FIFTY-FOURTH ANNUAL

COLORADO

BUSINESS ECONOMIC OUTLOOK

2019

Sponsored by the University of Colorado Boulder, Leeds School of Business

Leeds School of Business
UNIVERSITY OF COLORADO BOULDER
BUSINESS RESEARCH DIVISION

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Leeds School of Business

Dear Business Colleagues,

It's an exciting time at the Leeds School of Business. Our graduate and undergraduate applications are at record levels, our incoming freshman class is the best we've ever seen in terms of academic preparedness, and we continue to meet our 90%+ placement goal for our graduates year after year, with 2018 being no exception. We have also built out new partnerships with our corporate community, including with firms moving into the region and high-growth ventures throughout the area.

These achievements are the result of one of the key things that differentiates us from other business schools across the region and the country—our unique combination of academic excellence and connection to our business community that is recognized around the world for being innovative, entrepreneurial, and focused on creating economic and social value. In terms of academic excellence, we have made great strides in attracting top talent from around the globe to inspire and educate our students and creating impactful research that is helping businesses like yours. In the last two years alone, we have welcomed new faculty from universities such as Stanford, Berkeley, and Northwestern, as well as Wharton Business School, London Business School, and Harvard Business School.

Connections to our community are mission-critical to us. We actively partner with you to make sure we provide high-quality talent to lead your organizations into the future. For example, our Career Impact initiative is a partnership with key business leaders, locally and globally, to understand the essential skills and attributes that future business professionals need. The insights from this initiative inform innovations in our curriculum and programs. Additionally, we launched our End the Gap initiative, aimed at achieving 50% female enrollment across all of our programs, which will help us contribute the finest, diverse candidates possible to drive your organizations forward.

Another integral part of our efforts to deliver the talent our region needs to remain a leader far into the future is the important partnership we've formed with the College of Engineering and Applied Sciences. The partnership includes curriculum integrations and new ways to connect to the community. We are also pleased to announce that in May 2019 we will break ground for a new building that will physically connect our two schools. 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.

We are delighted to share this 54th 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

Pride Points

#1 Business School in Colorado

MBA applications up 10%
despite 7% nationwide decline

UTD per-capita faculty ranking puts Leeds in the top 25 of all schools worldwide

Incoming class of 2022 is more competitive than ever. 29.35 ACT; 41.4% women;
30% students of color; 11% first generation

Leeds class of 2018 achieved a 90.3% career placement rate within 3 months of graduating

#22 Best Undergraduate Business School across all public universities

Cornell study ranks CU Marketing faculty #3 in the world for per-capita research after Yale and Duke

5 graduate programs for working professionals

Introduction

The Business Research Division (BRD) in the Leeds School of Business is proud to present our 54th annual Colorado Business Economic Outlook. This 2019 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 54th 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 Business Research Division simultaneously generates an econometric forecast by industry, which is disseminated 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 of importance 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; Cindy DiPersio, project coordinator; Kristin Weber, graphic designer; Denise Munn, senior manager of print production and account management; and Rachel Long, John Palmer, and Anna Sernka, student research assistants, for their help in assembling and presenting the 2019 Colorado Business Economic Outlook Forum. The assistance provided by Leeds School staff, including Laurel Page, advancement events experience manager; Amber Hickory, executive director, Marketing and Communications; Erik Jeffries, marketing director; Christopher Perez, graphic designer; Trisha McKean, assistant dean for advancement; and Anna Linn, assistant director of corporate and external relations, is greatly appreciated. I am also appreciative of the help provided by Dirk Martin, Andrew Sorensen, and Julie Poppen with CU Boulder Strategic Media Relations.

Colorado Economic Forecast for 2019

The sections that follow provide a summary of 2018, a forecast for 2019, and industry-specific data analysis and insight into the key factors influencing each sector. We believe this information will prove useful in your business and policy decision-making process.

Richard L. Wobbekind, PhD
Associate Dean
Executive Director, Business Research Division
Leeds School of Business
www.colorado.edu/business/brd

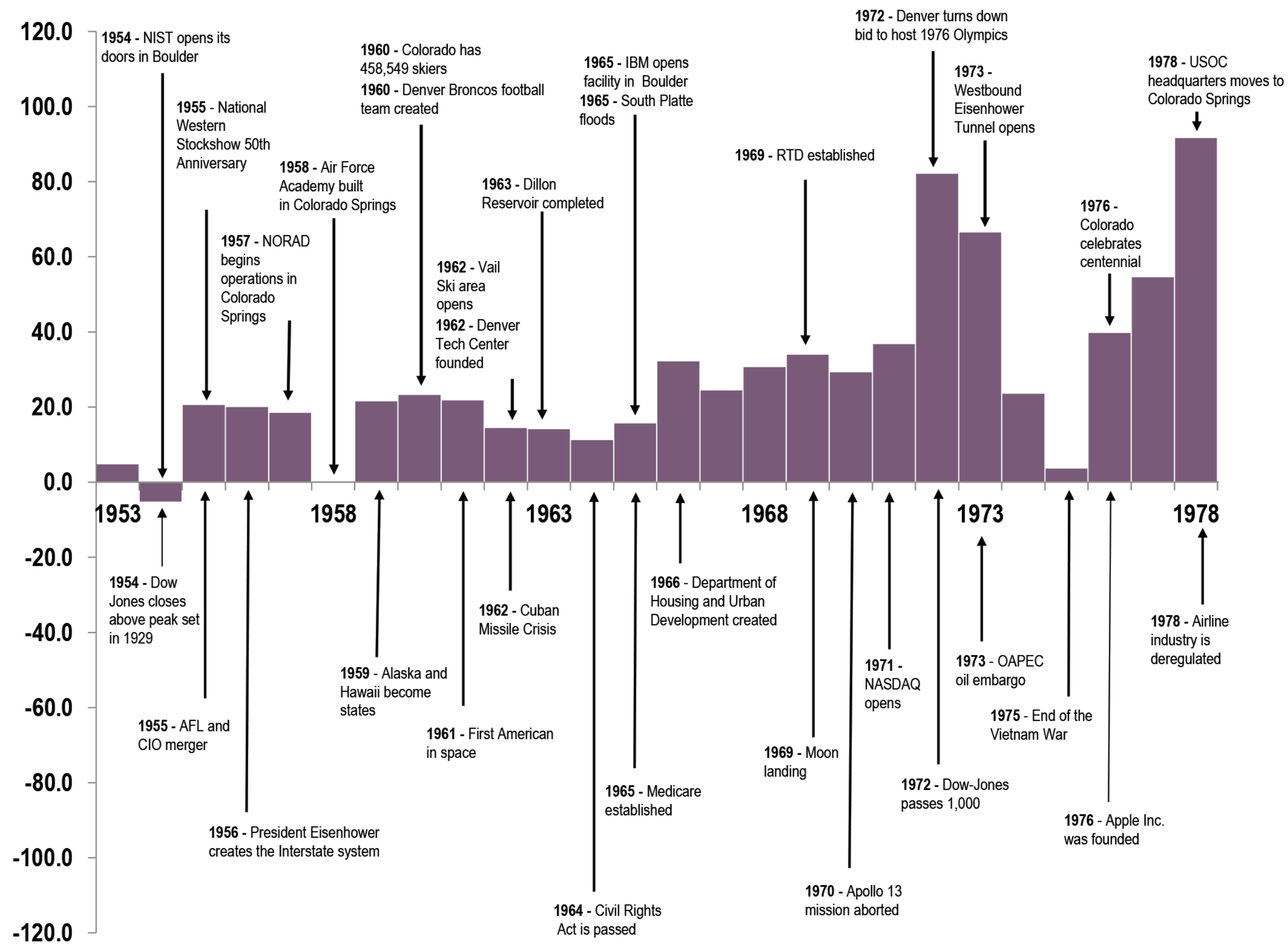
Colorado Then and Now

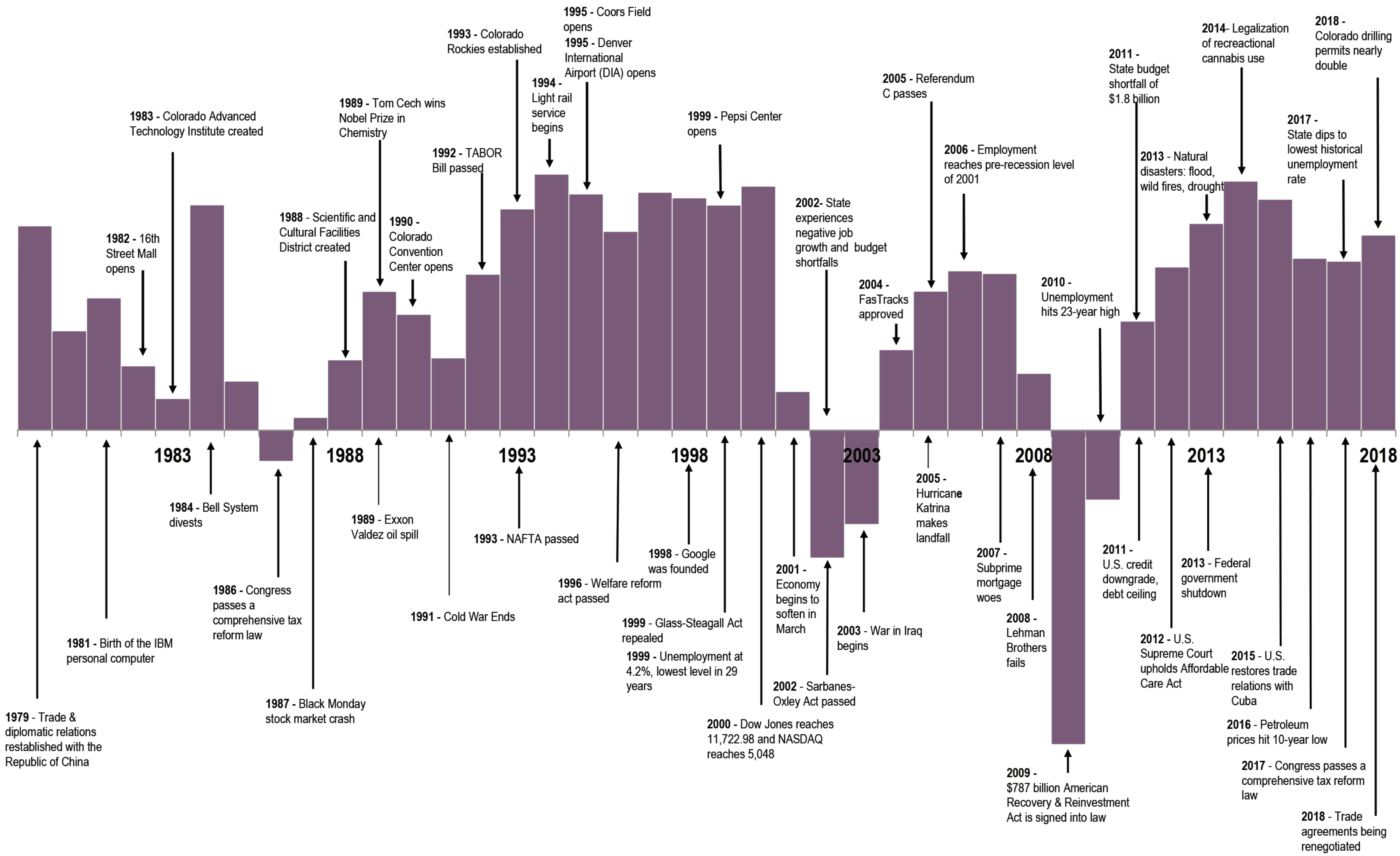
Over the past 48 years, Colorado has experienced (mostly) unrelenting population growth, numerous economic booms and busts, and dynamically changing industries.

In 1970, just over one million individuals were employed in Colorado and the average annual earnings were $6,538. Goods-producing industries accounted for 23.4% of jobs and made up 26.7% of the Colorado GDP. Proprietor employment represented less than 17% of total employment. Females made up 37% of Colorado's labor force according to data from the Colorado Demography Office. Throughout the 1970s, the Colorado economy benefited profoundly from booms in petroleum and mining production as both industries experienced peak employment for the time.

Colorado wage and salary employment has grown to more than 2.6 million, not including proprietor employment in the state, and average annual pay for covered wage and salary earners topped $56,914. Goods-producing sectors now account for just over one-in-eight of total jobs and 16.3% of the Colorado GDP. Proprietor employment stands at 25.6% of total employment. The share of females in the state's labor force increased to 46.2%, nearly a 10 percentage point increase from 1970. In just over four decades, 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 41.2% 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.

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. ✥




1979 - Trade & diplomatic relations restablished with the Republic of China
1981 - Birth of the IBM personal computer
1982 - 16th Street Mall opens
1983 - Colorado Advanced Technology Institute created
1983
1984 - Bell System divests
1986 - Congress passes a comprehensive tax reform law
1987 - Black Monday stock market crash
1988 - Scientific and Cultural Facilities District created
1988
1989 - Tom Cech wins Nobel Prize in Chemistry
1989 - Exxon Valdez oil spill
1990 - Colorado Convention Center opens
1991 - Cold War Ends
1992 - TABOR Bill passed
1993 - Colorado Rockies established
1993
1993 - NAFTA passed
1994 - Light rail service begins
1995 - Coors Field opens
1995 - Denver International Airport (DIA) opens
1996 - Welfare reform act passed
1998
1998 - Google was founded
1999 - Pepsi Center opens
1999 - Glass-Steagall Act repealed
1999 - Unemployment at 4.2%, lowest level in 29 years
2000 - Dow Jones reaches 11,722.98 and NASDAQ reaches 5,048
2001 - Economy begins to soften in March
2002- State experiences negative job growth and budget shortfalls
2002 - Sarbanes-Oxley Act passed
2003
2003 - War in Iraq begins
2004 - FasTracks approved
2005 - Referendum C passes
2005 - Hurricane Katrina makes landfall
2006 - Employment reaches pre-recession level of 2001
2007 - Subprime mortgage woes
2008
2008 - Lehman Brothers fails
2009 - $787 billion American Recovery & Reinvestment Act is signed into law
2010 - Unemployment hits 23-year high
2011 - State budget shortfall of $1.8 billion
2011 - U.S. credit downgrade, debt ceiling
2012 - U.S. Supreme Court upholds Affordable Care Act
2013
2013 - Natural disasters: flood, wild fires, drought
2013 - Federal government shutdown
2014- Legalization of recreactional cannabis use
2015 - U.S. restores trade relations with Cuba
2016 - Petroleum prices hit 10-year low
2017 - State dips to lowest historical unemployment rate
2017 - Congress passes a comprehensive tax reform law
2018
2018 - Colorado drilling permits nearly double
2018 - Trade agreements being renegotiated

U.S. Economic Outlook

U.S. real gross domestic product (GDP) is estimated to have grown 2.9% in 2018—up from 2.2% in 2017 and 1.6% in 2016—marking nine consecutive years of positive economic growth. From a supply perspective, the pickup of economic growth in 2018 was supported by increases in productivity, employment, and capacity utilization. Employment growth was especially strong in 2018, and the unemployment rate dipped further, to 3.7%, in 2018, despite an increase in labor force participation. The strong pace of recent economic activity has pushed actual GDP above potential GDP for the first time since the 2008–09 recession. The unemployment rate is also estimated to be below the natural rate of unemployment.

This robust pace of economic activity has put further upward pressures on prices. Estimated from Consensus Forecasts, consumer prices rose 2.5% in 2018, compared to 2.1% in 2017. Core personal consumer expenditure (PCE) price inflation also ticked up, to 1.9%, just below the Federal Reserve's desired 2% pace. Employment costs rose 2.9%, a somewhat faster pace compared to recent years. Personal income in Q3 2018 was up 4.6% compared to a year earlier.

The pace of economic activity in 2018 was not even, however, throughout the year. Economic growth was especially strong in the first half of the year, but appears to have slowed in the second half. Real GDP growth surged in Q2 2018, by 4.2%, the fastest rise seen in four years, likely spurred by the hefty tax cuts to businesses and consumers in late 2017. Personal consumption growth surged 3.8% in Q2 2018, while business investment growth reached 11.5% and 8.7% in Q1 and Q2, respectively. However, these components of aggregate demand appear to have slowed in the second half of the year to levels more comparable to those seen in 2017.

