

F I F T Y - F I F T H A N N U A L

C O L O R A D O

BUSINESS ECONOMIC
OUTLOOK

2020



Leeds School of Business

UNIVERSITY OF COLORADO **BOULDER**

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Leeds School of Business



Dear Business Colleagues,

It's an exciting time at the Leeds School of Business. Our undergraduate business program was recently named in the Top 20 in *U.S. News & World Report's* 2020 Best Undergraduate Business Programs at public universities, our incoming freshman class is the best we've ever seen in terms of academic preparedness, and we've met our 90%+ placement goal for our graduates for the fifth year in a row. Our faculty and students are focused on transforming the future of global business.

These achievements are the result of our unique combination of academic excellence and connection to one of the nation's most vibrant business communities. In terms of academic excellence, we have attracted top faculty talent from universities such as Stanford, Berkeley, Duke and Northwestern to inspire and educate our students and create impactful research that is helping businesses like yours.

Strong partnerships with you—our nationally recognized, innovative business community—are mission-critical to us. Our goal is to ensure we provide high-quality talent to be your organization's next generation of leaders. For example, our Career Impact initiative works with key business leaders, locally and globally, to understand the essential skills and attributes that future business professionals need. The insights we've learned have already informed new innovations in our curriculum and programs. Additionally, we have seen great momentum in our End the Gap initiative, aimed at achieving 50% female enrollment across all programs, which helps us contribute the finest, diverse candidates to drive your organizations forward.

Another integral part of our efforts to deliver the talent our region needs is the partnership we've formed with the College of Engineering and Applied Sciences and our joint building expansion, which broke ground this past spring. This first-of-its-kind physical connection between Business and Engineering, and the direct link it facilitates to our dynamic business community, positions us to better prepare future generations of leaders to drive meaningful change in the world. This unprecedented partnership will shape interactions between the worlds of business and technology in a way that will differentiate us and elevate our schools and campus for decades to come. The grand opening will be in spring 2021.

We are delighted to share this 55th annual economic outlook with you, as part of our commitment to provide you with important access to our world-class research. We hope the forecast is positive for your business in the year ahead.

Warm regards,
Sharon Matusik, Dean



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Introduction

The Business Research Division (BRD) in the Leeds School of Business is proud to present our 55th annual Colorado Business Economic Outlook. This 2020 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 55th 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 100 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 all 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 worked hard at preparing, presenting, and promoting this project.

My sincerest thanks go to Brian Lewandowski, associate director; Jake Dubbert, research economist; Cindy DiPersio, project coordinator; Kristin Weber, graphic designer; Denise Munn, Senior Print Production Manager; and James Donahue, Chad Fredrick, Rachel Long, and Anna Sernka, student research assistants, for their help in assembling and presenting the 2020 Colorado Business Economic Outlook Forum. The assistance provided by Leeds School staff Laurel Page, assistant director of Advancement Event Experiences; and Trisha McKean, assistant dean of advancement, is greatly appreciated. The Leeds Marketing and Communications team—executive director Amber Hickory and team members Justin Forbis, Anneli Gray, Tiffany Harbrecht, Brad Haynes, Erik Jeffries, Danica Johnson, Christopher Perez, and Jennifer Schuman—contributed marketing and promotion assistance.

I also appreciate the help provided by Dirk Martin, Andrew Sorensen, and Julie Poppen with CU Boulder Strategic Media Relations.

Colorado Economic Forecast for 2020

The sections that follow provide a summary of 2019, a forecast for 2020, 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.

Associate Dean Business and Government Relations
Executive Director, Business Research Division
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www.colorado.edu/business/brd

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.

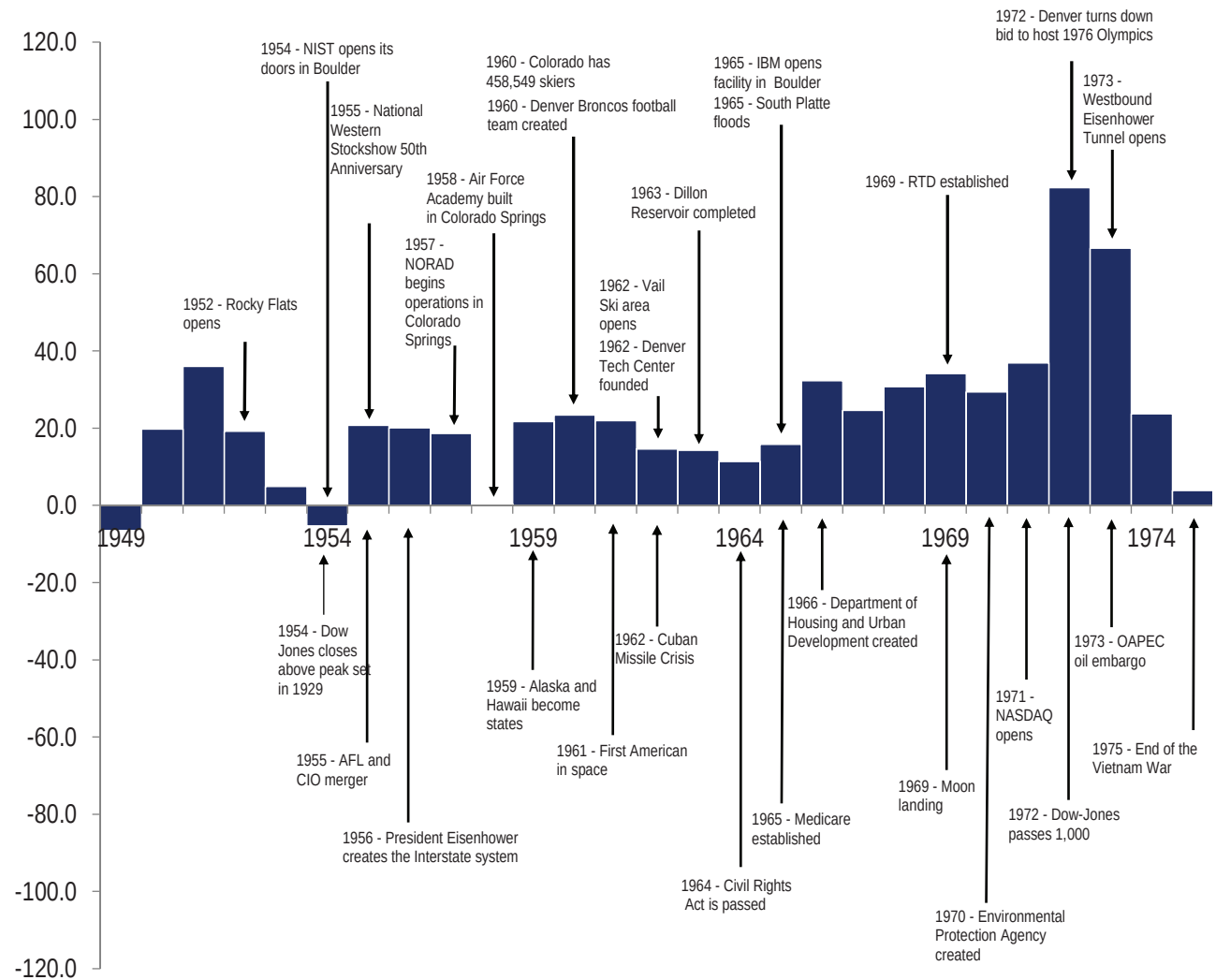
Over the past five decades, Colorado has experienced numerous economic booms and busts, dynamically changing industries and (mostly) unrelenting population growth.

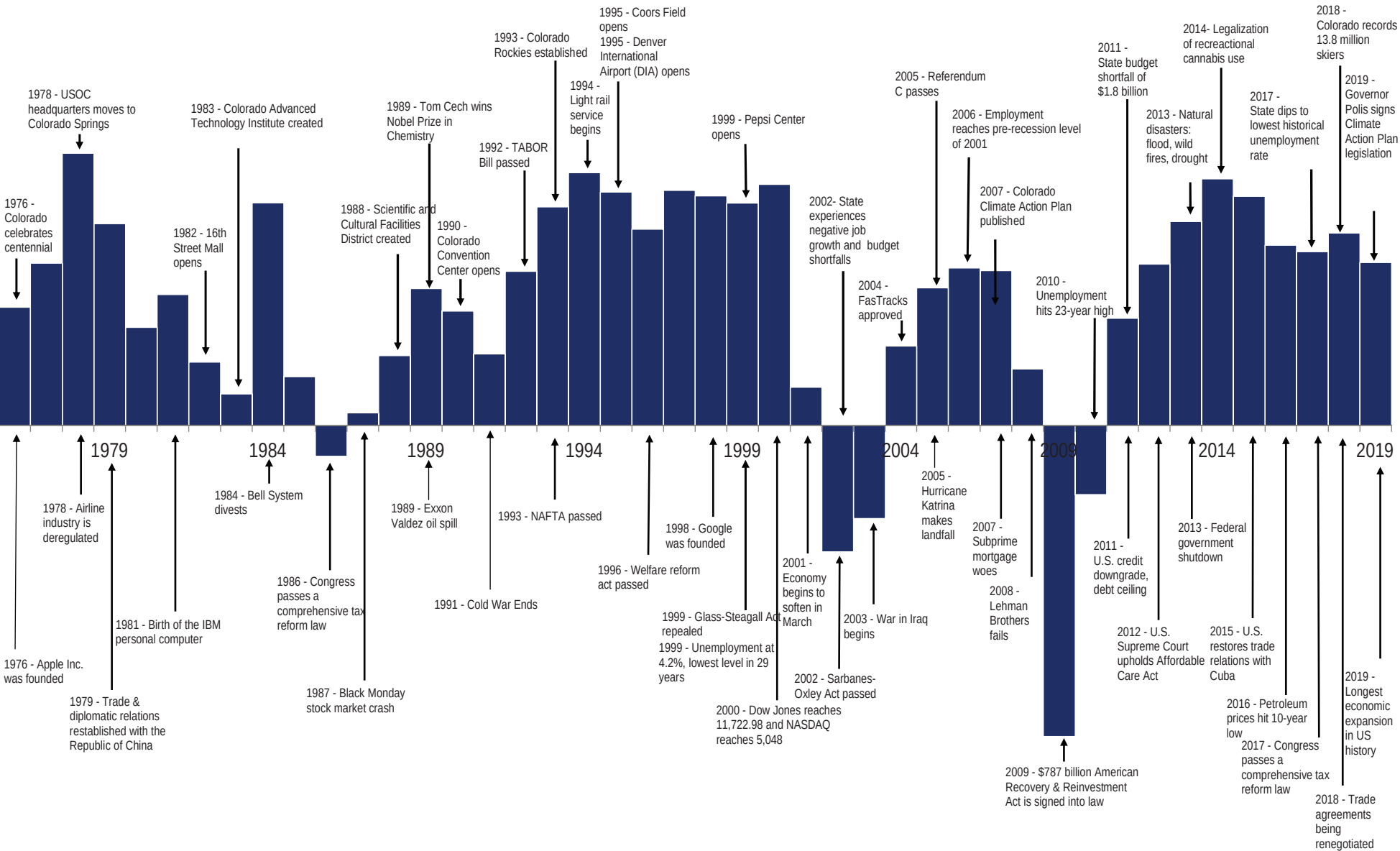
In 1970, just over 1 million individuals were employed in Colorado, and the average annual earnings were \$6,538. Since then, wage and salary employment in the state has grown to more than 2.7 million, not including proprietor employment in the state, and average annual pay for covered wage and salary earners grew to \$58,941.

Goods-producing industries accounted for 24% of jobs and made up 26.7% of the Colorado GDP. Those sectors now account for 14.2% of total jobs and 16.6% of the state's GDP. While proprietor employment represented less than 17% of total employment in 1970, it now represents 26.2%. The share of females in the state's labor force has increased to 45.7%, nearly a 10-percentage point increase from 1970.

Throughout the 1970s, the Colorado economy benefited profoundly from booms in petroleum and mining production as both industries experienced peak employment for the time. 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 41.7% today. 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, IT software, and telecommunications. ♦

Annual Change in Colorado Employment in Thousands





U.S. Economic Outlook

The United States is currently in its longest economic expansion in post-WWII history, exceeding the record set during the technology boom of the 1990s. Real gross domestic product (GDP) is estimated to have grown 2.3% in 2019—down from 2.9% in 2018 and 2.4% in 2017—marking 10 consecutive years of positive economic growth in the United States. From a supply perspective, the tapering of economic growth in 2019 was fueled by a tightening of the labor market and a deceleration in business investment. Employment growth was especially strong in 2018, and the unemployment rate remained low, at 3.7% in 2019, despite an increase in labor force participation. Even with the evidence of an overarching slowdown, the unemployment rate is also below the natural rate of unemployment, which the Federal Reserve estimates to be 4.5 – 5% in the United States.

This slowing pace of economic activity has decreased upward pressures on prices. Consumer prices rose 1.8% in 2019 compared to 2.4% in 2018. Core personal consumer expenditure (PCE) price inflation also ticked up, to 1.7%, just below the Federal Reserve's 2% target pace. Employment costs rose 2.8%, a somewhat faster pace compared to recent years. Personal income in Q3 2018 was up 4.7% relative to one year prior.

The pace of economic activity slowed in 2019, from 3.1% in Q1 to 2% in Q2 and 1.9% in Q3. Components of aggregate demand have slowed. Personal consumption grew 2.9% in Q3 2019, while fixed business investment fell for the second consecutive quarter, shrinking 3% in Q3 2019.

The forecast for 2020 is for growth to decelerate further, expanding 1.8% for the year. This deceleration of U.S. GDP can be attributed to several factors: First, the

stimulatory effects of the tax cuts mandated in the 2017 Tax Cuts and Jobs Act (TCJA) experienced in 2018 have likely waned as both corporations and consumers adjust their spending. Second, trade tensions between the United States and its trade partners escalated significantly in 2019, with over \$500 billion in tariffs enforced since the inception of the trade war in early 2018. Consequently, tensions with China are high. Third, the U.S. budget deficit widened significantly in 2019, owing, in large part, to the TCJA. The residual effects of a deficit on GDP are likely negative as a long-run budget deficit can be detrimental to future government spending. Last, a slowdown throughout the global economy, specifically in key U.S. trade partners, points to a compounding effect on the U.S. slowdown.

REAL GROSS DOMESTIC PRODUCT, 2010-2020
(In Billions of Chained 2012 Dollars)

Economic Indicator	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 ^a	2020 ^b
Real Gross Domestic Product	\$15,598.8	\$15,840.7	\$16,197.0	\$16,495.4	\$16,912.0	\$17,403.8	\$17,688.9	\$18,108.1	\$18,638.2	\$19,066.9	\$19,410.1
Percentage Change	2.6%	1.6%	2.2%	1.8%	2.5%	2.9%	1.6%	2.4%	2.9%	2.3%	1.8%
Personal Consumption Expenditures	\$10,643.0	\$10,843.8	\$11,006.8	\$11,166.9	\$11,497.4	\$11,921.2	\$12,247.5	\$12,566.9	\$12,944.6	\$13,294.1	\$13,586.6
Percentage Change	1.7%	1.9%	1.5%	1.5%	3.0%	3.7%	2.7%	2.6%	3.0%	2.7%	2.2%
Fixed Business Investment ^c	\$1,781.0	\$1,935.4	\$2,118.5	\$2,206.0	\$2,365.3	\$2,408.2	\$2,425.3	\$2,531.2	\$2,692.3	\$2,754.2	\$2,792.8
Percentage Change	4.5%	8.7%	9.5%	4.1%	7.2%	1.8%	0.7%	4.4%	6.4%	2.3%	1.4%
Government Expenditures	\$3,307.2	\$3,203.3	\$3,137.0	\$3,061.0	\$3,033.4	\$3,091.8	\$3,147.7	\$3,169.6	\$3,223.9	\$3,298.0	\$3,354.1
Percentage Change	0.0%	-3.1%	-2.1%	-2.4%	-0.9%	1.9%	1.8%	0.7%	1.7%	2.3%	1.7%
Net Exports	-\$565.9	-\$568.1	-\$568.6	-\$532.8	-\$577.2	-\$721.6	-\$783.7	-\$849.8	-\$920.0	-\$976.0	-\$1,010.0
Percent of Real GDP	-3.6%	-3.6%	-3.5%	-3.2%	-3.4%	-4.1%	-4.4%	-4.7%	-4.9%	-5.1%	-5.2%

^aEstimate. ^bForecast. ^cComponents do not sum to total since fixed business investment excludes residential investment and changes in inventories.

Sources: Bureau of Economic Analysis, Consensus Forecasts, National Association for Business Economics, and Colorado Business Economic Outlook Committee.

Total Output

The pace of U.S. economic activity decelerated in 2019, with real GDP growth estimated at 2.3%. Most components of aggregate demand contributed to the deceleration. Personal consumption slowed from 3% in 2018 to an estimated 2.7% in 2019, and the trade deficit worsened. However, government spending accelerated from 1.7% to an estimated 2.3% in 2019.

Consumer Expenditures

Consumer spending on goods and services grew at an estimated 2.7% in 2019, slower than the pace seen in 2018. The deceleration of consumer spending can likely be attributed to consumers' adjustments in their post-TCJA spending habits, uncertainty, and a decline in consumer confidence exhibited late in 2019, with monthly decreases in consumer confidence in August, September, and October. Consumer spending is expected to slow further in 2020.

With respect to labor income, the economy in 2019 drove unemployment to low levels not seen since 2000, while wages grew at a rate commensurate with prior years. The United States marked its 109th-straight month of job growth in October 2019. Consumer spending in 2019 was also supported by improved consumer balance sheets, with consumers continuing to benefit

from increased asset prices. Despite the increase in household net worth and assets, consumers also took advantage of historically low interest rates, and consumer indebtedness continued its rise to historic levels.

Investment

The pace of business fixed investment spending decelerated in 2019 to an estimated 2.3%. Businesses across broad industries have likely realized the gains in free cash flow from the TCJA, and have consequently adjusted their capital allocation strategies. Investment spending is expected to decelerate in 2020. Residential fixed investment shrank for the six consecutive quarters through Q2, but showed growth in Q3 2019. Through the first half of 2019, residential housing investments decreased 3.4%. Corporate default rates remained below 3% throughout 2019, pointing to rational capital allocation decisions and abundant liquidity despite a record level of corporate debt. For comparison, the corporate default rate was as high as 14% in 2009.

Government Expenditures

Government spending grew at an estimated 2.3% in 2019—the fastest pace since 2009. Much of the increase came from growth in federal outlays, which were boosted by new legislation in 2018 that raised caps on

discretionary spending and significantly increased funds for emergency federal assistance. Spending by the federal government is forecasted to decelerate in 2020, growing at an estimated 1.7%. These surges in federal spending, along with substantial tax cuts passed in 2017, are expected to appreciably widen the federal budget deficit in coming years, with the federal budget deficit expected to eclipse \$1 trillion in fiscal year 2020.

Net Exports

Net exports continued to be a drag on U.S. economic growth in 2019. As of Q3 2019, the trade deficit was 5.2% of real GDP. Exports increased 0.7% in Q3 2019, impacted by weak economic growth among major trading partners combined with a stronger U.S. dollar. Imports increased 1.2%. The effects of trade tension and a looming global slowdown have led to a deceleration in trade across both imports and exports.

Looking ahead, the trade deficit will likely increase slightly, into the \$1 trillion range, by early 2020. The total value of affected U.S. import tariffs is \$524 billion, while the value of retaliatory tariffs is \$113 billion. Trade forecasts are especially challenging to make given the volatile nature of the trade war, and a change in rhetoric from either China or the United States would likely alter the outlook on trade. ✚

Colorado Economic, Employment, and Population Outlook

Economy

While *growing but slowing* has been the economic mantra of 2019, a review of economic metrics reveals Colorado continues to outperform the nation. Real GDP growth grew 3.4% in Q1 2019, ranking Colorado 7th among the 50 states for growth year-over-year, and the state's five-year average ranks 5th, at 3.6%. Employment grew 2.1% year-over-year in September,

ranking the state 11th overall, and the low unemployment rate of 2.7% earned the state a place among the five lowest. Personal income grew by \$20.5 billion year-over-year in Q2 2019 in the state, ranking Colorado 4th for the 6.2% growth. Likewise, per capita personal income grew, ranking Colorado 10th, with 4.7% growth. Over the year, population and labor force also expanded, with the former adding 77,744 people in 2018 (ranking

Colorado 7th for pace of growth and 8th for overall growth), and the latter adding 39,407 in September 2019 (ranking Colorado 24th for labor force growth, at 1.3%). Reflecting both the young workforce and economic opportunity, Colorado's labor force participation ranked 4th-highest nationally, at 69.1% in September. Home values continued to appreciate in 2019, growing 5.5% in 2019, while ranking the state 16th.

STATE AND NATIONAL ECONOMIC COMPARISON, 2008-2018

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Colorado											
Real GDP Growth (Percent Change)	1.2	-2.0	0.9	1.5	1.8	3.3	4.7	4.6	2.4	4.0	3.5
Personal Income Growth (Percent Change)	3.4	-4.8	3.3	8.7	6.3	5.1	8.8	4.8	1.9	7.3	7.1
Per Capita Personal Income (\$)	42,689	39,982	40,682	43,570	45,659	47,298	50,700	52,133	52,262	55,335	58,456
Per Capita Personal Income Growth (Percent Change)	1.6	-6.3	1.8	7.1	4.8	3.6	7.2	2.8	0.2	5.9	5.6
Employment Growth (Percent)	0.8	-2.4	-1.5	0.8	1.3	1.5	3.3	2.1	3.1	3.8	2.9
Unemployment Rate (Percent)	4.8	7.3	8.7	8.4	7.9	6.9	5.0	3.9	3.2	2.7	3.3
Labor Force Participation Rate (Percent)	72.1	70.9	70.4	69.7	69.0	68.1	67.6	66.8	67.0	68.0	69.2
CPI-All Items (Percent Change)	3.9	-0.6	1.9	3.7	1.9	2.8	2.8	1.2	2.8	3.4	2.7
All Items Less Food and Energy (Percent Change)	2.8	1.7	1.4	2.3	2.0	3.2	2.9	3.3	4.0	3.1	2.5
Shelter (Percent Change)	1.7	1.2	0.5	1.7	2.7	4.5	5.0	5.7	7.3	5.1	2.7
United States											
Real GDP Growth (Percent Change)	-0.1	-2.5	2.6	1.6	2.2	1.8	2.5	2.9	1.6	2.4	2.9
Personal Income Growth (Percent Change)	3.6	-3.1	4.1	6.2	5.1	1.3	5.7	4.8	2.6	4.7	5.6
Per Capita Personal Income (\$)	40,904	39,284	40,546	42,735	44,599	44,851	47,058	48,978	49,870	51,885	54,446
Per Capita Personal Income Growth (Percent Change)	2.7	-4.0	3.2	5.4	4.4	0.6	4.9	4.1	1.8	4.0	4.9
Employment Growth (Percent)	-0.5	-4.3	-0.7	1.2	1.7	1.6	1.9	2.1	1.8	1.6	1.7
Unemployment Rate (Percent)	5.8	9.3	9.6	8.9	8.1	7.4	6.2	5.3	4.9	4.4	3.9
Labor Force Participation Rate (Percent)	66	65.4	64.7	64.1	63.7	63.2	62.9	62.7	62.8	62.9	62.9
CPI-All Items (Percent Change)	3.8	-0.4	1.6	3.2	2.1	1.5	1.6	0.1	1.3	2.1	2.4
All Items Less Food and Energy (Percent Change)	2.3	1.7	1.0	1.7	2.1	1.8	1.7	1.8	2.2	1.8	2.1
Shelter (Percent Change)	2.5	1.1	-0.4	1.3	2.2	2.3	2.8	3.1	3.4	3.3	3.3

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

While benchmarking to the other 49 states shows Colorado well above the fold, the fact remains that the economy is showing signs of slowing. The 3.4% real GDP growth in Q2 2019 compares to 4.2% in Q2 2018 and 4% in Q1 2019. Average job growth from January through September 2019 grew 1.9% compared to 2.5% for the same period in 2018. Average labor force growth from January through September 2019 grew 2% (61,472) compared to 3.5% (104,255) for the same period in 2018. Inflation in the Denver-Aurora-Lakewood metropolitan area has outpaced price growth nationally for the past seven years. Home price growth slowed from 11.2% year-over-year in Q2 2016 to 10.4% in Q2 2017, 9.4% in Q2 2018, and 5.5% in Q1 2019 (the slowest rate since Q1 2013).

Meanwhile, the unemployment fell eight-tenths of a percentage point year-over-year in September to 2.7%, and initial and continued jobless claims are mostly running slightly below the previous year. Net migration increased from 46,000 to 52,000 in 2018, and is projected to stay stable in 2019. Personal income, while slowing 1.2 percentage points year-over-year, remained strong, at 6.2%; per capita personal income slowed similarly, but still grew at a healthy 4.7% in Q2 2019.

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. The previous editions of this book serve as a chronicle of the changing issues and opportunities facing people and industry in Colorado for 55 years. 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 the each of the NAICS supersectors by providing an overview of labor force and wage and salary employment totals.

Employment

Colorado is demonstratively an employment growth state, recording 80 growth years and only 8 years of job losses between 1940 and 2019, and 2020 is projected to be another year with net jobs added.

After growing by 64,900 jobs (2.4%) in 2018, the pace of employment growth decelerated in Colorado in 2019, with the state adding 51,100 jobs, or 1.9% growth. Growth will continue in 2020, with the state adding 40,100 jobs, or 1.4% growth—a pace that will keep Colorado in the top 10 nationally despite the slower pace. The three private sector industries that will record the most jobs added in 2020 are Professional and Business Services (11,700 jobs); Trade, Transportation, and Utilities (6,300); and Education and Health Services (5,600). The Information Sector is the only sector projected to lose jobs in 2020.

Year-over-year employment growth was recorded in all of Colorado's seven metropolitan areas in 2019: Colorado Springs (3.4%), Boulder (3.3%), Grand Junction (2.6%), Greeley (2.4%), Fort Collins (2.2%), Denver-Aurora-Broomfield (1.7%), and Pueblo (0.8%).

Most businesses in the economy are small businesses—96.1% of wage and salary establishments have fewer than 50 employees (compared to 95.7% nationally). These small businesses represent 49% of jobs in Colorado (compared to 43.6% nationally).

Labor Force and Unemployment

After seven years of consecutive declines, the unemployment rate increased from 2.7% in 2017 to 3.3% in 2018. However, the labor market tightened in 2019, averaging an estimated 3% for the year and is projected to average 3.2% in 2020.

Labor Force Participation Rate

The labor force participation rate (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 LFPR is important because it conveys the relative amount of labor resources available for the production of goods and services.

The average national LFPR was 65% over the past 43 years. In September 2019, it was 63.1%, which is 1.9 percentage points below the long-term average. In Colorado, the average LFPR since 1976 is 70.6%, well above its most recent low of 66.5% in October 2015. Colorado's LFPR has been above 69% consistently since May 2018, sitting at 69.1% as of September 2019. Colorado ranks fourth in the nation in terms of the highest LFPRs. Colorado sits behind Minnesota (70.2%), Iowa (70.1%), and Nebraska (69.9%).

Nationally, adults age 65 and over saw the highest increase in participation of 2.8%, followed by adults age 20–24, who increased participation by 1.5%. The participation rate of the remaining age ranges remained steady; none experienced larger than a 0.9% increase compared to the prior year. Adults age 20–24 participate at a rate of 72.5%, while adults age 65 and over participate at a rate of 20.4%. Adults age 25–54 participate at a rate of 83.1%.

continued on page 10

Colorado Economic, Employment, and Population Outlook

continued from page 9

COLORADO RESIDENT LABOR FORCE 2010-2020 (In Thousands)

Labor Force	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 ^a	2020 ^b
Colorado Labor Force	2,724.4	2,736.1	2,757.2	2,767.2	2,802.5	2,828.9	2,896.8	2,992.41	3,096.4	3,161.4	3,208.8
Total Employment	2,486.4	2,507.3	2,539.9	2,577.6	2,662.4	2,719.5	2,803.4	2,911.08	2,994.8	3,063.6	3,097.3
Unemployed	238.0	228.8	217.3	189.6	140.1	109.4	93.3	81.3	101.6	94.2	104.1
Unemployment Rate	8.7%	8.4%	7.9%	6.9%	5.0%	3.9%	3.2%	2.7%	3.3%	3.0%	3.2%

^aEstimated. ^bForecast. Note: There are slight 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 2010-2020 (In Thousands)

Sector	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 ^a	2020 ^b
Natural Resources and Mining	24.4	27.9	30.3	30.6	34.1	30.7	23.7	25.9	28.3	28.6	28.7
Construction	115.1	112.5	115.8	127.5	142.2	148.8	155.3	163.7	172.3	177.5	180.5
Manufacturing	124.2	128.1	130.9	132.8	136.6	141.0	142.7	144.3	147.6	149.9	151.3
Trade, Transportation, and Utilities	397.5	401.6	409.5	420.1	432.7	445.7	453.9	461.3	469.8	475.7	482.0
Information	72.0	71.4	69.8	69.9	70.3	70.7	71.9	71.9	74.9	75.5	75.0
Financial Activities	144.4	143.9	146.7	151.0	153.9	159.0	163.9	168.1	170.5	173.0	174.7
Professional and Business Services	330.8	341.5	356.9	372.6	386.6	398.4	405.7	412.8	425.6	441.4	453.1
Education and Health Services	263.9	272.9	281.8	285.9	298.0	313.3	325.8	334.1	340.6	347.1	352.7
Leisure and Hospitality	263.0	271.4	279.7	289.4	300.4	312.8	323.6	333.2	339.9	343.7	347.1
Other Services	92.4	93.7	96.0	97.7	100.9	104.2	107.3	108.6	110.8	112.7	114.4
Government	393.4	392.4	394.3	403.2	407.9	416.5	428.1	436.7	445.0	451.3	456.9
Total ^{c,d}	2,221.1	2,257.3	2,311.7	2,380.5	2,463.7	2,541.0	2,601.8	2,660.4	2,725.3	2,776.4	2,816.5

^aEstimated. ^bForecast. ^cNonagricultural self-employed, unpaid family workers, and domestics are excluded from the total.

AVERAGE ANNUAL PAY BY SECTOR COLORADO AND UNITED STATES (Q1 2019)

NAICS	Sector	Colorado	1-Year Growth	United States	1-Year Growth
11	Agriculture, Forestry, Fishing, Hunting	\$38,723	5.4%	\$36,036	3.6%
21	Mining	122,798	3.7	105,294	2.4
22	Utilities	106,203	6.2	111,073	3.1
23	Construction	62,676	4.4	63,085	3.2
31-33	Manufacturing	71,923	3.0	68,727	1.8
42	Wholesale Trade	86,940	3.8	78,492	2.7
44-45	Retail Trade	32,691	3.4	32,619	3.7
48-49	Transportation and Warehousing	57,536	2.0	53,628	2.9
51	Information	104,019	3.3	115,574	7.4
52	Finance and Insurance	96,984	2.8	109,909	1.6
53	Real Estate and Rental and Leasing	60,035	3.9	59,794	3.9
54	Professional and Technical Services	98,636	4.0	98,066	3.6
55	Mgmt of Companies and Enterprises	139,456	-6.8	123,494	1.6
56	Administrative and Waste Services	44,993	9.4	41,492	4.0
61	Educational Services	41,829	3.0	51,523	2.4
62	Health Care and Social Assistance	51,619	3.0	50,641	2.6
71	Arts, Entertainment, and Recreation	38,471	5.9	39,079	3.0
72	Accommodation and Food Services	23,743	6.0	21,743	4.1
81	Other Services	41,366	3.9	38,803	3.2
	Government	57,315	3.6	57,911	3.2
	Federal	83,867	5.0	83,279	3.1
	State	65,591	3.7	61,079	3.0
	Local	48,768	3.3	51,870	3.4
	Total, All Industries	59,671	3.9	57,695	3.2

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

Labor Data Sets

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—3 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 provides an estimate of the size of the total labor force and is used to calculate the unemployment rate. The LAUS data considers 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.

Population

Total Population Change and Comparison to United States

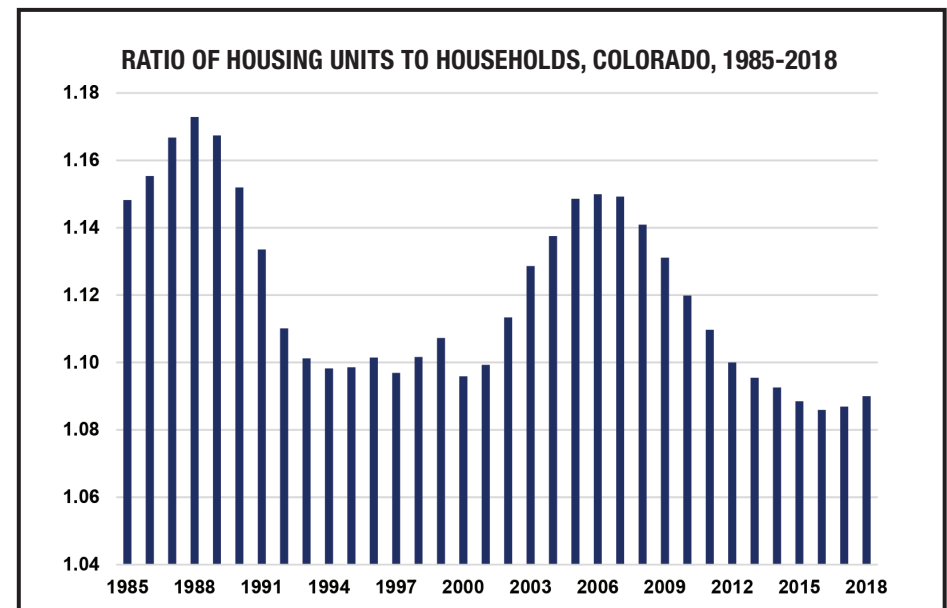
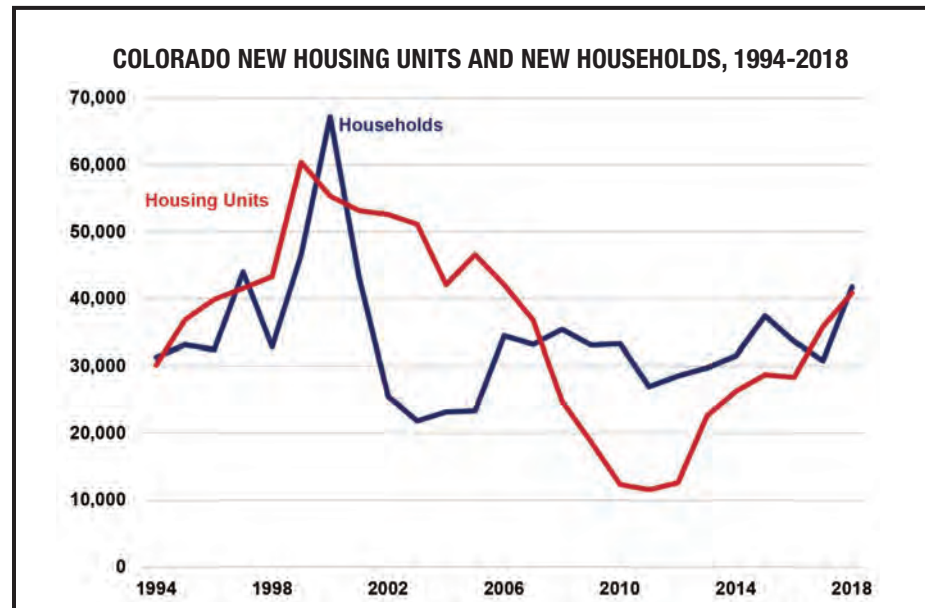
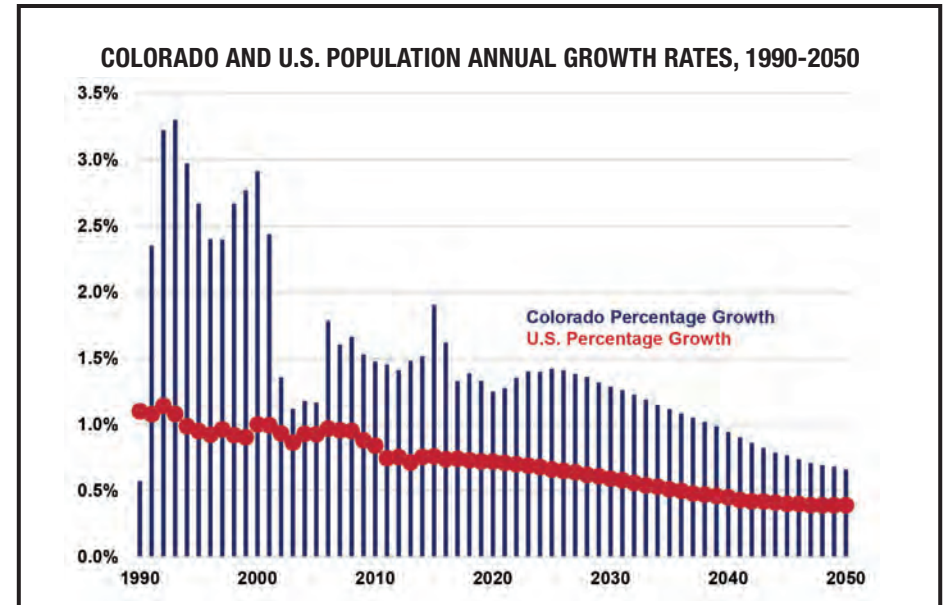
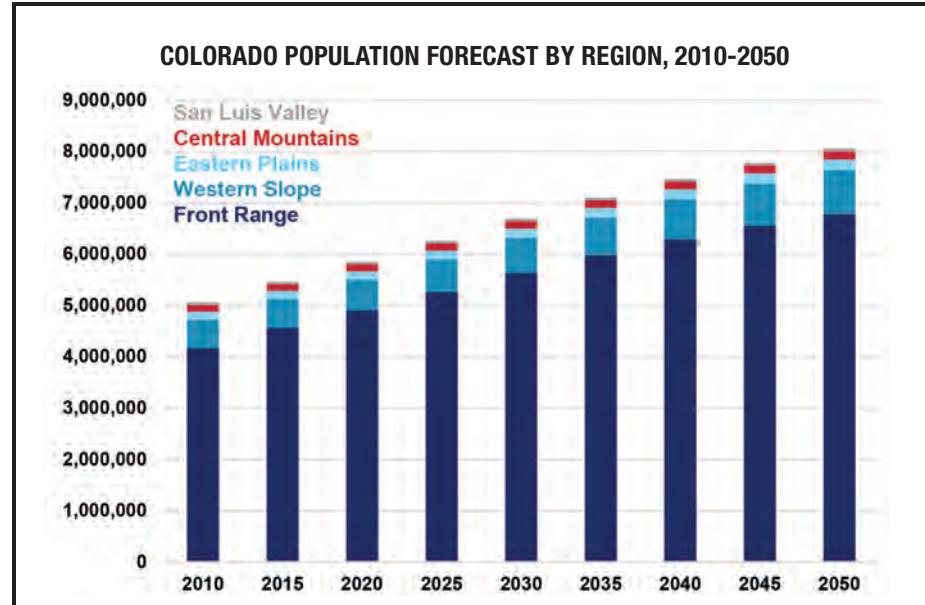
Colorado's 2018 population was estimated at 5,694,311, an increase of 77,744 residents from the previous year. The increase was comprised of 63,780 births, minus 38,219 deaths, and net migration of 52,183. The state's increase of 1.4% was twice that of the nation and was the seventh-highest growth rate. Colorado recorded the eighth-highest amount of total growth—behind states like Texas, Florida, California, and Arizona. In the United States, nine states experienced population loss. The population growth in 2017 and 2018 was slower than experienced during the period from 2014 to 2016 but was still relatively steady, following job growth patterns.

The total fertility rate for Colorado fell during the recession and is still below pre-recession rates. Total fertility in Colorado is 1.7 children per woman, below both the national average of 1.8 and replacement levels of 2.1. Deaths have been steadily increasing, from 28,000

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Colorado Economic, Employment, and Population Outlook

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

Colorado Economic, Employment, and Population Outlook

annually in 2000 to 38,000 annually in 2018, due to the aging of the population. Colorado's net migration of 52,183 ranked eighth in the United States. Florida ranked first, with over 300,000 net migrants. Colorado's net migration per 1,000 in population is 9.1, which ranks seventh in the nation. Although Colorado has been growing relatively fast compared to other states, its growth rate of 1.4% between 2016 and 2017 is significantly lower than the 3% growth observed during the 1990s. In the 1990s, the total growth in the state surpassed 100,000 seven different years. Since 2001, Colorado's population has increased by 100,000 only once, in 2015.

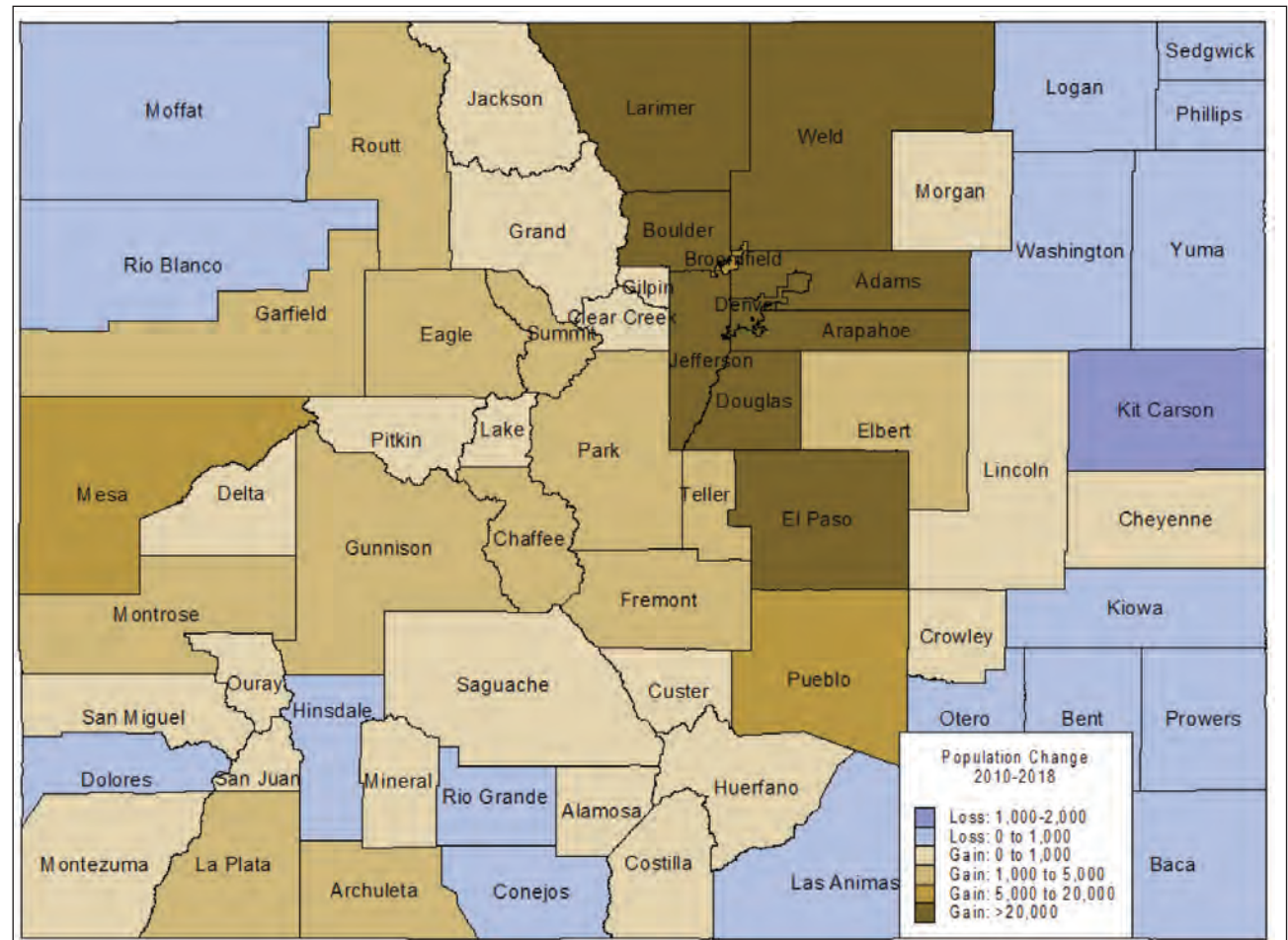
Change by County

Growth throughout the state has been concentrated in the Front Range, with 95% of the population growth between 2010 and 2018 occurring on the Front Range and 64% of the total in the Denver Metro area. Population growth is highly correlated to job growth, and job growth has had similar patterns across the state, with 95% occurring along the Front Range since 2010. Between 2010 and 2018, a total of 16 counties experienced natural decline, with more deaths than births, and 20 counties experienced net out migration.

In 2018, for the second year in a row, El Paso County experienced the largest population growth, increasing by 12,854, followed by Denver, with an increase of 10,882. Denver remains the most populated county. The largest decline in population was in Rio Grande County, with a decline of 60 people due to both out migration and natural decline. The fastest-growing counties ranged from mountain counties with small populations, to the South Central counties of Saguache and Huerfano that are starting to recover from the recession, to Elbert and Park that are proximate to the Denver Metro area, to the larger Front Range counties of Weld and Douglas.

Recent growth has somewhat changed compared to the trend between 2010 and 2017. Many of the Denver Metro area counties experienced slower growth in 2018

COLORADO POPULATION CHANGE, 2010-2018



Source: Colorado Demography Office, U.S. Census Bureau, and the Business Research Division.

than during the prior seven. Included in this group are also the mountain counties of Eagle, Summit, Pitkin, and Ouray. On the other hand, several counties are growing faster in 2018 than during the previous seven years. They vary in location from the Front Range, Western Slope, and the South Central and the North East areas. This may indicate that other parts of the state are starting to recover.

Housing

Housing unit growth picked up to an estimated 40,859 between 2017 and 2018, the largest increase since 2006. Housing unit growth has surpassed household formation for the last two years, which is starting to ease some

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Colorado Economic, Employment, and Population Outlook

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LARGEST AND SMALLEST POPULATION BY COUNTY, 2018

Rank	County	Total Population	County	Population Change
Largest	1 Denver	717,796	El Paso	12,854
	2 El Paso	714,398	Denver	10,882
	3 Arapahoe	651,345	Weld	8,983
	4 Jefferson	579,489	Adams	7,406
	5 Adams	511,469	Arapahoe	7,060
Smallest	1 San Juan	760	Rio Grande	-60
	2 Mineral	775	Pitkin	-59
	3 Hinsdale	807	Eagle	-49
	4 Kiowa	1,373	Sedgwick	-43
	5 Jackson	1,392	Washington	-33

Source: Colorado State Demography Office.

COMPONENTS OF COLORADO RESIDENT POPULATION CHANGE, 2010-2020 (In Thousands)

Year	Births (Resident)	Deaths (Resident)	Natural Increase	Net Migration	Population Change	Total Population
2010	67.3	31.4	35.9	37.6	73.5	5,050.3
2011	65.9	32.0	33.9	39.5	73.4	5,123.7
2012	64.7	32.8	32.0	40.3	72.3	5,195.9
2013	64.7	33.6	31.1	45.9	77.0	5,272.9
2014	65.7	34.0	31.7	48.2	79.9	5,352.9
2015	66.3	36.2	30.1	71.7	101.8	5,454.7
2016	66.6	36.8	29.7	58.5	88.2	5,543.0
2017	65.3	37.7	27.6	46.1	73.6	5,616.6
2018	63.8	38.2	25.6	52.2	77.7	5,694.3
2019 ^a	63.3	40.0	23.3	52.4	75.7	5,770.0
2020 ^b	63.4	40.7	22.7	49.4	72.1	5,842.1

^aEstimated. ^bForecast. Source: Colorado Department of Local Affairs, State Demography Office (July 1 estimates).

of the price pressure, but the ratio of housing units to households is still close to record lows reached in 2016 as shown in the chart on page 12. The ratio is starting to increase and expected housing growth should help to alleviate some of the supply pressure. Time periods where there was the highest ratio of housing units to households were in times of recession where migration slowed or declined yet housing construction continued. Household formation is forecast to continue to grow annually around 33,000–35,000 as long as job growth continues.

Demographically, it will be important to keep an eye on both the boomers currently age 54 to 72 and the millennials age 23 to 38. The boomers are quickly aging into the 70+ age group where downsizing or moving to homes with fewer stairs and less maintenance is common. The 70+ age group is increasing by approximately 6% per year. The leading edge of the millennials is also a group to watch as they start to enter the age group often associated with home ownership. The peak number of millennials

were born in 1991, making them 28 years old in 2019. The majority are still in age groups where they would primarily live at home or be renters, but as a larger share of millennials age into their 30s there will be stronger growth in first-time home buyers—if there are entry level homes to buy.

Forecasts

Colorado's population is projected to continue to grow but at a slowing rate. The population is forecast to increase annually in the mid-70,000s through 2020, with the natural increase forecast remaining in the high- to mid-20,000s and net migration remaining in the high-40,000s to the low-50,000s. Growth rates are forecast to fall from 1.4% to 1.3% by 2020. The slowing forecast is due to a slowing economy, slowing birth rates, an aging population, slowing labor force growth, and slowing international immigration. Although Colorado's population growth is forecast to slow, it is projected to continue to outpace

the nation, growing at roughly twice the rate. Colorado is forecast to increase from 1.7% of the U.S. population in 2018 to 2% by 2050.

The largest population growth by county continues to be along the Front Range. Between 2019 and 2029, the state's population is projected to increase by 832,000, with 87% of this increase, or 720,000 people, projected for the Front Range and 415,000 for the Denver Metro area. The North Front Range is expected to observe the fastest growth, at an annual average of 2.3%, or 169,000 people. The 2050 forecast for the state is 8.1 million, with 6.8 million along the Front Range, or 84% of the total population.

Age

Age is one of the most important characteristics about a population because people change their behavior and spending patterns as they age. Similarly, they participate in the labor force differently and buy or rent housing

differently. Colorado is aging relatively fast, with the 65+ population age group observing the fourth-fastest growth in the United States. Colorado is also one of the youngest states, with the sixth-lowest share of population over 65 years old, at 14%.

Between 2010 and 2017, the 65+ population increased by 254,000, or an annual average growth rate of 4.5%. Between 2010 and 2018, the total population increased by 644,000, or an annual average growth rate of 1.5%. The 65+ population observed 39% of the total growth in the state, yet the 65+ age group represents only 14% of the population.

Age in Colorado remains a dominate force when understanding most trends in the state. The current and unique age distribution of the state (with relatively fewer people over 65 compared to other states) is the result of years of migration trends, where Colorado has

historically attracted young adults age 22–37 in large numbers. Today, many of the migrants to Colorado in the 1970s are aging into the 65+ group at a rate of approximately 5% per year. Most of the growth between 2018 and 2025 will be in the 65–74 age group. Due to the aging of the population, Colorado will experience faster growth in industries supporting the 65+ population, like health care and restaurants. The current tight labor force is due in part to the aging of Colorado, with the fastest growth in retirees it has ever experienced, as well as slower growth in new entrants. The population age chart shows the growth rate of the population by different ages and their relationship to the labor force.

Summary

Colorado's recent population growth has been steady yet slowing due to slowing births, increasing deaths, and

moderate net migration. Although it is slowing relative to historical trends, it is still increasing relatively fast compared to the United States. Colorado has grown by over 644,000 people since 2010 from both births and migration, and 95% of the growth has been concentrated along the Front Range. A dominate driver for the migration into the state is job growth, which has also predominantly been along the Front Range. The population forecast for Colorado is for continued but slowing growth through 2020. However, population growth is projected to be twice as fast as the nation's. There are several risks to the forecast, including potential recessions, climate change, water challenges, and whether Colorado can attract and retain the workers Colorado needs to fill current and future jobs. Other risks include affordable housing, affordable and available daycare, the aging of the labor force, and the educational attainment and educational achievement of Coloradans. ❖

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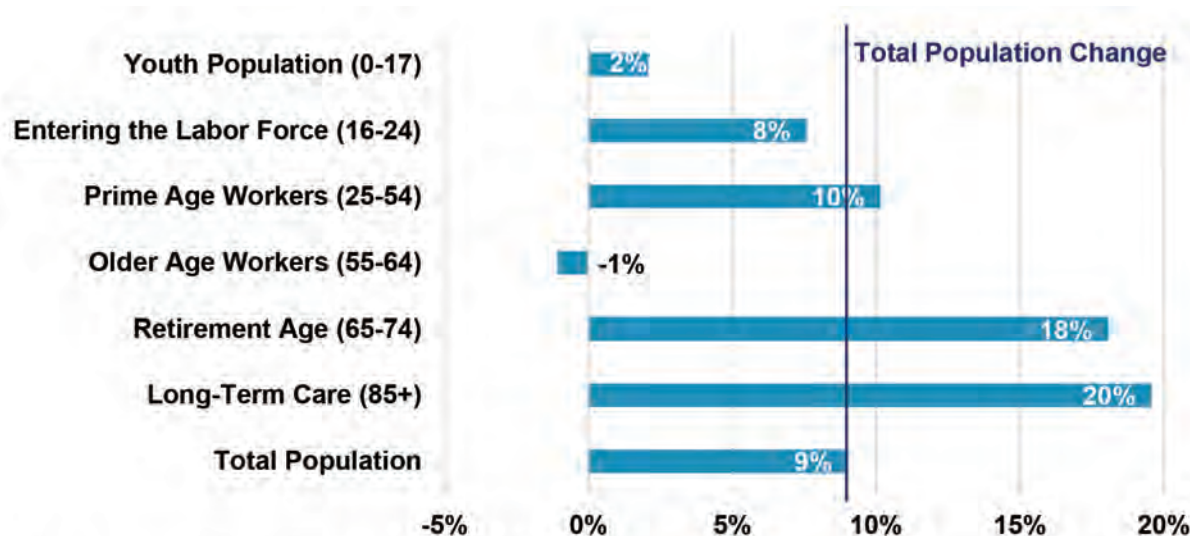
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PROJECTED CHANGE IN SPECIFIC AGE GROUP POPULATIONS IN COLORADO, 2019-2025



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

Agriculture

A Surprisingly Optimistic Outlook for Colorado Agriculture

Someone is making money in Colorado agriculture and food systems. It just may not be farmers and ranchers. Processors, packers, and others in the supply chain may be seeing most of the benefits of an increase in cattle and dairy numbers in Colorado. The agriculture value chain has many segments, and one often makes money while others experience losses. Farmers and ranchers are not exactly pleased with the prices they are receiving and their own business profitability, but increased production, greater efficiencies, and better margins for some sectors of the supply chain are pointing toward an uptick in agricultural income for 2019 and 2020.

COLORADO FARM INCOME AND PRODUCTION EXPENSES 2010-2020 (In Millions of Dollars)

Year	Gross Value of Farm Revenue	Total Farm Production Expenses	Net Farm Income
2010	\$7,089.4	\$5,856.4	\$1,233.0
2011	8,487.1	6,650.0	1,837.1
2012	8,345.4	7,006.8	1,338.6
2013	8,610.5	7,216.0	1,394.5
2014	9,176.2	7,955.8	1,220.4
2015	8,923.0	7,312.8	1,610.2
2016	7,620.7	6,363.0	1,257.7
2017	8,246.4	7,178.7	1,067.7
2018 ^a	8,301.9	7,050.4	1,251.5
2019 ^b	8,719.4	7,200.0	1,519.4
2020 ^c	8,911.4	7,300.0	1,611.4

^aRevised. ^bEstimated. ^cForecast.

Source: Colorado Business Economic Outlook Ag Committee.

Colorado net farm income is estimated to be \$1.52 billion for 2019, a 21% increase. This increase is well ahead of the estimated U.S. increase of 4%. For 2020, Colorado's net farm income is forecast to grow a more modest 6%, to \$1.61 billion. The reason for Colorado's strength versus the United States is that Colorado's agriculture is heavily weighted toward beef, which has maintained its value and grown its herd size, and corn, which has had a good year when compared to soybeans.

Headlines in spring 2019 predicted a great growing season for Colorado as the state was officially drought-free for 14 weeks. That streak ended in August as drought crept back into the state. Experts emphasize this was just one wet year in a long-term period of the region becoming increasingly dry. Following a wet and snowy winter, prospects were good for farmers and ranchers who needed water for their crops and feed for their cattle, but optimism was moderated by continuing trade uncertainty and a world that continues to have an ample supply of grain.

Cattle Still King

Colorado agriculture is very diverse but the big player is still cattle, accounting for an estimated \$3.4 billion in cash receipts in 2019. The number of cattle and calves on feed for the slaughter market in Colorado feedlots on September 1, 2019, was up 3% over the 2018 inventory on the same date, bucking the national trend, which was 1% down from 2019.

Cattle ranchers in most of the state enjoyed abundant moisture and good grazing conditions, and feeders had the advantage of lower corn prices for most of the year to increase their margins. The big financial winners are probably the feeders who raise calves up to slaughter weight, and packers who process the beef herd. Profit margins per head are higher, and with a larger volume of cattle, overall revenue will be up.

The beef market was disrupted by a fire at a packing plant in Kansas on August 9, 2019. The reduction in processing capacity caused by the fire dropped prices for

INDUSTRY SNAPSHOT AGRICULTURE

Nominal GDP, 2018 (\$ Billions)	2.2
Real GDP, 2018 (\$ Billions, 2012 Dollars)	2.9
2018 Real GDP Growth Rate	-6.6%

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

fed cattle and for steers and heifers being sold to feedlots, while prices for boxed beef shot up, raising concerns from ranchers about price manipulation. However, the fed cattle sector has come through this and other uncertainties better than expected, with other plants picking up the excess production.

The Price of Pork in China

The animal protein complex of beef, pork, chicken, and lamb was expecting a bump in 2018 and 2019 prices because of African Swine Fever (ASF) in China. This increase did not develop until Q4 2018 and had some momentum into 2019, but did not affect beef to the extent expected. ASF is the wildcard for the protein world. The enormous volume of pigs raised in China affects everything from the volume of protein in the world market to the amount of grains needed for feed worldwide.

The most recent estimate is that one of every four pigs in the world will die because of this disease. Ripple effects will indirectly affect the rest of the protein market. China has reached the point where it has worked through the backlogged supply of pork, and the United States is the only other major producer of pork in the world. There is great potential in 2020 for price gains in the pork market, with efficiency improving (more pigs per litter) and relatively low grain prices.

Drought Down Under Helps Colorado Lamb

Further indication of the global nature of agriculture is the current decline in U.S. beef exports to China, in part because of import tariffs. Because Australia is in a drought, cattle herds are being sold off. They are in closer proximity to China and have lower shipping costs, so China is purchasing Australian beef to the detriment of U.S. beef. However, the drought in Australia is likely to help Colorado lamb prices because Australia will be selling more lamb to Asia at lower prices because of the drought, lowering the supply of Australian lamb available in the United States.

Lamb producers in Colorado are looking forward to the opening of a new lamb processing plant in Brush

sometime in 2020. This plant will change lamb market dynamics in Colorado, shifting where lambs are processed in the state, and is expected to put Colorado at the center of the U.S. lamb feeding industry. It has been 40 years since a new lamb processing facility has been built in the region, and it is expected to bring 50 new jobs to Brush.

Studies show consumers prefer U.S.-raised lamb, and there is a certain cachet for “Colorado lamb,” which is more widely consumed in large cities on the east and west coasts than in the state where it is produced. Colorado’s diverse population, with roots in countries where lamb is consumed more heavily than beef, also enjoys local lamb production and the availability of halal lamb in Denver.

Got Cheese?

Colorado also bucks nationwide trends with our dairy herd. The year 2019 saw a slight turnaround in milk prices and a modest liquidation of the dairy herd in the United States. However, Colorado’s dairy herd increased by 11,000 in 2018 and 10,000 in 2019. Much of this increase is thanks to Leprino foods and its cheese operation near Greeley. U.S. consumers continue to drink less milk, except for whole milk, which has shown an increase in consumption. The increase in cheese consumption by U.S. consumers has helped make up for declining milk consumption. Per capita cheese consumption has more than doubled since 1975, to 38 pounds per person in 2018.

Explain the Grain Pain

Corn farmers had a relatively good year, although prices remain low, at an estimated average \$3.75/bushel for 2019 compared to the \$8/bushel farmers fondly remember from 2012. Colorado growers made up for the price deficit with good yields, especially on irrigated corn. They were able to get corn planted in the spring when many in the Midwest were fighting floods, and had an advantage in the fall with better harvest conditions as many corn fields in the upper Midwest were covered in early season snowfall and are still waiting to be harvested.

Corn producers will need to continue to increase yields and efficiencies. More corn is expected to be planted throughout the United States as demand and prices for soybeans is low because of the trade situation with China. Soybean exports to China for 2019 are down 47% in Q3 2019. Colorado’s climate is not conducive to growing soybeans, so while Colorado farmers are not directly affected, they are indirectly affected because of downward pressure on markets and other farmers across the Midwest switching to corn because it is less expensive to grow than soybeans.

**VALUE ADDED BY COLORADO AGRICULTURAL SECTOR
2010–2020
(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
2010	\$3,831.1	\$2,249.3	\$6,080.4	\$737.6	\$271.6	\$7,089.6
2011	4,322.0	2,740.8	7,062.8	1,189.1	235.4	8,487.3
2012	4,487.2	2,577.2	7,064.4	1,065.3	215.7	8,345.4
2013	4,705.7	2,320.3	7,026.0	1,345.5	239.0	8,610.5
2014	5,357.7	2,479.7	7,837.4	1,052.9	285.9	9,176.2
2015	5,550.3	2,224.8	7,775.1	929.3	218.6	8,923.0
2016	4,428.3	2,051.3	6,479.6	907.2	233.9	7,620.7
2017	4,728.6	2,219.2	6,947.8	1,029.9	268.7	8,246.4
2018	4,707.4	2,185.8	6,893.2	1,178.8	229.9	8,301.9
2019 ^c	4,909.4	2,385.0	7,294.4	1,200.0	225.0	8,719.4
2020 ^d	5,074.2	2,362.2	7,436.4	1,250.0	225.0	8,911.4

^aIncludes sales of forest products, custom feeding fees, custom harvest fees, and other farm income. ^bIncludes farm program payments directly to producers. ^cEstimated. ^dForecast.

Source: Colorado Business Economic Outlook Ag Committee.

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Agriculture

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Corn prices are also under pressure from renewable fuel standards (RFS) waivers. Under the national RFS, refineries must blend a certain percentage of biofuels, such as ethanol, into their gasoline. Refineries that can prove they are under financial strife may apply to the EPA for an exemption from these blending requirements. Far more waivers from ethanol blending have been granted under the current administration than in the past.

ASF is also a wild card for corn farmers. China has culled a tremendous number of pigs to prevent further spread of the disease. China was previously the largest customer for U.S. soybeans, but switched to suppliers in Brazil following the implementation of U.S. tariffs. Brazil's supply is limited, but ASF led to a reduction in the need for soybean meal to feed Chinese pigs, lessening

pressure for China to buy U.S. soybeans when Brazil's supply was depleted.

Wheat farmers may be in the toughest spot of all in 2019. A combination of dry conditions in the fall, the presence of wheat stem sawfly in the state, and low prices led to a downturn in estimated planted acres. Dryland wheat farmers, who grow a crop without irrigation, do not generally have many options for growing something other than wheat. Wheat requires the least water of most of the grain crops. Millet and sorghum are options, but demand for those crops is not as high.

Wheat stem sawfly is an insect that burrows into the wheat stem and lays its eggs. When the eggs hatch, they eat through the stem, causing the wheat to fall over and making it very difficult to harvest. There are no control methods for this pest. While it is mainly present in

northeast Colorado, it has been found throughout the wheat-growing areas of the state.

Exports

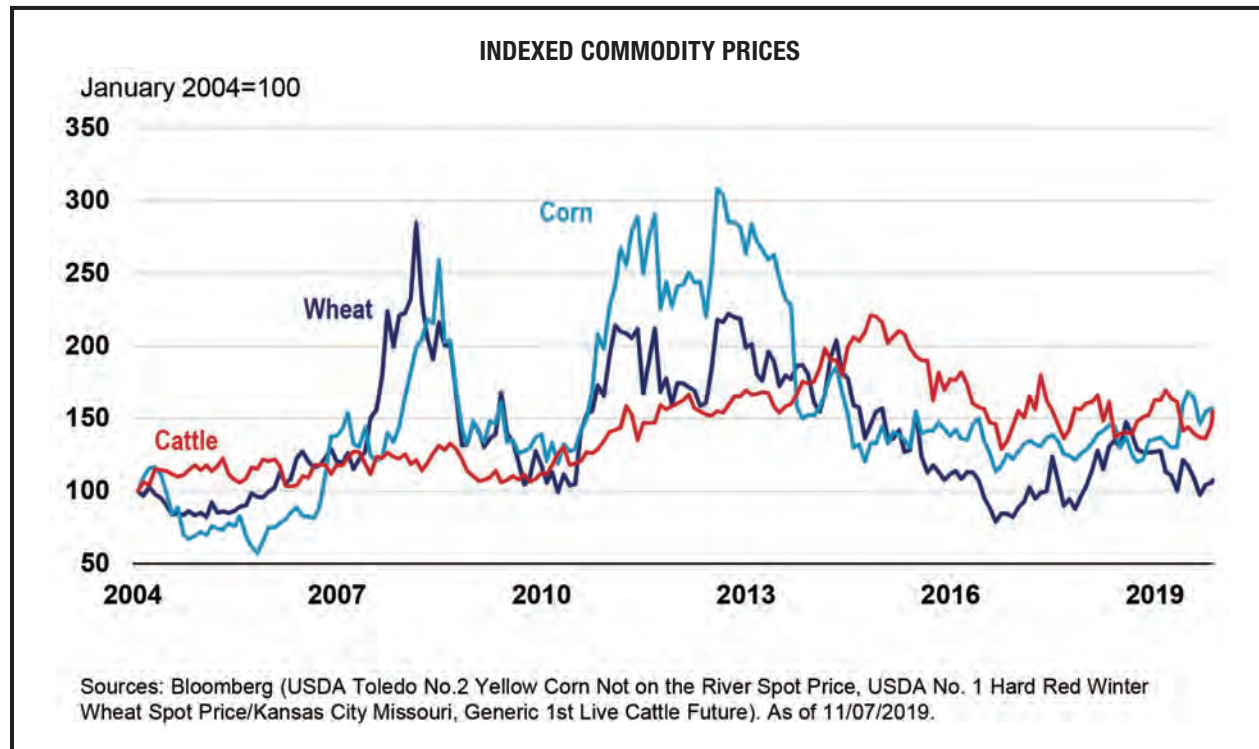
Colorado's agricultural exports had been on a tremendous growth curve for the last 10 years, but are down 15% January through September 2019 compared to the prior year. Tariffs on sales of soybeans to China have affected Colorado's farmers indirectly as Midwestern farmers plant less soybeans and more corn, bringing down prices, and corn and wheat have to compete with more soybeans being available in the domestic animal feed market.

