place in September 2021. The expansion will be completed in December 2023.

Hotel Growth

Supply continued to grow in Denver even during the pandemic. As of June 2022, according to CoStar, pipeline properties continue to grow and are concentrated



in downtown and near Denver International Airport. There are already more than 13,000 downtown hotel rooms within walking distance of the convention center and nearly 51,000 rooms in the metro area, with more on the way.

CBRE's second quarter report forecast that by year-end 2022, Denver hotels will see an increase in revenue per available room (RevPAR) of 33.4%. This is the result of an estimated increase in occupancy of 14.2% and a 16.8% gain in average daily room rates (ADR). The 33.4% boost in Denver RevPAR is better than the national projection of a 29% increase. Year-end 2022 Denver RevPAR will still be 8.5% less than the 2019 year-end RevPAR level of $100.32. RevPAR for Denver hotels is not expected to surpass 2019 levels until 2024.

Workforce

The workforce continues to be a huge challenge for Denver, as it is across the country, and is impacting the entire hospitality community. Many restaurants are not able to open to full capacity, and many hotels are unable to realize a full sell-out, both due to staffing shortages. Hotels and restaurants alike have hefty employment incentives in place, but to no avail.

Research from Destination Analysts states that during their travels, Americans are having more unsatisfactory travel experiences due to lack of workforce and service issues. Research is also showing the expectations are increasing, and the traveler is running out of patience about how workforce challenges are negatively impacting their experiences. The industry is discussing these issues at all levels, and VISIT DENVER is working to determine its role in helping to "move the needle" for this important aspect of Denver's recovery.

Tourism in Colorado Springs

In mid-2022, Visit Colorado Springs received data from the 2021 annual visitor profile study from Longwoods International, which shed light on key recovery data. In 2021, a total of 23.7 million people visited the Pikes Peak Region, spending $2.6 billion. Visitation was up 12% over 2020 and 5% over 2019, and spending was up 18% over 2020 and 3% over 2019 (2019 was a strong performing year for the Pikes Peak Region). Visitation

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Leisure and Hospitality

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Colorado's Outdoor Recreation Economy

The economic impact of outdoor recreation in Colorado is well documented. The latest data from the U.S. Bureau of Economic Analysis show robust strength in Colorado's outdoor economy:

- $11.6 billion – Total outdoor recreation contribution to Colorado's economy
- 125,200 – Outdoor recreation jobs
- $5.7 billion – Outdoor recreation compensation

Colorado Outdoor Recreation Industry Office Listening Tour

Beyond economic indicators, what makes outdoor recreation in Colorado special? The team at the Colorado Outdoor Recreation Industry Office (OREC, part of the Office of Economic Development and International Trade) hit the road this year for a statewide listening tour. They wanted to hear from Colorado residents about outdoor recreation in their communities. What they found was:

Coloradans love where they live

Ninety-two percent of Coloradans participate in some form of outdoor recreation every year. Most of us love where we live because of the access to nature and outdoor recreation. That love of place is key. It drives our motivation to work on challenges, like balancing outdoor recreation with resource protection and providing more affordable housing for workers.

The outdoor recreation conversation is expanding

Public lands stewardship and responsible recreational activity are longtime priorities for Coloradans, yet the conversation about outdoor recreation in our state is expanding. Community leaders are talking more than ever about workforce shortages, affordable housing, and how climate change is affecting where they live, work, and recreate.

There are many opportunities for collaboration

Each Colorado community is unique— shaped by the landscape, traditions like ranching or mining, and the people who live there. The OREC team is learning how communities are managing land uses, planning for climate change, and providing housing for residents and workers. These and other priorities increasingly necessitate collaboration between towns and across valleys and counties.

Outdoor recreation communities are creative

The OREC team recently launched its first new grant opportunity, the Colorado State Outdoor Recreation Grant, to help communities with pandemic recovery efforts. The grants support outdoor recreation infrastructure, planning assistance, marketing and promotions, and workforce development in the outdoor industry. Colorado communities will use the grants for solutions that are as varied and unique as each community and speak to the creativity of the outdoor industry.

Outdoor Recreation Challenges

Just as the positive dimensions of outdoor industry are understood, so too are the challenges presented by rapid growth in outdoor recreation. The impacts of recreation are frequent topics of discussion and study. Challenges to outdoor recreation can vary by community, but some are common to almost all areas:

A constrained workforce

All industries in almost every region of the country report shortages in people applying for job openings. This is especially true in the outdoor industry where recreation activity is accelerating rapidly.

Lack of affordable housing

A major factor behind the constrained workforce is a lack of affordable housing for outdoor recreation employees. This challenge is especially pronounced in smaller, more rural communities where outdoor recreation is concentrated and where tourism and second home ownership are common.

Sustainable environmental conservation

In the early years of the pandemic, public lands and recreation program managers were stunned by the explosion of tourists and outdoor recreationists visiting outdoor areas. They're still seeing overuse and even abuse of recreational areas by inexperienced or indifferent users.

Outdoor Recreation Opportunities

The challenges confronting outdoor recreation may be formidable, but a growing number of opportunities and initiatives across Colorado aim to address them. From grassroots community groups to hundred-million-dollar federal funding programs, the resources targeting outdoor recreation challenges are multidimensional. Some examples of strategic opportunities include:

Advocacy

The Colorado OREC office and other state and local agencies, business owners and employees, and nonprofits such as the Outdoor Industry Association are among an expanding network advocating for the outdoor industry. Whether it's lobbying for funding, conservation programs, housing and infrastructure, workforce or business development, and more, their collective voice is more influential today than ever.

Education

Colorado's higher education institutions are leading the nation with new professional development programs supporting careers in outdoor recreation. They are responding to industry workforce shortages by offering specialized degrees and certificates. Institutions leading the way include: University of Colorado Boulder, Colorado State University, Colorado Mesa University, Western Colorado University, Colorado Mountain College, Fort Lewis College, University of Denver, Adams State College, Metro State University, Red Rocks Community College, and Pikes Peak Community College.

Collaboration

The OREC team sees real opportunities to address outdoor recreation challenges through rising participation in collaborative community initiatives, regional partnerships, and statewide gatherings. Examples include Governor Polis' Colorado Outdoor Regional Partnership initiative, the Central Mountain SBDC's recent Outdoor Industry Summit, and the annual Colorado Outdoor Industry Leadership Summit (COILS). Private companies and nonprofits are essential partners in programs like these. REI, VF Corp., Vail Resorts, Patagonia, Great Outdoors Colorado, Volunteers for Outdoor Colorado, and many others leverage their financial resources, employee volunteers, and name recognition to help mitigate outdoor recreation challenges.

Entrepreneurship

Entrepreneurs and their startups make a positive impact on Colorado's outdoor recreation economy, especially in our rural communities most dependent on recreation. Well-known startup success stories like Smartwool, OtterBox, and Osprey continue to inspire new generations of startups such as SheFly, Himali, and Sasquatch Expedition Campers. Colorado's robust entrepreneurial ecosystem includes many organizations supporting outdoor entrepreneurs as well as outdoor communities. To name just a few: Startup Colorado, Moosejaw Accelerator, ICELab, SCAPE, Telluride Venture Network, and Central Mountain Ascent.

Colorado's outdoor recreation economy is thriving. Strong advocates, dynamic collaborations, innovative educational programs, passionate entrepreneurs, and many other ecosystem constituents are taking outdoor recreation and community economic vitality to exciting new places. The outdoor economy—and the communities where people recreate—certainly face challenges in managing sustainable recreation. But Colorado leaders in local communities, business, and government are proving themselves capable of rising to the challenges.

Contributor: *Clif Harald, First Flatiron Consulting, LLC*

and spending in 2021 surpassed 2019, showing how strong the recovery it was for the area. With pent-up demand for travel and people seeking outdoor destinations, Colorado Springs fared well.

Colorado Springs' Lodgers and Automobile Rental Tax (LART) collections remained strong in summer 2022. July 2021 saw a total LART tax of $1.3 million, and July 2022 saw a 1.8% increase of $1.3 million. Through July 2022, Colorado Springs collections were up 24.7%. The Rocky Mountain Lodging Report showed positive data on hotel occupancy for Colorado Springs at peak season in July. Occupancy was 67.6% in July 2022 compared to 62.9% in July 2021. In summer 2022, Colorado Springs Airport traffic surged from pre-COVID levels. A total of 195,364 passengers traveled in and out of the airport in August. Enplanements were up 1.7% compared to August 2021 and up 25.9% compared to August 2019 prepandemic levels.

Most data show tourism numbers in 2022 are still up slightly from 2021 (which was a record year) and up significantly from 2019 (the last "normal" year). Events like Territory Days in Old Colorado City and the Colorado Springs Labor Day Lift Off returned, attracting hundreds of thousands of visitors and locals. The last of five City for Champions projects, the U.S. Air Force Academy Gateway Visitor Center, broke ground in July 2022. The Center will join the Hybl Sports Medicine and Performance Center, U.S. Olympic & Paralympic Museum, Weidner Field, and Robson Arena to round out the City for Champions.

In 2021, Colorado Springs held 40 day meetings and 172 conventions booked through the end of September. In that same time period for 2022, there were 33 day meetings and 161 conventions. The slightly lower number of meetings and conventions is attributed to the lack of space available to meet demand. Demand is up and remains strong.

In late summer, Visit Colorado Springs sponsored a study conducted by MMGY Travel Intelligence called "Portrait of Travelers with Disabilities: Mobility and Accessibility." The findings reveal the continued challenges travelers with disabilities face, especially when it comes to trip planning, transportation, and lodging. Travelers with mobility disabilities spend $58.2 billion per year on travel in the United States. Visit Colorado Springs is committed to improving accessibility for all travelers across the destination.

Colorado Springs anticipates a strong 2023, including welcoming back international visitors,

Tourism in Grand Junction

Grand Junction, located in Mesa County, is almost equal distance between Denver, Colorado, and Salt Lake City, Utah; it is approximately 264 miles to either major city. The Grand Junction Regional Airport is the 4th-largest airport in Colorado, served by United, Allegiant, and American Airlines. Amtrak operates daily stops in Grand Junction on the California Zephyr, traveling between Chicago and the San Francisco Bay area. Although Mesa County is a destination, visitors also stay in this area due to its convenient location to access other popular areas in Western Colorado.

Grand Junction's travel and tourism industry significantly contribute to the area's economic diversity. Visitor spending is 30% of the City of Grand Junction's sales tax revenue as confirmed by three separate economic impact studies; Tourism Economics, An Oxford Economics Company; BBC Research & Consulting; and The Adams Group, Inc. Sales tax generated from the tourism industry provides funding for public safety, infrastructure, and other city services while lowering the tax burden for residents and local businesses.

Visit Grand Junction, the City of Grand Junction's destination marketing organization, deploys marketing targeted toward potential visitors outside Mesa County to promote travel and tourism to the area. This provides a sustainable and consistent economy and enhanced quality of life for residents.

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Leisure and Hospitality

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A significant focus for Visit Grand Junction is elevating the brand while monitoring its net promoter score (NPS). The NPS measures the likelihood that a respondent would recommend a destination, company, product, or service to a friend or colleague. Strengthening the Grand Junction area's (Mesa County) brand elevates Grand Junction's prominence to attract Colorado Mesa University (CMU) students and diversified industries to the area.

Grand Junction was named for the convergence of the Gunnison River and Colorado River (formerly known as the Grand River). Over 1.5 million acres of public lands connect the area's alpine terrain with the dramatic high desert, nourished by powerful rivers that sustain the vibrant agriculture industry. Outdoor recreation is a popular activity, with 76% of Mesa County designated as public land. Opportunities for outdoor adventures are abundant in every season due to the year-round temperate climate. Colorado National Monument, part of the National Park Service; the Grand Mesa, the largest flat-top mountain in the world, bursting with 300 lakes; and Rattlesnake Arches, the 2nd-most concentration of arches in the world, are the most well-known geographic wonders in Mesa County. Agritourism, art and history, boutique shopping, and trendy restaurants complement the outdoor recreation scene.

Grand Junction has recovered more quickly from the economic effects of the pandemic relative to many areas of the state and the nation. Grand Junction's hospitality industry continues to exceed projections in 2022 and is expected to maintain a healthy pace in 2023. Much of this growth is due to the development of Grand Junction's destination brand, which has enhanced awareness of the Grand Junction area. The brand was developed through extensive research involving the community, thereby ensuring residents take ownership of it and continue to support it.

Although gas prices, recession fears, and challenges with air travel loom in the months ahead, Grand Junction's stable occupancy rate, along with increases in Average Daily Rate (ADR) year-over-year, are sustaining hotel and lodging tax revenue. Grand Junction's lodging tax rate is 6%, of which 4.25% is allocated to Visit Grand Junction for destination marketing and management programs; 1% to the Grand Junction Air Service Alliance to market, promote, purchase, and/or contract for additional direct airline service for existing or new carriers to and from Grand Junction; and 0.75% to the Grand Junction Sports Commission to market, promote, solicit, and sponsor tourism-generating sporting activities, events, tournaments, and competitions.

Lodging tax collections for 2022 are projected to increase 8% above 2021, and collections for 2023 are projected to increase 9% above 2022. Hotel revenue is expected to increase by 8% in 2022 compared to 2021.

Over 5.5 million guests visited Grand Junction in 2021, a 17% increase compared to 2020's visitation of 4.7 million. Visitation is expected to increase by 7% in 2022 and 9% in 2023. Young travelers make up the majority of visitation to Grand Junction, with 36% of visitors 44 years or younger, and 25% from households with children under 18. The median household income of visitors to Grand Junction decreased from $78,000 in 2019 to $73,000 in 2022, indicating a more diverse group of travelers.

Grand Junction hotel performance saw record-high occupancy and room revenue, driven by strong ADR in 2021 and 2022.

For 2021, record occupancy was achieved in nine out of 12 months, resulting in an average occupancy of 65.8%. Grand Junction's 2021 occupancy was ahead of the nation's by 14% and ahead of Colorado by 10%.

Through September 2022, Grand Junction's occupancy was 67.9%. This is ahead of the United States by an average of 6.8% and ahead of Colorado by an average of 2.8%. Visit Grand Junction projects occupancy for Grand Junction's hotels to reach 66% for 2022 and 69.1% for 2023.

Grand Junction hoteliers have been seeing the results of applying effective revenue management strategies. Through September 2022, Grand Junction ADR was $110.52. Visit Grand Junction projects ADR to reach $108.55 for 2022 with all but one month in 2022 reaching record ADR each month compared to the prior year. Projected ADR for 2023 is $116.75. Despite the record increase in ADR, Grand Junction's ADR has historically remained one of the lowest in Colorado. Thus, opportunities to optimize room rates will continue to be an effective strategy for hoteliers.

The opening of the Hotel Maverick in June 2020 has been positive in terms of high occupancy and driving rate. Located on the campus of CMU, this premiere boutique hotel operates as one of the few teaching hotels in Colorado. It provides hospitality students with opportunities to participate in paid internships, connect with hospitality leaders, and obtain interviews for industry jobs after graduation. The opening of Camp Eddy in August 2022 also brought niche accommodations to the area with RV sites, tiny homes, and Airstream trailers. New lodging is planned for Los Colonias and Dos Rios development areas, which includes new boutique hotels, RV lodging, and camping. Restaurants, spas, and retail stores are also planned for these riverfront properties. As evident from high occupancy rates, additional hotel inventory is needed to accommodate continued growth in tourism.

Leisure and hospitality employment in Grand Junction increased by 2.4% in 2022, with 8,400 jobs, and grew 4% beyond 2019 prepandemic levels.

To support tourism-related businesses outside the City of Grand Junction, Visit Grand Junction created the Grand Junction Area Tourism Membership Program. Tourism-related businesses outside the City of Grand Junction, but within Mesa County, are provided the opportunity to be included in marketing initiatives for a nominal annual fee. This membership provides representation in Visit Grand Junction's marketing efforts. In addition to this marketing assistance, funds from the American Rescue Plan Act of 2021 have been allocated to Visit Grand Junction. These funds are being used to assist tourism businesses with their own marketing initiatives, including website development, social media, blog writing, data-based actionable insights, and other marketing resources.

Short-term rentals continue to be a popular lodging option in Grand Junction. Any property owner operating a short-term rental within the City of Grand Junction must register with the City annually and comply with the associated regulations.

Casinos

Over the last three decades, Colorado casinos have paid over $2.6 billion in state gaming tax revenues on over $18.4 billion in adjusted gross revenues. The gaming industry is taxed on gross revenues rather than net revenues and continues to provide significant funding for the recipients of gaming tax revenues. Gaming tax revenues annually support more than $14 million for community colleges, over $27 million for state historical restoration projects, more than $15 million for tourism, $7.5 million for small business innovation, and over $30 million for mitigation of gaming impacts to state and local governments.

Like so many in the hospitality and tourism industry, the steady economic growth that Colorado casinos and the gaming sector had experienced was abruptly halted with closures in 2020 due to COVID-19. Despite a slow reopening with tight restrictions and limitations, customers have been excited to return to the mountain communities for entertainment. New ownership of properties and large investments in capital construction projects have increased the market, with additional improvements on the horizon.

For the fiscal year ending in June 2022, Colorado casino adjusted gross proceeds (AGP), which is defined as the amount wagered by players less payout from the casinos to all players, were over $1 billion. Gaming taxes paid to the state were $162 million, reflecting a decline from the previous year due to the coronavirus.

COLORADO CASINOS
2012–2022

			Adjusted Gross Proceeds[a] (In Millions)			
Year	Casinos Open	Devices	Black Hawk	Central City	Cripple Creek	Total
2012	41	14,964	558	70	133	757
2013	40	14,647	553	68	128	749
2014	37	14,168	561	62	123	746
2015	36	13,823	596	66	128	790
2016	35	13,509	610	70	131	811
2017	34	12,958	621	72	135	828
2018	33	12,969	623	79	140	842
2019	33	12,848	613	80	141	834
2020	35	10,878	400	56	104	560
2021	33	10,568	728	83	165	976
YTD. Sept. 2021	33	10,970	538	62	124	725
YTD. Sept. 2022	33	10,941	610	62	126	799

[a]AGP calculated on an annual basis, hence different from the state fiscal year.

Source: Colorado Division of Gaming.

Black Hawk continues to dominate the Colorado casino sector, with 15 casinos, 6,532 devices, and a majority of AGP. Cripple Creek has 12 casinos and 2,771 devices, and Central City has six casinos and 1,748 devices.

The inception of sports betting has proven to be an asset to the many Coloradans who avail themselves to sports and gaming, and to the many beneficiaries who enjoy the taxes paid by the casinos. Since legalization in 2020, over $7.9 billion has been wagered in Colorado. Colorado collects a 10% tax on sports betting proceeds, as well as licensing and operational fees from operators and vendors to cover regulatory costs. This allowed the state to distribute over $12 million that was collected by the state in FY2021-22 to the state's water plan.

Despite the steady recovery from COVID-19, casinos continue to face obstacles, including meeting adequate staffing numbers due to the labor shortage. Continued efforts to expand gaming to the Front Range, either by authorizing video lottery terminals and keno machines or instant racing machines at racetracks and other locations, are ongoing.

Colorado Restaurant Industry

After 2+ years of operational restrictions, severe revenue losses, thousands of business closures, and dampened consumer spending due to the COVID-19 pandemic, 2022 was a year of relatively normal operations for Colorado restaurants. The industry continues to recover from its 2019 high point—$14.5 billion in revenue and employing more than 280,000 workers—but once the Omicron variant of the COVID-19

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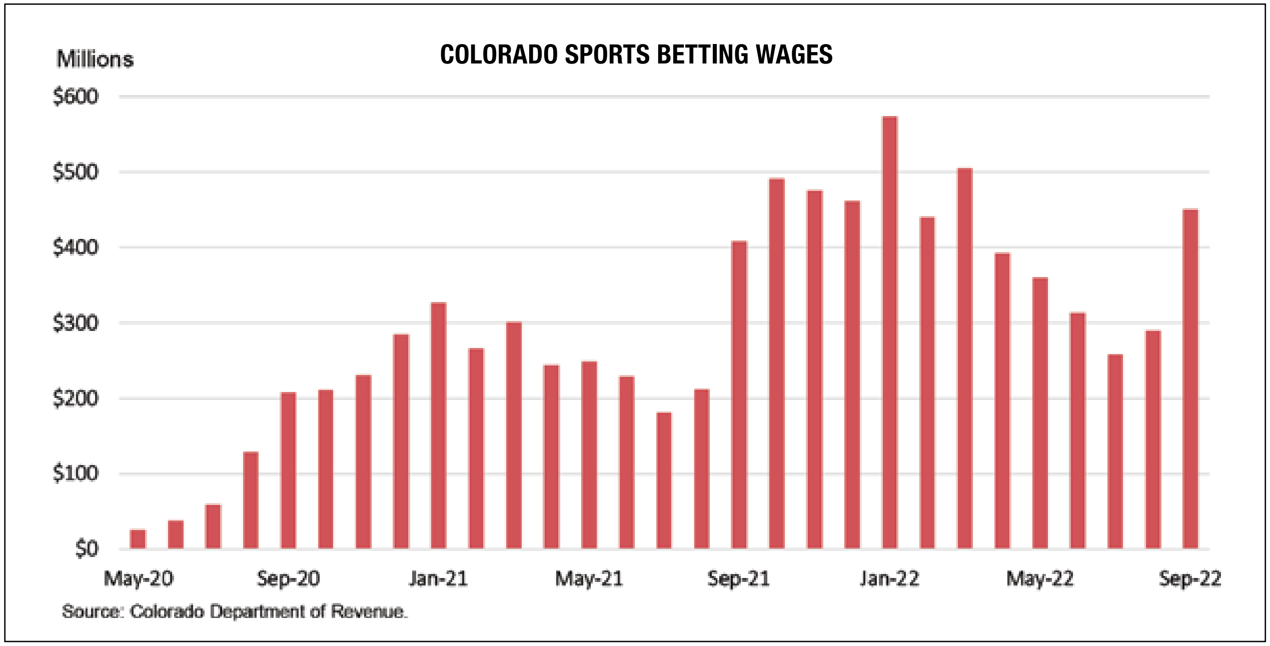

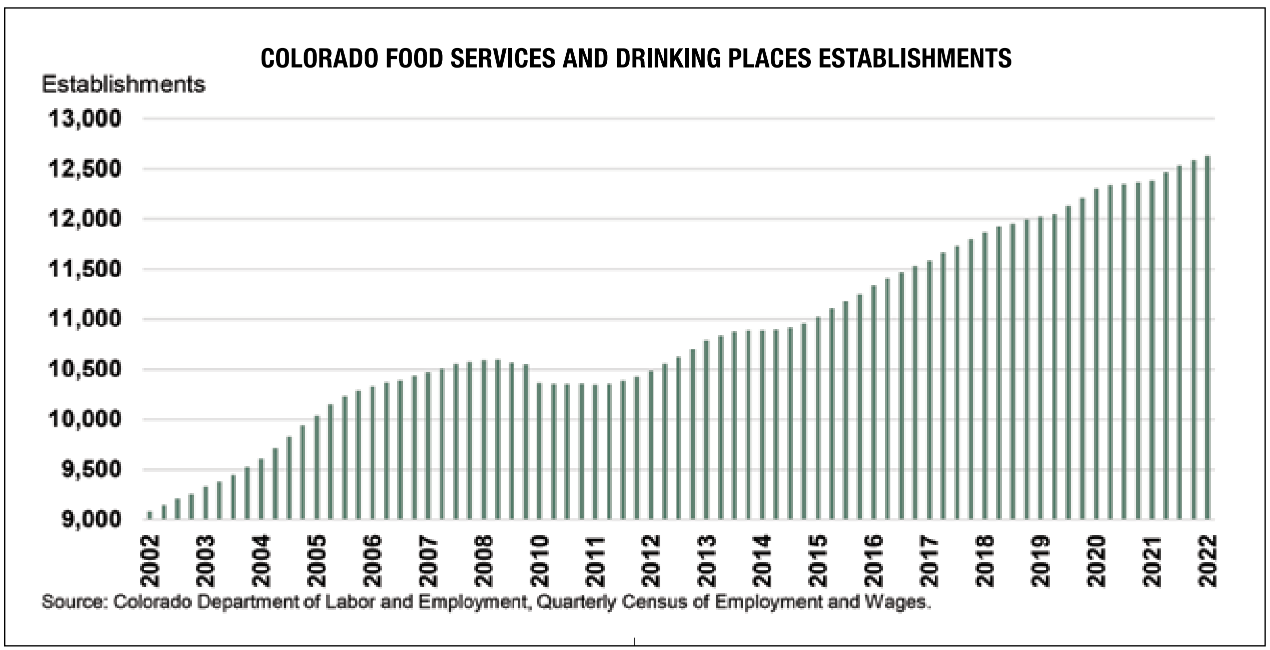

virus swept through Colorado in early 2022, operations have resumed with a few restrictions regarding capacity, masks, or vaccines. There were also legislative wins in 2022 for local restaurants and bars, and a return of some of the convivial energy and camaraderie that comes from sharing meals together in public.