The forecast for 2019 sees real GDP growth slowing to 2.7%, as the pace of U.S. economic begins to gradually slow toward a long-run, sustainable rate of growth. The risks to this forecast are likely skewed to the downside owing to a number of factors. First, the stimulatory effects of the tax cuts are likely temporary, and it is uncertain when their boosts to businesses and consumers will wane. Second, the Fed has been increasing short-term interest rates in recent quarters, and the rate increases have pushed up longer-term rates. The Fed has signaled its intention to raise short-term rates further in 2019, but the pace of rate increases and their effects on longer-term rates and economic activity is difficult to forecast. Third, trade tensions between the United States and its trading partners escalated significantly in 2018. Tensions between the United States, Mexico, and Canada have eased somewhat with the signing of the United States-Mexico-Canada Agreement; the details of

REAL GROSS DOMESTIC PRODUCT
2009-2019
(In Billions of Chained 2012 Dollars)

Economic Indicator	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018[a]	2019[b]
Real Gross Domestic Product	$15,208.8	$15,598.8	$15,840.7	$16,197.0	$16,495.4	$16,899.8	$17,386.7	$17,659.2	$18,050.7	$18,574.2	$19,066.4
Percentage Change	-2.5%	2.6%	1.6%	2.2%	1.8%	2.5%	2.9%	1.6%	2.2%	2.9%	2.7%
Personal Consumption Expenditures	$10,460.0	$10,643.0	$10,843.8	$11,006.8	$11,166.9	$11,494.3	$11,921.9	$12,248.2	$12,558.7	$12,897.8	$13,246.0
Percentage Change	-1.3%	1.7%	1.9%	1.5%	1.5%	2.9%	3.7%	2.7%	2.5%	2.7%	2.7%
Fixed Business Investment[c]	$1,704.3	$1,781.0	$1,935.4	$2,118.5	$2,206.0	$2,357.4	$2,399.7	$2,411.2	$2,538.1	$2,719.6	$2,851.5
Percentage Change	-14.5%	4.5%	8.7%	9.5%	4.1%	6.9%	1.8%	0.5%	5.3%	7.2%	4.9%
Government Expenditures	$3,307.3	$3,307.2	$3,203.3	$3,137.0	$3,061.0	$3,032.3	$3,088.5	$3,132.5	$3,130.4	$3,182.1	$3,261.6
Percentage Change	3.5%	0.0%	-3.1%	-2.1%	-2.4%	-0.9%	1.9%	1.4%	-0.1%	1.7%	2.5%
Net Exports	-$484.8	-$565.9	-$568.1	-$568.6	-$532.8	-$577.7	-$724.9	-$786.2	-$858.7	-$887.5	-$950.0
Percent of Real GDP	-3.2%	-3.6%	-3.6%	-3.5%	-3.2%	-3.4%	-4.2%	-4.5%	-4.8%	-4.8%	-5.0%

[a]Estimate. [b]Forecast. [c]Components 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.

that agreement have yet to be worked out. Tensions with China, however, remain high. Fourth, the U.S. budget deficit widened significantly in 2018, owing both to tax cuts and increased government spending. The increased budget deficit could crowd out financing to businesses and consumers, and could put pressure on the U.S. Congress to limit government spending in the future. Finally, economic activity among major trading partners (notably China, Germany, Japan, and Canada) also shows signs of slowing, which would lower the demand for U.S. goods and services.

Total Output

The pace of U.S. economic activity picked up speed in 2018, with real GDP growth at 2.9%. Most components of aggregate demand contributed to the acceleration. Growth of business fixed investment was especially strong, at 7.2% (compared to 5.3% in 2017). Government spending grew 1.7% after being essentially flat in the previous year. Net exports continued to be a drag on economic growth in 2018. Expectations for 2019 are a modest loss of momentum, with the economy hitting natural speed barriers—especially a tight labor market—and the Fed continuing to raise short-term interest rates.

Consumer Expenditures

Consumer spending on goods and services grew at an estimated 2.7% in 2018, just slightly faster than the pace seen in 2017. The acceleration was supported by an uptick in spending on services, which accounts for about two-thirds of overall consumer spending. Spending on consumer goods slowed somewhat in 2018, owing to a slower rate of spending on durable goods.

The growth of consumer spending was sustained by strong gains in labor and capital income, and by lower tax liabilities owing to the recent tax-rate cuts. With respect to labor income, the strong economy in 2018 drove employment to levels not seen since the 2007–08 recession and pushed wage rates at a somewhat faster rate compared to recent years. The recent tax cuts are anticipated to continue boosting spending in 2019 as consumers gradually adjust their spending habits. Consumer spending in 2018 was also supported by improved consumer balance sheets, with consumers benefiting from increased asset prices (especially home prices). Consumers also took advantage of better access to credit markets and consumer indebtedness rose to historic levels.

Investment

The pace of investment spending quickened in 2018 to an estimated 7.2%. The improved performance was primarily due to a surge in business investment. This robust performance of business investment was boosted by legislation in 2017 that reduced the tax liabilities of business and increased incentives to invest. In contrast, investment in residential housing was about flat in 2018 compared to the previous year. While the effects of recent legislation on residential housing are difficult to assess, it will likely reduce consumers' incentives to purchase houses. The rush of investment spending slowed significantly in Q3 2018, however, with business investment slowing to a 0.8% annualized pace and residential investment declining at a 4% annualized rate.

Government Expenditures

Government spending grew at an estimated 1.7% in 2018 after declining slightly in 2017. 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 forecast to increase somewhat faster in 2019, at a 2.5% pace. These surges in federal spending, along with substantial tax cuts passed in 2017, are expected to widen appreciably the federal budget deficit in coming years. Outlays of state and local governments also increased in 2018, although at a somewhat slower rate compared to the federal government.

Net Exports

Net exports continued to be a drag on U.S. economic growth in 2018. The trade deficit was 4.8% of real GDP, about the same as in 2017 but significantly higher than in years prior to 2017. Exports grew about 4% in 2018, boosted by strong economic growth among major trading partners but held back by a stronger U.S. dollar. Imports grew at a slightly faster pace, spurred by robust domestic demand and by the stronger dollar. The effects of trade tension between the United States and several countries in 2018 is difficult to discern, although a surge in agricultural trade in the early half of 2018 is attributed to attempts to avoid expected tariffs.

Looking ahead, the trade deficit in 2019 will likely increase slightly, to about 5% of real GDP. There are significant uncertainties regarding the forecast, however. Trade tensions between the United States and China are continue to be especially high and could escalate in 2019 if the two countries adhere to a "tit-for-tat" strategy. Economic activity among major trading partners slowed in the second half of 2018, and could also widen the trade deficit further if that weakness extends into 2019.

Colorado Economic, Employment, and Population Outlook

Economy

After signaling a slowdown, Colorado's economy was marked by a reacceleration in 2017 and 2018. Employment growth slowed to under 1.9% in September 2017—the lowest level in almost six years—before staging a rebound that led to 3% growth in mid-2018. Likewise, real GDP growth in Colorado slowed to just 1.4% in 2016—the lowest level since 2010—before rebounding to 3.6% in 2017 and 3.5% in Q2 2018. Personal income and per capita personal income followed similar trajectories, slowing to 1.9% and 0.3% in 2016 before resuming growth. Even population net migration slowed from 69,065 in 2015 to 59,628 in 2016 and 47,640 in 2017 according to the Colorado State Demography Office.

But despite slower growth in 2015-2017, Colorado has nonetheless outperformed most other states in 2018. Quarterly real GDP increased at a seasonally adjusted annual rate of 2.8% in Q1 and 3.5% in Q2 2018, ranking Colorado sixth (tied) in the country for the pace of GDP growth in the second quarter. In terms of employment, Colorado grew jobs at a pace of 3% in 2013, 3.5% in 2014, and 3.1% in 2015 before slowing to 2.4% in 2016 and 2.2% in 2017—but the 2.2% growth still was the sixth-fastest in the country. Colorado's per capita

STATE AND NATIONAL ECONOMIC COMPARISON, 2007-2017

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Colorado											
Real GDP Growth (Percent Change)	3.3	1.2	-2.0	0.9	1.5	1.8	3.3	4.4	4.3	2.3	2.7
Personal Income Growth (Percent Change)	6.6	3.3	-4.6	3.3	8.7	6.3	5.2	8.9	4.8	1.9	5.8
Per Capita Personal Income ($)	41,889	42,492	39,851	40,549	43,502	45,637	47,308	50,746	52,228	52,372	54,646
Per Capita Personal Income Growth (Percent Change)	4.7	1.4	-6.2	1.8	7.3	4.9	3.7	7.3	2.9	0.3	4.3
Employment Growth (Percent)	2.3	0.8	-4.5	-1.0	1.6	2.4	3.0	3.5	3.1	2.4	2.2
Unemployment Rate (Percent)	3.7	4.8	7.3	8.7	8.4	7.9	6.9	5.0	3.9	3.3	2.8
Labor Force Participation Rate (Percent)	72.2	72.1	70.9	70.4	69.7	69.1	68.2	67.7	66.8	67.0	68.1
CPI-All Items (Percent Change)	2.2	3.9	-0.6	1.9	3.7	1.9	2.8	2.8	1.2	2.8	3.4
All Items Less Food and Energy (Percent Change)	1.8	2.8	1.7	1.4	2.3	2.0	3.2	2.9	3.3	4.0	3.1
Shelter (Percent Change)	2.2	1.7	1.2	0.5	1.7	2.7	4.5	5.0	5.7	7.3	5.1
United States											
Real GDP Growth (Percent Change)	1.9	-0.1	-2.5	2.6	1.6	2.2	1.8	2.5	2.9	1.6	2.2
Personal Income Growth (Percent Change)	5.5	3.6	-3.1	4.1	6.2	5.1	1.3	5.7	4.9	2.6	4.4
Per Capita Personal Income ($)	39,844	40,904	39,284	40,545	42,727	44,582	44,826	47,025	48,940	49,831	51,640
Per Capita Personal Income Growth (Percent Change)	4.5	2.7	-4.0	3.2	5.4	4.3	0.5	4.9	4.1	1.8	3.6
Employment Growth (Percent)	1.1	-0.5	-4.3	-0.7	1.2	1.7	1.6	1.9	2.1	1.8	1.6
Unemployment Rate (Percent)	4.6	5.8	9.3	9.6	8.9	8.1	7.4	6.2	5.3	4.9	4.4
Labor Force Participation Rate (Percent)	66	66	65.4	64.7	64.1	63.7	63.2	62.9	62.7	62.8	62.9
CPI-All Items (Percent Change)	2.8	3.8	-0.4	1.6	3.2	2.1	1.5	1.6	0.1	1.3	2.1
All Items Less Food and Energy (Percent Change)	2.3	2.3	1.7	1.0	1.7	2.1	1.8	1.7	1.8	2.2	1.8
Shelter (Percent Change)	3.7	2.5	1.1	-0.4	1.3	2.2	2.3	2.8	3.1	3.4	3.3

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

personal income growth rate slowed from 7.3% in 2014 to 2.9% in 2015 and 0.3% in 2016, before reaccelerating to 4.3% in 2017—fourth highest in the country.

In addition to accelerating real GDP growth in the first half of 2018, total personal income rose 5.6% in Q2 2018 year-over-year, and per capita personal income increased 4.2%. The state's labor force increased 2.4% year-over-year in September—the second-fastest rate in the country—and the unemployment rate stood at 3.1%, the 12th-lowest rate nationally. Wage growth overall accelerated in 2018, with the state recording 3.1% growth in average annual pay for the four quarters ending in Q1. Wage growth was recorded across all industries.

The U.S. city average all items Consumer Price Index for All Urban Consumers (CPI-U) increased by 1.6% in 2014, 0.1% in 2015, 1.3% in 2016, and 2.1% in 2017. Inflation increased to 2.5% during the first half of 2018. Core inflation—all items less food and energy—increased nationally 1.7% in 2014, 1.8% in 2015, 2.2% in 2016, and 1.8% in 2017, accelerating to 2.1% in the first half of 2018.

Inflation is reported by the Bureau of Labor Statistics for the Denver-Aurora-Lakewood Metropolitan Statistical Area (MSA), which is often used as a proxy for Colorado. A reflection of the hot local economy, prices increased faster than the nation, at 2.8% in 2014, 1.2% in 2015, 2.8% in 2016, and 3.4% in 2017. Prices were up 3.2% in the first half of 2018. Core inflation in the region increased 2.9% in 2014, 3.3% in 2015, 4% in 2016, and 3.1% in 2017. Shelter prices increased 5% in 2014, 5.7% in 2015, 7.3% in 2016, and 5.1% in 2017.

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 54 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 North American Industry Classification System (NAICS) supersectors by providing an overview of labor force and wage and salary employment totals.

Employment

After growing by 56,200 jobs (2.2%) in 2017, the pace of employment growth accelerated in Colorado in 2018, with the state adding 65,000 jobs, or 2.4% growth. This trend will continue in 2019, with the state adding 53,200 jobs, or 2% growth—a pace that will likely keep Colorado in the top 10 nationally. The three private sector industries that will record the most jobs added in 2019 are Professional and Business Services (11,400 jobs); Trade, Transportation, and Utilities (8,700); and Leisure and Hospitality (7,500). Overall, growth is projected in every industry.

Year-over-year employment growth was recorded in all of Colorado's seven metropolitan areas in 2018. By MSA, the fastest year-over-year growth through September occurred in Colorado Springs (5%), Greeley (4.3%), Fort Collins (3.1%), Denver-Aurora-Broomfield (2.8%), Grand Junction (2.1%), Boulder (1.9%), and Pueblo (0.5%). All MSAs are projected to decelerate in 2019 but grow nonetheless, led by Colorado Springs and the Northern Colorado MSAs.

Most businesses in the economy are small businesses—88.6% of wage and salary establishments have fewer than 50 employees (similar to the 88.3% nationally). These small businesses represent 49.3% of jobs in Colorado.

Labor Force and Unemployment

The unemployment rate in Colorado recorded the seventh-consecutive year of declines in 2017, falling from an annual rate of 8.7% in 2010 to 2.8% in 2017. The unemployment rate increased modestly in 2018, reflecting a growing labor force through greater participation, rather than a deteriorating employment environment. The unemployment rate is projected to increase to 3% and 3.1% in 2018 and 2019, respectively.

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.

Over the last 42 years, the average national LFPR was 64.9%. Most recently, in October 2018, it was slightly below average, at 62.9%. Compare this to Colorado's LFPR, which has averaged 70.6% over the past 42 years. Over the past four years, Colorado's LFPR has increased from its most recent low of 66.6% in August 2015 to 69% in October 2018, ranking Colorado third in the nation for the highest LFPR, behind Minnesota with 70% and North Dakota with 69.6%.

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Colorado Economic, Employment, and Population Outlook

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COLORADO RESIDENT LABOR FORCE
2009-2019
(Not seasonally adjusted) (in thousands)

Labor Force	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018[a]	2019[b]
Colorado Labor Force	2,723.0	2,724.4	2,736.1	2,757.2	2,767.2	2,799.5	2,824.8	2,893.3	2,992.31	3,094.6	3,181.3
Total Employment	2,524.4	2,486.4	2,507.3	2,539.9	2,577.6	2,659.5	2,715.1	2,798.9	2,907.47	3,001.0	3,082.0
Unemployed	198.5	238.0	228.8	217.3	189.6	140.0	109.7	94.3	84.8	93.6	99.2
Unemployment Rate	7.3%	8.7%	8.4%	7.9%	6.9%	5.0%	3.9%	3.3%	2.8%	3.0%	3.1%

[a]Estimated. [b]Forecast. 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
2009-2019
(in thousands)

Sector	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018[a]	2019[b]
Natural Resources and Mining	24.2	24.4	27.9	30.3	30.6	34.1	30.7	23.7	25.7	29.4	30.8
Construction	131.3	115.1	112.5	115.8	127.5	142.2	148.8	155.3	163.6	171.8	176.8
Manufacturing	128.0	124.2	128.1	130.9	132.8	136.6	141.0	142.7	144.0	146.7	148.4
Trade, Transportation, and Utilities	403.8	397.6	401.8	409.7	420.2	432.8	445.8	454.1	460.3	470.5	479.2
Information	74.7	72.0	71.4	69.8	69.8	70.3	70.7	71.9	71.7	74.6	76.0
Financial Activities	148.0	144.3	143.9	146.7	151.0	153.9	159.0	163.8	167.5	170.0	171.7
Professional and Business Services	331.8	330.8	341.5	356.9	372.6	386.5	398.4	405.7	413.2	426.3	437.6
Education and Health Services	256.5	263.9	272.9	281.8	285.9	298.0	313.2	325.7	333.5	340.2	346.7
Leisure and Hospitality	262.4	263.0	271.4	279.7	289.4	300.4	312.8	323.6	333.4	340.5	348.0
Other Services	93.7	92.4	93.7	96.0	97.7	100.9	104.2	107.3	108.7	110.1	111.4
Government	390.5	393.8	392.9	394.9	403.7	408.5	417.1	428.7	436.9	443.5	450.2
Total[c,d]	2,244.9	2,221.5	2,257.8	2,312.2	2,381.1	2,464.2	2,541.7	2,602.4	2,658.6	2,723.6	2,776.8

[a]Estimated. [b]Forecast. [c]Nonagricultural self-employed, unpaid family workers, and domestics are excluded from the total.