Canada and Mexico are two of Colorado's largest trading partners, and the United States-Mexico-Canada Agreement (USMCA) has still not been signed, causing uncertainty in those markets and negatively affecting Colorado's export numbers. International buyers are looking for clarity before entering into longer-term purchase agreements. Mexico is the main market for U.S. sorghum, and the lack of a trade agreement there is limiting the amount that Colorado farmers are willing to plant.

One bright spot in trade is the first stage of a newly signed agreement with Japan that will greatly benefit U.S. beef producers. The United States, which currently has a 38.5% tax on beef to Japan, is competing with Australian and Canadian beef that benefits from the lower tariffs negotiated under the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).

The proposed deal will lower or eliminate tariffs on many other U.S. goods, such as frozen potatoes, wheat, cheese, wine, nuts, berries, sweet corn, sorghum, oranges, pork, and poultry.

In 2019, South Korea became the second-largest trading partner for Colorado, pushing Mexico into third place. South Korea increased beef imports by 14%, helping to offset some of the trade issues in the region, and is now the #1 importer of beef from Colorado.



Weather Works Out for Beans, Fruit, and Vegetables

After a rainy and cool spring, San Luis Valley and Western Slope fruit and vegetable crops were off to a slow start, and production was delayed a few weeks. However, patience was rewarded with a great crop for most tree fruits and vegetables.

San Luis Valley potato farmers will benefit from bad weather elsewhere as they had ideal harvest conditions in the fall. Idaho experienced several days of freezing temperatures while potatoes were still in the ground, and North Dakota potato-growing areas had so much rain that growers may not be able to completely harvest

all of their crop. Russet supply in the United States is expected to be extremely tight. While Colorado production is expected to be down slightly in 2019 because of a cool spring, prices are expected to average over \$10/cwt (hundredweight) for the first time since 2011. The cool spring and delayed planting led to smaller potatoes than usual, creating a smaller crop for Colorado.

Colorado's potato growers continue to seek out additional crops as their water supply in the San Luis Valley is under more and more pressure. One winter of drought relief was not enough to restore the levels in the artesian aquifers that provide irrigation for the potato crop. Valley farmers are seeking alternatives, such as quinoa and hemp to produce a profit and use less water.

Dry edible beans are a small share of Colorado's ag receipts, but they are another possible bright spot. The 2019 crop is estimated at 672,000 cwt, up 1% from the prior year. Prices are expected to be higher as much of Colorado's pinto bean crop is exported to Mexico, and Mexico's bean growing areas have experienced unfavorable conditions in fall 2019. This expected uptick in demand may lead to some corn farmers planting dry beans in place of corn.

High Hopes for Hemp

The hope for hemp and its possibilities runs rampant in Colorado as farmers and entrepreneurs look for alternative crops with profit potential and perhaps less water use. A total of 80,000 acres of hemp were registered with the Colorado Department of Agriculture. About 40,000 acres were actually planted, with the remainder left unplanted because of lack of seed or cloned plants. This is more acres than Colorado planted to sugar beets or dry beans in 2019.

It is unknown how this hemp will be used, whether it is mostly for cannabidiol (CBD) oil or for other purposes. Concerns include whether farmers will have buyers for this crop, which can be very expensive to plant. Hemp planted for CBD oil must use feminized plant clones or seeds, which will not produce pollen. Feminized seeds can cost \$1/per seed, and clones \$3–\$4 each, creating a very expensive per acre planting cost. Many regulations and supply chain issues remain to be worked out. Hemp growers in 2019 were unable to insure their crop through crop insurance and were often unable to find banking services.

Colorado growers seem to be mostly growing hemp for CBD oil production, which is in high demand now. The majority of hemp processing facilities in Colorado are for CBD. The demand for enough hemp to make CBD



Photo courtesy of Dan Harvey.

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Agriculture

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will inevitably be met by farmers in Colorado and other states who are now free to grow hemp under the 2018 Farm Bill. Additional processing for hemp to be turned into bioplastics, building materials, paper, and fabric will be needed.

The Future of “Meat”?

There are plant-based burgers that are unapologetically centered around plants, and there are plant-based burgers that attempt to appear to be real beef. Labs are currently growing cellular beef from cloned cells, and a new business in Boulder (Emergy Foods) is developing meat-similar products grown from fungi. Plant-based protein accounts for less than 1% of retail meat sales, and is seen by many as a flexitarian option for those who choose to not eat meat on one or more days of the week. While plant-based burgers are widely available, commercialization of cellular meat is still on the horizon.

U.S. meat and poultry consumption, which saw a decrease from 2009–14, has seen an uptick in recent years. World consumption of meat per capita continues to grow. Part of this increase is due to population growth, and part is due to increasing purchasing power and the growth of the middle class.

Income versus *Income* and Where It Ends Up

Net farm income across the United States is up 4.8%, but is it really? In the current farm economy, there's income and there's *income*. Much of the increase in U.S. farm income in 2019 comes from Market Access Payments made to farmers to compensate them for losses from the U.S. trade war with China.

In Colorado, those payments have not been as significant as they are in big Midwest soybean-growing states. Colorado is expected to see ag sector growth after several years where experts predicted the decline of net farm income to below \$1 billion. That growth may not be seen directly in the pockets of farmers and ranchers, but in 2019, Colorado agriculture still has much to be thankful for. ❖

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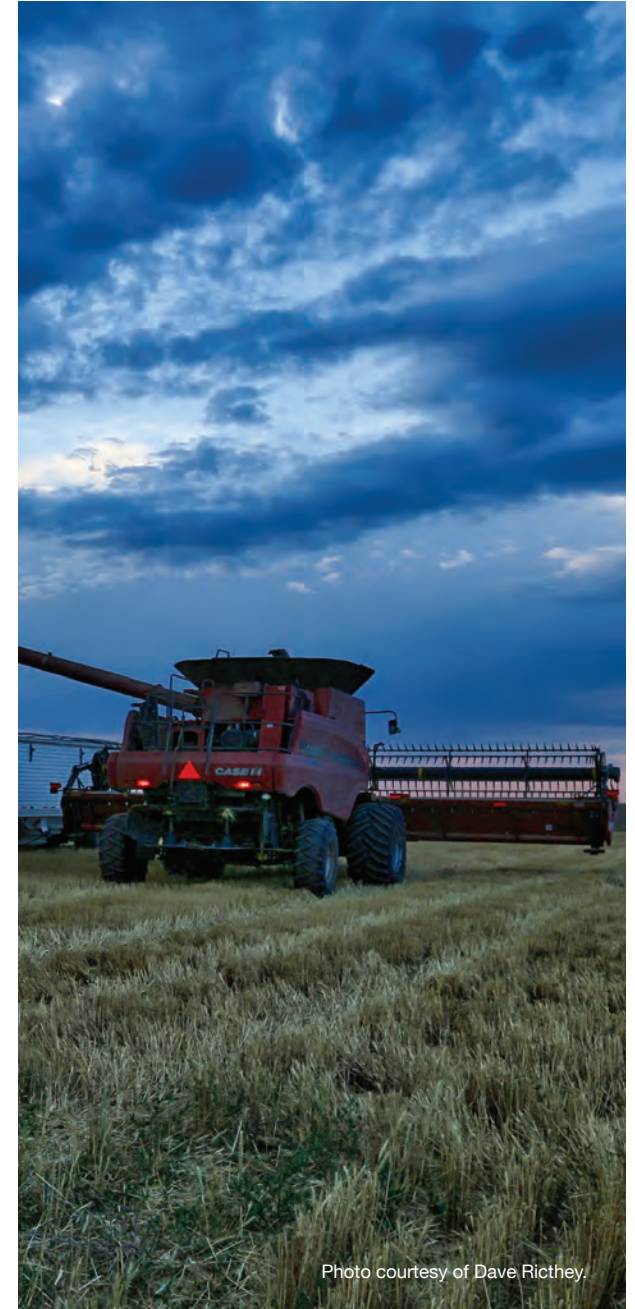


Photo courtesy of Dave Ricthey.

Natural Resources and Mining

The Natural Resources and Mining (NRM) Sector constitutes roughly 1% of Colorado's employment, but generates some of the highest per worker income levels in the state. Being an energy- and mineral-rich state, Colorado's natural resources are important for economic growth. In the U.S. Energy Information Administration's (EIA) most recent assessment of 2017 proved reserves, Colorado ranked 7th for petroleum liquids, 6th for wet natural gas, and 11th among the states in the production of coal. Overall, Colorado ranked 21st in total value of principal nonfuel minerals for 2018.

In addition to traditional energy resource development, Colorado is also one of the nation's leading renewable energy states, developing a portfolio mix of wind, solar, biomass, and hydroelectric energy resources. Colorado law now mandates that investor-owned utilities (IOUs) generate 30% of electricity from renewable energy by 2020. Cooperatives must achieve a 20% standard by that same year. Colorado's current governor has made a target goal of 100% renewable energy by 2040, and Xcel Energy,

Colorado's largest utility, is aiming for 100% of its electricity generation to be carbon-free by 2050.

The NRM industries make a significant contribution to Colorado's GDP, with the value of the overall NRM Sector estimated to be nearly \$17 billion in 2019. NRM employment totaled more than 28,300 jobs in 2018, an increase of 9.3% from 2017, and 28,600 in 2019. For 2020, the expectation is for a modest increase of 100 jobs. As with many of Colorado industries, economic and political factors, especially a national or global recession, can abruptly alter the trajectory of Colorado's NRM employment outlook. Prolonged crude-oil price suppression can have a particularly acute impact on jobs in this sector.

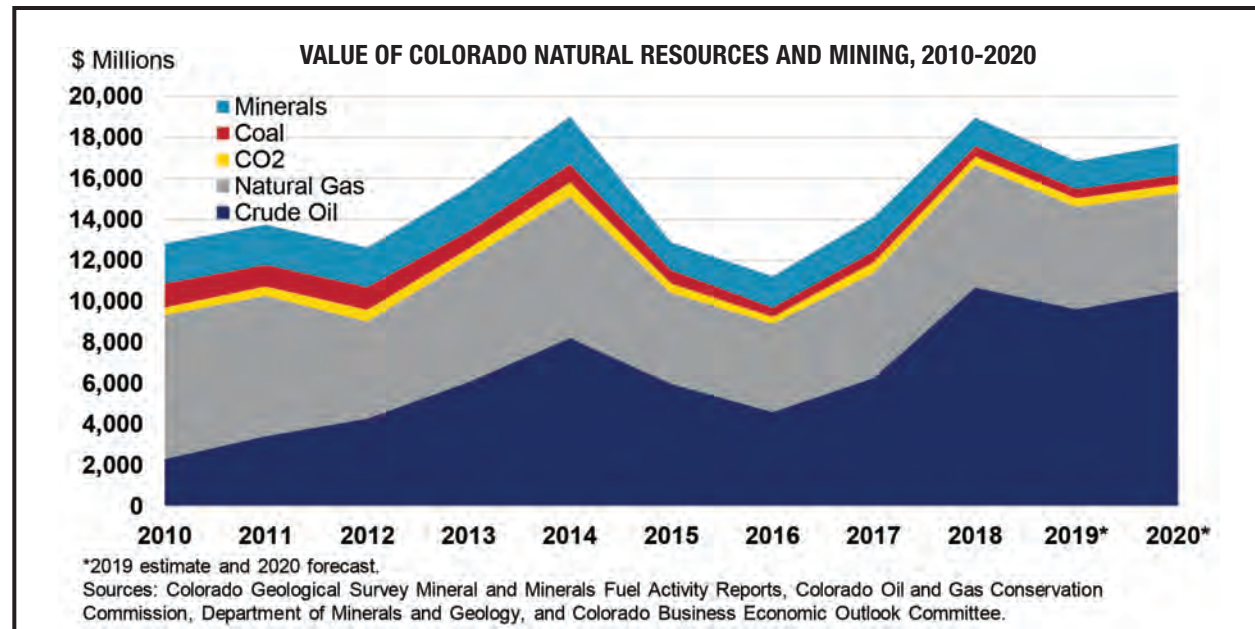
Oil and Gas

Colorado's total oil production is valued at more than \$9.6 billion for 2019—an estimated 10% lower than 2018. The value of the state's natural gas production in 2019 will be just shy of \$5 billion. Combined, this

INDUSTRY SNAPSHOT NATURAL RESOURCES AND MINING

Nominal GDP, 2018 (\$ Billions)	13.1
Real GDP, 2018 (\$ Billions, 2012 Dollars)	17.7
2018 Real GDP Growth Rate	-0.1%
Total Employment, 2018 (Thousands)	28.3
2018 Employment Growth Rate	9.3%
Employment Growth National Rank	7
Share of Colorado Employment	1.0%
Share of National Employment	0.5%
Average Wage, 2018	88,489
Percent of Statewide Average Wage	149.2%
2018 Average Wage Growth Rate	5.1%

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



represents a 12% decrease in gross value from 2018. For 2020, expectations are for a modest 5% increase in value over 2019. The Colorado Office of State Planning and Budgeting (OSPB) September 2019 economic outlook is estimating severance tax collections at \$255.2 million for FY2018–19 (July 1, 2018–June 30, 2019); \$114.1 million for FY2019–20; and \$210.4 million for FY2020–21. OSPB is attributing the drop in the current fiscal year to larger ad valorem credits and lower oil prices and production.

The rate at which new production in Colorado comes online to offset the inherent decline in new Niobrara/Codell shale play laterals is a critical input into any forecast. While the spud rate and rig count have remained on par with 2018, permits received by the Colorado Oil & Gas Conservation Commission (COGCC) have decreased by more than 50%. While many operators have

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Natural Resources and Mining

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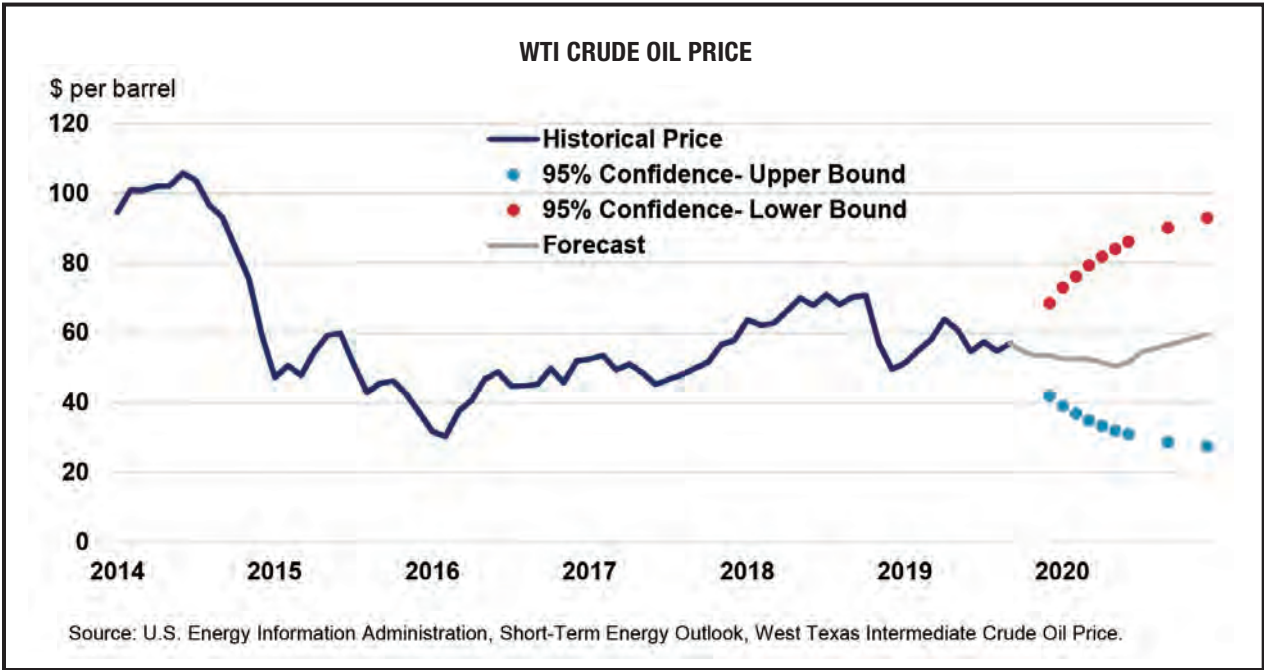
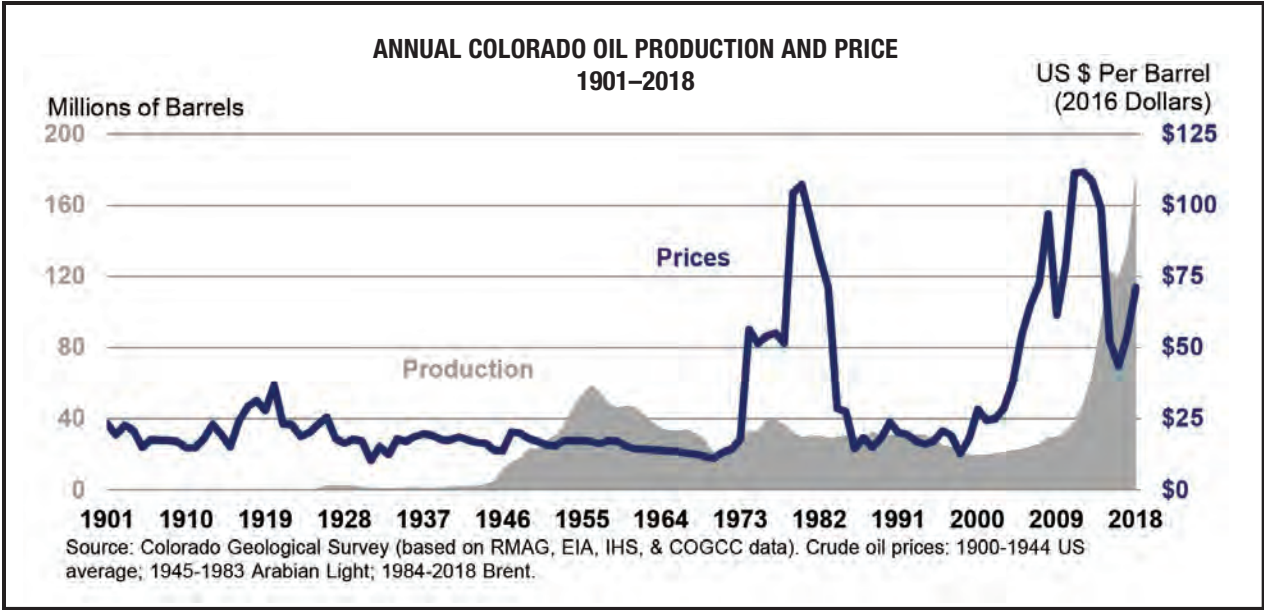
VALUE OF COLORADO NATURAL RESOURCES AND MINING, 2010–2020 (In Millions of Dollars)

Year	Oil and Gas Extraction					Mining				Total
	Crude Oil	Natural Gas	Carbon Dioxide	Subtotal	Percent Change	Coal	Minerals	Subtotal	Percent Change	
2010	2,322.8	6,998.0	371.0	9,691.8	30.7%	1,203	1,930	3,133	10.0%	12,825
2011	3,438.0	6,828.0	475.0	10,741.0	10.8	1,061	1,940	3,001	-4.2	13,742
2012	4,278.0	4,745.0	560.0	9,583.0	-10.8	1,129	1,930	3,059	1.9	12,642
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	10,690.5	5,946.3	437.4	17,074.2	43.3	512	1,380	1,892	-14.7	18,966
2019 ^a	9,609.6	4,985.4	450.0	15,045.0	-11.9	455	1,350	1,805	-4.6	16,850
2020 ^b	10,500.0	4,788.0	450.0	15,738.0	4.6	455	1,500	1,955	8.3	17,693

COLORADO PHYSICAL OUTPUT OF FOSSIL FUELS, 2010–2020

Year	Coal	Crude Oil	Natural Gas	Carbon Dioxide	Index (Base Year: 2010 = 100)			
	Millions of Short Tons	Millions of Barrels	Billions of Cubic Feet	Billions of Cubic Feet	Coal	Crude Oil	Natural Gas	Carbon Dioxide
2010	25.2	32.6	1,617	268	100.0	100.0	100.0	100.0
2011	27.0	38.8	1,648	469	107.1	119.0	101.9	175.0
2012	28.8	48.7	1,658	439	114.3	149.4	102.5	163.8
2013	24.2	65.1	1,567	268	96.0	199.7	96.9	100.0
2014	22.8	94.7	1,581	355	90.5	290.5	97.8	132.5
2015	18.7	122.8	1,691	409	74.2	376.7	104.6	152.6
2016	12.8	119.9	1,708	444	50.8	367.8	105.6	165.7
2017	15.2	134.8	1,721	464	60.3	413.5	106.4	173.1
2018	14.3	177.6	1,868	517	56.7	544.8	115.5	192.9
2019 ^a	13.0	186.0	1,938	451	51.6	570.6	119.9	168.3
2020 ^b	13.0	175.0	1,900	475	51.6	536.8	117.5	177.2

^aEstimated. ^bForecast. Sources: CO Geological Survey Mineral and Minerals Fuel Activity Reports, COGCC, Dept. of Minerals and Geology, and the Colorado Business Economic Outlook Committee.



been able to optimize production with favorable economics to as low as \$50 per barrel in the prime Wattenberg target areas, economic and regulatory uncertainties could very well slow development in 2020.

In March 2019, Colorado lawmakers voted to approve Senate Bill 19-181—legislation that significantly overhauls oil and gas regulation in the state. Changes include rewording the COGCC’s 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. While no moratoriums on drilling have been enacted, there remains controversy and uncertainty over the real economic impact of the legislation. The local government control aspect of the new bill is especially contentious—Weld, Boulder, and Adams counties have already drafted their own regulations under the new provision. The next couple of years will involve an extensive amount of rulemaking with the possibility of legal challenges persistently looming.

Employment in the Colorado oil and gas industry has grown by more than 20% since 2016—driven by higher oil production in the state. In 2019, near-term employment growth will perhaps reach a peak. Economic and regulatory uncertainties, along with exploration and production optimizations, may translate to stagnant or decelerating job growth in 2020.

Oil

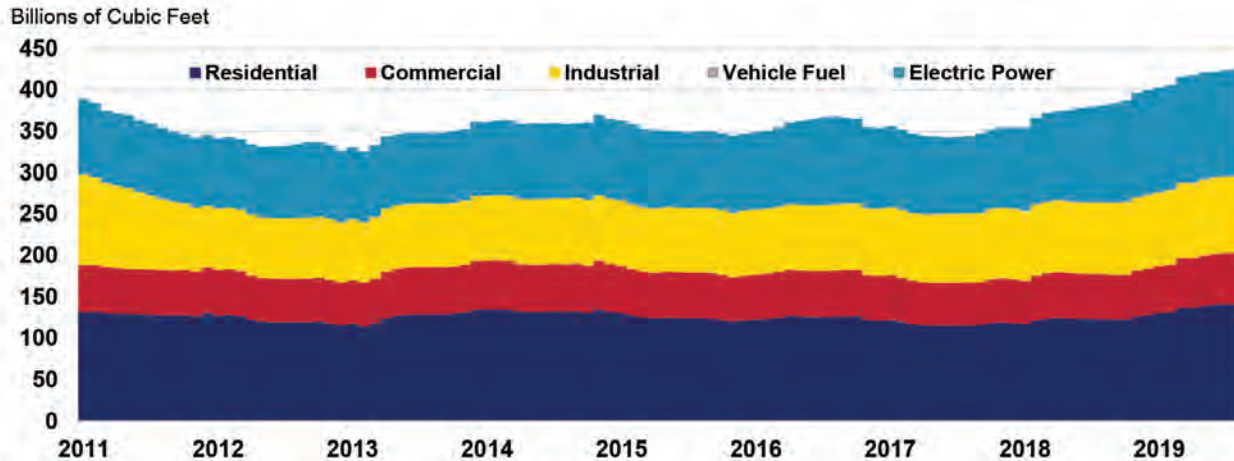
Colorado crude production hit an all-time high in 2017, again in 2018, and now looks to reach another record in 2019. For 2018, production was a remarkable 177.6 million barrels—a 32% increase over 2017. In 2019, the output is estimated to be 5% higher again, reaching 186 million barrels. According to the EIA, Colorado accounts for almost 5% of the total crude produced in the United

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Natural Resources and Mining

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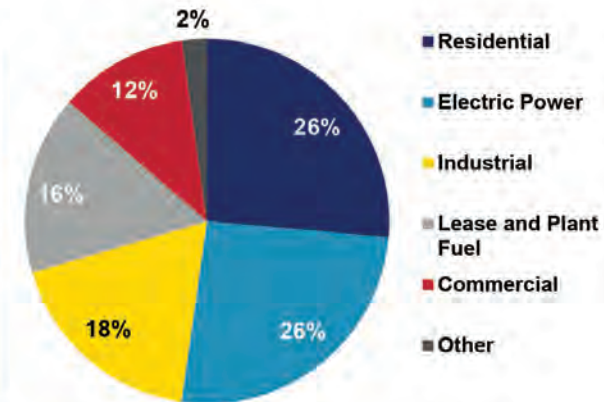
**COLORADO NATURAL GAS DELIVERED TO CONSUMERS BY END USE,
12-MONTH ROLLING SUM, 2011-2019**



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, 2018**



Source: U.S. Energy Information Administration.

Note: Other includes vehicle fuel and pipeline and distribution use.

States and ranks 5th among states for production in 2019. Development of the prime Niobrara shale assets in the Greater Wattenberg Area continue—the rapid decline rates of lateral wells (estimated to be from 30% to greater than 50% in the first year) are currently being offset by new wells being drilled. In the longer term, estimates of the Niobrara shale resource are as high as 2 billion barrels of oil, only a fraction of which has been exploited thus far.

For 2019, the U.S. petroleum benchmark, known as West Texas Intermediate (WTI), has fluctuated between \$46 and \$66 per barrel, with a mean daily spot average of \$57 per barrel as of late-October. This is a 12% decrease from the 2018 WTI mean daily price of \$65 per barrel and well below the 2014 mean daily price of \$93. Future energy prices depend on a myriad of factors

across multiple scales, including economic and geopolitical situations, technological developments, and new resource discoveries.

The International Energy Agency's (IEA) *October Oil Market Report* indicates a revised year-on-year global oil demand growth of 1.0 million barrels per day (mb/d) in 2019 and 1.2 mb/d in 2020, with lower oil prices and GDP outlook being important factors. The global oil supply has been hovering just below 101 mb/d in 2019. Notably, the supply plunged 1.5 mb/d to 99.3 mb/d after the attack on Saudi oil facilities in September. Regarding consumption in the United States, EIA calculated 20.50 mb/d in 2018, and estimates 20.54 in 2019 and 20.76 in 2020. EIA notes a slowing rate of growth in tight oil production due to lower prices and slowing growth in per-well production. EIA currently estimates that the average

WTI will average \$56 per barrel for calendar year 2019 and \$54 per barrel for 2020. U.S. production of liquid fuels (including NGL and ethanol) will be 18.32 mb/d in 2019 and 19.76 mb/d in 2020 according to EIA forecasts.

Retail Gasoline

The Colorado average retail price of automotive gasoline of all grades in 2019 (through October) was \$2.61, a 6% decrease from the 2018 average price. Nationally, EIA expects the average for regular grade to be \$2.56 per gallon in 2019 and \$2.57 in 2020. Regional prices for diesel (averaging \$3.01 for 2019) have been at a roughly 18% premium compared to the price of regular grade unleaded gasoline. Expectations are for Colorado gasoline to remain at a similar or slightly lower average price

in 2020 (between \$2.50 and \$2.70 per gallon average for all grades).

Natural Gas

In 2018, Colorado was sixth in the nation for marketed natural gas production in the United States. EIA estimates that conventional and unconventional output from Colorado basins accounts for 6% 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.

Recent growth in the use of natural gas for electric power in Colorado brings it in line with the residential sector as the two largest natural gas-consuming sectors in the state, each accounting for 26% of the total 487,130 million cubic feet consumed in 2018. Other significant end-uses include industrial consumption (18%), lease and plant fuel (16%), and commercial consumers (12%). For 2019 (through August), the average monthly residential gas price in Colorado was \$9.73 per thousand cubic feet—the eighth lowest in the country.

For 2020, the expectation is that Colorado natural gas spot prices will range between \$2.25 and \$3.50 per thousand cubic feet. EIA is currently forecasting the Henry Hub spot price average to be \$2.61 per thousand cubic feet in 2020—essentially no change from \$2.67 average price estimated for 2019, but roughly 20% lower than the \$3.27 average price in 2018. EIA notes that U.S. natural gas prices have fallen in 2019 in large part due to supply growth that has enabled natural gas inventories to build more rapidly than average during the spring and summer injection season.

EIA forecasts suggest that the average U.S. household using natural gas for heating will see a total winter 2019–20 (October through March) price decrease of 1% (approximately \$10) over 2018–19, due to a 4% decrease in consumption and 3% increase in price. Just under half of all households in the United States depend on natural

gas as a primary heating fuel; for Colorado, this number climbs to more than 69%. The National Oceanic and Atmospheric Administration (NOAA) estimates that the total heating degree days for the entire nation in winter 2019–20 will be 4% less than 2018–19 winter.

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) is estimated to be over 1.9 trillion cubic feet (TCF) in 2019. For 2020, production is expected to remain flat.

Carbon Dioxide

Colorado’s carbon dioxide production is marketed almost exclusively for enhanced oil recovery (EOR) operations. In 2018, an estimated 517 billion cubic feet of CO₂ will be produced in three counties (Montezuma, Dolores, and Huerfano), with the total production value grossly estimated at \$437 million, a 15% decrease over 2017.

Drilling Permits and Rig Activity

The COGCC has received 3,288 Applications for Permit to Drill (APDs) in 2019 (as of October 1)—a 55% decrease in the number of APDs received for the same period in 2018. For 2019, the commission has approved 1,830 permits as of October 1 versus 3,986 for the same period in 2018. In 2018, nearly 70% of the approved well permits were located in Weld County. COGCC recorded an 11% decrease in well starts for 2019 through May (620) versus that same time in 2018 (694). As of September 2019, COGCC had a backlog of nearly 6,000 APDs and over 500 location permits to process.

The 2019 average monthly rig count for Colorado is 31 as of the end of October, a one-rig decline from the 2018 average of 32. September and October saw the average monthly rig count drop to 26 and 24, respectively—numbers last seen in late 2017 when activity was on the uptick.

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 2019, that number has reached greater than 85% of all issued permits; of these, an estimated 87% are located in Weld County. Horizontal well starts totaled 499 through the beginning of May—94% of the state’s total spud up to that point in 2019.

Coal

Coal mining in Colorado dates to 1864. Colorado’s clean, high-quality coal reserves help utilities meet the stringent requirements of the Clean Air Act. Production peaked at 40 million tons in 2004. Data provided to the Colorado Mining Association (CMA) indicate that in 2014, when 23 million tons were produced, the industry accounted for \$900 million in sales. With reduced production of 14.3 million tons and lower prices, sales fell to an estimated \$512 million in 2018 and are expected to drop to \$455 million in 2019 and in 2020, with production falling to 13 million tons. According to the National Mining Association’s survey Economic Contributions of Mining (2018), the industry made a direct contribution of \$3.8 billion to Colorado’s economy and directly employed 2,541 workers (including transportation), with 8,859 indirect and induced jobs. Federal royalties on Colorado coal production in FY2018 totaled \$29.4 million, about half of which is returned to Colorado to support public education and other activities. Coal mines also paid property taxes, state royalties, and severance and sales taxes of \$15.7 million in 2018.

According to EIA, coal is the fastest-growing major source of electricity worldwide. Sales of Colorado coal outside the United States were close to 25% of total production in 2012 and 2013, but fell to 8% of total production in 2016. Sales outside the United States recovered to 20% in 2017 and are estimated to have reached 30% in 2018. Domestic sales both within Colorado and to other states have also dropped over the past decade. The state’s total production rose from 27 million tons in 2011 to

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Natural Resources and Mining

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COLORADO NATURAL RESOURCES AND MINING EMPLOYMENT 2010–2020 (In Thousands)

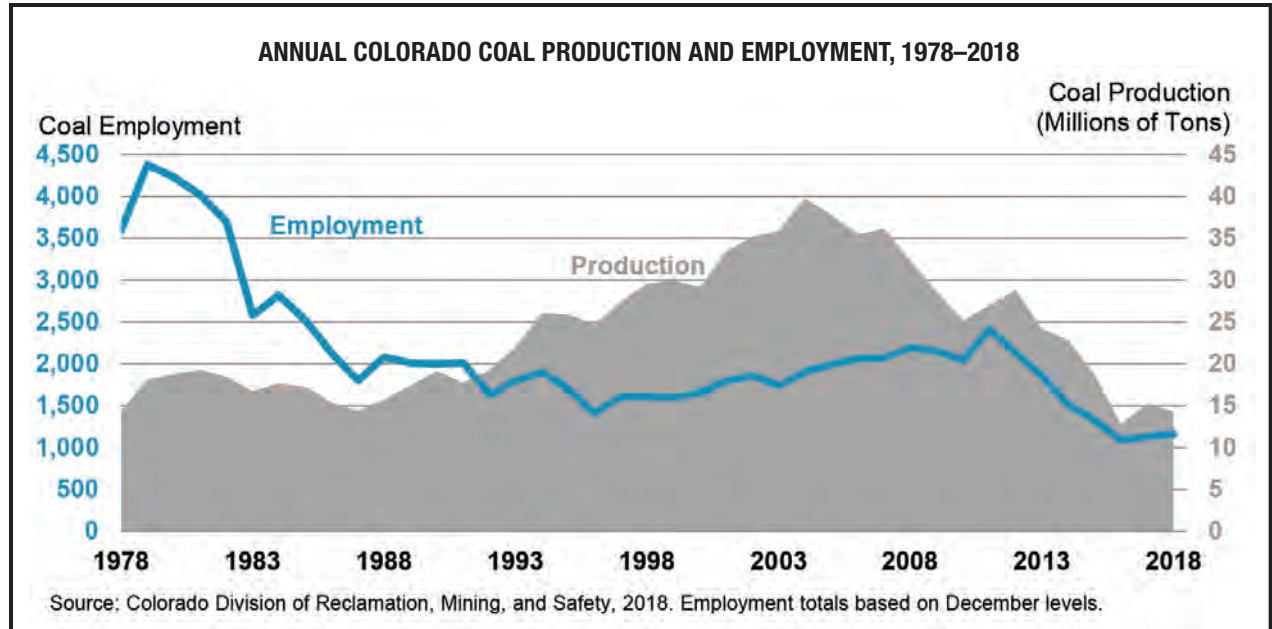
Year	Employment	Percentage Change
2010	24.4	0.8%
2011	27.9	14.3
2012	30.3	8.6
2013	30.6	1.0
2014	34.1	11.4
2015	30.7	-10.0
2016	23.7	-22.8
2017	25.9	9.3
2018 ^a	28.3	9.3
2019 ^b	28.6	1.1
2020 ^c	28.7	0.3

^aRevised, ^bEstimated, ^cForecast.

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

28.8 million tons in 2012 before declining to 12.8 million tons in 2016. These are the lowest production levels since the mid-1970s. Production recovered to 15.2 million tons in 2017 before sliding to 14.3 million tons in 2018. Colorado coal production is expected to fall to 13 million tons in 2019 and in 2020.

Coal must now compete in an environment where government mandates for renewable energy could limit sales in Colorado. The slated, and government-mandated, closure or conversion to natural gas of nearly 1,000 megawatts (MW) of electricity generated by coal-fired plants along the Front Range will also cause annual production losses of up to 4 million tons. New Environmental Protection Agency regulations will also significantly curtail



future production. Low natural gas prices in 2018 added to the impact of these mandates, and other political action is leading to the closure of coal-fired power plants across the United States.

Mines

Colorado coal mines produce bituminous and sub-bituminous coal for electricity generation at power plants, and to a lesser extent, cement and coking operations. In 2018, coal was produced in five Colorado counties: Routt, Moffat, Rio Blanco, Gunnison, and La Plata. Gunnison County was the leading coal-producing county between 2001 and 2018, producing 182 million tons, followed by Routt County with 149 million tons, Moffat County with 121 million tons, and Delta County with 64

million tons. (The last mine operating in Delta County closed in 2016.) Arch Minerals' West Elk Mine produced 4.6 million tons in 2018, making it the highest-producing mine in Colorado.

Value

Coal production decreased in 2018 while price remained stable. In 2012, the total value of coal sold in Colorado was estimated at \$1.1 billion, with an average coal price of \$37.54 per ton. EIA data indicate prices increased to \$38.64 per ton in 2014 before falling to \$36.12 per ton in 2015. The estimated average price of coal in 2018 was \$35.77 per ton. The value of coal sold by Colorado mines fell from \$1.1 billion in 2012 to \$512 million in 2018.

Employment

The Colorado Division of Reclamation, Mining and Safety tracks coal production and the employment of coal miners on a monthly basis. In 2011, employment at Colorado's coal mines was at a 25-year high of 2,411 miners in December. This was due, in part, to the employment of coal miners at the New Elk Coal Mine in Las Animas County. In December 2013, employment slid to 1,857 miners, due primarily to layoffs at the Elk Creek Mine. According to the Colorado Division of Reclamation, Mining and Safety, the number of persons employed at Colorado coal mines was 1,119 at the end of 2017 and 1,160 at the end of 2018. At the end of July 2019, employment was reported as 1,131.

Export Coal

Based on EIA data, in 2010, approximately 54% of the coal produced in Colorado was shipped by rail or truck to power plants in 14 other states, with destinations as far as Florida. In 2018, 39% of the coal produced in Colorado was shipped to eight other states. In 2018, the only state outside of Colorado that took more than 500,000 tons of Colorado coal was Utah, which took 1.9 million tons of coal, all of which went to the Bonanza Power Plant that is captive to the Deserado Mine. Sales to Alabama, Kentucky, and Tennessee, which took almost 6 million tons in 2010, have fallen to 0 tons as the Tennessee Valley Authority eliminated its take of Colorado coal.

EIA reports that 6.5 million tons of Colorado coal were exported abroad in 2012. These international exports fell to 3.8 million tons in 2014, less than 2 million tons in 2015, and less than 1 million tons in 2016. International exports increased to 2.9 million tons in 2017 and is believed to have reached 4.3 million tons in 2018.

Consumption and Generation

According to EIA data (Form EIA-923, EIA-860), 50% of the 18.1 million tons of coal delivered to electric utilities in Colorado in 2010 came from Colorado mines, with

COLORADO ELECTRIC POWER INDUSTRY GENERATION BY PRIMARY ENERGY SOURCE, 2009-2018
(In Millions of Megawatt Hours)

Year	Coal	Natural Gas	Hydroelectric ^a	Wind	Solar	Biomass	Petroleum	Other ^b	Total
2009	31.6	13.8	1.9	3.2	0.026	0.057	0.013	0.053	50.6
2010	34.6	11.1	1.6	3.5	0.042	0.060	0.017	0.070	50.7
2011	34.0	10.2	2.1	5.2	0.105	0.062	0.022	0.063	51.4
2012	34.5	10.5	1.5	6.0	0.165	0.058	0.011	0.055	52.6
2013	33.7	10.7	1.2	7.2	0.248	0.084	0.010	0.046	52.9
2014	32.5	12.0	1.8	7.4	0.253	0.126	0.010	0.047	53.8
2015	31.6	11.8	1.5	7.4	0.251	0.081	0.007	0.052	52.4
2016	30.0	12.7	1.6	9.4	0.538	0.162	0.007	0.053	54.4
2017	29.2	12.5	1.6	9.3	0.954	0.166	0.007	0.057	53.8
2018	26.4	16.4	1.6	9.8	1.062	0.164	0.012	0.059	55.4

^aIncludes pumped storage.

^bIncludes 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, lime-derived fuels, and miscellaneous technologies.

Source: U.S. Energy Information Administration.

the remainder from Wyoming. In 2018, 14.5 million tons were delivered while the percentage that came from Colorado mines fell to 31%. According to the EIA Electricity Data Browser, coal-fired power plants in Colorado consumed 14.5 million tons of coal in 2018, supplying the state with 48% of its electricity, down from 68% in 2010. Annual electricity generated at Colorado's 12 coal-fired power plants fell from 34.6 million megawatt hours (MWhs) in 2010 to 26.4 MWhs in 2018. Electricity generated from natural gas increased from 11.1 MWhs to 16.4 MWhs between 2010 and 2018. Wind-generated electricity increased from 3.5 MWhs to 9.8 MWhs. The reduction in coal-fired generation from 29.2 MWhs in 2017 to 26.4 MWhs in 2018 was offset by natural gas, which increased from 12.5 MWhs to 16.4 MWhs. Wind increased from 9.3 MWhs to 9.8 MWhs while solar increased from 0.95 MWhs to 1.06 MWhs.

Minerals and Uranium

Nonfuel mineral resources include metals, industrial minerals, and construction materials (e.g., aggregate, cement, etc.). The United States Geological Survey (USGS) estimates that the total U.S. 2018 nonfuel mineral production value was \$82.2 billion. In 2018, Colorado produced primarily gold, cement, sand and gravel, molybdenum, and crushed stone with an estimated production value of \$1.4 billion, or approximately 1.7% 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 2018 production value of gold and molybdenum was about \$875 million. This is approximately a 5.3% increase compared to the 2017

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production value of \$831 million. This increase in value was due to the increase in molybdenum prices and production at Freeport-McMoRan Inc.'s (Freeport) Henderson and Climax mines. Freeport is the world's largest producer of molybdenum and in 2018, their Colorado operations account for about 37% of their North America molybdenum production.

The combined molybdenum production at the Henderson Mine and Climax Mine increased from 32 million pounds in 2017 to 35 million pounds in 2018. Estimated average prices for molybdenum increased from \$8.21 in 2017 to \$11.93 per pound in 2018. Freeport announced in 2019 that it expects operations at the Henderson Mine to continue for the next two decades based on current production and development plans. Colorado was one of the largest producers of molybdenum in the United States in 2018. In 2018, Freeport estimated proven reserves of 58 million metric tons, with 0.18% molybdenum at the Henderson Mine, and 158 million metric tons, with 0.15% molybdenum, at the Climax Mine.

Production of gold at Newmont's Cripple Creek and Victor (CC&V) mine located in Teller County decreased from 451,000 ounces in 2017 to 360,000 ounces in 2018 likely due to lower-grade ore mined at CC&V and other factors according to Forbes. The estimated average gold prices increased from \$1,261 in 2017 to \$1,270 per ounce in 2018. Colorado was the third-largest producer of gold in the United States in 2018, following Nevada and Alaska. In 2019, Newmont acquired Goldcorp Inc. and entered into a joint venture with Barrick Gold in Nevada, making it the largest gold-mining company in the world, now known as Newmont Goldcorp. Their corporate headquarters remains in Greenwood Village, Colorado.

In 2018, Colorado produced and consumed approximately 51.8 million tons of aggregate (sand, gravel, and crushed stone). The production of construction aggregate was down slightly from 2017 levels. However, the general aggregate production trend between 2012 and 2018 has been increasing, especially regarding crushed stone. Forecasts for 2020, as they have for several years,

suggest similar slight increases in production in Colorado, primarily in the central and northern regions due to a continued strong construction market in the Denver, Colorado Springs, and Northern Colorado areas. Shortages of some products in some urban and industrialized areas are expected to continue to increase owing to local zoning regulations and land-development alternatives. 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.

There was no uranium mining in Colorado in 2018. According to the EIA, the U.S. 2018 uranium production was the lowest in nearly 70 years. Most of the uranium used by domestic nuclear power plants over the last several decades has been imported from foreign countries. In 2018, uranium concentrate was produced at seven locations, mostly in Wyoming, Nebraska, and Utah.

Renewables

Colorado's abundance of renewable energy resources includes wind, solar, hydroelectric, geothermal, and biomass resources. These additional electricity resources accounted for nearly 23% of Colorado's net generation in 2018, a one percentage-point increase from 2016 and more than a five percentage-point increase from the 17.7% generated from these sources in 2015. For 2019, renewables appear to be on track to account for 25% of all electricity generated in Colorado. Utility-scale solar generation increased 11% in 2018 and wind increased 5% over 2017. Colorado's windy plains, high mountains and rivers, active subsurface heat flow, and abundant sunshine give it a high potential for renewable energy growth in the United States. In terms of overall renewable energy technical potential, the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) ranked Colorado sixth nationally in 2012; a 2016 NREL report regarding economic potential lists Colorado in the top 10 for some model cases and closer to the middle for other cases.

VALUE OF COLORADO NONFUEL MINERALS AND URANIUM PRODUCTION 2010–2020 (In Millions of Dollars)

Year	Nonfuel Minerals	Uranium	Total
2010	1,930	0.0	1,930
2011	1,940	0.0	1,940
2012	1,930	0.0	1,930
2013	2,110	0.0	2,110
2014	2,320	0.0	2,320
2015	1,340	0.0	1,340
2016	1,510	0.0	1,510
2017	1,680	0.0	1,680
2018	1,380	0.0	1,650
2019 ^a	1,350	0.0	1,350
2020 ^b	1,500	0.0	1,500

^aEstimated. ^bForecast.

Source: U.S. Geological Survey, Mineral Survey Reports.

Colorado was the first state to pass a voter-approved renewable portfolio standard (RPS) in 2004. The legislature has three times increased requirements to the present standard that mandates investor-owned electric utilities provide 30% of their generation from renewable energy resources by 2020, with 3% coming from distributed generation. This is one of the most ambitious renewable portfolio goals in the nation, and the Colorado Public Utilities Commission states that the existing wind and solar installations have already achieved this electricity goal, mostly by purchases through 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 alleged.

As of August 2019, residential electricity rates in Colorado were 12.70 cents per kWh—2% higher than the same time in the previous year. This is below the national average of 13.30 cents per kWh and is the second highest in the eight-state Mountain West Region, which averages 12.18 cents per kWh. Colorado commercial rates are 10.68 cents per kWh, below the national average of 11.00 cents per kWh. Colorado's industrial rate averaged 7.53 cents for August 2018, which is slightly higher than the national average of 7.44 cents. Averaging across all consumer sectors, Colorado's year-over-year electricity rate is 2% higher than in 2018.

Governor Jared Polis campaigned on a platform to achieve 100% renewable energy by 2040 with a key motivation being to address climate change and pollution. Specifically, Polis laid out a roadmap that includes growing jobs in the renewable energy sector, modernizing the Colorado Public Utilities Commission (PUC), increasing the push to zero emission vehicles and buildings, and supporting local governments and citizens in reaching 100% renewable energy and improved-energy efficiency. In striving toward these goals, Colorado lawmakers passed seven climate and energy bills and four electric vehicle (EV) bills in the 2019 legislative session. The newly signed legislation aims to reduce carbon emissions to 90% below 2005 levels by 2050, including a formal goal that Xcel Energy reach 100% carbon-free electricity production. Additionally, these bills expand Colorado's energy efficiency and EV programs.

Wind Energy

As of 2019, Colorado ranks eighth nationally for total MWs of installed wind capacity, ninth in the nation for share of electricity generation, and fourth for wind industry employment. The U.S. Department of Energy estimates that installed wind power in Colorado grew by more than 180% from 2010–2018, with a notable 26% increase in 2016 alone. Cumulative wind power generating capacity has increased by nearly two gigawatts during this period, to reach 3,759 MW. An additional 859 MW

is currently under construction and another 254 MW is in advanced development. Colorado wind farms include 2,248 wind turbines in 26 projects and cumulatively produced more than 9.8 million MWhs of electricity in 2018—17.7% of the state's total net generation. Through September 2019, Colorado produced 19.3% of its electricity from wind, and it is likely to reach a 10 million MWhs milestone by year-end.

Most of Colorado's wind stations operate in rural areas with limited economic development opportunities, providing local jobs to hard-pressed areas. While hard numbers regarding the economic impact of renewable energy sources are difficult to come by, the wind industry adds to local economies through new 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 Wind Energy Association found 7,000 to 8,000 jobs were supported, directly or indirectly, in 2018, and the total capital investment through 2018 was \$7 billion. Annual land lease payments are between \$10 and \$15 million.

On September 18, 2018, Xcel Energy completed its 600 MW Rush Creek Wind Project. The project, consisting of 300 turbines located in Arapahoe, Cheyenne, Elbert, Lincoln, and Kit Carson counties, is the largest wind farm in the state and will service over 300,000 homes. The wind turbines were supplied by Vestas Wind Systems, which has four manufacturing plants in Colorado. The Rush Creek Farm is part of Xcel's goal to produce more than 50% of its power from renewable energy sources by 2026.

Solar Energy

Colorado is a leader in solar energy. In terms of cumulative installed solar electric capacity, Colorado ranks 12th nationally, with over 1,268 MW of installed capacity as of June 2019 (177 MW, or nearly 14% of the total, was installed in 2018). Over the next five years, the Solar Energy Industries Association (SEIA) estimates the annual installed capacity will increase by another 2,406 MW, the 9th-fastest growth rate in the nation. A total

of 476 solar companies currently operate in Colorado, employing nearly 7,000 people. According to SEIA, the total investment in Colorado solar is more than \$3.35 billion, and install prices have dropped 32% over the last five years.

According to the Lawrence Berkeley National Laboratory (LBNL) report, *Tracking the Sun*, Colorado currently has 50,920 individual photovoltaic (PV) installations that generated nearly 67 MW of power in 2018. The state ranks 7th in the nation in total number of residential PV installations.

Like many states, the rooftop solar community in Colorado has been thriving with installation costs dropping more than 60% since 2010. In 2018, Colorado was found to have an estimated \$4 per watt install price for residential PV systems by LBNL, ranking it 19th among all states. According to a 2016 NREL study, the total estimated installed capacity potential for rooftop PV in Colorado is 16.2 GW, whereas the annual generation potential is 23.5 terawatt-hours per year.

Hydroelectric Power

For the past decade, Colorado's hydroelectric plants have been providing between 1.8% and 3.6% of the state's total electricity. For 2018, a total of 3% of the state's total electrical output came from more than 60 hydroelectric generating stations with around 1.6 million MWhs of electricity generated. 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. This renewable resource provides a constant but seasonably variable source of electricity. The industry employs several hundred individuals for operations and maintenance.

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Geothermal Energy

High-grade geothermal targets, potentially capable of electrical generation, have been identified near Mount Princeton and Poncha Hot Springs in Chaffee County and deep (approximately 8,000 feet) in the Raton Basin in Las Animas County west of Trinidad. In addition, a hot reservoir is thought to be associated with Waunita Hot Springs in eastern Gunnison County. Several attempts to obtain federal funds to drill and test the high-potential geothermal targets in Colorado have been unsuccessful despite the similarity of these targets to producing resources in Nevada.

Private investment in Colorado prospects is hampered by the state's status as a geothermal "greenfield." 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 now offers state income tax credits that may help reduce risks associated with investment in geothermal energy. Enterprise Zone Tax Credits are available in economically distressed areas of the state, including some areas with high-grade geothermal potential. This in combination with other federal and state incentives has generated renewed interest in at least one Colorado geothermal target.

Direct-use geothermal resources in the state continue to contribute to local economies on a small scale, 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 geexchange) heat pumps continues to slowly grow in Colorado. While these heat pumps are not strictly an

alternative energy source, they consume electricity so efficiently (using one-half to one-quarter of the electricity consumed by conventional heating and cooling systems) that if they were used in all domestic and commercial buildings, the goal of 100% renewable energy use could be obtained by the energy saved more quickly than with the status quo continued of using conventional heating and cooling systems. ♦

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Construction

Growth in the Colorado construction industry slowed to a small degree in 2019, although statistical tracking of project starts and new permits is misleading, showing an alarming and grimmer picture in which the 2019 activity tumbled by 29%. The real picture is that construction put-in-place was stable. Sector activity will total \$17 billion in 2019 but increase 12%, to \$19.1 billion, in 2020. Challenges facing the industry include a continued shortage of skilled and unskilled labor, unease regarding trade policy, the “silver tsunami” of baby boomers retiring, regulatory and political uncertainty heading into an election year, and a reduction in the number of large projects on the horizon to begin once current projects end. Although companies involved in construction are currently very busy, many are now reporting fewer projects being added to backlog than in recent years.

Construction employment in 2019 was supported by the continuation of large multiyear projects. Labor shortages could ease as large projects are completed. The committee expects total construction employment to increase 3% from 2018 to approximately 177,500 workers in 2019, and increase 1.7%, to 180,500 workers in 2020. By comparison, jobs increased an average of nearly 5% annually from 2015 through 2018. In addition to the impact of large multiyear projects, another key factor throughout this forecast is that the demand for new activity, particularly in housing, is driven in large part by net in-migration. The State Demographer expects net migration of 52,000 in 2019 and 49,000 for 2020. These numbers will support continuing strong housing activity.

Residential Single-Family Housing

The number of single-family permits issued in Colorado in 2019 will be 25,500 for 2019, representing a decline of 2.4% from 2018. A return to modest growth in 2020 will result in another 26,800 single-family permits, a 5% increase.

In September 2019, Colorado single-family permits showed a year-to-date 7.3% decline, much larger than the 2.9% decline reported for the United States. The reduction in permits was deepest through the first half of 2019, with a sharp 15.7% drop. Permit growth returned in third quarter 2019, with a 10.2% increase over third quarter 2018.

Builders along the Front Range corridor from Colorado Springs to Wyoming typically account for about two-thirds of Colorado’s new housing activity, and the market has been strong in these areas in recent years. Colorado continues to experience good in-migration, despite a slowdown from recent highs, and builders are reporting more second-home buyers as the national economy continues to recover. Nevertheless, closing activity has declined in the past year, dropping by 1% through the third quarter of 2019.

Homebuilding has shown a dramatic recovery from the recessionary trough of 2009, when only 7,261 single-family permits were issued. While the current pace is robust compared to recent years, single-family permits were historically as high as 40,000 per year (in 2004 and 2005). Single-family permits have been rising steadily and will finish 2019 nearly 250% higher than the number a decade earlier in 2009, although this level will still be only two-thirds of the 2005 peak.

Due to a strong economy and increasing home values, Colorado’s foreclosure rate remains very low, and the resale housing market has been undersupplied in many Colorado market areas since 2013. In Metro Denver-Boulder, the 9,060 resale home listings as of mid-year 2019 represented a 1.9-month supply. This was nearly unchanged from the same time a year earlier, continuing a moderately undersupplied market.

Colorado’s housing market continues to be influenced by unusually low mortgage interest rates. The 30-year rate increased by about 50 basis points during the second half of 2018, to nearly 5%, shocking homebuyers. The number of contracts written for new homes declined sharply each quarter through mid-year 2019. The drop in mortgage

INDUSTRY SNAPSHOT CONSTRUCTION	
Nominal GDP, 2018 (\$ Billions)	21.3
Real GDP, 2018 (\$ Billions, 2012 Dollars)	16.3
2018 Real GDP Growth Rate	5.5%
Total Employment, 2018 (Thousands)	172.3
2018 Employment Growth Rate	5.3%
Employment Growth National Rank	10
Share of Colorado Employment	6.3%
Share of National Employment	4.9%
Average Wage, 2018	62,414
Percent of Statewide Average Wage	105.2%
2018 Average Wage Growth Rate	5.0%
Sources: Bureau of Economic Analysis, Bureau of Labor Statistics.	

rates in the first half of 2019 helped the market recover, but even with rates as low as 4% in the third quarter, sale contracts were down in year-over-year comparisons.

Consumer confidence remains relatively high despite slipping in 2019, and the mountain region index has been notably higher than the national index for most of 2019. Home prices continue to rise; the S&P CoreLogic Case-Shiller Denver Home Price Index for Metro Denver rose by 2.9% year-over-year in August.

Rental occupancy rates remained in relative balance for single-family homes despite large supply increases in apartments. The strong in-migration is causing rent increases in some submarkets, making home ownership a more attractive housing option for those who can qualify for a loan.

The average single-family permit value increased by 3.5% year-to-date through September 2019. The recent increase is consistent with the tight construction labor

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RESIDENTIAL BUILDING PERMITS BY TYPE 2010–2020

Year	Single Family	Multifamily	Total Housing Units
2010	8,790	2,801	11,591
2011	8,723	4,779	13,502
2012	12,617	10,684	23,301
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 ^a	26,134	16,493	42,627
2019 ^b	25,500	13,100	38,600
2020 ^c	26,800	13,500	40,300

^aRevised. ^bEstimated. ^cForecast.

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

market and increasing materials costs reported by builders, as well as higher home sale prices. The forecast for calendar year 2019 is for nearly unchanged permit value, at \$300,000 per unit, followed by a 3% decline in 2020, to \$295,500, as homebuilders increasingly move to a greater percentage of smaller homes, including more townhomes, in their efforts to achieve more affordable new home prices.

Financing for new projects has been comfortably available. Unlike other years in which financing has been tight, developers can fund new housing projects far more readily.

Multifamily Housing

Multifamily construction decreased during the past year because rental markets attained balance and migration into Colorado slowed slightly compared with previous years. In addition, one of the challenges facing the industry is increased time getting through the various governmental approval processes, which has extended the planning process before breaking ground by an estimated five months and temporarily delaying some projects. By year-end, expect 13,100 multifamily units to be permitted, a 20% drop from 2018. Since 2010, an average of 96% of multifamily permits were located between Colorado Springs and Fort Collins. Post-recession apartment construction has been strong, compensating for modest levels of single-family construction and fulfilling the demand for households that are unable to meet the financial and credit requirements to purchase a home. Builders are planning more entry-level homes into the single-family home sales markets, which should allow more renters to buy homes.

Multifamily construction is expected to increase slightly in 2020. The committee forecasts 13,500 multifamily units will be permitted in 2020, a 3% increase from 2019. Builders are expected to adapt to the planning times, and some projects that may have been delayed will push forward. Multifamily permitting has declined from an average of 16,750 units started annually from 2016–2018, when net migration was stronger and many markets had low vacancies. Construction of multifamily units remains elevated compared with historical averages. Multifamily construction averaged fewer than 10,000 units a year between 1980 and 2015.

New multifamily construction consists overwhelmingly of apartments rather than for-sale condominiums. Apartments make up about 95% of multifamily units built since 2010, spurred by strong demand for rental housing and potential concerns about defects litigation with its related insurance costs. Despite recent legislation intended to alleviate litigation, condominium construction is slow to return. Except for units subject to

CONSTRUCTION EMPLOYMENT, 2010–2020 (In Thousands)

Year	Employment	Percentage Change
2010	115.1	-12.3%
2011	112.5	-2.3
2012	115.8	2.9
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 ^a	172.3	5.3
2019 ^b	177.5	3.0
2020 ^c	180.5	1.7

^aRevised. ^bEstimated. ^cForecast.

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

government income restrictions, most new condominiums offer high-end, luxury units. In addition, builders report that financing for apartments is easier to obtain than for condominiums.

Demand is keeping pace with supply, and new units are rapidly absorbed, largely attributed to in-migration, which, though down from recent peaks, is still historically strong. Rental markets across the state are balanced, with vacancy rates at 5.2% in early 2019, down from 5.8% a year earlier. Vacancy rates in Colorado ranged from 5.6% in Colorado Springs to less than 2% in Grand Junction. The Denver-Boulder Metro area had a vacancy

rate of 5.4%. Market conditions throughout the state may temporarily soften as a large number of projects are completed and leased. Some submarkets within the Denver-Boulder Metro area already have double-digit vacancies as a result of a surge of new project completions and units in lease-up; the northwest Denver vacancy rate was over 13%.

As a result of the balanced market conditions, rent increases have moderated throughout the state. Following three years of increases averaging roughly 10% annually from 2014–2016, rent bumps slowed to an average of 4% annually in Colorado from 2017–2019. During the past year, rents increased 4%, to an average of \$1,409. All surveyed areas across the state experienced rent growth. The strongest increases were 11% in Grand Junction and Pueblo, where vacancies were low. Conversely, in Fort Collins, rent increased only 2%. Rents in the Denver-Boulder Metro areas increased 4% over the past year.

The construction value per unit is expected to increase, primarily because of rising labor and materials costs. The average value per multifamily unit will increase about 2%, to \$144,400, for 2019. Reflecting continued increases in construction costs, the value per unit is expected to rise nearly 3% in 2020, to approximately \$148,700.

Nonresidential Building

The nonresidential building sector tracks new, remodeled and rehabilitated offices, medical facilities, colleges, retail outlets, churches, schools, and government buildings. Nonresidential project starts in 2019 are forecast to end the year at \$4.7 billion, down from \$8 billion the prior year. Some of the decline comes from predicted 2019 construction starts that actually got underway in fourth quarter 2018, explaining, in part, the large swing in value from year to year. Nonresidential construction starts will rise in 2020, to \$6.4 billion. A note of caution became part of the discussion in 2019 as concern arose over the expected scope of activity beyond the time horizon of this forecast. For now, large projects and planned starts will allow the construction industry to coast along at its

VALUE OF CONSTRUCTION IN COLORADO BY TYPE 2010–2020 (In Millions of Dollars)					
Year	Residential	Nonresidential	Total Building	Nonbuilding	Total Construction
2010	\$2,903.0	\$2,967.3	\$5,870.3	\$2,214.4	\$8,084.7
2011	3,363.1	3,932.1	7,295.2	2,289.2	9,584.4
2012	5,368.2	3,675.2	9,043.5	3,329.2	12,372.7
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	10,178.8	5,999.6	16,178.3	2,705.6	18,883.9
2017	10,361.8	6,166.4	16,528.2	2,935.2	19,463.4
2018 ^a	11,726.3	8,014.2	19,740.5	4,390.8	24,131.3
2019 ^b	9,542.0	4,700.0	14,242.0	2,800.0	17,042.0
2020 ^c	9,927.0	6,400.0	16,327.0	2,800.0	19,127.0

^aRevised. ^bEstimated. ^cForecast.

Sources: McGraw-Hill Construction Research and Analytics and the Colorado Business Economic Outlook Committee.

current speed, but there is a notable dearth of big project announcements for starts after 2020. Subsectors of retail, industrial, manufacturing, speculative office, and medical buildings all appear to be entering a more quiescent period. Large contractors are beginning to be concerned about the diminished backlog of work they are seeing.

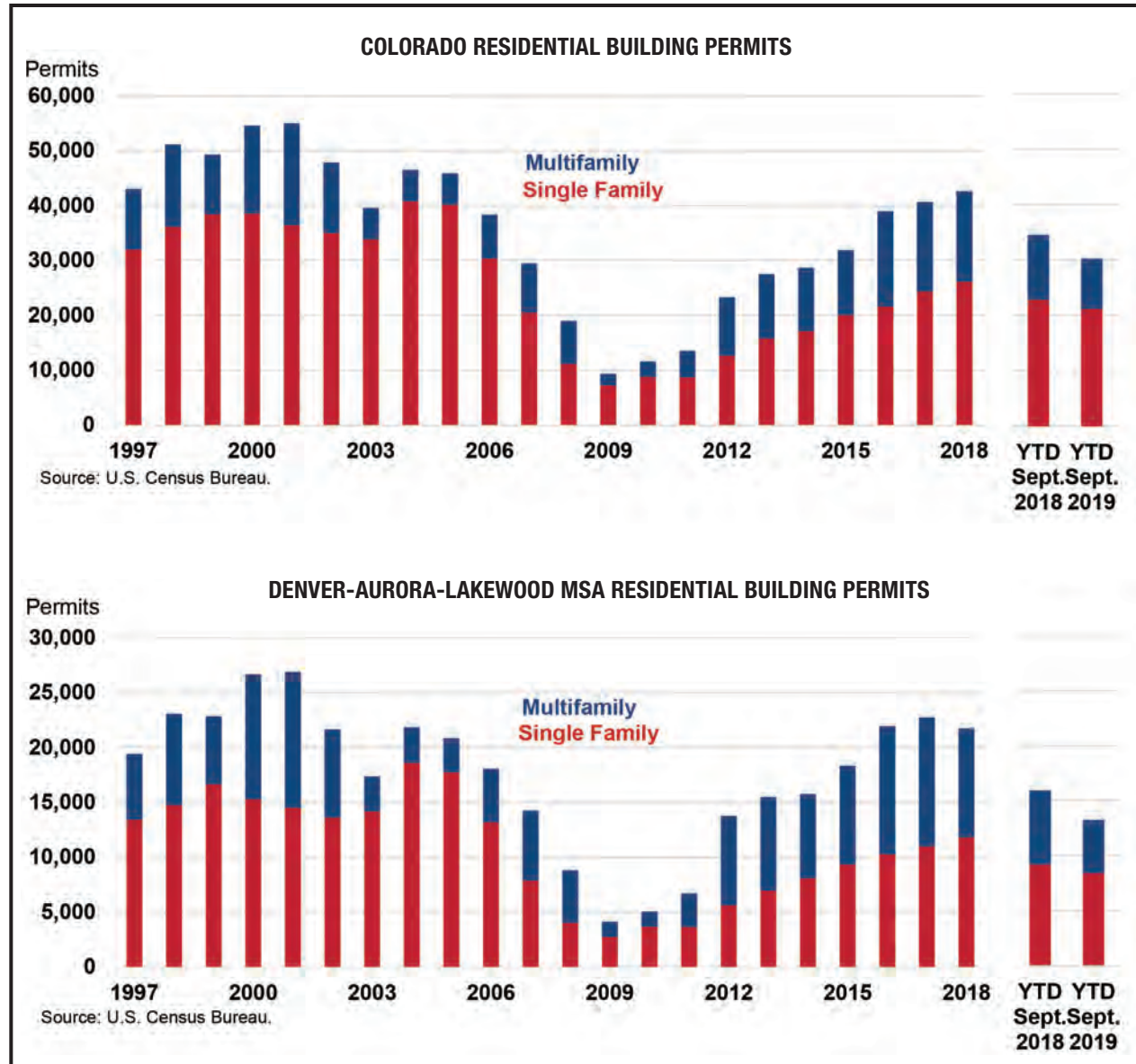
Fueling the continued construction boom in Colorado are net in-migration and an ongoing trend of corporate relocations to Colorado from more expensive areas on the East and West coasts. Many of the relocations are technology-related companies, driving demand for

more Class A office space. A third factor is a significant increase in institutional projects, led by the City and County of Denver, other municipalities, colleges, and public schools. Many of these projects have followed a string of successful bond measures. Local governments also have started to tap into marijuana tax revenue for their projects. Universities continue to find diverse funding sources, including student fees, to advance major remodeling and expansion projects.