That said, 2022 continues to be a year of transition for the local restaurant industry as it struggles to regain its lost workforce and recoup revenue losses in the face of skyrocketing inflation and continued supply chain disruptions. Technology and its use in both on- and off-premises dining is also changing the way restaurants operate—and the way they hire.

In 2021, restaurant retail sales in Colorado surpassed those from 2019, with $14.9 billion in sales, a 2.8% increase. The number of local eating and drinking establishments also grew—up 1.7%, from 12,359 in 2020 to 12,577 in 2021. The retail sales trend continues: in the first half of 2022, restaurant retail sales in Colorado were up on average 16% compared to the same half in 2019 and 18% compared to the first half of 2021, but at what cost to the industry? Historic inflation and supply chain disruptions led to increased menu prices in 2021 and 2022, accounting for the increase in retail sales, and the relentless labor shortage facing the industry has translated to intense burnout among operators and restaurant workers.

Labor Woes

Colorado restaurant operators continued to experience significant workforce challenges in 2022. Staffing was an industry-wide pain point before the pandemic, and the 2020 and 2021 restaurant shutdowns, capacity restrictions, and negative consumer behavior in the face of mask and vaccine requirements drove thousands of Coloradans away from working in public-facing roles, including service and culinary positions in leisure and hospitality.

By early 2022, Colorado data showed that the restaurant industry was down approximately 8,400 workers (3.5%) compared to prepandemic levels, and eight out of 10 restaurant operators reported struggling to hire enough staff (down from nine out of 10 in August 2021). More than 50% of local restaurants reported struggling to retain their current teams. By March 2022, there were more than 1.4 million open positions across the country in the restaurants and accommodations sector, making the hospitality industry the 3rd-highest in terms of job openings at that time; the industry remained 800,000 jobs below prepandemic levels in the spring. As the year progressed, hiring for restaurants remained slow; the industry remained 635,000 jobs below prepandemic levels in September and operators reported that recruiting and retaining employees were the top challenges facing their business. National Restaurant Association data showed that 42% of operators were struggling to hire enough employees and, locally, operators reported that hiring was a bigger challenge than ever before.

The continued labor shortage in restaurants has led to operational changes at all levels. More than 92% of Colorado restaurants have changed business practices or wage rates to increase hiring and retention, with one in four restaurants offering retention and hiring bonuses. Wages in Colorado continue to increase and consistently outpace national figures; compared to March 2020, Colorado restaurants have increased wages by 20% on average, and almost one-third of local restaurants have increased wages by 21% to 30%. In comparison, national wage rates for the restaurant industry grew by 9.3% in 2021 and 11.1% in 2022 (as of June 2022). More than 33% of Colorado operators have added benefits and other forms of compensation to attract and retain workers (a 10% increase from July 2021), including paid vacation, medical and dental insurance, 401K plans, health and wellness programming, and educational assistance.

Soaring Inflation and Overhead

Rising operating costs have been compounded by the high rate of inflation. In September 2021, the national

Consumer Price Index increased 8.2% year-over-year (not seasonally adjusted) compared to 7.7% in the Denver-Aurora-Lakewood MSA. Food prices increased 11.2% nationally and 11.8% in Colorado. In addition, Colorado restaurants are currently faced with myriad regulatory and legislative mandates that are adding to their outgoing expenses, including pandemic-related paid sick leave, a new retail delivery fee, and soon, the Colorado Secure Savings Program, which mandates employers to provide retirement savings accounts for their employees. Moreover, a forthcoming minimum wage increase of 8.68% across the state (and an increase of 8.94% in Denver), due to pricing based on the CPI, will cost many restaurants tens of thousands of dollars or more.

During summer 2022, 91% of Colorado operators reported that their food and beverages costs were higher than in 2019, and 97% of operators said their total labor costs were higher than 2019. A total of 78% of operators said their total occupancy costs were higher than in 2019 and 97% of operators reported their other operating costs (supplies, administrative, etc.) were higher than in 2019.

As a result of these increased costs, Colorado restaurants took a number of actions, including 94% of restaurants increasing menu prices; 70% changing the food and beverage items offered; 55% of restaurants reducing hours of operation on days they are open; and 51% closing on days that they would normally be open.

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Moreover, 43% of operators say they postponed plans for expansion, 52% of operators report they stopped operating at full capacity, 48% of restaurants cut staffing levels, and 26% of operators say they incorporated more technology in their restaurants. Twenty-two percent of operators report they eliminated third-party delivery.

Despite this wide range of mitigating actions taken to address higher costs, most Colorado restaurants are less profitable now than they were before the pandemic. Ninety-three percent of Colorado operators say their restaurant is less profitable now than it was in 2019, which is having a dire effect on operator confidence. A total of 46% of Colorado operators reported that business conditions for their restaurant were worse in August 2022 than in the prior three months. Most operators do not expect a return to normal business conditions any time soon.

Workforce Development Efforts

The Colorado Restaurant Association (CRA) and Colorado Restaurant Foundation (CRF) have supported local restaurants on several fronts in 2022, including workforce development through the CRF. The Association provided a second round of hiring and retention bonus grants for Denver restaurants, which began in September 2021, in partnership with the City and County of Denver's Economic Development & Opportunity office, the CRA, and the Colorado Hotel & Lodging Association, funded with federal COVID-relief dollars.

Colorado is also proud to be one of the few states selected to implement certified apprenticeship programs, launched through a CRF partnership with the National Restaurant Association Education Foundation (NRAEF). As of September 2022, 47 local apprentices were in the CRF's Registered Apprentice programs across 65 apprentice-employer restaurants and hotels, with growth plans in place for 2023.

The CRF also manages the Colorado ProStart high school hospitality education program with the CRA and the NRAEF, which trains juniors and seniors in restaurant/hospitality management, culinary arts, and business economics. It provides high school and college academic credit, scholarships, and work opportunities. In 2022, there were 1,300 Colorado ProStart students at 40 schools across the state.

The CRA's hospitality job board (corestaurantjobs.com), which launched in 2021 to connect employers with local talent, is expanding thanks to a Colorado Tourism Office Restart Industry Associations grant. The marketing and strategic planning assistance that this grant provided will add workforce development resources to the job board that will help with recruitment and retention based on direct operator feedback.

Finally, the CRF has distributed more than $4 million in Angel Relief Fund emergency assistance grants to local restaurant workers since the pandemic began, and in May 2022, expanded the Angel Relief Fund grant program to include grants for mental health care, with local partner Khesed Wellness and national partner Teladoc Health.

Government Funding, Legislation, and Policy

Unfortunately, almost 60% of Colorado restaurants' applications for federal Restaurant Revitalization Fund (RRF) grants were not fulfilled during summer 2021, when the $26.8 billion fund was quickly drained by an overwhelming number of applicants, leaving 3,099 local restaurants without aid to a deficit of more than $697 million. Two RRF replenishment bills then failed to pass in Congress at the end of 2021, leaving restaurants across the country without much-needed aid. Employee Retention Tax Credit payments have been very slow to process.

Local legislative wins have helped ease some of the disappointment over the lack of federal support for restaurants. The Colorado legislature approved a $600 million backfill to the state's Unemployment Insurance Trust fund to stabilize employer premiums and save restaurants the costs associated with bringing the depleted fund back to solvency. The CRA lobbied for that bill, as well as HB22-1406, which provided a round of tax relief for restaurants, saving them up to $2,000 per month in July, August, and September 2022 for up to five restaurant locations. An outdated and burdensome regulatory requirement for certain liquor licenses was also eliminated in 2022.

During the pandemic, outdoor dining was a lifesaver for restaurants, adding capacity and revenue opportunities as well as safe-feeling spaces for diners. Some localities allowed their outdoor dining programs to lapse in 2022, such as Aurora and Golden, but Denver announced the development of a permanent Outdoor Places Program that will launch in 2023 so Denver operators can continue making use of adjacent spaces and add to the dynamic nature of the Colorado dining scene.

Technology

Consumer behavior across service industries is more digital, streamlined, off-premise, and convenience-driven, and restaurants are making big changes to capitalize on technology trends and data. A total of 16% more U.S. consumers are dining through take-out, delivery, and drive-thru in 2022 than were in February 2020. Operators are investing in drive-thru lanes, ordering and delivery apps, QR code menus, and contactless payment options. Ghost kitchens are contracting and evolving, and guest loyalty programs are on the rise, as is the TikTok effect, which can drive significant consumer traffic and support businesses' hiring and retention. Across operations, technology offers distinct competitive advantages with patrons' acceptance growing every year.

Outdoor Recreation

Despite rising gas prices and higher inflation, outdoor recreation continues to be a strong leisure activity in Colorado. Total visitation to state parks, national parks, and other public lands was up slightly, indicating that people want to spend time in the outdoors and will spend money to do so.

COLORADO PUBLIC LAND VISITS
2013–2023
(In Thousands)[a]

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022[a]	2023[a]
Colorado State Parks[b]	11,500.0	11,900.0	13,200.0	14,296.0	15,398.0	14,924.0	14,891.4	19,474.4	19,938.0	19,543.5	21,106.6
National Parks and Sites											
Bent's Old Fort NHS	23.3	24.6	26.2	31.9	26.4	23.6	21.7	12.4	21.6	24.4	19.8
Black Canyon of the Gunnison NP	175.9	183.0	209.2	238.0	307.1	309.0	432.8	341.6	308.9	286.5	383.4
Colorado NM	409.4	419.9	588.0	391.1	375.0	375.5	397.0	435.6	499.8	486.7	454.8
Curecanti NRA	814.2	931.4	944.7	982.5	1,041.4	931.5	836.0	921.6	1,043.7	1,006.3	1,007.0
Dinosaur NM[c]	203.1	185.4	215.9	225.2	233.8	225.0	221.2	195.5	266.1	171.5	219.5
Florissant Fossil Beds NM	58.0	63.3	69.1	73.6	71.8	79.6	77.3	61.1	75.1	69.8	75.5
Great Sand Dunes NP	242.8	271.8	299.5	388.3	486.9	442.9	527.5	461.5	602.6	503.0	617.4
Hovenweep NM[c]	11.0	11.8	15.4	18.9	17.6	17.9	15.6	8.7	11.8	10.8	12.5
Mesa Verde NP	460.2	501.6	547.3	583.5	613.8	563.4	556.2	287.5	548.5	493.4	488.7
Rocky Mountain NP	2,991.1	3,434.8	4,155.9	4,517.6	4,437.2	4,590.0	4,670.1	3,305.2	4,434.8	4,579.3	4,700.0
Sand Creek Massacre NHS	4.8	7.4	5.9	6.8	6.5	6.0	5.7	4.2	6.2	4.7	5.1
Total Visitors to Parks and Sites	5,393.8	6,035.0	7,077.2	7,457.4	7,617.5	7,564.4	7,761.1	6,034.9	7,819.1	7,636.4	7,983.6
Bureau of Land Management	6,963.0	7,536.0	7,694.0	7,739.0	8,310.0	8,708.0	9,553.0	12,507.0	10,602.0	11,692.1	12,261.4
National Forest[d]	27,000.0	27,000.0	27,000.0	27,000.0	26,100.0	31,000.0	31,490.0	31,490.0	31,490.0	31,490.0	31,490.0
Total Public Land Visitation[e]	50,856.8	52,471.0	54,971.2	56,492.4	57,425.5	62,196.4	63,695.5	69,506.3	69,849.1	70,362.0	72,619.6

[a]2022 is forecasted with limited data and 2023 is estimated based on trends.
[b] State parks managed by Colorado Parks and Wildlife.
[c]Dinosaur NM and Hovenweep NM cross into Utah, but the number of visitors reported in this table is only for the Colorado portion of the parks.
[d]Yearly visitor numbers were not available; reported numbers based on limited data.
[e]Due to rounding, the sum of the individual items may not equal the total.
Note: Yucca House National Monument does not report visitations, therefore it is not included.
Definition: NHS = national historic site, NP = national park, NM = national monument, and NRA = national recreation area.
Sources: Colorado Parks and Wildlife, National Park Service Visitor Use Statistics, Bureau of Land Management, National Forest Service and Colorado Business Economic Outlook Committee.

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Visitation to Colorado's 43 state parks remained flat between 2021 and 2022. Although state park visitation in 2022 was flat, total visitation for state parks remains significantly higher than prepandemic levels (15 million visitors in 2019 versus 20 million visitors in 2022).

Beginning in January 2023, Colorado will implement the Keep Colorado Wild Pass. This is an opt-out, $29 fee that will be added onto vehicle registrations. If people choose not to opt-out, that is, they choose to pay the $29 fee, they can enter any Colorado state park for the year. People can opt out or in each time they renew their vehicle registration (a current annual pass is between $80 and $120. The Keep Colorado Wild Pass is only $29). Colorado Parks and Wildlife hopes that many Coloradans will take advantage of the vehicle registration park pass. The state's goal is to raise at least $36 million annually. The first $30 million will go to state park management. The remaining money will be used to support backcountry safety, wildlife conservation, and local communities.

If the state is correct and people take advantage of the Keep Colorado Wild Pass, park visitation will likely increase in 2023, along with a greater increase in 2024 as all vehicle registrations get cycled through the first year. The increased visitation will not only mean additional revenue for Colorado Parks and Wildlife, which does not receive tax dollars, but it will also mean additional spending by visitors in local communities, buying gas, eating at restaurants, and buying gear.

National park visitation also remained flat from 2021 to 2022. Rocky Mountain National Park, Colorado's most visited national park, continued to use a timed-entry system, requiring visitors to reserve a time to enter the park. Two types of timed entry are available. A visitor to Rocky Mountain needs a timed entry to enter the park in general. If a visitor wants to visit the Moraine Park, Glacier Gorge, and Bear Lake area, an additional timed entry permit is required to get into that area of the park. These limits implemented by the National Park Service are used to help manage both people and resources at the park. Visitation to Rocky Mountain remained similar to prepandemic levels.

In March 2022, the National Park Service added a new location in Colorado, the Amache National Historic Site. Located near Granada, this site was one of the relocation camps that Japanese Americans were forced into by the U.S. government during World War II. This newest site will be developed over the coming years to tell the story of Japanese Americans during the war and will ensure that, "As a nation, we must face the wrongs of our past in order to build a more just and equitable future" (Deb Haaland, United States Secretary of the Interior).

Skiing Industry

U.S. ski resorts logged a record 60.7 million skier visits in the 2021/22 season, up 2.9% from 2020/21 (59 million), and up 0.3% from the previous record of 60.5 million visits in 2010/11. The industry benefited from continued strong interest in outdoor recreation spurred by COVID-19, as well as the lifting of COVID-driven capacity restrictions that had dampened visitation in winter 2020/21.

In Colorado, the state's 32 operating ski areas also set a new record, tallying just over 13.8 million skier visits in winter 2021/22, up from 12 million visits in 2019/20 (+14.9%), and up from the previous record of just under 13.8 million visits in 2018/19 (+0.2%). Similar to resorts nationally and elsewhere in the Rockies, Colorado's ski industry benefited from continued interest in outdoor recreation and nature-focused travel destinations, as well as a relatively strong economy, expanded air service to mountain airports and DIA, expanded uptake of season pass products, pent-up demand for travel, more flexible work arrangements, and continued COVID impacts to other travel options, among other factors. Out of state domestic visitation was particularly strong for Colorado's ski areas (and for ski resorts in the Rockies generally) in the 2021/22 season. Many resorts also experienced particular gains in visitation at off-peak times of the season.

Photo by Glade Optics on Unsplash.

At the same time, Colorado ski resorts had to overcome several headwinds. These included below-average snowfall and above-average temperatures (which caused a slow start to the season), continued weakness in international visitation due to COVID border requirements and restrictions and a strong dollar, staffing shortages, traffic congestion on selected highways, and some continued COVID operational challenges.

While Colorado resort skier visits rose a strong 14.9% year-over-year, taxable sales in resort communities were even more robust. Across a mix of eight resort communities (Aspen, Breckenridge, Frisco, Snowmass Village, Steamboat Springs, Telluride, Vail, and Winter Park), state taxable sales leaped 49.6% from winter 2020/21 to winter 2021/22 (November-April in each season). Winter 2021/22 taxable sales also outpaced winter 2018/19 (Colorado's previous record ski season, and a pre-COVID benchmark) by 50.4%. These gains far outpaced the state as a whole, which saw a 20.8% gain in taxable sales from winter 2020/21 to 2021/22, and a 35.2% cumulative gain from winter 2018/19 to 2021/22. Colorado's ski resort communities have likely benefited from the same factors driving increased taxable sales statewide over the past few years. Additionally, ski resort communities have also benefited from increased tourist visitation (including more visits by high-spending out-of-state guests), and by second homeowners likely spending more time in their units.

The summer period is also important to ski resort communities, accounting for a lower, secondary peak in economic activity. Spending has boomed the past two summers, with state taxable sales jumping 42.8% in May through August from 2020 to 2021, and rising a further 7.7% year-over-year in 2022. Cumulatively, taxable sales in May through August increased 43.5% from 2019 to 2022, outpacing the state's 31.1% gain over the same period. Colorado ski resort communities, along with other outdoor destinations and activities, have continued to benefit from heightened interest in outdoor recreation and outdoor settings during and after the pandemic. The industry has also invested significantly in new outdoor recreational offerings since the passage of the 2011 Ski Area Recreational Opportunity Enhancement Act, which allows for more recreational uses on public land. In addition to helping resort economies, these offerings have likely helped redirect and relieve some of the growing recreational and visitation pressure that is impacting many areas of Colorado's mountains.

Looking ahead to the winter 2022/23 season, resorts continue to be watchful for COVID variants, but no COVID-driven operating limitations are currently anticipated. Additionally, there are several reasons for optimism about the season. Season pass sales have been strong, lodging bookings for the upcoming winter were solid as of fall 2022, and scheduled seats on flights to most Colorado mountain resort airports and to DIA are currently up from last winter. While the national economic picture is mixed, demand for travel appears to remain strong. At the same time, international visitation is likely to be restrained by a strong dollar and inflation in key markets.

As always, weather and snow conditions can also provide positive or negative momentum to the season. In its October 13, 2022, U.S. winter forecast, the National Oceanic and Atmospheric Administration (NOAA) announced that there is a 75% chance that La Niña climate conditions will emerge for the third winter in a row. La Niña favors drier, warmer winters in the southern United States and wetter, cooler conditions in the northern part of the country. Located between these northern and southern regions, Colorado and its snow and weather advantage relative to other western ski regions is unknown.

The long-term prospects for the industry remain positive. Colorado maintains a preeminent position within the skiing industry, accounting for by far the largest number of visits, as well as being home to many of the largest and most renowned resorts. Colorado has benefited from a strong reputation for an outstanding combination of ski terrain, lift infrastructure, consistent and reliable snow conditions, guest service, scenery, community character and amenities, and travel accessibility, among other attributes. Ski resorts also continue to improve and expand their infrastructure, enhancing the guest experience and increasing their operating capacity. Colorado is also home to the headquarters of the continent's two largest resort operators—Vail Resorts and Alterra Mountain Company—further cementing the state's standing as the epicenter of the U.S. ski industry.

Even as it continues to cultivate its strengths, vigorous competition from ski resorts in other states and from other vacation and leisure options, climate change, concerns about congestion and travel delays along the I-70 corridor, and maintaining staffing in challenging housing markets remain key challenges for Colorado resorts.

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Other Services

The Other Services supersector comprises establishments that provide services not specifically categorized elsewhere in the employment classification system. As a result, the businesses under this category are highly fragmented and diverse. Car washes, beauty salons, religious organizations, funeral homes, grantmaking foundations, and labor unions are some of the industries included in Other Services. In addition, the supersector includes businesses that provide maintenance and repair for agriculture, construction, mining, and forestry machinery and equipment. Industry growth is influenced by the economy, demographics of the Colorado population, disposable income, and consumer confidence.

OTHER SERVICES EMPLOYMENT, 2013-2023 (In Thousands)

Year	Repair and Maintenance Services	Personal and Laundry Services	Religious, Grantmaking, Civic, Professional, and Similar Organizations	Total
2013	22.5	24.1	51.1	97.7
2014	23.4	25.2	52.3	100.9
2015	24.7	26.3	53.2	104.2
2016	25.0	27.8	54.5	107.3
2017	25.5	28.7	54.4	108.6
2018	26.0	29.4	55.6	110.9
2019	26.7	30.3	57.7	114.8
2020	25.4	25.9	57.6	108.9
2021[a]	26.4	28.4	58.9	113.6
2022[b]	27.8	29.6	61.5	118.9
2023[c]	28.8	31.5	62.7	123.0

[a]Revised. [b]Estimated. [c]Forecast.

Note: Due to rounding, the sum of the individual items may not equal the total.

Sources: Colorado Department of Labor and Employment, and Colorado Business Economic Outlook Committee.

While the pandemic in 2020 took a heavy toll on the Other Services sector with many businesses in this sector deemed as nonessential, the sector fully rebounded in 2021 as the economy recovered. Employment in this sector grew steadily in 2022, reaching 123,800 in September, up 7% year-over-year. Employment growth is expected to continue into 2023 due to a few major factors: customers have resumed visiting face-to-face businesses again, such as salons and pet care services; a growing national consensus around workers' rights and that the economy should work for everyone could provide a historic opportunity for unions; continued record increases in used car prices and a shortage of new vehicles is causing car owners to hold onto their cars for longer, increasing maintenance; and a generally positive outlook for donation dollars will help nonprofits. Employment in the Other Services sector is projected to increase 4.7% in 2022 year-over-year to reach 118,900 jobs, then increase 3.4% in 2023 for a total of 123,000 jobs.

Religious, Grantmaking, Civic, Professional, And Similar Organizations

Industries in the Religious, Grantmaking, Civic, Professional, and Similar Organizations subsector group are establishments that organize, support, and/or promote various professional, social, and political causes. These organizations account for the largest portion of the Other Services supersector, employing 51.8% of the Other Services employees in 2021. Establishments in this subsector include various labor unions, nonprofits such as the Denver Dumb Friends League, the Boy and Girl Scouts organizations, and the United States Olympic Committee, as well as social advocacy and political organizations. The outlook for donations is mixed in 2022 as donor counts have decreased, perhaps as a result of inflationary pressures on households. According to the Fundraising Effectiveness Project, the number of donors decreased by 7% in Q2 2022 compared to Q2 2021, largely driven by a collapse in the sub-$500 donor buckets and one-time donors. However, the amount of overall dollars given increased 6.2% year-over-year in Q2 2022, led by growth in the number of recaptured donors in the midsize and larger donor segments.

INDUSTRY SNAPSHOT OTHER SERVICES

Nominal GDP, 2021 ($ Billions)	9.7
Real GDP, 2021 ($ Billions, 2012 Dollars)	7.2
2021 Real GDP Growth Rate	6.0%
Total Employment, 2021 (Thousands)	113.6
2021 Employment Growth Rate	4.3%
Employment Growth National Rank	20
Share of Colorado Employment	4.1%
Share of National Employment	3.7%
Average Wage, 2021	48,420
Percent of Statewide Average Wage	67.7%
2021 Average Wage Growth Rate	6.1%

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics.

While membership has been declining for decades, labor unions could start to gain ground heading into 2023, helping the sector. The pandemic has appeared to have brought workers' rights, needs, and desires into the limelight, perhaps shifting the balance between the employer-employee relationship. Consequently, several high-profile union negotiations have been in the national spotlight in recent months, including a number of freight railroad and fast-casual dining unions.