[d]Due 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.

AVERAGE ANNUAL PAY BY SECTOR
COLORADO AND THE UNITED STATES (Q2 2017-Q1 2018)

NAICS	Sector	Colorado	1-Year Growth	United States	1-Year Growth
11	Agriculture, Forestry, Fishing, Hunting	$36,723	3.8%	$34,843	3.4%
21	Mining	118,425	0.8	102,813	-1.1
22	Utilities	100,048	1.3	107,738	2.1
23	Construction	60,055	2.7	61,174	2.7
31-33	Manufacturing	69,833	2.9	67,573	2.3
42	Wholesale Trade	83,736	3.1	76,474	2.0
44-45	Retail Trade	31,599	1.1	31,473	2.2
48-49	Transportation and Warehousing	56,405	3.8	52,121	1.8
51	Information	100,681	2.4	107,662	6.3
52	Finance and Insurance	94,290	2.6	108,113	4.0
53	Real Estate and Rental and Leasing	57,798	3.6	57,526	2.8
54	Professional and Technical Services	94,842	3.4	94,701	2.7
55	Mgmt of Companies and Enterprises	149,596	13.6	121,433	2.8
56	Administrative and Waste Services	41,147	2.8	39,917	3.1
61	Educational Services	40,595	2.2	50,320	1.9
62	Health Care and Social Assistance	50,124	0.7	49,377	1.4
71	Arts, Entertainment, and Recreation	36,350	0.7	37,946	2.1
72	Accommodation and Food Services	22,405	4.7	20,903	2.8
81	Other Services	39,793	2.3	37,616	3.0
	Government	55,308	2.1	56,099	2.2
	Total, All Industries	57,834	3.3	55,898	2.6

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

This growth has come largely from increased participation of the population age 24 and older, with adults age 24–54 increasing participation by 1.3 percentage points, adults age 55–64 increasing participation by 1.7 percentage points, and adults age 65+ increasing participation by 0.7 percentage points. These increases can partially be explained through the higher education level of this segment of the population because increased education corresponds with a higher LFPR. However, not all age groups saw increased participation. The LFPR of civilians age 20–24 actually decreased by 1.3 percentage points, while the population age 16–19 decreased participation by 0.4 percentage points. Both these decreases can be partially explained by higher rates of school enrollment, as well as more rigorous classes and extracurricular activities.

Colorado's increased LFPR of 2.4 percentage points since August 2015 has resulted in a labor force increase of 120,000, from 3.0 million to 3.1 million, compared to what it would have been if Colorado maintained its 2015 low. This suggests that the rising LFPR has resulted in increased employment of around 100,000, assuming the ratio of civilians employed to labor force remained the same.

However, even though the LFPR is on the rise, it has not reached 74.5%, Colorado's July 1998 peak. If Colorado were to achieve this LFPR, the labor force would increase by 250,000, from 3.1 million to 3.3 million, which suggests increased employment of around 240,000 people. This would also rank Colorado first in the nation for LFPR.

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

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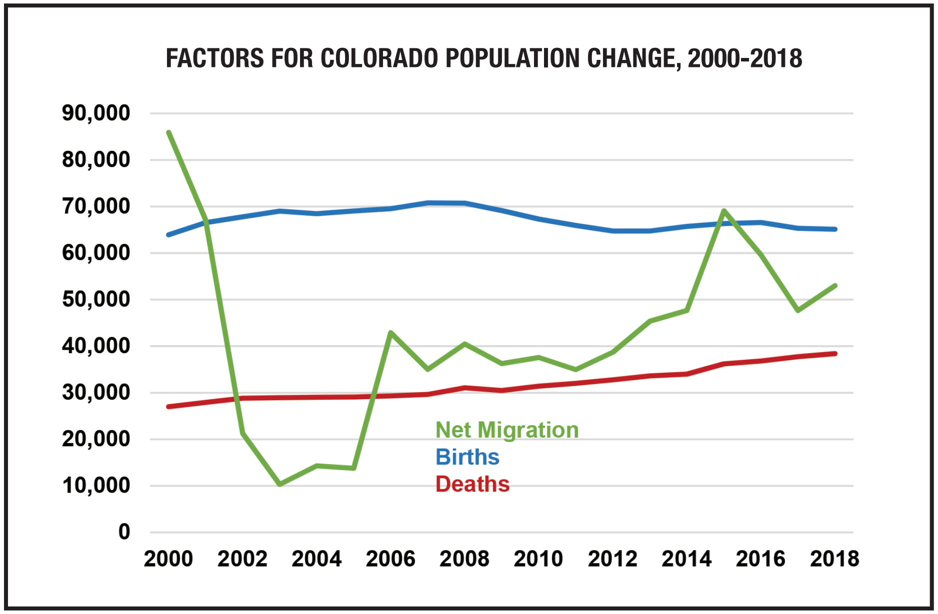
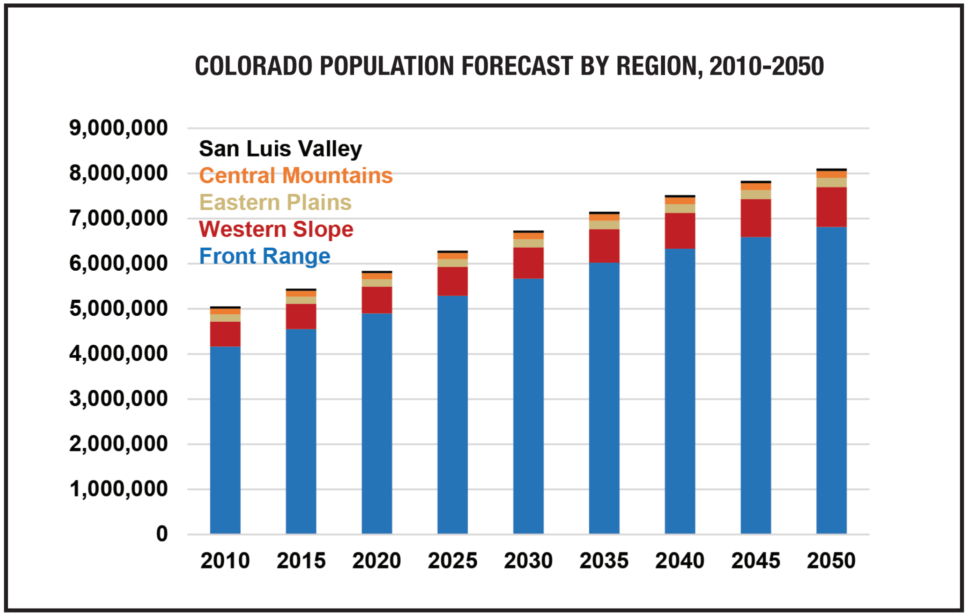
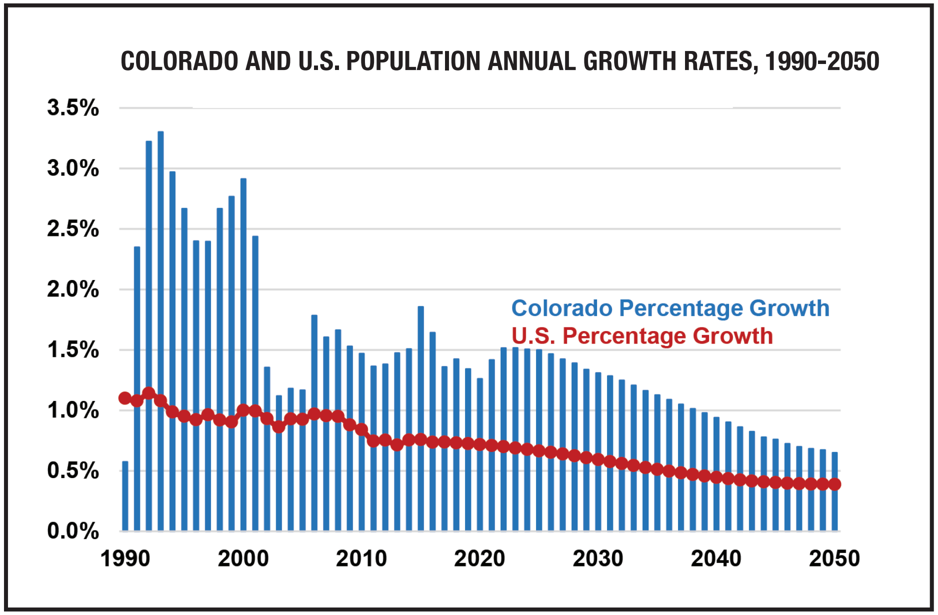
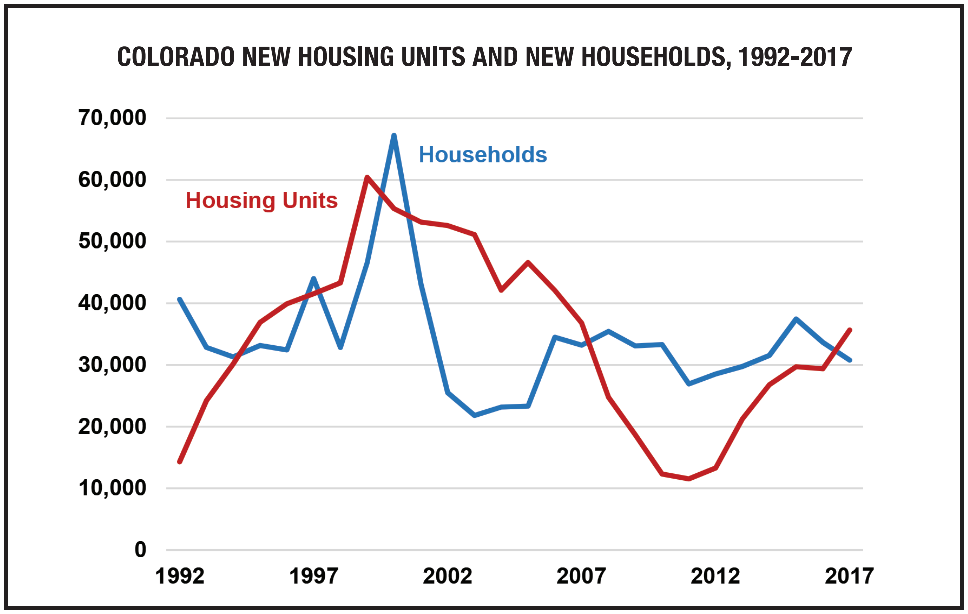








Source: Colorado Department of Local Affairs, State Demography Office.

Colorado Economic, Employment, and Population Outlook

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

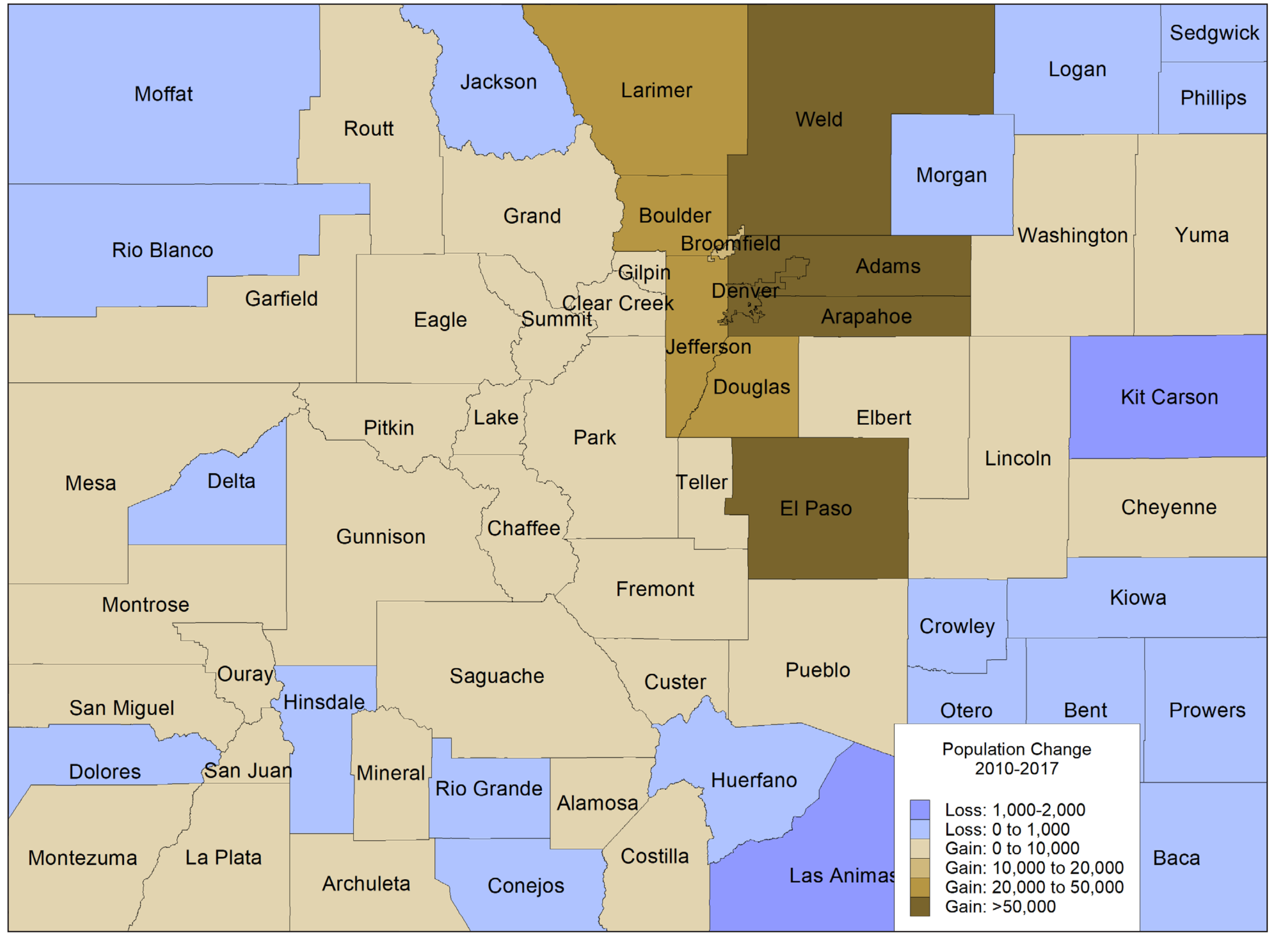
Colorado's July 2017 population was estimated at 5,609,445, an increase of 75,205 residents from the previous year. The increase comprised 65,312 births, minus 37,747 deaths, and net migration of 46,059. The state's increase of 1.4% was twice that of the nation as a whole and ranked Colorado as the ninth-highest growth rate. Colorado received the eighth-highest amount of total growth—behind states like Texas, Florida, California, and Arizona. The population growth from 2016 to 2017 showed a continued pattern of slowdown due to fewer migrants, more deaths, and fewer births.

The total fertility rate for Colorado fell during the recession and is still below pre-recession rates. Total fertility in Colorado is 1.7 below the national average of 1.8, where replacement levels are 2.1. Deaths have been steadily increasing from 28,000 annually in 2000 to 37,700 annually in 2017 due to the aging of the population. Colorado's net migration of 46,626 ranked ninth among states in the United States. Florida ranked first, with over 300,000 net migrants. Colorado's net migration per 1,000 in population is 8.4, which ranks 10th in the United States. 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 its growth rate of 3% during the 1990s. In the 1990s, the total growth in the state surpassed 100,000 seven different years. Since 2001, Colorado has increased by 100,000 one time.

Change by County

Growth throughout the state has been disparate, with 95% of the population growth between 2010 and 2017

COLORADO POPULATION CHANGE, 2010-2017



Source: Colorado State Demography Office.

occurring in the Front Range and 64% of the total in the Denver Metro area. Between 2010 and 2017, a total of 16 counties experienced a decline in natural increase; that is, there were more deaths than births in during this time period. Twenty-three counties experienced net migration loss—or saw more people leave the county than move in—between 2010 and 2017. Seven counties experienced both more deaths than births and more people leaving than entering, creating a challenge for long-run sustainability. Six of these counties are in Colorado's Southeast corner: Baca, Bent, Crowley, Kiowa, Las Animas, and Otero; the final county is located in the southwest area of the state: Dolores.