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A statewide sampling of the diverse new projects in 2019 includes the Gate Expansion project at Denver International Airport, the Health Care Careers Center on the Front Range Community College's Larimer Campus, the Leeds School of Business and Engineering building expansion at CU Boulder, the renovation of Meeker High School, the new Sheltair Aviation Facility at Rocky Mountain Airport, the Denver Zoo Animal Hospital, and new schools in Buena Vista and Cañon City.

Major projects slated to start in 2020 include the \$230 million Colorado Convention Center expansion; a new office complex for Kiewit; the CSU Water Resources Center, the CSU Animal Health Building and CSU Center, all part of National Western Complex redevelopment; several River North area projects, including the new World Trade Center; Elitch's and River Mile projects; Prime Tech Office Building in the Denver Tech Center; and the Colorado School of Mines Subsurface Frontiers Building in Golden. A reboot of the \$650 million Great Hall renovation project at Denver International Airport is also anticipated in 2020.

Nearly one-third of the \$926 million in school district bonds approved in November will appear as 2020 construction starts. Many of these bond projects have been bolstered by matching grants from the state's BEST (Building Excellent Schools Today) program.

Economic development groups continue to report significant business expansion and relocation inquiries. Therefore, companies will continue to follow potential employees to Colorado, and net-migration remains a good predictor of continued commercial building in the state. Nevertheless, an increasingly congested transportation system and the growing problem of affordable housing are concerns, primarily in the Denver-Boulder Metro area. These challenges are enticing more relocating

companies to spread out along the Front Range, from Fort Collins to Colorado Springs.

Nonbuilding

Nonbuilding measures new construction in infrastructure projects. This subsector tracks roads and bridges, drainage and flood control, water and wastewater facilities, electric power generation and transmission, reservoirs, mass transit, and similar projects.

Statistical data collected about this subsector do not always accurately capture the current level of activity due to the role of multiyear projects. The recorded numbers are expected values typically reported when a multiyear project is started (permitted), even though construction of such a project typically continues over several years. Because statistical reporting does not track work put in place, the data have a tendency to overstate activity during the year that multiyear projects—and especially megaprojects of \$1 billion or more—have been awarded, and then understate activity during the years of actual construction. This issue is highlighted because the amount of money spent on multiyear projects represents a significant portion of nonbuilding spending in most years.

At this point, there appears to be a pause in \$1 billion-plus megaproject awards, with the last one occurring in 2018. As a result, the value of such awards has fallen to under \$3 billion, and is expected to stay under that level until the next megaproject is awarded. That there is little discussion of replacement activity just beyond the time horizon of this forecast should alert readers to the possibility of a decline in construction activity in this subsector after 2020 as well. Major players of federally subsidized highway, road and bridge activity, the Regional

Transportation District, and airports and reservoirs lack plans for the next big project to replace ongoing activity.

The official numbers for 2019 appear to be on track for \$2.8 billion, in line with earlier forecasts. The Colorado Department of Transportation (CDOT) awarded over \$300 million during a busy first half of the year, and is expected to award up to \$500 million more before the end of the year. Xcel Energy's \$743 million Cheyenne Ridge Wind Project was another significant nonbuilding project awarded in 2019. These starts are in addition to continued work on large projects such as CDOT's expansion projects on I-70 in Denver (Central 70), I-25 in the north Front Range, and the I-25 Gap Project in Douglas County for highway expansion and upgrades. Denver Water's North System Renewal Project and continued work on \$275 million in infrastructure projects connected to the redevelopment of the National Western Center also add to nonbuilding activity.

An annual review of year-to-date "Call Before You Dig" statistics illustrates the high level of activity throughout the entire construction sector over the past decade. After year-over-year increases of 7 – 12% in the volume of requests for identifying buried utilities from 2012–2017, the pace of acceleration has lessened in recent years. But growth continues: 2019 is once again busier than the previous year, with 2019 volume on pace to be about 3% higher than 2018. This supports the committee's belief that the overall construction activity in Colorado will be slower than recent history.

Looking ahead, road and bridge construction spending will remain healthy and stable for another year. Additional funding from the state legislature should keep the value of new CDOT projects awarded in 2020 roughly in line with industry expectations, comparable to the value

of 2018 CDOT projects, without the Central 70 megaproject in that year's calculation. Work to complete the \$415 million in transportation and mobility bond-funded projects approved by Denver voters in 2017 is ongoing and will continue through 2020.

Predicting construction starts for major water projects is challenging. Northern Water's long-awaited \$425 million Windy Gap Firming Project is likely to be awarded in 2020, and it is possible the first segments of Thornton's \$400 million, 58-mile raw water pipeline could be awarded in 2020 as well. Final planning and preconstruction by Denver Water's selected joint-venture team is underway on the \$464 million Gross Reservoir expansion project, and some construction packages are a possibility for 2020.

All of this activity totals to a final statistics of project awards for 2020 of \$2.8 billion, similar to the amount awarded in 2019. This number could, of course, be lower if one or more of the larger anticipated projects is not ultimately awarded in 2020, but the total also could be higher if a larger project starts earlier than expected. As with 2019, the \$2.8 billion projection for awarded projects is below the value of construction expected to be put in place during 2020 in the nonbuilding subsector. Actual activity for on-going projects will be close to \$3 billion. ❖

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Manufacturing

Manufacturing in Colorado was a \$25.1 billion industry in 2018, representing about 6.8% of the state's nominal GDP despite the sector comprising just 5.4% of the state's nonfarm employment base. Colorado's Manufacturing Sector is largely made up of small employers—about 78% of companies had fewer than 20 employees in the first quarter of 2019. However, these companies accounted for just 16% of jobs in the sector. The majority of workers (56%) were employed in companies with 100 or more employees.

In 2020, Colorado's manufacturing employment is set to expand for the 10th consecutive year. Although the sector has grown slower than employment across all industries in Colorado since the Great Recession, it has been bolstered in the past few years by strong growth in several

subsectors. These include food products, beverages, chemical products, and transportation equipment. Other positive areas of manufacturing include the continued expansion of jobs in companies making cannabis products and a surge in machinery manufacturing in 2019.

However, there are challenges in the sector, including global trade and tight labor markets. Manufacturers across the state continue to express difficulty in finding employees despite work order backlogs. Exacerbating the tight labor market are immigration restrictions that put pressure on subsectors such as food manufacturers. This subsector, along with others such as computer and electronic products, are also pressured from a decline in export activity year-to-date through September. Through September 2019, exports from Colorado have declined

INDUSTRY SNAPSHOT MANUFACTURING

Nominal GDP, 2018 (\$ Billions)	25.1
Real GDP, 2018 (\$ Billions, 2012 Dollars)	23.5
2018 Real GDP Growth Rate	4.8%
Total Employment, 2018 (Thousands)	147.6
2018 Employment Growth Rate	2.3%
Employment Growth National Rank	17
Share of Colorado Employment	5.4%
Share of National Employment	8.5%
Average Wage, 2018	70,677
Percent of Statewide Average Wage	119.2%
2018 Average Wage Growth Rate	1.8%

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

COLORADO MANUFACTURING EMPLOYMENT BY INDUSTRY, 2010-2020 (In Thousands)

Industry	2010	2011	2012	2013	2014	2015	2016	2017	2018 ^a	2019 ^b	2020 ^c
Food	18.5	19.4	19.3	19.9	20.6	21.6	22.2	22.8	23.3	23.6	23.9
Beverage and Tobacco	5.2	5.4	5.6	5.9	6.4	7.0	7.8	8.3	8.7	8.9	9.1
Printing and Related	5.6	5.3	5.3	5.3	5.4	5.5	5.5	5.5	5.3	5.1	5.0
Other Nondurables	15.0	15.2	15.5	15.7	16.0	16.7	17.1	17.4	18.2	18.0	18.0
Subtotal, Nondurable Goods	44.3	45.3	45.7	46.8	48.4	50.8	52.6	54.0	55.5	55.6	56.0
Nonmetallic Minerals	6.8	6.8	6.9	7.3	7.7	8.1	8.1	8.5	8.6	8.7	8.8
Fabricated Metals	12.5	13.3	14.1	14.8	15.7	15.4	14.8	14.7	15.3	15.4	15.6
Computer and Electronics	21.4	22.1	22.4	21.9	21.5	21.6	21.4	21.8	22.4	22.8	22.6
Transportation Equipment	8.8	8.9	8.8	8.8	8.8	9.4	9.6	9.8	10.1	10.2	10.4
Other Durables	30.4	31.8	33.0	33.2	34.5	35.8	36.2	35.5	35.8	37.2	38.1
Subtotal, Durable Goods	79.9	82.9	85.2	86.0	88.2	90.3	90.1	90.3	92.2	94.3	95.4
Total, All Manufacturing	124.2	128.1	130.9	132.8	136.6	141.0	142.7	144.3	147.6	149.9	151.3

^aRevised. ^bEstimated. ^cForecast. 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.

4.1% according to data from the U.S. International Trade Administration. This includes significant declines from some of Colorado's key trading partners including Mexico, and China.

Colorado's manufacturing industry employment growth has outperformed the nation since 2010, growing at an annualized rate of about 2.2% compared with 1.2% nationally. Indeed, the national outlook has worsened over the latter half of 2019, but if national activity significantly slows or contracts, Colorado looks to buck the national trend. As of September, the ISM Purchasing Managers Index (PMI) fell for the seventh-consecutive month and indicated the second-consecutive month of contracting economic activity in the Manufacturing Sector. Experts noted decreased business confidence, a strong contraction in the new export orders index, and contracting employment. According to the report, global trade and tariffs remained significant issues for companies in the sector. Indeed, exports from the United States fell about 1.2% year-to-date through September 2019 according to data from the U.S. International Trade Administration. While employment data at the national level indicate continued over-the-year job growth in manufacturing through September 2019, the pace appears to be slowing. U.S. manufacturing employment increased 0.9% over-the-year in September, to 12.9 million employees.

Despite the worsening national outlook, Colorado's Manufacturing Sector will grow an estimated 1.6% in 2019, adding 2,300 jobs and approaching 150,000 employees for the first time since 2005. However, anticipated growth is below the average of about 2,800 jobs added each year from 2013 to 2018. Job growth in the sector is projected to slow in 2020, increasing by 1% with the addition of another 1,400 jobs.

Nondurable Goods

Nondurable goods continues to be a bright spot in Colorado manufacturing, led by steady growth in food manufacturers, a growing beverage sector, and the

increasing influence of cannabis manufacturing. However, positive growth in these subsectors was partially offset by a contraction of hundreds of jobs in apparel manufacturing. In 2018, nondurable goods manufacturing accounted for about 37% of manufacturing employment. Nondurable goods include the production of goods that generally last for less than one year. Nondurable goods employment increased by 1.1% in 2019 and is estimated to average about 55,600 workers for the year. It is expected to expand at a slower rate, 0.6% in 2020, adding about 350 jobs.

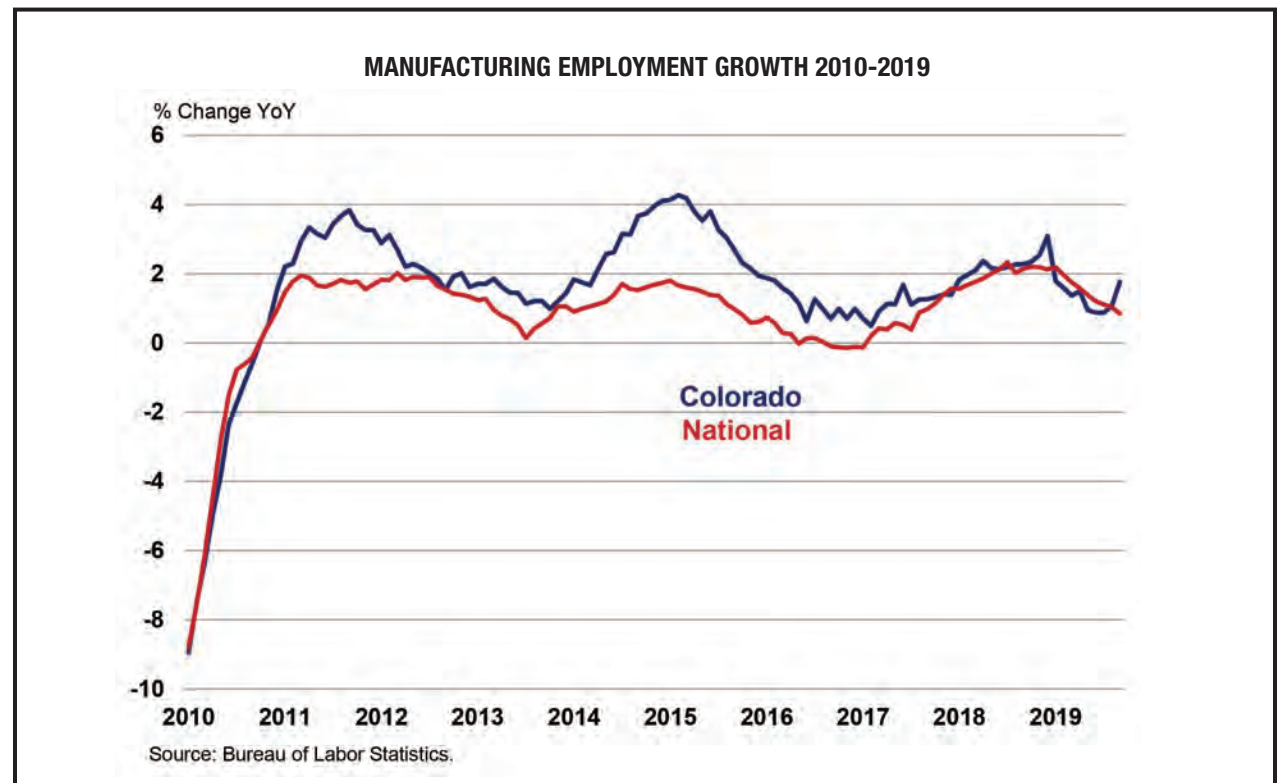
Food Manufacturing

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. Beyond large food manufacturers, Colorado is home to many boutique manufacturers, often specializing in "niche" natural and organic products.

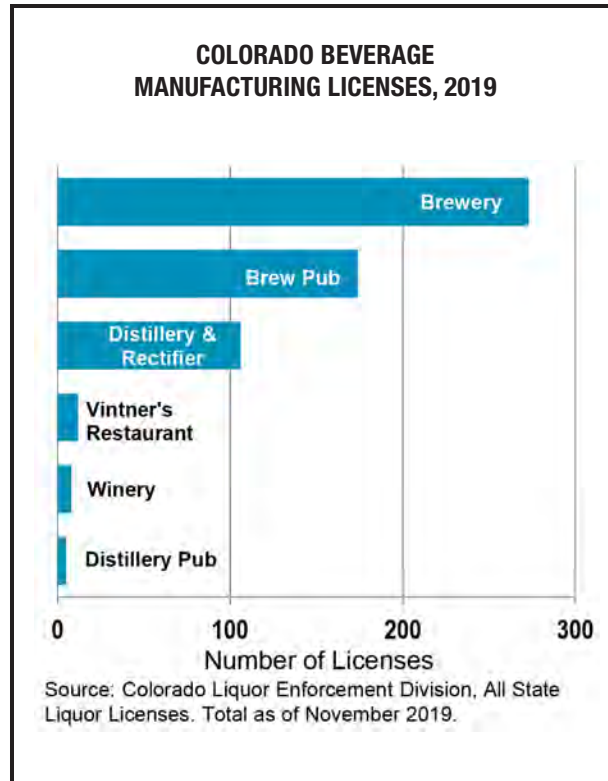
Canada, Mexico, and countries in Asia are major purchasers of Colorado-produced food products. Colorado food manufacturing exports totaled over \$1.7 billion in 2018, staying fairly flat with an increase of just 0.1% over 2017. These exports made up 20.7% of all Colorado exports in 2018 and are the second-largest export

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Manufacturing

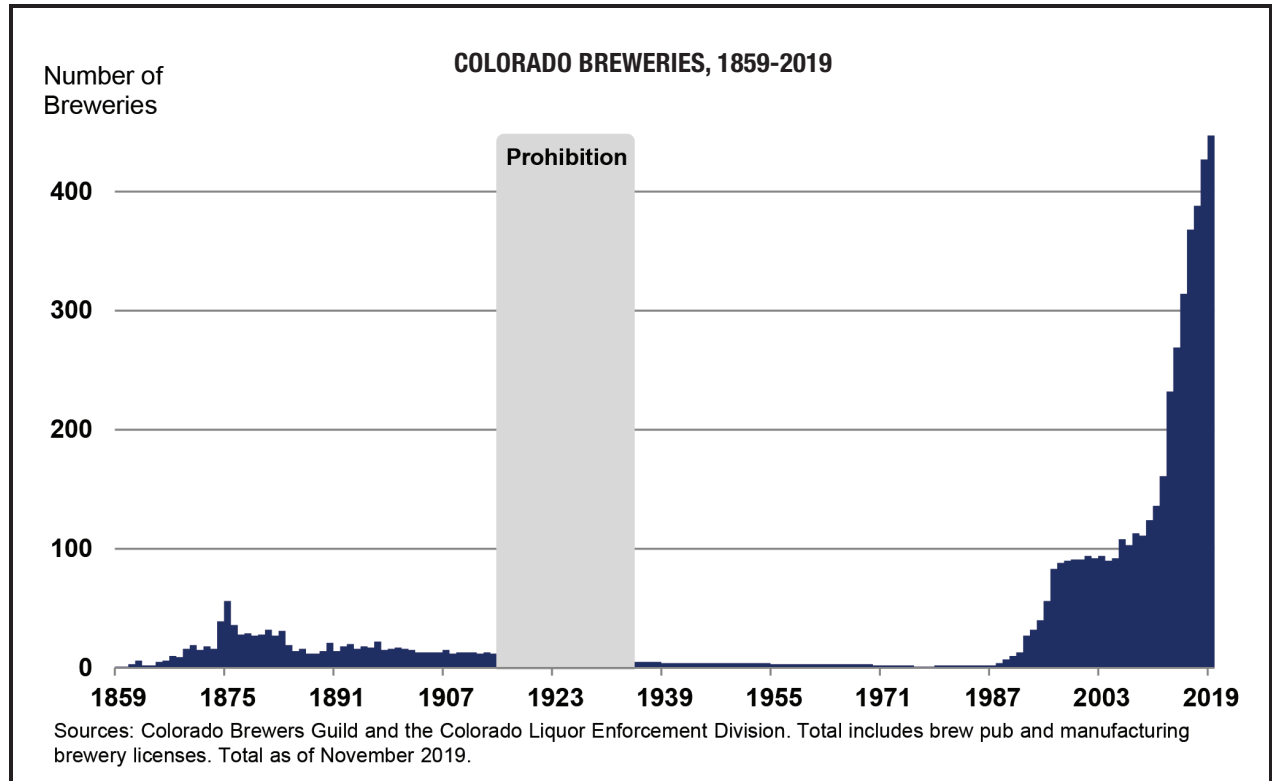
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category for the state. Of the 2018 food manufacturing exports, 95% were to North America (excluding U.S.) and Asia combined. Between 2017 and 2018, these exports to North America fell by \$86 million while these exports to Asia increased by \$77.5 million.

Colorado's exports through September 2019 were down compared to the year before according to the Census Bureau and the Kansas City Federal Reserve. The ongoing trade disputes worldwide are a likely liability for food manufacturing in the state and nation.

As with many areas of manufacturing and all other sectors, finding new employees is an issue. Food manufacturing is especially impacted by the immigration restrictions. Employment is expected to increase by 265 jobs



in 2019 and another 250 in 2020, reaching total employment of 23,850 workers, representing over 42% of the nondurable goods subsector.

Beverage Manufacturing

Firms in the beverage subsector produce soft drinks, ice, bottled water, beer, wine, liquor, and specialty drinks like kombucha. Most of the subsector employment is located along the Front Range. According to the Brewers Association, in 2018 Colorado ranked second in the country for the number of craft breweries (396), and it was first in economic impact per capita. In 2018, the state produced just over 1.5 million barrels of craft brew, the third-highest production in the country. The tax breaks received in 2018 countered the impact of the aluminum

tariffs on the beverage industry. The industry is hoping the tax breaks will be renewed before they expire at the end of 2019 to help with future growth or counter trade dispute impacts again.

The beverage subsector in the state is facing headwinds. Molson Coors announced in 2019 that it will close its Denver headquarters that employs 300 people as it restructures the company (though this is expected to have little impact on manufacturing employment). Fort Collins-based New Belgium Brewing announced its sale to a global brand. Boulder Beer Co., based in Boulder, announced it will be ending its distribution and packaging operations, and will cut 20 of the brewery's 50 employees.

Winemakers and craft distillers are also expanding in Colorado. Several wineries across the state received national recognition in 2018 from *Wine Enthusiast*, *USA Today*, *Food + Wine* magazine, and *The Wine Advocate*. Most winemakers are quite small, but recognition and recent improvements in harvesting have led to considerations of exporting. This depends on how trade disputes are settled because a significant portion of exports could go to China.

Exports of other beverages and tobacco products in Colorado decreased 39.7%, from \$131.8 million in 2017 to \$79.5 million in 2018. In 2018, Canada and Mexico received 95.3% of the exports in this category and were the reason for most of the decrease (over \$51 million). Microbreweries, distilleries, and wineries are expected to continue to grow slowly in the coming years. However, each new location has relatively few workers. Employment in the beverage subsector is expected to increase by about 230 workers in 2019 and another 200 in 2020, reaching 9,100 workers total.

Printing and Related

Colorado employment in the printing and related products subsector is continuing to decline after five years of minor growth from 2012 through 2016. Those in printing are looking for ways to stay relevant, but things that have helped keep people employed in the past, like print jobs for craft beers and niche products or exports to Asia, did not do as well in 2018. Many small businesses are trying to cut costs, which includes use of printing. The export of Colorado's printed products in 2018 declined 6.7%, to \$46.1 million. Exports to China did increase by \$2.2 million in 2018, but that was not enough to counter the losses to other countries. Employment is expected to decline in 2019, to 5,140, and again in 2020 to 5,000 workers.

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 2018, employment in the *textiles, apparel, and leather and allied product* subsectors averaged about 2,600 employees, a decline of 7% from 2017 levels. Moreover, optimism that the influx in outdoor industry brands moving to Colorado would result in a more active manufacturing ecosystem to facilitate local production has largely fallen flat. Brands like VF Corp. show no signs of making significant investments in local or regional production infrastructure despite uncertainty caused by the ongoing trade and tariff spat with China, home to many of the factories manufacturing products designed by local brands.

While employment is expected to decline by 15% in 2019, to 2,060 jobs, largely from a contraction in apparel manufacturing, whatever growth is to be ascribed to the sector will continue to emanate from Colorado's active early-stage and small business ecosystem of outdoor industry and lifestyle product companies. Companies in this small but highly symbolic sector that complements Colorado's tourism juggernaut should keep employment stable, if slightly down, from 2019 to 2020.

Paper products manufacturers employed about 1,300 employees in Colorado in 2018, a small decline year-over-year. Paper products employment contracted steadily throughout the last decade and is expected to continue on a downward trend over the next few years.

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 770 workers in 2018. Due to the sensitivity of the sector to oil and gas production operations, the ongoing policy attention surrounding the oil and gas industry may dampen the employment outlook in the years ahead. Employment has increased gradually over the last few years and is expected to remain between 750 and 800 workers in both 2019 and 2020.

Chemical products manufacturing firms employed about 7,600 workers in 2018 and is the largest of the other non-durable goods subsectors. Recent strength in this subsector, which added nearly 500 jobs in 2017 and over 700 jobs in 2018, is expected to continue through the forecast period. The recent employment gains in the sector have been bolstered by an increase in cannabis product manufacturers as the cannabis industry matures in the state. The passage of the 2018 Farm Bill, which legalized the production of hemp, is providing a boost to cannabis manufacturing as companies look to increase production capacity. Job gains are expected to continue for this subsector, but at a slower pace than recent years, growing to 8,000 workers in 2019 and 8,150 workers in 2020.

Colorado *plastics and rubber products* manufacturing firms make a diverse mix of goods ranging from insulating foam to 3D printed dental molds and pipe fitting components. Employment in this subsector rose to 5,800 in 2018, exceeding expectations. Demand from the medical industry is rising and health care is a burgeoning area of growth for additive technologies such as 3D printing. 3D printing has found a niche in the health care market due to the need for customized orthotics, implants, and other products that improve treatment. Growth going forward is expected to continue, but at a slowing pace, rising to 5,960 in 2019 and 6,050 in 2020. While there are hundreds of job openings in the subsector, employment growth is limited in some areas by the tight labor market. However, a positive anecdotal sign is that emerging additive technology classes are becoming more common in schools, which may boost recruitment from local schools in the years to come.

Durable Goods

Durable goods industries represented about 62% of employment in the manufacturing sector in 2018. Durable goods manufacturing generally includes the production of goods lasting longer than one year, such

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as nonmetallic minerals, fabricated metals, computer and electronic products, transportation equipment, and other durable goods. Durable goods employment will increase by an estimated 1,800 jobs (2%) in 2019, to 94,300 employees. The sector was boosted in large part by a surge in machinery manufacturing employment that is expected to account for about half of the job growth over-the-year. The growth in durable goods is expected to continue in 2020, rising by another 1,100 jobs and growing by 1.2%.

The *nonmetallic minerals* subsector employs approximately 8,700 workers in Colorado. The forecast for 2020 calls for the addition of about 100 jobs for a modest growth rate of 0.8%. Companies classified in this subsector in Colorado manufacture products largely made of glass and ceramics used in the electronics and construction industry. Demand from electronics remains

steady but with only minimal growth, while construction demand remains strong but is expected to taper slightly throughout 2020. As most of the state's jobs in the industry produce plumbing fixtures, glass products, and concrete and stone products, employment in this sector tracks closely with the health of the construction industry. While construction remains strong in the state, productivity gains necessitated by low unemployment and the difficulty finding and retaining workers will hold down job growth to a positive but small increase.

The *fabricated metals* subsector is one of the larger manufacturing industries in Colorado in terms of jobs, employing about 15,500 workers in roughly 900 establishments in 2019. 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 sector is stable, projected to add 100 jobs in 2020 for a growth rate of 1.5%. A slowdown in manufacturing would hit this sector more strongly than some others, but so far on-the-ground data suggest that demand remains high, and, in fact, manufacturers in this sector report backlogs due to higher sales and difficulty finding qualified workers.

The *computer and electronic products* manufacturing subsector includes industries such as communications equipment, audio and visual equipment, semiconductors, navigational equipment, laboratory measuring instruments, and optical media products, among other things. Nearly half of the employment in the subsector comprises navigational, measuring, electromedical, and control instruments, an industry group largely influenced by Colorado's aerospace and health care companies. The subsector includes several national firms and is closely tied with national trends and the state's export market. Computer and electronic products are Colorado's largest export industry.

Momentum in Colorado's computer and electronic products subsector continued into 2019 and is on pace for its third-consecutive year of employment growth. By the end of 2019, employment for the year will be an estimated 22,800 jobs, an increase of about 1.8%. However, employment growth in 2020 will be negatively influenced by the fall in export activity and a weak national outlook. Through the first six months of 2019, year-to-date export activity was down 14.6% compared with the same months in 2018. Further, at the national level the computer and electronic products subsector has been among those reporting contractions in employment and new orders in the ISM PMI for the past few months. Looking ahead, employment is forecast to decrease to 22,600 jobs in 2020.

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



Photo provided by Jonathan Castner, *CompanyWeek*.

subsector is sensitive to international demand and federal spending on national defense and space exploration.

The outlook for defense spending reflected in the Congressional spending in the National Defense Authorization Act is expected to produce continued strong activity in large aerospace firms. However, production processes in this subsector are relatively labor intensive, and employment growth remains constrained by the labor supply and wage pressure effects. Firms in the subsector employed an estimated 10,200 workers in 2019, and total transportation equipment manufacturing employment is expected to grow by 0.7% to total nearly 10,400 in 2020.

Other Durable Goods

The six other durable goods subsectors include manufacturing of machinery, furniture, wood products, electrical equipment, primary metals, and miscellaneous other durable goods. Together, these subsectors will employ an estimated average of 37,200 workers in 2019, an increase of 2.9%. Employment in these subsectors is sensitive to a variety of economic factors, including trade policy, business climate, consumer behavior, labor prices, and opportunities for automation. Employment in other durable goods manufacturing is projected to increase by 2.2% in 2020.

Machinery manufacturing firms make products that apply mechanical force to perform work. Colorado's diverse machinery manufacturing subsector produces a broad array of goods, including wind turbine components, jet engine controls, HVAC and industrial cleaning equipment, automation equipment, thin-film coating equipment, and canning assemblies.

The subsector employed about 12,900 workers in 2018, up 7.5% from the year prior. Preliminary data for the first quarter of 2019 indicate that employment in the subsector continues to grow. Employment in the subsector is expected to increase an additional 4%, to approximately

13,400 workers in 2019 and 14,000 by 2020. Employment growth in the subsector will be bolstered by demand from the fracking, medical device, and space sectors. In addition, as Colorado attracts larger original equipment manufacturers (OEM), this subsector may benefit from trends such as a shortening product development cycle and increased reshoring. With technology providing productivity gains in the industry, employers will seek those who are tech-savvy first. Both within Colorado and nationally, recruiting more young people has become an industry-wide priority. The workforce shortfall continues to be the dominant constraint on the employment outlook.

Employment in Colorado *furniture and related products* manufacturing firms grew 2.5% in 2018 and accounted for about 5,700 jobs. Firms in this subsector include window, shade, mattress, door, and other furniture firms. The subsector is influenced by household growth in the state and domestic markets. Household growth in Colorado has contributed to positive growth in the subsector over the past few years, with employment increasing at an annualized rate of 3.6% from 2013 to 2018. Strong growth is estimated for 2019, with employment increasing to about 5,900 workers. While growth will slow in 2020, the subsector is projected to increase by 1.7%, to 6,000 employees.

Companies in the *electrical equipment, appliances, and components* subsector manufacture diverse products, including lighting and fixtures, motors and generators, electric power equipment, batteries, wiring, cable, and other communications equipment. The electrical equipment, appliances, and components subsector is influenced by residential and nonresidential investment activity and communications and utility infrastructure. The subsector has been challenged over the past few years, with employment contracting from 2016 to 2018. The downward trend continued in the first quarter of

2019 with employment falling by 0.4% from the first quarter of 2018. Negative indicators include declining exports through the first half of the year and slowing construction activity in the state. Employment in the sector is estimated to average 2,100 in 2019 and projected to contract to 2,000 workers in 2020.

Employment in the *primary metals manufacturing* subsector, which includes firms that smelt or refine metals from natural ore and scrap, as well as firms that sell minimally processed metal products, grew to 2,230 jobs 2018. Tariffs may have benefited firms in this sector in 2019, as well as strong real estate development along the Front Range. This subsector is expected to slow in the coming year, with forecasted 2019 employment of 2,320 and just over 1% growth in 2020, to 2,350.

The *miscellaneous manufacturing* subsector encompasses durable goods manufacturers that are not classified elsewhere. In Colorado, the largest firms in this subsector are medical equipment manufacturers, though other businesses include contract manufacturers producing a diverse array of products for several sectors. As expected, employment declined in 2018 and 2019 to approximately 10,200. The sector is anticipated to remain relatively stable, at 10,300, in 2020. Increased global competition for Colorado's established firms in this sector may be hindering employment growth. This dynamic will be offset by a planned site consolidation and expansion for Medtronic, as well the emergence of disruptive startups introducing innovative products. ❖

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Manufacturing

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The Colorado Cannabis Market

For the past few years, the Colorado Cannabis Market has grown very rapidly, absorbing the illicit market for residents and tourists. The market is starting to show signs of maturity as medical cannabis sales have slightly declined in the past two years and retail cannabis sales growth has come back from the stratosphere.

In 2018, total cannabis sales were \$1.55 billion, up from \$1.51 billion the previous year—growth of just 2.5%. A closer look shows that retail sales grew by 11%, and medical sales declined by 8%. Sales are back on the rise in 2019, owing to an increase in casual consumers and the new popularity of products containing cannabidiol (CBD). Market growth is generally fueled by an increased number of product offerings as consumers shift from traditional flower cannabis to concentrates, oil extract products, and edibles. Total cannabis sales are expected to increase to about \$1.7 billion in 2019 based on year-to-date performance—growth of 11% over the prior year.

Although still significant, retail cannabis sales growth is slowing. The retail market experienced growth of 90% and 45% in the first two years, respectively. In 2018, retail sales grew by 13%, up from 11% the previous year.

The cannabis market in Colorado is still positioned for further growth, due to a number of bills that passed the legislature in 2019. These bills are generally designed to improve patient and consumer access, and will encourage growth even though the illicit market has been absorbed. House Bill 1090, allows outside investment from public companies, which were previously barred from owning even indirect stakes. The bill also eases residency requirements for owners and allows equity to non-U.S. citizens. This new regulatory environment is expected to attract a wave of investment, increasing scale, operational efficiency, R&D spending, and consolidation in the industry.

Other significant legislation will expand the market through permitting new retail channels and consumption spaces. Starting January 1, 2020, dispensaries, restaurants, hotels, and

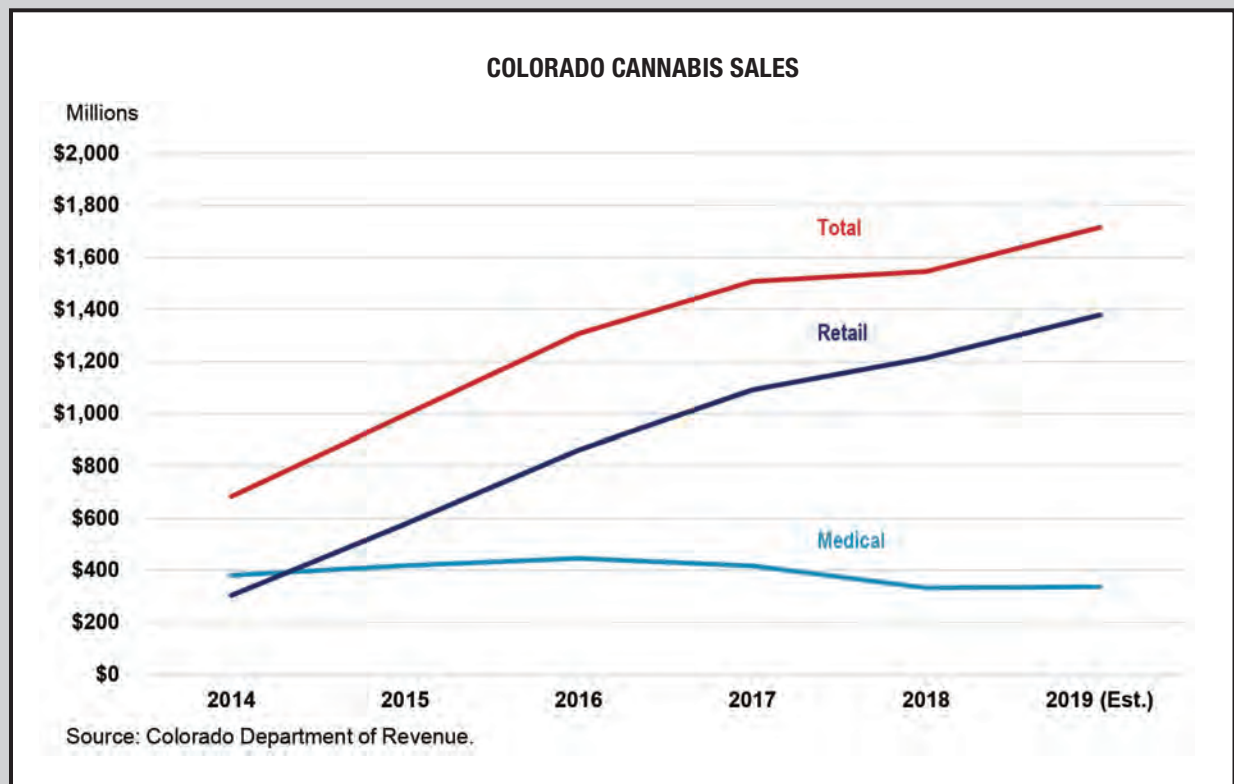
other businesses can apply for cannabis consumption areas, where cannabis products may be sampled or consumed on site. Expect to see new cannabis-friendly businesses—from spas to B&Bs to restaurants—and some existing hospitality businesses to incorporate cannabis into their offerings.

Cannabis product delivery will also begin in 2020. Under the new delivery bill, medical cannabis will be eligible for delivery to patients beginning in January 2020, and retail cannabis will follow in 2021. The legislation would allow delivery by licensed retailers only during the first two years and allow third-party delivery companies starting in 2022. The delivery bill will expand access and convenience to patients and adults, which can also serve to encourage market expansion.

In the medical cannabis market, two pieces of legislation expanded qualifying conditions for patient access. The legislation will open access to individuals with autism and to people who want to substitute medical cannabis for conditions usually treated with opiates or opiate withdrawal.

The overall cannabis industry outlook is generally positive as the nation and the world continue to legalize and regulate cannabis, cannabis use is allowed in more public spaces, and the therapeutic benefits of cannabis are further researched. Market growth is expected to continue in Colorado, albeit at a slower pace than the first few years.

Contributor: Adam Orens, Marijuana Policy Group



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 gained an estimated 1.3% in 2019, to a total of 475,700. The sector is expected to grow another 1.3% in 2020, to total 482,000 jobs.

Trade

Wholesale

The wholesale trade industry employs nearly 110,000 Coloradans with more than 90% working for merchant wholesalers, firms that sell to retail outlets. More than 60,000 of these are in firms selling durable goods, particularly computers, peripherals, and electronic equipment. Businesses selling groceries and related products account for the largest share of the 38,000 nondurable wholesale jobs. The remaining workers are employed by business-to-business sellers, electronic marketers, and agents and brokers.

Historically, wholesale employment has slowed in later years of a recovery. The trade wars and a sluggish world economy can be expected to depress growth further in late 2019 and 2020. The sector is forecast to add 1,500 jobs in 2019 and 1,300 in 2020. This is the slowest growth forecast since 2011 when the economy was emerging from the Great Recession.

Retail Trade

Colorado's retail sector accounts for \$100 billion in sales and around 275,000 employees. It includes several of the largest employers in the state, as well as many mom-and-pop stores. Colorado retailers include grocery stores, auto dealers, department stores, gas stations, and many other kinds of firms that sell to consumers. Many retail employees work part-time, and average wages in the sector are relatively low.

Consumer spending has been the main driving force in the national economy for the past several quarters, but recent data brought warnings of possible future slowing. National retail sales fell 0.3% in September 2019 from August's level with much of the decline accounted for by vehicle sales that were off 0.9%. The drop followed a 0.6% increase the previous month and was the first decrease since February. The Conference Board Consumer Confidence Index fell a sizable 9 points in September after a slight drop in August.

The Colorado economy remains strong, and consumer spending still seems healthy. But some slowing is probable over the next several quarters. Income gains have already slackened. In the second quarter of 2019 the state quarterly personal income increase was less than that of the nation, and the 12-month growth was the slowest in

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INDUSTRY SNAPSHOT TRADE, TRANSPORTATION, AND UTILITIES

Nominal GDP, 2018 (\$ Billions)	58.9
Real GDP, 2018 (\$ Billions, 2012 Dollars)	54.3
2018 Real GDP Growth Rate	4.4%
Total Employment, 2018 (Thousands)	469.8
2018 Employment Growth Rate	1.8%
Employment Growth National Rank	8
Share of Colorado Employment	17.2%
Share of National Employment	18.6%
Average Wage, 2018	50,043
Percent of Statewide Average Wage	84.4%
2018 Average Wage Growth Rate	3.0%

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

TRADE, TRANSPORTATION, AND UTILITIES EMPLOYMENT, 2010-2020 (In Thousands)

Year	Wholesale Trade	Retail Trade	Total Trade	Transportation and Warehousing	Utilities	Total TTU
2010	90.7	236.4	327.1	62.3	8.2	397.5
2011	91.8	239.3	331.1	62.4	8.1	401.6
2012	93.9	243.0	336.9	64.6	8.0	409.5
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 ^a	108.0	272.7	380.7	81.0	8.0	469.8
2019 ^b	109.5	275.0	384.5	83.3	8.0	475.7
2020 ^c	110.8	276.7	387.5	86.5	8.0	482.0

^aRevised. ^bEstimated. ^cForecast.

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

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

Trade, Transportation, and Utilities

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WHOLESALE TRADE EMPLOYMENT, 2010-2020 (In Thousands)

Year	Wholesale Trade	Retail Trade	Total Trade	Transportation and Warehousing	Utilities	Total TTU
2010	90.7	236.4	327.1	62.3	8.2	397.5
2011	91.8	239.3	331.1	62.4	8.1	401.6
2012	93.9	243.0	336.9	64.6	8.0	409.5
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 ^a	108.0	272.7	380.7	81.0	8.0	469.8
2019 ^b	109.5	275.0	384.5	83.3	8.0	475.7
2020 ^c	110.8	276.7	387.5	86.5	8.0	482.0

^aRevised. ^bEstimated. ^cForecast.

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

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

2½ years. Home price appreciation is providing less of a fillip to household purchases. The August Denver Case-Shiller home price index was up only 2.9% over the past 12 months following gains averaging nearly 8% in 2017 and 2018. This dampens consumers' willingness to spend on big-ticket items and to tap home equity to finance such purchases. The number of new homes being built has declined and is expected to drop further in 2020, which will mean less spending on furniture or appliances. Finally, an aging population, albeit at a slower rate than in many states, will result in a smaller share of outlays on goods.

The three categories of retailers that account for the largest shares retail sales in Colorado are automobile and parts dealers, with 23% of sales in 2018; food and beverage stores, with 20%; and general merchandise,

with 15%. The outlook for all three categories is one of somewhat more moderate growth than in the past several years. Auto sales are weakening. The Colorado Automobile Dealers Association reported that sales through July of new light vehicles were down 3.3% over last year. The number of light trucks, including SUVs, sold was down 0.9% while passenger cars were off 11.7%. Further declines are anticipated in 2020. Sales in food stores largely reflect changes in population and prices, although supermarkets are losing market share to big box stores such as Target and Walmart and other nontraditional grocers. Growth in 2020 is expected to be comparable to 2019—at best. General merchandise store sales will be somewhat weaker as a slowing economy reduces discretionary purchases and department stores continue to lose market share to online purchases. Colorado retail

store sales grew more than 5% in 2017 and 2018. Sales tax collections, which are used as a proxy for retail sales, are up 4.6% year-over-year in September 2019 according to the Colorado Department of Revenue. U.S. retail sales for the first nine months of 2019 have increased by 3.3% compared to a gain of 4.7% for the full year of 2018. A similar deceleration likely occurred in Colorado, meaning an increase of roughly 4% for 2019. Some further slowing can be expected in 2020, with a forecast increase of 3.5%. As inflation is expected to remain moderate the outlook translates into continuing real sales growth.

Retail trade employment in 2017 and 2018 saw its slowest growth since the early recovery from the Great Recession despite healthy sales gains. This relative weakness can be explained by a tight labor market and productivity enhancing changes, such as more self-service and a shift to more online sales. Minimum wage increases have had some negative impact in outlying low-cost areas and on small retailers on the Front Range. The continuation of these developments, along with slowing sales, will mean little growth in retail employment. The gain in retail jobs will slightly increase to 0.8% in 2019 from 0.7% in the previous year and to 0.6% in 2020. Most the new jobs will be in the “other employment” category as little or no growth is anticipated at either food and beverage stores or general merchandise outlets.

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 83,300 jobs in 2019 and 86,500 in 2020. The sector is projected to add 2,300 jobs in 2019 and 3,200 in 2020, or growth of 2.8% and 3.9%, respectively. Modest gains are projected for most of the subsectors, with other transportation and air transportation gaining the largest number of jobs.

RETAIL SALES, 2010-2020
(In Billions of Dollars)

Year	Total Retail Trade Sales ^a	Percentage Change
2010	62.3	6.8%
2011	66.7	7.1%
2012	70.7	6.0%
2013	74.1	4.8%
2014	79.5	7.3%
2015	83.4	4.9%
2016	87.2	4.5%
2017	91.7	5.2%
2018 ^a	96.7	5.5%
2019 ^b	100.6	4.0%
2020 ^c	104.1	3.5%

^aExcludes food services. ^bEstimated. ^cForecast.

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

RETAIL TRADE EMPLOYMENT, 2010-2020
(In Thousands)

Year	Food and Beverage Stores	General Merchandise Stores	Other Retail	Total
2010	45.0	50.0	141.3	236.4
2011	45.1	50.7	143.5	239.3
2012	46.1	50.6	146.3	243.0
2013	48.0	49.8	150.6	248.4
2014	49.3	49.6	155.5	254.5
2015	51.1	50.3	160.7	262.1
2016	52.4	52.0	163.7	268.1
2017	52.7	52.6	164.9	270.8
2018 ^a	51.9	53.3	167.5	272.7
2019 ^b	51.4	53.6	170.0	275.0
2020 ^c	51.1	53.8	171.7	276.7

Transportation

Couriers and Messenger and Support Activities for Transportation

The Couriers and Messenger employment increased 11.8% in 2018 and was up 6.5% through Q3 2019 over Q3 2018. Employment in the subsector is expected to increase to 13,300 in 2019 and 13,800 in 2020. Warehousing and Storage has seen strong employment gains in recent years, bolstered by new Amazon distribution facilities in the state. The subsector increased 13.5% in 2017 and 18.8% in 2018, and this strong growth has continued through Q3 2019. Employment in the subsector is expected to increase to 12,300 employees in 2019 and 13,300 employees in 2020.

The employment growth in support activities for transportation accelerated to 4% in the first quarter of 2019,

and growth is expected to continue for rest of 2019 and 2020. Scenic transportation employment growth accelerated in the first quarter of 2019 and is expected to see steady growth in 2019 and 2020. Pipeline transportation and ground transportation employment is expected to remain stable in 2019 and 2020.

Air Transportation

National data from the Bureau of Transportation Statistics show that U.S.-based airlines carried over 909 million passengers for the 12 months ending July 2019, an increase of 4.3% compared to the same period one year prior. These are the highest figures on record.

The seasonally adjusted systemwide load factor on U.S. airlines remained nearly flat, at 84%, over the past 12 months ending in August 2019 compared to a year ago. The load factor is the ratio of revenue passenger miles to

available seat miles. While both increased year-over-year, the ratio remaining nearly flat reflects available seat miles increasing at the same rate as revenue passenger miles. Five U.S. carriers accounted for 83% of domestic passenger traffic in the 12 months ending June 2019: Southwest Airlines (23%), American Airlines (20%), Delta Air Lines (19%), United Airlines (15%), and Alaska Airlines (6%).

Airlines depend highly on the health of the economy. Economic activity affects air travel by business and leisure passengers, as well as air freight. Because many costs are fixed, the profitability of individual companies is determined by efficient operations, and favorable fuel and labor costs. Small airlines can compete by serving local or regional routes with substantial economic growth.

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Trade, Transportation, and Utilities

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COLORADO AIRPORT STATISTICS, 2009-2018 (In Thousands)

Passengers and Cargo	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Passengers (in thousands) ^a										
Denver International Airport (DEN)	50,167.4	51,985.0	52,849.0	53,156.3	52,556.4	53,472.5	54,014.5	58,266.5	61,379.4	64,494.6
Colorado Springs Municipal Airport (COS)	1,864.0	1,738.3	1,621.1	1,639.1	1,299.7	1,250.0	1,179.5	1,298.4	1,674.9	1,725.0
Aspen-Pitkin County Airport (ASE)	433.7	445.4	442.5	429.8	413.4	435.3	467.0	508.8	489.6	570.9
Grand Junction Regional (GJT)	457.7	443.7	444.2	439.3	422.2	427.7	428.8	465.3	481.0	487.7
Durango-La Plata County Airport (DRO)	296.2	327.2	351.3	373.1	385.6	387.5	373.6	375.6	373.8	378.5
Eagle County Regional Airport (EGE)	363.3	402.2	378.6	335.8	334.3	330.0	313.9	327.7	309.2	347.7
Montrose Regional Airport (MTJ)	184.4	193.2	174.5	145.3	169.2	175.1	204.6	230.3	245.1	267.8
Yampa Valley Airport (HDN)	245.0	220.1	213.1	119.9	183.6	184.5	187.8	214.7	192.8	200.2
Gunnison-Crested Butte Regional Airport (GUC)	84.3	74.6	73.0	62.4	61.6	63.5	68.8	70.0	64.5	72.5
Pueblo Memorial Airport (PUB)	10.4	23.3	44.9	19.6	13.5	13.6	7.3	4.8	7.7	20.9
Cortez Municipal Airport (CEZ)	15.4	12.7	14.0	15.1	16.4	7.7	4.6	9.1	15.8	16.1
San Luis Valley Regional/Bergman Field (ALS)	12.6	13.5	14.2	13.9	14.0	7.8	6.2	7.7	13.0	14.3
Fort Collins-Loveland Municipal Airport (FNL)	62.2	71.3	90.0	69.6	5.5	4.2	6.9	9.1	6.4	5.1
Telluride Regional Airport (TEX)	13.5	18.5	22.0	15.7	12.9	7.2	0.1	0.3	4.8	3.8
Total Passengers	54,210.1	55,969.0	56,732.4	56,834.9	55,888.3	56,766.6	57,263.6	61,788.2	65,258.0	68,605.1
Cargo, Freight, and Air Mail (in millions of lbs.)										
DEN Freight and Express	468.2	517.7	511.8	488.1	470.1	486.6	490.8	504.1	525.1	559.3
DEN Air Mail	26.6	37.5	35.4	33.7	28.8	32.9	55.0	47.5	59.7	54.3
DEN Total	494.8	555.2	547.2	521.8	498.9	519.4	545.8	551.6	584.9	613.6

Note: Excludes airports with few passengers.

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

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



Photo provided courtesy of Denver International Airport.

According to the International Air Transport Association's (IATA) July 2019 Airline Business Confidence Index, airline leadership expect rising input costs over the year ahead but expect to see improvement in yields and passenger demand that will help offset the rising costs.

Passenger traffic in August 2019 year-to-date was up 6.9% at Denver International Airport (DEN) and down 5.1% at the Colorado Springs Airport (COS). In 2018, Colorado Springs saw over 1.7 million passengers pass through the airport, a 3% increase over 2017. Despite the

growth, Colorado Springs passenger traffic is less than 3% of the DEN volume.

Colorado has a total of 14 commercial service airports; 13 of those had scheduled passenger service in 2019. The only airport in 2019 without scheduled commercial flights was Northern Colorado Regional Airport (FNL). Plans are in place for the FAA to sponsor a remote air traffic control tower system at FNL that will allow commercial carriers to start nonstop commercial flights from the airport. Three of Colorado's airports fall under the

federal Essential Air Service (EAS) program: Alamosa (ALS), Cortez (CEZ), and Pueblo (PUB).

Southern airports, Alamosa (ALS) and Pueblo (PUB), both saw seat capacity increases in 2019 compared to 2018. Alamosa increased by 7%, while Pueblo increased by 20%. Mountain airports—Aspen (ASE), Vail/Eagle (EGE), Steamboat Springs/Hayden (HDN) and Telluride (TEX)—experienced a combined decrease in 2019 capacity of 3%. However, Telluride experienced over double the capacity growth in 2019 compared to 2018 because of additional service on Denver Air Connection to DEN, joining Boutique Air's existing service. Steamboat Springs/Hayden welcomed new service on JetBlue in 2018 to Boston, Fort Lauderdale, and Long Beach. Both Boston and Fort Lauderdale will be returning for the 2019–20 winter period. Vail/Eagle Airport announced a new route on American to Philadelphia (PHL) starting in December 2019 and running through winter 2020. In addition, in October United Airlines announced the carrier will operate summer service to Chicago-O'Hare (ORD) in 2020. Western Slope airports—Cortez (CEZ), Durango (DRO), Grand Junction (GJT), Gunnison (GUC), and Montrose (MTJ)—experienced a combined capacity growth of 14% compared to 2018. Cortez welcomed a new flight on Boutique Air to Telluride in July 2019. Durango added new service in June 2019 to Chicago-O'Hare on both United and American, along with Houston (IAH) on United. United also started service from Grand Junction to Chicago-O'Hare in June 2019. American announced service from Montrose to New York-LaGuardia (LGA) starting in December 2019.

Denver International Airport

DEN is owned and operated by the City and County of Denver. The city's Department of Aviation employs approximately 1,200 people at the facility.

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Trade, Transportation, and Utilities

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TRANSPORTATION AND WAREHOUSING EMPLOYMENT 2010-2020 (In Thousands)

Year	Truck Transportation	Couriers and Messengers	Warehousing and Storage	Air Transportation	Other Transportation	Total
2010	17.1	8.5	6.7	12.5	17.4	62.3
2011	17.9	8.5	6.9	12.3	16.9	62.4
2012	18.7	8.6	6.9	13.0	17.3	64.6
2013	19.4	8.9	7.1	14.2	18.1	67.6
2014	20.3	9.4	7.3	14.7	18.6	70.4
2015	20.8	10.3	7.7	14.1	19.3	72.2
2016	20.1	10.9	8.1	14.4	19.5	73.0
2017	20.1	11.3	9.2	15.4	20.1	76.1
2018 ^a	20.6	12.5	10.9	15.9	21.1	81.0
2019 ^b	20.8	13.3	12.3	16.7	21.2	83.3
2020 ^c	21.0	13.8	13.3	17.2	21.2	86.5

^aRevised. ^bEstimated. ^cForecast. Note: Due to rounding, the sum of the sectors may not equal the total.

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

DEN served 64.5 million passengers in 2018, ranking the fifth-busiest airport in North America and the 20th-busiest in the world. This was the highest number of annual passengers in DEN's history. Passenger traffic increased by 5.1% in 2018 compared to 2017, primarily driven by growth in international traffic and on DEN's largest carriers: United, Southwest, and Frontier. For the year-to-date period ending August 2019, DEN's passenger traffic was up 6.9%. Airline capacity and passenger traffic growth at DEN is expected to increase through the end of 2019, and the year is forecast to end with over 69 million passengers, surpassing the 2018 record of 64.5 million passengers by over 7%. Twenty-three airlines provide nonstop service to over 210 destinations from Denver: 188 are domestic destinations, propelling DEN to boast the third-largest domestic air service network in the United States, after Dallas-Fort Worth and Chicago-O'Hare.

DEN's largest carrier, United, accounts for 44% of the airport's passengers, and the carrier provides nonstop service to over 160 domestic destinations from Denver. Denver ranks as the fourth-largest hub in United's network, behind Chicago, Houston, and Newark. It is important to note that Denver is the largest hub in the carrier's network in terms of domestic destinations served, solidifying both Denver's local market strength and competitive advantage as a central point for trans-continental connecting passengers. In 2019, United added service to 11 domestic destinations previously unserved from Denver: Brownsville, Texas; Destin, Florida; Eureka, California; Everett, Washington; Fairbanks, Alaska; Flagstaff, Arizona; Hobbs, New Mexico; Santa Rosa, California; Sarasota, Florida; Watertown, South Dakota; and West Palm Beach, Florida. Internationally, United announced the expansion of its

London-Heathrow, U.K. flight from daily, summer seasonal to daily, year-round service effective November 2019. United also started daily, year-round service to Frankfurt, Germany, in May 2019. United announced plans to start service to one new international route in 2020—Nassau, Bahamas (NAS), never before served nonstop from Denver—and three domestic routes: Panama City, Florida; Riverton, Wyoming; and Sheridan, Wyoming.

Southwest Airlines ranks as Denver's second-largest carrier, accounting for 30% of DEN's passengers. In terms of domestic destinations, DEN ranks as the largest station in the Southwest network, tied with Chicago-Midway, with 65 nonstop destinations. Among Southwest's top 10 stations, Denver recorded the third-largest capacity growth from 2018 to 2019, behind Dallas-Love and Oakland. Denver is the second-largest station for Southwest in terms of seat capacity, behind only Chicago-Midway. In 2019, Southwest initiated new domestic service from Denver to Buffalo, New York. In 2020, Southwest plans to start service to Des Moines, Iowa.

Frontier Airlines ranks as DEN's third-largest carrier, accounting for 12% of DEN's passengers. Denver is Frontier's largest hub in terms of seat capacity and destination count. In 2019, Frontier inaugurated service to 10 destinations, four of which were previously unserved from Denver—Burlington, Vermont; Green Bay, Wisconsin; Mobile, Alabama; and Tyler, Texas. In 2020, Frontier plans to start service to Newark, New Jersey.

Through August 2019, international passenger traffic at DEN increased 7% compared to the same period in 2018. The expansion of nonstop flights to international destinations continues to be a high priority for DEN. Two new international destinations were added in 2019. In March 2019, Cayman Airways became DEN's newest carrier with the inauguration of seasonal service to Grand Cayman, Cayman Islands. United also added year-round service to Frankfurt, Germany, joining its partner Lufthansa on the route. As a result of United's new Frankfurt flights, DEN reached a new milestone

of offering 50 weekly departures to Europe in the peak summer season.

Air Canada, Aeroméxico, British Airways, Copa, Edelweiss, Icelandair, Lufthansa, Norwegian, Volaris, and WestJet continue to offer nonstop international service at DEN. Along with United, Southwest, and Frontier, DEN is served by 11 foreign-flag airlines that operate nonstop service to 27 international destinations in 13 countries.

Growth in air service and passenger traffic in Denver has prompted the initiation of several major expansion and infrastructure projects. A \$1.5 billion gate expansion plan, which will bring 39 new aircraft gates to all three of the airport's concourses by 2021, represents a 30% increase in gate capacity. In addition, the airport is making sure that the Jeppesen Terminal is ready for the future and growing passenger numbers via the Great Hall project. This project will move and consolidate the TSA checkpoints, improve passenger flow, and enhance safety, security and the overall passenger experience in the terminal. DEN is currently in the process of transitioning to a new contractor for the project with construction slated to resume in the first quarter of 2020. DEN is committed to completing the design and construction of the Great Hall project within the original budget of \$650 million plus a \$120 million contingency.

Utilities

Colorado natural gas rates have held steady in 2019. Natural gas production is up around 10% as producers continue drilling for oil. A colder winter helped boost natural gas consumption compared to 2018.

Electricity prices have risen around 1.6% in 2019, with continued growth in utility infrastructure. Electricity consumption fell in 2019 with cooler summer weather compared to the prior year, continued energy efficiency efforts, and ongoing adoption of on-site solar. These trends are expected to continue in 2020 with advances in efficient products for home and commercial use, and additional rooftop solar installations offsetting natural growth in consumption.

In 2019, Xcel Energy was the first U.S. electricity provider to announce plans to serve customers with 100% carbon-free electricity by 2050 and reduce carbon emissions by 80% by 2030 company-wide from 2005 levels. Xcel Energy continues to implement the Colorado Energy plan to add wind, solar, and battery storage to their system while retiring coal units 1 and 2 at the Comanche generation station. Xcel Energy currently has 3,163 MW of wind and 305 MW of utility scale solar providing electricity in Colorado. Xcel Energy and EVRAZ announced an agreement for a 240 MW solar power facility to power the EVRAZ steel plant in Pueblo, the largest on-site solar facility dedicated to a single company.

As part of their Responsible Energy Plan, Tri-State announced plans to retire their Nucla and Craig Unit I coal plants in 2020 and 2025, respectively. Their portfolio now includes more than 475MW of renewable energy including wind and solar.

Colorado natural gas consumption grew by 8.5% in 2019, to an estimated 533.8 BCF. Electricity consumption fell by 0.4% in 2019, to an estimated 56,225 million kWh. Utilities employment held steady at 8,000 in 2019. Retirements from an older than average workforce and automation are expected to hold down employment gains in 2020 and beyond. ♦

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COLORADO ELECTRIC POWER AND NATURAL GAS CONSUMPTION 2010-2020 (In Millions of Kilowatt Hours)

Year	Nonresidential	Residential	Total	Percentage Change	Total Gas Consumption	Percentage Change
2010	34,816	18,102	52,918	3.7%	501.4	-4.3%
2011	35,181	18,277	53,458	1.0	466.7	-6.9
2012	35,465	18,220	53,685	0.4	443.8	-4.9
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	438.7	-0.5
2018	37,163	19,287	56,450	3.0	492.1	12.2
2019 ^a	37,046	19,178	56,225	-0.4	533.8	8.5
2020 ^b	37,521	19,261	56,782	0.6	519.5	-2.7

^aEstimated. ^bForecast.

Sources: Edison Electrical Institute Statistical Yearbook, Xcel Energy, and Colorado Business Economic Outlook Committee.

Information

Companies in the Information industry are responsible for the creation, distribution, and transmission of information. In 2018, Information industry employment recorded the fastest industry job growth since 2000 (3,000, 4.2%). Data in 2019 point to a rebounding Telecom Sector and software publishing, while other sectors continue to struggle. The industry is expected to add 600 jobs in 2019, but lose 500 in 2020.

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. The types of products produced by the publishing industry has diversified to include an increasing amount of electronic and internet-based products, such as audio, downloadable files, digital books, and mobile device applications. The sector is expected to post modest employment losses in 2019 and 2020.

Newspaper Publishing

Coming off one of the worst years for job cuts in newspaper publishing since the Great Recession in 2017, the outlook has not improved much. The industry continues to shift away from newsprint circulation to online formats, where Facebook and Google garner over two-thirds of all online advertising revenue. Mergers and buyouts of local or regional newspapers have frequently come with layoffs of newsroom staff, eroding the quality of journalism and leading to further declines in circulation. Nonprofit and governmental initiatives have begun ideating how to save local journalism, signaling the current revenue model is long past viable.

Colorado continues to sit in the national spotlight for the decline of local news outlets, starting with the fall of the *Rocky Mountain News* in 2009, followed by the significant layoffs at the *Denver Post*, and the cut in circulation at the

Durango Herald and the *Grand Junction Daily Sentinel*, to name a few. In 2018, GateHouse Media purchased the formerly locally owned *Pueblo Chieftain*. Since then, almost half of the staff is gone, either through layoffs or voluntary exits. Cuts came to the *Chieftain* again in 2019 as its parent company cut hundreds of jobs nationwide. According to The Expanding News Desert project at the Center for Innovation and Sustainability in Local Media at the University of North Carolina at Chapel Hill, total newspaper circulation in Colorado has dropped by 56% from 2004 to 2019. Additionally, it notes that 3 counties in the state have no newspaper, while 33 counties only have one newspaper.

In 2018, the newspaper publishing industry in Colorado employed 2,535, down from 2,726 in 2017, a 7% decline. From 2009 through 2018, the industry lost 48.6% of its jobs, never recovering from the Great Recession as many other industries did. The average annual salary in newspaper publishing during 2018 was \$49,412, 16% lower than the average annual salary of \$58,941 in the state. The structural shift newspaper journalism is undergoing will cause further job losses both nationally and statewide through 2019 and 2020.

Book Publishing

Despite losing jobs year-over-year for the last decade, revenues in the book publishing industry remain healthy. During 2018, total national publishing revenue fell 0.4% year-over-year, but is up 6.9% during the first six months of 2019, according to the Association of American Publishers. Trends in the book publishing industry show a continued move toward digital and audio publication and consumption. Self-publishing through digital platforms continues to grow as well, with digital publications and the ease of online platforms allowing authors greater flexibility and opportunity.

The prevalence of podcasts has given rise to the popularization of audiobooks, which are a substitute for declining e-books. Both the sale and production of audiobooks

INDUSTRY SNAPSHOT INFORMATION	
Nominal GDP, 2018 (\$ Billions)	21.7
Real GDP, 2018 (\$ Billions, 2012 Dollars)	23.4
2018 Real GDP Growth Rate	9.4%
Total Employment, 2018 (Thousands)	74.9
2018 Employment Growth Rate	4.2%
Employment Growth National Rank	2
Share of Colorado Employment	2.7%
Share of National Employment	1.9%
Average Wage, 2018	100,735
Percent of Statewide Average Wage	169.9%
2018 Average Wage Growth Rate	0.0%

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

expanded by 33.8% from 2017 to 2018, with audiobook subscription services providing access to myriad genres. This digital shift has created problems for the Denver Public Library, which has seen a 16% drop in print resource checkouts from 2016 to 2018, and an increase in e-book and audio e-book borrowing of 41% during the same period, according to the *Denver Post*. E-books and audio e-books cost almost 400% to 600% more per book for the library than do print versions.

Sales revenue for general books, also known as trade books, is up 4.6% through the first half of 2019. Religious presses, which represent about a quarter of publishing jobs in Colorado, saw the fastest growth in that category, at 11.4%, and now represent almost 10% of all consumer publications. Professional, university, and other educational book sales revenues are up 1.1% through June 2019 over the same period the prior year, according to the American Association of Publishers.

Employment in the book publishing industry contracted by 27.7% in the state over the last 10 years. The book publishing industry in Colorado is quite small, with a total of 727 employees in 2018, down 5.2% from 2017. Annual

salaries for the industry have remained essentially flat the last few years, growing by a meager 1.6% over 2017 to around \$73,000 in 2018. The number of establishments dropped to 89 in 2018, falling by 7.3% over 2017. The largest employers are concentrated in Boulder and Colorado Springs in niche publishing sectors. The industry is expected to continue to shed jobs in 2019 and 2020 as the industry consolidates and further efficiencies are found.