The sector was hit hard due to the pandemic, losing 2,100 jobs in April 2020 but steadily rebounded and ended 2020 down just 0.2%. In 2021, employment fully rebounded to prepandemic levels, growing 2.2% year-over-year. Steady growth continued over the course of 2022, with employment reaching 63,200 in September 2022, up 5.7% year-over-year and 11.3% above levels seen in January 2020. Through the end of 2022, the sector is expected to continue steady growth, ending the year with an average of 61,500 employees and year-over-year growth of 4.4%. Looking to 2023, the sector is projected to end the year with an average of 62,700 employees, observing growth of 2%.

Repair and Maintenance

The Repair and Maintenance sector encompasses businesses that provide repair and maintenance services for automotive, commercial machinery, electronic equipment, and household goods. This subsector has typically been buoyed by the increasing average age of vehicles, pushing up demand for vehicle repair and maintenance. Despite the hardships faced during the pandemic when few were commuting, business boomed at auto repair shops in Colorado and nationally in 2021 and continued upward through September 2022. Factors driving this upward swing include the chip shortage for new cars, the lack of inventory for new cars, and the high prices of used cars—all contributing to car owners keeping their old cars for longer and going in for more tune ups. After national retail sales for motor vehicles and parts dealers grew 22.4% in 2021, sales continued growth, albeit at a more moderate pace, and were up 3.8% in September 2022 year-to-date, according to data from the Census Bureau. The future outlook for this sector is positive, with industry leaders saying more cars will be on the roads that are out of warranty than ever before.

Repair and Maintenance employment was hit hard from the pandemic, ending 2020 down 4.9%. The sector rebounded healthily, with employment reaching prepandemic levels in August 2021 of 26,700. The sector continued strong growth through 2022, reaching a historic employment peak of 29,200 in June. As of September 2022, employment stood at 28,900, the 2nd-highest employment total since 1990. Given the subsector's continued growth and strong retail vehicle sales, employment is expected to average 27,800 in 2022, a gain of 5.5% year-over-year, and 28,800 in 2023, an increase of 3.6%.

Photo coutesy of Sten Rademaker on Unsplash.

Personal and Laundry Services

Industries in the Personal and Laundry Services sector are vastly diverse. They include firms that provide services such as hair, nail, and skin care; death care (i.e., funeral homes and cemeteries); dry cleaning and laundry (including coin-operated); pet care (except veterinary); photofinishing; and parking lots. This Other Services sector was the hardest hit during the pandemic, with employment declining 14.5% in 2020 year-over-year, losing an astounding 53.8% of employment from March to April 2020. This was due to many of the subsector's notable industries, such as hair, nail, and skin care services, being deemed nonessential and forced to temporarily close, causing a major shock to the subsector's employment. Employment in this sector improved in 2021 as Colorado businesses emerged from lockdowns, and hair, nail, and skin care salons welcomed customers back. By year-end 2021, employment was up 9.7%, but still below prepandemic employment levels. Employment fully rebounded in 2022, hitting prepandemic employment levels in June, and continued steady growth through September 2022, reaching 31,700 employees, up 8.2% year-over-year. The sector is projected to grow 4.3% in 2022 to average 29,600 jobs, followed by a 6.4% gain in 2023 to average 31,500 jobs.

Contributor: *Adam Illig, Leeds School of Business (Chair)*

Government

The Government supersector includes federal, state, and local workers and is the 3rd-largest provider of jobs in Colorado, representing 16% or nearly one in six jobs in the state. Government activities include a variety of services, ranging from space research and technology to public safety, program administration, and education.

Government employment declined 0.4% in 2021 as the sector continued to be impacted by the pandemic. While the sector continued to recover in 2022, government entities at all levels were impacted by many of the same challenges faced by other sectors including labor force shortages, supply chain issues, and increased costs. In 2022, government employment in Colorado increased 3.2% (13,900 jobs) and is projected to increase 2.4% in 2023 to total 462,800.

Federal Government

In 2021, total federal government employment in Colorado was 54,200, which was a 2.5% decrease from 2020. This decrease was due, in part, from the winding down of 2020 Census work, as well as the waning of COVID-19 pandemic funding. The Coronavirus Response and Consolidated Appropriations Act (2021) provided $900 billion in fast and direct economic assistance for American workers, families, small businesses, and industries, as well as $2 trillion in spending from the 2020 Coronavirus Aid, Relief, and Economic Security (CARES) Act.

Additionally, funding is also winding down on the American Rescue Plan Act (ARPA) of 2021 (COVID-19 Stimulus Package), which provided $1.9 trillion in economic stimulus to speed up the country's recovery from the economic and health effects of the COVID-19 pandemic. The U.S. Department of Treasury has delivered over $450 billion directly to families under the American Rescue Plan. State and local governments have used Emergency Rental Assistance Program funds to make more than one million payments to low-income households and more than $5 billion to help families avoid evictions. They also received over $240 billion in fiscal support to state, territorial, local, and tribal governments that was used to fight the pandemic and accelerate local economic recovery. This program also helped businesses that were hit the hardest to keep their employees on the payroll.

Government spending increased significantly during the pandemic as the government looked to fiscal policy to help ease the effects of the economic downturn, but as most of the funding has been spent, the economic outlook has shifted from economic recovery to addressing inflation. As the economy has continued to recover in 2022, tax revenues are up, and the deficit is expected to decrease to 3.9% of GDP, which is smaller than in 2020 or 2021.

INDUSTRY SNAPSHOT GOVERNMENT	
Nominal GDP, 2021 ($ Billions)	52.2
Real GDP, 2021 ($ Billions, 2012 Dollars)	41.2
2021 Real GDP Growth Rate	2.2%
Total Employment, 2021 (Thousands)	438.3
2021 Employment Growth Rate	-0.4%
Employment Growth National Rank	28
Share of Colorado Employment	16.0%
Share of National Employment	15.1%
Average Wage, 2021	65,286
Percent of Statewide Average Wage	91.3%
2021 Average Wage Growth Rate	4.3%

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics.

However, according to the Congressional Budget Office's (CBO) Long-Term Budget Outlook, the long-term outlook from 2022-2052 is an average deficit of 7.3%, mostly driven by increased interest costs.

By the end of 2022, federal debt is projected to equal 98% of GDP, which is down from 102% in 2021. The expected growth of nominal GDP, which includes high inflation

GOVERNMENT EMPLOYMENT IN COLORADO, 2013–2023 (In Thousands)

Government Sector	2013	2014	2015	2016	2017	2018	2019	2020	2021[a]	2022[b]	2023[c]
Federal	53.0	52.1	52.8	53.5	53.5	52.9	53.1	54.7	54.2	55.0	55.7
State	107.8	109.6	112.8	116.5	121.2	125.9	130.2	126.4	123.8	128.2	131.7
Local	242.4	246.3	250.9	258.2	261.9	266.8	271.8	259.1	260.4	269.0	275.4
Government	403.2	407.9	416.5	428.1	436.7	445.6	455.1	440.2	438.3	452.2	462.8

[a]Revised. [b]Estimated. [c]Forecast.

Note: Due to rounding, the sum of the individual components of government may not equal the total.

Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

and continued economic growth, will help hold down the amount of debt relative to output in 2022 and 2023. The CBO projects that the debt as a percentage of GDP will begin to rise again in 2024 and will reach 107% of GDP in 2031. Spending projections show that outlays in 2022 will decrease from 2021 levels and continue to decline through 2024 as federal COVID-19 spending diminishes. Revenues will rise to 19.6% of GDP as a result of the growing economy. This is one of the highest levels ever recorded as collections from income taxes increase. Revenues are expected to increase again in 2026 due to scheduled changes to the tax laws. There are also concerns that rising interest rates could result in slower economic growth and output as borrowing costs will rise, affecting everything from consumer car and home purchases to business expansion and public investments in areas like infrastructure.

While there were competing thoughts as to whether the historic COVID-19 relief packages would be effective, data suggest it helped the economy avoid a major recession. However, the pent-up spending of workers and businesses has resulted in significantly increased demand and, thus, rising prices across the economy. This comes as businesses continue to struggle with labor shortages while attempting to increase supplies. Many workers that fell out of the labor force have not returned, and this continues to put pressure on employers to fill positions and manage upward pressure on wages and, in turn, retail prices. Inflation has hit Colorado and the Mountain West, more than the rest of the U.S., with inflation up 9.6% year-over-year compared to 8.2% for the rest of the country. According to the U.S. Labor Department, the highest price increases were seen in natural gas and electricity, with increases of 19.8% and 11.2%, respectively, year-over-year.

Key demographic trends are a key determinant to the long-term economic outlook. Projections show that the U.S. population will grow more slowly and get older over the next 30 years than it has over the last 30 years. This may result in slower growth over the next three decades. The population is expected to grow from 335 million to 369 million by 2052, an increase of 0.3%, mainly due to immigration. This is much lower than the 0.9% increase over the last 30 years. Despite immigration, the proportion of the population that is 65 and older will continue to increase, with the percentage going from 17% today to 22% in 2052. Along with an older population and a smaller working-age population, slower growth will also be impacted by expectations that labor force productivity will increase more slowly over the next 30 years, at a pace of 1.3%.

The U.S. Government Accountability Office's (GAO's) America's Fiscal Future-Fiscal Outlook shows similar trends to CBO estimates, and both agree that the current fiscal path is unsustainable over the long term. The conditions that existed prepandemic continue to pose economic, security, and societal threats to the United States. Key drivers of revenue and debt will need to be addressed to change the current course. On the spending side, Medicare and Social Security are projected to account for 85% of revenue by 2050. On the revenue side, average annual revenue as a percentage of GDP will continue to be lower than historical averages, thus creating pressure on spending levels in an environment with increasing borrowing costs. Proposed solutions include revising fiscal rules to manage the debt by better aligning spending and revenue, addressing mandatory and discretionary spending, considering revising the debt limit rules, and fixing the financing gaps for Medicare and Social Security.

Federally funded science and research centers located in the state continue to generate significant employment and economic impacts. Colorado has 33 laboratories that receive significant federal funding—one of the highest concentrations of federally funded science and research centers in the nation. These laboratories employ an estimated 7,800 direct workers and 9,820 indirect workers who earn a total of $783 million in wages and benefits and generate approximately $2.6 billion in annual

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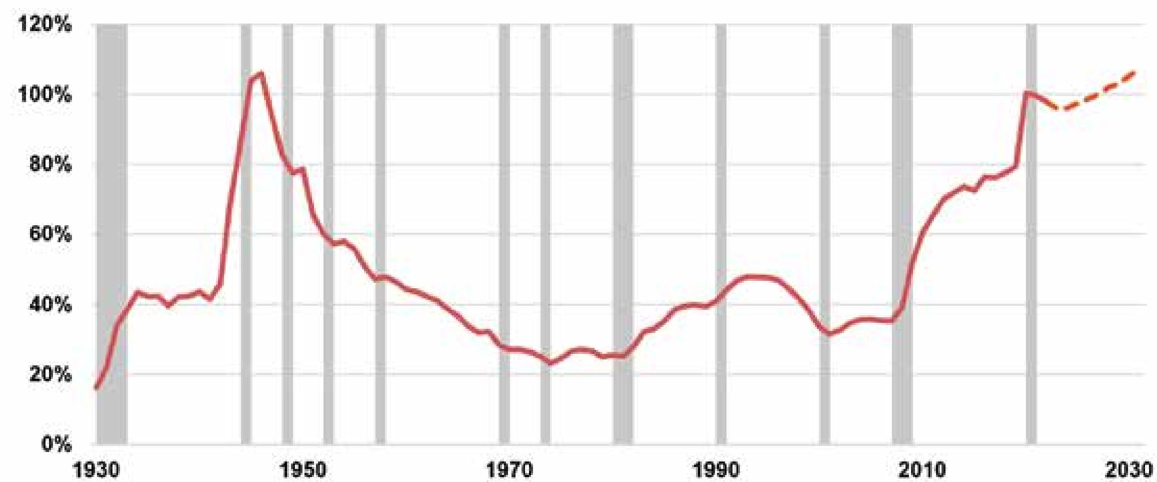
U.S. FEDERAL DEBT AS A PERCENTAGE OF GDP



Source: Congressional Budget Office. Note: Shaded areas represent recessions.

Government

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economic impact to Colorado. The National Renewable Energy Laboratory (NREL), for example, reported that in FY2019 it had an economic impact in Colorado of $875 million. These labs also contribute to the state's high-tech industries, stimulating significant tech-transfer opportunities for higher education and area companies in critical areas, such as renewable energy, space science, and natural resource management.

State Government

The state government industry consists of a variety of public sector activities, such as higher education, law enforcement and security, road and other public infrastructure construction, and a range of government administrative services. In many communities across the state, state government is the largest employer with competitive wages and benefits. In 2021, total state government employment was 123,800, down 2.1% from the previous year and the second annual decline in employment following the COVID-19 pandemic. The decline stems from the loss of around 3,900 public higher education jobs, the second consecutive decline. Excluding public higher education employment, state government employed 54,200 people in 2021, a 0.9% decrease from the prior year. Minus the postpandemic employment declines, state employment has been steadily increasing over the past decade, with a compound annual growth rate of 3.1% from 2010 to 2020, and employment typically grows with population growth.

The declines in employment over the last two years stem from multiple factors. First, some state departments that necessarily require close contact lost staff due to fears from the spread of the coronavirus. Similarly, state workers engaging directly with the impacts from the pandemic faced higher workloads than prepandemic, which pushed some to leave their jobs with the state. As a result of early economic forecasts projecting steep declines in state revenue, budget writers made drastic cuts in the budget including furloughs of most employees. State population growth slowed with net migration dropping to its lowest level and deaths rising to their highest level in over a decade. Shifts in migration, the desire to upsize home space, and historically low mortgage rates led to a surge in housing demand throughout the state. This exacerbated the affordable housing shortage, leading to high job vacancy rates in the central mountain region and around state prisons.

In 2022, state employment is estimated to have grown 3.6%. The state appropriated approximately $3.5 billion in federal American Rescue Plan Act funds during the 2021 and 2022 legislative sessions. This will result in the hiring of hundreds of temporary employees to implement the programs created with these funds. In 2023, state employment is expected to rise by 2.7%, roughly back to the 10-year average. As the workforce tightens and wage increases in the private sector start to slow, resulting from the Federal Reserve's quick tightening regime, stable state jobs will prove more attractive as many fear a recession nearing.

Higher Education

Employment in Colorado's public higher education system accounts for almost 60% of total state government employment. These workers include both part- and full-time faculty and nonfaculty staff. In 2021, job growth in Colorado's public higher education sector declined by 5.3% as state universities and colleges continued to deal with the disruptions from the COVID-19 pandemic. In addition, many of the state's higher education institutions, especially community colleges, continue to struggle with lower enrollment. Total enrollment in Colorado's state-administered colleges and universities declined in budget year 2021-22 and is expected to fall again in the current year.

Public higher education institutions in Colorado have seen their budgets restored and increased above prepandemic levels, but state higher education employment is expected to be relatively flat in 2022. Worker shortages for auxiliary services such as residence halls, dining services, and parking services will continue to impede job growth, and early data indicate that some institutional budgets will remain under pressure as a result of enrollment declines.

Historically, employment in public higher education is countercyclical as the demand for new credentials increases when fewer job opportunities are available.

Local Government

County Government

As the 2022 calendar year closes out and the new year begins, county governments are feeling the same supply chain and workforce pressures as all other sectors of the economy. Many counties are delaying road and bridge projects because the cost of steel and petroleum-based products like asphalt are too expensive. Others are concluding that prices will continue to increase and are ordering materials now for projects that need to occur in the summer of 2023. Vehicle replacements for county fleets are also a challenge and have caused counties to look for replacement options in states as far away as Georgia. Equipment prices for road and bridge work are 25% higher than they were a year ago. On the workforce front, recruitment for law enforcement, correctional officers, and public health and human services jobs has been difficult. These public service careers lack appeal to younger workers. Many counties continue to chase after the private sector's employment practices by providing across-the-board salary increases and a continued embracement of the hybrid work style to help accommodate people's work-life balance. In many instances, counties have lost prospective employees because they cannot find an affordable place to live in the community.

Counties rely primarily on property taxes to provide state mandated services and to respond to community needs. The tremendous spike in market values for residential and commercial properties that have occurred since June of 2020 (three months into COVID-19) will be realized on January 1, 2023, for property tax dependent local governments (counties, schools, special districts, junior colleges, and cities). For local governments with diverse economies, this will likely equate to an increase in property tax revenues. Other counties are projecting flat revenues and, in some cases, decreases if, for example, a major employer has left or other pressures like water-dependent activities begin to fold. In large part, a county's property tax revenue reality dictates its ability to weather the supply chain and workforce pressures mentioned earlier.

Many counties are also planning for a recession. Counties provide social services for community members in need. This includes food, medical and economic assistance and workforce supports. A recession could cause demands for these services to increase. Some counties are increasing their reserve amounts to prepare for a potential economic downturn.

Like the state, counties are judiciously investing their one-time ARPA funds on assets and needs that their communities want. Counties have expanded broadband access and invested in redundancy projects, rehabilitated and built housing units, invested in flood management and drinking-water infrastructure with local partners, replaced lost revenue to ensure the basics of local government are on solid footing, supported COVID-19 vaccination efforts, and solicited needs from the broader nonprofit community that provide behavioral health and suicide prevention services as well as other supports. Awareness is high among local governments that ARPA funds are a once-in-a lifetime opportunity to address long-standing needs and spark local economies. As such, many have held public forums to solicit feedback and ensure their investments align with needs.

Municipal Government

The Colorado Municipal League (CML) conducts an annual statewide survey, "The State of Our Cities and Towns," to measure the economic outlook of Colorado communities compared to previous years. Looking toward 2023, municipalities are facing challenges like those of their county and special district counterparts. Municipalities indicated they consider inflation to be the greatest cause of concern, followed by the tight labor market, affordable housing, unfunded street and road maintenance needs, and unfunded water and wastewater improvement needs.

Inflation has drastically increased costs for capital projects, and retention of employment has become more difficult, due in large part to a lack of affordable and workforce housing. However, other factors are also impacting the ability of cities and towns to retain and recruit employees, including: budgetary constraints make offering competitive wages more difficult; the increased cost of living is forcing people to leave the market in some areas, especially mountain resort areas; the increased popularity of remote work has made it less likely for people to accept positions that don't offer remote options; and municipalities find it difficult to compete with private-sector positions.

The difficulties municipalities are experiencing in retaining employees permeates throughout city operations. Across the board, staffing shortages have slowed—or even halted—municipal daily operations such as water treatment and delivery, sanitation services, inspections, and other public works and utilities projects. Municipalities are combating staffing shortages by increasing wages to be more competitive with the private sector. Some cities are also utilizing creative strategies including offering training opportunities, improving benefits, and even offering housing stipends or subsidized workforce housing to retain staff.

Although a majority of municipalities are feeling the squeeze of inflation, most cities are positive about their economy and revenue as compared to 2021. In 2021, federal and state recovery funding prompted a quick economic recovery from the COVID-19 pandemic, and an increase in sales tax revenue allowed many cities and towns to bounce back from the dip caused by the pandemic. Cities are still seeing high sales tax revenues, and municipalities are expecting funding from the federal Infrastructure Investment and Jobs Act (IJAA) and Inflation Reduction Act (IRA) to continue to boost their economies. Municipalities plan to use these funds to finance unmet water and wastewater needs, as well as transportation projects, affordable housing, and broadband deployment. The state is helping local governments access this funding through the implementation of a program that will provide match funding so local governments can successfully apply for these grants. Despite this help from the state, municipalities—especially smaller cities and towns—are largely uncertain as to how to access IJAA funds, and most municipalities show concern around their ability to navigate IJAA opportunities.

Looking beyond 2023 and to the next five years, housing affordability continues to remain among the largest challenges for municipalities across Colorado. Most municipalities report housing supply and affordability issues have worsened over the past three years. The Western Slope and mountain communities are seeing the worst of this crisis, which can be largely attributed to the booming short-term rental market in mountain resort towns. Several cities are seeking to combat the popularity of short-term rentals through increases in lodging tax on them, with the revenue directed at affordable housing projects, and by passing moratoria on short-term rental licenses. In addition to strategies championed by local governments, the state is helping in the form of grants for innovative and transformational housing projects. Additionally, a statewide ballot measure was passed this election season. Proposition 123 will dedicate state general fund dollars to affordable housing projects for counties and municipalities. With this historic investment in affordable housing, municipalities will be able to offer even more creative solutions to the affordable housing crisis.

Beyond the next five years, municipalities are growing more concerned about meeting water needs for their communities. Colorado remains in a decades-long drought, exacerbated by a warmer climate and drier winters. While 58% of municipalities are at least slightly concerned about meeting water needs in five years, nearly 75% are

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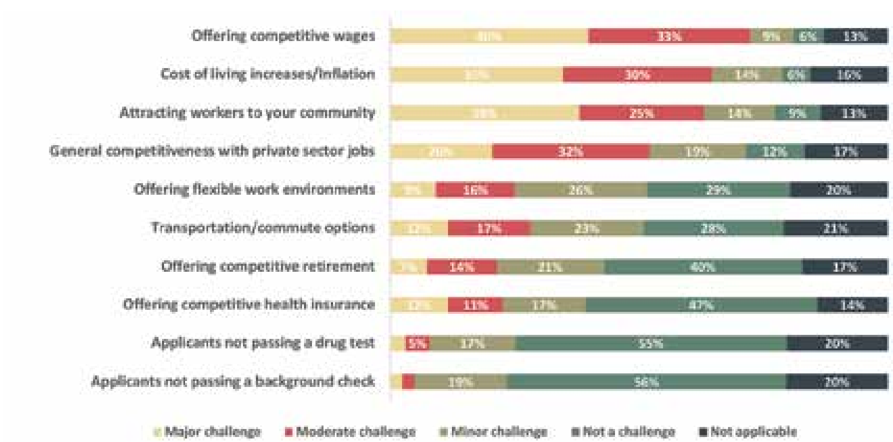
MUNICIPAL CHALLENGES LOOKING TOWARD 2023

Source: Colorado Municipal League.

MUNICIPAL HIRING/RETENTION SOLUTIONS

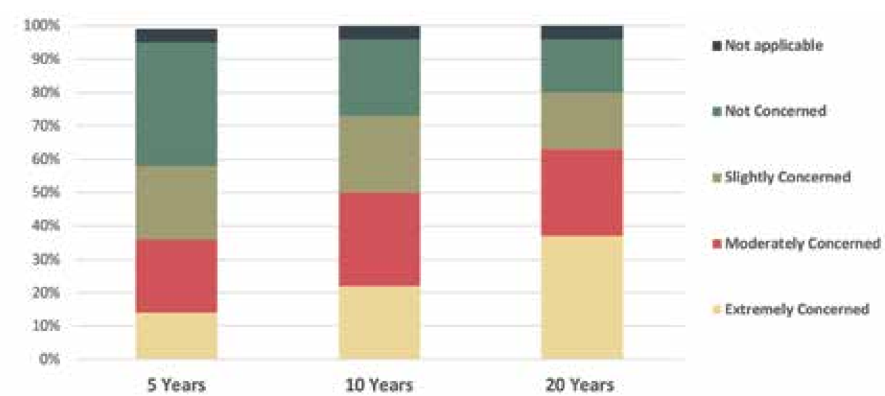
Source: Colorado Municipal League.

CHALLENGES IN FILLING FULL-TIME POSITIONS



Source: Colorado Municipal League.

MUNICIPAL CONCERN OVER THE ABILILTY



Source: Colorado Municipal League.

concerned about meeting needs in 10 years. This concern increases to 80% when looking 20 years into the future.

The coming years will continue to bring challenges for Colorado cities and towns. As the state continues to grow, municipalities will have to become more creative in how they address these problems. Cities and towns will continue to see strains from inflation and labor shortages, making it more difficult to implement strategies to create more housing and provide water to growing communities.