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LARGEST AND SMALLEST POPULATION BY COUNTY, 2017

	Rank	County	Total Population	County	Population Change
Largest	1	Denver	705,651	El Paso	12,201
	2	El Paso	701,283	Weld	10,141
	3	Arapahoe	643,257	Denver	9,304
	4	Jefferson	575,193	Douglas	7,665
	5	Adams	503,375	Arapahoe	5,991
Smallest	1	San Juan	714	Kit Carson	-465
	2	Mineral	752	Logan	-150
	3	Hinsdale	791	Rio Blanco	-89
	4	Kiowa	1,364	Sedgwick	-85
	5	Jackson	1,375	Yuma	-70

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

COMPONENTS OF COLORADO RESIDENT POPULATION, 2009-2019 (In Thousands)

Year	Births (Resident)	Deaths (Resident)	Natural Increase	Net Migration	Population Change	Total Population
2009	69.1	30.5	38.6	36.3	74.9	4,976.9
2010	67.3	31.4	35.9	37.6	73.5	5,050.3
2011	65.9	32.0	33.9	34.9	68.9	5,119.2
2012	64.7	32.8	32.0	38.7	70.7	5,189.9
2013	64.7	33.6	31.1	45.3	76.5	5,266.3
2014	65.7	34.0	31.7	47.7	79.4	5,345.7
2015	66.3	36.2	30.1	69.1	99.2	5,444.9
2016	66.6	36.8	29.7	59.6	89.4	5,534.2
2017	65.3	37.7	27.6	47.6	75.2	5,609.4
2018[a]	65.1	38.4	26.7	53.0	79.7	5,689.1
2019[b]	65.3	39.1	26.2	50.0	76.2	5,765.3

[a]Estimated. [b]Forecast. Source: Colorado Department of Local Affairs, State Demography Office (July 1 estimates).

From 2016 to 2017, El Paso County experienced the largest population growth, increasing by 12,201, followed by Weld, with an increase of 10,141. Denver remains the largest populated county. The largest decline in population was in Kit Carson County, with a decline of 475 related to the closing of the Kit Carson Correctional Center. The fastest-growing counties were primarily in nonmetro areas, except for Weld and Broomfield. The fast growth in Crowley was due to the reassignment of prisoners from Kit Carson.

Housing

Housing unit growth has picked up to an estimated 35,600 between 2016 and 2017 and finally surpassed household formation for the first time since 2007. The growth in housing units keeping pace with households should help to alleviate some of the supply and price pressure. Household formation is forecast to continue to grow annually around 33,000 – 35,000. Demographically, it will be important to keep an eye on both the baby boomers currently age 54 to 72 and the millennials age 22 to 37. The boomers are quickly aging into the 70+ age group, where downsizing often occurs or moving to homes with fewer stairs and smaller yards to maintain. 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 27 years old in 2018. The majority of millennials are still in age groups where they would primarily live at home or be renters, but as a larger share of them 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 forecast to continue to grow but at a slowing rate. The population is forecast to increase annually in the mid-70,000s through 2020, with natural increase forecast to remain in the high- to mid-20,000s and net migration to remain in the high 40,000s to low 50,000. 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, aging population, slowing labor force growth, and slowing international immigration. Although Colorado's growth is forecast to slow, it is forecast to continue to outpace the nation, growing at roughly twice the rate. Colorado's share of national population is projected to increase from 1.7% of the U.S. population currently to 2.1% by 2050.

The largest population growth by county continues to be along the Front Range. Between 2018 and 2025, the state is forecast to increase by almost 600,000. Eighty-seven percent, or 520,000 people, is forecast for the Front Range, and of that, 300,000 is forecast for the Denver Metro area. The fastest growth is forecast for the north Front Range, at an annual average 2.4%, or 120,000. The 2050 forecast for the state is 8.1 million, with 6.8 million along the Front Range, or 84% of the total population.

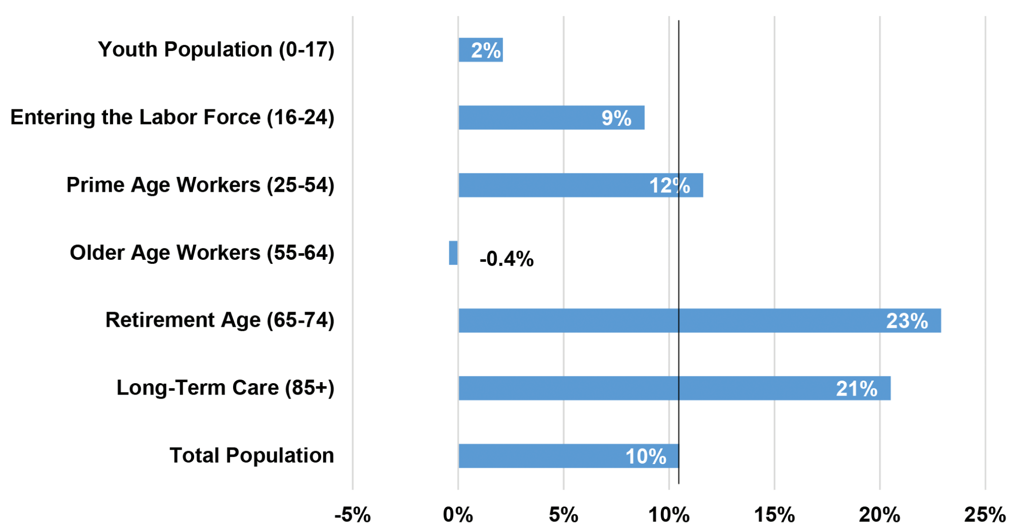
Age

Age is one of the most important characteristics about a population because people change their behavior and spending patterns by age. Similarly, they participate in the labor force differently and buy or rent housing differently by age. Colorado is aging relatively fast, with the third-fastest growth in the nation for the population over 65. Colorado is also one of the youngest states, with the sixth-lowest share of its population over 65 years old.

Between 2010 and 2017, the 65+ population increased by 217,000 or an annual average growth rate of 4.8%. Between 2010 and 2017, the total population increased by 560,000, or an annual average growth rate of 1.5%. The growth of the 65+ population was 38% of the total growth in the state, yet the 65+ represented only 13% 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 very few people over 65) 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+ age 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. The current tight labor force is due in part to the aging of Colorado, with the fastest growth in the number of retirees it has ever experienced, as well as slower growth in new entrants.

PROJECTED CHANGE IN SPECIFIC AGE GROUP POPULATIONS IN COLORADO, 2018-2025



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

Population Summary

Colorado recent growth has been slowing due to slowing births, increasing deaths, and slower net migration. Although it is slowing relative to historical trends, it is still relatively fast compared to the United States, and Colorado has grown by over 560,000 people since 2010 from both births and migration. The growth has been disparate in the state, with 95% of the growth along the Front Range. A dominate driver for the migration is job growth. The population forecast for Colorado is for continued slowing but the growth is forecast to be twice as fast as the United States. There are risks to the forecast, with the primary question whether Colorado can attract and retain the workers it needs to fill current and future jobs. Other risks include affordable housing, affordable and available daycare, aging of the labor force, and educational attainment and achievement of Coloradans.

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Agriculture

Farmers are always fighting the weather, but now they are weathering a storm of low commodity prices, trade uncertainties, and unfavorable economic conditions.

While Colorado's economy is one of the fastest-growing in the nation, increased prices for feed, fertilizer, fuel, and labor, as well as higher interest rates, are taking a big bite of farm profits. With higher margins, industries such as construction and oil and gas are able to pay higher salaries and absorb these inflating costs, while farmers struggle with the increases.

It is projected that Colorado's 2018 farm and ranch income will be the lowest since 2002, with totals expected to slip from $900.6 million in 2017 to $690 million in 2018, ticking up to $706 million in 2019. Farm income prospects could be rosier if farmers and ranchers can defer expenses such as maintenance and purchases of equipment for a few more years. However, expenses such as fuel and fertilizer to plant crops and feed for animals cannot be deferred.

Colorado's farm income is expected to decline more than the national figure, with a drop of 23% in 2018, and a slight strengthening in 2019. The USDA projects a 19.9% decline in national farm income in 2018. Colorado's farm income is closely tied to livestock, so a decline in cattle income has a greater effect for the state.

As innovation and technology drive profits in other industries, the economies of scale created by the use of these technologies on the farm may have the opposite impact on agriculture. Farmers grow more crops on less land, using less water and fertilizer, but find themselves in a market of abundance that drives commodity prices down, and have to produce more just to stay afloat. Smaller operations go out of business when they do not have the equity to survive market swings, leading to more consolidation and the perception of "large corporate farms."

In the September 2018 Purdue University/CME Group Ag Economy Barometer reading, farmers showed a pessimistic outlook, indicating that financial conditions on their farms deteriorated significantly as 2018 unfolded and their expectations for the future weakened as well. Creighton's Rural Mainstreet confidence index, which reflects expectations for the economy six months out, sank to a very weak 42.6 in October 2018 versus September's 49.5, indicating a pessimistic economic outlook among rural bankers.

Uncertainty stemming from the inability of Congress to pass a farm bill, and the known and unknown effects of tariffs add to the unsettled atmosphere.

The United States, Mexico, and Canada have agreed to a new trade pact; however, the United States still has tariffs in place on imports of steel and aluminum from those countries, and they still have retaliatory tariffs in place that impact food and ag exports. Farmers and ranchers will not see the full benefit of the new trade agreement until those tariffs are rescinded. Farmers wanting to build new grain bins or install new center pivot irrigation systems are reconsidering when they see prices have increased because of steel tariffs.

Farmers are wondering what the future will hold and how small a margin they can have and still survive to farm another year. Businesses in rural Colorado are suffering, from equipment dealers to small-town cafes.

COLORADO FARM INCOME AND PRODUCTION EXPENSES 2009-2019 (In Millions of Dollars)

Year	Gross Value of Farm Revenue	Total Farm Production Expenses	Net Farm Income
2009	$6,910.1	$6,044.2	$865.9
2010	7,089.4	5,856.4	1,233.0
2011	8,487.1	6,650.0	1,837.1
2012	8,345.4	7,006.2	1,339.2
2013	8,550.2	7,210.6	1,339.6
2014	9,087.2	7,947.8	1,139.4
2015	8,804.3	7,313.2	1,491.1
2016	7,497.5	6,361.5	1,136.0
2017[a]	8,084.7	7,184.1	900.6
2018[b]	8,040.0	7,350.0	690.0
2019[c]	8,056.0	7,350.0	706.0

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

Source: Colorado Business Economic Outlook Ag Committee.

INDUSTRY SNAPSHOT AGRICULTURE

Nominal GDP, 2017 ($ Billions)	2.7
Real GDP, 2017 ($ Billions, 2012 Dollars)	3.6
2017 Real GDP Growth Rate	-3.3%

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

Cattle Still King in Colorado

Beef and cattle continue to drive Colorado's ag economy, accounting for 67% of the total value of production and $3.4 billion in cash receipts. Value of livestock and products for 2018 is estimated to be about 3% lower than 2017, with less than a 1% drop in value projected for 2019. The national cattle herd is still growing, but at a moderating pace. Ranchers are selling a higher volume of cattle but at lower prices, with a season average of $116 per 100 pounds (cwt) projected for 2018 versus $117.50/cwt for 2017 and the high of $153/cwt in 2014. Consumer demand for beef is good, and will only increase as incomes rise in developing countries.

Not all Colorado beef producers had a great year. Nearly half the state is in extreme to exceptional drought. Of Colorado's 64 counties, 57 are designated as drought disaster sites by the U.S. Department of Agriculture. Ranchers in those areas have reduced herds by selling feeder calves earlier to save on feed costs. Those keeping their cattle will face higher expenses.

Market access to China for U.S. beef was finally reestablished in 2017. However, in retaliation for U.S. tariffs, China has upped the tariff on U.S. beef to 37% from 12% and imposed tariffs on hides and skins, which are Colorado's largest agricultural exports to the country. Year-to-date through September, hides and skins exports to China are down 39%.

A bright spot for beef exports is Korea. With decreases in import tariffs brought about by the 2012 Korea/U.S. trade agreement, U.S. beef gained a competitive advantage over other beef suppliers, and Korean importers began increasing purchases of U.S. beef. Colorado beef exports to Korea for January to August 2018 totaled $208 million, an increase of 73% compared to the prior year. This agreement, which was revised in September 2018, will continue to reduce import tariffs on U.S. beef. Colorado's beef producers also stand to benefit from tariff reductions under a proposed U.S./Japan bilateral trade agreement.

Retaliatory tariffs have also affected the U.S. hog market. China has been buying pork from Poland and Spain most recently, and exports to Mexico have decreased. U.S. exports are not growing as quickly as domestic production. The tonnage of pork exports is up but the value of exports is down.

Feeder lamb prices are lower in 2018, partly due to higher imports. At the end of July, the United States had a full quarter's worth of lamb and mutton in cold storage, waiting to be sold, which also puts downward pressure on prices.

VALUE ADDED BY COLORADO AGRICULTURAL SECTOR
2009–2019
(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
2009	$3,462.9	$2,249.3	$5,712.2	$1,006.1	$191.8	$6,910.1
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	4,681.1	2,284.5	6,965.6	1,345.6	239.0	8,550.2
2014	5,322.5	2,425.8	7,748.3	1,053.0	285.9	9,087.2
2015	5,504.2	2,152.1	7,656.3	929.4	218.6	8,804.3
2016	4,372.5	1,983.9	6,356.4	907.2	233.9	7,497.5
2017	4,638.6	2,177.6	6,816.2	999.8	268.7	8,084.7
2018[c]	4,492.0	2,223.0	6,715.0	1,050.0	275.0	8,040.0
2019[d]	4,484.0	2,252.0	6,736.0	1,050.0	270.0	8,056.0

[a]Includes sales of forest products, custom feeding fees, custom harvest fees, and other farm income. [b]Includes farm program payments directly to producers. [c]Estimated. [d]Forecast.

Source: Colorado Business Economic Outlook Ag Committee.

Rain Makes Corn (and Wheat)

Wheat and corn, Colorado's primary grain crops, are part of a global market. Reduced crops in 2018 in Russia and Australia are helping wheat prices somewhat, but a large crop failure encompassing multiple countries would be needed to pull wheat prices up to levels seen in 2008 and 2012.

The value of Colorado's wheat crop is estimated to be down slightly for 2018, to $319 million from $320 million in 2017, and projected to rise to $366 million in 2019.

Cash receipts for Colorado corn are estimated at 3% higher for 2018, at $547 million, and are projected to move another 2% higher in 2019, to $556 million.

Colorado's field corn crop is used almost entirely within the state by the dairy, cattle feeding, and ethanol industries. While Colorado does not export much corn, tariffs on U.S. exports of corn and soybeans to China have an effect on the entire U.S. commodity market, bringing the price of corn down for all farmers.

Colorado exports 40 – 60% of the wheat produced in the state. Following China placing a 25% retaliatory tariff against United States, it has not purchased one new shipment of wheat from the United States since May. In marketing year 2016–17, China was the fourth-largest export destination for U.S. wheat. It dropped to eighth in 2017–18.

USDA announced aid to farmers in response to trade damage from retaliation by foreign nations. USDA's tariff aid will be of most benefit to soybean farmers; soybeans are not widely grown in Colorado because of climate conditions. Colorado corn farmers will receive about a penny per bushel of corn in aid, and wheat farmers about 14 cents.