Directory Publishing

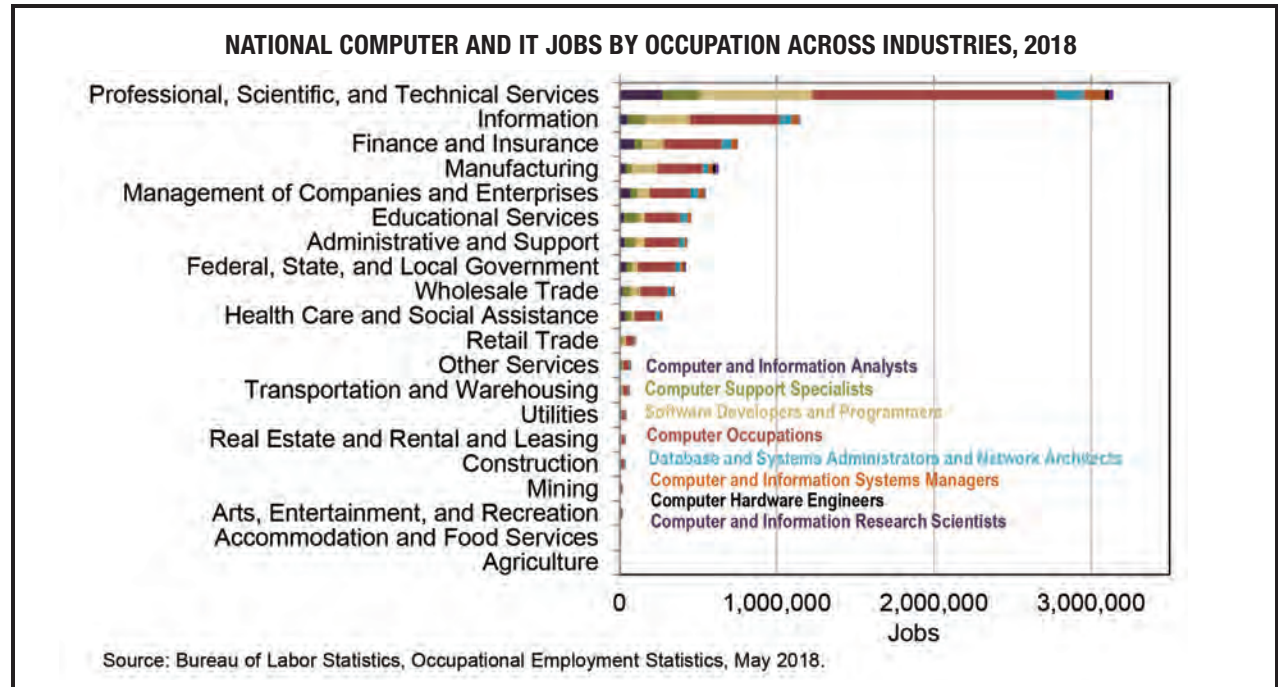
The directory publishing industry includes companies that publish not only directories, but also mailing lists and any collections of facts both in print or electronically. The largest employers in Colorado provide marketing services through the collection of consumer data, and consumer credit and loyalty programs. With only 28 establishments in Colorado, the directory publishing industry employed 1,104 people during 2018. Both the number of establishments and employment have slowly declined annually for the past decade, and that trend is expected to continue in 2020 due to both the high concentration of large companies in the industry and lower spending on advertising. Directory publishing employees garner the highest wages in the publishing sector, with average annual pay in the state at \$106,868 during 2018.

Software Publishing

Colorado continued to record gains in software publishing in 2018, marking four consecutive years of growth. Fueled by organic, homegrown growth, as well as through acquisitions and company relocations, the sector expanded by 7.5% in 2018, to 14,700 jobs. Growth continued in 2019, averaging 1.8% year-over-year through September. The sector is poised to grow further in 2020.

In 2018, there were 684 software publishing companies adding 64 establishments year-over-year—an increase of 10.3%. Average industry wages in Colorado are more than twice the state average (\$133,830).

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 productivity software; smartphone apps; and video games. (Note: The closely related custom computer programming services sector is included in Professional and Business Services.)

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 (twice the national average). The industry workforce is predominately male (67%) and in the age group from 35 to 55. Significant competitors in software publishing space include Utah, Oregon, and Washington in terms of industry sector growth. According to the CompTIA *Cyberstates 2019* report, Colorado ranks 5th

in tech innovation, 11th in net new tech jobs, and 15th overall in tech employment.

Telecommunications

Employment in the Telecom Sector rose by 1,058 in 2018, marking the first time since 2008 that the industry added more than 1,000 jobs in a year. Just over 27,000 people worked in the Telecom Sector in 2018 across 670 establishments throughout Colorado. Fifty-one percent of these establishments are located in Metro Denver; however, with many larger companies based in the metro area over 70% of all telecom jobs are in the Denver Metropolitan Statistical Area (MSA) (91% of the jobs added in 2018 were also in the MSA).

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Broadcasting and telecommunications are combined for GDP reporting; this combined sector has contracted for the past four years—declining 1.7% in 2014, 7.7% in 2015, 8.4% in 2016, and 10.6% in 2017 (newest available data). In 2017, GDP in the telecom and broadcasting sector accounted for just 2.3% of the state total, down from 3.8% of the 2013 statewide GDP.

Mergers and acquisitions have been commonplace in this industry over the past handful of years, dating back to CenturyTel merging with Denver-based Qwest Communications in 2011 to become CenturyLink. CenturyLink finalized another merger in late 2017, buying Broomfield-based Level 3 Communications for \$34 billion. Another noteworthy merger involving two companies with large workforces in Colorado occurred in 2016 when Time Warner Cable was acquired by Charter Communications for \$78.7 billion.

INFORMATION EMPLOYMENT 2010–2020 (In Thousands)

Year	Publishing	Telecom	Other	Total
2010	22.9	28.5	20.6	72.0
2011	22.5	28.0	20.9	71.4
2012	21.6	27.2	21.0	69.8
2013	20.6	27.4	21.9	69.9
2014	20.2	27.5	22.6	70.3
2015	20.2	27.0	23.5	70.7
2016	20.2	27.4	24.3	71.9
2017	20.6	26.1	25.2	71.9
2018 ^a	21.1	27.1	26.7	74.9
2019 ^b	20.9	27.5	27.1	75.5
2020 ^c	20.6	27.9	26.5	75.0

^aRevised. ^bEstimated. ^cForecast.

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

AT&T acquired Time Warner in a deal valued at \$85 billion in 2018, building on its 2015 merger with DirecTV valued at nearly \$50 billion. Boulder County-based Zayo Group agreed to a merger with affiliates of Digital Colony Partners and the EQT Infrastructure IV Fund for \$14.3 billion in May 2019, with the deal expected to close in early 2020.

Comcast and Disney engaged in a bidding war for 21st Century Fox, with Disney emerging as the winner after offering \$71 billion in 2018. Comcast subsequently expanded its European customer base, agreeing to a \$40 billion deal with U.K.-based Sky Television.

In an effort to keep pace with AT&T and Verizon in the wireless market, T-Mobile announced a merger with Sprint in April 2018 valued at \$26.5 billion. This deal is received regulatory approval and will likely close in 2020, but it promises to help spur a faster 5-G network build-out among the big three wireless providers. Dish has also committed to the Federal Communications Commission (FCC) that it will deploy a facilities-based 5G broadband network by June 2023.

Colorado stands to gain substantially from this merger of T-Mobile and Sprint after the state's Attorney General Office dropped its opposition. Dish Network, based in Englewood, was granted the right to purchase wireless spectrum and two mobile phone businesses from T-Mobile in an agreement with the Department of Justice. This paves the way for Dish to use more than 20,000 cell sites and multiple existing T-Mobile retail locations to become the fourth nationwide wireless mobile operator. This deal for Dish could be worth more than \$5 billion and promises to bring 2,000 jobs to Colorado to help roll out and support the new wireless company.

Employment in the Telecom Sector experienced a 41% decline from 2001 to 2006 as the industry shed nearly

19,000 jobs. This trend was reversed for three years, from 2006 to 2009, as 4,000 jobs were added over this period. Job losses were again the norm from 2009 to 2012, with payrolls falling a combined 4,700 or 15% (with a considerable portion of this loss due to the aforementioned cuts at CenturyLink after its merger with Qwest).

The trend of losses reversed in 2013 and 2014, with sector payrolls edging up about 263 combined over these two years. Employment trended down 500, or 1.9%, in 2015. In 2016, Telecom employment expanded by 450, growth of 1.7%; losses resumed in 2017, with employment falling over 1,300, or 4.9%. The sector added over 1,000 jobs, a gain of 3.9%, in 2018.

The Wired and Wireless Telecommunications subsector, created in 2017 when wired and wireless carriers were collapsed into the same component sector, accounted for nearly all of the telecom job gains, with employment rising 1,077 in 2018. The Bureau of Labor Statistics suppressed the number of jobs in Satellite Telecommunications and Other Telecommunications in 2018, but there appears to be little change in employment.

Telecom sector employment will increase by 400 in 2019. The sector is anticipated to add 400 positions in 2020. Developments that could impact employment changes in various components of the telecom industry are outlined in the following paragraphs.

Broadband

Broadband has emerged as a critical component of economic development. Economic research shows 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.

Broadband provisions in Colorado communities located outside the Front Range present unique challenges. Nearly 84% of the state's population lives in urban areas along the Front Range. Rural areas of the state have historically been underserved as mountainous and rugged terrain poses challenges to infrastructure projects, which are reliant on large population bases to offset the high initial investment costs. State legislation, namely Senate Bill (SB) 05-152, which intended to proscribe unfair competition between publicly and privately provided broadband, initially presented barriers to broadband efforts in many rural parts of the state.

Over the past decade, about 40% of municipalities and two-thirds of counties have voted to opt out of the restrictions in SB 05-152 that prohibit communities from running their own internet service. According to the Institute for Local Self-Reliance, 142 cities and counties have voted to override the provisions in SB 05-152. Collaborating with a private provider to roll out municipal broadband can be a costly venture, especially in areas with smaller or widely dispersed populations. Larger towns like Longmont, Loveland, and Centennial have implemented plans to roll out their fiber networks. Fort Collins opted out in 2015, issued \$142 million in bonds for broadband buildout, and launched service to its first customers in late 2019. The town will have at least 800 miles of fiber when the network is built out in 2022, but currently only about 5% of the network conduit is in the ground. Smaller communities have been slower to engineer and deploy broadband utilities infrastructure. Successful deployment in small towns, such as Red Cliff, Meeker, and Wray, provide innovative and inspiring examples for other communities to follow. 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.

Additionally, 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 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. Many small, rural local telephone companies in Colorado stand to benefit to from the final phase of the Federal Communications Commission's (FCC) Connect America Fund designed to subsidize voice and broadband networks in high-cost rural areas over a 10-year period. The Governor's Office of Information Technology developed a broadband map that focuses on broadband infrastructure throughout the state and is updated twice per year.

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 that have the promise to reduce health care costs while improving outcomes. Senate Bill 2 passed in 2018 also helped rural broadband expansion as it amended the state broadband fund created in 2014 to free up an estimated \$115 million in broadband grants from the State Broadband Administrative Fund over the next five years.

It specifically targets underserved areas with a population of 7,500 or less that currently lack access to speeds that meet or exceed the FCC standards and has the potential to connect over 17,000 rural households.

Telephone

Telephone, the legacy business for telecom providers, has been experiencing a protracted decline since the turn of the century. In June 2019, the Centers for Disease Control and Prevention, which tracks landline use to assure representative samples in its health studies, reported that over 57% of U.S. households had only cellphone service during the second half of 2018, marking the second consecutive year the share without a landline has grown by three percentage points. According to this study, less than 40% of all households still had a landline (and about 3% had no phone service at all). Among young adults age 25–34, about 77% of lived in households with only wireless telephones. 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.

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Television

Similar to the decline in land telephone subscriptions, pay TV companies have been losing subscribers at a continued steep rate. An August 2019 report from Leitchman Research revealed that cable, satellite, and telecom pay TV providers lost about 1.53 million subscribers in second quarter 2019 compared to a loss of about 420,000 reported in second quarter 2018. As internet speeds have become faster and more affordable in many markets, customers have been “cord cutting” and leaving traditional cable and satellite services—over the past year “top-Pay TV” providers have lost over 5 million subscribers compared to a loss of roughly 1.6 million a year ago. Even internet-delivered TV services, like Sling TV and DIRECTV NOW, saw a drop of 120,000 subscribers in Q2 2019. Leitchman reported that 74% of U.S. households have subscription video on-demand service from Netflix, Amazon Prime, and/or Hulu in 2019 (up from 69% in 2018), with 69% 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 service like Disney+ with Verizon subscriptions or including AppleTV 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 added 370,000 broadband internet subscribers in second quarter 2019, slowing by 23% from the same quarter in 2018. There are now 100 million broadband subscribers; cable companies provide broadband service to 66 million while telephone companies provided service to 34 million.

Wireless

Advances in wireless communications have enabled consumers continue to move away from landlines and pay TV providers. As more content is delivered wirelessly and with 5G (fifth-generation) mobile networks on the horizon, telecoms are fighting to expand their spectrum to meet the demands of bandwidth-intensive consumers. According to the FCC, the number of connected devices exceeds 400 million, or 1.2 devices for every resident in the United States. According to Pew Research Center, 96% of Americans own a cell phone and 81% own smartphones (up from just 35% reported in the first smartphone ownership study in 2011). Additionally, tablet computers are owned by 52% of Americans (up from just 3% in 2010), but this share has plateaued over the past three 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. The FCC auctioned 5G spectrum in the 28GHz and 24GHz band in 2019, releasing a total of nearly 5 gigahertz of 5G spectrum into the market—more than all other flexible bands combined.

In October 2018, the FCC unanimously voted to open additional spectrum to connected devices and proposed opening up to 120 megahertz of spectrum available on the 6GHz band, an unlicensed spectrum used by Wi-Fi networks. This additional spectrum will help to ease congestion on wireless networks and help to accommodate the expected 300% increase in U.S. internet traffic between 2016 and 2021. Additionally, the FCC changed how it auctioned licenses in the 3.5 GHz band—a spectrum that is key to the deployment of 5G networks—and now issues licenses at the county level rather than the smaller census tracts.

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. Mobile phone users will be required to upgrade their phones to fully take advantage of the new 5G networks, further limiting their adoption.

Film, Television, and Media

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; over \$18 million in incentives was conditionally approved to productions as of September 30, 2019. The Colorado Office of Film, Television & Media (COFTM) estimates that approved productions have (and will) generated over \$221 million in economic impact to 55 counties in Colorado and created over 8,800 cast and crew positions.

A multiplier effect was used based on the reported actual and predicted expenditures of \$123 million in production spend and 3,995 cast and crew hires from the start of the program in FY2012–13 through FY2019–20. The multiplier effect was extrapolated from the University of

COLORADO FILM INCENTIVES PROGRAM 2013-2019

Number of Completed Projects	72
Incentives Paid	\$17.1M
Economic Impact	
Total Production Spend	\$116.6M
Estimated Tax Revenue	\$14.0M
Net Cost to State	\$3.1M
Estimated ROI	37:1

Sources: Colorado Office of Film Television & Media, Leeds School of Business.

Colorado's Leeds School of Business 2011 study *Economic and Fiscal Impact Analysis of Actual Film Budget Scenario on Colorado* and *Colorado Film Incentives and Industry Activity* reported in 2015, which were recently updated to include current data. Using the multiplier, the actual economic activity is estimated to be \$221 million since the inception of the program.

After completing an internal review process within COFTM, each project is presented to Colorado's Economic Development Commission (EDC). This group, made up of Colorado business leaders, must vote to approve each project before a purchase order or contract is initiated. After completion of the film, television show, commercial, or video game, a 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 seven years, Colorado's film 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) and *Amateur* (Josh Charles, Michael Rainey Jr.); *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. Additionally, Colorado's video game industry was boosted by three separate incentives for the choose-your-own-adventure games "Project Siren" and "Project Medusa" produced in Westminster. 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. In 2018, COFTM incentivized seven unscripted television show projects that were produced locally to air on Food Network, PBS, Facebook Live, HGTV, and Velocity Channel. The trend continued in 2019 with unscripted series for Food Network and Discovery Channel, in addition to two locally produced, micro-budget feature films.

COFTM has started tracking nonincentivized production across the state as well. Due to Colorado's strong crew-base reputation, commercial production—which traditionally skips the incentive application process due to tight client deadlines—has become a large part of the state's film market. Thanks to partnerships across the state with 12 COFTM-activated Regional Film Commissions and local film liaisons, the office now has a better scope of commercial activity. During FY2019–20, Colorado remained a key location for the commercial

COMPETING WESTERN STATES OFFERING FILM INCENTIVES

State	Incentive	Allocated Funds FY 2019 (Millions)
California	20-25% tax credit	\$330.00
New Mexico	25% film / 30% TV tax	\$110.00
Montana	20-35% tax credit	\$10.00
Utah	25% tax credit	\$9.29
Oklahoma	35-37% rebate	\$4.00
Colorado	Up to 20% rebate	\$0.75

Source: Colorado Office of Film Television & Media.

industry, including content for Skull Candy (Denver) and Harley-Davidson (Leadville), Subaru (Telluride), as well as local campaigns for Colorado Great Outdoors (Durango) and Colorado Lottery (Jefferson County). Additionally, Colorado was a popular music video location for musicians Enrique Iglesias (*Despues que te Perdi* filmed in Park County), Dan + Shay (*Tequila* filmed in Frisco), and Brooks Forsyth (*Cast My Dreams to the Wind* filmed in Victor).

Unfortunately, growth of Colorado's infrastructure is at a standstill. Rental houses are a key part of any community's film industry and allow access to gear for both in and out-of-state companies. This infrastructure is attractive to out-of-state companies because they do not incur the added expense of traveling with gear. However, due to reduced General Fund allocation for the incentive

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program, Colorado rental houses are seeing a decline in business. Ken Seagren, the owner of Colorado's largest rental house, Lighting Services, Inc., reports a 95% decline in local rentals. Additionally, Colorado's largest sound-stage, WestWorks Studios (17,000 square feet of studio space), closed its doors in September of 2019.

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. Anecdotally, producers who worked in the state inquired about returning with new projects. A new, younger crew population, many of whom graduated from Colorado institutions of higher education, supplemented this crew base. In fact, various institutions across the state, including the Colorado Film School and CU Denver's College of Arts and Media, have reported an increase year after year in film and video students. At the same time, with a 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.

Since the inception of the 20% performance-based rebate, COFTM has been allocated a total of \$18.6 million for incentives. Although continued funding reflects the success of the program thus far, COFTM must compete annually for General Fund funding. For FY2019–20, COFTM was allocated \$750,000 for the third year in a row, which is a dramatically smaller amount than the \$3 million allocated in FY2016–17 and FY2015–16. As a result of lower funding allocations, COFTM has made an effort to support Coloradans who live and work within the state by only awarding incentive dollars to in-state applicants since FY2017–18. Less funding resulted in fewer incentivized productions and reduced impact on both the state's workforce and economy.

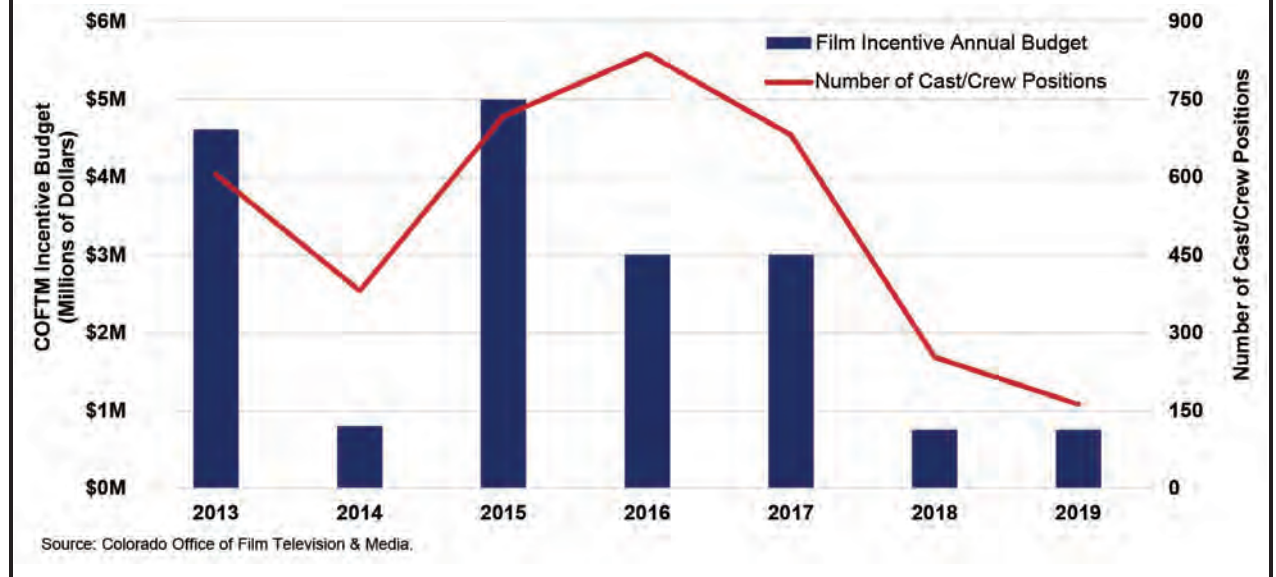
The number of crew and cast positions associated with projects incentivized by COFTM dropped drastically in the years in which the budget was cut. Likewise, the total

COFTM INCENTIVIZED PROJECTS FY2014-15 — FY2019-20

Year	Incentive Funding	Number of Projects Completed	Total Colorado Spend	Total Colorado Spend with Multiplier	Cast and Crew Hires
FY 2014-15	\$5,000,000	16	\$33,570,021	\$60,367,291	717
FY 2015-16	3,000,000	15	17,052,944	30,665,457	838
FY 2016-17	3,000,000	11	28,902,839	51,974,530	768 ^a
FY 2017-18	750,000	8	5,627,228	10,119,163	262
FY 2018-19	750,000	5	4,094,389	7,362,735	180 ^a
FY 2019-20	750,000	6	5,064,213	9,106,721	244 ^a

^aNumber based on CPA Final Reports and Estimated Spend based on application materials for projects still in production.
Source: Colorado Office of Film Television & Media.

TOTAL CAST/CREW POSITIONS CREATED THROUGH INCENTIVE PROJECTS AND COFTM INCENTIVE BUDGET



Colorado expenditure associated with productions incentivized by COFTM dropped drastically in 2018 and continues on a downward direction as a result of decreased incentive funding. The primary reason for the declines in positions created and expenditure is that a smaller budget can only support incentives for smaller productions, with lower budgets and, therefore, smaller crews.

Limited funds for Colorado's incentive program puts the industry at risk as production companies continue to make location decisions based on the production budget's bottom line. Inquiring production companies with budgets too large to see an impact from Colorado's limited funds move their films to neighboring states that offer similar scenery and larger funding opportunities. During the 2019 legislative session, New Mexican lawmakers voted to increase the state's annual allocation from \$50 million to \$110 million. Also worth noting is a new investment in Montana's film incentive program. Lawmakers there increased the film incentive allocation from

\$750,000 (the same amount Colorado has been allocated the previous three fiscal years) to \$10 million.

All of COFTM's FY2019–20 allocation was approved for five projects within the first two months of the fiscal year. One project approved in a previous fiscal year reported an underspend upon submitting their final CPA report at the end of FY2018–19. In September 2019, the EDC approved the use of these funds for a Colorado-produced limited television series to air on Food Network. To accommodate the influx of inquiries, more incentive funding is required.

In an effort to keep Colorado's film incentive running as a minimally viable program, COFTM requested an additional \$1.25 million from the EDC. The EDC, created to promote economic development in Colorado, has oversight of the Economic Development Strategic Fund, and in October 2019, the Commission approved an additional \$1.25 million as a one-time Band-Aid for Colorado's film incentive program. The funds have yet to

be approved for a specific project but COFTM anticipates the additional \$1.25 million will lead to increased cast and crew jobs, and increased production spend in Colorado's rural communities.

The film industry is incentive driven. Colorado's film and television activity will continue to reflect the incentive program's annual allocation. ❖

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Blockchain

Blockchain, at its most basic, is a digital ledger in which transactions are recorded chronologically and publicly. Different blockchain systems are being built across the world, but each network allows connected computers to validate each other's data, creating a shared, immutable, and decentralized record. This new technology allows people to transact with one another in a secure and trustless manner, reducing the reliance on third-party intermediaries. This concept has taken the finance world by storm and has led to disruptions across many industries.

Industries Blockchain Is Currently Affecting

Currency

The first-ever widespread consumer use of a blockchain was Bitcoin. Since then, numerous cryptocurrencies have been released, including Ripple, Litecoin, Dash, and Dogecoin. The concept surrounding digital currency is that there is a set amount of currency that will ever be released into circulation. For example, there are only—and will only ever be—21 million Bitcoins. There is no central party, such as the Federal Reserve, that can arbitrarily make more or fewer coins and change the valuation of the coins. Additionally, the technology allows for one person to transact with another person using the network and without the intermediary of a bank, money transmitter, or another application. This is meant to reduce transaction fees, increase security, and allow a global network of transactions without borders. Whether this global digital currency ever comes to fruition is unknown and speculative, but the digital currency was the first use case of blockchain technology.

After the advent of Bitcoin and other cryptocurrencies, there is a new type of U.S. dollar representation of what has been termed stable coins. A stable coin, which represents the value of a dollar, is built using blockchain technology to give the same benefit of trustless transactions; there is no need for a bank or money transmission service. The most prevalent example is Circle, which is backed by the investment banking firm Goldman Sachs. Also, Facebook, along with a plethora of partnerships, has begun creating its own stable coin with the Libra project. Legislators worry that even though Libra is starting as a stable coin, it will soon turn into its own currency and compete with the dollar.

Supply Chain

Blockchain technology is being used in traditional ERP and Supply Chain management systems. A blockchain can increase

supply chain efficiency for a product like a diamond, where its use can better track the diamond from origin at the mining operation, all the way to the point of sale at a jewelry store, ensuring and validating quality along the way. In addition to diamonds, several major companies, including Walmart, are using blockchains to ensure food security and organic authenticity in their stores. Companies, such as Bext360, based in Golden, are using blockchains to help enterprises with their supply chains.

Digital Assets

One of the most pursued use cases of blockchain tokens has been representation ownership of land, real estate property, vehicle, or other ownership titles. The main benefit is the ability to split the ownership among multiple parties while managing the complexities of joint ownership without having a third party, like a bank, financial institution, or lender, manage the transaction. A good example is blockchain technology can be used to drastically improve the efficiency of real investment trusts (REITs).

Lending

Companies are using blockchain to tokenize a borrower's assets, equities, and income, and lending to them in a much more efficient manner—specifically collecting collateral if the loan goes sideways. Lending platforms will loan borrowers U.S. dollars based on their cryptocurrency and digital assets, all executed through smart contracts.

Public Markets

Blockchain platforms are starting to make their way into traditional public stock exchanges. t-ZERO announced a partnership with the Boston Stock Exchange to allow for public trading of “securities tokens.” A securities token is a representation of a public stock or commodity, with the ability for the user to buy and sell stocks just like they would in their normal brokerage account. The implications of this are the technology helps with the regulatory burdens of exchange (as transactions are recorded and immutable), and the network allows for lower prices on trading fees and faster transactions.

Secondary Markets

Private markets hold a huge amount of value, but often struggle with liquidity and transparency of transactions. Public markets were created to protect nonaccredited investors and allow them to participate in stocks and equities. The majority of value for equities and stocks are still in private markets where transaction times are lengthy and must go through long approval processes, such as the right of first refusal, second refusal, and co-sale.

Securities tokens and smart contracts allow these private equities to be transacted at a much higher rate and bring more potential liquidity to what has been a very illiquid market. The Polymesh project out of Boulder is one of the biggest projects related to secondary markets in the world.

Advertising Identity

Right now, a social media user's identity is siloed in third-party systems, like Facebook, LinkedIn, and Instagram. This can cause problems and create tension between users of a product and the company selling their data to display ads. Innovative ad-tech companies, like the Brave browser, have been coming out with blockchain solutions that allow users to control their personal data, and grant and revoke access to the third parties as they see fit. Also, companies such as Facebook with its Libra project want to start having a user's Facebook profile be a verified form of identity for transactions on the internet.

Government Identity

Social Security numbers, birth certificates, voter registration, and other government identification systems are critical for governments to operate. To increase security, as well as improve efficiency in the issuance of these identities, governments—including Colorado—have been looking into using blockchain solutions. The State of Colorado just released its digital ID platform, with a future roadmap for using blockchain technology.

Colorado Blockchain Companies

For a list of companies using blockchain technology in Colorado, visit <https://coloradoblockchain.com/companies>.

Outlook

Blockchain technology, industry, and regulations are beginning to come to fruition. At this point in time, it is clear that blockchain technology is here to stay, and some of the most innovative companies are beginning to build using the technology. Colorado also has positioned itself as a leading state and the true potential of this technology is starting to be seen. 🍀

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Financial Activities

The Financial Activities Supersector consists of two sectors that make up 6.2% of statewide employment: (1) Finance and Insurance, and (2) Real Estate and Rental and Leasing. The Financial Activities industry marks eight consecutive years of growth in 2019, adding 2,500 jobs to total 173,000. Growth is projected for 2020—1%, or 1,700 jobs. Foundationally, the strong economy will support banking, insurance, and real estate employment.

Approximately 68.5% 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 31.5% of the workers are employed in the Real Estate and Rental and Leasing Sector, which includes real estate-related payroll

FINANCIAL ACTIVITIES EMPLOYMENT

Year	Finance and Insurance	Real Estate and Rental and Leasing	Total
2010	101.7	42.6	144.4
2011	101.4	42.5	143.9
2012	103.5	43.2	146.7
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 ^a	117.0	53.5	170.5
2019 ^b	118.5	54.5	173.0
2020 ^c	119.6	55.1	174.7

^aRevised. ^bEstimated. ^cForecast.

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

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

jobs and companies that lease anything from real estate to equipment to formal wear.

Finance and Insurance

Capital Markets

Overview

The capital markets abhor uncertainty. This is ironic given the innumerable variables driving price action would argue that uncertainty is the constant.

However, there are certain foundational constants that the capital markets depend upon. Specifically, that rules and policies will be enforced, and that change will be gradual and predictable. One of the economic inputs in flux is the trade policy of the United States. After decades of policies expanding free trade, in the blink of an eye this has been turned on its head.

What was described as an easily winnable war began with tariffs on imported washing machines and solar panels in March 2018. Little over one year later, in April 2019, President Trump announced 10% tariffs on \$300 billion of Chinese imports in addition to the 25% tariffs already being levied on \$250 billion of Chinese goods. Over this period of time, China has responded in a tit for tat fashion. Keep in mind that China is not the only source of trade tension as “policy tweets” have been directed at other trading partners of the United States.

As the United States rounds the horn into the second year of a trade war, uncertainty prevails. This impacts businesses both large and small. Multinational companies are encountering macroeconomic weakness globally and routinely cite trade tensions and uncertainty regarding U.S. trade policy as a driving cause. Small businesses are being impacted as their supply chain has been disrupted. Be it parts/products they are importing or parts/products they are exporting, there are few businesses that have not been impacted by the trade war either directly or indirectly. Each presidential tweet consisting of threats of trade war escalation or the promise of a “big deal” has the power to buffet the capital markets. However, as

INDUSTRY SNAPSHOT FINANCIAL ACTIVITIES

Nominal GDP, 2018 (\$ Billions)	74.4
Real GDP, 2018 (\$ Billions, 2012 Dollars)	61.4
2018 Real GDP Growth Rate	1.4%
Total Employment, 2018 (Thousands)	170.5
2018 Employment Growth Rate	1.4%
Employment Growth National Rank	18
Share of Colorado Employment	6.3%
Share of National Employment	5.7%
Average Wage, 2018	84,615
Percent of Statewide Average Wage	142.7%
2018 Average Wage Growth Rate	3.8%

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

months and soon, years pass, supply chains shift and/or business capital expenditures get delayed. It is possible for corporate chieftains to publicly proclaim their confidence in the economy based upon the low employment rate and the appetite for consumption exhibited by the U.S. consumer and yet be reluctant to make long-term investments that would be stimulative to the economy due to uncertainty about U.S. policy. As we enter 2020, a presidential election year, could a business leader be faulted for taking a “let’s wait and see” approach to their strategic planning? But the November 2020 election results will not provide clarity; regardless of who wins the White House, the Senate, and the House of Representatives, there will be a desire to see what the policy and legislative agenda will bring. Trade, tax policy, and health care are three major issues that could be in flux. We may very well find ourselves treading economic water for the next 12–15 months, which begs the question: “Can the consumer sustain the economy during that period, or will we tip into recession?”

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For the better part of a decade, U.S. GDP has run at a cumulative annual growth rate of approximately 2.2%. There have been up periods where we have exceeded that level and down periods where we have fallen below that level, but on average it has been 2.2%. Following a push for deregulation and a reduction in elements of the U.S. tax code in 2017, there was a momentary surge in GDP as sources of economic friction were reduced. In order to pay for the cuts to the U.S. tax code, GDP needs to run in excess of 3%, and there were some political touts that we could see growth as high as 6%. Since the tax cuts, the highest GDP has reached was 3.5% in Q4 2017 and once again in Q2 2018. However, GDP has quickly reversed course, and while 2019 will likely come in at an annual rate of approximately 2.2%, we are slowing. The advance estimate for Q3 2019 GDP was reported at 1.9%. Adding to the warning lights on the dashboard is the

growing budget deficit in the United States, exceeding \$1 trillion (see the Government section for a discussion of this). This is exerting economic stress of its own as the bond market has revealed a vulnerability when overnight financing rates, secured by U.S. government and government sponsored enterprise debt, pushed as high as 10% at the end of Q3 2019.

In a polarized environment, outcomes become binary. The trade war is either on or off. In geopolitics, others are either friend or foe. Domestic politics have devolved similarly as partisanship has polarized the electorate into a state where disagreement has no middle ground. There is a risk that as politics have been inserted into every discussion (including this one) and every aspect of life in America—aspects that were once seen as apolitical, things like the independence of the Federal Reserve,

trade policy, and law enforcement—could cause consumer confidence to suffer.

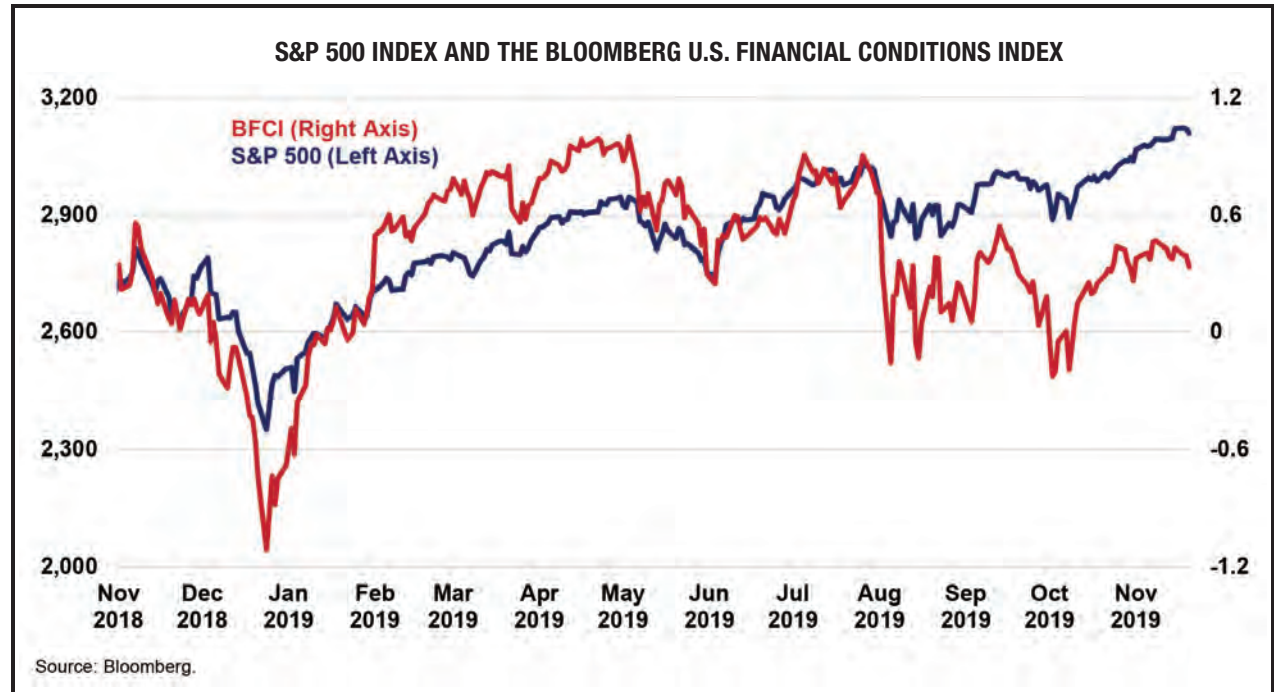
The capital markets are driven by money, and money is agnostic when it comes to politics. Interestingly, the capital markets have experienced their own issues with governance lately and perhaps reflect a ray of hope and the path for society at large. Society has private citizens and public officials, and similarly, the capital markets have private companies and public companies. There is a libertarian aspect to the rights of private citizens, where one is entitled to do their own thing and find their own version of happiness, provided it does not impinge upon the rights of others. Similarly, private companies often prefer to remain private to avoid the bright light of accountability as to the success or failure of the choices they make, and how they spend their money and allocate their resources.

Look at We Company (aka WeWork) as an example. The founder and CEO, Adam Neuman, had a business vision and a propensity for hyperbole and opinionated, erratic behavior. Through his personality, he built a private company that at one point was estimated by Morgan Stanley to be worth as much as \$100 billion in an initial public offering (IPO). The board of directors was made up of sophisticated investors and financially literate business people, including Bruce Dunlevie, a founding partner of Benchmark Capital that was an early investor in eBay, Twitter, and Zillow; Ron Fisher, vice chairman of Softbank Group, a mega-investor in We Co.; Lewis Frankfort, former executive chairman of luxury brand Coach; Steve Langman, a former mergers and acquisitions banker at Goldman Sachs and Lazard; and Mark Schwartz, the former head of Goldman Sachs's Asia-Pacific Investment Banking. These men are the epitome of worldly, sophisticated business people. However, once the necessary regulatory filing was made with the SEC to bring this company public, the lack of acceptable corporate governance became glaringly apparent. Components of good governance include rule of law, transparency, accountability, and being consensus oriented. Once the

curtain was pulled back on how Neuman was running We Company, the market made it clear that such behavior was not acceptable for a public company. We Company had to accept a bailout that values the company at less than \$8 billion when just a few months before it was valued at \$47 billion. Neuman voted with the rest of the board to remove himself as CEO (perhaps an example of how even sophisticated business people can find themselves on an untenable track and unable to recognize that until the curtain is pulled back and actions are exposed to public scrutiny). The company will remain private and attempt to right itself into a viable, profitable enterprise. That is the value of regulatory checks and balances and the importance of good governance.

In early November, it was announced that the CEO of McDonald's, Steve Easterbrook, had been fired for what is reported as a consensual relationship with an employee. However, such a relationship was against company policy with no exceptions. In a case of checks and balances, the board of directors sent a message that nobody is above the law and terminated Easterbrook. Despite the fact that during Easterbrook's tenure as CEO, McDonald's shares nearly doubled in value from when he started in March 2015. Easterbrook wrote an email to McDonald's employees that he had violated company policy on personal conduct, saying "This was a mistake," and that "Given the values of the company, I agree with the board that it is time for me to move on." This dovetails with a PriceWaterhouseCooper's study that showed for the first time in nearly two decades that more CEOs were dismissed for ethical lapses than for financial performance.

These examples of corporate governance issues are pertinent as we face a presidential impeachment hearing while heading into an election year. How will this impact consumer confidence? The answer to that question may be determined by how partisan the hearings are or if the public perceives that the constitutional role of checks and balances on executive power is taking precedence.



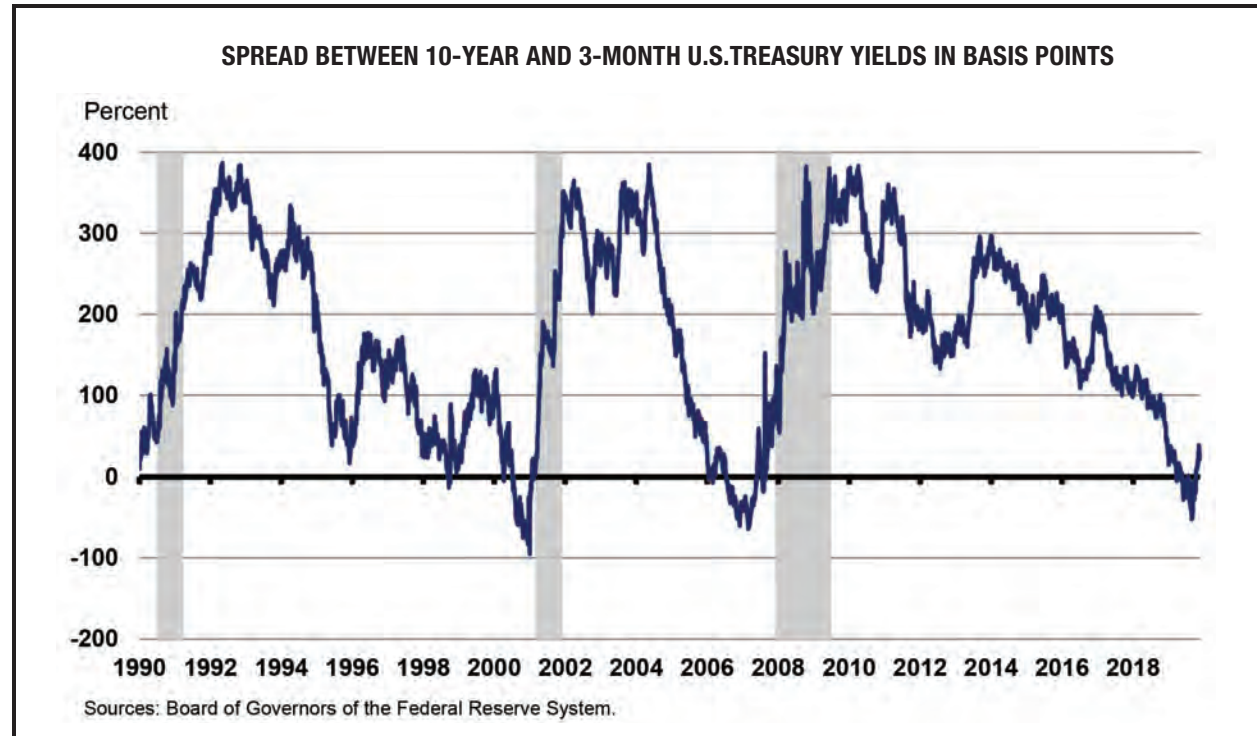
The public hearings will begin during the 2019 holiday season. Will this impact consumer spending during the holidays? Have the capital markets demonstrated that this process need not be overly disruptive? The constitution lays out a succession plan for a reason. Money is agnostic and Wall Street is pragmatic; within that vein, Raymond James published a research note that asked, "What if Trump quit?" This is not a political statement, but merely a necessary gaming out of possible scenarios. In this case, the presumption was that Vice President Pence would assume the role of president; that he would likely install the former U.S. ambassador to the United Nations and former South Carolina Governor Nikki Haley as his vice president; and that this would have a calming effect with a predictable, traditional choice that they believed would likely result in a stock market rally.

The authors went on to say that Trump could walk away from the fight to reveal his tax returns and countless other governance issues and potentially go on to make even more money and maybe start his own media network that was reportedly his initial plan.

Trade policy and governance issues are front and center as we head into 2020. How has the Federal Reserve responded during this environment of uncertainty? Throughout 2019, the president has launched a barrage of attacks upon the Federal Reserve, calling Fed independence into question. The Fed has a dual mandate of stable prices and full employment. With PCE core inflation running below 2% and unemployment at generational

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lows, the Fed had been gradually trying to return to noncrisis policy. As such, it had been shrinking its balance sheet, an unwinding of quantitative easing (QE), and gradually raising the Federal Funds target rate. In December 2018, the Fed Funds target was at 2.50%. In 2019, it has reduced the Fed Funds target three times, 25 basis points each, taking the target to 1.75% at the October 30, 2019, FOMC meeting. The October 2019 FOMC meeting statement indicated that the committee would be pausing unless there was a material change to the outlook. Presumably, the two major issues that could impact that outlook would be a resolution to the trade war or a precipitous weakening in consumer spending.

Bond Market

Looking to the bond market, there has been a series of disturbing warnings. The first to be highlighted is the inversion between the 3-month Treasury bill and the 10-year Treasury note. This relationship had progressively flattened and dipped negative throughout 2019. As the month of August 2019 closed out, it dipped to -50 basis points on August 28. In the span of approximately 60 days, it went from a -50 basis point inversion to a +20 basis points at the end of October. Put into context, the quarterly average dating back to the 1960s is +144 basis points. The five-year average is +126 basis points. This suggests a drag on the economy, but with luck, the 75 basis points of easing by the Fed has mitigated this, and the impact of the brief periods of inversion will be diminished. In early November, the relationship has

YIELD OF 10-YEAR SOVEREIGN BONDS BY NATION

Nation	Yield	Nation	Yield
Switzerland	-0.58	Spain	0.27
Germany	-0.39	United Kingdom	0.66
Denmark	-0.37	Israel	0.86
Netherlands	-0.26	Italy	0.99
Japan	-0.19	Australia	1.09
Austria	-0.16	Greece	1.16
Finland	-0.15	New Zealand	1.26
Sweden	-0.12	Norway	1.36
Belgium	-0.08	Hong Kong	1.41
France	-0.08	Canada	1.44
Ireland	0.02	Singapore	1.71
Portugal	0.20	United States	1.83

Source: Bloomberg.

Note: Data as of November 4, 2019

continued to steepen to +26 basis points. We still have a long way to go to return to historic norms.

Another warning from the bond market is in the leveraged loan market. This market is defined as credit to companies that already have considerable amounts of debt and/or a poor credit history. According to the credit rating agency Moody's, in 2019, the leveraged loan market in the United States had grown to \$2 trillion. That is an increase of nearly 80% over the past eight years and makes the leveraged loan market larger than the junk bond market. These loans are routinely packaged into collateralized loan obligations (CLOs), and as demand has grown, underwriting standards have declined. This has resulted in "covenant lite" loans, meaning there are fewer protections for investors purchasing these loans. For years, regulators and analysts have cited the leveraged

FINANCIAL MARKETS: STOCKS
2010-2019 YTD
(Year-End Close)

Year	Index				Annual Percent Change			
	S&P 500	Dow Jones	NASDAQ	Russell 2000	S&P 500	Dow Jones	NASDAQ	Russell 2000
2010	1,258	11,578	2,653	784	12.8%	11.0%	16.9%	25.3%
2011	1,258	12,218	2,605	741	0.0	5.5	-1.8	-5.5
2012	1,426	13,104	3,020	849	13.4	7.3	15.9	14.6
2013	1,848	16,577	4,177	1,164	29.6	26.5	38.3	37.0
2014	2,059	17,823	4,736	1,205	11.4	7.5	13.4	3.5
2015	2,044	17,425	5,007	1,136	-0.7	-2.2	5.7	-5.7
2016	2,239	19,763	5,383	1,357	9.5	13.4	7.5	19.5
2017	2,674	24,719	6,903	1,536	19.4	25.1	28.2	13.1
2018	2,507	23,327	6,635	1,349	-6.2	-5.6	-3.9	-12.2
YTD Nov. 19, 2018	2,691	25,017	7,028	1,497	4.3	7.1	3.6	0.2
YTD Nov. 19, 2019	3,120	27,934	8,571	1,598	16.0	11.7	21.9	6.8

Source: Yahoo! Finance. Note: YTD represents the growth year-to-date through November 19 from the prior end-of-year close.

loan market as a source of systemic risk in the economy. Low interest rates and the longest economic expansion in U.S. history has allowed this sector to expand to a threatening size. As the preponderance of these loans float over an index, they are vulnerable to a rising interest rate environment.

Finally, perhaps one of the greatest economic threats is the black hole of low, and even negative, interest rates that are prevalent among other developed economies. In early November, out of 25 developed economies, only Iceland's 10-year government bond was yielding more than that of the U.S. 10-year Treasury note, which was yielding 1.78%. Meanwhile, countries like Portugal and Spain have 10-year government bonds that yield less than 0.50%. Note that the Federal Funds target rate as of October 30, 2019, is at 1.75%, and this is an overnight

rate, illustrating just how out of sync U.S. yields (and by extension, the U.S. economy) are with the rest of the world, where as many as \$17 trillion in foreign bonds trade with a negative yield. While President Trump has frequently lamented the fact that countries like Germany and Japan can borrow at negative yields, this is a classic case of "be careful what you wish for." If one believes in the time value of money, and that in a growing economy if you borrow money for 10 years, that as a function of inflation and economic growth you will need to repay some amount greater than what you borrowed (to account for inflation, economic growth, and opportunity cost), what message is the market giving if when borrowing for 10 years you will be required to pay less than the amount you borrowed? That implies an absence of inflation and an absence of economic growth. It implies a

lack of hope and an absence of optimism about the future economic prospects of that nation. Expounding upon the black hole metaphor, as countries and corporations feel incentivized to load up on debt in a zero interest rate policy (ZIRP) or a negative interest rate policy (NIRP) environment, it is not too difficult to imagine that the debt burden acts like the gravity well of a black hole. As attempts to stimulate the economy gain traction, encouraging renewed optimism about the future, any increase in interest rates sends tremors through the economy as concerns about the massive debt load pull the economy back into the gravity well because the cost to service the debt in a rising interest rate environment saps the energy required to achieve escape velocity from the economic black hole.

U.S. national debt recently surpassed \$23 trillion, just eight months after passing the \$22 trillion milestone, coupled with a budget deficit in excess of \$1 trillion. There is a concern that the United States may be slipping into the very same trap that has confronted Europe since the financial crisis. The European Central Bank has been experimenting with NIRP for half a decade, and a growing chorus of economists are calling it a failed experiment. Expanding debt saps economic output, demanding further cuts to monetary policy, and the cycle repeats. Heading into the end of Q3 2019, the United States saw rates in the overnight secured funding market climb into the double digits. This was concurrent with a mismatch in new issue U.S. Treasury debt versus maturing U.S. Treasury debt. To stabilize this aspect of the economic plumbing, the Federal Reserve began funding operations in the overnight market, and it has since announced balance sheet expansion also called QE-lite by market practitioners. QE-lite is \$60 billion/month, or \$720 billion/year, which, for the time being, appears to have stabilized and placated the bond market. It should be

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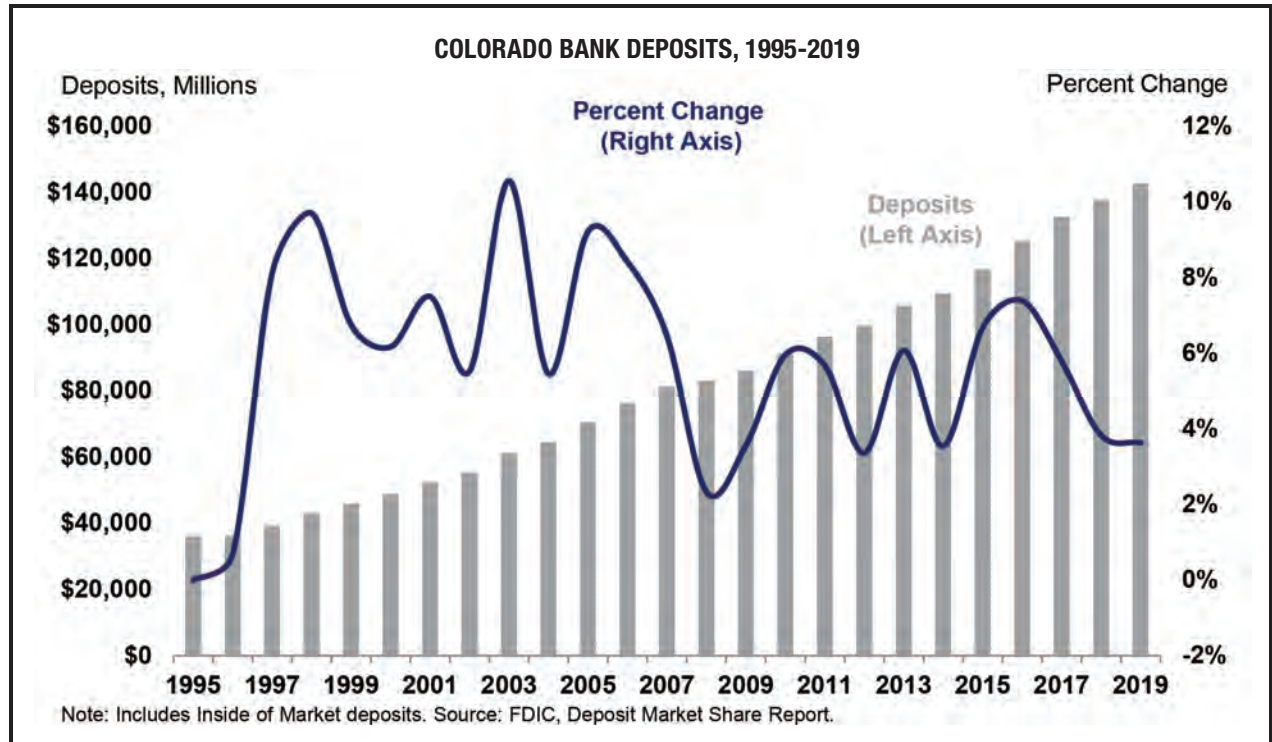
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noted that monetary policy is not a cure-all for expanding fiscal policy.

Stock Market

Looking to the stock market, as of November 1, the Dow Jones was up more than 17% year-to-date, the S&P 500 was up more than 22% year-to-date, the NASDAQ was up more than 26% year-to-date, and the Russell 2000 was up more than 17% year-to-date. On the surface, those appear to be fairly spectacular returns for an economy that is running at 2% GDP +/- . However, if we take a closer look at the S&P 500 in a more historical context, a different story is told. Recall that as we entered the trade war in 2018, the stock market became increasingly volatile with a dramatic sell off occurring into year-end 2018. If we look at the S&P 500 from its peak on September 20, 2018, to November 1, 2019, the return is a more sedate, though still healthy, 4.65% and a far cry from the 22% year-to-date return for that index. This reflects an economy that is lumbering along while uncertainty lurks around every corner.

On a more granular note, Colorado continues to enjoy an expanding ecosystem in the financial services industry. The Lone Tree campus of Charles Schwab currently houses some 4,500 employees or approximately 500 more than was originally projected at this time. Robinhood, a disruptive force in the online brokerage industry, recently announced Denver as its third U.S. location, with expectations to house 800 employees. Robinhood's COO was quoted as saying "The breadth of highly skilled and diverse talent in Denver across both of these industries (finance and technology) make the city a natural fit for Robinhood." Colorado will undoubtedly feel the effect of the uncertainty of trade, tax, and health policy at a national level; nevertheless, it benefits from an attractive geographic location, a diverse economy, and one of the few financial services sectors outside of the Northeast where there is a significant labor presence in banking and finance, investments, and insurance. Total employment in this sector exceeds 101,000.



Commercial Banking

The current makeup of banks operating in Colorado consists of roughly 56% of deposits residing in the four largest banks. In this context, deposits can serve as a rough proxy for loans, too. Conversely, community banks with less than \$100 million face a situation where those 51 banks (38% of all banks doing business in Colorado) collectively hold \$2.7 billion in deposits (2% of the industry total). There are 130 banks in Colorado; 76 are headquartered in the state while the remaining 54 are headquartered elsewhere.

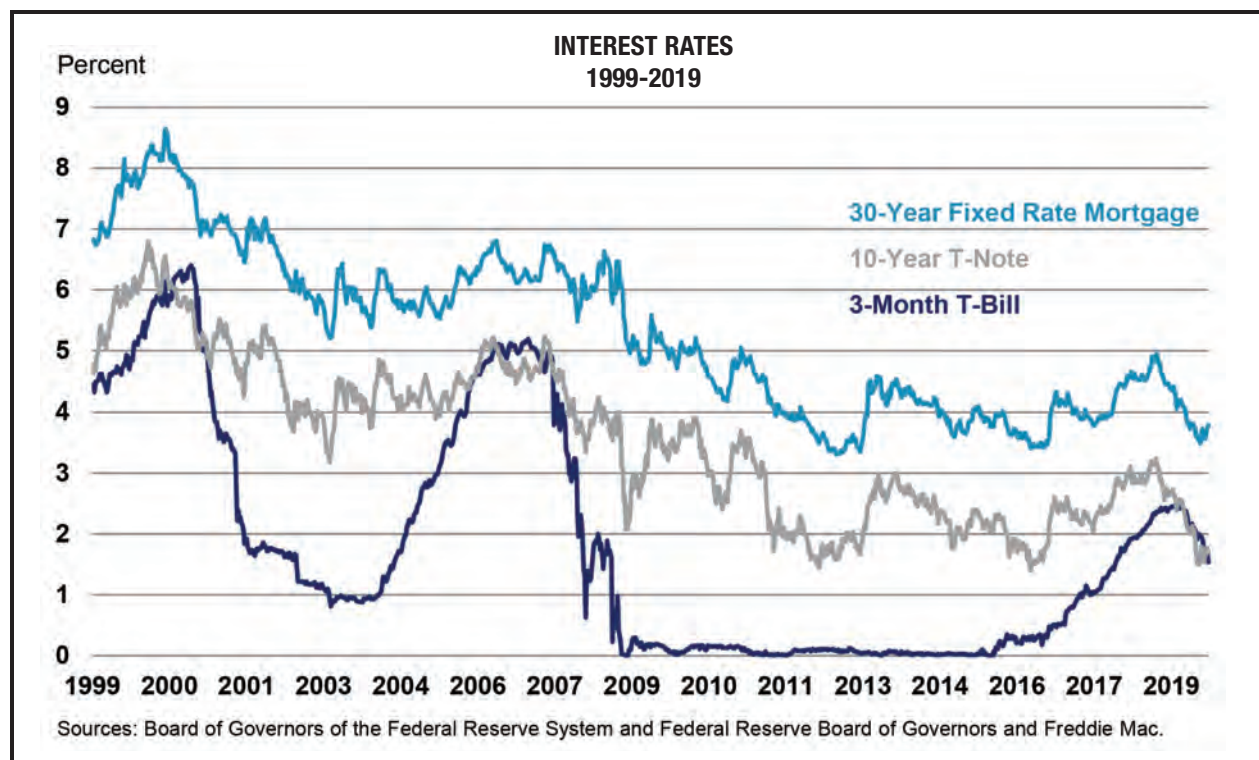
Capital, Earnings, Loans, and Reserves—U.S. Data

Currently, U.S. banks hold more than \$2 trillion in capital and reserves to support all banking activities,

making the U.S. banking system the most financially sound in the world.

In the second quarter of 2019, equity capital rose to \$2.1 trillion, up \$38.6 billion (1.9%) from the first quarter. Retained earnings contributed \$14 billion to equity growth but demonstrated an overall reduction of 37.4% from the second quarter of 2018.

In 2019, net income for U.S. banks increased on higher net operating revenue and a lower effective tax rate. Net operating income rose 4.96 % over Q2 2018. Additionally, almost 60% of all banks reported annual increases in net income from the year-ago quarter, while less than 4% of banks were unprofitable during the second quarter 2019, according to the Federal Deposit Insurance



Corporation (FDIC). The average return on assets increased to 1.38% from 1.37% in second quarter 2018.

Slightly more than half of all banks (50.6%) reported declines in noncurrent loan balances, showing a 4.8% decline over Q1 2019. Total loan and lease balances rose by \$152.3 billion (1.5%) from first quarter 2019. Almost three-quarters of all banks (72.7%) reported quarterly increases in their loan and lease balances.

A Glimpse at Community Banks

Looking at the community bank subset, it also reported positive numbers. Their net income benefited from higher revenue and a lower effective tax rate. A total of 96% of community banks reported a profit during the quarter. At the end of second quarter 2019, there were

4,874 community banks in the United States. Fifty-four banks merged, one community bank opened, and one community bank failed during the quarter.

Community banks reflected net income of \$6.9 billion in second quarter 2019, an increase of \$522.2 million (8.1%) from second quarter 2018 according to the FDIC.

Interest Rates

Concerns over trade conditions, slowing global growth, and geopolitical uncertainties continued to play a central role in the Fed's decisions to lower interest rates. The Federal Open Market Committee announced in October that it would cut interest rates for the third time in 2019. The committee approved another quarter-point decrease in the target range for the federal funds rate to a range of

1.5–1.75%. While the economy remained strong overall, Colorado banks noted that these factors continue to discourage business investment and have caused slowing particularly in the Manufacturing Sector.

Overall and core inflation continued to run below the Federal Open Market Committee's target of 2%, though generally it agreed that, under appropriate policy, inflation would move up to the objective over the medium term.

Falling rates could prove to be a problem, resulting in lower yields on bank-purchased assets and less interest paid by borrowers, and current borrowers could be incentivized to refinance at a lower rate. Many banks are already paying very low interest rates on deposits, which means there is less room to reduce how much they pay out as rates fall.

Customer Debt

Should the economy slow down, borrowers could struggle with debt, although quarterly results from four of the largest U.S. banks recently showed consumers are continuing to bolster the economy. Further, reports showed that delinquencies on bank cards fell in Q2 2019; however, they increased to 1.88% for direct and indirect auto, home equity, marine, mobile home, personal, property improvement, and RV loans. That said, the rate remained well below the pre-recession average of 2.09%.

Excluding their mortgages, U.S. consumers now owe a record \$4 trillion in the form of student loans, auto loans, and credit cards. Despite higher debt loads, households are paying out just under 10% of their disposable income on interest payments according to Federal Reserve data. That is down from over 13% in the run-up to the financial crisis.

The majority of debt held by households is in the form of a mortgage loan, with the most common type a 30-year fixed rate loan. Consumers with these mortgages have locked in the interest rate on these loans—the rate of

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interest will not increase should interest rates begin to rise again. However, consumers should plan accordingly and manage any variable interest rate debt exposure.

Almost \$7 trillion in U.S. housing debt in 2019 is backed by Fannie Mae, Freddie Mac, and the Federal Housing Administration, which is the highest amount in U.S. history and 33% more than before the 2008 financial crisis.

Loan Demand and Fee Income

Colorado bankers say that loan demand is solid, especially among the most creditworthy borrowers with equity to fund new ventures. While bank lenders to small business are busy, it is often a race among several banks to the lowest rate and, though good for the customer, results in very little net new business. Often banks are trading business among themselves, frequently resulting in unprofitable loan pricing for the successful bank and great rates for the borrower. Fee income remains greatly pressured due to competition and price fixing by the federal government in the formerly profitable line of debit card interchange fees. Fee income from various sources will continue to be pressured.

Lenders continue to face difficult conditions in the mortgage lending space because of rising rates and a wealth of competition—exacerbated by the increased presence of nonbank lenders. A tight market has led to high pressures on pricing margins.

Total loan and lease balances rose by \$152.3 billion (1.5%) from Q1 to Q2 2019. Almost three-quarters of all banks (72.7%) reported quarterly increases in their loan and lease balances. Over the past year, total loan and lease balances rose by \$443 billion (4.5%), a modest increase from the 4.1% annual growth rate reported in Q1 2019.

Between Q2 2018 and Q2 2019, Colorado banks' loans and leases decreased to \$37 billion from \$40.8 billion. It is important to note that FDIC data reflect only Colorado domiciled banks (76) and do not reflect out-of-state banks, both large and small, doing business in Colorado

(54). Additionally, during the past 12 months, 4 institutions were acquired and merged into other existing banks. The same banking activity simply occurs in fewer banks.

Banks continued to strengthen armor against loan loss. Banks set aside \$12.8 billion in loan-loss provisions during the second quarter 2019, an increase of \$1.1 billion (9.3%) from a year earlier. More than one-third of all banks (36.1%) reported year-over-year increases in loan-loss provisions. Loan-loss provisions as a percentage of net operating revenue increased from 5.80% in second quarter 2018 to 6.25%.

Federal Reserve Vice Chairman and Chairman of the Financial Stability Board Randal Quarles argued, however, that the global economy would become more stable if national regulators allowed global banking groups to reduce the amount of equity and bail-in debt they hold to reduce the likelihood of a government bailout.

Mergers and Acquisitions

The number of FDIC-insured commercial banks and savings institutions declined from 5,362 to 5,303 during the second quarter of 2019. Five new banks were added during the second quarter, 60 institutions were absorbed by mergers, and 1 bank failed.

Colorado has continued to experience a steady stream of mergers and acquisitions activity. Three have been completed, and one was still in process in October 2019. Larger community banks seem to be popular with purchasers. The consolidation is being driven by a number of factors, including increased overhead, the expense of compliance with burdensome federal regulatory requirements, expensive technology advancements, and no clear plan for leadership succession.

Following a national trend, a Colorado credit union announced the purchase of a Colorado bank. While it is unknown if that will be completed due to regulatory issues, it marks a trend troubling to many public officials:

more commercial banking activity moving from taxable banks to tax exempt credit unions.

Mergers often result in increased capital for loans and the ability to offer new services, and they can be one way to keep costs and prices down. Customers see benefits, including access to a greater number of ATMs and bank branches.

Regulation

Work continues toward implementation of all facets of the Economic Growth, Regulatory Relief, and Consumer Protection Act (S. 2155) in 2018, which brought some much-needed regulatory relief to help banks better serve their customers and communities. The heads of the banking agencies told lawmakers that they expect to have regulatory changes from the S. 2155 regulatory reform law implemented by year-end. Testifying before the House Financial Services Committee in May 2019, Federal Reserve Vice Chairman for Supervision Randal Quarles said that the agencies are “on track to complete the implementing actions for S. 2155,” adding that they would “have the bulk of the implementing actions completed by the third quarter of this year [2019], and all of them completed by the end of this year.”