Special Districts

Special districts are a form of local government in Colorado that date back to early mining communities when residents of such camps sought mechanisms to join together to efficiently and effectively provide essential services. Special districts of one form or another have been utilized since that time. The general source of statutory authorization (and limitations) is the Special District Act (Article 1 of Title 32 of the Colorado Revised Statutes). There are many types of special districts organized under the Special District Act, including, but not limited to, the following: Ambulance Districts, Fire Protection Districts, Health Service Districts, Metropolitan (Metro) Districts, Park and Recreation Districts, Sanitation Districts, Water Districts, Water and Sanitation Districts, Health Assurance Districts, Mental Health Care Service Districts, Tunnel Districts, and Forest Improvement Districts. Further, there are other types of special districts organized and operating under other statutory schemes, including Business Improvement Districts, Cemetery Districts, Conservation Districts, Downtown Development Authorities, Federal Mineral Lease Districts, Irrigation Districts, Library Districts, Local Improvement Districts, Pest Control Districts, Public Improvement Districts, Regional Transportation Authorities, Special Improvement Districts, Water Conservancy Districts, and Water Conservation Districts. Currently, there are 3,329 special districts in Colorado.

Many special districts in Colorado have non-tax sources of revenues, such as rates, user fees, and service charges. Some special districts, such as those providing water or sewer services, rates, or fees may comprise the majority of district revenues—and, as such, some of these districts may have been structured as government enterprises for which the voter-approval provisions of Taxpayer Bill of Rights (TABOR) do not apply. However, for most special districts, property tax is the primary source of tax revenue. Please note that a handful of districts may impose a sales tax. While property tax is a relatively stable source of tax revenue, assessing, levying, and collecting the tax is a two-year process; therefore, for special districts, it can be very difficult to absorb new or unexpected expenditures. Further, as explained below, statewide tax policy changes in the property tax system may impact future property tax revenues.

Like their county and municipal counterparts, TABOR provisions apply to special districts and require voter approval for taxes and debt. Prior to voter approval of Amendment B at the 2020 statewide general election, a constitutional provision, referred to as the Gallagher Amendment, interacted with TABOR to maintain or reduce residential property tax revenue, commensurate with market increases. In a post-Amendment B Colorado (which repealed the provisions of the Gallagher Amendment that set a ratio calculation for residential property assessment), the Colorado General Assembly has authority to set property tax assessment rates in statute (the authority to make such statutory changes is also a constitutional power reserved for the people of Colorado under Article 5, § 1 of the state constitution). To that end, citizen proponents filed a proposed statutory measure in the spring of 2021, which appeared on the statewide 2021 ballot as Proposition 120. After the process for Proposition 120 commenced in 2021, the Colorado General Assembly introduced and passed Senate Bill 21-293 (SB21-293), which created additional classifications or categories of property assessment rates by dividing the two general categories of property (residential and commercial) into multifamily residential, single-family residential, agricultural, commercial, oil and gas, renewable energy production, and lodging. While SB21-293 permanently reduced the assessment rate of two of these categories, the temporary reductions in the remaining classifications applied for property taxes assessed in 2022 and 2023. The result was that SB21-293 blunted the potential negative fiscal impact of Proposition 120. Alone, Proposition 120 would have reduced statewide property tax revenues by $1.03 billion, based on the fiscal impact statement published by nonpartisan legislative staff on May 17, 2021. After the changes in SB21-293, which will reduce property taxes in the first year by $193.1 million (according to the fiscal note), the impact of Proposition 120 would have been an additional reduction of $45.9 million, according to the 2021 State Ballot Information Booklet. On November 2, 2021, statewide voters rejected Proposition 120.

This interest in changing property tax on the state level, although the tax is only levied locally, continued in 2022. Although none of the following appeared on the 2022 statewide ballot, 29 citizen initiatives were filed related to property tax, of which 27 would have resulted in reductions in property tax revenues. Further, the Colorado General Assembly introduced and passed Senate Bill 22-238 (SB22-238), which extended the two-year temporary property tax assessment rate reductions in SB21-293 lost by local property taxing districts; however, the SB22-238 backfill is only for the 2023 property tax assessment year. Perspectives of the need, and method, to make changes to Colorado's property tax structure may differ, but without a permanent solution to address the issue, there is a strong likelihood that we will experience insecurity and volatility in local government property taxes as a result of the various proposals and counterproposals.

Looking into 2023, Colorado's special districts are working to provide essential public services while managing the challenges of an uncertain and dynamic economy. Without the benefit of receiving federal recovery funds from the ARPA, for which no direct federal or state allocation

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was provided, many special districts are slowly recovery from revenues lost, or additional burdens shouldered, during the most intense periods of the COVID-19 crisis. Further, while some of the supply chain issues impacting public capital and other contracting has eased somewhat, the inflationary pressures generally, and the cost of petroleum products in particular, are profound fiscal challenges for special districts. And, while some indicators show that the labor market may become more competitive, special districts are facing the same recruitment and retention crises of other employers.

PK-12 Education

Colorado public school districts educate over 875,000 students in preschool through 12th grade every year. Funding for public schools comes from three main sources of revenue: local property tax, state funding, and federal dollars. The state share is primarily from income and sales tax revenues flowing through the state and then to districts. While federal education law is well established and sets strong requirements for public education, federal dollars are typically a relatively small overall component of the annual funding of public schools. Since March of 2020, K-12 public education, like many sectors of the economy, has experienced dramatic changes in the delivery of services, labor force availability, and revenue fluctuations.

Overall funding of education in Colorado as compared to the national average has declined since 1992, despite such actions as Amendment 23 to the Colorado constitution in 2000 and the passage of cannabis sales taxes to support education. Colorado spent between $2,205 to $3,033 less per pupil than the U.S. average in FY2018, according to data from the Census Bureau, Quality Counts, and NCES. Many school districts have turned to increasing local property taxes to support education, but due to the wildly disparate property values within school districts, the ability to generate revenue is a function of property values as well as the local voters' willingness to support public education with additional property tax dollars. These disparities are a result of residential development, nonresidential development, oil and gas resources, and the number of students in a district.

2022 Impacts

District noninstructional operations have been greatly impacted by the shifting economy and widely reported in national news outlets. Labor shortages in nearly all of the support areas within school districts, including bus drivers, food service workers, childcare providers, custodians and maintenance workers, increase wage pressures and strain the system when community expectations for services remain at an all-time high. Historically, districts have been able to rely on temporary staffing services to fill some of the gaps, but those temp agencies are experiencing similar hiring challenges and are not able to provide as many workers as in the past.

Current inflation is proving challenging for Colorado school districts. Funding increases were based on calendar year 2021 Denver-Aurora-Lakewood MSA inflation of 3.5%. The spike in inflation seen in the first three quarters of 2022 impacted current fiscal year spending as prices for goods and services significantly increased. Planned spending patterns were modified to address any near-term shortfalls, redirecting resources or reducing planned activities.

Available affordable housing continues to drive both student enrollment declines and labor shortages for school districts. Although local conditions vary widely across the state, this is particularly acute along the Front Range. Areas with some affordable housing or growth in lower priced single-family homes have seen fewer impacts.

2023 Outlook

The outlook for 2022-23 is stable; however, lingering fiscal and operational headwinds will persist. Statewide enrollment in 2023-24 is projected to decrease by over 5,000, or 0.6% students from 2022-23. This decrease continues a declining trend given the significant 3.3% enrollment drop recorded in October of 2020. Student enrollment growth across the state has dropped from growth of 2% in 2008 to 0.1% and 0.2% in 2018 and 2019. This trend of declining enrollment, when combined with declining birth rates and rising housing costs, indicates overall declining enrollment within the state in the coming years. This is consistent with national trends indicating an annual 1% decline in the K-12 student population.

While enrollment is projected to decrease, funding will be supported by the inflationary increase in the School Finance Act. Certainly, enrollment projections vary by specific school district and region, with varying degrees of growth and decline. The projected maximum decline is nearly 10% and growth of just over 8%. Among the 10 largest districts, this spread is from a decline of 3.4% to a growth of 0.9% and a net decline of just over 6,100 funded pupils. Governor Polis' 2023-24 budget proposal, released on November 1, 2022, reduces (improves) the Budget Stabilization Factor by $35 million, bringing the reduction to $286.3 million. The Budget Stabilization Factor is a mechanism to reduce the state's obligation to PK-12 public education funding. The per pupil funding inflationary increase of 8.3% is based on the Office of State Planning and Budgeting (OSPB) September 2022 Economic Forecast. This proposal totals a funding increase of $703.8 million for K-12 education. This totals an average of $861 per pupil more than 2022-23 funding.

School-district spending in the near term will be buoyed by the $1.05 billion in American Rescue Plan ESSER III funds allocated to Colorado school districts based on student poverty levels. This short-term funding allows districts to respond to student learning loss, the growing pediatric mental health crisis, as well as address some demands of aging capital infrastructure like HVAC systems or minor facility improvements. Spending will continue in the areas of additional staff. One challenge is that these nonrecurring federal resources must be used by September 30, 2024, which limits their usefulness for the continued operational pressures and will create a funding cliff if allocated for ongoing expenditures or high-impact interventions that set a level of expectation with families for ongoing services. There is growing concern of the negative impact in two years created by the removal of the programs and services added with these federal resources.

While the funding outlook is positive in the near term, this is a result of the inflation-adjusted component of the School Finance Act. The upcoming FY23 state revenue forecasts in December 2022 and March 2023 will determine where the Legislature is able to set the budget for K-12 education in 2023-24 and give an indication of the ability of the state to continue providing the expected funding levels into the future. The inflationary and caseload increases for all state-funded programs is constrained by TABOR caps, and one mechanism to balance the state's budget is the School Finance Act Negative Factor. Within the confines of the resources allocated by the Legislature, districts across the state will be contending with labor shortages, wage pressures, and inflationary costs outstripping the funding increases. However, within these fiscal constraints, an environment of high expectations remains for educators to prepare students for the 21st-century economy. With a recession predicted for the near future, districts will bolster reserves and balance funds to the extent possible in the near term as state funding for K-12 tends to lag an economic downturn.

Fixed Income Market – Local Governments

Throughout 2021 and into the first quarter of 2022, yields on allowable investments for local governments in Colorado were remarkably low. Although at the end of 2021, interest rates were forecast to stay low in 2022, the Federal Open Market Committee (FOMC), was aggressive in raising the Fed Funds rate. During the second and third quarters of 2022, interest rates rose sharply, and the FOMC is expected to continue combating near-record inflation over the coming months. Yields on short-term fixed income securities and daily liquid investment options such as local government investment pools rose abruptly in conjunction with the Fed Funds rate.

To illustrate, at the end of September, the two-year U.S. Treasury was 4.28%, 400 basis points higher than one year ago. Additionally, local governments were able to capture an average annual yield of .03% to .05% on bank deposits and daily liquid investment options during 2021. As of the end of September 2022, the average seven-day yield for daily liquid funds was around 3%. Interest income from local government investment pools and allowable investments under C.R.S 24-75-601 has been significantly higher in 2022. As a result, interest income captured by local governments should be higher than initially forecast for 2022. The increase in interest income for local governments can have significant impacts on local governments during times of high interest rates. According to Fed Funds futures, higher short-term rates are expected to persist into early 2023. However, local governments should be cautious about forecasting exceedingly high interest income for their 2023 budgets as market volatility is elevated and rate increases are expected to slow from the FOMC.

Historically, a rising interest rate environment can have negative impacts on the price of fixed-income security. Staying disciplined with duration and nimble with cash during the next 12 months should be the focus for local governments. Inflation will continue to be the main driver for a change in the Fed Funds rate by the FOMC. All indicators point toward elevated inflation into early 2023.

Public Finance Landscape

Due to the increase in the Fed Funds rate over the second and third quarters of 2022, the cost of issuing debt and borrowing money for local governments is going to be expensive from an interest payment perspective. Interest rates are expected to increase as the FOMC continues to try to tame inflation. As a result, local governments issuing debt over the next 12 months will end up paying more interest than any other point in the last 15 years.

The credit rating for Colorado local governments remains high and above the national average. Many entities within the state have maintained their investment-grade ratings throughout the pandemic and postpandemic cycles. Local governments in Colorado are experiencing a slight decline in reserve funds but are still seeing increases in tax revenues.

Voter acceptance of proposed debt issuances may be more challenging as inflation has eroded the willingness to pay increased taxes for capital projects. The next two election cycles can serve as a barometer for future municipal bond issuances. ✜

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International Trade

United States

Despite accelerating inflation around the world and central banks shifting to tightening policies, the surging demand and consumption that began in late-2020 maintained momentum through Q3 2022, bolstering trade volumes for the U.S. The headline estimates from the U.S. Census Bureau (Census) and the U.S. Bureau of Economic Analysis (BEA) show substantial growth in the international trade sector for the nation, with goods exports and imports increasing nominally year-to-date (YTD) in September by 22.3% and 19.3%, respectively, and services exports and imports increasing by 15.6% and 25.1%, respectively.

Based on this growth, national goods exports total value should reach $2.2 trillion and goods imports $3.4 trillion by the end of 2022—the first time that the series will exceed $2 trillion and $3 trillion, respectively. National services exports should reach $919 billion and imports $688 billion. This will lead to the nation experiencing its first goods and services deficit over $1 trillion, with a goods deficit of nearly $1.25 trillion slightly softened with a services surplus of $232 billion.

These high-flying records overstate real growth in trade volume, as they do not account for the extreme inflationary environment of the last couple of years. The BEA all commodities export and import price indexes grew by 41% and 24.8%, respectively, from April 2020 to June 2022. This represents extraordinary price growth, especially for goods exports. During a period of similar length as the U.S. economy began a new expansion cycle after the Great Recession—from March 2009 to September 2011—the indexes rose by 17.1% and 24.7%, respectively.

These indexes show much stronger upward price pressures than the consumer price index (CPI). During the same periods discussed in the previous paragraph, the all items U.S. city average CPI grew by 15.3% (April 2020 to June 2022) and 6.6% (March 2009 to September 2011). Beginning in 2021, the international transportation and logistics system experienced significant strains as several supply disruptions made it difficult for firms to meet the rising demand in goods, which was bolstered by large outlays of federal stimulus in advanced economies and shifts from services spending—on things like travel—to products, especially through e-commerce. The disruptions included ships stranded without product due to early COVID-19 restrictions, shutdowns at mines and factories that contributed to materials and components shortages, and closures and labor shortages at ports and inland transportation nodes that led to bottlenecks and extreme increases in delivery times.

The resultant supply-demand mismatch led to a nearly eight-fold increase in the price of shipping containers. The Freightos Baltic Index: Global Container Freight Index, for example, shows international freight rates grew from a stable multiyear average of about $1,400 in mid-2020 to about $4,400 in the first few months of 2021 before jumping to over $10,000 in August 2021 and $11,000 in September. These elevated rates (on average, just below $10,000) remained until April 2022, when they began a sustained downward trend. In early November, rates were just above $3,000, still twice their prepandemic average.

Air freight, facing similar but unique issues, also saw extreme price increases through 2021 and the first half of 2022. Passenger planes, which typically carry about 45% to 50% of annual air freight volume, were removed from service to such a large extent in response to travel restrictions that the U.S. air freight capacity declined by 75% in the early months of the pandemic, according to the BEA. For example, the BEA Import Air Freight Index jumped 39.9% from March 2020 to April 2020 and grew another 61.4% by November 2021. The series has since declined, but in September 2022 was still 79% above March 2020.

When adjusting for this inflation, BEA estimates of real trade volumes show that September YTD national goods exports increased by 7.1% and goods imports by 9% from 2021 to 2022 (nominal growth was 22.3% and 19.3%, respectively). These rates still represent strong growth: real annual growth for exports averaged 3.1% and for imports 3.6% from 2010 to 2019. It also represents a deceleration of real growth for imports, which grew 14.5% the year prior (exports remained steady following a real growth rate of 7.4% in 2021). If these YTD trends hold, both goods exports and imports real volume will reach new records by the end of 2022. Real exports will exceed their previous recent peak of 2019 by about 1.9%, while real imports will exceed their peak of 2021 by 9%.

Adjustments to services trade volumes were less dramatic, with real services exports increasing 9.8% YTD in September 2022 (compared to 15.6% nominally) and real services imports increasing by 18% (25.1%). Like goods, these are strong real growth rates for services: average annual growth for these series were 2.6% and 2%, respectively, from 2010 to 2019. Real services imports will virtually match their 2019 record (0.1% above), but exports will be about 9.3% below their 2019 record.

These real changes will lead to a real increase in the goods and services deficit of 14.9%, as the goods deficit increases by 11.4% and the services surplus decreases by 13.3%.

By BEA principal end-use categories, industrial supplies made up the largest share of national goods exports September YTD in 2022, accounting for 40.5%. This includes petroleum products and preparations, which alone accounted for 12.5%. Capital goods were the next largest category at 27.3%, followed by consumer goods at 12%. Of the six BEA principal end-use categories, only foods, feeds, and beverages declined in real terms (barely, by -0.03%) and consumer goods saw the largest real increase, of 14.7%.

For goods imports, consumer goods made up the largest share of nominal value, at 26.6%. Capital goods and industrial supplies were not far behind, at 26.2% and 25.5%, respectively. All categories increased except for other goods, which dropped by 4.3% in real terms. Like exports, consumer goods was the fastest-growing category at 13.7%. Capital goods imports real growth also exceeded 10%, at 11.3%.

For Colorado's goods export destinations, Canada again held the top spot, accounting for 16.9% of nominal value. Taken as a bloc, the European Union (EU) was the next largest at 16.6% (with Germany, the Netherlands, and France representing the largest country destinations within the bloc at 3.1%, 3%, and 2%, respectively), followed by Mexico at 14%. China was the 3rd-largest country destination at 9%, followed by South Korea and Switzerland at 7.5% and 6.2%, respectively. Of these, the EU saw the largest nominal growth of 31.9% September YTD 2022 (exports to France increased by 60.9% and the Netherlands by 40.2%), followed by the UK (23.1%) and Mexico (20.2%). Goods exports to China saw the smallest nominal growth, of 2.7%, while Hong Kong saw a decline of 8.6%, continuing a downward trend that began in mid-2019 after the introduction of Chinese legislation to allow extradition of Hong Kongers to mainland China.

For import sources, China was the top spot, accounting for 17.3% September YTD 2022. The EU—again as a bloc—was second at 16.2%, led by Germany (4.2%), Ireland (2.4%), and Italy (2%). Mexico, Canada, and Japan comprised the remainder of the top five country sources (along with China and Germany), accounting for 13.7%, 13.4%, and 4.4%, respectively. Of these sources, Canada and Mexico saw the largest nominal growth—29.3% and 20.9%, respectively—while Germany and Japan saw the slowest—4.2% and 7.5%, respectively.

By major service categories, other business services accounted for the largest share of service export value September YTD 2022, at 26.6%. Financial services and charges for intellectual property were the next largest at 18.8% and 14.1%, respectively. Travel was the fastest-growing category in nominal terms, which increased by 102% from the same period in 2021, followed by transport at 38.6%. Despite such substantial growth, its share of the total services export value—13.9%—is still far below its prepandemic average of about 20%. Three categories fell compared to their values in 2021: construction (-43.4%), insurance services (-7.2%), and financial services (1.4%).

MAJOR DESTINATIONS FOR COLORADO EXPORTS OF MANUFACTURED GOODS, MINERALS, AND AGRICULTURAL PRODUCTS, 2018-2022 YTD
(In Millions of Dollars)

Country	2018	2019	2020	2021	Sep 2021 YTD	Sep 2022 YTD	Percent Change	Country Share of Total
Canada	$1,447	$1,446	$1,284	$1,591	$1,188	$1,306	10.0%	16.9%
Mexico	1,254	1,059	1,048	1,420	1,067	1,084	1.6	14.0
China	577	524	504	921	670	700	4.5	9.0
South Korea	494	542	521	606	447	579	29.5	7.5
Switzerland	191	201	183	296	209	483	130.5	6.2
Japan	456	399	400	448	332	374	12.4	4.8
Malaysia	392	468	525	522	393	373	-5.1	4.8
Germany	301	280	305	289	202	239	18.3	3.1
Netherlands	305	331	300	246	177	232	31.1	3.0
Taiwan	223	232	222	268	196	190	-2.8	2.5
United Kingdom	220	243	202	226	176	188	7.1	2.4
France	182	170	106	181	111	152	36.8	2.0
Hong Kong	243	202	137	166	127	140	10.3	1.8
Philippines	194	152	102	138	100	125	25.6	1.6
Australia	146	123	152	144	111	121	8.2	1.6
Total Top 15 Countries	6,625	6,373	5,991	7,461	5,506	6,285	14.2	81.2
All Other Countries	1,707	1,724	2,184	1,611	1,204	1,457	21.1	18.8
Total All Countries	$8,332	$8,097	$8,174	$9,073	$6,710	$7,743	15.4%	100.0%

Source: U.S. Census Bureau.

For services imports, transport was the largest category, accounting for 23.4%, followed by other business services at 20.8%, and travel at 15.6%. Like services exports, travel and transport were the fastest-growing categories (109.5% and 57.4%, respectively) and travel still trailed prepandemic levels near 20%. Insurance services was the only category to fall from 2021 values, by 4.6%.

Data on services trade with partners are published only through the first half of 2022. The EU was both the top destination for services exports and top source for services imports, accounting for 30.1% and 33.2% of total value through the first half of the year. For exports, EU member Ireland was the top country destination at 10.4%, followed by the UK (10%), Canada (8.3%), Switzerland (7.4%), and China (5.3%). For country import sources the top five included the UK (13.4%), Germany (8.2%), Canada (7.7%), Japan (7.6%), and Mexico (6.6%).

Colorado

Official state trade estimates at this time do not include services trade values. Some unofficial third-party

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TOP 15 COLORADO EXPORTS, 2018-2022 YTD
(In Millions of Dollars)

Description	2018	2019	2020	2021	Sep 2021 YTD	Sep 2022 YTD	Percent of Total
Meat	$1,238	$1,257	$1,357	$1,839	$1,357	$1,481	19.1%
Industrial Machinery	1,159	1,188	1,123	1,164	878	1,023	13.2
Precision Instruments	1,282	1,313	1,168	1,258	932	1,021	13.2
Electrical Equipment	1,170	1,145	1,205	1,314	966	965	12.5
Aircraft/Spacecraft	278	336	866	335	202	411	5.3
Articles Of Iron Or Steel	207	272	191	290	217	290	3.7
Organic Chemicals	92	98	103	247	170	269	3.5
Aluminum and Articles Thereof	203	147	200	265	198	212	2.7
Plastics	220	200	213	253	188	209	2.7
Prec. Stones and Metals	21	18	22	25	21	185	2.4
Mineral Fuel, Oil, Etc.	83	81	31	212	188	150	1.9
Vehicles	119	130	117	144	106	132	1.7
Pharmaceutical Products	120	120	189	122	87	104	1.3
Misc Chemical Products	100	103	105	132	95	98	1.3
Photo/Cinematographic Goods	225	191	122	173	139	90	1.2
Total Top Fifteen	6,518	6,599	7,011	7,772	5,744	6,639	85.8
All Others	1,814	1,499	1,163	1,301	966	1,103	14.2
Total All Commodities	$8,332	$8,097	$8,174	$9,073	$6,710	$7,743	100.0%

Source: U.S. Census Bureau.

estimates suggest that services exports in Colorado are about twice the size of goods exports. Given the importance of outdoor recreation and tourism to the state's economy, it is likely that a strong share—likely stronger than that of the U.S. as a whole—is travel. The most recent passenger traffic reports for Denver International Airport (DEN) from September show that the number of international passengers has grown substantially over 2021, but is still well below 2018. Through September, 2.5 million international travelers went through DEN in 2022, 92.7% more than the 1.3 million that did so over the same period in 2021 and about 2.1% higher than the record 2.4 million in 2018. Financial, telecommunications, and other business services trade are all strong sectors in the state, and likely saw gains in 2022 at a similar pace as the nation. As such, Colorado service exports and imports, while not officially recorded, have likely reached their prepandemic levels.