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Agriculture

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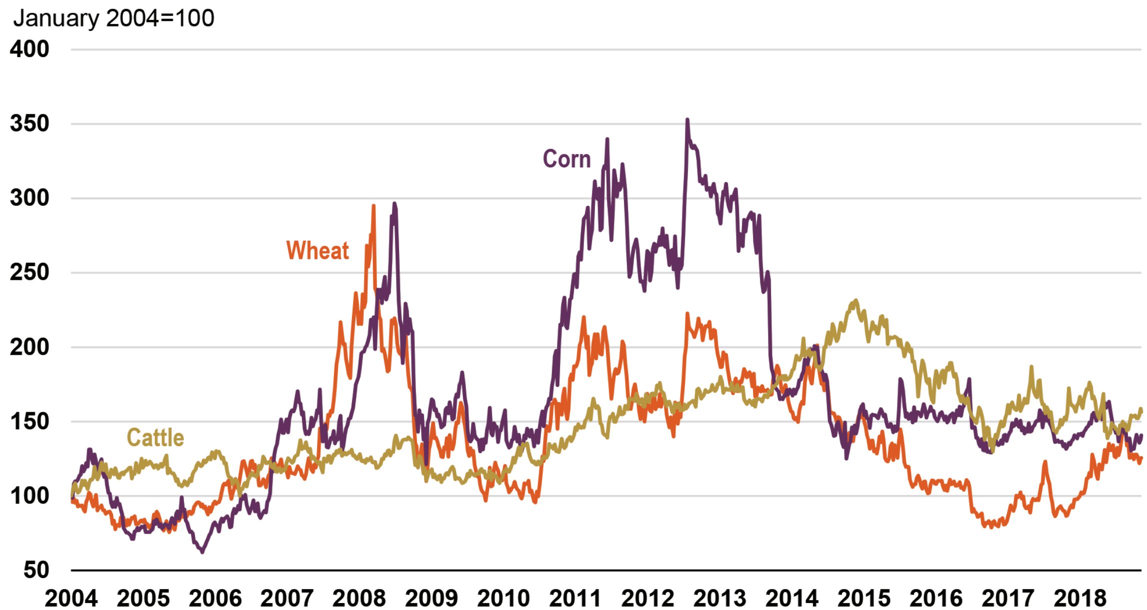
Colorado grain farmers do not have many choices when it comes to the crops they raise. Much of Colorado is dry-land production, meaning farmers do not have irrigation. Most irrigated properties grow corn because it is more profitable than wheat. Dryland corn crops produce significantly less yield than irrigated corn. Other crops such as sunflower, millet, and sorghum are used as rotational crops with wheat and corn but are in less demand. Dry beans and other alternative crops vary in profitability and require different equipment to plant and harvest. Sugar beets accounted for $32 million in cash receipts in 2017, but are all planted under contract and cannot simply be picked up as a substitute crop. Farmers cannot simply switch from growing wheat to growing potatoes or carrots in the blink of an eye.

As soybean prices drop because of tariffs, more U.S. farmers are expected to plant wheat and corn, which will further increase world stocks of those commodities.

Colorado sunflower prices have been hurt by sinking soybean prices as oil can be manufactured from both. When more soybeans are available on the U.S. market, more soybean oil is available to compete with sunflower oil, continuing to keep downward price pressure on both commodities.

Colorado remains the leading producer of millet in the United States. While most millet is currently used in bird and pet feed, producers hope this grain will become more well known as a gluten-free alternative grain.

INDEXED COMMODITY PRICES



Sources: Bloomberg (USDA Toledo No.2 Yellow Corn Not on the River Spot Price, USDA No. 1 Hard Red Winter Wheat Spot Price/Kansas City Missouri, Generic 1st Live Cattle Future). As of 11/06/2018.

Hay

Colorado hay producers were one of the few winners in the ag economy in 2018. Drought brought good prices for the farmers with irrigation or sufficient rain to produce hay. Most high-quality hay in the state is believed to have been sold for this season. If Colorado receives good moisture this winter, hay prices will recede for 2019.

Dairy

Despite tariffs currently affecting exports, Colorado's dairy cash receipts are estimated to grow from $754 million in 2017 to $765 million in 2018 and a projected $775 million in 2019. Colorado dairy exports to Mexico, the state's largest export customer, are off 30% for the year. Exports to Mexico account for 70% of Colorado's dairy exports. Colorado dairy farmers benefit from the location of the Leprino plant, which gives them a local market for their milk.

Fruits and Vegetables

Potatoes are the largest player in Colorado's fruit and vegetable marketplace, with most of the state's potatoes grown in the San Luis Valley. Farmers there continue to be challenged by a decreasing water table. Growers were faced with an extremely dry year and warmer than average temperatures for much of the season. Snowpack was only 43% of average, resulting in very little surface water for irrigators. Only 3.3 inches of rain was recorded from March-September. An improved snow pack will be imperative for potato producers in 2019. Cash receipts for potatoes for 2018 are estimated to be down 5% from 2017, sinking from $193 million to $184 million, with an additional 5% decline projected for 2019, to $175 million.

Potatoes are a bright spot for exports. Colorado exported roughly 48,640 metric tons of fresh potatoes to Mexico in 2017, with a value of $21.8 million. For January through June 2018, Colorado potato export volume was up about 10% compared to the same period in 2017. Value was up more than 40% compared to

2017 and projected at $27 million for 2018 based on the January through June numbers.

Peaches and other fruits grown on the Western Slope generally had a good year. Some growers faced water challenges as the drought struck and supplies of irrigation water were limited in the latter part of the summer. The fruit industry continues to experience modest annual growth.

Colorado's fruit and vegetable growers are in an enviable spot in many ways, because of the cachet of Colorado brands such as Palisade Peaches, Rocky Ford Melons, Olathe Sweet Corn, and Pueblo Chiles. Colorado fruit and vegetable growers benefit from a diversity of marketing approaches. Some farmers sell directly to consumers, and that direct-to-consumer marketing reinforces the importance of Colorado produce with retailers. Consumers' desire to purchase local products and know where their food comes from continues to benefit Colorado farmers.

An invisible challenge faced by Colorado fruit and vegetable growers is consolidation and mergers in the retail produce industry. Farmers who have long-established relationships with buyers have been finding that mergers and reductions in workforce have eliminated the positions of people they have worked with for years, and they now must communicate with a corporate office instead of a local purchasing agent. The staff at the corporate office sometimes lacks institutional knowledge and valuable information about supply chain challenges.


Photo courtesy of Dan Harvey.

Labor continues to be an issue, with farmers continuing to hope for guest worker reform. Colorado growers continue to use the H-2A program to obtain workers but would like a program that is less cumbersome and bureaucratic.

H-2A is a program for people from other countries to do seasonal agriculture work in the United States. Farmers build in time buffers when working with the U.S. Department of Labor to bring in workers, but sometimes workers still do not arrive in time to plant or harvest crops, or sometimes there are fewer workers than the farmer requested. The H-2A program is now more than 30 years old and cannot cope with the rising demand for guest workers. Some farmers have changed from more labor-intensive crops like cabbage to carrots that can be harvested mechanically.

Industrial hemp is also taking root in some fields in Colorado. While farmers may not be tilling under grapevines or peach orchards, some plots of land that were previously planted to alfalfa or left fallow are now planted to hemp. Questions still remain as to whether the hemp industry has the processing facilities to process the 31,000 acres of hemp in fields and the 4.6 million square feet indoors now planted in Colorado, and whether the 2018 Farm Bill will designate hemp as an agricultural crop.

Nursery and Floriculture

Colorado's sod, nursery, and floriculture industry continues to benefit from the state's lively housing market as new homes include new trees, flowers, and landscaping. Nursery and floriculture are estimated to continue to grow, from $336 million in 2017 to $359 million in 2018 (a 7% gain) and a projected $384 million in 2019.

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Agriculture

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Farm Economy Continues to Challenge Producers

A weak El Niño is forming and is expected to build through the winter. According to the National Oceanic and Atmospheric Administration (NOAA), there is a slight positive probability of above-normal precipitation in southern Colorado from November to January. Farmers are always at the mercy of the weather, and it is hoped that drought relief will find its way to the state soon.

A share of the ag economy is off-farm jobs. Jobs for highly skilled individuals pay well, and many farmers with skills such as welding, truck driving, or mechanics can supplement their farm incomes. Most farmers would like to make their living on the farm, but this opportunity can provide some stability in an uncertain farm economy.

The real victims of this downturn in the farm economy are young and beginning farmers who may not have built up equity to survive the bad years. They may be renting land, which does not go down in price when prices for their crops drop. The current, aging population of farmers may eke out an existence, but will there be a generation to follow them? Self-driving tractors, drones targeting weeds, and robots picking vegetables may be the wave of the future. Will that future include as many farmers? ✜

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Photo courtesy of Dave Richey.

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 2016 proved reserves, Colorado ranked 7th for petroleum liquids and 6th for wet natural gas. In 2016, Colorado ranked 13th among the states in the production of coal, 3rd in gold production, and 2nd in the production of molybdenum. Although some production has decreased, the Climax Mine and Henderson Mine were two of the largest national primary producers of molybdenum in 2016.

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. From 2005 to 2015, Colorado had a net increase in electricity generation of 3.3 billion kilowatt hours (kWh), all from wind and solar. This was the highest increase in renewables among the six mountain region states according to the EIA.

The NRM industries make a significant contribution to Colorado's GDP. In particular, the Niobrara-Codell resource play in the Denver Basin continues to drive the state's oil and gas industry. The value of the overall NRM Sector will see an estimated annual increase of 29%, to over $17.7 billion, in 2018.

NRM employment totaled 25,700 jobs in 2017, an increase of 8.4%. The industry is on track for an annual increase of 14.4% in 2018 to total 29,400. For 2019, the expectation is for employment growth of 4.8%, or 1,400 jobs, assuming stable oil prices and no significant roadblocks to oil and gas activities in the state. Unexpected economic and political factors can change the trajectory of Colorado's NRM employment outlook abruptly.

Oil and Gas

Colorado's total oil production is valued at more than $9.9 billion for 2018—an estimated 62% higher than 2017. The value of state's natural gas production in 2018 will be around $5.3 billion. Combined, this represents a 35% increase in gross value from 2017. For 2019, one should expect the value to remain or decrease modestly, although any extended price spikes up or down in prices could easily render this prediction wrong. The Colorado Office of State Planning and Budgeting (OSPB) September 2018 economic outlook estimated severance tax collections for FY2017 (July 1, 2017–June 30, 2018) at $142.6 million, increasing to $183.5 million in FY2018–19, and then decreasing to under $140 million in FY2019–20 due to larger ad valorem credits and stagnant oil and gas prices.

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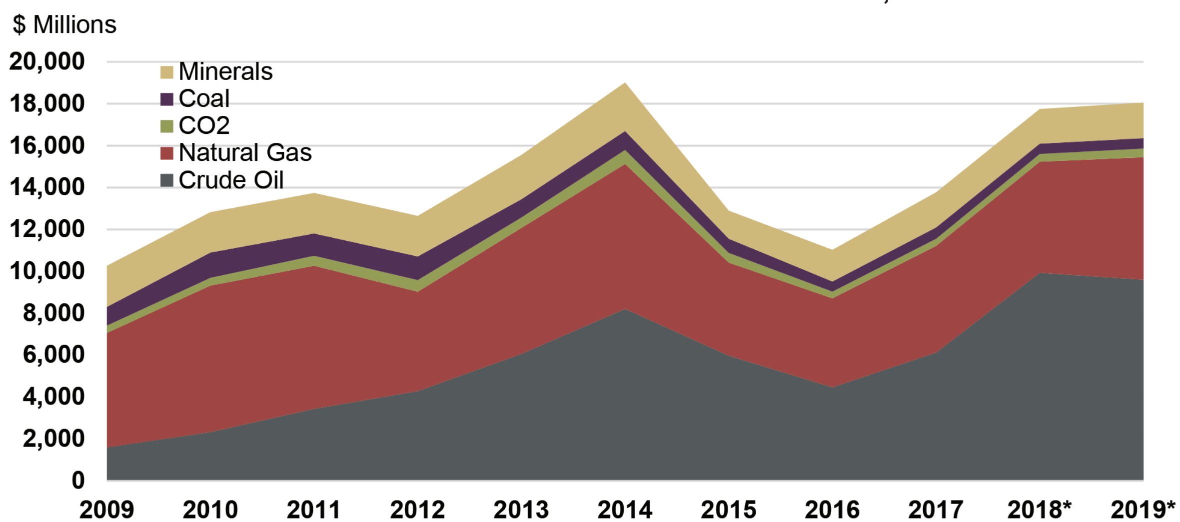
INDUSTRY SNAPSHOT
NATURAL RESOURCES AND MINING

Nominal GDP, 2017 ($ Billions)	11.2
Real GDP, 2017 ($ Billions, 2012 Dollars)	18.3
2017 Real GDP Growth Rate	6.6%
Total Employment, 2017 (Thousands)	25.7
2017 Employment Growth Rate	8.4%
Employment Growth National Rank	7
Share of Colorado Employment	1.0%
Share of National Employment	0.5%
Average Wage, 2017	84,161
Percent of Statewide Average Wage	146.9%
2017 Average Wage Growth Rate	2.8%

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

VALUE OF COLORADO NATURAL RESOURCES AND MINING, 2009-2019



*2018 estimate and 2019 forecast.
Sources: Colorado Geological Survey Mineral and Minerals Fuel Activity Reports, Colorado Oil and Gas Conservation Commission, Department of Minerals and Geology, and Colorado Business Economic Outlook Committee.

Natural Resources and Mining

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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 2017, the number of drilling permits received by the Colorado Oil & Gas Conservation Commission (COGCC) has increased, indicating a continued strong near-term development. Many operators have been able to optimize production with favorable economics, at $45-$50 per barrel in the prime Wattenberg target areas.

In Colorado's regulatory regime, the balancing act continues between facilitating responsible hydrocarbon exploration and production, while ensuring public safety, welfare, and environmental protection. There were two propositions on the Colorado ballot that failed in 2018—one that would have increased setback distances for oil and gas operations, and another that would have allowed property owners to file a takings claim for lost mineral rights—that could have significantly impacted the state's oil and gas activities. The discussion regarding appropriate setback distances and competing land-use interests will no doubt continue into 2019. Of the recommendations made in a 2011 National Petroleum Council report titled *Prudent Development,* increasing public trust and committing to community engagement seem particularly relevant in the current Colorado political climate.

Employment in the Colorado oil and gas industry has grown by more than 23% since 2016—all driven by higher oil production in the state. Notably, however, technology improvements in drilling, coupled with a well-characterized resource play (i.e., the Niobrara-Codell), have allowed for operational efficiency improvements. In other words, operators have been able to do more with less, and consequently Colorado's NRM Sector labor increases may be muted.

Oil

Colorado crude production hit an all-time high in 2017, with nearly 132 million barrels produced. For 2018, production is estimated to increase another 20%, to around 159 million barrels. Colorado accounts for almost 5% of the total crude produced in the United States according

VALUE OF COLORADO NATURAL RESOURCES AND MINING, 2009–2019
(In Millions of Dollars)

	Oil and Gas Extraction					Mining				
Year	Crude Oil	Natural Gas	Carbon Dioxide	Subtotal	Percent Change	Coal	Minerals	Subtotal	Percent Change	Total
2009	$1,600.0	$5,461.0	$356.0	$7,417.0	-47.3%	$887	$1,960	$2,847	-10.3%	$10,264
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	4,462.0	4,251.0	318.0	9,031.0	-17.0	481	1,510	1,991	-1.2	11,022
2017	6,124.0	5,088.0	344.0	11,556.0	28.0	533	1,680	2,213	11.2	13,769
2018[a]	9,931.0	5,297.0	375.0	15,603.0	35.0	490	1,650	2,140	-3.3	17,743
2019[b]	9,600.0	5,850.0	413.0	15,863.0	1.7	490	1,700	2,190	2.3	18,053

[a]Estimated. [b]Forecast.

Sources: Colorado Geological Survey, United States Geological Survey (USGS), Colorado Oil and Gas Conservation Commission, Department of Minerals and Geology, and Colorado Business Economic Outlook Committee.

to the EIA. 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 2018, the U.S. petroleum benchmark, known as West Texas Intermediate (WTI), has fluctuated between $59 and $77 per barrel, with a mean daily spot average of $67 per barrel as of mid-November. This is a 31% increase from the 2017 WTI mean daily price of $51 per barrel, but still 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 (IEA) is forecasting a revised year-on-year global oil demand growth of 1.3 million barrels per day (mb/d) in 2018 and 1.4 mb/d in 2019 due to trade concerns, a weaker economic outlook, and higher oil prices. Furthermore, it notes that the global oil supply is more than 2 mb/d higher than it was in 2017. Regarding consumption in the United States, EIA calculated 20.0 mb/d in 2017 and estimates 20.5 mb/d in 2018 and 20.7 mb/d in 2019. The last time the nation saw greater than 20 mb/d consumption was in the years 2003–2007. The healthy economy and lower petroleum product prices are important factors driving increased consumption. EIA currently estimates that the average WTI will average almost $67 per barrel for calendar year 2018 and just under $65 per barrel for 2019. The total global liquid fuels inventory will stay flat in 2018, and increase by 0.6 mb/d in 2019 according to EIA forecasts.