The Financial Accounting Standards Board in October voted to extend the implementation of the current expected credit loss (CECL) standard for certain financial institutions as proposed earlier in 2019. The delay would apply to small reporting companies (as defined by the SEC), non-SEC public companies, and private companies.

“... FASB [Financial Accounting Standards Board] acknowledges the significant challenges of complying with one of the most sweeping accounting changes in years,” said American Bankers Association President and CEO Rob Nichols, though he expressed disappointment that the board failed to extend the implementation delay to all filers, as bankers have long called for.

Major market participants, including investors, consumer groups, auditors, and financial institutions, as well as members of Congress from both parties, have called for such a delay given concerns that CECL could harm the broader economy and vulnerable populations in particular. While the CBA views this as a missed opportunity, FASB still has time to do the right thing and put CECL on pause for all companies until it can determine its impact. “Stop and study” legislation is pending in Congress.

The consumer-focused Center for Responsible Lending (CRL) had warned that the standard could seriously affect credit availability to low- and moderate-income borrowers. CRL called for a pause in CECL’s implementation to allow for a full economic impact study of the standard.

“As proposed, CECL creates a significant disincentive for lenders to originate loans to low- and moderate-income families and communities of color, since the up-front charge will be relatively large than for ‘prime’ loans, even when the lender charges an interest rate that will fully cover the expected risk of loss,” said CRL President Mike Calhoun. “This problem is particularly acute for long-term assets like mortgages.”

Marijuana Banking in Colorado

Seven years after the passage of Amendment 64 that legalized recreational marijuana in Colorado, related businesses and the financial institutions being pressed to serve them saw the first real movement toward Congressional action on the conflict of federal and state laws regarding cannabis banking.

The SAFE Banking Act (H.R. 1595) sponsored by Representative Ed Perlmutter (D-CO) and Senator Jeff Merkley (D-OR). This bill would provide a safe harbor by making a variety of changes to federal law in order to allow banks to serve cannabis-related legitimate businesses in states where the activity is legal. The legislation had 206 cosponsors when the House adopted it in fall 2019.

STATES Act (S. 1028) was introduced by Senators Elizabeth Warren (D-MA) and Cory Gardner (R-CO). The bill provides that when possession or distribution of marijuana is legal under state or tribal law, that activity is exempt from restrictions and penalties of the Controlled Substances Act (CSA). The legislation has 10 cosponsors. No movement has taken place in the Senate.

A comprehensive solution would incorporate elements from both of these legislative proposals, as well as require guidance from Financial Crimes Enforcement Network (FinCEN) regarding the treatment of legal versus illegal cannabis activity, and exam procedures for cannabis accounts from federal banking regulators.

By a bipartisan vote of 321 to 103 in late September 2019, the U.S. House passed the SAFE Banking Act, a bill that would provide clarity to financial institutions seeking to serve legitimate cannabis businesses, sponsored by Colorado Rep. Ed Perlmutter. With cannabis now legal in some form in 33 states, the bill would allow banks to serve cannabis-related businesses in those states and prohibit federal regulators from taking action against a bank solely because cannabis is involved. The Colorado Bankers Association has pressed for this change to promote public safety and help government tax and regulate cannabis businesses, which cannot be done effectively in a cash-only environment.

The Senate’s version of a cannabis banking bill could include additional measures not included in the SAFE Banking, according to Senator Mike Crapo, chairman of the Senate Banking Committee. Those additions could include anti-money laundering measures, protocols for preventing “legacy cash” at unbanked marijuana businesses from being mixed with laundered funds, clarification on interstate banking, and measures to address the safety of cannabis products. Crapo indicated that he hopes for a Senate vote on his version of the bill by the end of the year.

Meanwhile, and despite the federal illegality of this controlled substance and the proceeds therefrom, bank regulators continue to allow a few brave financial institutions

to service the marijuana industry if the financial institution is in compliance with the 2015 FinCEN guidance and operating on a small scale. Out of the 131 banks and more than 80 credit unions operating in Colorado, about 30 institutions are doing so now—usually low volume and low key.

Any institution serving the industry does so at its own risk. Although regulators are not prohibiting the activity, the federal law has not changed and could be enforced, meaning prosecuted or blocked and reprimanded by bank regulators, at any time. Literally, no federal regulatory guidance is provided to banks in writing, and oral reassurances create caution about future reversals.

An act of Congress is the only true and lasting solution to the issue of conflicting state and federal laws.

December 2018’s Farm Bill removed hemp from the cannabis definition. There is much interest by farmers in growing this crop, but banks continue with caution. Regulations have not been finished. The federal law’s limit of the THC level means the crop must be destroyed if it tests over that limit and that content is greatly impacted by water, pesticides, and fertilizers used.

Expected Headwinds and Challenges—and Work Ahead

Colorado banks will continue to face the following headwinds:

- Regulatory reform still is the industry’s top issue. While managing excessive regulatory burden is a significant challenge for all banks, it is overwhelming for community banks. The cost of regulatory compliance as a share of operating expenses is two-and-a-half times greater for small banks than for their larger counterparts. Compliance burdens must be spread over a large asset base. Thus, industry consolidation is significantly being driven by government policy (extremely detailed regulation) and not only by market forces.

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- In October 2019, the U.S. House voted 249–173 to pass legislation championed by Rep. Emanuel Cleaver (D-MO) that would modernize the existing Bank Secrecy Act/Anti-Money Laundering framework by, among other things, enhancing bank-law enforcement communications. In the Senate, the Illicit Cash Act contains similar provisions to H.R. 2513 and would build on the strong cooperation between banks and law enforcement by improving information sharing while ensuring that financial institutions keep providing the most valuable and relevant information possible—and ensuing bad actors cannot access the financial system. Bankers will continue their work to support passage of the legislation.
- The FDIC issued a final ruling in September 2019 allowing community banks with a leverage capital ratio of at least 9% to be considered in compliance with Basel III capital requirements and exempt from the complex Basel calculation. Now, banks with less than \$10 billion in assets may elect the community bank leverage ratio framework if they meet the 9% ratio and if they hold 25% or less of assets in off-balance sheet exposures, and 5% or less of assets in trading assets and liabilities. While bankers continued to support an 8% ratio, they welcomed the ruling, applauding the FDIC for approving a community bank leverage ratio (CBLR) that recognizes the fact that the vast majority of community banks already meet or exceed risk-based capital requirements. Bankers also celebrated the FDIC's emphasis that the CBLR is an optional alternative to the risk-based capital framework.
- Bankers will continue to monitor carefully the Federal Reserve's work to create FedNow, its own faster payments system. Bankers have urged it to focus on ensuring interoperability between the Fed and the existing real-time payments network that financial

institutions use. FedNow is not expected to be operational until 2023 or 2024—and it should ensure that the system remains accessible only to chartered financial institutions; develop a liquidity management tool to help financial institutions manage fund balances in a real-time environment; ensure equitable pricing with no volume discounts; work closely with core service providers to facilitate rapid implementation; and strive to get FedNow operational and interoperable on an accelerated timeline without forcing institutions to operate duplicative real-time payment systems in order to service all of their customers.

- Succession planning remains a challenge, and that applies to management, boards, and even ownership. Along with capital and liquidity, succession planning ranks as one of the three biggest issues that spur bank mergers. As baby boomers retire in record numbers, it has become increasingly difficult for banks to replace those who have guided them through some of the industry's most challenging years. Therefore, banks are growing and diversifying efforts toward broad internal training, leadership development, and recruitment. If that is not done, sale of the bank often must be considered.

Small Business Administration

The U.S. Small Business Administration (SBA) offers three broad types of financing. The flagship guarantee loan program, also known as the SBA 7(a) loan program, provides government guarantees to private-sector lenders to help mitigate risk and encourage more of those lenders to make loans to small businesses that otherwise would not qualify for conventional financing.

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

The SBA also facilitates micro loans through nonprofit lenders to assist emerging small businesses unable to secure financing from conventional sources, secure affordable funding to help those businesses start, and grow.

Nationwide, SBA 7(a) lending declined from \$25.4 billion in FY2018 to \$23.2 billion in FY2019 (-8.7%), although the decrease in Colorado was significantly less, from \$730 million in FY2018 to \$700 million (-4.1%). The absolute number of 7(a) loans approved in Colorado declined from 1,436 to 1,297 (-9.7%), reflecting the overall national trend of fewer loans but higher average dollar loan sizes. The average 7(a) loan in Colorado increased from \$508,414 in FY2018 to \$539,919 (+6.2%). Nationwide, the average size of an SBA 7(a) loan was \$446,487.

Wells Fargo Bank, National Association, was the #1 SBA 7(a) lender in the state, with 209 approvals totaling \$83,124,600.

The SBA 7(a) program tends to be countercyclical in the sense that when the economy is strong, banks will use this program less, and when the economy is less good, banks will use the program more.

The real estate-focused SBA 504 loan program is less countercyclical than the 7(a) program. Interest rates impact SBA 504 volume, with 25-year fixed rates at historic lows during 2019. It has a broader appeal to small businesses looking to own rather than lease their properties. Nationwide, SBA 504 lending increased from \$4.8 billion in FY2018 to \$5.0 billion (+4.2%) in FY2019. The trend in Colorado went the other way, with total loan volumes declining from \$151.2 million in FY2018 to \$137.5 million in FY2019 (-9.3%). The average size of an SBA 504 loan in Colorado increased marginally, from \$935,691 to \$941,452. Nationwide, the average size of an SBA 504 loan was \$813,010.

With limited inventory, along with commercial real estate prices and construction costs increasing more rapidly in

Colorado than other states, small businesses have been less able to participate in the beneficial SBA 504 loan program despite the incredibly low interest rates. This is putting small businesses in Colorado at a slight disadvantage compared to their peers in other states.

Colorado Lending Source was the #1 SBA 504 lender and overall, the most active SBA lender in the state by dollar volume, with 112 approvals totaling over \$94 million. The most active bank partner on the SBA 504 loan program (the 504 program requires a private-sector lender to partner with a nonprofit lender to facilitate a 504 loan) was FirstBank, which participated in 27 unique 504 projects totaling \$22,912,193.

SBA 7(a) loan approvals were processed in 43 of Colorado's 64 counties and SBA 504 approvals were processed in 23 Colorado counties.

Both nationally and in Colorado, demand increased for the SBA microlending program. Nationally, the SBA participated in 5,500 projects totaling \$81.5 million. In Colorado, those figures were 171 loans for \$2.4 million. The SBA instituted the microloan program in response to small business needs.

Colorado Credit Unions

Bolstered by fast population growth, rising home values, and one of the lowest unemployment rates in the nation, Colorado's not-for-profit credit unions experienced strong loan growth of 8.4% during the 12-month period ending June 2019, well above the national rate of 6.6%.

Colorado credit union memberships continue to grow at remarkably fast rates. Through June 2019, year-over-year memberships grew 4.6%. This is down from the previous year's figure of 5.3% but significantly faster than the 3.7% national rate and over three times the state's population growth rate (the State Demography Office estimates that the population of Colorado will grow 1.3% in 2019).

Colorado memberships now total 2.02 million, or over one-third (35%) of the state's 5.77 million population.

Over three-quarters of Colorado's 81 credit unions experienced increasing assets in the period from June 2018 to June 2019. Total assets grew 6.3%, and savings balances increased by 6.1%.

Although annual loan growth has slowed since the recent peak of 16.4% in 2015, at 8.4%, Colorado credit union loan portfolios continue to grow significantly faster than national credit union growth. The recent loan growth has been led by commercial loans, which grew 20.6% during the four quarters between June 2018 and June 2019, followed by home equity lines/second mortgages (14.2%), new automobile loans (7.5%), other unsecured loans (7.1%), first mortgages (6.8%), used automobile loans (4.4%), and credit cards (0.3%). It is noteworthy that nearly all loan portfolio categories tracked by credit union regulators showed strong increases, except for credit cards. While most of these growth rates follow national trends, surging Colorado home values have led to a growth rate of home equity line of credits (HELOCs) and second mortgages that is nearly double the national rate of 7.7%. On the other hand, the growth rate of credit cards at Colorado credit unions was only a small fraction of the national rate of 7.7%.

As loan growth has outpaced savings in recent years, Colorado credit unions have experienced an increasing loan-to-savings ratio, which grew from 81.8% at year-end 2015 to 91.5% through June 2019, well above the national level of 83.7%. However, core deposits represent roughly half (47.2%) of total deposits, a sign that credit unions in the state are managing interest rate risk prudently.

Strong loan growth continues to help Colorado credit unions maintain a healthy loan portfolio and solid earnings. Period-end delinquencies and annualized mid-year

net charge-offs were 0.36% and 0.37%, respectively. Both figures remain near cyclical lows and are substantially below national levels of 0.63% and 0.55%. These figures also reflect significant improvements from the 25-year averages of 0.86% for delinquencies and 0.58% for net charge-offs. Annualized ROA (net income as a percentage of average assets) totaled 0.94% in the first half of 2019, essentially equal to the 0.96% national figure. Overall, 88.9% of Colorado's credit unions experienced positive ROA during the first half of 2019.

The Colorado credit union capital ratio (net worth as a percentage of total assets) remains near its all-time high of 11.6% reported in June 2015. As of June 2019, the ratio was 11.5%, up slightly due to strong earnings. The figure is slightly higher than the national aggregate capital ratio of 11.3% and well above the 7% threshold level at which federal regulators deem credit unions "well capitalized." In fact, all 81 of Colorado's credit unions are above this threshold.

Looking forward, Credit Union National Association (CUNA) economists expect continued slower loan and membership growth through 2019 and into 2020. Most economists expect economic growth to slow to under 2% in 2020. At the national level, credit union loan growth has declined precipitously in recent quarters, from 10% in 2017 to just 6.6% over the past 12 months as of June 2019. This has been led by a steep decline in auto loans, which make up roughly one-third of credit union loan portfolios. In Colorado, growth in new and used auto loans fell from 14% and 8%, respectively, in 2018 to 7.5% and 4.4% over the past 12 months.

Nonetheless, there is reason to expect that Colorado may be better positioned to weather a downturn relative to

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other states: unemployment in Colorado is just 2.6%, well below the national rate of 3.5% and the fifth lowest in the nation. Moreover, strong population growth and continued rising home values are likely to buttress the state's economy. For example, growth in first mortgages, second mortgages, and commercial loans all registered significantly higher in Colorado than at the national level. Nonetheless, it is anticipated that Colorado will also be affected by a slowing economy and fading loan demand to some extent, and credit unions in the state should expect modestly lower loan and membership growth in 2020 accompanied by employment growth of a modest 1%.

Real Estate and Rental and Leasing

Commercial Real Estate

On July 1, 2019, the U.S. economic recovery became the longest in history, at 121 months, or just over a decade, driven by years of commercial expansion and broad-based job growth. Key drivers behind the expansion were the technology, financial services, and energy sectors—the same industries that have grown quickly in Colorado since 2009 and contributed to the state's strong economy and robust commercial real estate market. Compared to other states, organic business growth and corporate relocations and expansions, like VF Corp., DaVita Healthcare, and Kiewit Corp., contribute to strong in-migration of workers, principally in the age group between 25 and 45, who are concentrating in communities along the Front Range. The largest private-sector job gains have been in tech and cybersecurity, energy, trade, transportation, utilities, and manufacturing. The rate of population growth among Colorado's major metropolitan areas has been stronger than in Seattle, Atlanta, and Phoenix, but slower than in Texas metros. Still, in-migration and job growth are generating improved property operating fundamentals among all commercial real estate (CRE) types, while encouraging new construction of residential

and commercial properties in an effort to keep pace with increasing demand.

Metro Denver

Commercial real estate markets in Metro Denver posted another year of expansion due to positive net in-migration, diversified job growth, and capital infusion on both the development and investment fronts. Labor supply constraints, spiking property taxes, rising construction and land costs, and geopolitical uncertainty, particularly related to trade concerns, are real hindrances stakeholders face daily but positive market trends have yet to be deterred.

Office—Although the pace of office construction has slowed from the peak construction years of 2016 and 2017, the development pipeline in Metro Denver remains healthy, with 2.9 million square feet of office space underway as of Q3 2019. Nearly half of that total—1.3 million square feet—is located in downtown Denver. The total amount of space under construction represents a small uptick from the same period in 2018, when developers were working on 2.8 million square feet of new office space, according to CBRE.

As of Q3 2019, speculative development accounted for nearly 96% of new projects in downtown Denver, including major projects, such as Block 162 that will add about 600,000 square feet of office space to the downtown market upon completion anticipated in 2020. Likewise, about 1.1 million square feet of the new construction in Denver's suburbs is speculative, but persistent demand caused by business expansion has kept leasing strong, with about 26% of the area's speculative office space pre-leased as of Q3 2019.

In fact, occupancy of newly constructed buildings drove positive net absorption of 1.5 million square feet so far in 2019, with nearly 600,000 square feet of that absorbed in Q3 alone, marking the 10th consecutive quarter in which at least 100,000 square feet of office space has been absorbed in Metro Denver. Technology tenants continue

to lead the charge when it comes to office leasing, making up just under 19% of all leasing activity so far in 2019, followed by business and legal services firms. Some of Silicon Valley's biggest names have established or grown their footprints in the Denver market in recent years, including Facebook, Google, and Slack. Consumer products maker VF Corp. also completed one of the area's largest lease deals of the cycle when it moved into 285,000 square feet at 1551 Wewatta St. in 2019 as part of its headquarters relocation from North Carolina to Denver.

This demand has kept office vacancies on a downward trajectory despite millions of square feet of new construction added to the area's inventory in recent years, while simultaneously pushing up lease rates. Office real estate in Metro Denver in Q3 2019 carried an 11.5% direct vacancy rate, down 128 basis points from the same period a year earlier. Lease rates across the metro area have spiked to nearly \$29 per square foot for full-service leases, up from about \$25 per square foot in 2015.

Industrial—Denver's industrial market is primarily driven by distribution users servicing a growing regional population, along with service businesses and manufacturing businesses that produce and export goods to be sold locally or exported to other markets. Strong statewide population growth, robust economic growth, and e-commerce mega trends that are changing consumer behavior led to another year of expansion in the industrial market. As of Q3 2019, the industrial market had recorded 38 consecutive quarters of positive net absorption, which goes well beyond the six-year trend in the 1990s and reflects national industrial market trends. In total, the industrial market in and around Denver offers more than 246 million square feet of real estate, with a direct vacancy percentage of 6.5% as of Q3.

Metro Denver's industrial construction pipeline has grown substantially in recent years, with each year outpacing the one before it, and 2019 followed the pattern. More than 5 million square feet of industrial real estate are under construction now, with nearly one-third of that located in the Airport submarket, the area's largest and most

institutionally owned submarket for industrial real estate. The remaining development activity is dispersed throughout the region, underscoring the broad-based strength of Denver's industrial market and the "last-mile" requirements among e-commerce companies. Key projects include First Industrial's Aurora Commerce Center Building D in the Airport submarket, Prologis Park Central campus in the Central submarket, and FedEx build-to-suit at Highfield Business Park in the Southeast submarket.

Year-to-date net absorption of industrial space in Metro Denver reached 2 million square feet in Q3 2019 at an average asking lease rate of just over \$8 per square foot for a triple-net lease, roughly flat from the previous year. Buildings that offer research and development or flex space continue to draw the highest lease rates, at about \$10 per square foot, because of a relatively smaller supply of these buildings compared with more standard warehouses in the metro area, as well as the buildings' specialty nature, which often necessitates more construction spending.

Metro Denver's industrial vacancy rate has increased since 2018 to about 6.5%, the product of significant new space on the market after a period of record-low vacancy rates earlier in the cycle. Demand in the area remains high, particularly among users needing warehousing and distribution space as Metro Denver's population grows. E-commerce users are also showing strong and widespread interest in the area—both building and occupying several new facilities throughout Denver.

Retail—Denver's retail sector is resilient due strong population growth and consumer spending despite e-commerce's infiltration and on-going store closures. Owners and retailers alike are also adapting to changing consumer preferences by overhauling existing shopping centers with more entertainment and medical service options, for example, while banks are shifting to more efficient floorplans, and restaurants are revamping their layouts to accommodate more delivery and pick-up orders. To that end, developers and retailers are seeking out mixed-use infill and smaller-format urban concept projects.

Entertainment and fitness uses are also increasingly popular in the retail space in Metro Denver, with companies like Top Golf constructing a new 57,200-square-foot facility in Thornton and Chuze Fitness leasing 42,500 square feet in the South submarket, with plans for further expansion. In the RiNo submarket, the opening of the Mission Ballroom concert venue and event space added 60,000 square feet to an area that has seen predominately multifamily and office projects since redevelopment took hold in recent years. These leases and others led to a productive year so far for retail absorption, with 625,000 square feet of net absorption year-to-date, nearly double the absorption seen in the first three quarters of 2018.

Accordingly, the retail vacancy rate across Metro Denver fell slightly, to 6.9%, reflecting further stabilization of that rate which has hovered between 6.9% and 7.2% for nearly two years. Lease rates have similarly stabilized, with direct asking lease rates increasing by 3.5%, to \$19.56 per square foot for a triple-net lease. Power centers bring in the highest rates, at just over \$22 per square foot, with strip centers commanding \$20 per square foot.

Food halls continue to be a popular option for retail developers seeking to offer trendy, usually local food and drink concepts in upscale submarkets. In addition to existing food halls such as Milk Market, The Source, and Denver Central Market, new options, including Broadway Market, opened in 2019, with more on the way. The food halls have become a popular way to give consumers a unique experience not replicable online by offering one-stop access to local retailers and a community-centric retail experience.

Investment—Investors continue to place high value on Denver's solid real estate market trends and dynamic economy, especially relative to noncoastal markets of similar size. According to the 2019 CBRE Americas Investor Survey, Denver tied with Atlanta as the fifth-most sought-after market for commercial real estate investment, up from seventh in 2018 and its highest level on record. Industrial and multifamily assets are the most desired. However, uncertainty both nationally

and overseas has cut the amount of capital flowing both into and out of the United States, which has accordingly dampened investor interest in markets across the country, including Denver. Overall sales volume on a year-to-date basis is down 9.5% through Q3 2019, to \$8.9 billion, encompassing office, industrial, retail, multifamily, and hotel transactions, according to Real Capital Analytics. The decreases are felt across all property types, but it is important to note that the Metro Denver area has experienced several years of outsized sales volume growth relative to historical trends, so a decrease in sales volume at this point in the cycle is neither out of the ordinary nor cause for alarm.

Northern Colorado

Larimer County's unemployment rate was 1.9% in September compared to the state's rate of 2.2% (not seasonally adjusted). The State Demography Office forecasts that jobs and people will continue to move to Larimer and Weld counties over the next decade. Northern Colorado has recorded some of the strongest employment growth in the state following the recession. The region accounts for just 12% of the state's population, but it generated over 11% of its new job growth over a one-year period. Once-smaller communities, like Eaton and Wellington, are experiencing explosive growth, bringing new sources of revenue to city coffers and pressure to balance commercial growth with residential livability. Expect commercial real estate development to continue steadily in 2020.

During the first half of 2019, CBRE reported increased lease rates for office, retail, and industrial commercial markets and improved absorption across the board. Net absorption jumped in the industrial sector in particular, with about 276,000 square feet absorbed in the first half of 2019 compared with about 200,000 in 2018. The pace of development in northern Colorado has slowed from previous years, with 236,474 square feet of industrial space underway and 44,100 square feet of office space.

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Retail has the most space under construction, at 538,311 square feet, roughly on par with the prior year. That robust pipeline is expected to allow room for new tenants and tenant expansions as strong population growth is likely to keep retailers growing.

Southern Colorado

Southern Colorado, particularly Colorado Springs, has seen a strong late-stage rebound in economic fundamentals as companies expand their presence in the vibrant market and net in-migration increases. As of September 2019, the unemployment rate in Colorado Springs was 2.6%, reflecting a tight job market. The El Paso County population grew 13.9% between 2010 and 2018, with growth occurring principally in the east and northeast Colorado Springs submarkets. Newcomers, employers, and businesses are attracted to the area's quality of life, affordable housing and utility costs, and job and wage growth that is outpacing the national average. The Colorado State Demographer's office estimates that the population of El Paso County will outpace that of Denver County by 2021.

The City of Colorado Springs has taken steps to revitalize and attract businesses with measures like the City for Champions project, which will bring a U.S. Olympic Hall of Fame and a Switchbacks' soccer arena to downtown. Areas that have been targeted for redevelopment include South Nevada Avenue and Victory Ridge—a mixed-use development on Interquest Parkway, which will be home to Colorado's first In-N-Out Burger and distribution facility. Among retail, industrial, and office market fundamentals, CBRE reported decreasing vacancy and rising lease rates during the first half of 2019. The office sector reached its lowest vacancy rate this business cycle, continuing a trend of declining vacancies since the recovery began, while lease rates have climbed steeply, to \$15.22 per square foot on a triple-net basis. The retail market continues to thrive with ongoing new construction, especially heavy in northern Colorado Springs, which has seen a population boom this cycle. Accordingly, lease

rates climbed to \$14.32 per square foot on a triple-net basis. Like Denver, the industrial market is healthy in the Colorado Springs area, with a sub-5% vacancy rate and lease rates approaching \$10 per square foot on a triple-net basis; flex space is commanding a premium of nearly \$3 per square foot over warehouse and distribution space. National and regional companies are attracted to the area's solid growth dynamics.

Western Slope

Commercial and residential real estate businesses along the Western Slope have been quite active over the past few years; however, through 2019, most communities are reporting a decline in transaction and actual dollar volume in year-over-year comparisons. Reasons for this include impacts to agricultural commodity prices, disruptions due to international trade disputes, and low inventories of available housing stock. In September, the Mesa County unemployment rate fell to 2.5%, and hourly earnings were increasing. Heritage Title reports that the median sales price of a single-family property was \$269,900 in August, which is a 9.8% increase from \$245,000 at year-end 2018, according to the Colorado Association of Realtors. Housing permits were down 4.8% through September, to 619; however, the demand for housing has not abated as development of residential rental units is occurring in most mountain and Western Slope communities. Job growth has been strong, and the supply of labor is tight. With the rising cost of housing, high labor and materials costs, commercial real estate activity is likely to begin softening in the coming year.

Residential Real Estate

The United States has been in a record economic expansion lasting over 10 years. The U.S. stock market (S&P 500) was up 15% year-to-date in October. This provides real estate buyers with a sense of wealth and confidence. National unemployment remains low, at 3.6% in October 2019. These are signs of economic strength. However, the impact of trade wars and global stagnation are beginning

to weigh on the national economy. Additionally, political instability may impact corporate capital spending, leading to decreased job growth. These factors will have an impact on the national real estate market.

National Real Estate Market

Nationally, the average price of a home is up 3.2% in August, according to the CoreLogic Case-Shiller National Home Price Index. Home ownership is 64.8%, up from 64.4% in 2018, according to the Commerce Department. These gains came as a result of a strong summer in which interest rates declined to 3.75%. Unfortunately, low interest rates did not have as great an impact on home ownership as expected, per Matthew Speakman, an economist at Zillow. The key issue preventing a significant move in home ownership is lack of inventory at the lower price points in the market.

The National Association of Realtors conducts a survey every year assessing realtor confidence. Confidence remains high, at 60%, relative to 30% in 2008. However, this number is trending downward from 2016, as are other indicators, such as buyer traffic. Nationally, median days on the market is less than 31, which means that homes are selling—and selling fast.

Builder confidence remains strong nationally, but confidence varies by region. The National Association of Homebuilders reports the following percentage change for building permits by region:

- Northeast +5.7%
- South +1.6%
- Midwest -6.9%
- West -5.6%

The Midwest and West markets have seen a significant drop in building permits. It is important to note that building permits are a leading indicator of housing starts, and housing starts are a leading indicator of the number of new homes expected to come on the market. The

FHFA HOME PRICE INDEX Q2 2019

Colorado MSA	Compound Annual Growth		
	1-Year	5-Year	10-Year
Boulder	3.4%	9.2%	5.7%
Colorado Springs	7.6	8.4	4.1
Denver-Aurora-Lakewood	4.8	9.9	6.4
Fort Collins	6.3	9.4	5.8
Grand Junction	8.8	7.3	1.4
Greeley	7.9	10.5	6.3
Pueblo	8.5	8.7	3.4
Colorado	5.5	9.3	5.4

Data Source: Federal Housing Finance Agency. All Transactions Index (NSA), through Q2 2019.

number of new homes coming on the market relative to the number of new migrations should determine which direction prices should move. Prices should go up in a market if there are more people moving in relative to new homes coming on the market.

There continues to be migration from the large metro areas (New York, California) and the Midwest to the West, including Colorado. Unless the home builders increase production to match the net migration figures, Colorado should see continued price appreciation.

Colorado Real Estate Market

The Colorado real estate market is best described as growing but slowing. Statewide, the average home price rose 3.1%, to \$471,322, in 2019, representing a cool down from the 8.5% appreciation from 2017 to 2018 (RE Colorado). Colorado is still seeing an influx of residents from the Midwest and coastal cities. In fact, the Colorado Demography Office forecasts net migration of 52,000 in 2019 and 49,000 in 2020. Given the net migration figures, it is perplexing that statewide building permits

are expected to decline by 8% in 2019, according to the National Association of Home Builders (-9% for Denver, -11% for Fort Collins, -12% for Colorado Springs). Given the positive migration figures, why are home builders applying for fewer permits? One explanation could be “development fatigue.” Cities such as Lakewood are putting hard caps on new development because of growing concerns of overcrowding, and this trend may continue. Additionally, builders are constrained by tight labor markets and increasing construction costs limiting their ability to produce more homes.

Statewide, the months of inventory rose to 1.9 in 2019 from 1.5 in 2018. It is important to note that a balanced market of buyers and sellers is 4–6 months of inventory. At 1.9 months of inventory, it is still in a seller’s market but trending toward balance. Statewide, the average days on the market was 33, which was up from 29 in 2018. Once again, this statistic indicates a cooling market; however, the market is still very robust by historical standards.

The building permit numbers, months of inventory, days on market, and net positive migration are all indicators that Colorado should remain a seller’s market, and price appreciation should continue statewide in 2020.

Denver Real Estate Market

Similar to the overall state numbers, the Denver real estate market continues to grow but at a slower pace. Overall, home prices in Denver appreciated by 4.5% in 2019, which is in line with the previous year’s projections. Denver continues to see strong net migrations as corporations continue to relocate headquarters and workforces to Denver. This should drive demand for real estate. Meanwhile, building permits and housing starts have not kept pace with the demand for new homes. Home prices should continue to rise as demand outpaces supply.

While Denver is seeing real estate appreciation, the rate of growth varies across the cities making up the Denver Metro area.

Months of inventory and days on market provide a good view of the balance of supply and demand in the marketplace. There is supply and demand variance based on location and size/price for homes in the Denver area. For instance, Cherry Hills (larger and more expensive homes) performed vastly different from Aurora (smaller and less expensive homes). The more affordable neighborhoods, such as Aurora and Westminster, are still very competitive on the buy side, with months of inventory of 1.5 and 1.2, respectively (RE Colorado). Note that a balanced market, where supply and demand are balanced, is between 4 and 6 months. The days on market for Aurora was 22 in 2018 and 26 in 2019, and Westminster was 23 in 2018 and 21 in 2019. This means that first-time home buyers will continue to compete for properties, and price appreciation is expected in these markets.

Notice the Cherry Hills market, which represents the top end of the market from a price perspective, is showing signs of weakness relative to the less expensive markets. This market contains 4.8 months of inventory, and houses are taking on average 86 days to sell. Additionally, the average price of homes sold in this category decreased in the last year from \$2.48 million to \$2.32 million, which is another sign of relative weakness. For those looking to move up in the market by selling a moderately priced home and buying a luxury home, this may be a good time to exploit strength at the lower end of the market and weakness at the top end of market.

Denver is still in a sellers’ market; however, buyers are beginning to get more leverage as inventory levels are increasing slightly.

Housing Affordability

Is there housing affordability issue in the Denver market? Housing affordability is typically measured by the percentage of income that the average household spends on

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a rent/mortgage payment. A general rule of thumb states that housing costs should not consume more than 30% of household income. According to the Denver Post, the average Denver homeowner is now spending 31% of household income on housing costs. This suggests that Denver has exceeded the affordability threshold, although not by much.

Another affordability metric is average home price/average household income. Affordability for this metric is 2.6 or less; thus, home prices should not be greater than 2.6 times household income (historical standard).

Median Home Price – \$405,000 (per RE Colorado)

Median Household Income – \$78,739 (per Metro Denver Economic Development)

Based on this formula, the median home price in Denver is 5.14 times greater than the median salary, which far exceeds the historical standard and the national average of 3.6. By looking only at this metric, you would infer that Denver has an affordability issue. However, if you take historically low interest rates into account, the old measure of 2.6 is no longer valid as mortgage payments are significantly reduced with lower interest rates allowing for increases the increase of home prices.

Taking a deeper look at affordability, if a household earning the median income (\$78,739) purchases a median priced home (\$405,000) and places 20% down, the house payment (including principle, interest, taxes, and insurance) would be ~\$1,844. When that payment is annualized, the annual mortgage payment is \$22,128, which is 28% of income, making Denver affordable by the 30% standard (assuming the household can afford the 20% down payment).

Denver Rental Market

The Denver rental market continues to favor landlords, with low vacancy and increasing rental rates. However, rental rates have shown signs of stabilizing. The average rent declined slightly in Q2 2019, to \$1,528 per month, while vacancy dropped to 4.7% (per Apartment Association of Metro Denver). Meanwhile, construction costs have skyrocketed in Denver, from \$150 per foot to \$250 per foot. Teo Nicolais, an instructor at Harvard Extension School, says increasing construction costs, combined with stabilizing rents, will likely prompt builders to taper off on building new units, putting further upward pressure on current rental rates.

Colorado Springs Real Estate Market

The Colorado Springs real estate market has seen considerable growth over the last few years as investors have turned their focus to the area in search of returns. As well, Front Range residents have looked to Colorado Springs in search of an affordable alternative to Denver.

The Colorado Springs market has appreciated at rate similar to Denver in the last year. Inventory is trending downward, indicating the market is becoming more competitive as more buyers are vying for fewer homes. Days on the market is in line with the Denver market, at 30 days, meaning that homes are selling fast.

Fort Collins Real Estate Market

The Fort Collins real estate market is robust but is far enough removed from Denver to perform independent of the Denver market.

Fort Collins saw rapid price appreciation, from \$340,000 in 2016 to \$444,877 in 2018. It is interesting to note,

however, that the average home price decreased in 2019 while the months of inventory dropped to 2.4 and days on market dropped to 27. Typically, price appreciation is expected when inventory becomes tighter and days on the market decreases. These signs suggest that the price pull back is an aberration and that prices will likely trend upward in 2020.

Summary

If the U.S. economy continues its trajectory of slow and steady growth, Colorado will continue to be a robust real estate market. Assuming net migration continues to be positive, interest rates remain low, and housing starts do not keep pace with demand, Colorado should see price appreciation. Under this scenario, prices are expected to increase in the 3–5% range in 2020.

Should the U.S. economy dip into a recession, the Colorado real estate market is anticipated to be flat or grow by 1–3%. Inventory is currently so tight that a decrease in demand through a recession may bring Colorado into a balanced market of supply and demand, and growth should be 0–3%. ❖

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Professional and Business Services

Professional and Business Services (PBS) aggregates a wide variety of sectors including Professional, Scientific, and Technical Services; Management of Companies and Enterprises; and Administrative and Support and Waste Management and Remediation Services. The sector has produced solid employment growth, adding nearly 130,000 jobs across Colorado since 2009. Average monthly growth through August 2019 reached a near-record 5.1%. As a result, PBS will retain its position as the largest private industry, with 16.4% of all private-sector jobs. Overall, the PBS Committee projects PBS employment to increase by over 15,800, totaling 441,400 by the end of 2019. Growth will slow to 2.7% in 2020, adding another 11,700 jobs across Colorado.

Professional and Business Services Concentration by County

Geographically, PBS jobs are uniquely clustered largely along Colorado's Front Range. In fact, the vast majority of these are found within Fort Collins, Boulder, Denver, and

TOP 10 COUNTIES IN CONCENTRATION OF PBS EMPLOYMENT (PRIVATE SECTOR)

Concentration		Increase in Concentration	
County	Percent in 2018	County	Change 2010-2018
Broomfield	27.3%	Custer	4.7%
Arapahoe	23.5	Jackson	4.0
Denver	23.5	Broomfield	3.2
Boulder	23.2	Rio Blanco	3.1
El Paso	19.9	Sedgwick	2.9
Jefferson	19.8	Elbert	2.8
Douglas	19.8	Phillips	2.7
Elbert	17.3	Gunnison	2.0
Larimer	15.7	Eagle	2.0
Park	15.4	Dolores	1.8
Statewide	18.8%	Statewide	0.5%

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

Colorado Springs Metropolitan Statistical Areas. This clustering effect is also emerging in smaller communities like Westminster, home to three PBS companies highlighted in this forecast: Maxar, GeoVision, and Aerotek. Juliet Abdel, president and CEO of the Westminster Chamber of Commerce, believes "Westminster is a growing community with opportunities, developments and investments to become the next urban center. Businesses, professionals, the city and the overall community share a symbiotic relationship improving the high quality of life that is attractive to future PBS businesses and professionals."

The PBS subsectors generally yield highly skilled, highly educated workers, and pay above-average wages. This is particularly true for the technology and information sectors, where professionals earn much higher total compensation—about 98% more—than the average private-sector worker in Colorado.

According to Bloomberg's 2019 U.S. State Innovation Index, Colorado ranked as the 10th-most innovative economy in the country. The index uses six equally weighted metrics, including research and development intensity; productivity; clusters of companies in technology; science, technology, engineering, and math (STEM) jobs; populous with degrees in science and engineering disciplines; and patent activity. Colorado ranked in the top 10 for STEM concentration, tech company density, and science and engineering degree holders.

Colorado has one of the highest educated populations in the country, ranking second in the percentage of bachelor's degrees among people 25 and over, at 39.4% in 2017—8.6 percentage points higher than the national average. Colorado attracts highly educated talent from other states through migration. In fact, 43.5% of the residents age 25 and over living in Colorado who were born elsewhere have a bachelor's degree or higher. This is true for about 30% of the residents 25 and over born in Colorado.

Bachelor's degrees conferred by field of study for Colorado and the United States shows the proportion of degrees conferred in the fields of study relevant to the PBS Sector

INDUSTRY SNAPSHOT PROFESSIONAL AND BUSINESS SERVICES

Nominal GDP, 2018 (\$ Billions)	54.5
Real GDP, 2018 (\$ Billions, 2012 Dollars)	51.2
2018 Real GDP Growth Rate	5.2%
Total Employment, 2018 (Thousands)	425.6
2018 Employment Growth Rate	3.1%
Employment Growth National Rank	10
Share of Colorado Employment	15.6%
Share of National Employment	14.1%
Average Wage, 2018	81,401
Percent of Statewide Average Wage	137.3%
2018 Average Wage Growth Rate	3.4%

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

tend to be higher in Colorado compared to the national averages. Computer science, engineering, natural science, and business are about 1–2% higher than national averages.

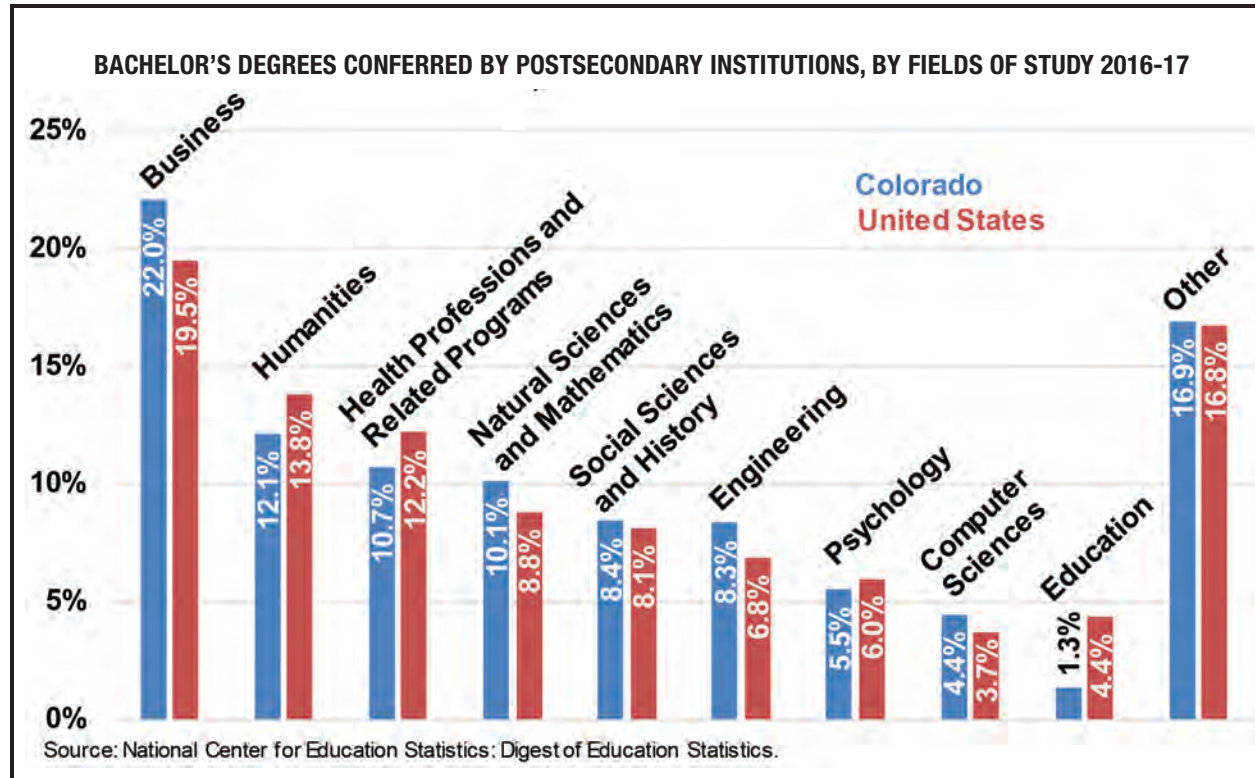
While Colorado ranks very high on college attainment, particularly for those who migrated here, still only a little over half of the individuals graduating from high school enroll in postsecondary institution immediately after graduation. According to the Colorado Department of Higher Education's 2019 Legislative Report on *The Postsecondary Progress and Success of High School Graduates*, 56.3% of Colorado's 2017 high school graduating class went on to enroll in a postsecondary institution immediately after graduation. Of those who did enroll, 24% enrolled in schools out of state. This limits the talent base for STEM and other skills needed to compete for PBS jobs.

Most of the PBS work performed is not physical labor. As a result, many engineers, accountants, attorneys,

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enterprise managers, employment service employees, and computer designers are still working past their normal retirement age, which leads to mentoring through the passage of technical and managerial skills.

According to the 2019 CNBC annual ranking of top states for business, after enjoying several years in the top five, Colorado has now slipped to 9th place overall. In short, the report concludes that while well-educated workers continue to come to Colorado to enjoy a great lifestyle in a beautiful place, costs are becoming relatively high compared to other states around the country. In fact, for 2019, Colorado ranked 37th for cost of doing business and 34th for cost of living (CNBC, July 10, 2019, "Top States 2019: Overall Ranking").

In addition to those higher costs, especially related to housing and child care, other headwinds to future PBS job growth have emerged. The near record-high employment rate and the consequent lack of available talent to fill positions have constrained the hiring pace. Looking ahead, a tempering of expectations for national economic growth may eventually impact hiring in the state. Fortunately, due to the nature of professional services, a relatively strengthening dollar and increasing trade tensions are not a direct threat, yet. That said, sustained troubles in other industries eventually reduces funds available for spending on a variety of professional services. Moreover, as outlined below, the challenges of globalization, automation, and commoditization are continually nipping at the heels of many positions across the legal, engineering, architecture,

accounting; computer systems design; services to buildings; and business support services sectors.

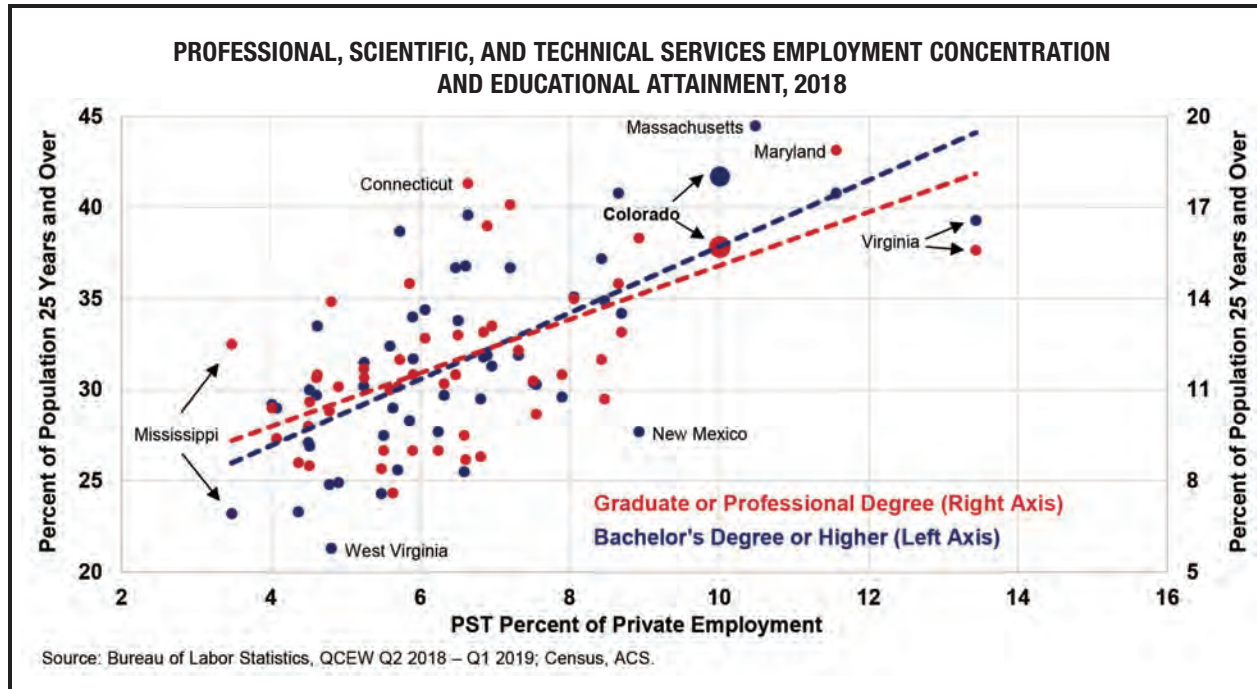
Because PBS customers are largely businesses, the number of new business filings is a useful predictor of future PBS job growth. The Q3 2019 *Quarterly Business & Economic Indicators* report from the Colorado Secretary of State's Office indicates Colorado is adding new businesses at a slower rate, with the number of initial filings for corporations, nonprofits, and other entities rising only 0.3% year-over-year during the third quarter.

Despite the lackluster growth in new business filings, the first quarter of 2019 saw Colorado companies receive more than \$376 million in venture capital funding, the largest sum raised for Colorado companies during any first quarter in the past six years, according to the most recent PitchBook Data-National Venture Capital Association Venture Monitor report. The Denver-Aurora Metro area saw more than \$292 million in venture capital funding raised across 53 companies in the first quarter of 2019 compared to more than \$154 million in venture capital funding raised across 38 companies in the first quarter of 2018. The Boulder Metro area saw more than \$57 million in venture capital funding raised across 19 companies in the first quarter of 2019 compared to more than \$130 million in venture capital funding raised across 26 companies in the first quarter of 2018.

Despite the headwinds, the great quality of life, opportunity, climate, outdoor recreation, and other benefits of living in Colorado are still driving net in-migration, particularly among PBS millennials. These newcomers are disproportionately bringing the PBS skills required for the knowledge-based workforce of the future. Colorado companies are ideally positioned to take advantage of the rapid growth of business professionals, scientists, technologists, and engineers.

Professional, Scientific, and Technical Services

The Professional, Scientific, and Technical Services (PST) Sector comprises establishments that provide services



that require high levels of expertise and training, including legal, engineering, computer design, and advertising services. This sector accounted for an estimated 246,600 jobs in September 2019, an increase of 9% over September 2018. The committee expects the PST Sector will increase employment by 4.9%, adding 11,000 jobs in 2019. It anticipates slower but continued growth of another 8,000 jobs, or 3.4%, in 2020 to 244,500.

Subsector Activity

Westminster-based Maxar Technologies is a global provider of advanced space technology solutions for commercial and government markets, working on satellites, robotics, earth imagery, geospatial data, analytics, and insights. The *Denver Post* reported in May 2019 that the company would build the power and propulsion component of The Gateway, a space station that would orbit around and access the whole surface of the moon, according to NASA

administrator Jim Bridenstine (Saja Hindi. May 23, 2019. "NASA selects Westminster-based company to work on lunar space station project," the *Denver Post*). "The Gateway gives us more access to more parts of the moon, and that access is not just landers —it's with robots and rovers and landers and even human landers," Bridenstine said. "Think of it as a command module, a permanent command module around the moon that can ultimately control these missions on the surface."

Westminster-based GeoVisual Analytics is exploiting advances in computer vision, machine learning, and emerging remote sensing capabilities to lead a breakthrough in farm automation by enhancing the art of farming with the science of artificial intelligence. Using routine monitoring of fields with airplanes, drones, and mobile phones, the company applies NASA-funded AI algorithms to help farmers to dramatically reduce production

uncertainties and increase profits. According to CFO Chris Ewing, "GeoVisual's product set also has a positive impact on sustainability by directly helping to reduce food waste and the associated carbon footprint of unnecessary inputs in the field." Over the past 18 months, the team has grown from 4 employees to 11 employees, plus outside contractors. Faster growth is anticipated in the future to support scaling of the commercial product.

Legal Services

Demand for legal services is increasing in some specialty areas but overall growth has slowed due to technology, outsourcing, and innovation in delivery models. Legal services employment across Colorado decreased by 200 jobs year-over-year in September 2019, to 19,000.

According to the *2019 Report on the State of the Legal Market* by Georgetown Law and Thomson Reuters, the traditional legal services model has broken down over the past decade. This is due to several factors such as the growing availability of market information about firms and practices leading to increased competition; the rapid growth of new technologies reducing the labor intensity of legal work; and the significant market shifts in the industry after the Great Recession causing unintended consequences. The report states that since 2008, these repercussions have upended the traditional law firm model, shifting the industry from a seller's to a buyer's market for legal services, with clients now in control of all key decisions impacting legal representation. Additionally, law firms are more vulnerable to shifts in market conditions than other businesses due to the difficulty of keeping, or protecting, their employees and clients.

The changing landscape of the legal industry can be observed in Colorado with Denver law offices getting smaller due to the digitization of law libraries and online libraries. There is greater use of technology to interact with clients by videoconferencing, and young lawyers are not as concerned about office status. A total of 45% of

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the top 40 Denver law firms have offices in LoDo or the Skyline Urban Renewal District as these areas are near transportation hubs. Moreover, firms are moving to LoDo to attract younger employees—LoDo is considered trendy (Monica Vendituoli. November 16, 2018. “Why Denver law offices are getting smaller—and moving to LoDo,” *Denver Business Journal*).

In short, automation, globalization, and outsourcing are holding down the need for additional hiring across Legal Services in Colorado. Over the last five years, Legal Services employment growth has fluctuated with some years declining up to 2.2% and others gaining up to 1.5%. In this context, the committee expects this subsector to lose a total of 300 positions in 2019, or a 1.6% retracement. The committee expects an additional reduction of 1% in 2020, ending with 18,800 employees.

Architectural, Engineering, and Related Services

Employment in the Architectural, Engineering, and Related Services Sector exhibited steady growth over the last five years, averaging just under 3%. Growth in 2018 of 2.8% suggests the sector will continue to grow. Moreover, at 55,900 employees in September, the 2019 average year-to-date 12.5% growth rate would yield a record year for the sector with year-end 53,700 employees, or 11.4% growth. The committee expects continued growth of 6.5%, or 3,500, totaling 57,200 employees in 2020.

Economic growth continues to provide increases in appropriations for public infrastructure expansion and renewal for public services, such as roads, transit, bridges, water, wastewater, and drainage. Increased consumer and business-to-business demand is also driving private-sector companies for more warehouses, office buildings, single- and multifamily housing, recreation, health care, and other commercial facilities.

The legislature increased the appropriations for roads and transit significantly at the end of the 2019 session, with spending increasing in 2019 and 2020. Some of the funding of the Colorado Department of Transportation projects is being leveraged with local agencies and RTD,



Photo courtesy of Casey A. Cass/University of Colorado.

TOTAL PROFESSIONAL AND BUSINESS SERVICES SUPERSECTOR EMPLOYMENT, 2010-2020 (In Thousands)

Year	Professional, Scientific, and Technical Services	Management of Companies and Enterprises	Administrative and Support and Waste Management and Remediation Services	Total ^a
2010	169.0	29.0	132.8	330.8
2011	173.8	30.2	137.5	341.5
2012	180.2	32.3	144.4	356.9
2013	189.3	34.6	148.8	372.6
2014	196.9	35.5	154.2	386.6
2015	204.6	36.6	157.3	398.4
2016	209.9	37.4	158.4	405.7
2017	215.6	39.2	158.0	412.8
2018	225.5	40.9	159.2	425.6
2019 ^b	236.5	42.5	162.4	441.4
2020 ^c	244.5	43.8	164.9	453.1

^aDue to rounding, the sum of the individual items may not equal the total. ^bEstimated. ^cForecast.

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

which will keep the pace of design and related construction at a high level. Tax revenues for local agencies continue to climb; however, increases in costs and recent construction bids temper the size and number of infrastructure projects.

The types of projects that are expected from the various Colorado agencies will be more focused on repurposing and enhancing rather than adding new buildings, roads, and bridges. More emphasis is being placed on developing existing vehicle corridors as multimodal. The transportation demand management (TDM) processes require that all new apartments, condos, and office buildings are designed for the tenants and employees to increase their

use of alternate transportation to reduce single-occupancy vehicles on the streets as a method to slowly reduce congestion.

Public agencies are seeing fewer responses to Requests for Qualifications and Proposals as engineering and architectural companies are short-handed and are being more selective with the projects for which they compete. Public agencies are also short-handed, and their staffs are maximized with administering more projects than before and are not able to put out as many for competition as before.

Private-sector growth is still healthy in warehouses, office buildings, single- and multifamily housing, recreation, health care, and other commercial facilities. Single- and

multifamily housing continues to be built, but permits are growing at a slower pace, partially due to the shortage of labor for contractors and engineering firms. Many projects remain in the pipeline but are being delayed from starting the initial design phase for several reasons previously stated.

The state's population growth has also increased demand for additional schools. Similarly, detention centers are at maximum capacity, so many are expanding and therefore need architectural and engineering services.

According to Jonathan Anderson, mechanical engineering lead with DLR Group, hiring has slowed as industry leaders look toward the future with cautious optimism. While companies still have a healthy backlog, firms are watching for signs from developers regarding the pace of construction and a possible slowdown. Tech companies have been a significant driver of new projects as large companies move to Colorado and require services for a build-out or tenant finish. Regarding hiring, firms have slowed aggressive hiring and are waiting to find qualified candidates in the extremely tight labor market. While hiring will continue at a healthy pace, the sense of urgency has tempered.

The shortage of technical personnel is also being addressed with productivity-technology processes, enabling projects to be shifted to out-of-state offices with the caveat that the people working at another location are being supervised by a Colorado Professional Engineer. In a way, this is creating a headwind for future hiring of engineers in Colorado if the remote design location can continue to perform the effort needed for the Colorado projects.

Engineering students across Colorado are graduating at higher numbers than in previous years. Overall, engineering programs are reporting they are at maximum enrollment. Significantly increasing the number of engineering graduates will involve hiring more professors and increasing classroom space, both of which are longer-term strategies.

**PROFESSIONAL, SCIENTIFIC, AND TECHNICAL SERVICES SECTOR EMPLOYMENT
2010-2020
(In Thousands)**

Year	Legal Services	Architectural and Engineering Services	Computer Systems Design Services	Management, Scientific, and Technical Consulting Services	Other	Total ^a
2010	17.8	39.0	41.3	18.0	52.9	169.0
2011	18.3	39.2	43.0	19.4	53.9	173.8
2012	18.8	40.4	45.3	20.6	55.1	180.2
2013	19.5	42.0	48.0	22.5	57.3	189.3
2014	19.2	43.4	50.6	23.9	59.8	196.9
2015	19.1	44.1	53.6	25.7	62.1	204.6
2016	18.7	44.8	56.4	27.1	62.9	209.9
2017	19.0	45.6	58.7	29.1	63.2	215.6
2018	19.3	48.2	61.5	31.2	65.3	225.5
2019 ^b	19.0	53.7	65.1	33.2	65.5	236.5
2020 ^c	18.8	57.2	68.1	35.2	65.1	244.5

^aDue to rounding, the sum of the individual items may not equal the total. ^bEstimated. ^cForecast.

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.

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Continuation of visible projects that will involve engineering design services and subsequent construction are interstate and state highway work around Colorado and the restart of the Great Hall project and concourse expansions at Denver International Airport. The RTD Light Rail extension to RidgeGate opened in 2019, and the North Metro Commuter Rail Line is expected to open in late spring 2020. The expansion of the National Western Complex also continues. Development of residential and commercial buildings surrounding the Gaylord Hotel has started and will continue for several years. The streets around the hotel are being upgraded for multimodal traffic that will be designed to safely accommodate the mixture of vehicles, bicycles, scooters, and pedestrians.

Colorado offers many positives to attract highly technical people needed for the engineering and architectural professions. They include attractive weather and outdoor recreation for maintaining healthy lifestyles, and good school choices for their children and for graduate studies. With the higher than normal number of job openings, job candidates can be more selective in choosing a company.

Computer Systems Design and Related Services

The Computer Systems Design (CSD) subsector has seen nine years of steady net job gains supporting increased activity across information security, social networks, and mobile and cloud computing. Businesses within this subsector create software, design computer systems, integrate technologies, and manage computer systems. Services include planning and designing computer systems that link computer hardware, software, and communication technologies. Firms offering these services may also install the system and train and support the users of the system, including on-site management and operation for clients.

Positions across CSD grew by 2,800 jobs, or 4.7%, in 2018. Average 2019 growth has improved to 6.1% year-to-date, with 65,800 in September 2019. In this context, the committee anticipates a total increase of 3,600 by the end of 2019. Growth is expected to continue in 2020 at about 4.6%, or 3,000 additional jobs, totaling 68,100.

Colorado's strong technology network puts the state in a position to benefit from the national growth in CSD. Cloud computing is another critical field that is driving growth in the sector, which benefits from a long history of data and storage companies in the state. As these services move to the cloud, Colorado companies stand to benefit.

According to CBRE's annual *Scoring Tech Talent* report, Denver ranked #8 for best market for tech talent, moving up two spots from 2018. The report analyzed 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. Greater Denver had the 13th-largest tech talent market nationally.

Subsector Activity

Large technology companies are moving to Colorado, driving some of the employment gains for the state. Zoom Video Communications, which makes video and audio-conferencing software for businesses, is expanding its Denver Tech Center office. The company, which currently employs about 300 people, expects to double its headcount within two years. Staff work in a variety of roles, including human resources, finance, marketing, and legal.

Amazon is also expanding its Denver Tech Hub, creating 400 new high-tech jobs and opening a new office in downtown Denver. The new 98,000-square-foot office will be located at 1515 Wynkoop Street. Positions include software and hardware engineering, cloud computing, and advertising. Amazon has more than 3,500 full-time jobs in Colorado, including its customer fulfillment and retail facilities.

Conga, the leader in end-to-end digital document transformation, opened a new 88,000 square-foot global headquarters in Broomfield in 2019 (Kris Oppermann Stern. October 14, 2019. "Conga's new Broomfield global headquarters invites exploration," *Colorado Real Estate Journal*). Conga makes tools to help companies compose and edit documents, and check contracts from within Salesforce.com. The new headquarters was designed to

provide up to 650 Conga employees with a state-of-the-art campus that supports accelerated innovation, productivity, and company culture. The *Broomfield Enterprise* reported that Conga has more than 500 employees globally, with 300 in Colorado, and its projected yearly revenue is more than \$100 million; four years ago, it was \$14 million (Jennifer Rio. August 22, 2019. "Conga celebrates new Broomfield headquarters," Broomfield Enterprise).

Checkr, a fast-growing Bay Area background check company, opened a second headquarters in Denver in July 2019. The company plans to add 1,500 workers within the next 10 years, from software engineers to customer service representatives. The average annual wage for Checkr employees will be \$138,050, more than double the median wage for Denver, according to the Colorado Economic Development Commission. Brett Caudill, software engineer for Checkr, reported that while the company has met their hiring goals so far, the number of interviews has been significant in order to find the right candidate in the tight labor market. Junior-level candidates are readily available, but experienced engineers are harder to find. Checkr strives to offer a salary above the median for the area in order to acquire the best fit for their company. The company recently leased 92,447 square feet of office space in downtown Denver and is currently working on a tenant finish that will allow it to house up to 500 employees.

Management, Scientific, and Technical Consulting Services

Management, Scientific, and Technical (MST) Consulting Services has averaged almost 7% growth over the last five years. Additionally, the sector is up 6.4% year-over-year through September 2019, with a projected total of 33,200 jobs by the end of 2019. The committee expects MST to end the year up 6%, or 2,000 new positions in 2020.

A search on LinkedIn shows over 5,000 open consulting positions across Colorado. Larger consulting companies like Accenture, PWC, Cognizant, and others are hiring across a variety of areas, including strategy, technology, business development, and others. Smaller niche players

are targeting software as a service, compensation, project managers, and software solution integrators.

Subsector Activity

In September 2019, Lockheed Martin was awarded an indefinite-delivery and indefinite-quantity contract for continued production of the Orion Spacecraft. Lockheed Martin recently announced that it was awarded a NASA contract to produce six Orion spacecraft that will carry astronauts from Earth to the moon and back. Lockheed Martin has been the prime contractor during the development phase of the Orion program.

Advanced Space, a Boulder company, announced it won a \$13.7 million project from NASA to develop an experimental satellite to test in-orbit navigation technology for an eventual return to the moon. Louisville-based Sierra Nevada selected ULA to launch their Dream Chaser for six NASA missions to the space station starting in 2121 using the new Vulcan Centaur heavy rocket. Raytheon is expected to add 500 more employees by 2022 and 2023 due to new aerospace control projects.

The Colorado Air and Space Port announced in April it has partnered with PD Aerospace of Japan to explore possible development and expansion including eventual space travel. A letter of intent was signed by both parties. “Absolutely, it will happen,” Vicky Lea, the director of aerospace and aviation for the Metro Denver Economic Development Corporation, said about tourism beyond Earth. “It’s a sign that Colorado Air and Space Port has a facility that appeals,” Lea told CBS4 (Shawn Chitnis. April 23, 2019. “Spaceport In Adams County Becoming More Of A Reality, CBS4). “That can offer the services, the kind of infrastructure, that companies that are developing these cutting edge, next generation space plans are going to need.”

Management of Companies and Enterprises

Management of Companies and Enterprises 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 jobs, has produced 2 – 5% job growth over the last five years. Diverse industries and products are represented by companies in this sector, including Vail Resorts, DaVita Healthcare Partners, Comcast, MDC Holdings, and Dish Network.

With 43,000 jobs in September 2019, the sector is expected to post a gain of 1,600 jobs, or 3.9% growth, by the end of 2019. It is anticipated to gain an additional 3.1% by the end of 2020, or 1,300 jobs, for a total 43,800 positions.

Job growth in this sector is driven by national and international economic conditions, as well as corporate headquarter relocations. Colorado continues to see corporate headquarters either relocate or announce relocations to the Front Range.

Subsector Activity

According to the *Colorado Sun*, Dish Network promises that 2,000 workers will be headquartered in Colorado as the Colorado attorney general dropped out of the Sprint-T-Mobile merger lawsuit (Jesse Paul. October 2019. “Colorado leaves lawsuit challenging Sprint-T-Mobile merger after Dish promises wireless service HQ, 2,000 jobs,” *Colorado Sun*). Dish has also promised that Colorado will be one of the first states to get 5G service as part of an agreement with Colorado’s Attorney General Office.

Administrative and Support and Waste Management and Remediation Services

This sector comprises establishments meant to 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. This sector included over 164,800 jobs in September 2019, and is anticipated to average 162,400 for 2019, growth of 2% for the year. Additional growth of 1.5%, or 2,500 jobs, is expected in 2020.

Employment Services

Employment Services jobs are related to hiring and placing personnel. The increasingly tight labor market in the United States and in Colorado has sometimes proven to be a barrier to hiring in this sector. While this sector typically served as an early indicator of future hiring trends, the variety of industries served is significant and subsequent results have not always followed that path.

Although the sector saw an increase of 1,300 in 2018, this sector was down 2.5% through September 2019 year-over-year, at 48,400. Given this employment trend, the PBS Committee expects the subsector to decrease 2.4%, or 1,200 jobs, in 2019. Consistent with longer-term trends, moderate growth of 200 jobs, or 0.4%, to 47,600 is expected by the end of 2020.

An interesting dynamic seems to be taking shape regarding staffing services the longer Colorado sustains near-record employment levels. Individuals appear to be drawn to full-time positions characterized by more stability and benefits as temporary roles are often the easiest—and therefore the first—to let go.