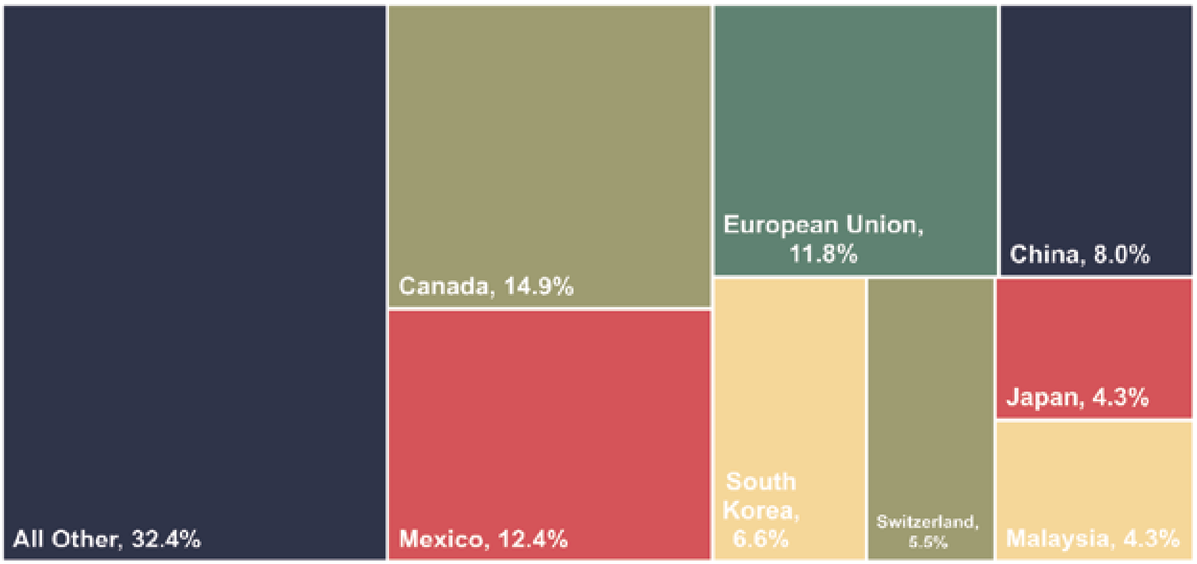
For goods trade, total export and import values nominally increased September YTD by 15.4% and 30.1%, respectively. If YTD trends hold, 2022 annual export values will reach $10.5 billion and import values $21.1 billion. This is the first time that Colorado exports will exceed $10 billion and imports $20 billion. It will also be the first time that the goods deficit exceeds $10 billion.

Like national estimates, inflation overstates these values. This report applies the BEA commodity price indexes that conform to sections of the harmonized tariff system (HTS) to nominal Colorado estimates from Census and BEA, accessed through WISERTrade, a data platform that aggregates trade data from U.S. and foreign statistical government agencies, to estimate real changes in goods export and import volume.

For exports, YTD values through September 2022 are 5.6% higher than 2021 in real terms, and 3.1% higher than the same period in 2018, a recent annual peak for exports. For imports, YTD values are about 16.2% higher than 2021, which was a record year in real terms. Real annual growth from 2010 to 2019 averaged 1.8% for exports and 2.2% for imports, making 2022 a strong year.

The top five product groupings by HTS sections have accounted for about 75% of Colorado's total export value since 2010 and include machinery, electrical equipment, TV image and sound recorders, etc. (25.7% YTD September 2022); live animals and animal products (19.9%); optical, photo, measuring, medical and musical instruments (13.2%); products of chemical or allied industries (8.9%); and base metals and articles of base metals (7.9%). Most of these groupings contain a diverse array of products, but some of the specific commodities that stand out for volume include electronic integrated chips, processors and controllers, beef, pork, medical devices, orthopedics, optical radiation instruments, aluminum alloy plates and casks, machinery and parts for manufacturing semiconductors, civilian aircraft/spacecraft and parts, and tanks and rails of iron and steel. Of the top five section groupings, only live animals and animal products saw a decline in real YTD values through September, of -4.5%, while the others ranged from 2.9% to 8.2% in real growth. Vehicles, aircraft,

COLORADO EXPORT MARKETS SEPTEMBER 2022 YTD



Source: U.S. Census Bureau.

vessels, and associated transport equipment, which was sixth in nominal value YTD September 2022 and contains aircraft and spacecraft, saw tremendous growth, at 66.8%. Mineral products, which includes petroleum products, declined by 39.2%, while pearls, stones, precious metals, imitation jewelry, and coins increased dramatically, by 787%. (Such growth is not uncommon in the Colorado trade profile when examining annual changes in specific commodities or groupings of commodities, which can have volatile series. This is likely a spike driven by a single contract or delivery, rather than the emergence of another strong commodity for the state, and should fall back to trend in 2023.)

The top five export destinations accounted for about 52.2% of Colorado value YTD, with the top two, Canada and Mexico, accounting for 30.9% alone. However, when taken as a bloc, the EU was Colorado's 3rd-largest export destination, with 13.3%. Following Canada and Mexico, China, South Korea, and Switzerland completed the top five, with 9%, 7.5%, and 6.2% of volume, respectively. Of the top five, Switzerland saw the fastest nominal growth of 130.5%, followed by South Korea at 29.5%. The nominal growth rates of the other three—Canada, Mexico, and China—were at or below 10%, which likely represents slow growth or decline, when adjusted for price changes. Malaysia and Taiwan were the only two countries in the top 10 export destinations that saw nominal declines.

Both have displayed long-term upward trends in the Colorado export profile.

The top five product groupings by HTS sections accounted for 73.2% of Colorado's total nominal import value YTD September 2022, with the top section—machinery, electrical equipment, TV image and sound recorders, etc.—accounting for over one-third (33.8%). Mineral products, including petroleum and derivative products, was the other dominant section and accounted for 21.2%. The other categories that completed the top five were optical, photo, measuring, medical and musical instruments (7.2%); textiles (5.8%); and vehicles, aircraft, vessels, and associated transport equipment (5.1%). Mineral products and vehicles were almost flat from 2021 values, while the other three grew by at least 15% in real terms.

The top five import sources accounted for 62.2% of Colorado volume YTD, with the top, Canada, accounting for 31.7% alone. Canada was followed by China, Mexico, Taiwan, and Malaysia (ranging from 5.5% to 10.9%), but when taken as a bloc, the EU took the third spot, at 10.9%. All top 10 sources saw double-digit nominal growth, while the EU showed growth of 5.3%—a nominal rate that could represent a decline in real terms.

Outlook for 2023

Monetary Policy and Slowing Global Growth

International trade is impacted by global demand abroad, often measured by GDP growth. Historically, as global GDP slows abroad, consumer demand abroad slows as well, which is a drag on Colorado and U.S. exports to the world. As the worldwide economy bounced back quickly from the pandemic recession, global GDP grew at 6% in 2021. In 2022, however, signs of slowing economic growth have emerged due to tightening monetary policy, geopolitical events, differing COVID-19 policies, among slowing consumer demand for goods and other drivers.

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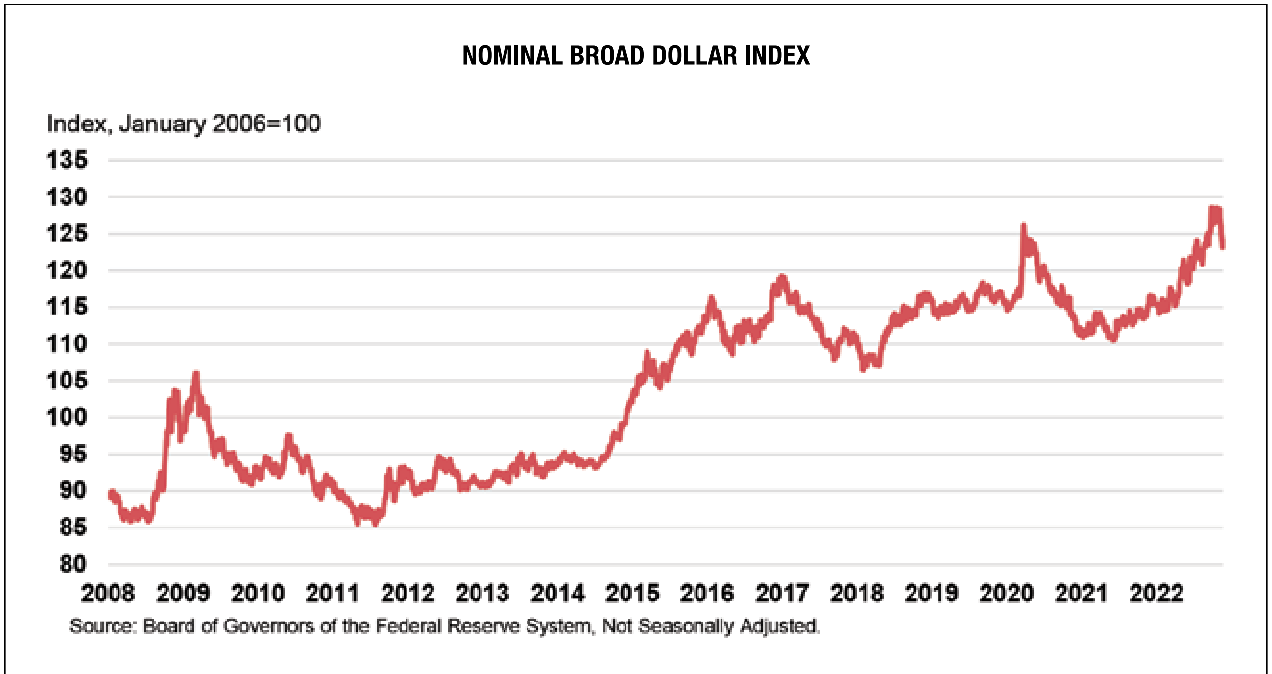

According to the International Monetary Fund (IMF), global GDP is expected to grow 3.2% in 2022, about 0.2% slower than the three years preceding the most recent recession. While advanced economies are expected to grow by 2.4%, outperforming their 2017-19 average, emerging market economies are expected to grow 3.7%, slower than their three-year prepandemic average.

The major driver behind slowing emerging market growth is a slowing Chinese economy, which is expected to slow to 3.2% in 2022. This would be China's slowest growth outside of 2020 since 1976 and is largely driven by production limitations because of the current zero-COVID policy as well as a slowing housing sector. While the property sector recovery in China may have a bumpy road ahead, it is possible that by mid-next year, the zero-COVID policy could ease or at least cause less disruption to production and trade. With that shift, China's economy will likely improve and is expected to grow by 4.4% in 2023, according to the IMF.

In 2023, advanced economies are expected to slow as fiscal and monetary policy dampens spending and investment and the energy market negatively impacts the European continent in particular. According to the IMF, world GDP growth is expected to be 2.7% with advanced economies growing only 1.1%. Oil and gas prices are of particular risk to the EU and the UK as there is a larger dependency on Russian supply, which has now been constrained. For the time being, though, Chinese production has been below recent norms, but as it picks up and temperatures get colder across Europe, high energy prices are likely to sink the EU and UK into recessions. This is due to the fact that Euro-area inflation is likely to increase even more than its already double-digit growth as a result of the high energy prices this winter, and consumer spending will fall compounded by cuts to production in energy-sensitive industries. In addition, reduced fiscal support in the UK from a potentially pared-back Energy Price Guarantee could increase risk. Meanwhile, EU countries are likely to keep fiscal supports as they brace for a likely recession, but doing so will affect debt-to-GDP ratios. Debt increases may be of concern in the 2023 as the European Central Bank (ECB) is likely to continue a rapid hiking path to target high inflation in the region, largely because of energy prices.

In the U.S., recession risks are also elevated, largely a result of tightening monetary policy intended to slow persistent and elevated inflation. While the U.S. is a larger energy producer than Europe, and thus less affected by global reductions in supply, inflation has become broad-based. This had led to a hawkish shift in tone from the Federal Reserve to hike Federal Funds rates to near 5% and hold them there for an extended period to slow demand, and thus inflation. However, there are international secondary effects of U.S. monetary policy choices as hiking policy rates tends to strengthen the dollar. While inflation is largely a global concern, central banks around the globe may also consider their currency depreciation as they make policy decisions, though this would likely be a second order priority.

Strength of the U.S. Dollar

Current U.S. monetary policy tightening and the likely global economic slowdown ahead has contributed to a strengthening dollar, as such conditions tend to drive a flight to capital. During Q4 2022, the Nominal Broad Dollar Index (DXY) reached new record highs, indicating the strength of the dollar is the highest it has been in recent history. The dollar was trading at 98 cents per Euro at the end of October 2022 despite the Euro being stronger for most of its history. Meanwhile, the dollar to pound sterling (USD/GBP) exchange rate has fallen to about $1.13 per British pound in October 2022. This record appreciation against the European area is reflective of the expected fragility of the global economy, but the dollar is also appreciating against the other two safe-haven currencies, the Japanese Yen and the Swiss Franc.

Despite setting records, it is quite likely that the dollar strength continues over the coming months given what appears to be a resilient U.S. economy thus far in the face of rapid Federal Reserve rate hikes. The Fed appears more able than foreign central banks to manage inflation given the labor market tightness and allows for hawkish policy to limit demand, while still possibly keeping unemployment rates relatively low.

A sustained shift in the dollar is not expected until the first half of 2023 as the dollar traditionally begins to slide as U.S. industrial production begins to trough. Lower industrial production domestically is likely by next year as tight monetary policy limits U.S. consumer demand while slowing global growth indicates lower foreign spending. Also, traditionally the dollar begins to retreat as the Fed eases monetary policy. Under current expectations, the Fed will have its last 25 basis point hike in the first meeting of 2023 and sustain that pace for a time until there is meaningful reversion of inflation. While such policy would not be easing outright, it may be relative to foreign central banks like the Bank of Japan. Additionally, by the first half of 2023, the worst of the European winter recession may pass and China's economy will likely near typical levels of production, helping to bolster stronger global growth as the U.S. growth trough is likely to be delayed by comparison. The confluence of these factors will likely turn the tide and allow the dollar to devalue after months of increasing valuation relative to the world at large.

Nonetheless, until a meaningful shift occurs, U.S. and Colorado exports to the world will be impacted by an appreciating currency. Specifically, while a strong dollar means cheaper foreign goods purchased domestically, it also makes domestic goods more expensive overseas. Therefore, foreign demand for U.S. products is negatively impacted by current exchange rates and exacerbated by foreign economic weakness. However, not all goods have the same elasticity of demand in response to currency movements, with processed and manufactured goods and value added services being more inelastic relative to raw or bulk goods. With top Colorado exports including processed meats or manufactured flight equipment, the largest local exports to the world will likely be less impacted by the strong dollar than the nation as a whole.

Furthermore, a strong dollar not only impacts international trade through its effects on purchasing power abroad, but also the demand for global commodities priced in dollars. For instance, oil contracts around the world are priced in dollars. Currently, oil prices are high as a result of supply and demand imbalances, but a stronger dollar amplifies the issue for nations abroad. The compounding costs can strain finances and raise the risk of demand destruction in the energy sector.

Conflict and Political Tensions

At the end of February 2022, Russia launched an invasion of Ukraine, under the auspices of liberating persecuted citizens of Russian descent in "breakaway" regions of eastern Ukraine. As the EU (along with the U.S.) condemned Russia's actions and enacted sanctions, Russia has cut its energy supply to Europe and stemmed Ukraine grain exports, leading to global shortages of energy and food, along with extreme price surges on the continent and abroad. Such instability will continue throughout the conflict under the current conditions, but could become even worse if the conflict escalates or broadens. For example, if European or American leaders decide to engage in open war—rather than financial and economic sanctions—against Russia, global demand and growth would further decline, though some sectors that have strength in Colorado, like aerospace and defense, may benefit.

Outside of Europe, tensions between China and Taiwan seem to be worsening, with the former performing a series of military exercises and shows of force in the Strait of Taiwan and in Taiwanese airspace. The Biden administration has explicitly stated that any act of aggression from China would be met with force from the U.S. Similar tensions seem to be growing with Iran and North Korea.

Federal Policies

1.Tariffs

The results of the tariffs the Trump administration imposed on China starting in July 2018, which the Biden administration has so far retained, have been mixed. As a whole, the U.S. has imported fewer goods from China, a trend that was exacerbated by the collapse in demand as COVID-19 spread, and thus far have not fully returned to levels from before the trade war and the pandemic. Taken as a whole, China now provides 18% of total U.S. goods imports, as opposed to 22% before the trade war began (imports of goods such as semiconductors, some IT hardware, and to some degree clothing and footwear). However, imports of goods from China that were not hit with tariffs by either administration have continued to rise, such as laptops, phones, video game consoles, and toys. Meanwhile, as of August 2022, U.S. imports from the rest of the world have risen above pre-trade war trends and are up 38% from before the trade war began. Neither the Trump nor the Biden administrations imposed new tariffs on most of these imports, and their levels have rebounded after the pandemic.

While the Biden administration may have sound long-term reasons for continuing the Trump administration's tariffs in a bid to lessen the ties between the U.S. and Chinese economies, in the short term it means that supply chain shortages will continue as companies work to find new suppliers, and the costs incurred by setting up these new suppliers will also have inflationary impacts.

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INTERNATIONAL STUDENT ENROLLMENT AT SELECT COLORADO INSTITUTIONS

University	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	Percent Change
University of Colorado Boulder	1,681	1,910	2,163	2,614	2,951	3,424	3,654	3,789	3,886	3,174	3,263	2.8%
Colorado State University	1,352	1,598	1,793	2,148	2,305	2,495	2,501	2,416	2,446	2,021	1,906	-5.7%
University of Colorado Denver	1,116	1,348	1,457	1,463	1,446	1,051	1,068	1,398	1,288	1,067	1,088	2.0%
University of Denver	1,430	1,590	1,617	1,690	1,688	1,494	1,404	1,278	1,122	902	771	-14.5%
Colorado School of Mines	652	660	767	823	875	800	818	856	866	720	682	-5.3%

Source: Institute of International Education, annual Open Doors report.

2. Export Controls on China: Chips and Semiconductors

In October 2022, the Biden administration imposed extensive new export controls on semiconductor exports to China in an effort to mitigate potential threats to national security. The new controls prohibit export of advanced chips and the software and equipment used to design and manufacture them, as well as any elements of that equipment built in the United States. The export controls apply to U.S. firms as well as any international company that uses U.S. semiconductor technology—arguably, all of the world's leading manufacturers of chips. Finally, the new rules prohibit U.S. citizens, residents, and green-card holders from being employed by Chinese chip manufacturers.

3. Visa Policy

In October 2022, the Department of Homeland Security announced that it plans to grant the maximum number of H-2B seasonal worker visas that the law permits for the first time. The number of H-2B visas granted will be more than 130,000, and the administration plans to release all the visas at the beginning of the fiscal year in order to give employers more time to find seasonal workers. This should alleviate some labor supply problems, particularly in industries hard hit by labor shortages such as restaurants and hospitality.

4. CHIPs Act

In an effort to combat the decline in U.S. global market share of the semiconductor supply chain, which had fallen from 40% of semiconductor manufacturing capacity in 1990 to 11% in 2019, Congress authorized a series of initiatives called the Creating Helpful Incentives to Produce Semiconductors for America (CHIPS) as part of the FY 2021 National Defense Authorization Act. The initiatives include incentives to boost investment in domestic manufacturing capacity and increase research and development in microelectronics and semiconductors in the United States.

5. Inflation Reduction Act (IRA)

The Inflation Reduction Act, which President Biden signed into law in August 2022, aims among other initiatives to boost domestic manufacturing capacity, increase procurement of key supplies either domestically or from free trade partners, and increase research and development into new energy technologies. In conjunction with the CHIPS act, the IRA aims to increase U.S. innovation and competitiveness.

6. Infrastructure Investment and Jobs Act (IIJA)

President Biden signed the Infrastructure Investment and Jobs Act (IIJA) into law in November 2021. The law is one of a series of initiatives the Biden administration has enacted in an effort to shore up American infrastructure. The IIJA invests new spending on roads, railways, bridges, airports, seaports, waterways, and public transit.

International Students in Colorado

International students play an important role in Colorado's economy. They are both a direct economic benefit and a contributor to the state's national and global competitiveness. Moreover, Colorado has always attracted top science and engineering students, many of whom contribute to the $1.6 billion in innovative research at Colorado's research institutions.

During the 2021/2022 academic year, Colorado hosted close to 9,500 international students, who contributed over $320 million in education exports and supported 3500 jobs. These numbers represent a slight decline from 2020/2021, and are a sign that Colorado's institutions have not yet recovered from the COVID-19 pandemic in terms of international education. The five institutions with the most international students are the University of Colorado Boulder, Colorado State University, the University of Denver, the University of Colorado Denver, and the Colorado School of Mines (see table on previous page).

Institutions in Colorado, as in the rest of the states, are cautiously optimistic that the worst of the pandemic impact on international education has passed and that numbers of students will increase going forward. However, the decline in international students as a result of COVID-19 was especially acute among new (incoming freshmen) students, and so it will take some years for international education to reach and surpass prepandemic levels. Moreover, the country of origin that sends the most students to the United States and to Colorado is China. Because of strained relations with China, the number of Chinese students coming to the United States decreased by 8%. The decline was even more pronounced for Colorado: prepandemic, over 30% of all international students in Colorado were from China; in 2021/2022, Chinese students made up only 17.4%, with India surpassing as the top country of origin. China remains the leading country of origin nationally, and it is unclear whether the decline is temporary or the start of a longer-term trend.

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Photo courtesy of Naassom Azevedo on Unsplash.

Summary

Employment in Colorado is estimated to have increased 4.4%, or 120,800 jobs, in 2022 once data revisions take effect in March 2023, pushing the economy to new peaks. Colorado will sustain job growth in 2023 despite a slowing economy, increasing another 57,100 (2%). Of the 11 industry groups in the state, nine are projected to add jobs in 2023; the exception is construction and financial activities, which are navigating the accentuated ill effects of rising interest rates. In 2023, Professional and Business Services is projected to add the most jobs, while the fastest pace of jobs growth (percentage terms) is projected in Natural Resources and Mining.

Agriculture—High production costs and drought concerns will remain a headwind for the Agriculture sector in 2023. While market prices for corn, wheat, fed cattle, milk, hogs, and sunflower are all generally higher across the board than a year ago, almost every input cost for farmers and ranchers— fuel, seed, pesticides, and fertilizer—has increased. Interest rate increases are expected to impact producer operating expenses, while inflationary pressures will likely keep the price of beef high. In addition, Colorado's net farm income is projected to fall to $772 million in 2023, the lowest level in 20 years.

Natural Resources and Mining—Increased oil and gas pricing during 2022 has resulted in an all-time high sector valuation. The estimate of Colorado's Natural Resources and Mining sector value for 2022 is $27.8 billion, a 55% increase from 2021 and more than double the valuation in 2020. Despite a marginal increase in Colorado's oil production and decrease in natural gas, increases in higher crude oil and natural gas prices have helped the industry. Colorado's total value of oil and gas production is estimated to be over $25 billion in 2022, an all-time high, and 160% higher than 2020. Colorado ranked 11th nationally in coal production, and seventh in petroleum liquid reserves. Colorado is also a leading producer of renewable energy, including wind, solar, biomass, and hydroelectric energy sources.

Construction—In 2022, two different trends have emerged within the construction sector. Residential building—especially single-family—is fast coming under high downward pressure while infrastructure ("nonbuilding") is growing into record volume. Overall, total construction activity is estimated at $23.7 billion in 2022, representing an increase of about 1.5%. While rising mortgage rates will temporarily slow the single-family housing market, the future remains bright in Colorado as millennials are in the typical home-buying phase of life and Colorado remains an attractive destination for primary and secondary home options. Multifamily construction will likely decline in 2023, largely because apartment demand will be partially met by the abundance of units already under construction. Nonresidential building construction is expected to remain generally steady, while nonbuilding construction is expected to accelerate in 2023, driven by increases in state and federal funding.

Manufacturing—Colorado's mix of manufacturing industries contributed to the sector, outperforming national industry growth through the pandemic and subsequent recovery. In 2022, employment in the manufacturing sector fully rebounded and surpassed its prepandemic level. Colorado's manufacturing sector continued to build upon industry strengths in renewable energy investments, breweries, cannabis products, aerospace, and health care. However, faced with ongoing pandemic-related challenges and headwinds from rising interest rates, inflationary pressures, and slowing demand for many goods, growth is projected to slow in 2023.