Looking toward the future beyond 2019, Colorado will face a point at which demand has peaked. While the short-term outlooks suggest a healthy market for crude

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COLORADO PHYSICAL OUTPUT OF FOSSIL FUELS 2009–2019

Year	Coal	Crude Oil	Natural Gas	Carbon Dioxide	Index (Base Year: 2009 = 100)			
	Millions of Short Tons	Millions of Barrels	Billions of Cubic Feet	Billions of Cubic Feet	Coal	Crude Oil	Natural Gas	Carbon Dioxide
2009	28.6	30.0	1,561	406	100.0	100.0	100.0	100.0
2010	25.2	32.6	1,617	268	88.1	108.7	103.6	66.0
2011	27.0	38.8	1,648	469	94.4	129.3	105.6	115.5
2012	28.8	48.7	1,658	439	100.7	162.3	106.2	108.1
2013	24.2	65.1	1,567	268	84.6	217.0	100.4	66.0
2014	22.8	94.7	1,581	355	79.7	315.7	101.3	87.4
2015	18.7	122.8	1,691	409	65.4	409.3	108.3	100.7
2016	12.8	116.6	1,689	444	44.8	388.7	108.2	109.4
2017	15.1	131.8	1,705	463	52.8	439.3	109.2	114.0
2018[a]	14.0	158.8	1,784	406	49.0	529.3	114.3	100.0
2019[b]	14.0	160.0	1,800	450	49.0	533.3	115.3	110.8

[a]Estimated. [b]Forecast.

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

Natural Resources and Mining

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oil, there will likely be a shift at some point from oil as a fuel source to oil as feedstock in the petro chemical industry or other demand drivers. Also, while unlikely in 2019, be aware that historical oil-price spikes have preceded 10 of the past 11 post–World War II recessions.

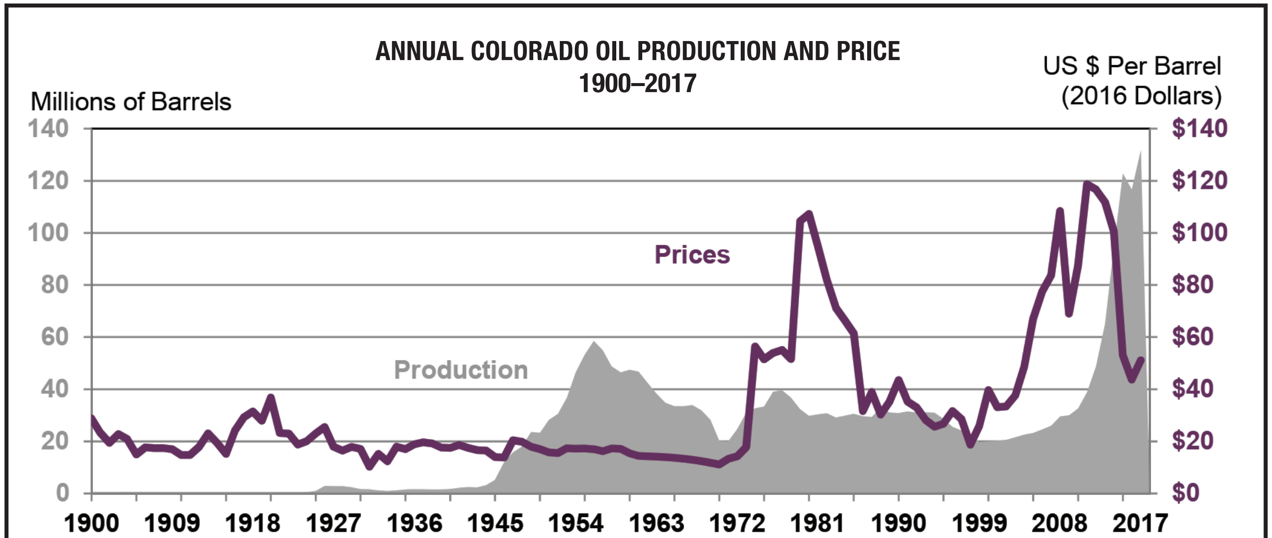
Retail Gasoline

The Colorado average retail price of automotive gasoline of all grades in 2018 (through October) was $2.77, a 14% increase from the 2017 average price. Nationally, EIA expects the average for regular grade to be $2.75 per gallon in 2018 and 2019. Regional prices for diesel (averaging $3.21 for 2018) have been at a roughly 17% premium compared to the price of regular grade unleaded gasoline. Expectations are for Colorado gasoline to remain at a similar or slightly higher average price in 2019 (between $2.77 and $2.90 per gallon average for all grades).

Natural Gas

In 2017, Colorado fell to sixth place (overtaken by Ohio) 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, and leads the nation in gross withdrawals from coalbed methane wells.

The residential sector is the largest natural gas-consuming sector in the state, accounting for 27% of the total 438,697 million cubic feet consumed in 2017. Other significant end-uses include electric power (22%), industrial consumption (19%), lease and plant fuel (17%), and commercial consumers (12%). For 2018 (through August), the average monthly residential gas price in Colorado was $10.58 per thousand cubic feet—the 10th lowest in the country. For 2019, the expectation is that Colorado natural gas will price in the range of $2.75 – $4.00 per thousand cubic feet with 80% confidence. EIA is currently forecasting the Henry Hub spot price average



Source: Colorado Geological Survey (based on RMAG, EIA, IHS, & COGCC data). Crude oil prices: 1900-1944 US average; 1945-1983 Arabian Light; 1984-2017 Brent.

to be $3.09 per thousand cubic feet in 2019—essentially no change from $3.12 average price estimated for 2018 and the $3.10 average price in 2017.

EIA forecasts suggest that the average U.S. household using natural gas for heating will see a total winter 2018–19 (October through March) price increase of 5% (approximately $30) over 2017–18, due to a 1% increase in consumption and 5% 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 2018–19 will be 1% less than 2017–18 winter. In the Mountain region, however, the forecast is for 2.4% more heating degree days.

There are nearly 20,000 active "gas" wells in Colorado that have produced (in combination with the associated gas generated from the state's "oil" wells) over 1.78 trillion cubic feet (TCF) annually in 2018. For 2019, the expectation is for production volume to increase modestly, to 1.80 TCF.

Carbon Dioxide

Colorado's carbon dioxide production is marketed almost exclusively for enhanced oil recovery (EOR) operations. In 2018, an estimated 400 billion cubic feet of CO_2 will be produced in three counties (Montezuma, Dolores, and Huerfano), with the total production value grossly estimated at $375 million, a 9% increase over 2017.

Drilling Permits and Rig Activity

COGCC received 7,381 Applications for Permit to Drill (APDs) in 2018 (as of October 1)—a 79% increase over the number of APDs received for the same period in 2017. For 2018, the commission approved 3,118 permits as of October 1, with 65% of these located in Weld County. COGCC recorded a 10% increase in well starts for 2018 (1,391) versus the same period in 2017 (1,261).

The 2018 average monthly rig count for Colorado is 31. Despite the increase in well starts over 2017, this represents a two-rig decline from the 2017 average of 33. One can speculate that this reduction may be in part due to improvements in drilling technology and operational efficiency, such as reduced drilling times and increased average lateral lengths. These optimizations allow for more production per active drilling rig on average.

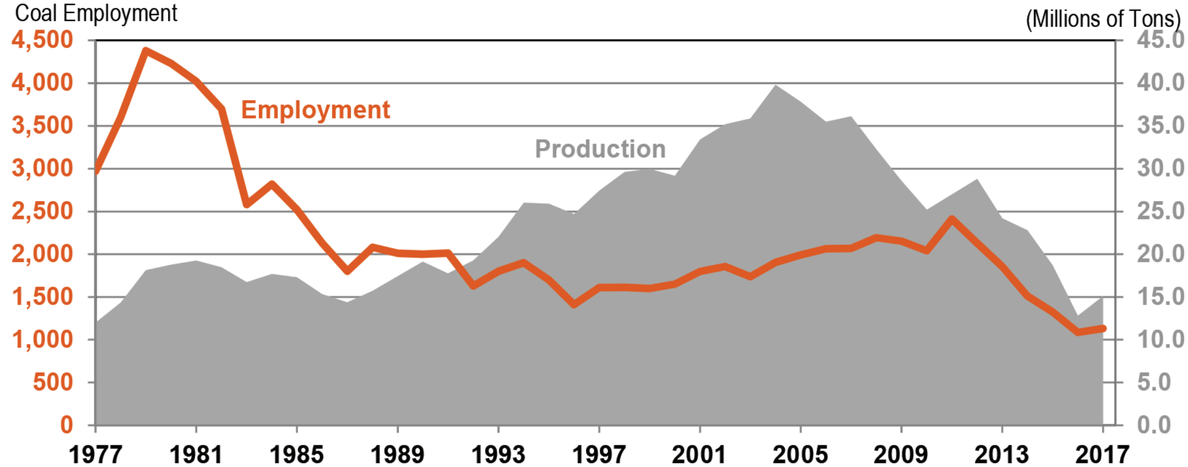
Horizontal drilling and hydraulic stimulation continue to be integral to Colorado's oil and gas activity. In 2010, only 5.6% of all Colorado drilling permits issued were for horizontal wells. In 2018, that number has been greater than 76% of all issued permits; of these, 84% are located in Weld County. Horizontal well starts totaled 1,024 through the beginning of October—74% of the state's total.

Coal

Coal mining in Colorado dates back 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 15.1 million tons and lower prices, sales fell to an estimated $533 million in 2017 and are expected to drop to $490 million in 2018 and 2019, with production falling to 14 million tons. According to the National Mining Association's survey Economic Contributions of Mining (2015), the industry contributed $1.9 billion to Colorado's economy and directly employed 3,723 workers (including transportation), with 12,977 indirect and induced jobs. Federal royalties on Colorado coal production in FY2017 totaled $32.7 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 $21 million in 2017.

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 2% of total production in 2016. Sales outside the United States recovered to 18% in 2017. 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 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 15.1 million tons in 2017. Colorado coal production is expected to slide to 14 million tons in 2018 and 2019.

ANNUAL COLORADO COAL PRODUCTION AND EMPLOYMENT, 1977–2017



Source: Colorado Division of Reclamation, Mining, and Safety, 2016. Employment totals based on December levels.

Coal must now compete in an environment where governmental 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

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Natural Resources and Mining

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COLORADO NATURAL RESOURCES AND MINING EMPLOYMENT 2009–2019 (In Thousands)

Year	Employment	Percentage Change
2009	24.2	-15.1%
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[a]	25.7	8.4
2018[b]	29.4	14.4
2019[c]	30.8	4.8

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

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

curtail future production. Low natural gas prices in 2016 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 six Colorado counties: Routt, Moffat, Rio Blanco, Gunnison, Montrose, and La Plata. Gunnison County was the leading coal-producing county between 2001 and 2016, producing 149 million tons, followed by Routt County with 126 million tons, Moffat County with 53 million tons, and Rio Blanco County with 31 million tons. Arch Minerals' West Elk Mine produced 4.8 million tons in 2017, making it the highest-producing mine in Colorado.

Production

According to the Mine Safety and Health Administration (MSHA), in 2017, Colorado was the 10th-most productive coal mining state, producing 15.1 million tons of coal. This is up from a ranking of 13th in 2016 when 12.8 million tons were produced. Using MSHA's data for the first three quarters of 2018, along with EIA data and Colorado coal production reports, the state's total coal production by year-end 2018 is expected to drop to 14 million tons.

Value

Production and the price of coal increased in 2017. 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 2017 was $35.28 per ton. The value of coal sold by Colorado mines has fallen from $1.1 billion in 2012 to $533 million in 2017.

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 1,132 at the end of July 2018.

VALUE OF COLORADO NONFUEL MINERALS AND URANIUM PRODUCTION 2009–2019 (In Millions of Dollars)

Year	Nonfuel Minerals	Uranium	Total
2009	$1,960	$6.0	$1,966
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[a]	1,650	0.0	1,650
2019[b]	1,700	0.0	1,700

[a]Estimated. [b]Forecast.

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

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 2017, a total of 27% of the coal produced in Colorado was shipped to 10 other states. In 2017, the only state outside of Colorado that took more than 500,000 tons of Colorado coal was Utah, which took 2.3 million tons of coal. Sales to Alabama, Kentucky, and Tennessee, which took almost 6 million tons in 2010, has fallen to 186,500 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.

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 the remainder from Wyoming. In 2017, 16.3 million tons were delivered while the percentage that came from Colorado mines fell to 35%. According to the EIA Electricity Data Browser, coal-fired power plants in Colorado consumed 16.7 million tons of coal in 2017, supplying the state with 49% 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 29.2 MWhs in 2017. Electricity generated from natural gas increased from 11.1 MWhs to 12.7 MWhs between 2010 and 2017. Wind-generated electricity increased from 3.5 MWhs to 9.3 MWhs.

COLORADO ELECTRIC POWER INDUSTRY GENERATION BY PRIMARY ENERGY SOURCE
2009-2017
(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

[a]Includes pumped storage.

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

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. 2017 nonfuel mineral production value was $75.2 billion. In 2017, Colorado produced primarily gold, cement, sand and gravel, molybdenum, and crushed stone, with an estimated production value of $1.7 billion, or approximately 2.2% 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 2017 production value of gold and molybdenum was about $831 million. This is approximately a 23% increase compared to the 2016 production value of $673 million. As it was in 2016, this increase in value was due to the increase in gold production at Newmont's Cripple Creek and Victor (CC&V) mine located in Teller County. The average gold price in 2017 was $1,260 per ounce. Colorado was the third-largest producer of gold (451,000 ounces) in the United States in 2017, following Nevada and Alaska.

The combined molybdenum production at the Henderson Mine and Climax Mine, both operated by Freeport-McMoRan Inc. (Freeport), increased from 26 million pounds in 2016 to 32 million pounds in 2017. Although estimated average prices for molybdenum increased from $6.47 in 2016 to $8.21 per pound in 2017, Freeport continues to operate Henderson at reduced rates due to market conditions. Colorado was the second-largest producer of molybdenum in the United States in 2017, following Arizona, which produces molybdenum as a by-product. In 2017, Freeport estimated proven recoverable reserves of 74 million metric tons at the Henderson Mine and 160 million metric tons at the Climax Mine.

In 2017, Colorado produced and consumed approximately 55.7 million tons of aggregate (sand, gravel, and crushed stone). The production of construction aggregate was up slightly up from 2016 levels due to continued construction primarily in the Front Range. Forecasts for 2019 suggest another slight increase 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.

There was no uranium mining in Colorado in 2018. Uranium prices continued to decline, which accounts for the lack of mining in the state.

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Renewables

Colorado's abundance of renewable energy resources includes wind, solar, hydroelectric, geothermal, and biomass resources. These additional electricity resources accounted for 22.3% of Colorado's net generation in 2017, a one percentage-point increase from 2016 and a nearly five percentage-point increase from the 17.7% generated from these sources in 2015. Utility-scale solar generation has had the most dramatic gains with a 114% increase in 2016 and a 77% increase in 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.

Colorado's Renewable Portfolio Standard (RPS) requires investor-owned electric utilities to 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 2018, residential electricity rates in Colorado were 12.50 cents per kWh, which represents virtually no change compared to the prior year. This is below the national average of 13.30 cents per kWh and is the third highest in the eight-state Mountain West Region,

Photo provided courtesy of Denver International Airport.

which averages 12.25 cents per kWh. Colorado commercial rates are 10.53 cents per kWh, below the national average of 11.01 cents per KWh. Colorado's industrial rate averaged 7.30 cents for August 2018, which is higher than the national average of 7.24 cents. Averaging across all consumer sectors, Colorado's year-over-year electricity rate has essentially remained the same as 2017.

Wind Energy

As of 2018, Colorado ranks ninth nationally for total MWs of installed wind capacity, eighth 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 133% from 2010–2017, with a notable 26% increase in 2016 alone. Cumulative wind power generating capacity has increased by nearly two gigawatts during this period, to reach 3,106 MW. There is an additional 600 MW currently under construction and another 210 MW is in advanced development. Colorado wind farms include 1,949 wind turbines in 25 projects and cumulatively produced more than 9.3 million MWhs of electricity in 2017—17.3% of the state's total net generation.

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 5,000 to 6,000 jobs were directly or indirectly supported in 2017, and the total capital investment through 2017 was $6 billion. Annual land lease payments in 2017 were between $5 and $10 million.

Colorado also has a significant wind turbine manufacturing presence, with 17 manufacturing facilities located in the state.

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 950 MW of installed capacity (roughly 2.8% of the state's net generation). Of that capacity, 374 MW was installed in 2016—nearly 40% of the state's total. Over the next five years, the Solar Energy Industries Association (SEIA) estimates the annual installed capacity will increase by another 1,832 MW, increasing by nearly three-fold the state's total capacity by 2023. According to the NREL's Open PV Project, Colorado currently has 2,606 individual photovoltaic (PV) installations that generate more than 135 MW of power. The state ranks 19th in the nation in total count of PV installations. A total of 327 solar companies currently operate in Colorado, employing around 6,000 people. As of 2018, the total investment in solar is more than $2.5 billion according to SEIA.