Subsector Activity

Westminster-based Aerotek, Inc., a leading provider of recruiting and staffing services, was recognized by *Forbes* as one of America’s Best Professional Recruiting Firms in 2019. Aerotek ranked #3 overall among 250 professional search firms focused on placing positions with salaries of less than \$100,000 (“Top Workplaces 2019: Small companies 4-65,” May 5, 2019, the *Denver Post*). Aerotek finds and places talent around the world in industries from energy and engineering to office and clerical and everything in between. Placing 60th in the *Denver Post* Top Workplaces, the company has more

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ADMINISTRATIVE AND SUPPORT AND WASTE MANAGEMENT AND REMEDIATION SERVICES SECTOR EMPLOYMENT, 2010–2020 (In Thousands)

Year	Employment Services	Services to Buildings and Dwellings	Business Support Services	Other	Total ^a
2010	33.7	36.8	25.0	37.3	132.8
2011	37.0	37.0	24.9	38.6	137.5
2012	40.7	37.8	26.7	39.2	144.4
2013	43.0	38.9	28.5	38.4	148.8
2014	46.8	40.9	27.0	39.5	154.2
2015	47.3	42.9	25.8	41.3	157.3
2016	47.5	44.1	24.6	42.2	158.4
2017	47.3	44.4	22.8	43.5	158.0
2018	48.6	44.6	20.6	45.4	159.2
2019 ^b	47.4	48.1	19.5	47.5	162.4
2020 ^c	47.6	49.5	18.3	49.4	164.9

^aDue to rounding, the sum of the individual items may not equal the total. ^bEstimated. ^cForecast.

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

than 17,000 clients and 300,000 contract employees annually worldwide. Aerotek Colorado is home to five offices and 132 employees.

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. The subsector grew 0.4%, to 44,600 jobs, at the end of 2018, which was consistent with the longer-term trend. However, recent data, including an annual average increase of 8.3% through September 2019, would result in 48,100 positions by year end, the highest

rate of increase in 10 years. Given this significant growth, a reversion is expected toward longer-term trend growth rates in 2020, with the subsector projected to grow 3%, to 49,500 positions.

Job growth in this sector correlates to construction as well as rental and occupancy rates. These have continued to improve in 2019, and the overall outlook remains positive due to Colorado's growing labor pool and its ability to attract corporate relocations and expansions.

Subsector Activity

Overall, WeWork is Denver's largest holder of office space according to the *Colorado Real Estate Journal* (Jill Jamieson-Nichols. April 18, 2019. "Denver's biggest office

user, WeWork looks to more growth," *Colorado Real Estate Journal*). Its rapid growth over the last two years may have fueled the recent spike in growth of building services jobs. That said, the committee wonders if recent financial challenges at WeWork will mean many of their leases will not survive the 10-year average contract, and ultimately reduce demand for services to those spaces.

RISE Commercial Property Services is a full-service property management company overseeing buildings from North Denver to Colorado Springs. Per T.J. Tarbell, president of RISE, "The strong market has been great for our clients and their properties, but at some point, occupancy will dip, and rents will flatten out. Our focus remains on those things that we can control, which starts with attracting and retaining top talent, and providing them with the technology, tools, and support they need."

Wage growth remains strong, and competition is heavy for quality real estate personnel (property managers, facilities/maintenance technicians, property accountants, etc.). According to Tarbell, finding and hiring quality talent is getting more difficult, particularly relating to facility management personnel. Companies will need to adjust their planning and recruiting tactics in order to address the staffing challenges ahead.

Control Solutions Inc. (CSI) is a leading Colorado-based building services company specializing in HVAC/Mechanical retrofits and temperature controls. According to Gary Bales, with CSI, due to the strong residential and commercial construction market, the construction industry continues to be faced with a shortage of qualified skilled labor. The older workforce is retiring, and the younger generation is not interested in the trades. However, more vocational-tech and trade schools are actively marketing to the next generation of workers.

Commercial construction activity is still steady. The larger projects are still ongoing through 2020, especially for local school construction bond projects that have monies committed. Bales is seeing a slowdown in small private investing for existing building remodels. The tenant finish was strong the past 18 months but slowly decreasing for Q4 2019 and will continue to decrease in 2020. “I have been speaking with building owners with 40,000–250,000 square feet with vacant spaces, and they said the leasing activity has slowed down at least 50% from this time last year.”

Bales believes there is a slowdown in the smaller private funded projects as well, but will continue to see a good amount of school and government projects through 2020. “We will not experience a major slowdown in the next two years, but I believe we are seeing the market signs of a little less activity in the next 6–12 months. Just like the residential market, the commercial market is flattening and balancing out.”

The outlook for 2020 appears similar to the 2019 economy, and overall it remains strong. For 2020, the demand for maintenance of these buildings is expected to drive increased job growth in this subsector.

Support Services

Support Services aggregates outsourced professional services such as advisory, security, payroll, logistics, and other professional office functions. This sector is continuing a multiyear contraction, decreasing from 28,700 in September 2013 to only 18,900 in September 2019. As with the Legal Services Sector, the number of business support services jobs is often pressured by industry consolidations, globalization, automation, and programmed configurations to deliver these core services. Given this dynamic,

the committee expects Support Services to shrink again by 5.2% or 1,100 jobs, in 2019. Similarly, another reduction of 6%, or 1,200 jobs, is anticipated in 2020.

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 will likely see its seventh consecutive year of employment gains as these services are a trailing indicator of overall population growth and development. The committee expects a 4.5% increase in employment in 2019 and 4% growth in 2020, a gain of 1,900 jobs, to 49,400.

Subsector Activity

According to the *Houston Chronicle*, Waste Management is piloting remotely operated vehicles, like bulldozers, with Caterpillar in Denver (Erin Douglas. January 25, 2019. “Waste Management CEO bringing tech to trash,” *Houston Chronicle*). Instead of a driver getting out of the truck at the landfill and going to the bulldozer, young people with video game experience would be able to sit inside and move the waste remotely. Similarly, Waste Management has developed algorithms using data collected from its trucks to predict when parts will break and to determine the most efficient route for drivers to take. It expects these labor-saving innovations across the company in the next year or two.

Recycling is an emerging challenge. Profits for recycling have plunged due to new quality controls on recycling imports implemented by China. Since the change, the price of mixed scrap paper and other recyclable materials has plunged from \$75 a ton in 2017 to nearly zero. Eighteen months ago, the company was shipping over 25% of its recyclables to China. In 2019, that figure is down to 3%.

PBS Sector Summary

Almost every occupation will be affected by the adoption of currently available technologies. Routine, predictable physical and cognitive tasks will be the most vulnerable to automation in the coming years. Colorado and the Denver Metro area is quite insulated from automation due to the greater number of services that are provided. However, automation is expected to increase over the next 10 years due to the flattening size of the overall workforce while the number of problems that need to be solved will increase with increased population. College and trade school graduates are more technologically savvy than before.

The many subsectors of Professional and Business Services will continue to collectively drive employment growth across Colorado’s Front Range in 2019. The overall strength in the economy, demographic trends, and the business environment will support steady growth of 4.9% in 2019 and 2.8% in 2020. ❖

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Education and Health Services

The Education and Health Services 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 88% of industry employment is made up of Health Care and Social Assistance, while about 12% is related to Educational Services. Education and Health Care employment totaled 340,600 jobs in 2018. The industry is on track to add about 6,500 jobs in 2019, a growth rate of 1.9%. In 2020, jobs are projected to grow by 5,600, a gain of 1.6%.

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. Employment in the private education sector is estimated to be up 1.9% in 2019, with an expected growth of 800 jobs in 2019. Growth for 2020 is projected at 1.9%, which would add another 800 positions.

Contributions to Colorado's employment come from many schools within the state's private postsecondary institutions, which account 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, Regis University, Colorado College, and Johnson & Wales University.

Profit and Nonprofit Colleges and Universities

Johnson & Wales University (JWU), a multicampus private, nonprofit university, has 49 full-time faculty and 80 part-time faculty and staff at the Denver location. As the campus gets ready to celebrate 20 years in the community, it added several new programs in fall 2018, including health sciences, public health, and a number of new MBA concentrations. The university launched a Master of Science in Addiction Counseling in fall 2019 and is moving from semesters to terms in fall 2020. Johnson & Wales recently released career outcomes data for the 2018 graduates across the system and found that 96% are working full time or part time, are doing service work, or are going to graduate school. With the low unemployment rate in Colorado, the university is seeing a rapid growth and expansion in the restaurant and hospitality industry. This growth has resulted in a wide variety of job and internship opportunities for Johnson & Wales students and graduates and an influx of employer visits. JWU is working on new educational partnerships with entities like the Boston Bruins, Jefferson County, and

INDUSTRY SNAPSHOT EDUCATION AND HEALTH SERVICES

Nominal GDP, 2018 (\$ Billions)	26.5
Real GDP, 2018 (\$ Billions, 2012 Dollars)	24.1
2018 Real GDP Growth Rate	3.4%
Total Employment, 2018 (Thousands)	340.6
2018 Employment Growth Rate	1.9%
Employment Growth National Rank	18
Share of Colorado Employment	12.5%
Share of National Employment	15.9%
Average Wage, 2018	50,156
Percent of Statewide Average Wage	84.6%
2018 Average Wage Growth Rate	2.9%

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

Service Systems Associates to help provide education to industry professionals. JWU faculty and staff are focused on the best ways to engage Gen Z students, and how to best support a diverse student body and focus on the value of higher education.

Private for-profit accredited colleges include Arizona-based University of Phoenix. In fall 2019, a total of 86 private accredited colleges are listed on the Colorado Department of Higher Education website; 67 of those are nonprofit and 19 are for-profit, 44 are private seminary schools, and 23 are headquartered outside of Colorado.

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 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.

COLORADO EDUCATION AND HEALTH SERVICES EMPLOYMENT, 2010–2020 (In Thousands)

Year	Educational Services	Health Care and Social Assistance	Total
2010	32.3	231.6	263.9
2011	33.8	239.1	272.9
2012	35.4	246.4	281.8
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 ^a	41.9	298.7	340.6
2019 ^b	42.7	304.4	347.1
2020 ^c	43.5	309.2	352.7

^aRevised. ^bEstimated. ^cForecast.

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.

Beyond STEM: K-12 Education with a Natural Resource Theme

In 2016, the Colorado Energy Office produced a study, Project Natural Resources Colorado Report 2016, on the quality of natural resource education in Colorado. The summary observations were that natural resource content was insufficient in Colorado classrooms. The diverse populations of students were not being exposed to careers nor were they pursuing postsecondary pathways in this field.

Students who are exposed to natural resource content will lead to a society that understands the vital role natural resources plays in their daily lives. Such a society will be able to make informed, well-reasoned decisions about how to prudently use natural resource industry products and how they will direct (at the ballot box) the industry to prudently develop our endowment of natural resources.

On June 15, 2018, Colorado became the 39th state to adopt Next Generation Science Standards (NGSS, www.nextgenscience.org) as the model by which science education in Colorado would be measured. NGSS uses a problem-based learning (PBL) approach that goes beyond the science,

technology, engineering, and mathematics (STEM) approach in teaching science.

STEM has now evolved to STEAM, which includes the arts or softer sciences, such as economics, political sciences, and communications, to complete the understanding of the problem being studied. With the shift to NGSS, the opportunity exists to integrate natural resources education into the curriculum. PBL offers storylines that are based on current issues taken from today's headlines.

The headlines behind the storyline are the “grabbers” that may get students interested in natural resources as a very well-paying career, and even become science-savvy citizens on these topics. The objective of such an effort is to develop a society that understands the vital role natural resources plays in their daily lives by building a culture that encourages prudent development and prudent use of natural resources.

The Natural Resources Education Program is one organization in the private sector that is putting together a pilot program as a proof of concept.

Contributor:

John Tobin, Natural Resources Education Program

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.

The private career schools in Colorado represent only a small percentage of overall employment, but their importance cannot be overlooked. In 2019, a total of

299 in-state occupational schools and 18 out-of-state occupational schools approved to market in Colorado are registered with the Colorado Department of Private Occupational Schools (an increase from 2018). Among Colorado-based private accredited colleges are schools as diverse as Career School of the Rockies; General Air Welding Academy in Denver; Paul Mitchell The School, a cosmetology school in Colorado Springs and Denver; and IBMC College, with three locations in Colorado. Universal Technical Institute (UTI) and WyoTech are out-of-state schools that are approved to operate in Colorado.

Private Secondary Education in Colorado

In 2018–19, the Colorado Department of Education listed 417 nonpublic-sector schools that provide education to children of compulsory school age (the term

nonpublic schools applies to private, parochial, and independent schools). According to the Council for American Private Education (CAPE), attendance at private secondary schools is still growing to record levels, not only in Colorado but across the nation. The greatest area of growth is Nonsectarian, Private Religious-based high schools, with 13.4% of schools being nonsectarian in the 1989–90 school year, 15.7% in 1997–98, and 21.8% in 2015–16. Of 78.2% of the sectarian-based private high schools open in 2015–16, a total of 37.9% were Catholic private schools, which is down from 53% in 1991–92.

According to Niche, a national school ranking and research organization, of the top 25 high schools in Colorado, 13 are public high schools. Boulder Valley District leads the way with 3 of the top 25. Of the 12 private high schools on the list, 5 are religious based. Of the 25 top ranked private high schools in Colorado, 14 are tied to some form of religion-based education.

The growth of private education will continue as the statistics show that private school students are doing better in national testing and academic achievement than their public-school counterparts. The data have not changed in the past several years, but according to the National Assessment of Education Progress (NAEP), a student attending a private high school is 15% more likely to attend a four-year college. Also, 55% of 8th graders in private Catholic grade schools are reading at or above grade appropriate proficiency as compared to 35% for public schools. Eighth grade math proficiency is at 44% for Catholic schools and 33% for public K-8 schools.

Private schools currently represent 10% of all student attendance and 25% of all schools nationally; however, private education still has a long way to go to be an equally available alternative to public education. The problem that plagues all private schools is a mechanism to fund the tuition requirements of students. Some of the great private high schools on the Front Range include Regis, Denver Academy, Colorado Academy, and Valor

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Christian. No one can argue that many of these schools are not affordable for many Colorado families. This disparity in the ability to pay tuition creates an economically driven gap in education quality that high school education students receive.

A national movement is underway to make world-class college preparatory Catholic high school education available to families who would normally not be able to afford it. This program is called Cristo Rey. Arrupe Jesuit High School is the Denver member of this 37-school national network. Under the Cristo Rey program, every student works five days each month at sponsoring corporate employers and students attend regular classes the other four days of the week. The shortened school week results in longer school days and a longer academic year. This “corporate work study program” provides access to a world-class private college preparatory education to Coloradans that otherwise would not be available to them. The results for Arrupe Jesuit graduates speak for themselves. Every student, 100%, across the 13 graduating classes has been accepted to college, with a 70% persistency rate. The 2019 class of 92 graduates earned \$15.5 million in merit/academic based scholarships. It appears that Cristo Rey has created a strategy that works for its students and their families.

All schools across the country are struggling to find and retain permanent teaching staff and are especially struggling with filling substitute teacher positions. As our Colorado population expands, large numbers of the new residents are young families or are in the prime child-bearing demographic. With the stress caused by expanding attendance numbers for all schools and the lagging building of new public schools, the growth for private schools is imminent.

Cautious Growth

Driving the cautious optimism for growth are several hurdles, including the following:

- CECU estimates that the current version of the College Affordability Act (which was approved by the House Education and Labor Committee on October 30, 2019) would severely limit the ability of private career schools to conduct business, if it does not put them out of business.
- Closures related to legal and financial difficulties will also limit growth.
 - o The Art Institute of Colorado, a Denver institution for more than 50 years, closed in December 2018, with 150 employees losing their jobs.
 - o Argosy University closed in March 2019.

The legislative pressures that the for-profit schools have faced in the last decade are being eased with the president and education secretary indicating support for the for-profit colleges and universities. However, at the writing of this report (October 2019), little had changed.

Educational Support Organizations

Educational support organizations located in Colorado include 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 has the potential to be a strong player in the educational support field.

Summary

Education is in the midst of significant transformation and reform, including an increase in adoption of online high school classes. This heavy reliance on technology both requires more strategic thought specific to pedagogy and instructional design, but also provides tremendous opportunities for data-driven education. When this “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. Health care employed 298,700 in 2018, and growth has been strong, with projected increases of 1.9% in 2019 and 1.6% in 2020.

Health care is a complex system impacted by demographic trends, health insurance coverage, the health care workforce, health care delivery trends, and public policy.

Population Trends

Aging

The State Demographer’s Office projects that Colorado will be home to 5.84 million people by 2020. This is an increase of 7.1% overall from the 5.45 million people that called Colorado home in 2015. Over this period, the growth in the 65 and older cohort continues to outpace younger cohorts with a growth rate of 23.5% over the five-year period. The cohort ages 18–64 will grow 6.2% and the 0–17 cohort will increase 0.4%.

Select Populations and Health Status

According to America’s Health Rankings produced by the United Health Foundation, Colorado’s rank was 8th in 2018. The state’s strengths include relatively low rates of obesity, low rates of death caused by cancer, and a low percentage of children in poverty. Challenges for the state include high rates of pertussis, low birth weights, and low high-school matriculation rate (78.9%). In addition to factors contributing to low birth weight, such as preterm birth, low weight gain for mother, smoking, and hypertension, birth weights in Colorado are also impacted by the altitude (Gwenn M. Jensen and Loma G. Moore. “The Effect of High Altitude and Other Risk Factors on

Birthweight: Independent or Interactive Effects?” *Public Health Briefs*, June 1997). However, changes occurred in several key metrics, including the following:

- The number of adults smoking decreased from 15.6% to 14.6%.
- The number of children ages 0 through 17 in poverty dropped from 18.5% to 12% over a five-year period.
- There were 8% more mental health providers from the prior year, from 313.5 per 100,000 population to 339.1.
- Chlamydia cases increased 19% over a three-year period, from 393.0 to 468.6 cases per 100,000 population.

The trend for Chlamydia, as well as other sexually transmitted diseases, follows overall trends across the nation. The Centers for Disease Control and Prevention (CDC) reports the following increases since 2014: Chlamydia 19%, Gonorrhea 63%, primary and secondary syphilis 71%, and congenital syphilis 185%.

Opioid Epidemic

In 2018, drug overdoses claimed the lives of 974 Coloradans, down from 1,012 in 2017. Opioids continue to be the leading cause of drug-related deaths, with over half of the 2018 overdose deaths caused by prescription opioids or heroin according to data provided by the Colorado Department of Public Health and the Environment.

Fatalities traced to prescription opioids (a category that includes fentanyl, methadone, and other drugs) dropped from 6.7 to 5.5 deaths per 100,000 Coloradans in 2018. While most prescription opioids saw a drop in the number of deaths, fentanyl misuse continues to rise, from 49 in 2016 to 81 in 2017 and increasing to 102 in 2018. This count includes all deaths in which fentanyl was involved, either as the primary killer or one of a number of drugs involved. According to the CDC, increases in fentanyl-involved overdose deaths can likely be attributed to illicitly manufactured fentanyl.

As prescription opioid overdose deaths have increased, overdoses from heroin, which is also classified as an opioid, have stabilized at a rate of 3.9 per 100,000 Coloradans in 2018.

Men are more likely to die from an opioid overdose death than women; men between the ages of 26 and 40 had the highest rate of opioid overdose deaths in 2018. There were 229 overdoses from heroin in 2018, increasing significantly from 46 deaths only a decade ago.

Rural, frontier, and urban counties have all been affected by an increase in opioid overdose deaths. The southern part of the state has been hit hard, such as Huerfano and Rio Grande counties.

The Three Waves of the Opioid Epidemic

The opioid epidemic is not just a Colorado problem—it is affecting people in every corner of the United States. The CDC has described the national opioid epidemic evolving in three waves.

The first wave was in the 1990s when there was a large increase in opioid prescribing and a jump in prescription overdose deaths.

The second wave began in 2010 with a spike in heroin overdose deaths. Finally, the third wave started in 2013 and continued through 2018, marked by the transition to synthetic opioids, such as fentanyl, that can be made illegally and added to other substances such as heroin and methamphetamines, or taken by itself.

Colorado has experienced a similar pattern. Starting in 2010, heroin overdose deaths increased sharply until 2016. Now, synthetic opioid overdoses are rising, suggesting that the state has caught the third wave.

The Role of Other Drugs

Though opioids are responsible for over half of the drug overdose deaths in Colorado, the misuse of other substances are contributing to the toll. The year 2017 was the first year in a decade that the state recorded more deaths due to methamphetamine (meth) than heroin. The

number of methamphetamine overdoses in Colorado has increased from 38 just a decade ago to 318 in 2018.

There is some overlap in deaths due to meth and opioids. In 2017, for instance, 79 deaths were reported to involve both heroin and meth, up from 25 in 2015.

Federal Funding

The federal 21st Century Cures Act, signed into law in December 2016, allocated funding to states to help address the opioid crisis. This funding has been allocated through the State Targeted Response and the State Opioid Response grants. Colorado has received over \$40 million in funding. In April 2017, the Office of Behavioral Health was awarded \$7.8 million per year for two years as a State Targeted Response grant. In September 2018, the Office of Behavioral Health was awarded \$15 million per year for the next two years as a State Opioid Response grant. This money has been distributed throughout the state to address drug overdoses in every community.

Health Insurance Coverage

The 2019 Colorado Health Access Survey published by the Colorado Health Institute indicates that while the rate of uninsured Coloradans has remained stable, at 6.5%, the way that Coloradans received their health coverage has shifted. Employer sponsored coverage has increased back to its highest rate since 2009. Medicaid coverage dropped for the first time since 2015 by 1.2 percentage points, from 19.9% to 18.7%. Notably, the individual insurance market decreased, from 8.1% to 7%. This is 0.3 percentage points below the 2009 rate of 7.3%.

Employer Sponsored

More than half of Coloradans are receiving health insurance through an employer in 2019 as the state continues to prosper from an economic boom.

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According to the 2019 Colorado Health Access Survey, 52.7% Coloradans get insurance through their employers—up from 49.4% in 2017.

In Colorado's highly competitive market, employers use employee benefits to attract and retain talent. At the same time, Lockton's 2019 Colorado Employer Benefits Survey showed that the single most important factor for employers when making benefit decisions is cost reduction. Top cost reduction strategies that employers are looking at for 2020 include increasing employee premiums, increasing employee deductible and out-of-pocket expense limits, using narrower networks, and using separate cost shares for specialty prescription.

According to a recent analysis from the Colorado Health Institute, Affordability in Colorado—Answers About Health Care Costs, consumers with employer-sponsored insurance (ESI) have been facing some of the highest and fastest-growing out-of-pocket costs in the nation,

even though premiums have been rising only modestly. The average deductible in Colorado for a family plan was about \$3,700 in 2017, 10% higher than the national average. Since 2008, the growth in deductibles has far outpaced the growth in per capita income and inflation. A total of 94% of employer-sponsored insurance plans in 2017 came with a deductible, putting more pressure on family budgets. The 2017 Colorado Lockton survey found that 18% of employers were planning to increase deductibles and 15% were likely to increase the maximum out-of-pocket expense in their employees' health plans.

The 2019 Employer Health Benefits Survey, a national survey by the Kaiser Family Foundation, found that affordability disproportionately impacts small employers and employers with mostly low-wage workers. Employees in small businesses face high deductibles for single coverage, and many face a high premium contribution if they choose family coverage. Covered workers in firms

with large shares of lower-wage workers on average face higher deductibles for single coverage and must contribute a greater share of the premium for family coverage than workers in firms with a smaller share of lower-wage workers. Additionally, employees of small businesses are less likely to have employer-sponsored insurance than those who work for large companies. In 2017, only 45.5% of Colorado employees of small businesses had employees' state insurance (ESI), while 82.7% of employees of large businesses had employer-based health insurance coverage. This change is partially driven by the Affordable Care Act (ACA), which requires larger companies to provide insurance or pay a penalty while smaller companies have no requirement.

Individual and Family Coverage

Over 245,000 Coloradans enrolled in the individual and family market. About 170,000 have plans through the state's exchange, Connect for Health Colorado. A total of 76% of the exchange enrollees are receiving financial assistance in the form of subsidies in 2019, up from 69% in 2018, according to the By the Numbers Open Enrollment Report Plan Year 2019. Compared to previous years, 2019 represents a smaller, more price-sensitive market. Affordability remains a top concern for individuals and families who do not qualify for subsidies. To address the rising cost of health care, especially in rural and mountain communities, the Polis administration has made lowering individual and family premiums a top priority.

In 2020, premiums for individual health insurance plans are decreasing by an average of 20.2%—a significant drop over the 6% average increase in 2019 and 2018's 32% average increase. The same seven health insurance companies that sold individual plans in 2019 are returning for 2020, with one new addition: Anthem (as HMO Colorado), Bright Health, Cigna Health and Life, Denver Health Medical Plans, Friday Health Plans, Kaiser Foundation Health Plan of Colorado, and Rocky Mountain HMO. Oscar Health, which is entering the Denver market, will be joining the group.

PRIVATE HEALTH CARE AND SOCIAL ASSISTANCE EMPLOYMENT, 2010-2020
(In Thousands)

Year	Ambulatory Care	Hospitals	Nursing Care	Social Assistance	Total ^a
2010	96.8	55.7	39.3	39.8	231.6
2011	101.1	56.5	40.3	41.3	239.1
2012	104.6	57.9	40.8	43.1	246.4
2013	106.8	55.9	41.1	46.0	249.8
2014	112.7	57.7	41.7	48.8	260.9
2015	120.0	60.4	42.6	51.7	274.7
2016	126.2	62.0	43.5	54.3	286.0
2017	131.6	61.8	43.6	56.6	293.6
2018 ^a	135.8	60.9	43.6	58.4	298.7
2019 ^b	139.9	61.4	43.9	59.2	304.4
2020 ^c	142.7	62.1	44.3	60.0	309.2

^aRevised. ^bEstimated. ^cForecast.

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

Average premium reductions and higher insurance participation are encouraging signs of stabilization in the market. The year 2018 was the most profitable year for the individual market since the ACA went into effect. Results from early 2019 suggest that despite enrollment declines and recent federal policy changes, such as the elimination of the individual mandate penalty, many insurers continue to make a profit in the individual market (Mark Farrah Associates. Current Trends in Individual Segment Enrollment, August 20, 2019). High premium increases in 2018 were in large part compensating for policy uncertainty and the termination of cost-sharing subsidy payments, and some insurers appear to have over-compensated, leading to historically high medical loss ratios (MLRs). Lower premiums in 2020 are therefore not surprising, but Colorado has taken additional steps to lower rates even further.

A main driver for 2020's double-digit average premium decrease is Colorado's reinsurance program—a policy that has worked in other states to produce similar decreases. The two-year reinsurance program is a state-run fund that helps cover high-cost health care claims to reduce insurance companies' expenses and drive down premiums. Under the program, the state would pay for the most expensive health care claims, so private insurers would be able to lower premiums across the board in the individual and family market. The program is designed to lower claims and premiums the most in rural and mountain areas and less so in metro areas. A family of four could save over \$4,000 a year in Denver and over \$10,000 in western Colorado.

High hospital costs are also being addressed in a draft report on the development of a state option plan by the Colorado Division of Insurance (DOI) and the Department of Health Care Policy & Financing (HCPF). The state option plan would be designed by the state and available to all Colorado residents in the individual and family market. It is not quite a “public option” because, unlike Medicare and Medicaid, the state plan is not actually run by the government. Instead, it would be

administered through private insurance companies and the state would set the rates insurance companies pay health care providers (similar to a plan recently signed into law by Washington state). The draft report estimates that the state option, which could go into effect in 2022, would save Coloradans 9% to 18% in premium costs compared to other commercial plans.

Here's how the state option would work: Every private health insurance company of a certain size would be required to offer the state option plan, which would be sold on Connect for Health Colorado so federal subsidies could be used toward the cost of the plan. Insurance companies would be required to spend 85% of the premiums they charge for the plan on patient care (current federal law requires that a minimum of 80 cents of every dollar taken in as premium in the individual market be spent on patient care). The state would also set benchmark rates that health care providers could charge insurance companies under the state option; providers would be able to charge 175% to 225% of what Medicare pays, down from the roughly 289% commercial insurance plans currently pay. This part of the plan is crucial to cutting down health care costs in the state. Colorado has among the highest hospital costs in the country, and by setting rates closer to what Medicare pays, the state hopes insurance companies can negotiate lower prices for other commercial plans as well, with the overall goal of preventing premiums from increasing for consumers. After a comment period, a final report was due to the Legislature on November 15, 2019. The Colorado Hospital Association has already published a response to the draft report highlighting its concerns, which could complicate any effort for final approval.

Medicaid and Uninsured

Colorado's Medicaid program, known as Health First Colorado, covers approximately 1.24 million people, which represents slightly more than one of every five people in the state. Among the enrollees, approximately 495,000 are children, 569,000 are adults without

disabilities, and 176,000 are seniors and people with disabilities. Colorado also covers another 82,000 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 \$10.7 billion in state fiscal year 2019–20, including \$3.2 billion from the State's General Fund.

Colorado's Medicaid Program began experiencing significant growth in FY2008–09, at the start of the Great Recession, and experienced double-digit percentage growth in caseloads every year through FY2015–16. Growth began to slow dramatically in FY2016–17 and has recently declined: since reaching a high point of 1.37 million people in May 2017, caseload has fallen slightly to less than 1.23 million people in June 2019. The decrease in caseload has come almost entirely from low-income adult and children populations. At the same time, the caseload in the higher-income CHIP program continued to increase; between FY2015–16 and FY2018–19, the CHIP caseload increased from 52,000 to 82,000, an increase of 58%. Taken together, the decrease in caseload for the lower income program (Medicaid) and the increase in caseload for the higher income program (CHIP) reflect an improving economy and low unemployment rates. Projections indicate that overall Medicaid caseload growth will decline by approximately 1.5% in FY2019–20 before returning to growth of approximately 2% in FY2020–21 and FY2021–22.

Most Health First Colorado members are enrolled in a managed care program known as the Accountable Care Collaborative. The Accountable Care Collaborative allows for the implementation of significant changes to payment methodologies, allowing Health First Colorado

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to pay providers for the increased value they deliver, instead of a strict fee-for-service reimbursement. Beginning in 2018, enrollment in the Accountable Care Collaborative became mandatory for Health First Colorado members who were not enrolled in another managed care program; currently, approximately 1.2 million members of Health First Colorado are enrolled in the Accountable Care Collaborative.

Colorado opted to increase Medicaid eligibility under the ACA beginning January 1, 2014; approximately 385,000 people are covered under the ACA provisions, which covered the full costs of newly eligible individuals from 2014–2016, and phases down to a 90% federal contribution by 2020.

Independent research indicates that the Medicaid expansion authorized by the ACA has had a positive impact on Colorado's economy. In a report for the Colorado Health Foundation, the Colorado Futures Center at Colorado State University found that Colorado's economy, as measured by state GDP, is \$3.8 billion (1.1%) larger as a result of Medicaid expansion. Furthermore, the center found that Colorado's economy added over 31,000 jobs and that household earnings are \$643 higher due to the effects of the Medicaid expansion. In December 2018, a federal district court in Texas found that the ACA was unconstitutional in its entirety. This ruling is currently being appealed; if it stands, the 385,000 people who are covered under the ACA provisions would lose eligibility and would need to find health coverage through another mechanism.

Healthcare Market Disruptors

There has been an interesting trend for private sector companies outside of the traditional health care market to create ventures to improve the health care for their employees. In March 2019, Amazon, Berkshire, and JPMorgan Chase rolled out their nonprofit venture Haven. The vision of Haven is to provide high-quality care at an affordable cost. No specific solutions have been laid out, but the vision identifies data and technology solutions

to address care delivery, patient experience, and health incentives. However, while there was an initial reaction in the market, with stock prices dropping for companies like CVS and Walgreens, there is less confidence in the industry that the venture will be successful as time goes on. A survey of industry leaders in 2019 indicated that 9% of respondents believe that the venture will be successful. This is down 18 percentage points from 27% in 2018 (Jackie Kimmell. "Haven 101: What we know about the Amazon-Berkshire-JPMorgan joint venture so far, Advisory Board, May 16, 2019).

An example specific to Colorado is the new Peak Health Alliance in Summit County. The model brings together employers and individuals to negotiate prices directly with doctors and the local hospital and then use those prices to get a better deal from insurers.

Walmart Health is a new standalone primary care health clinic in Georgia from Walmart. Walmart began to move into the primary care arena in 2014 with Care Clinics in retail stores in Georgia, South Carolina, and Texas. It has also opened a dental office at a retail location and leased space in a store in Texas to Beacon Health Options, a behavioral health provider. The intent of bringing health care into retail stores is to provide low cost, accessible services and to bolster customers coming to Walmart retail locations ("Walmart Health' is opening this week," Advisory Board, September 10, 2019).

Technology in Health Care

A strategic partnership was announced in September 2019 between the Mayo Clinic and Google. The intent of the partnership is to leverage artificial intelligence, machine learning, data analytics, and cloud computing for improving digital diagnostics; help find solutions for complex medical problems; anticipate the needs of patients; and provide services when and where they are needed. Other notable partnerships between technology companies and health systems include an agreement between Providence St. Joseph Health and Microsoft and an agreement between Cerner and Amazon Web Services.

The Health Care Workforce

Health care jobs are not restricted to doctors and nurses. The health care system is enormously 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.

Physical Health

Colorado gained 853 physicians between 2018 and 2019, which brings the total number of active licensed physicians to 16,894, according to data from the Colorado Department of Regulatory Agencies. With 2.9 physicians for every 1,000 residents, Colorado has roughly the same number of physicians per capita as the national average. However, because Colorado is so geographically diverse, some areas have much better access to care than others. Denver County has at 5.4 doctors per 1,000 residents, well above the national average of 2.9, while more rural counties have much lower rates, with one county not having any licensed physicians.

Registered nurses (RNs) make up the largest subcategory of the health care workforce, with more than 78,000 active licensed to work in Colorado. The position has seen a 46% increase since 2006 and is predicted to grow another 33% by 2027. The number of certified nurse assistants (CNAs) increased rapidly following the implementation of the ACA, from 27,114 in 2011 to 46,811 in 2014, but has since stabilized between 40,000 and 45,000. This group is especially important because it provides around 80% of the hands-on services needed by Colorado's older adult population, which is expected to double to 1.3 million by 2030.

The number of licensed physician assistants (PAs) and nurse practitioners (NPs) in Colorado has grown relatively slowly. In 2019, there are about 5,300 active PAs and 4,400 NPs—slight upticks from 2018. Due to the ever-increasing cost of health care, hospitals and other

health care providers have sought to cut costs by expanding the range of services that can be legally provided by these mid-level providers who cost less than physicians.

Behavioral Health

Behavioral health, including mental health and substance use treatment, continues to gain attention as a critical part of the health care system. For example, Colorado is making substantial investments to integrate physical and behavioral health through initiatives such as the Regional Accountable Entity (RAE). There are seven RAEs that will coordinate physical and behavioral health care for Health First Colorado members. This is part of the Accountable Care Collaborative Phase Two, which began in mid-2018 looking to make policy and payment changes, including increasing integration of physical and behavioral health care, and replacing regional care collaborative organizations (RCCOs) and behavioral health organizations (BHOs) with regional accountable entities (RAEs). In addition, the growing crisis of substance abuse, especially opioids, is causing many policymakers to search for ways to improve access to behavioral health professionals and services in Colorado. For example, in 2018 the General Assembly approved House Bill (HB) 1136 that requires the state to pursue a federal waiver to add residential and inpatient substance use disorder (SUD) treatment and medical detoxification services to the list of Health First Colorado benefits.

The number of certified addiction counselors (CACs) has decreased from 2,501 in 2011 to 2,289 in 2018 and to 1,500 in 2019 even as the need for CACs has grown with the opioid epidemic. This rate is equal to just 0.2 CACs per 1,000 Coloradans.

Licensed addiction counselors (LACs) are even scarcer, with only 1,191 in the state. But their numbers have been steadily increasing since 2013, when there were 277 in Colorado. With the increasing need for addiction counselors in rural areas, recruitment and loan repayment options are being discussed at the state level to help address the shortage. Options are also being discussed at

the state level for recruiting more CACs—especially in rural areas that have been hit hard by the rise in opioid abuse. The state has seen an increase in licensed professional counselors, up 1,556 from 6,335 in 2018 to 7,911 in 2019. Additionally, psychologists saw a slight increase in their ranks, up from 2,435 in 2018 to 2,785 in 2019.

In rural areas especially, scarcity of providers will remain a major barrier to Coloradans receiving needed behavioral health care. The movement to integrate primary care and behavioral health has transformed care delivery, but it has also created a need for more behavioral health providers.

Other Health

Colorado has seen a steady increase in the number of pharmacists in the past decade. The number of active licenses increased from 5,561 in 2018 to 8,729 in 2019.

Access to oral health care in Colorado has expanded dramatically since the implementation of the ACA. More Coloradans have dental insurance than ever before, according to the Colorado Health Access Survey. This increase in insurance will translate into an increase in access to oral health care, which will mean expanding the capacity of the oral health workforce. Colorado has 4,285 licensed dentists in 2019, a slight increase from 2018. The average rate around the state is 0.8 dentists per 1,000 residents, but this is not evenly distributed across the state. Population centers have much higher concentrations of dentists.

Dental hygienists, who provide much of the care received in an average dental visit, saw a slight decrease in employment, from 3,951 in 2018 to 3,868 in 2019. Pilot programs that use dental hygienists to provide care in rural areas have established that this is a field with potential for growth in the workforce.

Regional Disparities

The Colorado Commission on Affordable Health Care identified workforce shortage issues as a major barrier to health care in rural areas of Colorado. Low reimbursement for primary care limits the number of physicians

that can be recruited in areas with low population densities. Loan repayment programs, such as the National Health Service Corps and the Colorado Health Service Corps, provide loan forgiveness to physicians who work in eligible rural clinics after completing medical training. In 2017, the National Health Service Corps budget was not renewed by Congress. However, new mandatory resources have been allocated to increase the budget for fiscal year 2018 and 2019.

In addition to seeing shortages of doctors and nurses, rural areas continue to see shortages of other types of health care providers. This is particularly affecting older adults and people with disabilities who rely on non-medical support, such as personal care and homemaker services, to remain in their homes and out of nursing homes, where costs are typically borne by the state. Staffing shortages and rising costs also affect providers of services to people with intellectual and developmental disabilities; providers report concerns about finding qualified staffing and many are having financial problems. In Medicaid, recent federal regulations for home and community-based services (HCBS) have required a significant shift in the way that services are provisioned and delivered. Referred to as Conflict Free Case Management, the case managers who determine people eligible for services must work for separate entities than the providers who deliver care. Although Colorado is still in the process of implementing the new regulations, rural providers in particular have been vocal that the disruption of existing service models may further exacerbate provider shortages.

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. In the first

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quarter of 2019, the Colorado Department of Labor and Employment identified that 102,000 Coloradans are employed in 158 establishments including general, surgical, psychiatric, substance abuse, and other specialty hospitals.

The cost of hospital services remains a key driver for both public and private health care programs. Rising costs of hospital services are a component some sources cite for driving up insurance premiums, particularly in rural areas and mountain communities (Christopher N. Osher. “Kaiser Permanente blames hospitals, ‘unfair business practices’ for \$65 million loss in Colorado in three years, the *Denver Post*, October 10, 2018). The state’s Medicaid office, the Department of Health Care Policy and Financing, recently completed a study indicating that prices for hospital services have grown significantly since 2009, increasing by 76%, with administrative costs doubling during the same period (Christopher N. Osher. “Coloradans pay more as hospital building spree leads to empty beds and profits nearly twice the national average, the *Denver Post*, October 4, 2018). The report also cites that overhead costs at Colorado hospitals significantly exceed the national average; further, the growth in Colorado hospital overhead costs since 2009 is roughly double the national average growth rate.

Colorado has embarked on a number of initiatives to reduce hospital costs. In the Medicaid program, Colorado is implementing the Hospital Transformation Program to implement hospital-led strategic initiatives through the establishment of a delivery system reform incentive payment program. Under the program, hospitals will be required to implement quality-based initiatives to receive payments, and demonstrate meaningful community engagement and improvements in health outcomes over time. The program will outline expectations for key activities and tracking measures in order to establish statewide uniformity while providing the hospitals the flexibility to work with their communities on the best interventions and approaches. The program



Photo courtesy of Leeds School of Business.

will serve as a path to transition from a pay-for-process and reporting to a pay-for-performance structure.

Rising hospital costs continue to be a major factor contributing to increases in insurance premiums. Recent information from the state indicates that hospital costs have significantly increased in recent years. The state reports that hospital costs grew by 58.7% between 2009 and 2017, while adjusted discharges only grew by 14.2% (Colorado Healthcare Affordability and Sustainability Enterprise. *Cost Shift Analysis Report*, January 2019). At the same time, hospital margins for all payer types (commercial, Medicaid, Medicare, other) increased by more

than 150%, from \$538 to \$1,359 per adjusted discharge in the same interval. Notably, it was found that since the passage of the ACA and other state legislation, there has been no reduction in hospital cost shift to private payers (even though payments to hospitals have increased), the number of uninsured people in Colorado has been reduced, hospitals have less bad debt, and there have been fewer charity write-offs. The state continues to make efforts to reduce hospital cost growth, including the introduction of a reinsurance program and the proposal of a state option insurance plan.

At the federal level, in an effort to bring greater transparency to hospital charges nationally, the Centers for Medicare and Medicaid Services (CMS) announced that it would start requiring hospitals to publish their standard charges online beginning January 1, 2019.

Pharmacy

According to the *American Journal of Health-System Pharmacy*, in 2018 prescription drug spending in the United States was about \$476.2 billion. This was an increase of 5.5% over 2017. The drug adalimumab (rheumatoid and psoriatic arthritis) had the highest expenditure, at \$19.1 billion. The drug insulin glargine for diabetes was second at \$9.3 billion, and etanercept for rheumatoid arthritis was third at \$8.0 billion.

Recent growth in pharmacy has been driven by new drugs, higher prices for existing drugs, and fewer patients expiring. With the cost of Rx drugs continuing to rise, 25% of adults indicate that they struggle to afford their medications.

According to the Peterson-Kaiser Foundation Health System Tracker, the top five conditions for enrollees of private insurance in 2018 include the following (per member per year):

- Inflammatory conditions, \$174.45
- Diabetes, \$114.85
- Oncology, \$80.24
- Multiple Sclerosis, \$55.81
- HIV, \$49.07

Proposal for Affordable Health Coverage Option

In the 2019 legislative session, the General Assembly passed legislation (HB 19-1004) requiring the state to develop and submit a proposal concerning the design, costs, benefits, and implementation of a state option for health care coverage. As part of the legislation, the General Assembly declared that “in several regions of the state, health insurance is not affordable due to high health care costs and limited or no competition among

insurance carriers as well as other marketplace factors, and Coloradans cannot afford the health insurance premiums and out-of-pocket expenses.”

To develop the proposal, the state accepted public letters and comments, and held 14 public listening sessions across the state to gather input from community members, health insurance experts, brokers, employers, providers, insurance companies, and others. The state released a draft report on October 7, 2019, and the final report on November 15, 2019.

The proposal, if enacted, would create a state option insurance plan. The plan would be sold by licensed insurance companies and cover all of the essential health benefits covered by plans sold through Colorado’s health insurance marketplace (Connect for Health Colorado), including hospital care, prescription drugs, maternity coverage, preventive services, and mental health care. Per the proposal, the state option will be designed to provide a greater set of high-value primary and preventive care services outside of the individual’s deductible. While care would be provided by existing insurance carriers and providers, the state, through multiple state agencies, would oversee the ongoing development and implementation of the plan by creating a State Option Advisory Board.

To ensure provider participation, the state would require insurance carriers that offer plans in a major market (individual, small group, or large group), above a yet-to-be determined market share or membership size, to offer the state option. In order to reduce costs and make premiums more affordable, the state proposes to limit reimbursement at benchmarks between 175% and 225% of Medicare rates; the current averages for the individual market are 289% of Medicare rates. To further assist in controlling costs, the state is also proposing a requirement that 85% of premium costs are spent on patient care, that prescription drug rebates are passed through to consumers, and that carriers implement innovative “value-based insurance design” that create financial disincentives for patients or doctors to seek low value care through increased out-of-pocket costs and lower

reimbursements. Further, the state will seek additional funding from the federal government by pursuing a waiver under section 1332 of the ACA that would capture reductions in federal tax credits due to lower costs under the State Option. The state projects savings of between 9% and 18% on monthly premiums.

The proposal is expected to be implemented on January 1, 2022.

Public Policy

Soon after taking office, Governor Polis released “The Polis-Primavera Roadmap to Saving Coloradans Money on Health Care.” The roadmap identifies 13 action steps in order to reduce patient cost and invest in long-lasting changes to improve the health system. These steps include: increase hospital price transparency; establish a reinsurance pool; negotiate to drive down the cost of health insurance; lower hospital prices; reduce out-of-pocket costs; lower the cost of prescription drugs; launch a state-backed health insurance option; reward preventive and primary care; expand the health care workforce; increase access to healthy food; improve vaccination rates; reform the behavioral health system; and support innovative health care delivery and reform models. The state made progress on several of these initiatives during the 2019 legislative session, including passing legislation to allow the importation of prescription drugs from Canada; requiring the creation of a state option health insurance program; and the creation of a reinsurance program. These initiatives are still in development and it remains to be seen how effectively they will address the governor’s priorities.

During the 2019 legislative session, the General Assembly devoted a significant amount of time to health care legislation: 138 bills regarding health were introduced during the session, with 80% of those bills being passed, touching a large assortment of areas of health care delivery in Colorado, according to a summary from

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the Colorado Health Institute. The General Assembly authorized significant changes in Colorado's health insurance markets with the passage of: HB 19-1004, creating a public insurance option; HB 19-1168, creating a reinsurance program; SB 19-005, allowing the import of prescription drugs from Canada; HB 19-1216, prohibiting insurance carriers from charging copays or coinsurance above a certain amount for insulin; and SB 19-004, permitting health care cooperatives in Colorado.

The General Assembly passed legislation to increase transparency in Colorado's hospitals, including: HB 19-1001, requiring annual reporting on hospitals' spending and uncompensated costs; HB 19-1010, creating a new health facility license for freestanding emergency departments; and HB 19-1320, requiring nonprofit hospitals to engage annually with multisector representatives regarding their local community health needs assessment and implementation plans.

Legislation focused on other providers and insurance carriers, including: HB 19-1174, requiring improved disclosures about possible out-of-network billing and setting reimbursement amounts for out-of-network providers working at in-network facilities; HB 19-1211, requiring additional transparency from insurance carriers about their prior authorization requirements; SB 19-073, establishing a statewide system of advance medical directives; and HB 19-1077, allowing people with chronic conditions to get an emergency supply of their necessary medication from a pharmacy without a prescription if they find themselves in a dire situation. SB 19-201 created the Colorado Candor Act to improve communication following a patient injury or death, and SB 19-234 extended, until 2030, the state's professional review committees.

The General Assembly also focused its time on behavioral health, passing a large number of bills related to behavioral health and SUD treatment. SB 19-001

expanded a medication-assisted treatment program that previously covered Pueblo and Routt counties to include the San Luis Valley and up to two more counties; HB 19-1120 allows children age 12 and older to talk to a licensed mental health professional without notifying their parents; SB 19-227 aims to reduce harm caused by SUD by equipping some public buildings with overdose reversal medication, allowing hospitals to serve as clean syringe exchange sites, and expanding medication take-back and other programs; HB 19-1269 requires insurers to file annual reports showing how they are complying with mental health parity laws; SB 19-228 set aside more than \$4 million in funding for SUD prevention and treatment programs and requires providers to take SUD training before they can renew their licenses; and HB 19-1287 requires the state to improve access to behavioral health facilities and medication-assisted treatment. Other legislation focused on the intersection of behavioral health care and SUD: SB 19-211 expanded a criminal justice diversion pilot program; and SB 19-008 reformed how the Department of Corrections delivers medication-assisted treatment.

Legislation affecting other sectors also had connections to health care. Notable examples include: SB 19-181 imposes new requirements on oil and gas operators, and directs a state commission to prioritize public health, welfare, and the environment over fostering the oil and gas industry; HB 19-1322 provides additional funding for affordable housing support; HB 19-1032 adds new requirements for schools that offer comprehensive sexuality education; SB 19-188 created a study to investigate the creation of a family and medical leave insurance program; and HB 19-1171 expanded the Child Nutrition School Lunch Protection Act.

Colorado enacted a series of forward-looking legislation to get recommendations for future action. For example: HB 19-1176 created a health cost task force to study the current health care financing system and single-payer

and multipayer universal health care systems; HB 19-1233 directed the Commission of Insurance to set targets for carriers' level of investment in primary care services and established affordability standards for premiums; HB 19-1122 directed a study for maternal deaths and disparities in Colorado with the goal of preventing deaths during or after childbirth; and SB 19-015 created an interim committee to study how health care issues affect people throughout the state.

Conclusion

The rate of uninsured Coloradans has remained stable in 2019, at 6.5% of the population. Fewer Coloradans are accessing health insurance through Medicaid and employer-sponsored health insurance has been increasing. However, Governor Polis has launched a number of initiatives during the 2019 legislative session to further improve health care access for Coloradans across the state, including historically underserved regions. These initiatives are mid-to long-term initiatives and are likely to start coming to fruition in 2021 and beyond. This political focus at the state level mirrors a shift at the national level. The political arena shifted from debates about repealing ACA to universal health care coverage. There continues to be uncertainty in the market for what health care will look like in the future and how it will be financed. However, any significant policy changes will occur beyond 2020. ❖

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Leisure and Hospitality

Overview

This report reviews trends in key sectors that are the primary economic drivers for Colorado's tourism industry: conventions and meetings, hotels, restaurants, gaming, skiing, and outdoor recreation. The analysis reviews the infrastructure, events, and marketing activities that shaped the industry in 2018 and looks ahead to the challenges and opportunities that will steer future growth. The Leisure and Hospitality Supersector includes performing arts, entertainment, sports, recreation, accommodations, and food services used by Colorado residents, tourists, and business travelers.

The Leisure and Hospitality industry accounts for about one in eight jobs in Colorado. The industry was one of the first to add jobs following the recession and 2019 marks 10 years of consecutive employment growth.

LEISURE AND HOSPITALITY EMPLOYMENT 2010-2020 (In Thousands)

Year	Arts, Entertainment, and Recreation	Total Accommodation and Food Services	Total Leisure and Hospitality ^a
2010	44.7	218.3	263.0
2011	45.6	225.8	271.4
2012	46.5	233.2	279.7
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 ^b	56.8	283.1	339.9
2019 ^c	58.3	285.4	343.7
2020 ^d	59.1	288.0	347.1

^aRevised. ^bEstimated. ^cForecast.

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

Leisure and Hospitality employment grew by an estimated 3,800 jobs (1.1%) in 2019, and is projected to increase by 3,400 jobs, or 1%, in 2020.

National Trends in the Tourism Industry

Cautious optimism prevailed at the Travel and Tourism Research Association's annual Travel Outlook Forum held in Bethesda, Maryland, in early October 2019.

Adam Sacks, president of Tourism Economics, acknowledged worries, but stated leading travel indicators are still positive in the short term, and the consumer is still driving demand growth.

The U.S. economy is slowing but steady. The United States now has the longest expansion on record. Among the economic sectors, Manufacturing is the slowest as activity has stalled, and investment growth is tapering. Confidence has softened but is still high. Corporate profits remain elevated. Consumer confidence remains high but battered. Household wealth is up 50% from the pre-recession high. The economy is expected to slow gradually, not abruptly.

U.S. balance sheet assets are rising wages, low unemployment, high consumer confidence, and solid household finances. Liabilities are slow growth, global economic weakness, trade war effects, and financial market turmoil.

What does this mean for the travel sector? Occupancy rates remain elevated, and revenue per available room (RevPAR) is in record territory and is expected to increase 1.1% in 2020. New supply is under construction in major markets while national group demand is moderating as overall room demand trends downward.

Leading travel indicators show U.S. domestic travel remains strong. Domestic air travel bookings are solid, and air travel has been outpacing hotel demand for 18 months. U.S. vacation intentions are holding above 2019, reflecting the strength of the travel sector.

International arrivals appear weak as Canada and Mexico have fallen below previous peaks, and overseas visitors to the United States have slowed.

INDUSTRY SNAPSHOT LEISURE AND HOSPITALITY

Nominal GDP, 2018 (\$ Billions)	19.0
Real GDP, 2018 (\$ Billions, 2012 Dollars)	15.7
2018 Real GDP Growth Rate	3.0%
Total Employment, 2018 (Thousands)	339.9
2018 Employment Growth Rate	2.0%
Employment Growth National Rank	14
Share of Colorado Employment	12.5%
Share of National Employment	11.0%
Average Wage, 2018	25,878
Percent of Statewide Average Wage	43.6%
2018 Average Wage Growth Rate	5.8%

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

The strength of the travel sector is a strong positive in the U.S. economy. The amount that Americans spend on travel continues to grow.

Summary

According to Tourism Economics, the following are national tourism sector takeaways:

- The global economy is slowing.
- The U.S. economy is foundationally strong but is slowing due to weak trade, financial market tightening, and waning business confidence.
- The United States remains on a "recession watch" but the firm is not convinced this is inevitable over the next 12 months.

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- The lodging sector has achieved historic heights that positions it to weather a downturn.
- Leading travel indicators are positive in the short term, and the consumer is still driving demand growth.
- Long-term prospects remain solid.

Tourism in Colorado

The Colorado Tourism Office's (CTO) mission is to drive traveler spending through promotion and development of compelling, sustainable travel experiences throughout our four-corner state. During FY2019, CTO continued expanding the national reach of the highly successful "Come to Life" marketing campaign, generating its highest-ever return on investment and record-setting economic impact for Colorado. The campaign targets high-value travelers with the goal of increasing tourism spending and state and local tax generation in all parts of Colorado.

CTO became the first state organization to forge a strategic partnership with Leave No Trace in October 2017 and introduced the jointly created Care for Colorado Principles in May 2018. Since then, the CTO has shared the Care for Colorado Principles with millions of travelers through an "Are You Colo-Ready?" brochure, an animated video, in Colorado Welcome Centers, in the annual vacation guide, and on social channels and Colorado.com.

A recent study shows that a year after the program was introduced and with no paid advertising, 28% of Colorado adults recognized the Care for Colorado Principles. Of those who were not aware of the program, 71% approved when it was explained to them.

In 2019, CTO and Leave No Trace welcomed six new sustainable partners into the coalition: the Colorado Hotel & Lodging Association, the Colorado River Outfitters Association, the Colorado Dude & Guest Ranch Association, the Colorado Association of Ski Towns (CAST), the Colorado Mountain Club, and the Colorado

Association of Destination Marketing Organizations (CADMO). Those organizations, in turn, extended access to CTO messaging and Leave No Trace training to all of their members. This will bring the Care for Colorado Principles to tens of millions of travelers each year.

CTO research is showing more travelers are saying a destination's sustainability practices are important to their choice of destinations. In summer 2018, a total of 20% of Colorado travelers said a destination's commitment to sustainability was very important, up from 15% a year earlier.

The CTO continues to promote rural economic development. The CTO is partnering with the Colorado Energy Office and the Colorado Department of Transportation to increase accessibility of electric vehicle charging stations along Colorado's 26 Historic and Scenic Byways.

The CTO received a grant of \$141,293 from the State Historical Fund to build a new microsite on Colorado.com to promote all of the 26 Scenic and Historic Byways. Work on this project began in February 2019 and is scheduled to be completed by April 2020. CTO will be collaborating with multiple state agencies, regional byway groups, the State Byways Commission, and Miles Partnership to produce this new microsite that will include itineraries, photos, local tips, videos, and more.

In FY2019, the CTO granted \$721,000 to cultivate local tourism development and promotion across Colorado.

In 2019, CTO created and launched the Colorado Concierge program as a free digital resource and training platform for all Colorado businesses to coach their front-line workers into being Colorado experts and develop their ability to deliver Colorado-style hospitality. The CTO's research-based definition of Colorado hospitality is "a genuine, kind-hearted invitation to share in the life and wonder of Colorado."

Colorado Tourism Highlights

- Total direct travel spending in Colorado during 2018 exceeded \$22.3 billion, a 6.7% increase from

2017, compared with 4.1% nationally (Dean Runyan Associates).

- In 2018, Colorado welcomed 85.2 million visitors, up slightly from 84.7 million in 2017.
- Overnight stays by discretionary marketable leisure travelers—those targeted by tourism campaigns—was up to a record-high 19.5 million, a 3% increase from 2017. Colorado had the 9th-largest share of these travelers nationally in 2018, up from 18th largest in 2009.
- Visitor spending continued to spur job creation in 2018 with travel spending directly supporting 174,400 jobs, a 1.9% from 2017. This increase is slightly above the national increase of 1.8%.

International Travel to Colorado

In 2018, for the first time, Colorado attracted more than 1 million international visitors to the state, at 1,048,000 visitors. This represents year-over-year visitor growth of 7.4%, while international visitor spend increased 6.8%, to \$1.85 billion.

The international visitor is Colorado's highest value traveler, spending an average of \$1,770 per person per trip while visiting the state. Overseas travelers, excluding Canada and Mexico, tend to be in the state for a longer amount of time, spending \$2,440 per visit while in Colorado.

The countries with the largest percentages of increases in visitation are a direct result of the increase in international air service to Denver. The CTO supported Denver International Airport's marketing efforts, which resulted in seven new international nonstop flights in the past two years, bringing DEN's total international destinations to 26. In 2018, new nonstop flights included United Airlines seasonal service to London-Heathrow, WestJet to Calgary, Norwegian to Paris, and seasonal service by Edelweiss to Zurich. In 2019, United Airlines added a



Photo courtesy of Wayne D. Lewis/CPW.

new flight to Frankfurt, and announced that service to London-Heathrow would be a year-round flight.

Tourism and Conventions in Denver

In 2018, Denver matched record tourism results and trends show that 2019 is on pace to be another strong year for both conventions and leisure tourism.

Research firm Longwoods International indicated that Denver welcomed 31.4 million total visitors in 2018 (the latest figures available), including 17.3 million overnight visitors of which 83% were from out of state. Since voter approval to increase tourism marketing dollars in 2005, Denver tourism has grown by 64% compared to 22%

nationally. Travel spending by overnight visitors in 2018 was \$5.6 billion, and total visitor spending was \$6.5 billion. For the 15th straight year, the number of marketable visitors also grew, increasing 2% from 2017.

Denver set a record for lodger's tax collections in 2018, generating \$120.1 million, up 12% from 2017. Year-to-date 2019 lodger's tax is up 14.4%. Furthermore, the Tourism Improvement District (TID), which collects an additional 1% of lodger's tax in hotels with 50 rooms or greater, is expected to generate \$9.5 million in lodger's tax in 2019 and \$10.5 million in 2020.

According to Smith Travel Research (STR), through September 2019 occupancy in Denver is up 1.1 percentage points year-over-year, increasing from 77.3% to 78.4%. Over this same time period, the average daily rate (ADR) increased 2.9% from \$156.50 to \$160.97 and RevPAR increased 4.3%, to \$126.14 from \$120.98. For Metro Denver, occupancy increased 0.8%, to 76.4% from 75.8%. ADR increased 3.2%, to \$137.40 from \$133.19, and RevPAR increased 4%, to \$104.95 from \$100.90.

Denver continues to receive awards and accolades, including being named on Lonely Planet's top 10 destinations in the world for travelers to visit in 2020.

Convention Highlights

Denver is very strong for both conventions held and future bookings.

- In hosting conventions, 2018 was a very strong year with 926 meetings attracting 399,005 delegates who spent \$772 million. This included 67 groups that used the Colorado Convention Center and 859 individual hotel groups.
- The year 2020 is on pace to be strong. Through July 2019, there are 597,569 room nights on the books for 2020, a 13.1% increase during the same period in 2018.
- As of July 2019, a total of 1,356 conventions were scheduled to meet in Denver in all future years. These meetings will attract 1.7 million delegates for a total

projected future economic impact from all definite business of \$3.7 billion.

Tourism Highlights

Denver is experiencing an unprecedented period of tourism growth. Top Denver tourism industry trends include:

- Denver has continued to build on the success of IPW, the largest international trade show staged in the United States, which was held in Denver in 2018. Nearly 530 travel companies now offer Denver vacation product, an increase of 31 over the previous year.
- The Denver Tourism Roadmap was launched at the end of 2016, helping to guide Denver's tourism industry to smart growth and prosperity for the next 10 years by focusing on six strategic areas: convention infrastructure, visitor events, attractions and services, connectivity and mobility, downtown experiences, and branding.
- The Denver TID started collecting revenue from the new 1% lodging tax on January 1, 2018, to help pay for the expansion of the Colorado Convention Center and provide additional funds for Denver tourism and convention marketing. TID programs in 2019 included two buyer education trips for meeting planners, a weekend marketing campaign targeting short-term travel from regional visitors, and support for new and existing events.
- In sports, Denver hosted several successful major events in 2019. In its third year, the Colorado Classic turned into a women-only race featuring 100+ professional bicyclists in Denver and throughout the state. The Ice Climbing World Championships in Denver drew the largest audience in the event's history. International soccer events included a match between the U.S. Women's National Team and Australia, a Gold Cup doubleheader, and a match between Arsenal and

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Leisure and Hospitality

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the Colorado Rapids, indicating the region's enthusiasm for soccer as Denver seeks to host games for the 2026 FIFA World Cup.

- Residents and visitors alike continued to enjoy blockbuster exhibitions in 2019, such as Degas: A Passion for Perfection; Dead Sea Scrolls; Dior: From Paris to the World; and the recently launched Claude Monet: The Truth of Nature.
- Coming up on its 17th year in 2019, the Mile High Holidays campaign will continue to encourage Denver hotel stays during the traditionally slow “need period” of November, December, and January, taking advantage of holiday events, festivals, dining, shopping, New Year’s Eve fireworks, and the National Western Stock Show and Rodeo. New in 2019, the campaign will introduce to the world the Mile High Tree, Denver’s biggest and newest holiday tradition. Standing 110 feet tall, this brilliantly lit tree will be placed in Sculpture Park at the Denver Performing Arts Complex and will be free for families to enjoy all season long.

Denver is upgrading its infrastructure for the benefit of residents and visitors in many ways. While these projects may present some short-term inconvenience, over the long term they will help ensure Denver’s tourism growth is on the right trajectory. Projects include:

- The expansion of 39 new gates and Great Hall renovations to improve security and the visitor experience at DEN
- Widening of I-70 between I-25 and Chambers Road
- Redevelopment of the National Western Center
- Reconstruction of the 16th Street Mall
- Expansion of the Colorado Convention Center

Challenges to Denver’s Tourism Industry

At the same time Denver is enjoying these successes, competition for tourism and convention business is



Photo courtesy of Dustin Daskocil/CPW.

increasing. Like much of the world’s travel industry, Denver is subject to increased competition and a fluctuating world economy that could impact the industry’s performance at any time.

The new supply will eventually have an impact on occupancy, and Denver is already seeing a flattening and decreases in some submarkets around the metro area. This new supply has had a dramatic impact on hospitality employment and workforce development as well. Hotels, restaurants, bars, and attractions are having a difficult time attracting and retaining staff. As Colorado enjoys one of the lowest periods of unemployment in the state’s

history, there are simply not enough workers to fill all available positions. Additional local, state, and regional issues impacting the industry include affordable housing, minimum wage ordinances, and traffic and congestion.

Denver Hotel Supply

New hotels add to Denver’s lodging package for leisure and convention visitors. Metro Denver opened 2,547 new hotel rooms in 2019. An additional 2,055 rooms are scheduled to open in 2020, with 3,865 rooms in the pipeline for 2021. In 2019, the following properties began welcoming guests:



Photo courtesy of Dustin Daskocil/CPW.

- The 233-room Hilton Garden Inn Union Station
- The 382-room Home2 Suites and Tru Hotels by Hilton
- The 226-room Hyatt Place Peña Station
- The 157-room Element Hotel by Marriott

Denver International Airport

Denver International Airport (DEN) is the primary economic engine for the state of Colorado. Air traffic at DEN continues to set new records, with 64.5 million travelers in 2018 compared to 61.4 million in 2017, marking the 11th-consecutive year with more than 50 million passengers. DEN is the fifth-busiest airport in the United

States and the 20th busiest in the world, with 23 airlines offering more than 1,600 daily nonstop flights to over 200 worldwide destinations. In the last two years, Denver launched several new direct flights to international destinations, including Frankfurt (United), London Heathrow (United), London Gatwick (Norwegian), Paris (Norwegian), Zurich (Edelweiss), and Panama City (Copa). International arrivals at DEN were up 13.9% in 2018, to a record 2.9 million or almost 5% of all traffic. A project to add new gates will keep the airport competitive for years to come.

Tourism in Colorado Springs

Overnight visitors to Colorado Springs and the Pikes Peak region spent a total of \$1.7 billion in 2018, a 7% increase over 2017. Day travelers spent \$665 million for a total of \$2.4 billion compared to \$2.3 billion in 2017. According to the annual visitor profile study from Longwoods International, the region welcomed 23 million people, with 45% staying at least one night. A total of \$6.6 million is infused into the Pikes Peak region's economy each day by nonresidents.

For the first time, marketable trips to overnight visitors, the kind where people are not limited in where they travel, outpaced the visiting friends and relatives category (4.8 million and 4.0 million, respectively).

While the total visitor numbers in the overnight category remained essentially flat, spending increased significantly, up 7%. "Two key goals of our long-term Destination Master Plan road map are to increase the length of stay and total visitor spend. Knowing how visitors are inspired and what they like to do in the region is an important component to craft the organization's marketing messages. With higher demand for our area's attractions and natural landmarks, the best way to maximize economic impact in a sustainable and responsible way is to increase the length of trip and the amount of money visitors are infusing into our destination," says Visit Colorado Springs President and CEO Doug Price.

Other key findings from the Longwoods International Colorado Springs annual visitor profile study include:

- Overnight visitors to the Pikes Peak region spent an average of 3.2 nights, up substantially from 2.8 nights in 2017.
- The top three reasons for visiting the region are visiting friends and relatives, touring, and outdoors.
- Top markets, which shifted slightly, are Colorado, California, Texas, Florida, Missouri, and Illinois.
- About 6 in 10 overnight Pikes Peak region travelers arrived by personal vehicle.
- Most overnight visitors stayed in a resort, hotel, or motel, followed by staying with friends or relatives.

Through July 2019, the Lodgers and Automobile Rental Tax collected by the City is up 7.9% over 2018, showing continued strength for the regional tourism industry in 2019.