Trade, Transportation, and Utilities—The uniqueness of this large sector covering a wide array of companies continues to bolster the industry. Changes in consumer behavior

ANNUAL EMPLOYMENT CHANGE IN NONAGRICULTURAL WAGE AND SALARY EMPLOYMENT SECTORS, 2013-2023 (In Thousands)

Sector	2013	2014	2015	2016	2017	2018	2019	2020	2021[a]	2022[b]	2023[c]
Natural Resources and Mining	0.3	3.5	-3.4	-7.0	2.1	2.8	0.2	-7.0	-2.0	0.9	3.0
Construction	11.7	14.7	6.6	6.5	8.4	9.5	5.9	-4.2	1.9	6.2	-2.0
Manufacturing	1.9	3.8	4.4	1.7	1.6	3.2	3.0	-3.7	1.9	4.2	0.5
Trade, Transportation, and Utilities	10.6	12.6	13.0	8.2	7.4	9.1	7.5	-8.7	16.5	15.5	6.4
Information	0.1	0.5	0.5	1.2	0.1	3.3	1.5	-2.1	1.3	2.1	1.4
Financial Activities	4.3	2.9	5.1	4.9	4.2	3.5	3.0	-1.8	4.9	1.0	-4.0
Professional and Business Services	15.6	14.0	11.7	7.3	7.0	11.1	15.7	-8.8	22.4	33.0	20.3
Education and Health Services	4.1	12.1	15.3	12.5	8.3	6.6	6.9	-8.4	8.7	5.9	5.8
Leisure and Hospitality	9.7	11.0	12.4	10.8	9.6	6.5	5.7	-73.4	34.4	32.7	11.0
Other Services	1.7	3.2	3.3	3.1	1.3	2.3	3.9	-5.9	4.7	5.3	4.1
Government	8.9	4.7	8.6	11.6	8.6	8.9	9.5	-14.9	-1.9	13.9	10.6
Total[d]	68.9	83.0	77.5	60.8	58.6	66.8	62.8	-138.9	92.8	120.8	57.1

[a]Revised. [b]Estimated. [c]Forecast. [d]Due to rounding, the sum of the sectors may not equal the total. Sources: Colorado Dept. of Labor and Employment and Colorado Business Economic Outlook Committees.

shifting purchasing habits to e-commerce and increased consumer spending have expanded warehousing and delivery needs. The continued strong retail trade sales and return of air travel will strengthen employment in 2023, but worker shortages could remain a headwind.

Information—In 2021, in-person operations resumed, movie theaters reopened, and the digital transformation continued, elevating the number of jobs in publishing, media, and data processing industries. Societal shifts toward digitization, automation, and data continue to hurt some companies within the industry and help others in the state. Demand for connectivity and infrastructure has increased with the remote workforce, and data processing and hosting continue to be a large growth area for Colorado. Expanding broadband access across the state continues to be an ongoing mission that is important for increasing remote work, online education, and health care. Employment in the sector is expected to continue growing, albeit at a more modest pace in 2023 as electronic and online publishing, software publishing, and data services add jobs at a pace that more than offset long-run declines in traditional publishing and telecommunications industries.

Financial Activities—Financial activities underperformed other industries in 2022, driven by several factors: higher interest rates, continued supply chain issues, higher consumer prices, and geopolitical stress. Employment in finance and insurance industries is expected to decrease in 2023 as a result of higher interest rates. In addition, heightened inflation will moderate demand for commercial real estate, and the residential real estate market is expected to dampen as buyers become increasingly wary of economic and socioeconomic conditions. Employment growth in this sector is expected to decline in 2023 on the heels of an expected economic downturn.

Professional and Business Services—The sector continues to be a strength within the Colorado economy—it is the second-largest private sector industry with about 17% of total—and it recovered quickly from the pandemic-induced downturn. The highly skilled and highly educated workforce allowed the sector's employees to quickly adapt to remote work and boosted employment 5.2% in 2021, which continued into 2022. In 2023, economic headwinds could moderate growth in this sector, but Colorado's position as one of the most innovative, educated, and entrepreneurial states bodes well for the sector.

Education and Health Services—Employment in Education and Health Services is still impacted by the vestiges of the pandemic. The demand for behavioral health services surged as a result of the pandemic, and the industry is seeing increased turnover at all staffing levels. Growth in private education services in the year ahead will be influenced by the ability of schools to adjust to the changing demands of online learning and closures related to legal and financial difficulties. While employment in this supersector rebounded in 2021, growth decelerated in 2022, and is expected to moderate further in 2023.

Leisure and Hospitality—While employment in the Leisure and Hospitality industry has recovered to its prepandemic levels, it lags the respective growth witnessed in the majority of other industries in Colorado over the same time period. Over the course of 2021, demand for leisure and hospitality services returned as vaccination rates increased and public health restrictions eased. The rapid return to demand for these services led to historic increases in job openings in 2021 and 2022 as employers attempted to hire workers in the industry. However, workplace conditions that were exacerbated by the pandemic have decreased the supply of labor that lags the elevated demand for employees. That said, a return to Colorado travel and tourism and increased outdoor recreation and skiing are bright spots within the industry. Industry employment is expected to post gains in 2023, albeit at a more moderate pace, as the industry faces workforce challenges.

Other Services—This industry fully rebounded from the pandemic recession as person-to-person interactions increased in 2021 and 2022. Businesses in this sector (e.g., hair and nail care, religious organizations) will continue to benefit from business and life getting back to normal in the year ahead.

Government—While Government employment continued to recover in 2022, government entities at all levels were impacted by many of the same challenges faced by other sectors including labor force shortages, supply chain issues, and increased costs. Declining educational enrollment is expected to continue in the coming years; however, educational funding will likely increase, driven by changes in the proposed 2023-2024 state budget. The proposed 2023-2024 state budget, combined with funding from the Infrastructure and Investment Jobs Act and Inflation Reduction Act, will help the sector remain stable in 2023.

National and Colorado

- National real GDP grew an estimated 1.8% in 2022. Despite expectations for a slowdown in early 2023, U.S. real GDP is projected to grow 0.6% for the year.
- As prices increased in 2022, consumers supported consumption with increased income, decreased savings, and increased debt. Personal consumption will slow further in 2023 as inflation dents the purchasing power of consumers.
- Rising interest rate policies were deployed to manage high inflation. The higher interest rates had a cooling effect on investment. The higher cost of borrowing is expected to slow residential and nonresidential fixed investment, while infrastructure investment is projected to grow.
- The strong value of the dollar relative to other currencies may dampen U.S. exports and increase the trade deficit in 2023.
- Continued headwinds in 2023 include a shortage of workers, high inflation, increased borrowing costs, and disrupted supply chains. However, these issues are signaling modest improvement.
- Colorado will remain an economically competitive state in 2023 with above-average growth in GDP, income, and employment.
- Employment growth is projected in nine of the 11 major industries in 2023, with most growth coming from the services sectors.
- In 2023, Colorado is projected to add 55,500 people, according to the State Demography Office. Growth will come from net migration (35,000) and from the natural increase (20,500).

For more information on each industry sector, visit colorado.edu/business/brd. ✤

Around the Region

The western region of the United States is made up of Colorado and its neighboring states of Arizona, Kansas, Montana, Nebraska, New Mexico, Utah, and Wyoming. This section compares currently reported economic activity in these states and their top metropolitan statistical areas (MSAs) as measured by total employment, employment growth, unemployment rate, average annual pay, and GDP.

Every state in the region showed positive 10-year employment growth. Utah and Arizona recorded the highest average 10-year employment growth rates of 2.9% and 2.2%, respectively. In September 2022, all of the regional states posted year-over-year job gains with Colorado, New Mexico, and Utah posting the largest increases of 4.1%, 4%, and 3.7%, respectively. Kansas saw the lowest employment growth of just 2%. Colorado was the leading state in the region in average annual pay, personal income, and GDP. Regarding MSAs, the Phoenix-Mesa-Scottsdale MSA, the Denver-Aurora-Lakewood MSA, and the Salt Lake City MSA posted the largest year-over-year employment increases of 3.9%, 3.5%, and 2.5%, respectively, in September 2022. The Cheyenne MSA saw the smallest annual increase of 1.1%.

In terms of real GDP growth, Utah, Arizona, and Montana saw the largest annual increases of 8.6%, 6.8%, and 4.5%, respectively, year-over-year in Q2 2022. Wyoming and New Mexico were the only states in the region to experience a decline in Q2 2022 GDP (-5.3% and -1.3%, respectively). In 2020, the Salt Lake City MSA led the

REGIONAL STATES								
September 2022 Total Employees (In Thousands)	3,091.7 Arizona	2,882.8 Colorado	1,678.0 Utah	1,402.1 Kansas	1,034.5 Nebraska	854.1 New Mexico	505.9 Montana	286.4 Wyoming
Employment CAGR September 2012 - September 2022	2.9% Utah	2.2% Arizona	2.2% Colorado	1.3% Montana	0.6% Nebraska	0.6% New Mexico	0.3% Kansas	-0.2% Wyoming
Employment % Change September 2021 - September 2022	4.1% Colorado	4.0% New Mexico	3.7% Utah	3.4% Arizona	2.9% Wyoming	2.6% Nebraska	2.1% Montana	2.0% Kansas
Unemployment Rate September 2022 (Not Seasonally Adjusted)	4.2% New Mexico	3.7% Arizona	3.4% Colorado	3.3% Wyoming	2.9% Montana	2.6% Kansas	2.2% Nebraska	2.1% Utah
Average Annual Pay 2021	$70,563 Colorado	$61,750 Arizona	$57,837 Utah	$53,853 Nebraska	$53,422 Kansas	$53,022 Wyoming	$52,522 New Mexico	$51,319 Montana
Personal Income Q2 2022 (Millions of Dollars)	$390,046 Colorado	$379,522 Arizona	$176,104 Utah	$170,079 Kansas	$118,971 Nebraska	$101,665 New Mexico	$60,491 Montana	$37,142 Wyoming
Personal Income Q2 2022 (Per Capita)	$73,357 Colorado	$71,105 Wyoming	$63,002 Nebraska	$59,811 Kansas	$57,029 Montana	$56,773 Utah	$55,799 Arizona	$50,189 New Mexico
GDP Q2 2022 (Millions of Current Dollars)	$480,828 Colorado	$453,602 Arizona	$245,831 Utah	$209,272 Kansas	$161,260 Nebraska	$122,359 New Mexico	$64,757 Montana	$48,044 Wyoming
Real GDP Percentage Change Q2 2021 - Q2 2022	8.6% Utah	6.8% Arizona	4.5% Montana	4.3% Colorado	3.0% Nebraska	1.5% Kansas	-1.3% New Mexico	-5.3% Wyoming

Sources: Bureau of Economic Analysis, Colorado Department of Labor and Employment, and Bureau of Labor Statistics (CES, QCEW, and LAUS data). [a]Not seasonally adjusted. Unless noted, all data is seasonally adjusted. Based on preliminary data.

MSAs in the region with the smallest decline, with -0.4% in 2020 (most recent available data), followed by the Phoenix-Mesa-Chandler MSA (-0.5%) and the Lincoln MSA (-1.2%). There were no regional MSAs that recorded year-over-year gains in 2020.

In 2021, Colorado's $70,563 average annual earnings exceeded all states in the region, followed by Arizona, with $61,750. Boulder and Denver-Aurora-Lakewood led Colorado with above-average annual pay levels exceeding $78,000. This far surpasses other MSAs in the region, which all fall below $62,000.

REGIONAL METROPOLITAN STATISTICAL AREAS

September 2022 Total Employees (In Thousands)	2,322.6 Phoenix-Mesa-Scottsdale	1,581.3 Denver-Aurora-Lakewood	1,091.6 Kansas City	790.8 Salt Lake City	397.3 Albuquerque	298.9 Wichita	189.4 Lincoln	47.9 Cheyenne
Employment CAGR September 2012 - September 2022	2.7% Phoenix-Mesa-Scottsdale	2.4% Salt Lake City	2.3% Denver-Aurora-Lakewood	1.0% Kansas City	0.7% Cheyenne	0.7% Albuquerque	0.6% Lincoln	0.4% Wichita
Employment % Change September 2021 - September 2022	3.9% Phoenix-Mesa-Scottsdale	3.5% Denver-Aurora-Lakewood	2.5% Salt Lake City	2.1% Albuquerque	2.0% Kansas City	1.7% Lincoln	1.5% Wichita	1.1% Cheyenne
Unemployment Rate September 2022 (Not Seasonally Adjusted)	4.2% Albuquerque	3.5% Phoenix-Mesa-Glendale	3.2% Denver-Aurora-Lakewood	3.1% Cheyenne	2.9% Wichita	2.2% Kansas City	1.9% Salt Lake City	1.9% Lincoln
Average Annual Pay 2021	$78,450 Denver-Aurora-Lakewood	$65,786 Salt Lake City	$64,486 Phoenix-Mesa-Scottsdale	$61,820 Kansas City	$54,224 Albuquerque	$52,930 Cheyenne	$52,399 Lincoln	$51,264 Wichita
Personal Income 2021 (Millions of Dollars)	$267,282 Phoenix-Mesa-Chandler	$212,983 Denver-Aurora-Lakewood	$127,546 Kansas City	$71,937 Salt Lake City	$44,496 Albuquerque,	$41,473 Colorado Springs	$34,875 Wichita	$27,514 Boulder
Personal Income 2021 (Per Capita)	$83,173 Boulder	$71,728 Denver-Aurora-Lakewood	$60,219 Fort Collins	$58,145 Kansas City	$57,114 Salt Lake City	$54,959 Cheyenne	$54,907 Phoenix-Mesa-Chandler	$54,817 Colorado Springs
GDP 2020 (Millions of Current Dollars)	$281,005 Phoenix-Mesa-Chandler	$223,146 Denver-Aurora-Lakewood	$142,503 Kansas City	$103,913 Salt Lake City	$45,056 Albuquerque	$36,322 Wichita	$21,155 Lincoln	$5,822 Cheyenne
Real GDP Percentage Change 2019 - 2020	-0.4% Salt Lake City	-0.5% Phoenix-Mesa-Chandler	-1.2% Lincoln	-2.3% Kansas City	-2.8% Albuquerque	-2.8% Denver-Aurora-Lakewood	-3.3% Cheyenne	-5.9% Wichita

Sources: Bureau of Economic Analysis, Colorado Department of Labor and Employment, and Bureau of Labor Statistics (CES, QCEW, and LAUS data). [a]Not seasonally adjusted. Unless noted, all data is seasonally adjusted. Based on preliminary data.

Around the State

COLORADO METROPOLITAN STATISTICAL AREAS

September 2022 Total Employees (In Thousands)						
1,581.3	313.1	206.0	180.0	108.4	66.7	65.4
Denver-Aurora-Lakewood	Colorado Springs	Boulder	Fort Collins	Greeley	Grand Junction	Pueblo
Employment CAGR September 2012 - September 2022						
2.5%	2.3%	2.3%	2.2%	2.0%	1.2%	1.1%
Fort Collins	Denver-Aurora-Lakewood	Greeley	Colorado Springs	Boulder	Pueblo	Grand Junction
Employment % Change September 2021 - September 2022						
5.0%	3.8%	3.5%	3.3%	2.9%	2.9%	3.3%
Boulder	Fort Collins	Denver-Aurora-Lakewood	Pueblo	Greeley	Colorado Springs	Pueblo
Unemployment Rate September 2022 (Not Seasonally Adjusted)						
5.1%	3.5%	3.4%	3.4%	3.2%	2.7%	2.5%
Pueblo	Colorado Springs	Greeley	Grand Junction	Denver-Aurora-Lakewood	Fort Collins-Loveland	Boulder
Average Annual Pay 2021						
$84,399	$78,450	$61,025	$58,974	$57,864	$50,153	$49,722
Boulder	Denver-Aurora-Lakewood	Fort Collins	Colorado Springs	Greeley	Pueblo	Grand Junction
Personal Income 2021 (Millions of Dollars)						
$213	$41	$28	$22	$17	$8	$7
Denver-Aurora-Lakewood	Colorado Springs	Boulder	Fort Collins	Greeley	Grand Junction	Pueblo
Personal Income 2021 (Per Capita)						
$83,173	$71,728	$60,219	$54,817	$52,354	$48,884	$43,513
Boulder	Denver-Aurora-Lakewood	Fort Collins	Colorado Springs	Greeley,	Grand Junction	Pueblo
GDP 2020 (Millions of Current Dollars)						
$223,146	$39,502	$29,682	$21,593	$16,710	$6,777	$6,494
Denver-Aurora-Lakewood	Colorado Springs	Boulder	Fort Collins	Greeley	Grand Junction	Pueblo
Real GDP Percentage Change 2019 - 2020						
-0.1%	-1.0%	-2.8%	-3.1%	-3.2%	-4.1%	-11.5%
Colorado Springs	Fort Collins	Denver-Aurora-Lakewood	Grand Junction	Boulder	Pueblo	Greeley

Sources: Bureau of Economic Analysis, Colorado Department of Labor and Employment, and Bureau of Labor Statistics (CES, QCEW, and LAUS data). [a]Not seasonally adjusted. Unless noted, all data is seasonally adjusted. Based on preliminary data.

Boulder County

Boulder County's economy is fueled by businesses in diverse industries, a highly educated workforce, visionary entrepreneurs, global industry leaders, a desirable quality of life, a world-class research university, and several national research labs. The county often outperforms the state and national economies in areas such as job growth, educational attainment, capital investment, and commercial real estate absorption.

The COVID-19 global public health emergency effect on individuals, businesses, and institutions throughout Boulder County lessened in 2022. However, the Marshall fire in late 2021 significantly impacted residential and commercial communities throughout the county. Coordinated efforts by county and city officials, community and business leaders, institutions, and nonprofit organizations provided information, guidance, technical assistance, and financial support to the local communities. While the extent and duration of the economic disruption still lingers, Boulder County's underlying economic strengths, robust pre-COVID economy, and collaborative environment have aided its economic recovery.

Employment and Wages

Prior to the COVID-19 pandemic, Boulder County continued to post low unemployment rates and solid employment gains. After the coronavirus outbreak, the unemployment rate increased from 2.5% in February 2020 to a high of 9.9% in June 2020. In 2022, unemployment began the year at 3.1% and hovered around that rate throughout the year, gradually decreasing to 2.5% in September. This compares to the state unemployment rate of 3.5% and the national rate of 3.4% (both not seasonally adjusted).

Employment in the Boulder Metropolitan Statistical Area (MSA) increased 3.5% in 2021 year-over year. Continuing that trend, employment in September 2022 was up 3.9% year-over-year, representing a gain of 7,700 jobs, according to the Bureau of Labor Statistics CES data. The area's large concentration of jobs in sectors with higher-than-average wages contributes to above-average incomes for area residents. Census Bureau data show the 2020 average household income for Boulder County residents was $80,598, compared to $67,431 for Colorado residents and $64,247 for U.S. residents.

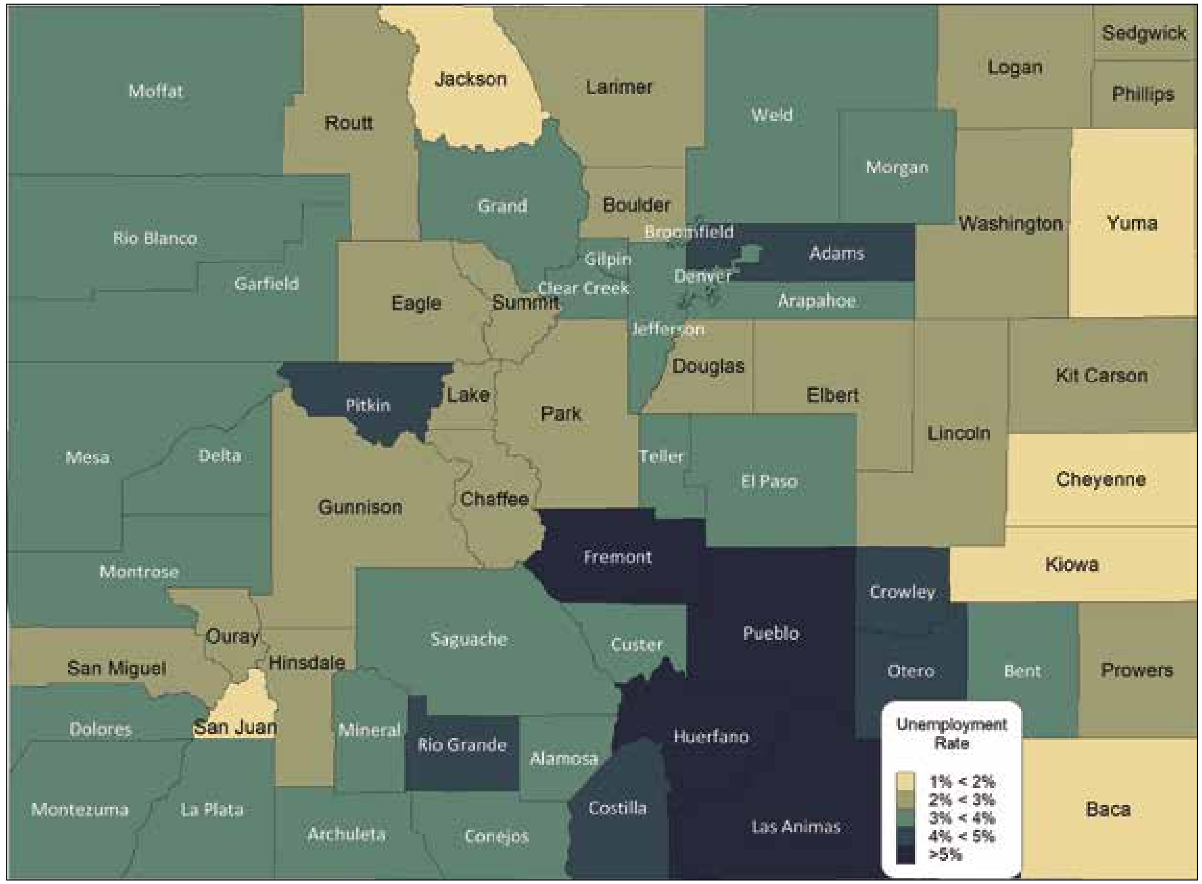
Professional and Technical Services

The Professional and Technical Services (PTS) industry is the largest employment base in Boulder County, representing 31,730 employees in the MSA, or 17% of all jobs. Approximately 5,200 firms represent nearly 30% of the employers in the area. This sector has experienced a 3.5% CAGR from 2016-2021.

Financial Services and Venture Capital Investment

Boulder County continues to represent a significant share of the state's financial institution deposits and venture capital investment. The high concentration of advanced technology and entrepreneurial activity in Boulder County continues to fuel venture capital investment in local

UNEMPLOYMENT RATE BY COUNTY, OCTOBER 2022



Source: Colorado Department of Labor and Employment, LAUS (Not Seasonally Adjusted).

early-stage companies. Boulder County venture capital investments totaled nearly $1 billion in June of 2022, which represented over 20% of the state total.

Leading Industries

The Boulder County economy continues to benefit from a high concentration of companies and employment in key industry sectors such as aerospace, biotechnology, information technology, natural and organic products, outdoor recreation, and tourism. In addition to the presence of well-established Fortune 500 companies, many startups and early-stage companies in these industries are based in Boulder County.

Aerospace— Colorado enjoys the highest concentration of private aerospace workers in the nation. Further, Boulder County's aerospace presence represents nearly 23% of the state's aerospace resources. The Metro Denver Economic Development Corporation estimates that there are 57 aerospace companies operating within Boulder County employing over 8,000 employees. This is over 16 times the national average.

Notable aerospace companies in Boulder County include Ball Aerospace, Blue Canyon Technologies (a subsidiary of Raytheon Technologies), Custom Microwave, EnerSys, Lockheed Martin, Northrop Grumman, Redstone Aerospace, Sierra Space Corporation, and Special Aerospace Services.

The University of Colorado Boulder offers internationally recognized aerospace research and education programs and is the top public university for NASA research funding. Several federally funded labs in the area, including the Laboratory for Atmospheric and Space Physics (LASP), the National Oceanic and Atmospheric Administration (NOAA), and the National Center for Atmospheric Research (NCAR), conduct research in space.

Biotechnology—The Colorado Bioscience Association (CBSA) estimates that the state is home to over 700 life sciences companies and organizations, supports 117,000 direct and indirect jobs, and contributes over $3 billion in annual payroll. Boulder County is home to 750 companies employing over 11,000 workers in the fields of Medical Devices & Diagnostics, and Pharmaceuticals & Biotechnology. This concentration is nearly 4.5 times the U.S. average. Additionally, Colorado life sciences companies raised a record $2.4 billion in 2021 through initial public offerings (IPOs), venture capital funding, and government funding.