The longer-term outlook for solar in the United States is facing uncertainty, with a trade dispute initiated by the domestic module and cell manufacturer Suniva in May 2017. Suniva's petition to the U.S. International Trade Commission was the major driver of the Trump administration's decision to impose a 30% tariff on all imported solar cells and modules. These tariffs, according to SEIA, may cost an estimated 23,000 jobs in the United States.

Like many states, the rooftop solar community in Colorado has been thriving with installation costs dropping more than 60% since 2010. For Q1 2017, Colorado had below national-average installation costs—modeled by NREL to be an estimated $2.66 per watt for residential PV systems. EnergySage, an online solar marketplace, estimates the average cost to install a 6 kW system in the state, after deducting the 30% federal solar tax credit, to be between $13,000 and $17,000. 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/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 2017, 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

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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.

Geothermal Energy

There was limited progress for geothermal energy development in Colorado in 2018. Potential high-grade geothermal drilling targets have been identified in previous years east-southeast of Mount Princeton and north of Poncha Hot Springs in Chaffee County. As well, a hot reservoir is thought to be associated with Waunita Hot Springs in eastern Gunnison County, and a deep (approximately 8,000 feet), extensive, electricity-grade reservoir has been identified and mapped in the Raton Basin in Las Animas County west of Trinidad. Funds have not been available to drill to any of these potential resources. The low price of natural gas makes high-temperature geothermal resources in islands of the western Pacific more attractive to investors than Colorado resources at this time. Several attempts at obtaining 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. 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 geoexchange) 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

Colorado construction industry is experiencing higher year-over-year activity in 2018 and will see still higher volumes of work in 2019, despite continued labor shortages and growing costs. Construction activity will total $21.2 billion in 2018 and increase 2.3%, to $21.6 billion, in 2019.

Construction employment increased more than 5% in 2018, totaling more than 171,800 employees. Additional employees, if available, could find job opportunities. Programs are underway throughout the state to attract new workers to construction and connect them with jobs to address the growing concerns of labor shortages. Construction firms are producing an increased volume of work by using more overtime, prefabrication, and other productivity-enhancing techniques. The labor situation has forced production schedules to be delayed, which will continue throughout the time horizon of this forecast. The committee expects total construction employment to increase 2.9% to approximately 176,800 workers in 2019.

The industry is experiencing a "silver tsunami," the result of retiring baby boomers, a labor outflow predicted by demographers for years. The result is a need for more construction workers than are available.

A controlling 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 53,000 in 2018 and 50,000 for 2019. These numbers are approximately double the population increases from the natural increase (births minus deaths).

Residential

Single-Family Housing

The number of single-family permits issued in Colorado increased by 13%, to 24,338 permits, in 2017, and 26,800 permits are estimated for 2018, representing a further increase of 10%. Continued growth in 2019, although at a slower pace, will result in another 28,100 single-family permits, a 4.9% increase.

Colorado's 2017 permit growth exceeded the nation's 9% increase, and the state's August 2018 year-to-date 13% increase was also above the 8% increase reported for the United States. The 2017 increase in permits was matched through August 2018, but the market appears to be slowing in recent months. After a strong 15% surge in the first half of the year, permit growth slowed to 7% in late summer.

Builders along Colorado's Front Range corridor, from Colorado Springs north 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. Closing activity increased by about 5% through mid-year 2018, to 8,798 new homes. New production housing contracts were up 9% for the year at the end of third quarter 2018.

Homebuilding has shown a dramatic recovery from the recessionary trough in 2009, when only 7,261 single-family permits were issued. While the current pace is robust in comparison with recent years, single-family permits were historically as high as 40,000 per year (in 2004–2005). Single-family permits have been rising steadily and will finish 2018 more than 250% higher than the number 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 10,060 resale home listings as of mid-year 2018 represented a 2.0-month supply. This was more than double the mid-year average supply of the past three years. The increase is seen as a step toward a more balanced market.

Colorado's housing market improvement cannot be fully attributed to the state's economic recovery. The decline in 30-year mortgage interest rates, from 5.2% to 3.4% from 2010 through third quarter 2016, helped make housing more affordable and supported increased sales of both new and existing homes. The turnaround in mortgage rates to nearly 4% in 2017 did not slow this momentum, but in 2018, the 30-year mortgage rate rose to over 4.8% by October. The recent slower pace in the increase of new home permits and contracts is attributed primarily to higher mortgage rates. The housing market recovery could further slow as the Federal Reserve moves toward higher interest rates.

Improvements in consumer confidence have enjoyed an upward trend for four years, continuing into mid-year 2018 to levels equal to or exceeding the mid-2000s. Healthy consumer confidence was undoubtedly influenced by reports of continued home price increases, including the S&P CoreLogic Case-Shiller Denver Home Price report of a 7.7% year-over-year increase in Metro Denver in August 2018.

Rental occupancy rates remained in relative balance for single-family homes despite large supply increases in apartments. The strong in-migration is resulting in rental

INDUSTRY SNAPSHOT
CONSTRUCTION

Nominal GDP, 2017 ($ Billions)	19.3
Real GDP, 2017 ($ Billions, 2012 Dollars)	15.4
2017 Real GDP Growth Rate	2.8%
Total Employment, 2017 (Thousands)	163.6
2017 Employment Growth Rate	5.3%
Employment Growth National Rank	9
Share of Colorado Employment	6.2%
Share of National Employment	4.7%
Average Wage, 2017	59,444
Percent of Statewide Average Wage	103.8%
2017 Average Wage Growth Rate	3.7%

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

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RESIDENTIAL BUILDING PERMITS BY TYPE 2009–2019

Year	Single Family	Multifamily	Total Housing Units
2009	7,261	2,094	9,355
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[a]	24,338	16,335	40,673
2018[b]	26,800	14,000	40,800
2019[c]	28,100	13,000	41,100

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

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

rate 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 declined by 1% in 2017, then increased by 9% through August 2018. The recent increase is consistent with the tight construction labor market and increasing materials costs reported by builders, as well as higher home sale prices. The forecast for calendar year 2018 is for an 8% increase in permit value, to $330,000 per unit, followed by a 5% increase in 2019, to $346,500.

Multifamily Housing

Multifamily construction activity decreased in 2018 because markets were more balanced, and migration into Colorado slowed compared with previous years. By year-end 2018, expect 14,000 multifamily units to be permitted, a 14% drop from 2017. Since 2010, an average of 96% of multifamily permits in the state occurred along the Front Range corridor. Apartment construction has been strong post-recession, compensating for low 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. As single-family homebuilding continues to increase and developers consider including more entry-level homes, demand for apartments may stabilize back to more historical levels.

Multifamily construction is expected to decrease further in 2019. The committee forecasts 13,000 multifamily units will be permitted in 2019, a 7.1% decline from 2018. Despite the expected decline in permits, construction of multifamily units remains elevated compared with historical averages. Multifamily construction has averaged fewer than 10,000 units a year since 1980. Continued construction labor shortages, however, will likely delay project completions.

New multifamily construction consisted overwhelmingly of apartments rather than for-sale condominiums. Apartments account for over 95% of multifamily units built since 2010, spurred by strong demand for rental housing and potential defects litigation concerns and related insurance costs. Despite recent legislation intended to alleviate some concerns of litigation, condominium construction remains subdued. Two major projects are nearing completion in Denver County, but no additional large condominium developments began construction in 2018.

Demand is keeping pace with supply and new units are rapidly absorbed, despite robust activity in recent years, partly because of the migration into the state. Overall, the Colorado apartment market is balanced, with the average vacancy rate down slightly as of November 2018, to 5.5%, compared with 5.9% a year earlier. According to ALN Data, Inc., the vacancy rate in the Denver-Boulder metro areas decreased to 5.5%, from 6.2% a year ago. Vacancy rates across Colorado range from 6.4% in Colorado Springs to less than 1% in the I-70 ski corridor of Eagle and Summit counties. Workers at ski resorts report difficulty finding housing because some single-family homes and condominiums that would otherwise be available to rent are held off the market for short-term vacation rentals.

CONSTRUCTION EMPLOYMENT, 2009–2019 (In Thousands)

Year	Employment	Percentage Change
2009	131.3	-18.9%
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[a]	163.6	5.3
2018[b]	171.8	5.0
2019[c]	176.8	2.9

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

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

As a result of the balanced market conditions, rent growth is slowing throughout the state. From 2014 through 2016, when markets were tighter, the average rent increased roughly 10% a year; as of November 2018, rent growth slowed to 3% in Colorado, to an average of $1,390. Rents in the Denver-Boulder Metro area increased nearly 4% year-over-year to average nearly $1,475 as of November 2018. The strongest rent growth in the state was 11% in Greeley, to nearly $1,115, where the vacancy rate has stayed below 5%. Despite the low vacancy rate in the ski corridor, the average rent was essentially unchanged from a year ago, at about $1,340.

The construction value per unit is expected to increase, primarily because of rising labor and input costs. The average value per multifamily unit will increase 4%, to $132,800, in 2018. Reflecting continued increases in construction costs, the value per unit is expected to rise about 4% again in 2019, to approximately $138,100.

Nonresidential Building

The nonresidential building sector tracks new, remodeled, and rehabilitated offices, medical facilities, colleges, retail outlets, churches, schools, and government buildings. Building starts in 2018 are forecast to end the year at nearly $7 billion, up from a revised estimate of $6.7 billion in 2017. Nonresidential construction starts will rise slightly in 2019, to $7.3 billion.

Fueling the continued construction boom in Colorado are net in-migration and a continuing trend of corporate relocations to Colorado from more expensive and regulated environments on the East and West coasts. A third factor is significant institutional projects, led by the City and County of Denver and public schools. Universities have found diverse funding sources to advance a number of major new remodeling and expansion projects.

Headwinds that keep the expansion in check include a dearth of skilled and unskilled labor and materials price increases. Tariffs are partially to blame for price increases, but also overall worldwide demand and transitional changes related to regional agreements, including the change from NAFTA to the United States-Mexico-Canada Agreement.

Notable project starts in 2018 include the $650 million construction upgrade for DIA Terminal and DIA Concourse expansions at $1.5 billion total; significant commercial additions along Brighton Boulevard in Denver's River North neighborhood; and a slew of health care facilities, including UCHealth Greeley, UCHealth Memorial in Colorado Springs, and Children's Hospital Anschutz Medical Office Building.

VALUE OF CONSTRUCTION IN COLORADO BY TYPE
2009–2019
(In Millions of Dollars)

Year	Residential	Nonresidential	Total Building	Nonbuilding	Total Construction
2009	$2,501.3	$3,126.2	$5,627.4	$1,648.4	$7,275.8
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	7,563.3	4,307.0	11,870.3	2,366.8	14,237.2
2015	8,596.9	4,801.9	13,398.8	2,951.8	16,350.6
2016	10,067.8	5,927.4	15,995.2	2,586.9	18,582.1
2017[a]	10,599.0	6,670.8	17,269.8	3,069.4	20,339.2
2018[b]	10,703.2	6,950.0	17,653.2	3,500.0	21,153.2
2019[c]	11,532.0	7,300.0	18,832.0	2,800.0	21,632.0

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

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

Major projects scheduled to start in 2019 include the Colorado Convention Center expansion at $230 million, several building projects on the National Western Center campus, the World Trade Center, UCHealth Anschutz Tower 3, CU Anschutz Health Sciences Building, and CSU Meridian Village Residence in Fort Collins. Several university buildings are scheduled to start, including three projects at the University of Denver, as well as mixed-use/office buildings in downtown Denver and the Denver Tech Center. Several Denver bond projects approved in November 2017 also will start in 2019, and retail expansion continues on the north side of the Denver Metro area.

A total of $1.5 billion in school district bonds were approved in November 2018, about one-third of which will appear in the 2019 start numbers. Major approvals include the Jefferson County School District at $567 million (a portion of which will be used for construction), Littleton Public Schools at $298 million, Douglas County School District at $250 million, and Harrison School District 2 at $180 million. Also of note is a $375 million Poudre School District bond for three projects, approved by voters in 2016 but delayed by a lawsuit, which will finally be built in 2019.

Economic development groups report significant business expansion and relocation inquiries. Companies continue to follow potential employees to Colorado, and net-migration has been a good predictor of continued commercial building in the state.

Nevertheless, an increasingly congested transportation system and the growing problem of providing affordable housing to Colorado's growing population are concerns.

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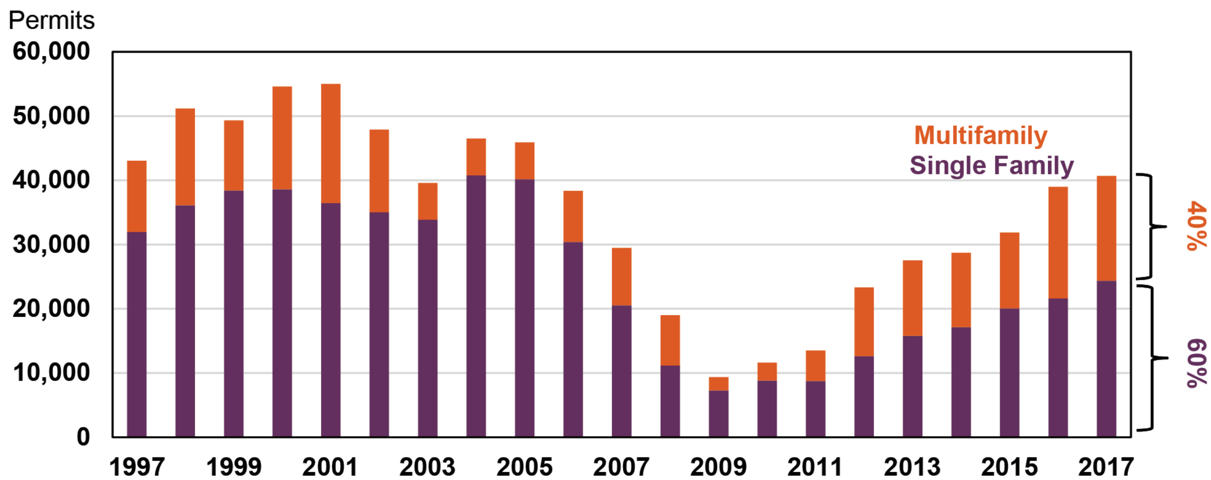
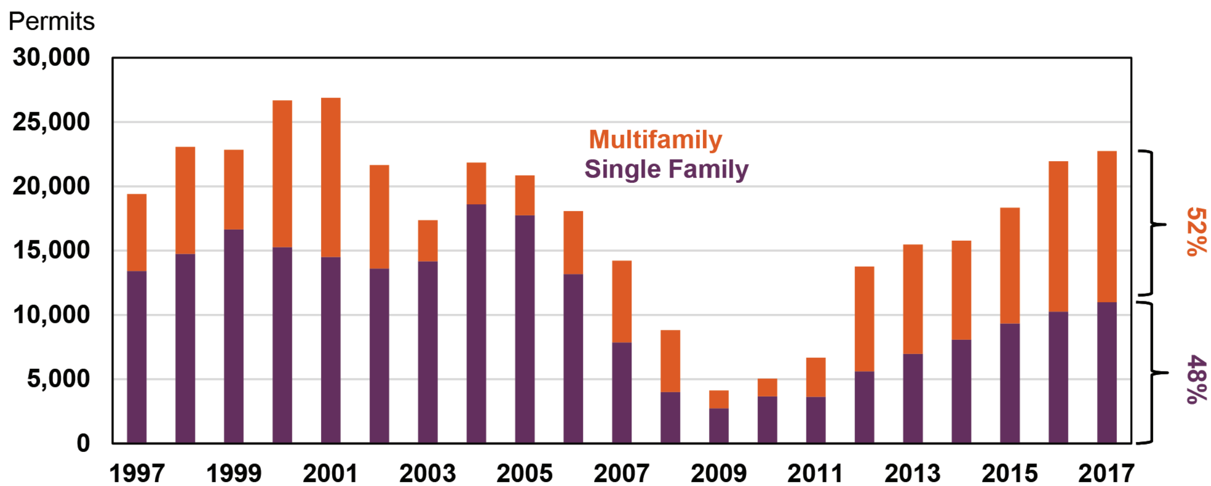
COLORADO RESIDENTIAL BUILDING PERMITS



Source: U.S. Census Bureau.

DENVER-AURORA-LAKEWOOD MSA RESIDENTIAL BUILDING PERMITS



Source: U.S. Census Bureau.

The affordable housing and transportation challenges in Denver are moving more of the demand for company relocations along the Front Range to Fort Collins and 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 usually 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 number of multiyear projects and the share of money spent on these types of projects continues to grow.