Colorado Springs is anticipating 2020 to be a strong year for the city and the Pikes Peak region. In 2020, the U.S. Olympic & Paralympic Museum Hall of Fame will open and is anticipating to draw around 245,000 new out-of-state visitors. Additionally, attractions like the new Pikes Peak Summit House, Flying W Ranch, and a handful of new properties, such as Kinship Landing and newly opened Hilton Garden Inn Colorado Springs Downtown, will provide new opportunities for visitors and overnight stays. Although the chapel at the U.S. Air Force Academy is closed to the public during renovations, a decrease in visitation is not anticipated as Colorado Springs and the Academy continue to promote the many other opportunities for visitors to do onsite, such as attend athletic events, visit the planetarium and visitor center, and hike the area's trails.

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Casinos

Colorado's casino and gaming industry has continued to experience a slow, but steady economic growth with customers feeling comfortable spending money on entertainment, including casinos. New ownership of properties and large investments in capital construction projects have increased the market with additional improvements on the horizon. Colorado's gaming towns of Black Hawk, Central City, and Cripple Creek are moving forward with plans to increase visitation, including nongaming amenities.

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 including community colleges and the state's historic preservation program. These gaming tax revenues help bolster their budgets and maintain their commitments to enhancing quality education for students at a more affordable price and preserving Colorado landmarks. The gaming tax also continues to fund the tourism promotion budget for the Colorado Tourism Office at \$15 million annually.

For the fiscal year ending in June 2018, Colorado casino adjusted gross proceeds (AGP), which is defined as the amount wagered by players less payout from the casinos to all players, were \$842 million. Gaming taxes paid to the

state were \$126 million reflecting a small increase from last year and a steady increase over the last five years.

Black Hawk continues to dominate the Colorado casino sector with 15 casinos, 7,323 devices, and a majority of the AGP. Cripple Creek has 12 casinos and 3,606 devices, and Central City has 6 casinos and 2,040 devices.

While the gaming industry has made strides to increase revenues since the 2008 smoking ban, it remains threatened by the continued attempts 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. A ballot initiative in November 2014 to allow slot machines at Arapahoe Racetrack lost 71% to 29%. The industry's annual polling on these types of gaming expansion continues to reflect that 75% of state voters oppose casinos located outside the historic towns of Black Hawk, Central City, and Cripple Creek. In the future, the industry and regulators will look to games that implement new technologies and attract younger customers while continuing to keep current customers entertained. With the passage of Proposition DD in the November 2019 election, there is much anticipation for Colorado to have sports betting in the state May 1, 2020.

Colorado Restaurant Industry Outlook

Colorado's restaurant industry continues to grow at a steady pace, according to data from the Bureau of Labor Statistics (BLS). The number of eating and drinking place establishments hovered around 12,000 in Q1 2019, which is stable when compared with the Q1 2017 level of 11,900.

Revenue and employment opportunities, however, continue to rise. Restaurant employment is on pace to increase 2% in 2019 and represents 8.6% of employment in the state. Sales are projected to surpass \$12 billion in 2019 and \$14 billion in 2020.

At the same time, 2019 is projected to be the third-straight year of job growth below 3%, which follows six consecutive years (2011–16) with gains above 3%.

COLORADO CASINOS 2009–2019

Adjusted Gross Proceeds^a (In Millions)

Year	Casinos Open	Devices (Thousands)	Black Hawk	Central City	Cripple Creek	Total
2009	40	16.1	\$530.0	\$64.3	\$140.4	\$734.6
2010	39	15.4	559.4	65.7	134.4	759.6
2011	39	14.7	550.9	67.8	131.4	750.1
2012	41	15.0	558.5	74.6	133.2	766.3
2013	40	14.6	553.1	67.6	128.0	748.7
2014	36	14.2	560.6	62.3	123.4	746.3
2015	36	13.8	595.8	66.2	128.0	790.1
2016	35	13.5	609.8	69.6	131.4	810.8
2017	34	13.0	621.4	71.9	134.7	828.1
2018	33	13.0	623.2	79.0	139.9	842.1
YTD, Sept. 2018	33	12.9	472.8	59.9	106.3	639.1
YTD, Sept. 2019	33	12.8	466.5	60.9	108.2	635.7

^aAGP calculated on an annual basis, hence different from the state fiscal year.

Source: Colorado Division of Gaming.

One reason for slower job growth in both the restaurant industry and the overall economy is the difficulty that many businesses are having finding qualified employees.

Recruitment and retention is the number one challenge for restaurant owners in 2019, according to the National Restaurant Association. This was true across all segments of the industry—family dining, fine dining, fast casual, quick service, and casual dining—and was especially pronounced among casual-dining and quick service operators.

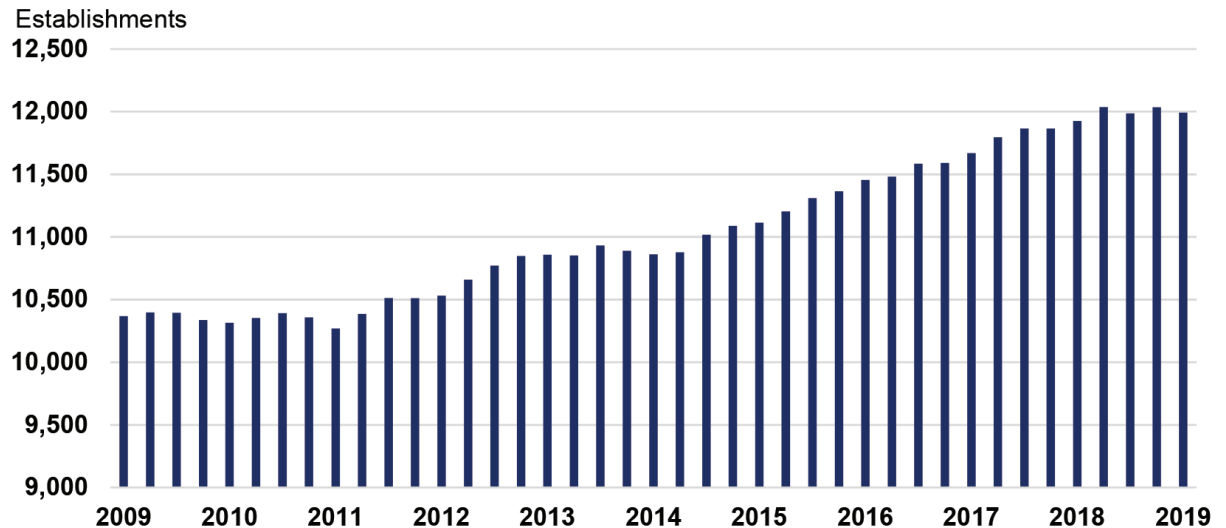
Labor challenges appear to be the most pronounced in the table service segment. Forty-eight percent of fine-dining operators and 42% of casual-dining operators say they currently have job openings that are difficult to fill. A somewhat lower 31% of limited-service operators reported similarly. Eighty-three percent of family-dining and casual-dining operators who reported difficulty in filling jobs say they are having trouble filling back-of-the-house job openings. Roughly three out of four fine-dining, quick service, and fast-casual operators report similarly.

Sixty-eight percent of quick service operators with difficult-to-fill job openings also report challenges finding front-of-the-house employees, as do a majority of casual-dining operators (62%) and fast-casual operators (59%). Quick service (67%) and fast-casual (59%) operators are the most likely to say they are having challenges finding managers.

A Competitive Business Environment

While restaurant operators generally are optimistic about business conditions, they do not expect a letdown in competitive pressures. In addition, rising labor costs and a complex legislative and regulatory landscape on federal, state, and local levels add pressure on business performance and bottom lines. In Colorado, changes to local minimum wage laws and overtime regulations are particularly burdensome.

COLORADO FOOD SERVICES AND DRINKING PLACES ESTABLISHMENTS



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

Many Operators Plan to Invest in Boosting Off-Premises Business and Delivery is Growing in Popularity

As the economy continues to add jobs, more consumers are likely to need the convenience of takeout and delivery. To capitalize on this, nearly 4 in 10 operators planned to invest more in expanding their off-premises business in 2019. This includes delivery, takeout, and ghost kitchens. Regarding delivery: Nearly 4 in 10 adults—including 50% of millennials—say they are more likely to have restaurant food delivered than they were two years ago. Restaurant operators across all segments report positive trends in their delivery business. A solid majority of casual-dining, family-dining, and fast-casual operators say their delivery sales are higher than they

were two years ago. Fewer than 1 in 10 say their delivery sales declined.

Culinary Trends Look More at Production than Specific Ingredients

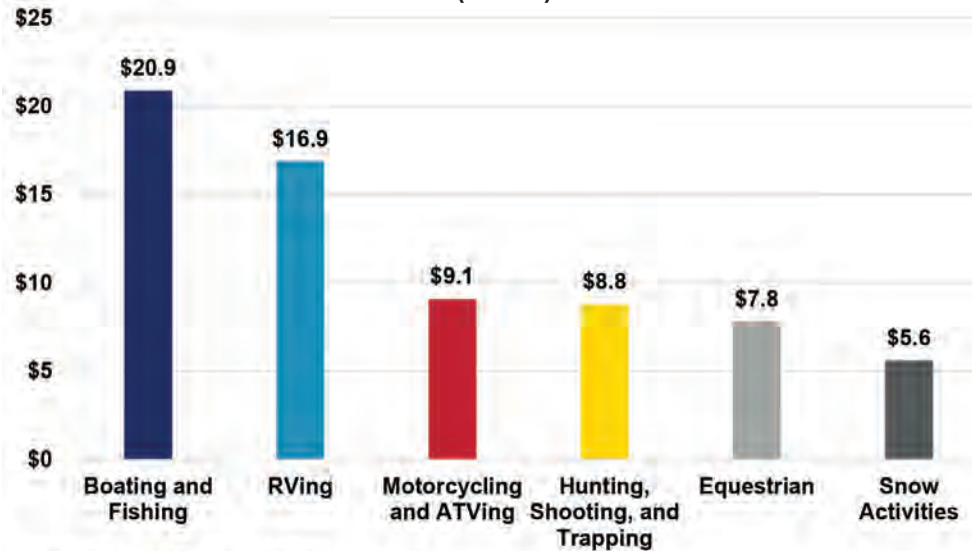
Rather than looking at specific ingredients or food items, culinary trends in 2019 focus more on how food is produced and prepared—philosophies that often apply across all segments of the restaurant industry. Among the biggest trends in restaurant concepts: CBD- and cannabis-infused food, zero-waste cooking, hyperlocal sourcing, veggie-forward cuisine, chef-driven fast-casual concepts, natural ingredients, plant-based protein, and environmental sustainability.

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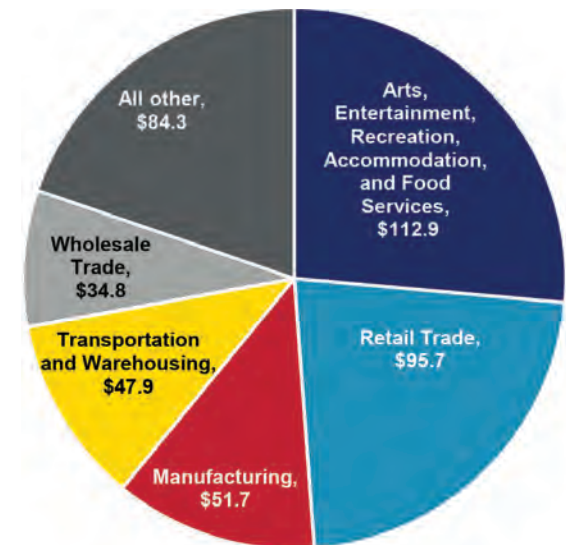
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**NATIONWIDE NOMINAL VALUED ADDED FOR LARGEST CONVENTIONAL OUTDOOR RECREATION ACTIVITIES, 2017
(Billions)**



Source: Bureau of Economic Analysis.

**INDUSTRY COMPOSITION OF OUTDOOR RECREATION
NOMINAL VALUE ADDED, 2017 (Billions)**



Parks and Outdoor Recreation

Outdoor recreation and Colorado are synonymous. Colorado is paradise for outdoorists. The strong outdoor recreation industry in Colorado fuels economic growth and development. The Bureau of Economic Analysis (BEA) reports that nationally, the outdoor recreation sector adds over \$412 billion annually to the nation's GDP, employing 4.5 million people and accounting for 2.2% of the nation's GDP. The Bureau of Labor Statistics (BLS) report looks at outdoor recreation across all sectors. As such, the economic impact of outdoor recreation includes sectors like manufacturing, retail, and education, in addition to leisure and hospitality. Teasing out the portion of outdoor recreation that falls in the Leisure

and Hospitality Sector shows that nationally, outdoor recreation adds \$113 billion to GDP.

Specifically to Colorado, outdoor recreation across all sectors has an economic value of \$11.3 billion or 3.3% of Colorado's GDP according to the BEA. The outdoor recreation industry supports 146,000 jobs. Pulling out the Leisure and Hospitality Sector from the BEA data shows outdoor recreation adds \$3.9 billion in value-added economic impact, and supports 72,000 jobs resulting in \$2.4 billion in compensation. Colorado has the 10th-largest outdoor recreation economy in the country, even though it ranks 21st by population.

In 2018, Colorado Parks and Wildlife (CPW) released *The 2019 Statewide Comprehensive Outdoor Recreation Plan* (SCORP). This plan, prepared by Southwick

Associates, estimated the economic contributions of outdoor recreational activity in Colorado during 2017.

In 2017, outdoor recreation in Colorado contributed:

- \$62.5 billion in economic output
- \$35.0 billion in GDP (10% of the entire state GDP)
- \$9.4 billion in local, state, and federal tax revenue
- 511,000 jobs in the state (18.7% of the labor force)—a majority outside of Metro Denver

The economic impacts between the BLS report and the CPW report may seem quite different; however, the two reports looked at different economic contributions, and therefore direct comparisons should be avoided. Together, the two reports paint a strong picture of the

COLORADO PUBLIC LAND VISITS
2010–2020
(In Thousands)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 ^a	2020 ^a
Colorado State Parks ^b	12,300.0	12,300.0	12,200.0	11,500.0	11,900.0	13,200.0	14,296.0	15,398.0	14,924.0	13,780.0	14,318.8
National Parks and Sites											
Bent's Old Fort NHS	29.1	26.8	25.8	23.3	24.6	26.2	31.9	26.4	23.6	21.7	21.7
Black Canyon of the Gunnison NP	176.3	168.3	192.6	175.9	183.0	209.2	238.0	307.1	309.	426.3	433.7
Colorado NM	433.6	435.5	454.5	409.4	419.9	588.0	391.1	375.0	375.5	439.1	378.7
Curecanti NRA	969.5	924.5	862.6	814.2	931.4	944.7	982.5	1,041.4	931.5	943.1	962.2
Dinosaur NM ^c	146.4	158.0	224.1	203.1	185.4	215.9	225.2	233.8	225.0	294.8	282.6
Florissant Fossil Beds NM	65.4	61.3	62.6	58.0	63.3	69.1	73.6	71.8	79.6	74.4	81.4
Great Sand Dunes NP	283.3	280.1	254.7	242.8	271.8	299.5	388.3	486.9	442.9	529.2	589.5
Hovenweep NM ^c	12.1	11.4	11.7	11.0	11.8	15.4	18.9	17.6	17.9	15.5	16.8
Mesa Verde NP	559.7	572.3	488.9	460.2	501.6	547.3	583.5	613.8	563.4	558.0	578.2
Rocky Mountain NP	2,955.8	3,176.9	3,229.6	2,991.1	3,434.8	4,155.9	4,517.6	4,437.2	4,590.0	4,605.0	4,897.1
Sand Creek Massacre NHS	4.1	3.9	4.4	4.8	7.4	5.9	6.8	6.5	6.0	5.9	6.0
Total Visitors to Parks and Sites	5,635.3	5,819.0	5,811.5	5,393.8	6,035.0	7,077.2	7,457.4	7,617.5	7,564.4	7,913.0	8,248.0
Bureau of Land Management	6,448.0	6,844.0	7,310.0	6,963.0	7,536.0	7,694.0	7,739.0	8,310.0	8,708.0	8,863.6	9,173.0
National Forest ^d	27,000.0	27,000.0	27,000.0	27,000.0	27,000.0	27,000.0	27,000.0	26,100.0	31,000.0	31,000.0	31,000.0
Total Public Land Visitation ^e	51,383.3	51,963.0	52,321.5	50,856.8	52,471.0	54,971.2	56,492.4	57,425.5	62,196.4	61,556.6	62,739.8

^a2019 is forecasted with limited data and 2020 is estimated based on trends.

^b State parks managed by Colorado Parks and Wildlife.

^cDinosaur 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.

^dYearly visitor numbers were not available; reported numbers based on limited data.

^eDue 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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Leisure and Hospitality

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economic impact of outdoor recreation to Colorado. The following factors were used to get a comprehensive picture of economic output in the CPW report:

- Direct contribution: the initial purchase made by the consumer (i.e., the original retail sale)
- Indirect contribution: secondary effects generated from a direct contribution, such as a retailer buying additional inventory
- Induced contribution: results from the salaries and wages paid by the directly and indirectly affected industries

- Actual dollars spent versus the value added dollars as reported by BLS
- Actual purchases as reported by consumers that may not be reported by the BLS. For example, the money spent by a person who goes to the grocery store to buy supplies for a camping trip is included in the CPW report but not the BLS report.

Public Lands Recreation

Public land constitutes more than 45% of Colorado and accounts for the majority of outdoor recreation. The



CPW manages 41 state parks throughout the state. Colorado state parks saw a 3% decrease in visitation between 2017 and 2018, perhaps due to drought conditions and various wildfires. Between 2018 and 2019 there appears to be an estimated 7% decrease with a total 2018 estimated visitation of 13.8 million park visits. This may have resulted from lower than expected spring visitation as the weather was cold and wet for much of the early season. In addition, in 2019, the cost to enter state parks increased by \$1 for a daily pass and \$10 for an annual pass.

In Colorado, the national park system manages four national parks, five national monuments, a national historic site, and a national recreation area. Park visitation in 2018 was approximately 7.6 million visitors, about the same as 2017. Like state parks, national parks were on track to set a new visitation record for 2018; however, extreme drought and wildfires likely depressed park visitation. For 2019, national park visits are estimated to be about 7.9 million, with Rocky Mountain National Park leading the way with record numbers.

Skiing Industry

According to the National Ski Areas Association (NSAA), the United States recorded a strong 59.3 million downhill skier and snowboarder visits during the 2018–19 winter season, up 11.4% from 53.3 million visits in the 2017–18 season and just below the record 60.5 million visits tallied in the snowy 2010–11 season. The gains in the most recent season were largely attributable to favorable snow and weather conditions across much of the country, expansion of lift ticket and lift pass offerings, and a continued strong economy.

In Colorado, the state's 31 ski areas had a breakout season in winter 2018–19, hosting a record 13.8 million skier/snowboarder visits. Visitation was up 14% from 12.1 million visits in 2017–18. Excellent snow conditions, increases in affordable season passes, and robust economic conditions helped spur growth in visitation in 2018–19. Additionally, resort investments in the on-mountain experience, strong airlift to Denver and mountain airports, recent improvements along the I-70 corridor, and a long-standing reputation as a premier skiing destination, among other factors, have contributed to industry's strength.

Colorado continued to maintain its dominance as the leading skiing destination in the nation in 2018–19, capturing 23.2% of total U.S. resort skier visits—far ahead of the next closest states (California, with 11.2% share, and Utah with 8.5% share). Colorado was home to 7 of the country's 10-most visited ski resorts in 2018–19.



Photo courtesy of Dustin Doskoci/CPW.

In addition to having the nation's busiest ski areas, Colorado is also home to the continent's two largest resort operators, Vail Resorts and Alterra Mountain Company. That bodes well for Colorado's ski resort communities, which are thriving with year-round tourism and increasingly busy summer and winter seasons. For several consecutive years, resort-anchored communities have seen healthy annual increases in winter taxable sales at area lodges, restaurants, bars, and shops. Between the 2017–18 and 2018–19 ski seasons, major Colorado resort communities saw taxable sales climb between November and April (e.g., Aspen up 4.8%, Breckenridge up 7.4%, Frisco up 8.5%, Snowmass Village up 16.3%, Steamboat

Springs up 8.7%, Telluride up 14%, Vail up 9.6%, and Winter Park up 7.1%).

Coming off the 2018–19 record season and kick-started by bountiful October snowfall and many early resort openings, Colorado resorts have strong momentum going into the 2019–20 ski season. Additionally, resorts are likely to benefit from a strong macroeconomic environment (an important influence on visitation, visitor mix, and spend per visitor), both in Colorado and nationally. Early indicators of business volumes are favorable, including announcements of strong preseason pass sales from leading ski resort companies and solid

Leisure and Hospitality

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resort town lodging bookings for the 2019–20 season as reported by Inntopia. Weather going forward remains uncertain, with the National Oceanic and Atmospheric Administration predicting (as of October 17, 2019) a likelihood of above average temperatures and average precipitation for Colorado in the December 2019 – February 2020 period.

The summer period (May to October) is also important to ski resort communities, accounting for a lower, secondary peak in retail sales. The lower summer sales volumes are typically due to a combination of lower spend per visitor and lower volumes of key visitor segments (particularly paid lodging guests as lodging occupancies are often lower in summer than winter). However, summer sales activity has shown strong growth, increasing 4.3% across eight selected resort communities in

May–July 2019 from May–July 2018, building on several years of prior increases. Ski resort communities are increasingly looking at summer as a growth opportunity by leveraging a wide variety of activities and offerings and pursuing new types activities as enabled by the 2011 Ski Area Recreational Opportunity Enhancement Act, which allows for more recreational uses on public land.

The Colorado ski industry has been characterized by moderate visitation growth over the past several seasons, with snow conditions and the economy having an important influence on visits and revenues year-to-year. While Colorado maintains a preeminent position within the skiing industry, evolving generational preferences, vigorous competition from ski resorts in other states and from other vacation and leisure options, climate change, concerns about the impact of congestion and travel delays along the I-70 corridor, and maintaining a welcoming

atmosphere for international visitors remain top of mind for Colorado resorts. ❖

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Photo courtesy of Tony Gurzick/CPW

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 examples of the type of industries in the Other Services Supersector. In addition, the supersector includes businesses that provide maintenance and repair on agriculture, construction, mining and forestry machinery and equipment. In 2018, approximately 15,400 businesses were classified in the Other Services Supersector. Industry growth is influenced by the economy, demographics of the Colorado population, disposable income, and strong consumer

OTHER SERVICES EMPLOYMENT, 2010-2020
(In Thousands)

Year	Repair and Maintenance Services	Personal and Laundry Services	Religious, Grantmaking, Civic, Professional, and Similar Organizations	Total
2010	21.4	22.2	48.9	92.4
2011	21.6	22.6	49.4	93.7
2012	22.0	23.2	50.8	96.0
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 ^a	25.5	28.7	54.4	108.6
2018 ^a	26.2	29.5	55.2	110.8
2019 ^b	26.9	29.9	55.9	112.7
2020 ^c	27.6	30.3	56.5	114.4

^aRevised. ^bEstimated. ^cForecast.

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.

confidence. In 2018, Colorado total employment for this supersector was approximately 110,800, up 2% from the previous year. The supersector is expected to grow by 1.7% in 2019, finishing with approximately 112,700 jobs. In 2020, the supersector is expected to add another 1,700 jobs, a 1.5% gain. Improvement is expected across all three subsector groups.

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. It is the largest industry in the Other Services Supersector, employing nearly 50% of the Other Services employees. 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. The sector also contains social advocacy and political organizations. In 2018, the sector added 800 jobs from the previous year, a 1.5% increase. The subsector is expected to add another 700 jobs in 2019, a 1.3% improvement from 2018 as a strong Colorado economy continues to help the supersector. The supersector is expected to continue to grow at a healthy rate in 2020, albeit at a slower pace than the prior year.

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 been buoyed as the average age of vehicles has increased, pushing up demand for services in this sector. In addition, the sector has benefited as some companies have delayed purchases in new equipment boosting demand for repair services on aging equipment. It is expected to end 2019 with 26,900 total jobs, up 2.7% from the

INDUSTRY SNAPSHOT OTHER SERVICES

Nominal GDP, 2018 (\$ Billions)	8.4
Real GDP, 2018 (\$ Billions, 2012 Dollars)	7.0
2018 Real GDP Growth Rate	2.6%
Total Employment, 2018 (Thousands)	110.8
2018 Employment Growth Rate	2.0%
Employment Growth National Rank	9
Share of Colorado Employment	4.1%
Share of National Employment	3.9%
Average Wage, 2018	40,987
Percent of Statewide Average Wage	69.1%
2018 Average Wage Growth Rate	3.6%

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

previous year. Job growth in this subsector is expected to continue to improve in 2020 at a similar pace.

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. Industry growth in this sector is based on changes in population, income, and consumer confidence. Employment in the subsector grew by 2.8% in 2018 and is expected to end 2019 with 29,900 total jobs, a 1.4% increase from the previous year. The improvement is from strong demand for personal services, such as pet grooming, beauty salons, barber-shops, and spas. ❖

Contributor: Louis Pino, Colorado Legislative Council

Government

The Government Supersector includes federal, state, and local workers and is the second-largest provider of jobs in Colorado, representing roughly one in six jobs. Government activities include a variety of services ranging from space research and technology to public safety, program administration, and education.

In 2018, Government employment in Colorado increased 1.9%, to 445,000. Local government, including public K–12 education, represented 60% of government employment, followed by state government, including higher education, with 28.2%. Federal government made up the remaining 11.9%. Government employment is expected to increase 1.4%, to 451,300, in 2019, then rise 1.2%, to 456,900, in 2020.

Government employment is impacted by a variety of factors, the most significant is available revenues. The biggest influence on federal government employment has been the federal budget that has impacted the budgets of federal agencies, national laboratories, and the military. Federal employment will experience a temporary spike in 2020 in order to conduct the decennial census. State government employment growth will be impacted by a tight state budget environment with limited new resources available. Local government employment has largely recovered from the Great Recession and is expected to grow at about the same rate as the state’s population. At all levels of government, employee retention and hiring is suffering from stricter salary schedules and a tight labor market. Many employees are looking to the private sector due to a low unemployment rate and higher wages.

Federal Government

The U.S. Government Accountability Office’s (GAO’s) Federal Fiscal Outlook and the Congressional Budget Office’s (CBO’s) 2020 Long-Term Federal Fiscal Outlook shows that the United States will continue to record unsustainable debt levels in the coming decades due to major revenue and spending imbalances under current fiscal policy. On the jobs front, the federal government will ramp up

employment for the 2020 census, growing 3.6% in 2020, although this rate is less than the 5.1% growth in 2010 for the last census.

The CBO projects that large budget deficits over the next 30 years will drive federal debt held by the public to unseen levels. Deficits will increase from 78% of GDP in 2019 to 144% by 2049. Future policy will have a significant impact on future deficits as exemplified by the scenario that if Congress prevented a cut in discretionary spending in 2020 and an increase in individual income taxes in 2026, the debt held by the public would reach 219% of GDP by 2049. If policies were adjusted for Social Security and benefits were limited to the amounts payable from revenues received, debt in 2049 would only reach 106% of GDP—still a troubling level.

The GAO’s Federal Fiscal Outlook shows that corrective legislation is needed to address the federal government’s fiscal condition. GAO has stated that, “the United States faces serious economic, security, and social challenges that will require difficult policy choices in the short term in setting national priorities and charting a path forward for economic growth. This will influence the level and composition of federal spending and how the government obtains needed resources. Decisions over the short term to enhance economic growth and address national policies need to be accompanied by a broader fiscal plan to put the government on a path that is sustainable over the long term.”

Health care spending and net interest continue to grow and absorb more resources. This is a continuing trend that lawmakers have not comprehensively addressed and will need to develop solutions. Health care spending is growing, with the nation’s aging population driving spending increases, and the rising cost of health care is driving debt growth, which may negatively affect future interest rates. It is concerning that while interest rates are currently near historic lows, they are expected to rise over the long term. The GAO projects that, “Social Security costs are also expected to increase as a percentage of GDP through 2038 before leveling off through 2092. The program has its

INDUSTRY SNAPSHOT GOVERNMENT	
Nominal GDP, 2018 (\$ Billions)	43.6
Real GDP, 2018 (\$ Billions, 2012 Dollars)	38.0
2018 Real GDP Growth Rate	1.1%
Total Employment, 2018 (Thousands)	445
2018 Employment Growth Rate	1.9%
Employment Growth National Rank	1
Share of Colorado Employment	16.3%
Share of National Employment	15.1%
Average Wage, 2018	56,985
Percent of Statewide Average Wage	96.1%
2018 Average Wage Growth Rate	3.8%
Sources: Bureau of Economic Analysis, Bureau of Labor Statistics.	

own separate revenue stream—the Old-Age and Survivors Insurance and Disability Insurance trust funds—but those funds are projected to be insufficient to cover costs.”

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 7,800 direct workers who earn a total of \$783 million in wages and benefits and generate approximately \$2.6 billion in annual economic impact to Colorado. The labs also contribute greatly 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. However, several of Colorado’s federally funded labs face an uncertain future as questions about funding levels in the yet-to-be passed FY2020 budget remain. The FY2020 Presidential Budget Request

to Congress flattens funding for the National Science Foundation, the Department of Energy, and NASA at current levels.

State Government

State government employment growth in Colorado has followed very stable trends over the past decade, slowing substantially only during the Great Recession as falling tax revenue sharply limited state resources. Over time, state government employment grows with population growth as tax revenues allow.

State General Fund tax collections increased 7.2% in the most recent fiscal year, which supported additional state spending. However, the additional state spending did not translate into new Colorado state government employees. Instead, this revenue was used to pay for new services for school districts and meet caseload growth in corrections, education, and health care. State government employment,

excluding higher education, is expected to increase 0.8%, to 50,400 jobs, in 2019 and grow 1.4% in 2020.

Higher Education

Employment in Colorado's higher education system accounts for slightly more than 60% of total state government employment. These workers include both part-time and full-time faculty and nonfaculty staff. The University of Colorado Hospital System also employs health care professionals who would be included in the health care sector if they had a different employer. Employment in public higher education increased 1.9% in 2018. State higher education employment is anticipated to rise 0.6% in 2019 and 1.1% in 2020.

Employment in public higher education is countercyclical as the demand for new credentials declines when there are attractive opportunities in the labor market. Colorado's 31 public institutions of higher education had 261,138 students enrolled in 2017 (the latest year available). This

was an increase of 2.2% from the prior year, which compares with 10% growth in 2009—the year after the country entered the Great Recession.

In recent years, higher education employment growth has accelerated due to the University of Colorado Hospital System adding hospitals around the state. UCHealth added Yampa Valley Medical Center in Steamboat Springs in 2017 after adding Memorial Hospital in Colorado Springs and Poudre Valley Hospital in Fort Collins in 2012. These mergers are noneconomic reclassifications that shift employment from the private health services subsector to the state government higher education subsector; however, the reclassification does not change the number of hospital employees in the state.

The forecast assumes slower growth through 2020 as fewer students are entering higher education, and the health care sector has largely consolidated, leaving fewer employment reclassifications.

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GOVERNMENT EMPLOYMENT IN COLORADO, 2010–2020 (In Thousands)

Government Sector	2010	2011	2012	2013	2014	2015	2016	2017	2018 ^a	2019 ^b	2020 ^c
Federal	55.7	54.4	54.1	53.0	52.1	52.8	53.5	53.5	52.8	53.2	55.1
State	93.0	95.4	97.6	107.8	109.6	112.8	116.5	121.2	125.4	126.3	127.8
State General	32.7	33.2	34.0	42.7	43.2	44.2	45.6	47.2	50.0	50.4	51.1
State Education	60.3	62.2	63.6	65.1	66.4	68.6	70.9	74.0	75.4	75.9	76.7
Local	244.7	242.6	242.7	242.4	246.3	250.9	258.2	261.9	266.8	271.8	274.0
Local General	117.9	116.5	117.3	115.2	116.4	118.1	122.8	125.4	128.1	130.7	131.8
Local Education	126.8	126.1	125.4	127.2	129.9	132.8	135.4	136.5	138.7	141.1	142.2
Government	393.4	392.4	394.3	403.2	407.9	416.5	428.1	436.7	445.0	451.3	456.9

^aRevised. ^bEstimated. ^cForecast.

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.

Government

continued from page 109

Local Government

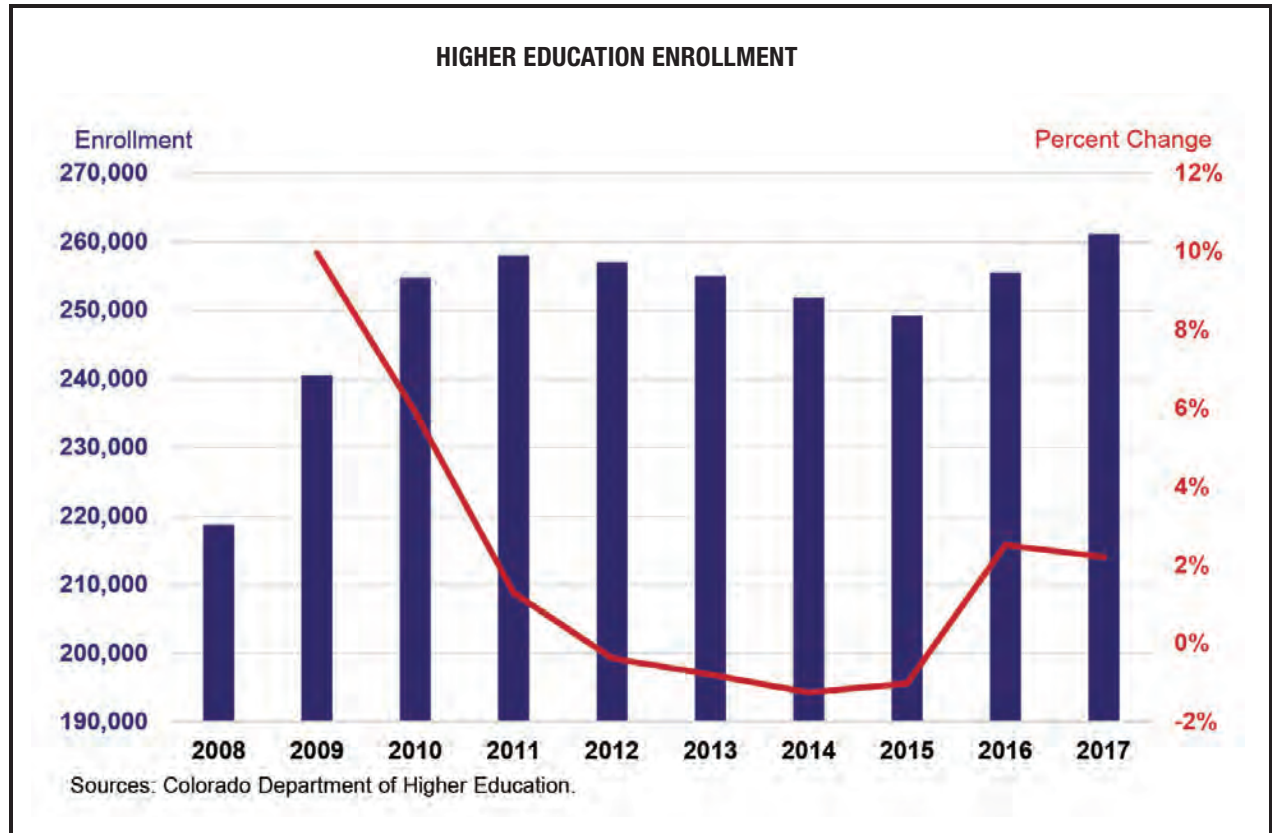
General

More than 3,000 local governments in Colorado provide a variety of services through counties, school districts, special districts, cities, and towns. Their powers and duties are defined by state law and range in authority from overseeing K–12 education, maintaining park programs, providing public safety, serving judicial functions, and regulating land use. Local governments generally derive their revenues from property taxes, sales and use taxes, fees, and intergovernmental sources. In general, cities rely primarily on sales taxes supplemented by property tax revenue. Counties rely mostly on property taxes that are supplemented by sales taxes. State and federal governments transfer various revenues to local governments, such as state-collected highway revenues derived from gas tax and motor vehicle registration fees that are transferred to counties and municipalities.

Each year, the Colorado Municipal League (CML) conducts a statewide survey entitled The State of Our Cities and Towns as a way to measure the economic outlook of Colorado's communities compared to previous years. CML groups the responses into three categories according to a municipality's size (i.e., population of less than 2,000, between 2,000 and 24,999, and 25,000 or greater). It also looks at them by region, providing a more realistic snapshot of what is happening on the Eastern Plains versus the Front Range or Colorado's mountain communities.

The results of the 2019 survey paint an optimistic portrait of Colorado fully recovered from the Great Recession with economic confidence felt among municipalities across the state. Of the 157 municipalities that participated, almost half felt their economy was better than it was in 2018, although Western Slope towns were much more likely than Eastern Plains towns to feel that their economy was better than last year.

Sentiments on municipal revenue were generally positive, with about three of every five municipalities indicating municipal revenue was at least somewhat better in 2019.



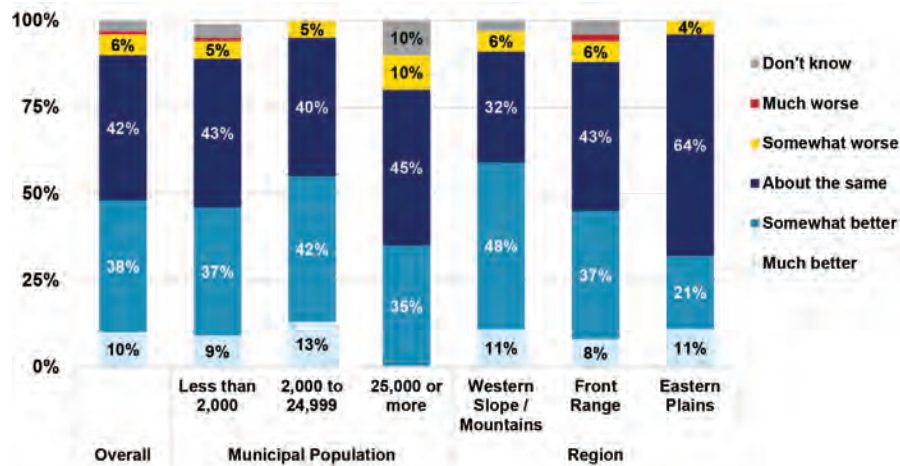
Again, Western Slope towns were much more likely than Eastern Plains towns to feel their municipal revenue had improved compared to last year. Also, larger municipalities were generally more likely to expect revenue increases than smaller municipalities, especially from property taxes and from investment and interest income. In total, 70% of municipalities expected to see an increase in sales and use taxes statewide but only 54% of Eastern Plains communities expected an increase. While this confidence level is encouraging, many communities are also feeling the regional pull of their surrounding communities, competing for the same bucket of sales tax revenue. As surrounding metro communities are growing, it has put a strain on

communities that were largely seen as the retail hub 5 to 10 years ago that no longer have a competitive edge.

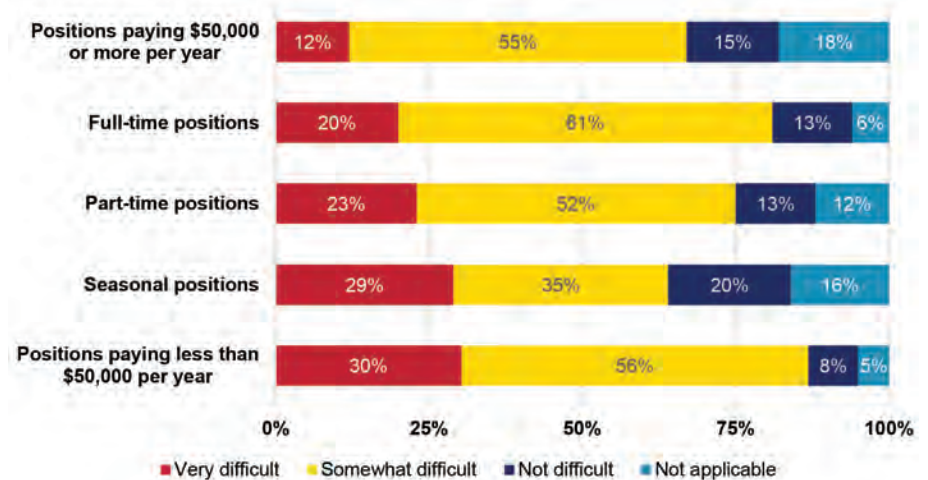
In 2018, large and medium-size towns reported higher degrees of economic confidence than their small town counterparts but that was not the case in 2019. In 2019, the numbers were pretty consistent across the board, with Colorado's small, medium, and large population centers generally reporting somewhat better or similar economic conditions compared to the prior year.

With Colorado's unemployment rate well below the national average, the vast majority municipalities found it at least somewhat difficult to hire for positions paying less

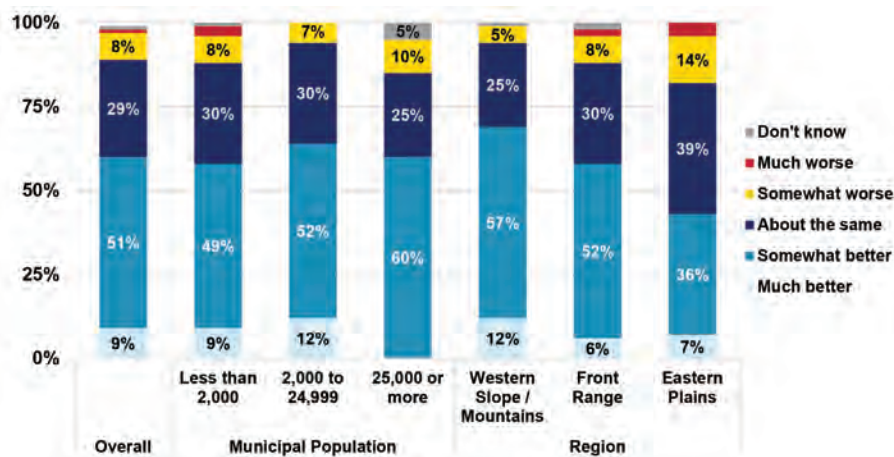
OVERALL ECONOMY IN FY2019 COMPARED TO FY2018



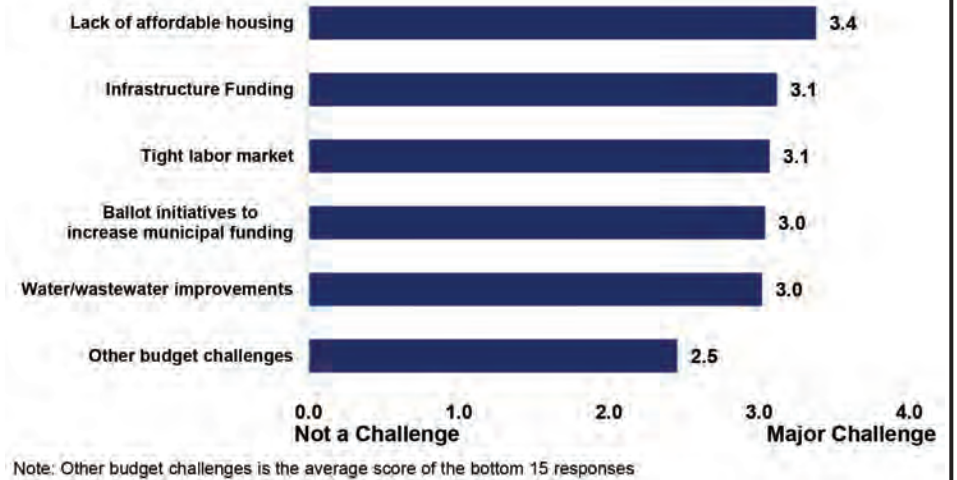
DIFFICULTY FILLING VARIOUS POSITIONS



MUNICIPAL REVENUE IN FY2019 COMPARED TO FY2018



POTENTIAL FISCAL CHALLENGES



Government

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than \$50,000 per year. The high cost of living and inability to offer competitive wages were clearly the most common challenges to filling full-time positions. The most difficult positions to hire were mostly within the police, fire, and public works departments. Colorado has been increasingly focused on minimum wage and living wage rates. Effective January 2017, Amendment 70 outlines a path to increase the Colorado minimum wage by \$0.90 each year, until reaching \$12.00 per hour in January 2020. After reaching \$12.00 in 2020, the minimum wage will be recalculated each year to account for inflation and increased costs of living based on the Consumer Price Index. This, in addition to the recently signed House Bill 1210 that gives cities and counties permission to set their own minimum wages starting in 2020, may increase regional competition and wages for employees. To date, the Colorado minimum wage ordinance has not had a significant impact on municipalities across the state. Four out of five municipalities reported “no impact” from the ordinance, while only 15% indicated it had a negative impact and 5% reported a net positive impact to their local economy. Effects of this ordinance (positive or negative) will likely not be felt for some years.

Similar to 2018, when asked about the greatest challenges municipalities will face over the next five years, budget constraints, lack of affordable housing, and infrastructure funding were on the top of the list. Limited funding options are at the root of many municipal transportation and other infrastructure challenges. Many respondents pointed out that infrastructure in their towns is aging, and they have been unable to secure state or federal funding, or local revenue sources to maintain deteriorating infrastructure, such as roads, sewer, and water systems. With the increased cost of housing in the Denver-Boulder

Metro area, more affordable housing choices are often further east and north, increasing commuters and putting more pressure and use on already congested and deteriorating roadway infrastructure. Municipalities recognize the need for regional mobility and housing solutions, and solutions that address both low-income and middle-income housing stocks. Current regional strategies include bolstering financial resources, such as dedicating short-term rental tax revenue to affordable housing projects, securing land and development/redevelopment opportunities, preserving naturally occurring affordable housing options, and considering regulatory processes.

Education

More than half of local government employees in Colorado are teachers or staff in public K–12 education. Schools are jointly financed by the state and individual school districts. Property taxes are the primary means for generating local funding for schools, and the state backfills the rest to maintain a consistent level of per pupil funding across the state.

In both rural and urban locations, school districts of all sizes and locations across the state are facing similar employment challenges for 2020. Housing, competitive wages, neighboring communities with a lower cost of living, and declining enrollments are the most common difficulties for school districts around the state.

Districts on the Front Range, I-70 Corridor, Central Mountains, the San Juans, and Northwest Colorado are all experiencing high housing costs for teachers, facility workers, and specialty employees. Although many school districts have raised their minimum salaries for new teachers, starting wages are still well below the average

wage needed for home ownership or affordable rent. To illustrate, the Telluride School District has no issue finding teachers due to its current rank in the state and attractive location; however, many of the new employees are forced to work multiple jobs, commute from surrounding cities, or live with roommates to keep their housing costs from eroding more than one-third of their income. This housing issue also plagues Eagle County, Meeker, Weld County RE-1, Boulder Valley, Adams 12 Five Star, and other school districts.

Faculty and staff, student transportation, food service, social work, and custodial services are the most affected by the current disconnect between wage and cost of living. In fact, school districts find themselves unable to fully staff these positions and departments due to the higher wages offered by different industries for similar roles. Additionally, benefit packages and PERA modifications contribute to a growing lack of retention.

Although multiple school districts have leveraged their voters for mill levy overrides and bond issuances, decreasing enrollment and the challenges discussed in this report continue to affect employment and budgets. The housing, competitive wages in other industries, shrinking benefits, high cost of living, and employment shortages will continue to put employment strains on school districts in 2020. ❖

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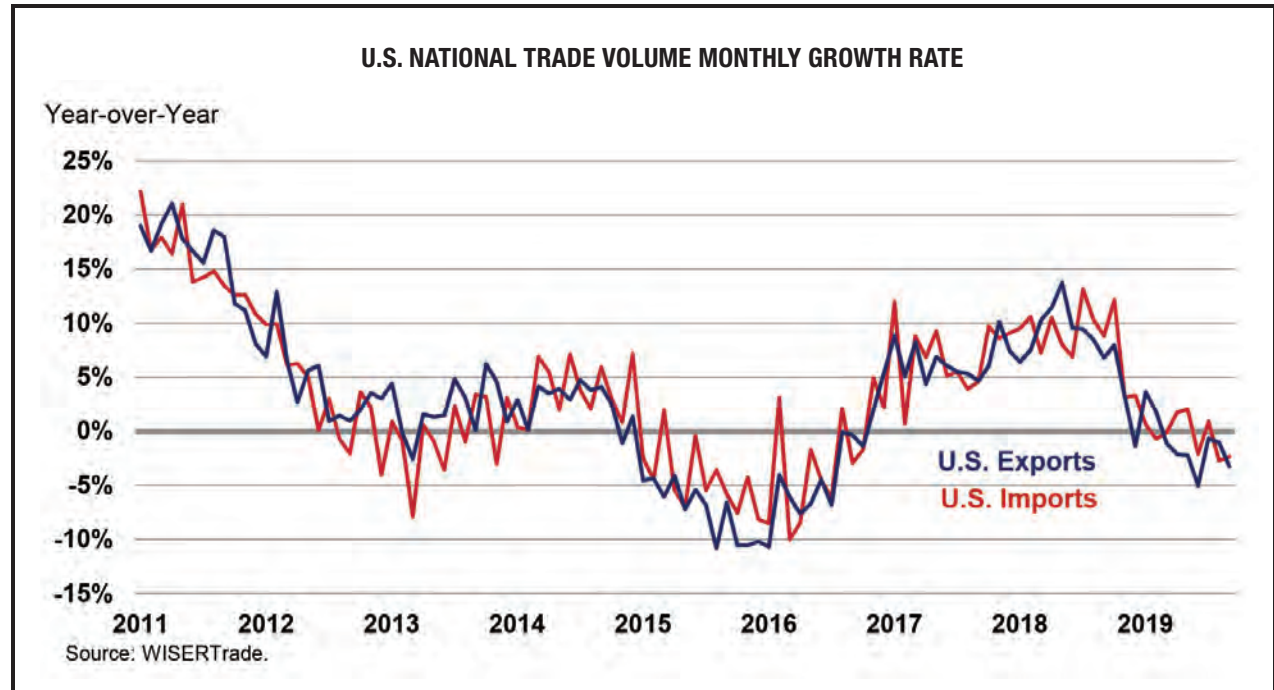
International Trade

Year-to-date figures through September for exports and imports at the national and state level are down from the previous year. (September is the most recent available data from WISERTrade; throughout this section year-to-date means the aggregate volume from January through September 2019 unless otherwise specified.) Nationally, exports are down 1.2% and imports are down 0.3%. For Colorado, these figures are down 4.6% for both exports and imports. These drops are substantial: they followed two consecutive years of strong growth for both sides of the trade balance at both levels. The end of 2018 represented an inflection point in trade.

An inspection of year-over-year figures further highlights this inflection. Year-over-year growth for national exports and imports each month from January 2011 to September 2019 shows trade grew rapidly in the years directly following the Great Recession until it reached a plateau (and slightly declined for imports) in mid-2012. Trade volumes grew modestly for the next couple of years, with a slight acceleratory trend. Toward the end of 2014, crude oil prices went into free fall, losing about three-quarters of value by the beginning of 2016—the year-over-year monthly growth rates in trade volume show a consequential decline. Following this shock, prices normalized and took an upward path, the United States passed a stimulus package, and economic growth began to synchronize globally, resulting in the upward trend from mid-2016 until mid-2018. Since then, growth has weakened each month. Year-over-year growth at the national level has been negative for exports each month from March to September 2019 and negative for imports for three of the last four months.

Colorado's year-over-year growth rates follow a similar trend, but are slightly more sporadic. Growth in exports has been falling since April 2018, and in all but three months between December 2018 and September 2019 it was negative. Imports have seen negative year-over-year growth in all but four months.

Colorado exported \$6.1 billion in goods year-to-date through September 2019, down 4.6% from \$6.4 billion



through September 2018. By the end of 2018, Colorado producers exported \$8.3 billion in goods. If this deficit continues through the rest of 2019, Colorado export volume will reach about \$7.9 billion.

The top five products made up 64% of Colorado export volume year-to-date and included (in order) precision instruments (optical, medical, or surgical instruments), meat (primarily beef), industrial machinery including computers, electrical equipment, and air/spacecraft. Of these, precision instruments and air/spacecraft saw year-to-date gains over 2018, while the rest saw losses. Air/spacecraft was one of the fastest-growing export products for Colorado, with year-to-date growth of 38%, which followed a growth of 38% in annual volume from 2017 to 2018, when it first broke into the top five. Nationally, these products are down 1.4% year-to-date and grew by

6.3% between 2017 and 2018. Other impressive gains came from articles of iron and steel (34% year-to-date, following over 20% growth in annual volume each year over the last two), pharmaceutical products (20% year-to-date), and miscellaneous chemical products (7%).

There were more losses than gains, however, with 7 of the top 10 export products of 2018 declining year-to-date 2019. Of particular importance are industrial products such as industrial machinery (4th in 2018), electrical equipment (3rd), plastics (7th), and aluminum (9th); which had seen growing year-over-year growth rates

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International Trade

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from early 2016 to about mid-2018, when the U.S. import tariffs on steel and aluminum were first announced. Year-to-date their volumes are down 1.3%, 6.1%, 11.8%, and 36.4%, respectively. A similar pattern is seen at the national level and may be indicative of slowing industrial production due to increasing trade restrictions and geopolitical uncertainty, and slowing growth. Some other products that saw large declines included photographic goods (down 13% year-to-date), raw hides and skins (38%), and beverages (59%). For photographic goods and raw hides, Colorado export volumes have been declining steadily for some years, and the declines seem to reflect shifting consumer behavior and production decisions, rather than economic disruption.

For beverages, 98% of which comprise beer and other nonalcoholic beverages (soft/energy/sports drinks), volume had been increasing over the last few years before falling in late 2018 and 2019. Although this timing aligns with the promulgation of retaliatory tariffs from many of the United States' largest trading partners (for which beverages were often a prime target), these changes may have been the result of more complex decisions by large firms in the state (Molson Coors, AB Inbev, Pepsi). For example, the decline in beer sales is primarily due to a 95% drop in monthly volume exported to Mexico from \$2.6 million in May 2018 to less than \$150,000 in July 2018; it has been oscillating around this value since then. In its Q1 2019 SEC filing, Molson Coors addressed lost sales revenue for its international business unit, stating that part of the loss is due to a shift to local production in Mexico. Such a shift was likely planned long before the tariffs were announced, and this may partially explain the sudden dramatic fall in May (though, to be certain, better detail would be needed on the company's operations). Further, before November 2016, Colorado beer exports to Mexico were practically nonexistent. One month prior, AB Inbev merged with SABMiller, which was required to divest certain business units. Molson Coors acquired some of these units, which may explain this sudden increase in export volume to Mexico. An important thing to note is that beer production in Colorado—which is

TOP 15 COLORADO EXPORTS, 2016-2019 YTD (In Millions of Dollars)

Description	2016	2017	2018	September 2018 YTD	September 2019 YTD	Percent of Total
Optic, Photo Etc, Medic Or Surgical Instrments Etc	\$1,251	\$1,170	\$1,282	\$953	\$967	15.9%
Meat And Edible Meat Offal	1,037	1,227	1,238	937	931	15.3
Nuclear Reactors, Boilers, Machinery Etc.; Parts	1,024	1,088	1,159	879	868	14.3
Electric Machinery Etc; Sound Equip; Tv Equip; Pts	1,119	1,213	1,170	901	847	14.0
Aircraft, Spacecraft, And Parts Thereof	200	202	278	207	286	4.7
Articles Of Iron Or Steel	143	173	207	155	208	3.4
Photographic Or Cinematographic Goods	270	241	225	170	148	2.4
Plastics And Articles Thereof	164	209	220	165	145	2.4
Aluminum And Articles Thereof	147	187	203	175	112	1.8
Ores, Slag And Ash	58	82	122	99	96	1.6
Vehicles, Except Railway Or Tramway, And Parts Etc	113	141	119	93	94	1.6
Pharmaceutical Products	101	118	120	77	92	1.5
Miscellaneous Chemical Products	136	141	100	73	79	1.3
Organic Chemicals	91	96	92	66	70	1.2
Raw Hides And Skins (no Furskins) And Leather	182	178	139	113	70	1.2
Total Top Fifteen	6,038	6,464	6,675	5,064	5,013	82.6
All Others	1,532	1,590	1,654	1,294	1,053	17.4
Total All Commodities	\$7,569	\$8,054	\$8,329	\$6,358	\$6,066	100.0%

Source: U.S. Census Bureau.

one of the top three brewing states, along with California and Texas, each at just over 18 million barrel equivalents of taxable volume in 2018 according to the Alcohol and Tobacco Tax and Trade Bureau—has decreased over the last few years, but so has production in all top states, many of which saw increases or much milder decreases in beer export volumes.

The top five export destinations accounted for 50% of Colorado volume year-to-date, with the top two, Canada and Mexico, accounting for 31% alone. However, when taken as a bloc, the European Union was Colorado's largest export destination, with 19%. Following Canada and Mexico, South Korea, China, and Malaysia completed

the top five, with Japan falling out from 2018. Of these, Mexico and China saw large declines year-to-date of 21% and 13%, respectively, while South Korea and Malaysia experienced strong growth of 5% and 16%, respectively. Export volume to Canada was flat, with less than 0.25% growth. Other top export destinations showed a mixed bag. Important Asian markets like Taiwan, Singapore, and Vietnam maintained their current trend of growth, while others like Japan, Hong Kong, and the Philippines experienced double-digit declines. Within the European Union, volume to the Netherlands and the United Kingdom were up, while those to Germany and France were down.

Colorado imported \$9.8 billion year-to-date in September 2019, down 4.6% from \$10.3 billion through September 2018. By the end of 2018, Colorado imported \$13.5 billion in goods. If this deficit continues through the rest of 2019, Colorado import volume will reach about \$12.9 billion.

The top five products made up 66% of Colorado import volume year-to-date and included (in order) industrial machinery, mineral fuels, electrical equipment, precision instruments, and air/spacecraft. Of these, only air/spacecraft saw gains, which increased by 9.1%, and precision instruments was virtually flat, losing less than 0.25%. Industrial machinery and mineral fuels (which include crude oil) imports were down about 7% each, while electrical equipment was down nearly 13%. Among the rest of the top products furniture, pharmaceuticals, articles of iron and steel, wood products, and toys and sporting equipment (including outdoor recreational gear) fell, while plastics, vehicles, beverages, and paper articles grew.

The top five import sources accounted for 66% of Colorado volume year-to-date, with the top, Canada, accounting for 29% alone. Canada was followed by China, Mexico, Switzerland, and Germany, but when taken as a bloc, the European Union took the second spot. Canada and China were both down about 9% in year-to-date figures, while Mexico was up about 2%. Many of Colorado's top European sources were down, including Germany, Italy, France, and Denmark, but these losses were partially offset by large gains in Switzerland, the United Kingdom, and Sweden. Among top Asian sources, South Korea, India, Thailand, and India saw losses (all down about 4% to 6%, except South Korea, which saw a massive drop of almost 60%), while Taiwan, Malaysia, and Vietnam continued to maintain strong growth trends. The dramatic drop for South Korea may be due to contractual fluctuations rather than effects from tariffs (though the latter may have influenced the former): it was driven almost entirely by a fall in the volume of electronic integrated circuits (microchips) starting in March 2018, which held a steady range from late 2013 to

early 2016 of around \$5 million before increasing almost 20-fold in volume in less than two years. The highest monthly volumes since 2010 were between December 2018 and March 2019 (about \$75 million) after which they fell about 85% in two months. In comparison to these highs, the beginning months of 2019 were much closer to the volumes of 2013 through 2016, ranging between \$5 and \$10 million.

Trends Affecting Trade

While it is tempting to attribute the downward trends in trade volume of late 2018 and 2019 entirely to the highly publicized tariffs imposed by the Trump administration throughout these two years, such a narrative would be overly simplistic and a mischaracterization. There is no doubt that these actions have contributed, but rather than an isolated incident, they seem to be part of a growing global shift away from integration and cooperation toward nationalism, which has sown uncertainty and fear, and dampened outlook, growth, and trade globally.

In North America, the Trump administration continued to shift foreign policy under its America First philosophy. The governments of the United States, Canada, and Mexico pursued ratification of the USMCA—the renegotiated and updated version of NAFTA that won many concessions that would benefit the United States—through 2019. While the leaders of the three nations signed the agreement in November 2018, only Mexico has ratified it to date, a full year later. In May, the United States lifted the steel and aluminum tariffs on imports from Canada and Mexico as a “good faith” gesture for the impending ratification of the agreement, but this was swiftly followed by threats on all Mexican imports, unless the government there contributed more resources to stopping illegal migrants before they reached the U.S. border. Further afield, the United States raised tariffs against the European Union and China (and threatened others), and canceled the “beneficiary developing countries” status of Turkey and India under the Generalized System of Preferences (under this designation certain

products from the countries are allowed to trade duty-free) in 2019. The United States and China continued sporadic negotiations amid threats and tariff increases throughout the year. The “trade war” has been on hold for negotiations since October, and the two sides hope for an agreement by the end of the year. Currently, \$250 billion of Chinese imports incur tariffs, and the United States has threatened another \$300 billion (which would essentially cover all Chinese imports).

In Europe, 2019 was dominated by the question of Brexit, which led to the resignation of Prime Minister Theresa May after failing to secure support in Parliament for a negotiated divorce deal in May 2019. Since then, the deadline has been extended twice and is now set for January 2020 (the previous one was October 2019). The trade relationship between the United Kingdom and the European Union is yet to be determined, though a “No Deal” Brexit would mean that the U.K. would fall under general WTO rules and would face tariffs on all products going into the single market. This event certainly represents opportunity for the United States and Colorado to increase trade and investment with both parties (indeed, trade with the United Kingdom in 2019 has outpaced that of the previous year), but it also has the potential to be disruptive to many economies across Europe, which could spill over into other regions. Beyond Brexit, other European leaders saw political turmoil in 2019, caused by tensions over questions of European integration and Middle East immigration.

In Asia, China's growth slowed significantly over the year, with retail trade, capital investment, and manufacturing often falling short of expectations. Hong Kong fell into increasingly violent protests in June over a bill introduced that would allow extradition of fugitives to Mainland China, which opponents claim prematurely erodes the country's economic and administrative autonomy under the “One Country Two Systems” philosophy. Over

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International Trade

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summer 2019, Japan and South Korea began to engage in an economic and diplomatic row, prompted by a South Korean Supreme Court decision that ordered two Japanese companies to compensate Korean individuals for forced labor during WWII.

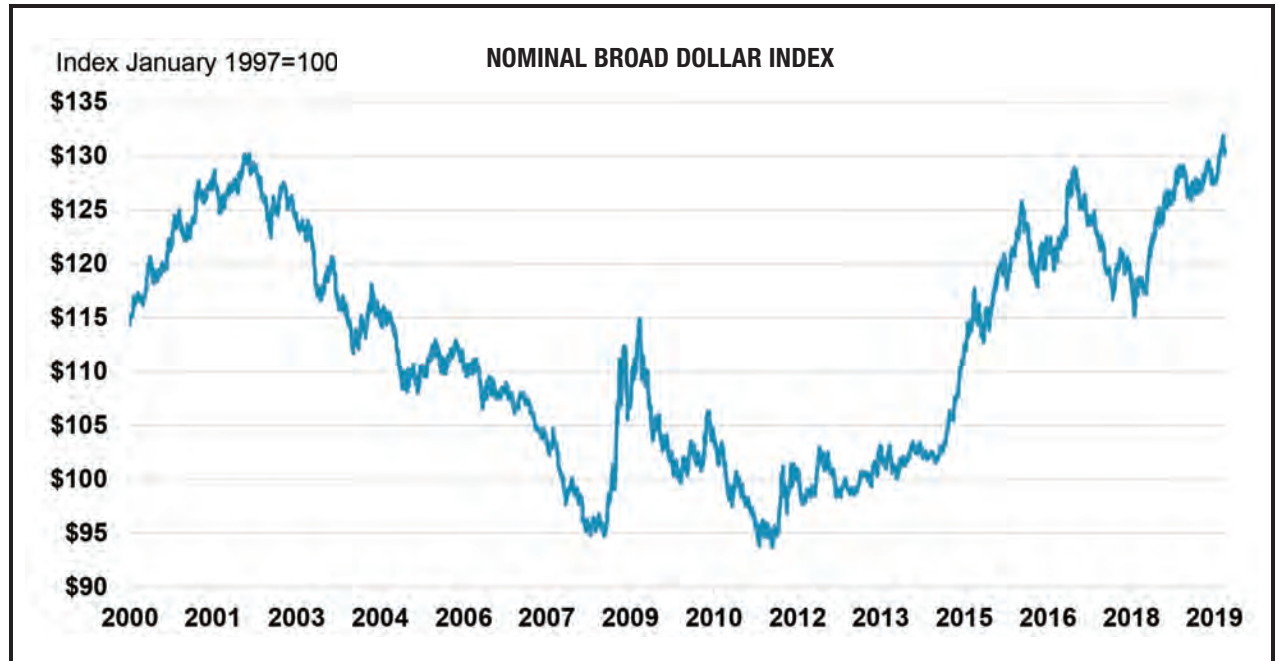
Elsewhere, North Korea and Iran stepped up rhetoric against the United States and allies in 2019. Iran even went as far as detaining a British tanker in the Strait of Hormuz. Argentina struggled to boost economic activity as its currency crisis continued throughout the year. Violence associated with FARC guerrillas is beginning to escalate in Colombia, while cartel violence in Mexico is reaching new heights. Despite these developments, the expansion in the United States held strong through 2019.

It is likely that Colorado will see a modest decrease in export and import volumes in 2020. Considering the probability of slowdown in global demand growth and continued appreciation of the dollar (as more global investors seek safe havens), exports will likely decline more than imports. Many factors may confound this outlook: the Trump administration lifting tariffs, central banks cutting rates, and China increasing stimulus.

Exchange Rates

Changes in interest rates, the value of currencies, and the prices of commodities also have an effect on trade volumes for the nation and the state.