In 2022, the Boulder County region was, and continues to be, an area of investment for many biosciences initiatives. Nearly 3 million square feet of laboratory space is currently under discussion and/or development. This effort has been led by such companies as BioMed Realty and Conscience Bay Company in Boulder, Lincoln Property Group in Broomfield, Medtronic in Lafayette, Umoja

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Around the State

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Biopharma and Biodesix Inc. in Louisville, and AGC Biologics in Boulder and Longmont.

The University of Colorado Boulder has a distinguished record in biotechnology research that attracts major research funding and generates numerous startups. The university is home to the BioFrontiers Institute, a program designed to facilitate interdisciplinary research and expand Colorado's leadership in biotechnology.

Information Technology—The concentration of Information employment in the county is significantly higher in the nation. This sector is an eclectic mix of industries that includes motion picture and music producers and distributors, radio and television network programming and broadcasting, telecommunications, and data processing. The Information sector in the Boulder MSA has a much stronger employment concentration than the nation, with employment 2.4 times the national average.

Information employment rebounded over the course of 2021, increasing by 5.3% in the Boulder MSA year-over-year. Wages in this industry are the highest of any industry and over 100% higher than the average for all industries in Boulder County.

Natural and Organic Products—According to the 2020 Naturally Boulder Economic Impact Study done by CU Boulder's Business Research Division, the natural and organic food industry in Colorado contributes $3.1 billion to the state's economy and supports approximately 22,150 jobs. Many leaders in the natural and organic products industry nationwide got their start in Boulder, and the area remains an international hub for the industry.

Outdoor Products and Recreation—Widely recognized as an industry hub, Boulder County outranks innovation and peer communities more than twofold with over 0.5 sporting goods, wholesalers and retailers, manufacturers, and sports instruction businesses per 1,000 residents.

Tourism—Boulder County is a popular destination that receives national media attention for its recreational and cultural amenities and impressive array of shopping and dining choices. *U.S. News & World Report* named Boulder the #1 place to live in the nation, and the city was recently recognized by *National Geographic* (Happiest City in the U.S. and one of America's Top Adventure Towns), *Bon Appetit* (America's Foodiest Town), *Outside Magazine* (#1 Sports Town), and *Bicycling Magazine* (Best Bike Cities). Longmont was recognized by *Livability* as the #7 Best Places to Get a Fresh Start and by *Westword* as the #3 Most Family-Friendly Community in Colorado. Louisville has been recognized as One of the Best Places to Live by *Money* and one of the 10 Best Towns for Families by *Family Circle.*

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Kit Carson County

Kit Carson County residents and businesses were pleased to return to a bit of normalcy as businesses reopened and children returned to school following the pandemic. Challenges remain, including drought conditions, high input costs for agricultural producers, low commodity prices, lack of affordable housing, and low-paying wages. People use their fortitude and ingenuity to move ahead and look to the future.

Agriculture in the county is preparing for the shutdown of over 250 irrigation wells in the area. Producers must adjust to dryland farming practices and consider lower per acre yields before they plant in the next few years. Input costs associated with less water and lower crop production will be weighing on many agricultural producers' minds. Those same producers may be ready for loan renewals at the local bank in early 2023 and may not be approved in today's tough market. According to the Colorado Demography Office, agricultural employment made up 45.3% of total jobs in Kit Carson County. Agriculture remains the economic driver for jobs and business in the rural area.

Real estate on the Eastern Plains continues to be a housing conundrum as house prices increased while wages have not on the same scale. "The Misery Index," as explained by the State Demography Office, demonstrates this well as housing costs and interest rates increase but the household wage does not rise in direct correlation. Building codes may be necessary to address the housing supply shortage, but at what cost? Would an improved building code also lead to more price increases on homeowners? To address the housing shortage, a new option called "home sharing" could be available not only in Kit Carson County but across Colorado.

Home sharing allows other people to reside in the home with the owner and share common living areas but have separate sleeping and bathing areas. Roommates are vetted and matched like dating apps to the appropriate homeowner. This would be a much faster way to solve the housing shortfall as many homes have unused bedrooms, and the homeowner might enjoy the companionship and the income it generates. This could be a housing solution for Kit Carson County as many homes have one or two occupants with available bedrooms to rent.

Flagler, which is in the west end of the county, is seeing some housing development as modular homes have been sold but it has slowed in the past couple months. The east end of the county has had more new homes built, but workforce shortages are a challenge for all businesses.

In September 2022, home prices averaged $323,000 in Kit Carson County, up over 47% year-over-year, according to Redfin.com. The housing market is experiencing a slowdown in purchases as prices exceed the buyers' budget. Remote-work options have made this area more attractive to home buyers as fiber broadband is offered across most of the county at reasonable rates.

Kit Carson County's population increased slightly, from 6,973 in 2021 to 7,017 in 2022. The population over age 65 made up 20% of the county in 2020. To make the county a viable place to live for the older population, it must maintain health care services and other businesses that are vital to these residents. Aging services will become more important as many older residents want to remain where they currently live on the plains and maintain their quality of life. A safe community, along with a variety of businesses and services catering to the elderly, will make Kit Carson County an affordable place to retire and live well.

After peaking at 4.2% in June 2020, the unemployment rate of 1.9% (not seasonally adjusted), in September 2022, one of the best in the state, remains much lower than the state unemployment rate of 3.4% and the national rate of 3.7%. According to the Bureau of Labor Statistics (BLS), Quarterly Census of Employment and Wages, there were 2,867 employees in the county in 2021, an increase of 0.4% year-over-year. As of Q1 2022, the labor force had recovered to prepandemic levels. Burlington's economic development staff reports work continues to replace the 142 jobs lost in 2016 when the private prison closed. The region was recently reminded that it takes up to 25 years to "grow an employee" so it's important to gain a child's interest to work in rural communities and in a particular career before they leave high school. That also means they are encouraged to return to their roots after training or higher education is completed.

From 2020 to 2021, average annual wages increased 3.1% in Kit Carson County, spanning every major sector, according to the BLS, Quarterly Census of Employment and Wages. Wages for the construction industry posted a negative year-over-year gain (-2.7%) but is the highest paying industry in the county. Average annual wages in Kit Carson County were $41,741 in 2021, 40.9% below the state average of $70,563.

Renewable energy development, like wind and solar farms, are still popular on the plains. A wind farm is under construction near the west end of Kit Carson County. Two other wind farms in Kit Carson County are expected to be built in 2023. These wind farms use more than 1,000 turbines to produce power on the Eastern Plains. In addition, solar farm development conversations are spreading across the region. All of these temporary construction jobs are appreciated as local businesses experience competition with online shopping conveniences and the growth of dollar stores. Supporting the local grocery and retail stores has become deeply important within the county as businesses try to maintain their client base during this time.

The following are thoughts for county residents to consider: What I buy is different from my kids' purchases, age impacts everything, and Colorado attracts future employees from California and Illinois, so what do we need to do to keep rural Colorado viable and a great place to live and work? Think about what the younger and the older populations will need for their lives to be fulfilling, plan for more than 10 years ahead, be open to new ideas for housing, consumer demand will dictate our future business development, and consider rural living to live life well. ✤

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Mesa County

Mesa County, also known as the Grand Valley, is nestled between the snow-capped Rockies and the Moab Desert on the Western Slope of Colorado. The county has a population of 157,499 people. Grand Junction is the largest metropolitan area in the region—and the largest city between Denver and Salt Lake City, Utah. Located on I-70, Grand Junction sits at the junction of the Colorado and Gunnison Rivers. Most residents work in Grand Junction, although they may live in one of the surrounding communities, each with their own unique culture. The City of Fruita is situated on the western edge of the valley, and the town of Palisade sits at the base of the Grand Mesa on the eastern edge of the valley. These three municipalities, along with the smaller communities of DeBeque, Collbran, Mesa, Mack, and Loma, make up Mesa County.

COVID-19 Impact and Recovery—After experiencing a COVID-induced national recession in 2020, Mesa County has rebounded quickly, keeping pace with employment gains observed in the state and nationally. The Mesa County unemployment rate peaked in April 2020 at 12.1% but has since fallen to 3.4% as of September 2022—on par with the state (3.4%) and below the national (3.7%) average, all seasonally adjusted.

Total nonfarm employment for the Grand Junction MSA rose 6.8% in 2021 year-over-year to an average of 72,598 workers. Employment declined by 8,700 (13.4%) from March to April 2020 but had recovered over 100% of the jobs lost, or 12,469 jobs, by July 2022, according to the Bureau of Labor Statistics. It is worth noting that Mesa County was the first county in the state to recover all prepandemic jobs.

Employment is now up 4.8% from January 2020. Based on the household survey of labor force and employment from the BLS Local Area Unemployment Statistics (which includes sole proprietors), the September 2022 labor force in Mesa County increased by 1.8% from September 2021 and 5.2% from September 2020 levels.

Sales and use tax numbers from the city and county remained strong. State sales tax collections in Mesa County increased by 11.5% in 2022 year-to-date through June 2022. According to Visit Grand Junction, total lodging tax collections received year-to-date through May 2022 is 24.8% higher than last year's five-month YTD period. To date, the city has collected $1,987,219 in lodging tax this year, compared to $1,335,579 last year, and $1,573,557 is projected in the budget.

Additionally, Mesa County business entity filings are up over 3.9% from the same time last year, while business confidence for Colorado dropped -38.9% from Q3 last year. Newly released data from the Census Bureau show the Mesa County poverty rate estimate fell, dropping from 14.2% in 2019 to 11.1% in 2020 (most recent data available). This is good news and shows that the strong economy of 2017-2019 had an impact on reducing poverty.

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Gross Domestic Product—Mesa County's real GDP dropped -0.9% in Q2 2022 year-over-year (most recent data available), compared to the 6.7% growth in GDP observed from 2020 to 2021.

Wage Trends—Average annual wages in Mesa County increased 4.4% year-over-year to $50,128 in 2022, according to the Q3 2022 Mesa County Economic Update from the Colorado Mesa University Davis School of Business. The median household income in Mesa County continues to rise year-over-year, increasing 6.5% from 2019 to 2020, with a $64,141 median household income level reported in 2020.

Employment and Labor Force—Mesa County employment is holding steady and averaged 75,675 in Q2 2022, rising to 75,944 in August 2022, according to the Q3 2022 Mesa County Economic Update from the Colorado Mesa University Davis School of Business.

Since February 2022, employment estimates have ranged from 75,174 to 76,207. The unemployment rate for the county is 3.4% as of September. The number of unemployed sits at 2,691—712 lower than last quarter and 2,148 lower than last year.

Business Community—While the pandemic greatly impacted the local economy, the business community has remained resilient. Businesses are still interested in relocating to the valley, particularly outdoor recreation companies and technology companies with remote workforces. The Grand Junction Economic Partnership (GJEP) worked with seven businesses that moved to the valley in 2021. GJEP has worked with four new companies that relocated to the Grand Junction area in 2022 and anticipates announcing five additional relocations by 2022.

Rural Jump-Start Mesa County—In 2021, the Office of Economic Development and International Trade (OEDIT) utilized recovery funds to enhance the Rural Jump-Start program with grant dollars to promote job creation and capital investment. Each new Rural Jump-Start business can receive up to a $25,000 match on capital investments such as facility upgrades and equipment purchases and a payout of $2,500 for each net new employee.

Since the program officially launched in 2016, GJEP has facilitated the approval of 25 companies in Mesa County for the Jump-Start tax credit (seven were removed due to inactivity). In 2021, six new businesses were approved for the Rural Jump-Start program, and two additional businesses may be approved by the end of 2022.

Health Care—Health care is Mesa County's largest industry, making up 17% of the county's total employment in 2021 and proving to be one of the best industries to rebound from the recession. Of the top 10 employers in the county, five are in the health care industry: St. Mary's Hospital (2nd-largest county employer), Community Hospital (4th), VA Medical Center (6th), Family Health West (8th), and Hilltop Community Resources (9th).

Construction is underway for Community Hospital as workers break ground on the 130,000-square-foot James Pulsipher Regional Cancer Center and medical office building set for completion in 2023. This state-of-the-art regional cancer center is expected to cost $53 million and continue to develop Community Hospital's highly sought-after treatment program with the best possible medical and radiation oncologists in the region. Community Hospital also broke ground on a new primary care and acute care clinic in Palisade, providing medical support to the east end of the Grand Valley.

Education—Mesa County has strong higher education and technical training institutions. Mesa County Valley School District 51 is the largest school district on the Western Slope of Colorado and the 14th-largest school district in the state. The District is also the largest employer in Mesa County. Each day, almost 3,000 employees serve more than 22,000 students across 43 schools. District 51 had an 81% graduation rate for the class of 2021, which is up from 80.2% in 2020.

Colorado Mesa University (CMU) is the 5th-largest employer in Mesa County. CMU is a regional public higher education institution offering more than 225 academic programs in liberal arts, professional, and technical programs at the master's, bachelor's, associate, and certificate levels. The campus encompasses 141 acres in the heart of Grand Junction. Of the 11,000 students, 14% come from outside Colorado, and 29% come from traditionally underrepresented groups.

Western Colorado Community College is the two-year division of CMU and serves the technical education needs of college and area high school students. The college offers over 29 certificate and associate degree programs, plus 330 non-credit personal and professional development courses.

Tourism—Travel is one of the top three industries in the state of Colorado and is a driving force of economic growth in Grand Junction and the surrounding communities. The travel and tourism industry in the county provides more than 3,000 jobs, and the local economy experienced $269 million in direct travel spending in 2021. Approximately 1 million visitors stayed at local lodging properties in 2021, and approximately $8 million was collected in local taxes in the same year.

Over 15,000 visitors use the Grand Junction Visitor Center annually, and over 500,000 people gain valuable travel inspiration by going to visitgrandjunction.com annually. Top domestic visitors come to Grand Junction from around Colorado (52%), Texas, Arizona, and California. Top international visitors come to Grand Junction from the United Kingdom, Canada, Germany, China, Australia, and the Netherlands. The top reasons people visit Grand Junction include vacation/pleasure, winery tours, and outdoor activities.

Mesa County attracts tourists because there is a diverse range of activities and sites. The county has a unique agricultural landscape that produces everything from award-winning wines to prime beef and the famous Palisade peaches. The Grand Valley is an adventure hub with over 10,000 miles of trails. Powderhorn

Mountain Resort, located on the Grand Mesa, has an average of over 250 inches of snow each season, with 600 acres of groomed trails and another 1,000 skiable acres. In addition, the county is within a three-hour drive of three national parks, three national monuments, two national conservation areas, six national forests, and three scenic byways.

Agriculture, Forestry, Fishing, and Hunting—Agriculture, forestry, fishing, and hunting industries make up 1.2% of Mesa County's total employment and are expected to grow by 2.6% in 2022, according to the Mesa County Workforce Center Q2 Report. According to data from Colorado State University Extension Tri-River, livestock production generates $48 million in sales each year, and fruit generates another $22 million. Each cow in the county contributes $600 to $800 to the local economy annually.

In 2016, construction on the 1,700-acre Cameo Shooting and Education Complex was started between Colorado Parks and Wildlife (CPW) and the town of Palisade. The land formerly was home to a coal mine and coal-fired power plant, but Palisade was able to buy it with state Department of Local Affairs funds. The complex opened in 2018, recording 2,176 users with $34,700 in income. Over the last 12 months, this complex saw 12,017 visitors and generated $529,310 in revenue. CPW spent about $1 million on the facility as a match for $3 million in federal funds derived from an excise tax on sporting arms and ammunition, so no state or federal income taxes have gone toward the facility.

General Manufacturing—The manufacturing industry, with 3,397 employees, represented 4.6% of Mesa County's total employment in 2021. The number of manufacturing employees in Mesa County is expected to increase 3.6% in 2022 year-over-year.

Mesa County recently celebrated the relocation of MotoMinded to the Grand Junction area. MotoMinded specializes in manufacturing LED lighting and mounts for motorcycles. The company utilizes several advanced manufacturing techniques to produce products in-house, along with outsourced billet Computer Numerical Control (CNC) vendors. Their capabilities include additive manufacturing, laser cutting and etching, and CNC routing.

Outdoor Recreation Economy— This past year, the Colorado Office of Economic Development and International Trade (OEDIT) and Zoma Labs made it possible for the Grand Valley Outdoor Rec Coalition to commission an economic impact report for the outdoor industry in Mesa County. Colorado Mesa University economics professors Nathan Perry, Tim Casey, and Johnny Snyder, worked on this year-long project. This study estimates the economic impact of outdoor recreation in Mesa County by measuring the effect of outdoor recreation businesses and the effect of outdoor recreation tourism.

Looking at the business impact results, the direct effect is the initial value that the industry contributes to the study region. Indirect effects are supply chain effects, and induced effects represent employee spending from those working in the direct and indirect industries. The three combined are the total economic contribution. The total employment contribution of the outdoor recreation business is 4,501 jobs and a total output value of over $318 million, which equates to over 2.8% of the total GDP in Mesa County.

Looking at the results of the tourism impact, the total employment contribution of outdoor recreation tourism is 5,396 jobs and a total output value of over $556 million, which accounts for 47.3% of the total economic impact of tourism in Mesa County.

Looking at the combined results of outdoor recreation business and tourism impacts, we get a total employment contribution of 9,897 jobs and over $875 million, including direct, indirect, and induced effects. The total impact of outdoor recreation in Mesa County is 7.5% of GDP and 11% of jobs. Accounting for more than one out of every 10 jobs in Mesa County (considering direct, indirect, and induced effects), outdoor recreation is a significant part of the economic profile.

Energy— According to the Colorado Mesa University Q3 2022 Mesa County Economic Update, compared to a year ago, oil and gas employment is higher. Compared to last quarter, it is lower, falling from 1,505 in Q4 of 2021 to 1,313 in Q1 2022. The reason for this is unknown, and it could just be a hiccup in the data, as rig counts have slowly risen, as have prices. Oil and gas is the only industry that has not fully recovered to the Q4 2019 pre-COVID peak business cycle levels.

Aviation, Aerospace, and Parts Manufacturing—The aviation, aerospace, and parts manufacturing industries make up 0.9% of Mesa County's total employment. Employment in these industries is expected to increase by 3.3% in 2022. West Star Aviation is the largest employer in Mesa County outside of hospitals and the public sector, with 531 total employees in Grand Junction. Earlier this year, West Star announced a major expansion at their Grand Junction location. Eighty-two new jobs are projected along with 40,000 square feet of hangar space and 32,000 square feet of expanded shop capacity.

Technology/Software—The biggest shift over the last year was the realization and acceptance that companies and employees could be located anywhere with a good internet connection. In 2019, Grand Junction began to see a growing population of remote workers migrate into the area. The COVID-19 pandemic accelerated this trend, and today, Grand Junction boasts several cutting-edge tech companies and entrepreneurs who have chosen quality of life over the typical tech hubs.

Colorado Mesa University (CMU)—One of the few universities that increased enrollment during COVID, CMU boasts programs in mechanical and electrical engineering, computer science, and cybersecurity. As of FY 2019-20, CMU enrolls more than 10,700 students annually, confers awards that range from doctoral degrees to vocational certificates, has an annual operating budget of $175 million, and ranks as one of the top five employers in Mesa County, with 770 full-time faculty and staff and

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Photo courtesy of Rio de la Vista.

an additional 1,400 part-time employees that include student workers. Along with growth on the main campus, CMU has expanded educational programming on both the CMU-Montrose and Western Colorado Community College campuses.

Real Estate— The Mesa County real estate market saw another quarter of high increases in sale prices. The median sales price increased by 18.2% compared to the same period last year. Since January 2022, there has been a 10.1% increase in median home value. More importantly, July 2022 showed a -4.5% fall in prices, demonstrating that high interest rates may finally start to cause a pause in the Mesa County housing market.

The number of foreclosures has risen from nine to 57 in Q2 2022 compared to Q2 2021. This temporary spike has already returned to normalcy and likely resulted from the end of mortgage forbearance programs in the fall of 2021.

Development Opportunities—The City of Grand Junction invested over $14 million in a new river district located along the Colorado River. A key component is Riverfront at Las Colonias Park, a 140-acre city park with an embedded commercial business park geared toward the outdoor industry. Bonsai Design, which develops aerial adventure courses, and RockyMounts, a bike-rack manufacturer, have built new headquarters within the business park.

A little further west, the City of Grand Junction is working with a developer to reinvigorate the grounds of a former auto salvage yard with a mixed-use commercial and residential park. The Riverfront at Dos Rios is a 58-acre mixed development comprising 15.8 acres of parks and open space, 9.5 acres of light industrial/commercial, and 10.2 acres of mixed-use development—all with access to the river, trail system, green space, and historic downtown Grand Junction. The entire riverfront district falls within Mesa County's federal Opportunity Zone tracts. The riverfront redevelopment has resulted in several Opportunity Zone projects in the area, mostly in residential housing.

The City of Fruita has more than 68 acres of shovel-ready sites for businesses, ideally those seeking land equipped with fiber or direct rail and highway access. The Fruita Commercial & Industrial Business Park offers lakeside sites complete with a cable wakeboard park, views of the nearby Colorado National Monument, and a multiuse bike path connecting downtown Fruita and the world-famous Kokopelli mountain bike trail system.

Airport—The Grand Junction Regional Airport (GJT) is the premier Class I airport serving western Colorado and eastern Utah, with eight nonstop destinations and an average of 16 flights per day. GJT logged its busiest year of commercial traffic in 2021, with more than half a million passengers. However, 2022 had its fair share of challenges with the loss of Delta's SkyWest connection between Grand Junction and Salt Lake City due to pilot shortages. GJT has begun a major runway project with crews moving 2 million cubic yards of dirt onto the site of the future runway. The future runway will open by 2030.

Summary—We are seeing signs of our community continuing to thrive. The diversification of our business industries steadily grows, making Mesa County more resilient during times of nationwide downturn. Strong economic indicators continue to point toward the positive positioning of Mesa County for growth in 2023.

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Northern Colorado

Summary—Talent, innovation, and opportunity continue to define Northern Colorado, a region that lies directly north of the Denver Metro area and south of Wyoming, between the western Rocky Mountains and eastern Great Plains, and encompasses Weld and Larimer counties. In Northern Colorado, prominent universities and community colleges attract companies searching for the next generation of talent. Northern Colorado's growing industry clusters include bioscience and medical devices, food processing and manufacturing, information technology and computer services, manufacturing (production tech and heavy machinery), and plastics. These clusters have strong ties to the region's agricultural production, energy extraction, and strength in animal science and translational medicine, and boost Northern Colorado's status as a regional distribution hub for agricultural and industrial products.

Northern Colorado continues to nurture technological innovation and entrepreneurship supported by its increasingly diverse and highly educated population. A historically high level of patent assignment and the strong presence of research institutions illustrate the regional passion for investment in ideas and innovation. In June 2022, Innosphere Ventures (aka Rocky Mountain Innosphere) added to their entrepreneurial opportunities with the opening of their new wet lab facility. The new bioscience building will accommodate life science activities that include tissue culture, cell and molecular biology, and experiments that involve liquid substances.

Northern Colorado features rich cultural and recreational opportunities. The region has three state-designated creative districts—Fort Collins, Greeley, and Loveland—where the arts and creative industries are celebrated.

Both Larimer and Weld counties received American Rescue Plan Act (ARPA) funding ($69.3 million and $63 million, respectively), as have several municipalities in the Northern Colorado region. These funds are being allocated to internal municipal organizational needs as well as to priority community needs, such as infrastructure, public health, housing, and economic and workforce redevelopment.

Population—Northern Colorado's population continues to grow, with a 2021 population of over 702,569 (2% year-over-year growth) for Weld and Larimer combined, according to the U.S. Census Bureau. Fort Collins and Greeley are the area's two largest cities, with a 2021 combined population of 277,861. The median age in Northern Colorado is approximately 36, younger than Colorado's median age of 38 (2021, ACS 1-Year Estimates). The continued in-migration of talented college students and professionals seeking work opportunities in the region drives this metric.

Industry and Employment—From 2016 to 2021, job growth in two Northern Colorado metropolitan statistical areas (MSAs) (Greeley and Fort Collins) posted gains of 6.3% (despite the pandemic), significantly outpacing the national growth rate of 1.2% during the same period. Employment in the Greeley MSA decreased 0.5% in 2021 year-over-year and was still down from 2019 levels by 7.5%. Similarly, employment in the Fort Collins MSA grew 3.7% in 2021 year-over-year and was almost flat to 2019 levels. Industries where employment is higher in 2021 compared to 2019 include Construction, Wholesale and Retail trade, Real Estate, and Health Care.