In 2019, the Federal Reserve cut interest rates three times. While interest rates fell, the strengthening of the U.S. dollar continued, but at a much slower pace than in 2018. In early January the trade-weighted broad dollar index stood at about 128; by the end of October it stood at about 130 (in 2018, the index increased by about 13 points). Over this period the U.S. dollar appreciated against the Brazilian real by about 9%, the euro by 4%, the South Korean won by 3%, and the Chinese yuan by 2%. However, it fell against the Canadian dollar, Mexican peso, and British pound by about 2% to 2.5%, and broke about even with the Japanese yen. In the broad index and many of these bilateral comparisons, the dollar declined



in value throughout the month of October after showing a slow but steady appreciation from the beginning of 2019. A strengthening dollar means that U.S. exports are more expensive for foreign markets and imports are relatively cheaper for U.S. consumers. Throughout 2018 and 2019, growing global concerns pushed investors into the dollar, a traditional safe haven bet to hedge risk.

Agriculture

Colorado Food and Agriculture Exports

Colorado food and agriculture exports hit a record high in 2017, just topping \$2 billion in sales. In 2018, sales were not far behind finishing the year at \$1.96 billion to 118 countries. The top five agriculture exports from Colorado are meat products (mainly beef), hides and skins, animal feed, cereal grains, and beverages. The top

five export markets are Canada, South Korea, Mexico, Japan, and China.

Unfortunately, this is not the story as 2019 comes to an end. Year-to-date through September, Colorado food and agriculture exports total \$1.3 billion in sales, nearly a 13% overall decrease from this time in 2018. It has been a year filled with uncertainty, increased trade barriers, and loss of market access around the world.

In the Asian region, positives include a new bilateral trade agreement with Japan. This will eventually address some of the competitive disadvantages that occurred when the United States pulled out of the TPP agreement. Through September 2019, South Korea continued to increase and purchase Colorado food and agriculture products, surpassing long-time major market Mexico. South Korea is now Colorado's second-largest export market, just behind Canada. Exports to South Korea

totaled \$290 million in sales, a 17% increase from 2018. On the other side, the continued trade dispute with China has had a major impact on some of Colorado's commodities, like hides and skins. The continuing turmoil and rioting in Hong Kong has many distributors putting orders on hold until the situation stabilizes.

In the Western Hemisphere, there remain uncertainties of Brexit and potential ongoing retaliatory measures from the European Union that may cause slowdowns for food and agriculture trade.

International Students in Colorado

International student enrollment in Colorado saw a 2.1% increase in the 2018–19 academic year from the previous year, beating out the national average of a .05% increase. Colorado institutions of higher education reported a total of 11,888 international students, according to the Colorado Department of Higher Education.

Nationally, growth in overall international enrollment has slowed in recent years, reflecting decreases in new (freshmen) enrollments. These decreases, after more than a decade of increases, are due to several factors, including increased competition from other English-speaking countries; affordability; concerns about physical safety; and perceptions about the United States being less

welcoming than under past administrations. Nationally, total enrollment grew by only .05% from 2017–18 to 2018–19. This statistic includes students in K–12 and those who have completed their degree program and stay in the United States for up to three years to work through the Optional Practical Training (OPT) program.

Colorado remains an attractive destination for students due to its high-quality academic offerings, outdoors lifestyle, and welcoming environment. Colorado's institutions continue to work together under the state's Study-Colorado initiative housed at the Department of Higher Education, which promotes education opportunities in the state. However, declines in new enrollments appear to be inevitable for the next few years at least.

The leading countries of origin for students coming to Colorado are China (30%), India (18%), Saudi Arabia (8%), Kuwait (3%), and South Korea (3%). For the United States as a whole, the top countries of origin are China, India, South Korea, Saudi Arabia, and Canada. The institutions in Colorado with the largest number of international students are the University of Colorado Boulder, with 3,789 students, followed by Colorado State University, the University of Colorado Denver, the University of Denver, and the Colorado School of Mines.

International student expenditures in Colorado totaled an estimated \$471 million for 2018–19, according to an economic impact analysis conducted annually by the organization NAFSA: Association of International Educators. This figure takes into account tuition, fees, and living expenses and subtracts U.S. support provided to students. If the education they receive is considered a product that students bring with them when they return home, higher education can be considered the state's fifth-largest export. ♦

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INTERNATIONAL STUDENT ENROLLMENT AT SELECT COLORADO INSTITUTIONS

Institution/Year	'11/12	'12/13	'13/14	'14/15	'15/16	'16/17	'17/18	'18/19	Percentage Change
University of Colorado Boulder	1,681	1,910	2,163	2,614	2,951	3,424	3,645	3,789	4.0%
Colorado State University	1,352	1,598	1,793	2,148	2,305	2,495	2,501	2,416	-3.4%
University of Denver	1,430	1,590	1,617	1,690	1,688	1,494	1,404	1,278	-9.0%
University of Colorado Denver	1,116	1,348	1,457	1,463	1,446	1,051	1,068	1,398	30.9%
Colorado School of Mines	652	660	767	823	875	800	818	856	4.6%

Sources: Institute of International Education, annual Open Doors report.

Summary

Employment growth in 2019 is projected to close up 1.9%, or 51,100 jobs, reflecting a deceleration in growth. Colorado will continue to add jobs in 2020, extending employment gains to a 10th-consecutive year. Job growth will occur at the slowest pace of the current expansion. Constrained by slower industry growth and shortage of workers, Colorado will add 40,100 workers in 2020, or growth of 1.4%.

In 2020, the three private-sector industries projected to add the most jobs are Professional and Business Services; Trade, Transportation, and Utilities; and Education and Health Services. The greatest pace of growth will be in Professional and Business Services; Construction; and Education and Health Services.

Agriculture—The Agriculture Sector has made a remarkable recovery in 2019, posting a 21% increase in net farm income, to \$1.52 billion. The industry is expecting modest growth of 6% in 2020. Colorado has outperformed the nation in agriculture, primarily due to emphasis on beef production, which has maintained its value and grown in herd size, and corn, which has had a bountiful year and performed well compared to soybeans. Easing drought conditions also played a significant role in producing crops and feed for cattle.

Natural Resources and Mining—Following a 62% increase in 2018, the value of Colorado's oil production decreased 10%, to \$9.9 billion, in 2019 due to softer pricing. In 2020, oil and gas should expect modest 5% growth. Overall, the value of Colorado's natural resources is estimated to be \$17 billion in 2019. Industry

employment is expected to remain nearly flat, at 0.4% growth in 2020. Compared to the rest of the nation, Colorado ranks 7th in petroleum liquids, 6th in wet natural gas, and 11th in coal production. Colorado is also a leading producer of renewable energy, including wind, solar, biomass, and hydroelectric energy sources.

Construction—The demand for housing units will remain stable in 2020 with continued strong in-migration totaling about 49,400. However, the supply of new homes will remain tight with new single-family permits increasing 5% and new multifamily construction growing 3%. The value of residential construction is projected to remain relatively flat, at \$9.9 billion in 2020. Summing residential with strong nonresidential values and major nonbuilding (infrastructure) projects will bring the total value of construction to \$19.1 billion in 2020. Labor

ANNUAL EMPLOYMENT CHANGE IN NONAGRICULTURAL WAGE AND SALARY EMPLOYMENT SECTORS 2010-2020 (In Thousands)

Sector	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 ^a	2020 ^b
Natural Resources and Mining	0.2	3.5	2.4	0.3	3.5	-3.4	-7.0	2.2	2.4	0.3	0.1
Construction	-16.2	-2.6	3.3	11.7	14.7	6.6	6.5	8.4	8.6	5.2	3.0
Manufacturing	-3.9	3.9	2.8	1.9	3.8	4.4	1.7	1.6	3.3	2.3	1.5
Trade, Transportation, and Utilities	-6.2	4.1	7.9	10.6	12.6	13.0	8.2	7.4	8.5	5.9	6.3
Information	-2.7	-0.6	-1.6	0.1	0.4	0.4	1.2	0.0	3.0	0.6	-0.5
Financial Activities	-3.6	-0.5	2.8	4.3	2.9	5.1	4.9	4.2	2.4	2.5	1.7
Professional and Business Services	-1.0	10.7	15.4	15.7	14.0	11.8	7.3	7.1	12.8	15.8	11.7
Education and Health Services	7.3	9.0	8.9	4.1	12.1	15.3	12.5	8.3	6.5	6.5	5.6
Leisure and Hospitality	0.6	8.4	8.3	9.7	11.0	12.4	10.8	9.6	6.7	3.8	3.4
Other Services	-1.3	1.3	2.3	1.7	3.2	3.3	3.1	1.3	2.2	1.9	1.7
Government	3.3	-1.0	1.9	8.9	4.7	8.6	11.6	8.6	8.3	6.3	5.6
Total ^{c,d}	-23.5	36.2	54.4	68.8	83.2	77.3	60.8	58.6	64.9	51.1	40.1

^aRevised. ^bEstimated. ^cForecast. ^dDue to rounding, the sum of the individual sectors may not equal the total.

Sources: Colorado Department of Labor and Employment (CES Data) and Colorado Business Economic Outlook Committee.

constraints and unusually low interest rates will continue to influence the industry. Employment will increase 1.7% in 2020, or 3,000 jobs, to total 180,500.

Manufacturing—Colorado's Manufacturing Sector is expected to expand for its 10th-consecutive year in 2020, benefited by strong growth in several subsectors. Employment growth is projected to increase 1,500 jobs, or 1%, in 2020, with gains in both durable and nondurable goods. The industry's strength in Colorado derives from the mix of subsectors, with comparative advantages in food products, beverages, chemical products, and transportation equipment. The industry also saw increased employment in cannabis production and a surge of machinery manufacturing in 2019. This sector is not without headwinds, however, and it experienced downward pressure from global trade tensions and tight labor markets. Through September 2019, exports from Colorado declined 4.1% according to data from the U.S. International Trade Administration. This includes significant declines from some of Colorado's key trading partners including Mexico and China.

Trade, Transportation, and Utilities—TTU employment is anticipated to increase by 1.3% to total 482,000 jobs in 2020, with trade (retail and wholesale) contributing the majority of industry growth. Retail sales are expected to decelerate, growing 3.5% in 2020. Denver International Airport reached its highest number of annual passengers in 2018 and saw growth in international traffic through United, Southwest, and Frontier. Overall, TTU is expected to add 6,300 jobs in 2020.

Information—The industry posted gains in 2019 on rebounding Telecom and Software Publishing sectors, while other sectors continued to struggle. Despite accelerating growth in recent years, the industry is expected to fall by 500 jobs in 2020.

Financial Activities—Colorado's Financial Activities Sector is expected to grow for the eighth-consecutive year in 2020, adding 1,700 jobs to reach total employment of 174,700. Capital markets in 2019 have been characterized by uncertainty surrounding trade and

monetary policy. Commercial real estate remains healthy, and residential real estate activity is likely to soften in 2020.

Professional and Business Services—The Professional and Business Services (PBS) Sector primarily provides services to other businesses (i.e., business-to-business). The sector is projected to post employment growth of 3.7% in 2019 and 2.6% in 2020, fueled by Colorado's skilled workforce, and driven by population and business growth, notably in tech.

Education and Health Services—The majority of sector employment is made up of health care professionals, representing 88% of industry employment. Increased access to health insurance and a growing, aging population will continue to lead to more health care jobs in the state. Private education and health care services are expected to continue their trend of modest growth, adding 6,500 and 5,600 jobs in 2019 and 2020, respectively.

Leisure and Hospitality—Cautious optimism prevails in tourism-related employment, which is expected to grow for the 11th-consecutive year in 2020. The state and the Denver Metro region continue to post record tourism records, and Colorado's ski industry maintains the greatest U.S. market share for snowsports visits. Momentum in Colorado's tourism industry is anticipated to slow through 2019 and 2020, with forecasted employment increases of 3,800 jobs and 3,400 jobs, respectively.

Government—Government employment within Colorado is expected to increase 1.2% in 2020, with gains in state and federal government. Federal employment will experience a temporary spike in 2020 in order to conduct the decennial census. At all levels of government, employee retention and hiring is suffering from stricter salary schedules and a tight labor market.

International Trade—Colorado exports declined 4.6% in 2019 year-to-date through September, but export growth is lagging the nation. Looking ahead to 2020, trade agreement negotiations, tariffs, and the strong dollar all pose risks to Colorado exports.

National and International

- U.S. output will continue to slow in 2020, with real GDP growth at 1.8% in 2020 compared to an estimated 2.3% in 2019.
- Personal consumption expenditures will grow at a moderate pace, tempered by slower employment growth and easing consumer confidence.
- In 2019, the Federal Reserve cut rates three times; it is generally believed that rates will remain flat through 2020, though this could change. Inflation is expected to remain just below the Fed target rate.
- Trade policy (i.e., tariffs), a tight labor market, uncertainty, and the 2020 election year pose risks to growth.

Colorado

- Despite slower growth, Colorado will still be in the top 10 states in 2020 for employment growth; wages will increase above the national average.
- Employment growth is projected in 10 of the 11 industries in 2020.
- Given that Professional and Business Services includes upstream engineering, design, and research activities, the strength of this sector bodes well for the state economy.
- Population growth will slow modestly in 2020. The state will still add an estimated 72,100 people, with 49,400 coming from net in-migration according to the State Demography Office.
- Affordable housing, wages, and infrastructure continue to be a concern for employees and employers.
- Colorado's skilled, educated workforce is credited with fueling industry growth among the state's tech sectors. Colorado retains a competitive advantage for attracting, recruiting, and retaining people and businesses, placing the state in the top 10 for economic growth nationally.

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.

These eight states showed positive 10-year employment growth. Utah and Colorado recorded the highest average 10-year employment growth rates, 2.9% and 2.3%, respectively. In September 2019, all of the regional states posted year-over-year job growth, led by Utah, Arizona, and Colorado, with 3.1%, 2.4%, and 2.1% growth, respectively. Regarding MSAs, the Phoenix-Mesa-Scottsdale MSA, the

Salt Lake City MSA, and the Denver-Aurora-Lakewood MSA led the region with year-over-year growth of 2.4%, 2.2%, and 1.9%, respectively, in September 2019.

In terms of real GDP growth, New Mexico and Wyoming led the region with 3.9% and 3.8% growth, respectively, year-over-year in Q2 2019. None of the regional states saw year-over-year declines in GDP. The

REGIONAL STATES

September 2019 Total Employees (In Thousands)	2,944 Arizona	2,788.4 Colorado	1,574.1 Utah	1,438.3 Kansas	1,033.3 Nebraska	861.2 New Mexico	484.1 Montana	288.5 Wyoming
Employment CAGR September 2009 - September 2019	2.9% Utah	2.3% Colorado	2.1% Arizona	1.3% Montana	0.9% Nebraska	0.8% Kansas	0.6% New Mexico	0.2% Wyoming
Employment % Change September 2018 - September 2019	3.1% Utah	2.4% Arizona	2.1% Colorado	2.0% New Mexico	1.5% Kansas	1.1% Montana	1.1% Wyoming	0.9% Nebraska
September 2019 Unemployment Rate ^a	4.9% New Mexico	4.9% Arizona	3.8% Wyoming	3.3% Montana	3.2% Kansas	3.1% Nebraska	2.7% Utah	2.7% Colorado
2018 Average Annual Pay	\$58,941 Colorado	\$51,865 Arizona	\$48,513 Utah	\$48,059 Wyoming	\$46,607 Kansas	\$46,262 Nebraska	\$45,167 New Mexico	\$43,407 Montana
Q2 2019 GDP (Millions of Current Dollars)	\$388,731 Colorado	\$364,277 Arizona	\$187,416 Utah	\$172,358 Kansas	\$126,322 Nebraska	\$103,814 New Mexico	\$51,933 Montana	\$39,788 Wyoming
Real GDP Percentage Change Q2 2018 - Q2 2019	3.9% New Mexico	3.8% Wyoming	3.6% Utah	3.5% Arizona	3.4% Colorado	2.1% Montana	0.6% Kansas	0.2% Nebraska

Sources: Bureau of Economic Analysis, Colorado Department of Labor and Employment, and Bureau of Labor Statistics (CES, QCEW, and LAUS data). ^aNot seasonally adjusted. Unless noted, all data is seasonally adjusted. Based on preliminary data.

Denver-Aurora-Lakewood MSA led the MSAs in the region, with growth of 3.6% in 2017 (most recent available data), followed by the Phoenix-Mesa-Scottsdale MSA (3.4%) and the Salt Lake City MSA (2.5%). The Albuquerque, Cheyenne, and Wichita MSAs all recorded year-over-year losses in 2017.

In 2018, Colorado's \$58,941 average annual earnings exceeded all states in the region, including Arizona, with \$51,865. Boulder and Denver-Aurora-Lakewood led Colorado with above-average annual pay levels exceeding \$65,000. This far surpasses other MSAs in the region. ❖

REGIONAL METROPOLITAN STATISTICAL AREAS								
September 2019 Total Employees (In Thousands)	2,177.7 Phoenix-Mesa- Scottsdale	1,535.2 Denver-Aurora- Lakewood	1,114.8 Kansas City	754.4 Salt Lake City	396.3 Albuquerque	302.7 Wichita	191.7 Lincoln	47.3 Cheyenne
Employment CAGR September 2009 - September 2019	2.6% Salt Lake City	2.6% Denver-Aurora- Lakewood	2.5% Phoenix-Mesa- Scottsdale	1.4% Kansas City	1.1% Lincoln	0.7% Cheyenne	0.5% Albuquerque	0.5% Wichita
Employment % Change September 2018 - September 2019	2.4% Phoenix-Mesa- Scottsdale	2.2% Salt Lake City	1.9% Denver-Aurora- Lakewood	1.4% Kansas City	1.1% Cheyenne	0.8% Albuquerque	0.6% Wichita	0.2% Lincoln
September 2019 Unemployment Rate ^a	4.4% Albuquerque	3.8% Phoenix-Mesa- Glendale	3.4% Cheyenne	3.1% Wichita	2.7% Lincoln	2.5% Kansas City	2.2% Denver-Aurora- Lakewood	2% Salt Lake City
2018 Average Annual Pay	\$65,133 Denver-Aurora- Lakewood	\$54,557 Salt Lake City	\$53,966 Phoenix-Mesa- Scottsdale	\$53,699 Kansas City	\$47,143 Cheyenne	\$46,309 Wichita	\$46,268 Albuquerque	\$45,198 Lincoln
2017 GDP (Millions of Current Dollars)	\$242,951 Phoenix-Mesa- Scottsdale	\$208,868 Denver-Aurora- Lakewood	\$131,092 Kansas City	\$87,802 Salt Lake City	\$44,051 Albuquerque	\$33,840 Wichita	\$20,246 Lincoln	\$5,754 Cheyenne
Real GDP Percentage Change 2016 - 2017	3.6% Denver-Aurora- Lakewood	3.4% Phoenix-Mesa- Scottsdale	2.5% Salt Lake City	1.4% Lincoln	1.2% Kansas City	-0.6% Albuquerque	-0.8% Cheyenne	-1.4% Wichita

Sources: Bureau of Economic Analysis, Colorado Department of Labor and Employment, and Bureau of Labor Statistics (CES, QCEW, and LAUS data). ^aNot seasonally adjusted. Unless noted, all data is seasonally adjusted. Based on preliminary data.

Around the State

COLORADO METROPOLITAN STATISTICAL AREAS

September 2019 Total Employees (In Thousands)

1,535.2	302.1	200.4	174.7	112.4	65.9	62.8
Denver-Aurora-Lakewood	Colorado Springs	Boulder	Fort Collins	Greeley	Grand Junction	Pueblo

Employment CAGR September 2009 - September 2019

3.7%	2.8%	2.6%	2.4%	2.1%	1.0%	0.9%
Greeley	Fort Collins	Denver-Aurora-Lakewood	Boulder	Colorado Springs	Grand Junction	Pueblo

Employment % Change September 2018 - September 2019

3.7%	3.4%	2.4%	2.3%	2.3%	1.9%	0.5%
Boulder	Colorado Springs	Fort Collins	Grand Junction	Greeley	Denver-Aurora-Lakewood	Pueblo

September 2019 Unemployment Rate^a

3.4%	2.6%	2.5%	2.2%	2%	2%	1.9%
Pueblo	Colorado Springs	Grand Junction	Denver-Aurora-Lakewood	Greeley	Boulder	Fort Collins-Loveland

2018 Average Annual Pay

\$67,668	\$65,133	\$51,847	\$51,808	\$50,194	\$44,431	\$43,190
Boulder	Denver-Aurora-Lakewood	Greeley	Fort Collins	Colorado Springs	Grand Junction	Pueblo

2017 GDP (Millions of Current Dollars)

\$208,868	\$32,683	\$25,274	\$17,164	\$12,586	\$5,579	\$5,236
Denver-Aurora-Lakewood	Colorado Springs	Boulder	Fort Collins	Greeley	Grand Junction	Pueblo

Real GDP Percentage Change 2016- 2017

9.4%	5.7%	4.2%	3.6%	3.3%	3.1%	2.8%
Greeley	Fort Collins	Grand Junction	Denver-Aurora-Lakewood	Colorado Springs	Boulder	Pueblo

Sources: Bureau of Economic Analysis, Colorado Department of Labor and Employment, and Bureau of Labor Statistics (CES, QCEW, and LAUS data). ^aNot seasonally adjusted. Unless noted, all data is seasonally adjusted. Based on preliminary data.

Boulder County

Boulder County's dynamic economy is fueled by competitive concentrations of businesses and employees in a diverse mix of industries. A highly educated workforce, visionary entrepreneurs, global industry leaders, a desirable quality of life, and a world-class research university are equally critical to Boulder County's economic vitality. The county has continued to outperform state and national economies in many areas, such as job growth, educational attainment, capital investment, and commercial real estate absorption.

Employment and Wages

Boulder County continues to post solid employment gains and low unemployment rates. Data from the Bureau of Labor Statistics show employment in Boulder County increased 3.3% between September 2018 and 2019, creating an additional 6,400 jobs. In September 2019, the Boulder County unemployment rate was 2% (not seasonally adjusted) compared to state unemployment of 2.2% and a national rate of 3.3% (not seasonally adjusted). The area's large concentration of jobs in sectors with higher-than-average wages contributes to above-average incomes for area residents. The 2018 median household income for Boulder County residents was \$83,755 compared to \$71,953 for Colorado residents, according to data from the U.S. Census Bureau.

Real Estate

Commercial and industrial real estate absorption in Boulder County has produced low vacancy rates and accelerated demand for new construction. The office vacancy rate for the region fell over the past year to 8.7% through Q2 2019 from 10.8% the year prior, according to data from Newmark Grubb Knight Frank Research. The industrial/flex vacancy rate in the county rose to 8.2% from 8.1%, and the retail vacancy rate fell from 5.4% to 3.6%.

Residential construction continues to be a strong component of Boulder County's economy, though growth in residential sales and average home values broadly slowed in 2019. According to the Boulder Area Realtor Association, the number of single-family (3,157) and multi-family homes (1,042) sold in Boulder County through August 2019 was nearly unchanged from 2018. The Federal Housing Finance Agency All-Transactions house price index for Boulder County increased 3.4% from midyear 2018 to 2019—the slowest rate since 2012. During the same period, the house price index for Colorado increased 5.5%.

Financial Services and Venture Capital Investment

Boulder County represents a significant and growing share of the state's financial institution deposits and venture capital investment.

As of June 30, 2019, Boulder County had 31 FDIC-insured financial institutions with 100 offices and \$10.5 billion in

deposits, representing 7.4% of the state total. From mid-year 2018 to midyear 2019, deposits in Boulder County institutions rose \$235 million, or 2.3%, compared to an increase of 3.6% during the same period for deposits held in Colorado institutions.

The high concentration of advanced technology and entrepreneurial activity in Boulder County continues to fuel venture capital investment in early-stage Boulder County companies. According to data from CB Insights, \$484 million in venture capital funding was received by Boulder County companies in the first three quarters of 2019, representing 48% of the state total.

Leading Industries

The Boulder County economy continues to benefit from high concentrations of companies and employment in key industry clusters, such as aerospace, biotechnology, cleantech, information technology, natural and organic products, outdoor recreation, and tourism. In addition to the presence of well-established Fortune 500 companies, many startup and early-stage companies in these industries are based in Boulder County.

Aerospace—Approximately 45 aerospace companies employ 5,800 people in Boulder County—a concentration of employment 12 times that of aerospace employment across the United States, according to the annual cluster report published by the Metro Denver Economic Development Corporation. Notable aerospace companies in Boulder County include Ball Aerospace, Blue Canyon Technologies, Custom Microwave, Digital-Globe, Lockheed Martin, Northrop Grumman, EnerSys, Redstone Aerospace, and Sierra Nevada Space Corporation. The University of Colorado Boulder offers internationally recognized aerospace research and education programs and is the #1 public university for NASA research funding. Several federally funded labs in the area conduct research in space, including the Laboratory for Atmospheric and Space Physics (LASP), the National

Oceanic and Atmospheric Administration (NOAA), and the National Center for Atmospheric Research (NCAR).

Biotechnology—A total of 175 pharmaceutical and medical device companies in Boulder County employ approximately 5,450 people (Metro Denver EDC). The concentration of biotech employment in the county is four times the concentration nationwide. Major employers include Array BioPharma, AveXis, Avista Pharma, ChromaDex, CordenPharma, Huvepharma, KBI Biopharma, Medtronic, Molecular Products Group, Mountainside Medical, GHX, and Vaisala. 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 headed by Nobel Laureate Tom Cech, designed to facilitate interdisciplinary research and expand Colorado's leadership in biotechnology.

Cleantech—More than 350 companies in Boulder County employ about 4,800 people working on renewable energy, energy efficiency, and energy research (Metro Denver EDC). Cleantech job concentration in the county is four times the U.S. average. The industry is well-supported by university programs, such as the University of Colorado Boulder's new Sustainability, Energy and Environment Community (SEEC) and the National Renewable Energy Laboratory (NREL), the federally funded research lab in Golden. Boulder County businesses in the industry include AlsoEnergy, Envision Energy, GE Oil & Gas, Namasté Solar, Scout Clean Energy, Siemens Energy, Solid Power, and Xcel Energy.

Information Technology—Boulder County has a long history as a center of information technology, data storage, software development, and Internet services. Major employers include Amazon, Apple, Carbon Black, CableLabs, Epsilon, Google, HP, IBM, Intrado, LogRhythm, NetApp, Qualcomm, Seagate, Twitter, and VMware/Carbon Black. They are among the 950

IT companies in the county employing 12,200 people (Metro Denver EDC). Boulder County's concentration of IT and internet/software employment is three times the concentration nationally. The county is home to many technology accelerators and mentorship programs, such as Boomtown, Catalyze CU, Cognizant, and TechStars. Boulder County also offers makerspaces like BLDG 61, the Boulder Library makerspace, and TinkerMill, the largest makerspace/hackerspace in Colorado. Longmont ranks as one of the "Fastest Internet Providers" (thanks to the city's ISP NextLight) according to *PC Magazine* in 2019.

Natural and Organic Products—Many leaders in the natural and organic products industry nationwide got their start in Boulder, and the area remains an international hub of the industry. Area companies include Aurora Organic Dairy, Bobo's, Boulder Brands, Boulder Organic Foods, Celestial Seasonings, Chocolive, Fresca Foods, Functional Remedies, Haystack Mountain Goat Dairy, and Justin's Nut Butter. Naturally Boulder, a Boulder-based industry association, supports these and hundreds of other natural products companies through networking, educational sessions for early-stage companies, and signature events.

Outdoor Products and Recreation—Widely recognized as a center of the outdoor recreation industry, Boulder is home to the Outdoor Industry Association and the International Mountain Bicycling Association. Beginning in 2018, two major outdoor industry trade shows, the Outdoor Retailer + Snow Show and the Outdoor Retailer Summer Market, relocated to Denver. Boulder County has a high concentration of manufacturers, distributors, retailers, marketing and media companies, and other service providers focused on the industry. Local companies include Active Interest Media, Brunton, Dynafit, Exxel Outdoors, Fjällräven, Gaiam, HEAD, K2 Sports, La Sportiva, Newton Running, Pearl Izumi, Salewa, Sea to Summit, Spyder Active Sports, and Thule.

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Tourism—The Boulder County area is a popular destination that receives national media attention for its recreational and cultural amenities, and impressive array of shopping and dining choices. Boulder has been recognized by *National Geographic* (Happiest City in the U.S. and one of America's Top Adventure Towns), *Bon Appetit* (America's Foodiest Town), *Outdoor* magazine (#1 Sports Town), and *Bicycling* magazine (one of the Best Bike Cities). Longmont was recognized by *Livability* as #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* magazine and 10 Best Towns for Families by *Family Circle* magazine.

The business and economic outlook is very positive for Boulder County. The region's robust economy built on diverse high-tech and lifestyle industries, the University of Colorado Boulder flagship campus, a highly educated workforce, thriving entrepreneurial culture, and highly desirable quality of life inspires optimism heading into 2020. ❖

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Kit Carson County

Kit Carson County is located along Interstate 70, spanning 60 miles from the western Kansas border back toward Denver and Colorado Springs. Covering 2,160 square miles, this area is known for its production agriculture and wind farm development. While agriculture has suffered without moisture and from strong winds, wind farm development has grown. The wind turbines generate power for the metro areas, and the landscape has changed in the past few years due to this new energy harvesting.

Due to the hailstorms of 2018 and 2019, Kit Carson County and its neighboring counties to the north, south, and west had a tough year. Homes and businesses were damaged across the county, but those storms quickly ramped up contractor employment for a sustained period. Work to repair siding, roofs, windows, and vehicles continues as does the farm and ranch work.

Commodity prices remain low for wheat and corn. Some wheat growers lost multiple acres due to dry conditions and hailstorms as others gleaned great grains but at lower prices. Corn harvest continues to bring in bountiful corn, which also drives down the price. Hemp production is increasing, however, as farmers try their hand at a new crop that potentially could improve cash flow and allow for continued operations. Limited hemp processing plants may be a concern for some hemp growers when it is time to harvest.

Information from the Colorado State Demography Office (SDO) shows Kit Carson County's population growth is weak compared to other counties. The county population decreased slightly from 7,162 in 2017 to 7,161 in 2018. The SDO predicts average annual job growth through 2030 will range from 0 to -0.8%, which is on par with Colorado's southeastern counties, but nowhere near the state's growth rate of 1.9%. Burlington, the county seat, works diligently to replace the jobs lost and fill the vacant facility when the prison closed in 2016. Earlier in 2019, a large retail business closed in Burlington, leaving another vacant building. Growth is hindered throughout the county with a limited labor pool and housing stock. Attracting graduates back to their roots may help the county "grow their own," and efforts are underway now to do exactly that.

Affordable housing continues to be a concern throughout most of the state, and Kit Carson County is no different. The current vacancy rate of 15% demonstrates great need to develop more housing and replace the depleting inventory. Demand for rental property remains high as fewer people have funds to purchase a home with a 20% required down payment.

Farm and sole proprietor employment represent significant employment in the county. Current construction of the Cheyenne Ridge, Bronco Plains, and Crossing Trails wind farms will help increase temporary jobs during the construction phase as communities benefit from the workers eating, sleeping, and engaging in local recreation activities.

The unemployment rate of 1.4% (not seasonally adjusted) remains much lower than the state average of 2.2%. Job openings are harder to fill with the low rate, and training costs increase as well as employees change jobs more frequently following higher wages.

Common minimum education requirements for job openings in 2019 were a high school diploma or equivalent. A shortage of skilled labor is also a challenge to fill positions for welders, diesel mechanics, and commercial driver's license (CDL) truck drivers. These higher-wage jobs require more credentials, so the local community college offers classes to address the needs of the employers and employees.

Many Kit Carson County employers offer minimum wage pay, which will be \$12.00 in 2020. The major employers for entry-level positions are consistently retail establishments, quick service restaurants, and sit-down restaurants.

Burlington's Colorado Welcome Center believes they will end 2019 with another record-breaking year of guests. Tourism remains an integral part of the Burlington economy and the county. For the fourth consecutive year, the Colorado Welcome Center had near-record visitor numbers. Tourism is an economic driver for the region where the determined people of the county look for more ways to attract people to visit the area.

Working with the individual communities in Kit Carson County through a collaborative effort to attract families to the area, we can fill our schools, businesses, and jobs more easily than in 2018. The evidence of that effort may be seen in 2020 if the plans and collaboration are

effective. Smaller hailstones and more time between storms would be appreciated. ✚

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La Plata County

The southwest corner of Colorado includes a five-county area known as Region 9. Region 9 encompasses Archuleta, Dolores, La Plata, Montezuma, and San Juan counties, as well as the Southern Ute and Ute Mountain Ute Indian Tribes. The area is largely rural, so communities depend on one another to provide goods and services within the larger regional economy. Employees in the region often commute long distances across state and county lines to take advantage of better job opportunities, better shopping, or lower real estate prices. The resulting interconnected economy extends to the entire “Four Corners” area, including northwest New Mexico, northeast Arizona, and southeast Utah.

La Plata County (specifically Durango) is the regional work center, with more workers commuting into the county than out. The U.S. Census Bureau estimates that in 2017, a total of 6,550 people were commuting in for work, primarily from Montezuma County (15%) and Archuleta County (5%). In contrast, 5,505 wage and salary workers were commuting out of La Plata County for work, primarily to Montezuma County (12%) and to Mesa County (7%). These estimates only reflect those jobs covered by unemployment insurance.

The regional population totaled 99,117 in 2018, growing 1.3% over 2017 and averaging 1% growth since 2010. Between 2010 and 2018, the La Plata County population grew from 51,441 to 56,402 (about 1.2% annually), with most of the growth occurring in Bayfield and Durango (the county seat). Ignacio saw slower growth, as did unincorporated areas of the county, including the Southern Ute Indian Tribe. These population figures do not reflect the large number of seasonal visitors, many of whom own second homes in the county. The State

SOUTHWEST COLORADO AVERAGE LIVING EXPENSE BY COUNTY, 2019

County	Adult	Adult and Preschooler	Two Adults, Preschooler, and School-age
Archuleta	\$25,572	\$51,048	\$61,860
Dolores	24,684	39,155	51,672
La Plata	27,984	55,472	68,120
Montezuma	23,088	43,225	53,953
San Juan	28,308	50,339	62,231

Source: Economic Development District of Southwest Colorado.

Demographer estimates an increase of more than 20,000 residents in the county over the next 20 years.

A number of entrepreneur support programs are located in La Plata County and serve the larger region. The Southwest Colorado Accelerator Program for Entrepreneurs (SCAPE) provides education, mentoring, and access to funding for startups and early-stage companies. Since its inception six years ago, SCAPE has launched 31 companies, created 91 jobs, and raised \$20 million in capital. One of its graduates, GitPrime, was recently purchased by Pluralsight out of Utah for \$170 million. The Region 9 Economic Development District (Region 9) administers the Southwest Enterprise Zone and is a resource for data, business incentives, and loans to small businesses. The Southwest Colorado Small Business Development Center (SBDC) is hosted by Fort Lewis College and provides advice and training for small businesses. These assets are particularly important as capital and incentives are not always readily available.

The Durango-La Plata County Airport (DRO) is the fifth-busiest commercial service airport in the state and is a self-sustaining economic enterprise fund of the City of Durango. DRO generates revenue from airport tenants and users and receives no local tax funding. DRO's

annual economic impact to La Plata County totals \$160 million, with \$280 million in annual economic impact throughout the Four Corners region. In 2019, total passenger traffic was up 3.9% year-to-date over 2018. Daily service to Dallas (American Airlines), Denver (United Airlines), and Phoenix (American) is available. There is also seasonal service to Chicago (American and United), Houston (United), and Los Angeles (American). A \$1.7 million terminal improvement project is underway.

Public lands and open space are considered vital economic assets across the region, providing direct employment that supports agricultural/natural resource development enterprises, recreation, and tourism. Public lands make up 44% of La Plata County; 40% are private lands and 16% are tribal lands. Major areas of public lands include the San Juan National Forest (SJNF), which encompasses over 400,000 acres, including portions of the Weminuche Wilderness (the largest designated wilderness area in Colorado) and the recently designated 37,236-acre Hermosa Creek Wilderness. The region is home to Mesa Verde National Park, as well as four national monuments.

The other major public land manager, the Bureau of Land Management (BLM), administers almost 22,000 acres and the federal mineral estate underlying private lands (known as split estate), and has trust responsibility for mineral management on Tribal lands. The Bureau of Reclamation also has an influential presence in the region as the entity involved in the construction of numerous reservoirs and water delivery systems. Some of these improvements, such as Lake Nighthorse, are now managed either in partnership with the U.S. Forest Service and/or by the state, local communities, or districts.

Access and proximity to public lands is a double-edged sword. A history of land management practices has created dense, fuel-heavy forests, coupled with increasing

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drought conditions and bark beetle infestations, resulting in the threat of wildfire for the people, resources, and industries of southwest Colorado. This is evidenced by several recent fires, including the 416 Fire that burned 54,000 acres north of Durango in the summer of 2018, and is estimated to have caused about \$135 million in damage.

Two Ute Tribes manage the Tribal lands in the region. The Ute Mountain Ute Tribe, headquartered in Montezuma County, has acreage on its reservation in La Plata and Montezuma counties in Colorado and in San Juan County in New Mexico. The Southern Ute Tribe is headquartered in La Plata County, with lands located in La Plata and Archuleta counties. Unlike some Indian reservations that are all contained within one boundary, the Southern Ute lands are not all contiguous. Both Ute Tribes are sovereign nations and operate under tribal administrations. Their various enterprises provide employment opportunities for Tribal members and other residents in the larger region. Both are working to diversify their economies and create more Native-run businesses in their communities.

Historically, La Plata County and the region developed as a result of “traditional west” commodities, such as minerals, cattle, and timber. Since the 1970s, La Plata County in particular has transitioned from a traditional rural county to a more urban environment in which tourism is the number one industry. People moving to the region for quality of life issues or “amenity migration” drove population growth in the 1990s, a trend continuing today.

Job growth in the region was steady at about 2 – 4% per year until the recession of 2007–2009. Employment reached a low of 31,442 jobs in 2011, the depth of the recession in the local area. The county’s economic conditions have stabilized and are exceeding pre-recession levels, as evidenced by an 11% increase in the number of jobs since 2011.

About 80% of total employment is by wage earners, while 20% is through proprietors. The service sector

employs about 43% of workers in the county. The service sector is composed of many types of jobs and very different wage scales.

The fastest-growing occupations through 2028 are projected to be Education, Training and Library (19%), Personal Care and Service (17%), Management (16%), and Transportation and Material Moving (14%) according to EMSI.

When comparing average annual wages with “livable wages,” few occupations in the county provide enough income to sustain a family of four with one breadwinner.

Raising public awareness at the local level is considered essential to closing the wage gap. In order to enhance the quality of life through fair wages, La Plata County Thrive! Living Wage Coalition formed in 2013 to build a coalition of workers, employers, government and organizations who work together in achieving a living wage; educate workers, employers and government officials about the importance of creating a living wage; publicly recognize employers who provide, or aspire to provide, a living wage; and advocate for improving minimum wages at the local, state, and national level.

Housing issues, namely availability and affordability, are hot topics across the region as communities struggle to provide stable, affordable housing opportunities for their workers, families, and seniors. Home prices in La Plata County are the highest in the region and are out of reach for many families that make up the local workforce.

One very important regional economic development strategy is to identify and attract industries that preserve and enhance the region’s natural and environmental features. Residents value the high quality of life, including clean air and water, and scenic views. A healthy environment is a selling point for a region’s economic development efforts. Businesses—and their employees—like to live in a safe and healthy environment. This is increasingly true in the information technology era when jobs follow people rather than people following jobs.

Another important regional goal is to minimize the relative impact of any sudden change in fortunes, hence employment, of any one (large) firm or industry. Events such as a housing bubble or a recession, changes to water quality and availability, or catastrophic events, such as wildfires, can move the region into unfamiliar and potentially costly scenarios. As such, strategies meant to encourage economic development in this rural region must be flexible and resilient to respond to the unexpected and be open to emerging opportunities. ❖

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Mesa County

Mesa County is a growing hub for business and innovation that offers an affordable cost of living and friendly business climate, as well as endless access to outdoor recreation. The county comprises the City of Grand Junction, the City of Fruita, and the towns of Palisade, Collbran, DeBeque, Gateway, Mack, and Mesa. The community is located at the confluence of the Colorado and Gunnison Rivers on the Western Slope where the Rocky Mountains meet the desert. Most residents live in Grand Junction, the largest city between Denver and Salt Lake City, Utah.

Population—The county has a population of 153,629 people, according to the Colorado Demography Office. After several years of stagnation, population growth increased for the fourth consecutive year in 2018, adding 1,708 people (1.1%).

Economy—The Mesa County economy is performing extremely well. The county has a strong sales tax collection, up 4.5% since 2018, according to the Q3 2019 Mesa County Economic Update from Colorado Mesa University (CMU). In 2017, nominal GDP in Mesa County expanded 6.3%, to \$5.6 billion (newest available data). The cost of living is 1.1% lower in Mesa County than the U.S. average.

Wage Trends—The average worker in Mesa County earned annual wages of \$44,584 as of Q1 2019, according

to the Bureau of Labor Statistics (BLS). Average annual wages per worker increased 3.6% in the region over the preceding four quarters. For comparison purposes, annual average wages were \$59,671 in Colorado and \$57,695 in the nation in Q1 2019.

Employment—As of September 2019, the unemployment rate in the county was 2.5% (not seasonally adjusted), slightly higher than the rate for Colorado (2.2%) and the nation (3.3%), according to the BLS. Mesa County's labor force is 78,379, up 1.4% year-over-year. Of this, 76,384 were employed and 1,995 were unemployed. Since early 2017, Mesa County has been adding employment at a consistent rate. Compared to five years ago, the number of employed is up 6,592.

Employment and wage data trends positive for almost all Mesa County industries according to the BLS. Construction, health care, and educational services are leading the way in terms of new employment and wage contribution. Oil and gas is down from Q1 2018. Natural gas prices and rig counts are down, so reductions in this industry were expected.

Based on employment data from 2019, Health Care and Social Assistance is the largest industry, followed by Government, Retail Trade, Accommodation and Food Services, Construction, and Manufacturing.

Real Estate—The Mesa County real estate market continues to stay strong with almost all indicators at peak levels. Grand Junction home values are outpacing Colorado and the United States, increasing 8.8% in Q2 2019 year-over-year, according to the Federal Housing Finance Agency. The median sales price for a single-family home was \$262,083 as of Q2 2019. Residential building permits fell 4.8% year-to-date through September; single-family home permits fell 19.5%.

According to numbers reported by Bray Commercial, 172 commercial transactions totaling over \$120 million were reported in Mesa County as of Q3 2019. Additionally, commercial permits are higher than in 2018.

Health Care—Mesa County is a regional medical and health care hub serving as a medical referral center for a population of approximately 500,000 in western Colorado and eastern Utah; it is the largest hub between Denver and Salt Lake City.

Mesa County has five large hospitals: Community Hospital, Family Health West, Grand Junction Veterans Health Care System, St. Mary's Hospital, and West Springs Hospital. In addition, Mind Springs Health provides mental wellness, behavioral change, and substance abuse treatment to patients within 11 counties.

Education—Mesa County has strong higher education and technical training institutions. Colorado Mesa University, a four-year higher education institution encompassing 90 acres in Grand Junction, has over 11,000 students and nearly 300 full-time academic and technical faculty members. It offers more than 100 programs at the bachelor's, master's and doctoral levels. It is the fifth fastest-growing university in the United States.

Western Colorado Community College—the two-year division of CMU—offers over 30 career-oriented certificate and associate degree programs and more than 330 noncredit, personal, and professional development courses each semester. Mesa County is also home to the IntelliTec Technical Trade College and Colorado Christian University.

There are three K–12 school districts in Mesa County, the largest being Mesa County School District 51. District 51 is the 14th-largest school district in Colorado, with 46 schools, 2,785 teachers and support staff, and 22,082 students. District 51 had an 81% graduation rate for the class of 2018. Of the student population, 3.4% are gifted and talented, 49% are eligible for the free and reduced-price lunch program, 3.2% are English language learners, and 30% are minority students.

Airport—The Grand Junction Regional Airport (GJT) is the premier Class I airport serving western Colorado and eastern Utah, with 8 nonstop destinations and an average of 16 flights per day. Allegiant, American, Delta, United,

and Denver Air Connection all operate out of GJT. Air service development continues to be a primary focus for GJT. In addition to both private and public passengers, 10 million pounds of cargo are shipped through the airport annually. GJT reported 173,823 passenger enplanements as of August 2019. For the second year in a row, Official Aviation Guide (OAG) ranked GJT in the top 10% of airports in the world for on-time performance—one of only three airports in the continental United States receiving this rating. In addition, OAG ranked GJT #8 out of North America's Small Airports for "Turnaround Kings" (commercial planes departing on-time after arriving late).

GJT is home to fixed based operator (FBO) West Start Aviation, which occupies over 281,824 square feet of hangar, shop, and office space on approximately 34 acres. In addition, West Star Aviation employs around 500 people. The firm offers complete, world-class fueling support services, as well as business aircraft maintenance, modifications, and refurbishment for aircrafts. It has been voted #1 Maintenance Repair and Overhaul (MRO) for six consecutive years by Pro Pilot PRASE Survey.

Leading Industries—The Mesa County economy has diversified significantly in the last 25 years. While the energy, agriculture, and health care industries still thrive, aviation and aerospace, manufacturing, tourism, outdoor recreation, and technology and IT have emerged as strong and growing industries. The following employment data were provided by the Mesa County Workforce Center (Labor Market Reports Q3 2019).

Health Care—Health Care and Social Assistance makes up 15% of Mesa County's total employment, with 10,874 jobs. This is expected to increase by 4% in 2020.

Manufacturing—The manufacturing industry makes up 4.5% of Mesa County's total employment. In 2019, Mesa

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Photo courtesy of SCL Health

County had 3,166 jobs, and the total number of jobs is expected to increase by 2.5% in 2020.

Energy—The energy industry makes up 3.5% of Mesa County's total employment, with 2,473 jobs. The industry, which saw a dramatic decrease in employment of 44% in 2010–16, is expected to increase by 3% in 2020.

Professional, Scientific, and Technical Services—This industry includes legal, accounting, architectural, engineering, management, computer systems design, and scientific research and development services, among many others. It makes up 3.1% of the county's total employment, with 2,168 jobs as of Q3 2019, and is expected to increase by 1.6% in 2020.

Aviation and Aerospace—There are 582 people in the county employed in aviation, aerospace, and parts and manufacturing, making up 0.8% of total employment. It is expected to increase by 2% in 2020.

Agriculture—The agriculture industry makes up 0.7% of Mesa County's total employment. In 2019, Mesa County had 537 jobs, and is expected to increase by 0.5% in 2020.

Recreation, Apparel and Sports Drinks—The Recreation, Apparel, and Sports Drinks industry makes up 0.8% of Mesa County's employment, with 557 jobs. This is expected to increase by 0.1% in 2020.

Outdoor Recreation Manufacturing—The outdoor recreation industry is drawn to Mesa County because of the

natural environment—over 75% is public lands—and the plentiful opportunities for outdoor recreation, which attracts a skilled workforce and provides terrain to test products. In 2017, outdoor recreation businesses contributed more than \$300 million and more than 2,000 jobs to the Mesa County economy. All municipalities are investing significantly in outdoor development.

Mesa County is home to many outdoor recreation businesses, including Bonsai Design, DT Swiss, Mountain Racing Products, and Leitner-Poma of America. In 2018, Timberleaf Trailers and RockyMounts relocated from other Colorado communities to Mesa County. The area has more than 14 bike shops, 5 ski shops, and 2 mountaineering/climbing shops. There is also a strong support network, including the Grand Valley Trails Alliance, Colorado Plateau Mountain Bike Trail Association, and the Outdoor Recreation Coalition.

Tourism—Tourism is a major economic driver in Colorado and a significant source of sustained economic growth in Mesa County. The travel and tourism industry in the county provides more than 5,500 jobs and \$139.9 million in wages, and the local economy experienced \$311 million in direct travel spending in 2018, according to Visit Grand Junction.

Grand Junction welcomed approximately 1.65 million guests staying in lodging properties in 2018. This equates to over \$12.8 million in local sales tax revenues and \$1.56 million in lodging tax revenues collected. According to Visit Grand Junction, 30% of the City of Grand Junction's sales tax is derived from travel and tourism spending.

Mesa County is a major tourism destination, with a mild climate and central location, making it easy to access year-round. The county has a unique agricultural landscape that produces everything from award-winning wines and craft brews to prime beef and fresh vegetables—not to mention the famously sweet Palisade peaches—attracting agritourism.

It is an adventure hub with over 10,000 miles of trails from snowcapped mountains to the desert, more than 300 lakes,

two rivers, and vast plains. Powderhorn Mountain Resort is located on the northern edge of the Grand Mesa, with an average of over 250 inches of snow each season, 600 acres of groomed trails, and another 1,000 skiable acres. The county has five public golf courses and a 26-mile Riverfront Trail from Loma to Palisade. 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.

The City of Grand Junction will be completing the Lunch Loop Connector Trail, which is a 1.5-mile, paved, off-street bike/pedestrian trail that will follow Monument Road between Highway 340 and the Lunch Loop/Three Sisters trailhead. When complete, it will link Lunch Loop to the Colorado Riverfront Trail and Riverfront at Las Colonias Park. This connector trail will help to complete the Redland Loop, a proposed 10-mile paved trail loop connecting the Riverfront Trail, Lunch Loop, Rigs Hill, Connected Lakes, the Audubon Trail, downtown Grand Junction, and neighborhoods representing diverse populations. The \$2.5 million project is split between the City of Grand Junction and Mesa County; this amount does not include critical grant funding that was secured.

Rural Jump-Start Mesa County—In 2016, the State of Colorado started the Rural Jump-Start Tax Credit program—a joint effort between the state, counties, municipalities, public colleges, and businesses to help spur job growth and the economies of Colorado's rural regions. It offers a tax holiday to businesses in exchange for creating new jobs. Mesa County was the first county to be accepted as a Rural Jump-Start Zone. Since its inception, 16 new companies have been approved for Jump-Start in the county.

Development Opportunities—The Riverfront at Las Colonias Park is a 15-acre outdoor industry business park nestled in a 140-acre city park on the Colorado River. It is under construction and will have nine commercial spaces, as well as outdoor meeting zones, shared conference rooms, large format training spaces, expandable

warehouse sections, aerial adventure, bike trails, retail outlets, and a river recreation zone.

The Fruita Commercial & Industrial Business Park has 68 acres of ready-to-build land with all the public improvements installed and rail access. It is easily accessed from Interstate 70 and located directly off Highway 6. The park offers lakeside sites and panoramic views of the nearby Colorado National Monument. The picturesque landscape is located minutes from downtown Fruita and the Kokopelli Trailhead, with bike trails to connect the park to both.

Riverfront at Dos Rios is a 58-acre mixed-use development in the heart of the City of Grand Junction. The project consists of 15.8 acres of parks and open space, 9.5 acres for light industrial/commercial, and 10.2 acres for mixed-use development. With unparalleled access to the river, trail systems, greenspace, and downtown, the city envisions this area as a vibrant neighborhood serving as home, workplace, and play place to artisans, entrepreneurs, and innovators.

Mesa County has seven Opportunity Zones prime for investment. An Opportunity Zone is an economically distressed community where new investments, under certain conditions, may be eligible for preferential tax treatment. The goal is to spur economic development and job creation by providing tax benefits to investors.

Summary—The business and economic outlook for Mesa County is exceptionally positive. A low unemployment rate, growing diversification of industries, strong real estate market, and unique development opportunities position Mesa County well for continued growth in 2020. ❖

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Northern Colorado

Summary—Northern Colorado continues to grow in technological innovation and entrepreneurship supported by its increasingly diverse and highly educated population. The region's stability and growing economy are attributed to industry and employment diversity. Northern Colorado's high level of patent production and strong presence of multiple research institutions illustrate the regional passion for investment in ideas and innovation.

Located between the western Rocky Mountains and eastern Great Plains, Northern Colorado refers to Weld and Larimer counties. The region neighbors the greater Denver Metro area and Wyoming.

Talent, innovation, and opportunity define Northern Colorado. Prominent universities and community colleges attract companies searching for the next generation of talent. Northern Colorado's growing industry clusters include 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, strength in animal science and translational medicine, and Northern Colorado's status as a regional distribution hub for agricultural and industrial products.

Northern Colorado features rich cultural and recreational opportunities. The region has two state-designated creative districts, Fort Collins and Greeley, where the arts and creative industries are celebrated.

Population—Northern Colorado's population continues to grow, with the 2018 estimate at nearly 665,000 according to the Colorado State Demography Office. The estimated increase in population in Weld and Larimer counties was 2.4% in 2018. Fort Collins and

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Greeley are the area's two largest cities, with a combined population of 274,300.

According to the Census Bureau, the Greeley Metropolitan Statistical Area ranked seventh in population growth between July 2017 and July 2018. The median age in Northern Colorado is approximately 35, younger than Colorado's median age of 37 (Colorado State Demography Office). The continued in-migration of talented college students and professionals seeking work opportunities in the region drives this metric.

Industry and Employment—Northern Colorado's job growth has outpaced the national rate, and the region's labor force participation, along with the rest of the Front Range, remains consistently higher than the United States as a whole. Northern Colorado's top industries by employment are Manufacturing, Health Care, Construction, Accommodation and Food Services, and Retail. 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 rose by 7.2% between 2016 and 2017 (most recent data). Strong population and job growth, along with an aligned and motivated labor force, have contributed to the economic success in the region.

As of September 2019, the combined unemployment rate in Larimer and Weld counties was 2% (not seasonally adjusted). Northern Colorado has seen a tight labor market over the past five years, which has spurred regional collaborative public-private partnerships to address local workforce issues. The region's educational institutions have developed and expanded training and experienced-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 two thriving sector partnerships: the NoCo

Manufacturing Partnership and the Northern Colorado 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. These public community colleges and universities produce over 17,000 postsecondary credentials per year. A variety of traditional and certificate programs help prepare the region's labor force for current and future employment.

A total of 3,300 students from 36 public high schools across Larimer and Weld counties participated in dual enrollment programs in partnership with 11 universities and community colleges during the 2017–2018 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. ❖

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Pueblo County

Economic indicators for Pueblo County showed impressive strength in 2019. The countywide unemployment rate was 3.4% in September 2019.

Government (federal, state, and local) (19.6%), Health Care and Social Assistance (20.4%), Retail Trade (13.1%), and Accommodation and Food Services

(10%) 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.

New and Existing Industry Clusters—Pueblo has seen significant success in attracting new, high-tech industries during 2019. The year also brought new companies in hemp processing, construction-related manufacturing, as well as food and beverage processing to the area. These industries add to the success Pueblo enjoys in manufacturing and metal fabrication. In addition, Pueblo is actively recruiting companies in the aerospace and defense, chemicals manufacturing, and outdoor recreation 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, UTC Aerospace Systems, L3 Doss Aviation, Evraz, Vestas, Trane Corp., Professional Bull Riders, KMG Electronic Chemicals, Atlas Pacific, Thar Process, 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 short line rail depending on the area of town. The two rail lines servicing the region are Union Pacific and BNSF. This transportation allows easy access numerous cities within 500 miles, such as Denver, Wichita, Cheyenne, and Albuquerque.

Pueblo is very focused on talent. 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. In 2019, an area high school started a manufacturing, agriculture, and

construction (MAC) Academy and already has over 300 students enrolled.

Energy and the HARP Project—In addition to these existing and developing clusters, other projects are in place. In 2018, renewable energy developer Community Energy Solar installed the largest solar panel facility east of the Rocky Mountains. The power from this facility, which is located next to the Comanche Generating Station, goes to Xcel Energy. The project uses 450,000 solar panels to generate enough power for 31,000 homes according to the developer. Pueblo is under consideration for other solar energy applications due to its favorable climate and abundant sunshine. Pueblo is also home to Vestas Wind Towers. Pueblo's facility is the largest wind tower manufacturing facility in the world.

Evrax Rocky Mountain Steel in Pueblo began installation of a 240-megawatt solar facility on property owned by Evrax in 2019. This will provide electric price certainty for the mining and steel-making company through 2041.

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 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 stood at 2.6% on a nonseasonally adjusted basis at the end of September 2019. This compares to an unemployment rate of 3.9% in September 2018. The labor force increased from 339,541 to 348,149 from September 2018 to September 2019, a change of 8,608. Over the same period, employment increased from 326,141 to 339,034 for a change of 12,893. Much of the reason that the Colorado Springs region has experienced above average economic growth, as evidenced by a high growth rate in gross metropolitan product (GMP), is because of the increase in the number of people working and the number of people entering or reentering the labor force.

The UCCS Economic Forum calculates the number of new jobs needed per year in order to match population growth in the working-age cohorts. For this calculation, Quarterly Census of Employment and Wages (QCEW) data are used, which excludes the sole proprietors who are counted in the labor force and employment numbers above. For 2019, the targeted ideal number of new jobs is 5,600, and this threshold assumes a "natural rate" of unemployment of around 4%. El Paso County has been performing well in this metric since 2013. New jobs totaled over 5,000 in 2013 and 5,000 new jobs the following year. By 2018, there were more than 5,550 new jobs in El Paso County and 5,700 new jobs from Q1 2018 to Q1 2019.

Specific Sectors—Sixteen of the 21 QCEW industry sectors in El Paso County saw job gains in 2018. The most significant gains were in Health Care and Social Assistance, Professional, Scientific, and Technical Services; Construction; Accommodation and Food Services; and Finance and Insurance. Health Care and Social

Assistance, combined with Professional, Scientific, and Technical Services, represented 63% of total job gains in the county. Job losses occurred in five sectors, with the most notable losses in Administrative and Waste Services and in Retail Trade.

QCEW average annual pay across all categories increased in El Paso County, from \$48,932 in 2017 to \$50,480 in 2018. This 3.2% wage increase is in line with the national average (3.4%). Average annual pay in Colorado increased 3.6%. The average wage in El Paso County was 14.4% below the 2018 state average of \$58,941 and 11.9% below the U.S. average of \$57,266.

Average annual wages increased in 18 sectors in El Paso County in 2018. Average wage growth was strong in Management of Companies and Enterprises (up \$12,376, to \$189,384); Agriculture, Forestry, Fishing and Hunting (up \$8,008, to \$39,676); Mining (up \$4,628, to \$69,264); and Professional, Scientific, and Technical Services (up \$3,380, to \$90,740). Average wages declined in Manufacturing (down \$9,464, to \$61,256) and Wholesale Trade (down \$468, to \$66,924).

Per Capita Personal Income—Nominal per capita personal income in 2018 in El Paso County was 17.1% below the Colorado average and 11% below the U.S. average. Per capita personal income increased 3.8%, to \$48,467, in 2018 over the 2017 level of \$46,692. Per capita personal income is not necessarily a good measure of income for the El Paso County region. The denominator in these calculations includes all residents regardless of age. El Paso County has a much lower median age (34.2) than the United States (38.2). The lower local median age will skew per capita person income downward.

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Residential Real Estate— From October 2018 through September 2019, a total of 3,805 single-family permits were issued in the region. This is a decrease of 349 permits (down 8.4%) issued compared to the number issued from October 2017 through September 2018. The UCCS Economic Forum expects approximately 3,800 single-family permits to be issued in the Pikes Peak region in 2019 and another 3,750 in 2020. Through September 2019, permits for 94 multifamily projects and 1,186 units were pulled. By the end of 2019, permits for 1,500 multifamily dwelling units are expected to be pulled and another 1,400 units are forecasted for 2020. As of Q2 2019, average monthly rents for apartments were \$1,216 per month in the Colorado Springs Metropolitan Statistical Area (MSA).

There were 5,585 permits for dwelling units (both single-family homes and multifamily units) pulled in 2018 in the Pikes Peak region, and 5,300 are projected in 2019. The Forum has estimated that for the population size and the demographic composition of the county, approximately 5,817 permits for dwelling units (both single-family homes and multifamily units) is appropriate in 2019. This means local building will not quite meet demand in 2019 since only 5,300 units will likely be built. Looking at these thresholds for population growth, it appears that the region has overbuilt during past economic expansions. That is not the case during this expansionary business cycle. Local residential developers say that the high cost of labor and materials, as well as the dwindling supply of vacant developed land, has limited the construction of new homes.

Home prices in the Pikes Peak region have stabilized after many quarters of double-digit growth. The average sales price of a home, new or existing, is estimated by the UCCS Economic Forum to increase to \$361,984 in the Pikes Peak region in 2019, a 4.2% gain over 2018. The median price of a new or existing single-family home is anticipated to rise to \$318,725 in 2019 compared to \$305,000 in 2018. Sales are expected to reach 15,514 homes in 2019 and 15,359 homes in 2020.

Foreclosures decreased 16.6% in 2018, to 908. This is the ninth-consecutive year foreclosures declined in El Paso County. Through September 2019, foreclosures totaled 659 compared to 695 through September 2018. The UCCS Economic Forum projects a total of 870 foreclosures in 2019 and another 870 foreclosures in 2020.

Commercial Real Estate—Average commercial office vacancy rates in Colorado Springs declined to 10% in 2018 from 10.8% in 2017. Through September 2019, the vacancy rate decreased to 9.1%. At the same time, average triple net lease rates increased from \$15.50 per square foot in 2017 to \$16.81 per square foot in 2018. They stayed flat, at \$16.81 per square foot, in Q3 2019. The UCCS Economic Forum uses the CoStar Group and Olive Real Estate Group to compile this commercial real estate information.

The average industrial vacancy rate declined to 6.4% in 2018 from 8.5% in 2017. Through September 2019, the rate decreased to 4.5%. Average rents rose from \$7.27 per square foot in 2017 to \$8.09 per square foot in 2018. This dropped slightly, to \$8.03 per square foot, in Q3 2019.

Average retail vacancy rates dropped slightly, to 5%, in 2018 from 5.1% in 2017. Rates stayed flat, at 5%, through September 2019. Average rents increased from \$12.45 in 2017 to \$14.34 in 2018. They declined to \$14.17 per square foot in Q3 2019.

Average medical office vacancy dropped from 9.2% in 2017 to 7.6% in 2018. Through September 2019, it rose slightly to 7.9%. Average rents increased in this property type, from \$18.35 in 2017 to \$19.64 in 2018. In Q3 2019, they had dropped to \$16.30.

It is worth noting that commercial real estate lease rates are significantly lower in Colorado Springs compared to Denver, and this may be providing an incentive for businesses to expand or relocate to Colorado Springs. As of Q2 2019, retail space was 38.1% lower in Colorado Springs, office space was 47% lower, and medical office space was 36.4% lower.

Sales and Use Tax—The City of Colorado Springs benefits from strong, growing taxable retail sales because more than 50% of the city's budget dollars come from these collections. City sales and use tax collections increased 6.5%, or \$11.1 million, to \$181.2 million in 2018. Sales and use tax collections are expected to increase 4% in 2019 and another 3% the following year in nominal terms. However, adjusting sales taxes for both consumer price inflation and population increases, the real value of sales and use tax collections will increase by just 0.6% in 2019 and decrease by 0.6% in 2020.

Education—Although Colorado has the second most educated population in the nation, in-state educational

metrics do not consistently reflect this. The high educational attainment is due in large part to the in-migration of highly educated individuals from across the nation.

In spring 2019, the average SAT score of juniors in 5 of El Paso County's 15 school districts was higher than that of all Colorado juniors, and 4 of the El Paso County school districts had higher average scores than the United States. In Colorado and the United States, high school juniors are required to take the SAT regardless of whether they are college bound. Some states, including Colorado, do not include the SAT results of high school seniors, which creates a downward bias in scores for the state.

In 2018, 11 of the 17 school districts in the Colorado Springs MSA exceeded the state of Colorado's average high school graduation rate of 80.7%. The U.S. high school graduation rate in 2017 was 85%. In 2017, 8 of the 17 school districts surpassed this national graduation rate.

In 2018, 35.1% of the Colorado Springs MSA's population age 25 and older had some college or an associate degree, which is higher than the state (29.4%) and the United States (28.9%). In addition, 38.6% of this population had attained a bachelor's degree or higher, which is lower than the state (41.7%) but significantly higher than the nation (32.6%) according to U.S. Census Bureau data on educational attainment.

Where Is the Economy Heading?

Because of the strong job postings, the low unemployment rate and diversification of industries, the Colorado Springs MSA will likely outperform the nation once

again in overall growth rates. GDP in the metropolitan region will not be released until mid-December for 2018. However, the Forum is forecasting a growth rate of 3.4% for 2018 and 2.8% for 2019. By way of comparison, Colorado had a 3.5% increase in GDP in 2018, and the Forum is forecasting a growth rate of 3.6% for 2019. The United States had a 2.9% increase in GDP in 2018, and Wells Fargo is forecasting an increase of 2.2% in 2019. The Colorado Springs MSA has been outperforming the national growth rates since 2015.

Job postings continue to be strong and as a leading indicator, that most likely means that unemployment rates will stay low in the region. Job postings consistently hover around 20,000 postings each month. As aforementioned, new job formation has likewise been strong, with 5,734 new jobs from Q1 2018 to Q1 2019. This is above the calculation of 5,600 new jobs needed per year in order to match population growth.

Low regional wages will continue to be a challenge, and unfortunately, no hard data exist to explain the persistent discrepancy. However, it is likely that a legacy of lower wages from past weak economic performance (prior to 2014) and a high percentage of retired military and military spouses are factors. Retired military usually have pensions and benefits and are willing to work for lower wages. Military spouses are young and often have many breaks in employment. The overall lower median age in the region also helps explain the lower regional wages. Nonetheless, wages will need to increase in order to attract and retain the talent needed for the level of growth the region is experiencing.

Low unemployment rates are always favorable, but regional and state businesses have found it challenging to find the talent they need. One thing that has mitigated the talent and skills gap has been the number of entrants and reentrants into the labor force. El Paso County saw a labor force increase of 8,608 people from September 2018 to September 2019 (up 2.5%). Simultaneously, 12,983 more people were employed (up 4%), and 4,285 fewer people were unemployed (down 32%). The likely reasons for this advantageous increase in the labor force include the higher educational attainment of local residents (because more educated people participate more in the labor force), the awareness by workers of the strong labor market, and the higher minimum wage, which makes employment more favorable than social assistance.

The strong economic performance of the state has solidly expanded to the Colorado Springs region. It is no longer an economy overly reliant on one or two sectors, it has strong in-migration of educated workers who skew young, and it has many new businesses and attractions that should perpetuate ongoing economic growth. ✚

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