Northern Colorado's top industries by employment are Retail, Health Care, Manufacturing, Construction, and Accommodation and Food Services. While the private sector is an economic driver, there is significant public investment through public health care providers, public universities, and local school districts.

Northern Colorado's real GDP decreased by 6.9% between 2019 and 2020 (most current available data) due to the COVID pandemic. The U.S. GDP decreased by 5.9% over the same time period. Key manufacturers include Advanced Energy, Aleph Objects, Anheuser-Busch, Boulder Scientific, Burris Optics, In-Situ, JBS, J.M. Smucker Company, Leprino Foods, Noosa, Otter Products, Tolmar, URSA Major, Vestas, Walker Manufacturing, Water Pik, and Woodward.

As of September 2022, the combined unemployment rate in Larimer and Weld counties was 3% (not seasonally adjusted). The labor force increased in September 2022 year-over-year by approximately 2.3% (not seasonally adjusted), ranking the 3rd-best in the state. The region's diverse industry mix has been helpful in weathering the impacts of the COVID-19 pandemic.

Over the last several years, Northern Colorado observed a tight labor market, which led to strong regional collaborative public-private partnerships to address local workforce issues. These existing collaborations have helped the region mobilize a strong economic development and workforce response to the pandemic. The region's educational institutions have focused on industry-relevant training and experience-based learning programs to ensure that the workforce is skilled and prepared.

Partnership, collaboration, and alignment are embedded in the cultural DNA of Northern Colorado. The region has four sector partnerships: the NoCo Manufacturing Partnership, the Northern Colorado Health Sector Partnership, the Northern Colorado Construction Sector Partnership, and the Health Sector Partnership. These organizations bring together industry stakeholders to create local alignment and collaborate on issues facing industry.

Education—Northern Colorado is home to Colorado State University in Fort Collins and the University of Northern Colorado in Greeley, as well as two community colleges, Aims Community College and Front Range Community College. Over 55,000 students are enrolled in Northern Colorado's colleges and universities. These public community colleges and universities produce over 18,600 postsecondary credentials per year. A variety of traditional and certificate programs help prepare the region's labor force for current and future employment.

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A total of 10,950 students from 40 public high schools across Larimer and Weld counties participated in dual enrollment programs in partnership with 11 universities and community colleges during the 2020-21 school year. Northern Colorado's K–12 and higher education institutions help develop the region's talent into a highly productive and innovative workforce. Weld County is further supporting education and the employment pipeline by providing workforce stipends to every graduating high school senior through the Bright Futures program.

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Pueblo County

Economic indicators for Pueblo County showed impressive strength prior to the COVID-19 pandemic. The countywide unemployment rate (not seasonally adjusted) averaged 3.9% in 2019 and was 4.3% in February 2020. However, during the pandemic Pueblo's unemployment rate hit a record-high 11.1% in June 2020; it has since fallen to 5.1% in September 2022—the highest of all metropolitan statistical areas (MSAs) in the state.

Employment in the Pueblo MSA fell 2.7% in 2020 year-over-year. Employment totaled 65,500 in September 2022, a 3.1% increase year-over-year, and is now up 0.6% from the prepandemic high in March 2020, according to data from the Bureau of Labor Statistics Current Employment Statistics (CES). Trade, Transportation, and Utilities (20.1%), Education and Health Services (19.9%), Government—federal, state, and local (17.9%); and Leisure and Hospitality (11%) continue to be the four largest sources of jobs in the local economy. However, Pueblo has a heritage of manufacturing and metal fabrication, with those segments providing many of the primary jobs that support other employment in the community. Median earnings for 2021 were $50,128.

Photo courtesy of Jes-c French.

New and Existing Industry Clusters—Pueblo has seen significant success in attracting new, high-tech industries during 2021. Construction on EVRAZ's $500 million expansion of its new long-rail steel mill continued. In addition, Pueblo is actively recruiting companies in the aerospace and defense, chemicals manufacturing, construction-related manufacturing, food and beverage manufacturing, outdoor recreation, and professional and scientific sectors.

Pueblo is proud of the companies that it keeps. Examples of companies that have located in Pueblo and continue to enjoy tremendous success are United Launch Alliance, Collins Aerospace, CAE (formerly Doss Aviation), EVRAZ, CS Wind (formerly Vestas Towers), Trane Corp., Professional Bull Riders, CMC Materials, KMG Electronic Chemicals, GulfCo Manufacturing (Atlas Pacific), indieDwell, Target Distribution, and many others.

Pueblo enjoys a tremendous transportation advantage with highways and rail. Pueblo County sits on I-25, a north-south interstate, and Highway 50 running east-west. A large portion of Pueblo is served by rail, ranging from a mix of heavy, light, and shortline rail depending on the area of town. The two rail lines servicing the region are Union Pacific and BNSF. This transportation allows easy access to numerous cities within 500 miles, such as Denver, Wichita, Cheyenne, and Albuquerque. Pueblo currently has over 400 acres of rail-served industrial parks available.

Pueblo is very focused on talent. Goals are to focus on talent retention, development, and recruitment initiatives by aligning programs and partners. Pueblo enjoys a reputation as having the best customized training programs in the region. Pueblo continues to support skilled workforce education programs such as Pueblo County High School's Manufacturing, Agriculture, and Construction (MAC) Academy, which has over 300 students enrolled.

Energy and the HARP Project—In addition to these existing and developing clusters, other projects are in place. A Light Source BP 240-megawatt solar facility that supplies power to EVRAZ Steel Mill came online in 2022, making EVRAZ the only solar-powered steel mill in the United States. This will provide electric price certainty for the mining and steel-making company through 2041.

Pueblo is a leader in clean energy. The Light Source BP project, combined with the solar panel facility owned and operated by Community Energy Solar, make Pueblo a leader in the United States in the generation of solar power. Pueblo is also home to CS Wind (formerly Vestas Wind Towers), with Pueblo's facility being the largest wind tower manufacturing facility in the world.

A driving force for much of the development in the downtown area is the expansion of the Historic Arkansas Riverwalk Project, also known as HARP. The city recently completed work on an ambitious complex that includes an expanded convention center with a multiuse arena for the Professional Bull Rider's University bull-riding school. Future phases will result in expansion of the Riverwalk, an amateur athletic swimming complex, and a potential indoor/outdoor water park. In addition to the tourist and convention visitors, the HARP project is expected to attract professional offices to locate in the city center area. ✤

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Southern Colorado

Employment—The unemployment rate in El Paso County was 3.5% on a nonseasonally adjusted basis at the end of September 2022 compared with 5.8% in September 2020 and 4.8% in September 2021. The labor force increased from 353,808 to 362,311 from September 2021 to September 2022, a 2.4% increase. Over the same period, employment increased 4.9% from 330,841 to 347,059 for a gain of 16,218 employed. El Paso County unemployment during the COVID-19 pandemic peaked in April 2020 with a 11.7% unemployment rate and 38,731 people unemployed. As of September 2022, the number of people unemployed had fallen by more than two-thirds to 12,772. This number of unemployed is still higher than prepandemic levels (e.g., 12,033 in February 2020), but the labor market recovery thus far is one of the strongest in the state. This is primarily due to the high presence of professional and technical jobs, which are conducive to remote work, including many Department of Defense contracting jobs. From 2020 to 2021, there was a net 10,974 more jobs in El Paso County. However, comparing 2021 to 2019, there was only a net number of 2,881 new jobs, but this should not overshadow that the region experienced remarkable resilience during the pandemic with a high job recovery rate after the initial lockdowns.

Specific Sectors—Thirteen of the 21 industry sectors in El Paso County saw job gains in 2021. The most significant gains were in Accommodations and Food Services; Transportation and Warehousing; Professional, Scientific, and Technical Services; and Health Care and Social Assistance. These four industries represented 77% of the 10,974 new jobs in the county. The seven industry sectors that experienced a combined loss of 553 jobs in 2021 were led by Other Services and Finance and Insurance.

Average annual pay increased in all but three industry sectors in El Paso County, with an increase in the average annual wage from $56,577 in 2020 to $59,313 in 2021. This 4.8% wage increase was lower than the national average (5.6%) and the Colorado average (5.9%). In 2021, the average wage in El Paso County was 15.9% below the 2021 state average of $70,563 and 12.3% below the U.S. average of $67,610. There have been some marginal improvements in the wage gap, but there is still a long way to go. The ongoing discrepancy in average wages is due to several factors. One, up until around 2015, the region was underperforming economically and had been doing so since the early 2000s. This depressed wages, and since wages are "sticky," it has been difficult to reverse that trend. Two, there is a large contingent of retired military in the region who have pensions but do some consulting work. Since they have a steady income stream through their pensions as well as health care benefits, they may be willing to work for relatively low wages. Three, working military spouses often have had to move various times throughout their careers, thus interrupting longer tenure in higher paying-positions. Finally, there is a large hospitality sector in Colorado Springs because of its natural attractions. These are not typically high-paying jobs, although they do help the relatively young workforce in the earliest years of their work lives.

It is challenging for the region that wages continue to be lower than the state and nation, especially considering the large increases in housing costs, as discussed on page 152. Either wages will have to increase materially, or in-migration will likely slow due to the discrepancy between wages and housing costs. It is true that the large presence of (even quite young) military retirees with pensions does provide an added income source for the roughly 79,000 veterans in the region. However, there is significant population growth outside of the military and those wages will need to sustain upward pressure to begin to ameliorate the wage discrepancies.

Per Capita Personal Income—Per capita personal income for El Paso County was $58,627 in 2021 (most current data available), 83% of the state average ($70,706). El Paso County's per capita personal income fell from a rank of 25th in the state in 2020 to 27th in the state in 2021.

Although there are legitimate concerns about the lower average wages in the region, it is also important to remember that the per capita personal income will be skewed somewhat by the lower median age in El Paso

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County. The region had a median age of 34.9 in 2021, which is younger than both the state (37.6) and nation (38.8). All individuals, including children, are in the denominator of the calculations for per capita personal income, which is why this metric needs to be used with caution.

Residential Real Estate—From October 2021 through September 2022, a total of 4,055 single-family permits were issued in the region. This is a decrease of 1,212 permits issued (down 23%) compared to the same period the year before. Through September 2022, permits for 131 multifamily projects and 4,372 units were pulled in 2022. As of Q2 2022, average monthly rents for apartments were $1,571. For Q2 2022, Denver's average monthly rent for apartments was $1,860, so the discrepancy between the two regions is not as large as it used to be. It is worth noting that the average monthly rent in the U.S. is roughly $1,700.

There were permits for 9,179 dwelling units (both single-family homes and multifamily units) pulled in 2021 in the Pikes Peak region. Data-Driven Economic Strategies (DDES) has estimated that for the region's population size and the demographic composition, approximately 7,000 permits for dwelling units (both single-family homes and multifamily units) were appropriate in 2021.

It is worth noting that DDES has calculated that El Paso County has a shortage of 12,351 housing units (multi- or single-family). This virtually guarantees that some degree of home building will likely continue during any contraction, and prices will stay relatively stable or continue to increase during the next few years.

The growth of multifamily construction in the region is unprecedented. According to the Pikes Peak Regional Building Department, new permits are still being issued at record paces. And according to the Apartment Association of Southern Colorado, the demand for and absorption of new multifamily units remains quite strong. The low vacancy rates substantiate what they say. Also, according to the Department of Housing and Urban Development, the Colorado Springs multifamily market is still "tight," with high absorption rates and low vacancy rates.

In Q2 2022, the median price for a single-family home in Colorado Springs was $480,900, a 9.5% increase from Q2 2021. By way of comparison, the U.S. median home price was $413,500, with a 14.2% increase over the same period. Colorado Springs' median home prices are 16.3% higher than the U.S.

Foreclosures decreased 49% in 2021 to 144, representing the 12th-consecutive year foreclosures declines in El Paso County. Through September 2022, foreclosures totaled 594 compared to 83 through September 2021.

Commercial Real Estate—Average commercial office vacancy rates in Colorado Springs rose to 9.7% in 2021 from 8.3% in 2020. Through September 2022, the vacancy rate rose slightly to 9.8%. This stands in sharp contrast to national office vacancy rates, which are hovering around 18.4% in 2022 Q3 according to Moody's Analytics. At the same time, average rents increased from $21.26 per square foot in 2020 to $24.37 per square foot in 2021. They continued to rise to $24.94 per square foot in Q3 2022. DDES uses the CoStar Group and Olive Real Estate Group to compile local commercial real estate information.

The average industrial vacancy rate rose to 4.4% in 2021 from 3.4% in 2020. Through September 2022, the rate continued to increase to 5.1%. Average rents rose from $8.93 per square foot in 2020 to $9.89 per square foot in 2021. They continued to rise to $10.18 per square foot in Q3 2022.

Average retail vacancy rates declined from 7.7% in 2020 to 6.8% in 2021. Rates fell again to 6.3% through September 2022. Average rents increased from $14.05 per square foot in 2020 to $14.94 in 2021. They continued to increase to $16.74 per square foot in Q3 2022.

Average medical office vacancy rose from 8% in 2020 to 9.4% in 2021. Through September 2022, vacancies rose to 10.3%. Average rents increased in this property type, from $24.19 per square foot in 2020 to $26.11 in 2021. In Q3 2022, they declined to $25.37 per square foot. Sources in the region state that much of the existing medical space and regular office space is obsolete, which causes distortions in the vacancy rates. New product is needed, but construction costs are high and investors are skittish.

As of Q3 2022, the cost of retail space was 27.1% lower in Colorado Springs than Denver and office space was 27% lower. Industrial spaces and medical offices are now more expensive in Colorado Springs.

Sales and Use Tax—Colorado Springs sales and use tax collections increased 24.1% to $231.2 million in 2021. Sales and use tax collections are up 8.9% in September 2022 compared to September 2021. The continued boom during 2021 and the first half of 2022 in residential construction was part of the reason for the sustained, high levels of sales and use tax. Consumers also continued to purchase durable and nondurable goods although that is likely to slow with higher interest rates going into 2023.

Education—In 2021, 10 of the 17 school districts in the Colorado Springs MSA exceeded the state of Colorado's average high school graduation rate of 81.7%.

In 2021, 34.4% of the Colorado Springs MSA's population age 25 and older had some college or an associate degree, which is higher than the state overall (27.9%) and the United States (28.1%). In addition, 41.5% of this population had attained a bachelor's degree or higher, which is slightly lower than the state (44.4%) but significantly higher than the nation (35%) according to U.S. Census Bureau 1-year data on educational attainment.

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Southwest Colorado

The southwest corner of Colorado includes Archuleta, Dolores, La Plata, Montezuma, and San Juan counties, as well as the Southern Ute and Ute Mountain Ute Tribes.

The region encompasses 6,584 square miles, or 6.3% of the total land area in Colorado. Publicly managed lands make up 45% of the district; 38% is in private ownership and 17% are tribal lands.

The area is very rural, with small communities that depend upon each other to provide goods and services within the larger regional economy. The regional population of the five counties was estimated at 99,185 in 2021, averaging 0.7% annual growth since 2010.

In 2021, collective employment across the five counties averaged 51,379, an increase of 5.4%, according to the Bureau of Labor Statistics LAUS data. Regionally, tourism provides the largest share of employment (17%). Top employment sectors vary by county: in Archuleta and San Juan it is accommodation and food services; in Dolores and Montezuma it is local government; and in La Plata health services is the largest sector.

The region's employment rebounded strongly from the pandemic, with September 2022 employment levels 7% above February 2020 levels. The collective unemployment rate stood at 2.9% in September 2022, much lower than the 12.1% seen in April 2020.

While each county and community has identified unique social and economic priorities, several crosscut boundaries and impact the entire region. These initiatives were identified during the 2021 Comprehensive Economic Development Strategy (CEDS) update and are supported by the statewide Regional Resiliency and Recovery Program. These include improving access to broadband technology, focusing on workforce development, and addressing substance misuse disorders and mental health.

Broadband

High-speed internet service has become an essential utility, just like water, sewer, and gas, and the region recognizes that improved access to reliable broadband benefits education, health care, and businesses. In rural areas with a small customer base, it is not cost-effective for a company to install hundreds of miles of fiber optic lines, so government subsidies are essential.

A regional focus, rather than the previous project-by-project approach, creates a recipe for success. The Region 9 Economic Development District (Region 9) is leading a collaborative effort between local governments to build out the critical "middle mile" of fiber-optic line needed to connect more homes, schools, and businesses to high-speed internet. In cooperation with the five counties and 10 municipalities, Region 9 has developed a plan for the project that is expected to cost $95 million.

A regional broadband stakeholders group has been meeting since January 2022 and have collaborated on a $60 million National Telecommunications and Information Administration (NTIA) application. Grant awards will be announced in March 2023, with a total build-out of three to five years. Numerous partners are contributing cash and in-kind matches totaling $35 million.

An important step in the project is developing an accurate map that shows where broadband is lacking in the five-county area, as well as connection and drop points among multiple users. Additional funding will be sought to install the "last mile" of fiber-optic lines in rural areas. The regional map will be cross-referenced with Federal Communications Commission (FCC) and Colorado Broadband Office statewide mapping.

The middle and last-mile projects will dovetail with separate federal efforts to fund expanded broadband on the Ute Mountain Ute Tribe (UMUT) and Southern Ute Indian Tribe (SUIT) tribal lands. The UMUT has been awarded $22.7 million from the U.S. Department of Commerce to expand high-speed internet service for reservation towns in Colorado and Utah. The funding was made available through the Bipartisan Infrastructure Law as part of the Tribal Broadband Connectivity Program of NTIA. The NTIA grant announcement is part of nearly $1.35 billion awarded to 94 Tribal entities across the country as part of the program.

The UMUT is working to enhance internet connectivity throughout the 600,000-acre reservation as the need for high-speed internet escalated during the COVID-19 pandemic. In the past two years, the UMUT has


Photo courtesy of Region 9 EDD (welding).

developed strategies to expand the infrastructure and boost internet speeds in Towaoc, their headquarters in southwest Colorado, and the Tribe's satellite community of White Mesa in southeast Utah. These underserved communities will have better internet coverage for business, education, health care, telehealth, tribal government services, and e-commerce.

The funding will help install two middle-mile routes, along with fiber-to-the-premise infrastructure, to connect about 817 Native American households, 7 Tribal businesses, and 36 community anchor institutions. The

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project also will complete several fiber rings to provide reliability and resiliency for the region.

U.S. Senators John Hickenlooper and Michael Bennet advocated for the funding and lauded the appropriation for the Ute Mountain Ute Tribe. In 2021, Bennet introduced the Broadband Reform and Investment to Drive Growth in the Economy Act (BRIDGE), which included $2 billion to Tribal governments for broadband access.

SUIT members were also greatly impacted by the COVID pandemic, not just in terms of their vulnerability to the virus but their lack of broadband service. The Tribe is in the midst of a three-year broadband project with a large portion in coordination with Archuleta and La Plata counties, and the La Plata Electric Association (LPEA). This $4 million project provides a cash match totaling up to $2 million toward bringing high-speed, reliable broadband connectivity to the towns of Allison and Arboles, areas along HWY 151, Pagosa Springs, and other locations in La Plata and Archuleta counties. The Colorado Broadband Office has identified these areas as "critically underserved." This project will fill this much-needed gap in services.

Workforce Development

Similar to the rest of the state (and the nation), the region has seen growing labor shortages due to a variety of conditions. Keeping the young people who already live here and attracting talent from outside of the region is difficult because there is a lack of workforce housing. Housing solutions are being sought at every level, and partnerships are being forged between private development and government entities. A disconnect between educational attainment and the skills that are required in some employment sectors has also been identified.

Consequently, there is a regional focus on the concept of "educonomy." Educonomy is the linkage of K-12, higher education, and industry accountability and engagement systems for the purpose of building career connected pathways for students. It is good for students, good for business, and good for communities. When students can see what is possible beyond high school, report they have at least one teacher or mentor who cares about them as a person, and can work on projects to apply what they learn, they are much more likely to achieve social and economic wellbeing as adults.

Photo courtesy of Ute Mt Ute Indian Tribe.

Some of the programs that are being implemented include:

- The La Plata Economic Alliance has partnered with La Plata County, Fort Lewis College, and Pueblo Community College to create the **Alliance and Fort Lewis College Talent Development Program,** an internship program meant to have an immediate impact on workforce development, existing staffing needs, and business growth.
- **Portrait of a Graduate** programs are being implemented at Montezuma-Cortez District and Durango District 9-R as part of the Homegrown Talent Initiative that fosters industry leaders working with students, teachers, and school administrators to develop competency skills and dispositions that will guide the district and inform course development for postsecondary pathways.
- **The Innovation Center at Durango High School Campus** has broken ground. The building is designed to accommodate 14 different career in technical education pathways. The goal is to create a professional work environment for students while they are still in high school. For example, culinary students may work with entrepreneurial students, and engineering students may work with media arts students.

- **Career and Technical Education** (CTE) is expanding across the region to include more industries and trades. CTE programs support a variety of career-based clubs, competitions, and internship opportunities, including SkillsUSA and Future Health Professionals (HOSA).
- **The Southwest Colorado Education Collaborative** integrates regional industries and high school interns to help create robust career pathway experiences by partnering with local businesses to provide job shadowing; tailored internships; mobile learning labs to supplement traditional classroom learning; and training students in the newest industry technologies. Over 100 stakeholders gathered in Ignacio in October 2022, and more than 50 gathered in Mancos in November 2022 to continue this work.
- **The Southwest Colorado Area Health Education Center** provides pre-career prep, postsecondary education, and health professional support programs. One such program is the Health Careers Institute which focuses on providing rural high school students with opportunities to explore the variety of fields in the health care industry. View the 2022 Health Careers Institute Report (https://swcahec.org/healthcare-careers-institute/) for more information.
- **Business Education Connection (BEC)** connects Durango-based high school students at Animas, Big Picture, and Durango high schools with work-based learning and internship opportunities in professional environments.
- **Animas High School Moves onto Fort Lewis College (FLC) campus.** Due to this relocation, high school students can engage with a variety of experts and fields of study at the college level.
- **The Pagosa Springs Community Development Corporation** (PSCDC) in Archuleta County was recently awarded the Colorado Workforce Development Council: Reskilling, Upskilling, and Next-skilling (RUN) Workers Grant. The funding helped connect 32 high school students in a summer work program that places them in an industry of their choice. PSCDC partnered with Build Pagosa to offer students a variety of certifications tied to the building trades, including a life-time OSHA certification. The students get paid, earn high school credit, and receive credentials in each field that can be stacked for further career advancement.
- The Ute Mountain Ute Tribe started the 2GROW Program in October 2022. The 2 Generations Raising the Opportunity Window (2GROW) Program will seek to use intergenerational learning programs and strategies to simultaneously improve parents' job-readiness; build familiarity and comfort with the structures, pathways, and institutions of higher education; and make parents better guides for their children's futures.

Substance Use Disorder

The opioid epidemic has been an ongoing crisis in Colorado, with more than 8,500 deaths from accidental overdose over the past 20 years and 2,400 deaths just since 2020. After settlements with major drug manufacturers and distributors, state and local governments have developed a framework for distributing more than $520 million in opioid settlement dollars throughout the state for addiction treatment, recovery, and prevention programs. In southwest Colorado, 43 drug overdose deaths were recorded in 2020-2021.

The SouthWEST Opioid Response District (SWORD) is the regional council formed as a requirement of the Colorado Opioid Settlement Memorandum of Understanding (MOU). SWORD will administer opioid funding in the region, with anticipated funding of more than $4.2 million over the next 18 years. All southwest Colorado municipal and county governments signed onto the Colorado MOU to receive settlement funds, and as part of the SWORD, will determine ways the money will be used to address opioid and other substance misuse and identify viable, sustainable, substance treatment solutions to fill existing gaps in our rural region. These gaps were identified through a community needs assessment and subsequent strategic plan prepared by the Southwest Colorado Opioid Overdose Prevention (SCOOP) in July 2021. A feasibility study will also be completed through SWORD to identify the highest acuity level solutions for the region.

The SWORD includes government voting members but also advisory members that fit the following areas of experience:

- Behavioral health providers
- Health care providers
- Recovery/treatment experts
- Tribal representatives
- Community representatives and those with lived experience with the opioid crisis

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