The official numbers for 2018 appear to be on track for $3.5 billion. Despite a slow period earlier in the year for the Colorado Department of Transportation (CDOT), the award of some high-profile projects and new funding from the legislature helped to prop up CDOT spending. A number of other significant nonbuilding projects thought likely to be awarded in 2018 remain pending: the $50–$80 million Phase 1 of the reconfiguration and reconstruction of Peña Boulevard; the initial work on $275 million in infrastructure projects connected to the redevelopment of the National Western Center; the first segments of Thornton's $400 million, 58-mile raw water pipeline; and the first round of bond-funded projects approved by Denver voters in 2017, which was $415 million for transportation and mobility projects. If some of these projects are ultimately awarded in 2018, the year-end numbers will likely exceed the committee's forecasted amount. Otherwise, the committee expects official 2018 numbers to end the year close to $3.5 billion.

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 seven years. The data show year-over-year increases of 7% to 12% in the volume of requests for identifying buried utilities each year since 2012. Once again, 2018 is busier than the previous year, with 2018 volume on pace to be more than 10% higher than 2017. This supports the committee's belief that the overall construction industry in Colorado continues to see steady growth.

Election Day 2018 did not result in increased funding for transportation projects; it is unknown whether the upcoming legislature will appropriate more general revenue funding to transportation in the spring. Without additional funding, the marquee projects in 2019 will be the transportation projects mentioned previously, along with the $425 million Northern Water's Windy Gap Firming Project, the initial phases of the $350 million I-25 Gap between Castle Rock and Monument, the $300 million I-25 Segments 5 and 6 between SH 66 and SH 402, and CDOT's $99 million US 160/550 project. Procurement for Denver Water's $464 million Gross Reservoir expansion project could occur in 2019, but is more likely to start in 2020.

When all of this is added up, the committee's forecast of the final statistics of project awards for 2019 is for $2.8 billion. This represents a 20% decrease from 2018, which the committee estimates at $3.5 billion in project awards. The "decrease" is primarily attributable to the nature of the delivery methods of the major projects: the full value of the multiyear Central 70 project was accounted for in 2018, while many of the multiyear projects that will get going in 2019 will involve multiple contract phases that will be awarded and "counted" over multiple years. Put another way, the $2.8 billion projection for awarded projects is below the value of construction expected to be put in place during 2019 in the nonbuilding subsector, which the committee believes will be at or above $3.0 billion. ✤

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Manufacturing

Manufacturing in Colorado was a $24.3 billion industry in 2017, representing about 7.1% of the state's nominal GDP, or value of all goods and services produced in the state. While Colorado ranked 12th-lowest nationally in the percentage of GDP coming from the Manufacturing Sector, the state's industry has been a leader in terms of growth. Colorado's real GDP growth ranked the state 7th in 2017, and growth in 2017 was the best in Colorado since 2007. Colorado's comparative strength derives from the state's manufacturing composition—two-thirds of Colorado's manufacturing real GDP comes from five sectors: Computer and Electronic Products, Food and Beverage and Tobacco Products, Miscellaneous Manufacturing, Chemical Products, and Fabricated Metal Products.

Colorado was home to more than 5,800 manufacturing establishments employing 146,700 workers in 2018 who represented 5.4% of the total employment base in the state.

Colorado's manufacturing industry employment growth has outperformed the nation for the last seven years. After growing 0.9% in 2017 and 1.9% in 2018, the industry looks poised to grow 1.2% in 2019, adding 1,700 jobs.

Manufacturing's steady performance in Colorado and nationally is a hot topic in business circles, with a unique set of circumstances fueling job growth to confound the sector's doubters.

- The economics of manufacturing in the United States continue to improve. Tariffs are only the latest incentive for companies to consider re- or near-shoring production. Total cost-of-ownership calculations increasingly point to reshoring production and moving or creating jobs domestically—not in every case, but more cases.
- Brand considerations are also having an impact on where companies manufacture. Buyers care where products are made. Brands are taking

INDUSTRY SNAPSHOT MANUFACTURING

Nominal GDP, 2017 ($ Billions)	23.0
Real GDP, 2017 ($ Billions, 2012 Dollars)	22.0
2017 Real GDP Growth Rate	1.6%
Total Employment, 2017 (Thousands)	144
2017 Employment Growth Rate	0.9%
Employment Growth National Rank	22
Share of Colorado Employment	5.4%
Share of National Employment	8.5%
Average Wage, 2017	69,446
Percent of Statewide Average Wage	121.2%
2017 Average Wage Growth Rate	4.7%

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

COLORADO MANUFACTURING EMPLOYMENT BY INDUSTRY, 2009-2019 (In Thousands)

Industry	2009	2010	2011	2012	2013	2014	2015	2016	2017[a]	2018[b]	2019[c]
Food	18.38	18.5	19.4	19.3	19.9	20.6	21.6	22.2	22.8	23.3	23.7
Beverage and Tobacco	5.20	5.2	5.4	5.6	5.9	6.4	7.0	7.8	8.3	8.6	8.9
Printing and Related	6.06	5.6	5.3	5.3	5.3	5.4	5.5	5.5	5.5	5.4	5.3
Other Nondurables	15.56	15.0	15.2	15.5	15.7	16.0	16.7	17.1	17.2	18.0	18.5
Subtotal, Nondurable Goods	45.20	44.3	45.3	45.7	46.8	48.4	50.8	52.6	53.8	55.3	56.4
Nonmetallic Minerals	7.17	6.8	6.8	6.9	7.3	7.7	8.1	8.1	8.5	8.5	8.6
Fabricated Metals	13.10	12.5	13.3	14.1	14.8	15.6	15.4	14.7	14.7	14.8	14.9
Computer and Electronics	21.80	21.4	22.1	22.4	21.9	21.5	21.6	21.4	21.8	22.3	22.5
Transportation Equipment	9.20	8.8	8.9	8.8	8.8	8.8	9.4	9.6	9.8	10.1	10.3
Other Durables	31.53	30.4	31.7	33.0	33.2	34.6	35.7	36.3	35.4	35.7	35.7
Subtotal, Durable Goods	82.80	79.9	82.8	85.2	86.0	88.2	90.2	90.1	90.2	91.4	92.0
Total, All Manufacturing	128.00	124.2	128.1	130.9	132.8	136.6	141.0	142.7	144.0	146.7	148.4

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

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.

note and working harder to establish domestic manufacturing.

- Maker and craft industries like brewing, distilling, and food are maturing. Company "exits" that generate wealth and publicity catalyze growth by inspiring more new brands. A growing cottage industry of production companies is following suit.
- Automation has not yet had a profound impact on employment in small and medium-size manufacturers, and downward pressure on job creation is being offset by dynamic growth in industries, like food and beverage, electronics and aviation, and cannabis. Technology is today allowing companies to move employees to more value-added roles and is a net job-creator.
- Tax reform has provided additional fuel for what was already an improving manufacturing economy. After falling from 59 in 2014, to 48 in 2016, the ISM Purchasing Managers Index surged again to near 60 after Congress passed the new tax law. The full impact of tariffs is not yet clear.

Based on data in Q1 2018, nearly 80% of the companies in Colorado had fewer than 20 employees, and represented just 17% of industry jobs. About 1.4% of establishments (<100) had more than 250 employees and represented 37% of jobs. Although not reflected in the employment numbers discussed in this report, there were an additional 7,700 "nonemployer" establishments in Colorado in 2016 according to data from the U.S. Census Bureau. These primarily sole proprietorships highlight the importance of small business to the sector, producing a broad range of manufactured goods across the state.

At the national level, total manufacturing employment in the United States rose to 12.8 million employees in October 2018. Year-over-year job growth in 2018 was the highest since 1995.

Workforce challenges are a significant downer to manufacturing's otherwise commendable narrative. Tariffs also pose a significant threat to growth, yet some manufacturers seem inclined to support measures that redress trade-policy imbalances even if short-term pain is in the offing. Half the manufacturers surveyed in nearly 100 *CompanyWeek* interviews in Q3 2018 expressed support for the Trump administration's controversial trade policy.

Nondurable Goods

Nondurable goods continues to be a bright spot in Colorado manufacturing, led by a dynamic food and beverage sector and the growing influence of cannabis manufacturing. About 38% of manufacturing employment is found in the nondurable goods industries, which include the production of goods that generally last for less than one year. Nondurable goods employment increased by 2.8% in 2018 and is averaging about 55,300 workers for the year. It is expected to expand 2% in 2019, adding 1,100 jobs.

Food Manufacturing

The largest nondurable goods subsector in Colorado is food manufacturing, representing 42% of nondurable goods in the state. Colorado food brands and co-packers manufacture candies, baked products, tortillas, burritos,

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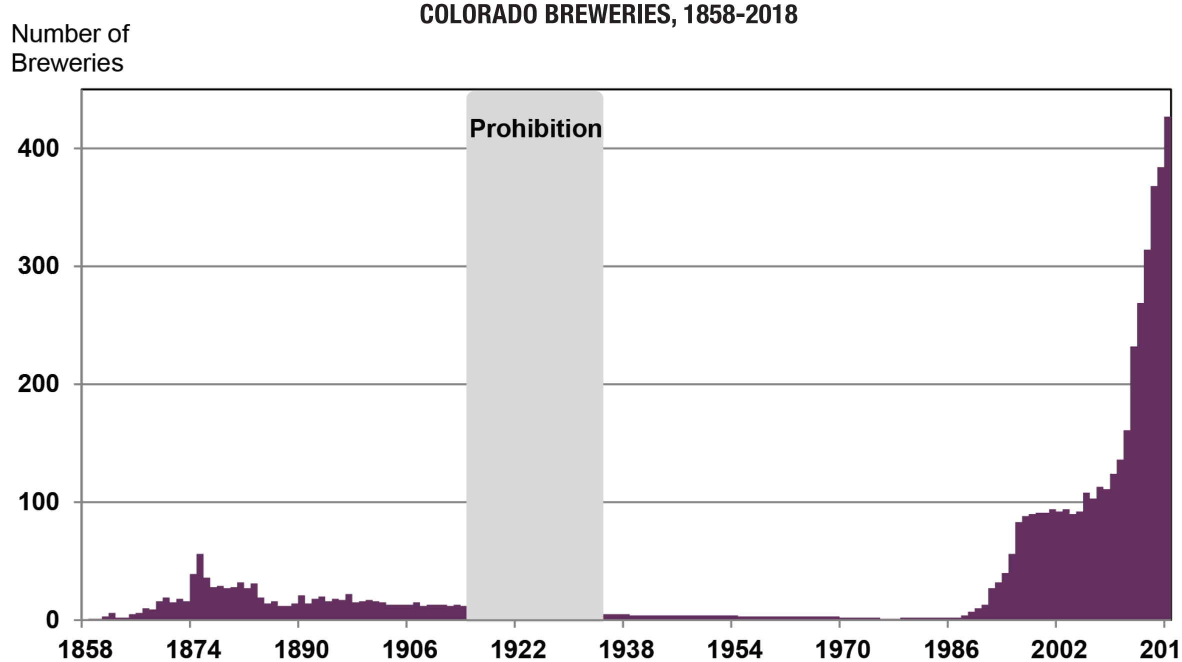
COLORADO BREWERIES, 1858-2018



Sources: Colorado Brewers Guild and the Colorado Liquor Enforcement Division. Total includes brew pub and manufacturing brewery licenses. Total as of November 2018.

Manufacturing

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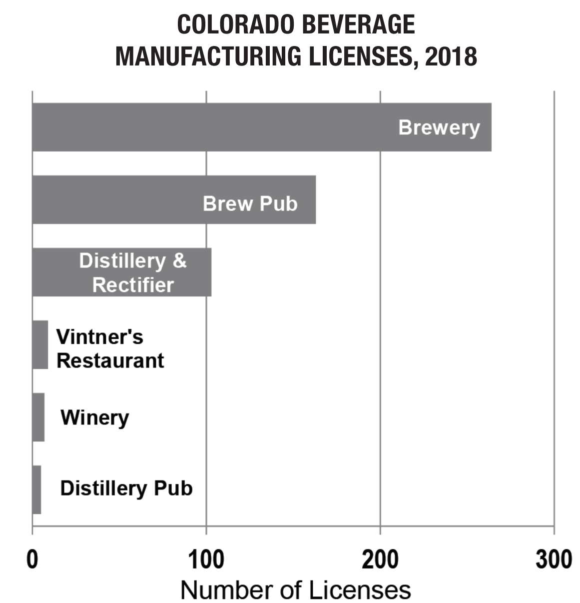

Source: Colorado Liquor Enforcement Division, All State Liquor Licenses. Total as of November 2018.

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 more than $1.7 billion in 2017, an increase of 16.3% over $1.5 billion in 2016. These exports made up 21.4% of all Colorado exports in 2017. Of the 2017 exports, 95.6% were to North America and Asia combined, and from 2016 to 2017 food manufacturing exports to North America increased $182 million.

The pending United States–Mexico–Canada Agreement (USMCA) may largely replace the North America Free Trade Agreement (NAFTA) with some relatively minor amendments. The probability of USMCA passing and the specifics of this possible new agreement are to be determined in 2019. If a good resolution with minimal tariffs is found, the Colorado food manufacturing industry is not likely to be negatively impacted. If a good resolution is not found and tariffs prevail, the entire commodity sector in Colorado (and the United States) could be negatively impacted since Canada and Mexico are such large trade partners. The ongoing trade dispute with China is a likely liability for food manufacturing in the state and nation as well.

Employment is expected to increase by about 500 jobs in 2018 and 400 in 2019, reaching total employment of 23,700 workers. These estimates are relatively conservative due to the impending impact of tariffs.

Beverage Manufacturing

Firms in the beverage subsector produce soft drinks, ice, bottled water, beer, wine, and liquor. Most of the subsector employment is located along the Front Range. According to the Brewers Association, in 2017 Colorado ranked third in the country in the number of craft breweries (348), and it was first in economic impact per capita based on 2016 data. The state produced just over 1.5 million barrels of craft brew, the third-highest production in the country in 2017. Especially given the relative strength of craft brewing in Colorado, there is concern about the impact of aluminum tariffs on the beverage industry.

While beer does very well in Colorado, winemakers and craft distilling is also expanding. Colorado ranked fifth in the nation in total number of craft distillers in 2017. The number of active distilleries increased by 11% in 2017. As of September 2018, there are 99 active distilleries in the state according to the American Craft Spirits Association.

Exports of other beverages and tobacco products in Colorado increased 26%, from $104.7 million in 2016 to $131.8 million in 2017. In 2017, exports to North America increased by over $27 million and made up 96.6% of these exports. Once again, the impact of tariffs is an unknown; however, microbreweries, distilleries, and wineries are expected to continue to grow slowly in the coming years, with just a few manufacturing employees added in each new location. Employment in the beverage subsector is expected to increase by about 300 workers in 2018 and in 2019, averaging about 3.5% annual growth, reaching 8,900 workers.

Printing and Related

Colorado employment in the printing and related products subsector has shown minor growth in the last five years but saw a decline of about 100 employees in 2017. Those in printing are looking for ways to stay relevant. There has been growth in printing of labels and t-shirts for new products produced locally, particularly craft beers; however, this local growth is slowing down. The number of employees in 2017 may have dropped further if not for an increase in the export of Colorado's printed products, which rose 17.9%, to $49.4 million. This increase was primarily due to an increase in exports to Asia of over $9 million, with over $6 million of that to China alone. Since China has started down the path of retaliatory tariffs, it seems likely that the printing subsector will be impacted more heavily than some other manufacturing subsectors. Employment is expected to decline slightly in 2018, to 5,400, and again in 2019, to 5,300.

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 2016, employment in the textiles and apparel subsectors averaged about 2,600 employees, or flat growth year-over-year. With outdoor industry brands eyeing Colorado and the western United States, the prospect for growth is promising, though limited supply-chain options, including production services and infrastructure, are still a barrier. Many companies in this subsector group offer niche products to small markets. Employment is expected to remain stable or grow slightly 2019.

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 does not have a large employment presence in Colorado, averaging only about 750 workers in 2017. After declining during the early years of the economic expansion, employment in this subsector has stabilized and is expected to average between 750 and 800 workers in both 2018 and 2019. The outlook for the subsector may be sensitive to oil and gas production operations, which are the subject of ongoing policy attention.

Chemical products manufacturing firms employed roughly 6,900 workers in 2017. Recent strength in this subsector, which added nearly 500 jobs in 2017, is expected to continue through the forecast period as a result of both migration into the subsector and hiring by existing firms. Some cannabis processors have classified themselves as chemical product manufacturers, providing a significant boost to employment as that industry matures. Bolstered by strong performance during the first quarter, the subsector is expected to grow to 7,550 jobs in 2018 and to expand further to average 8,000 jobs in 2019.

Colorado *plastics and rubber products* manufacturing firms make a diverse mix of goods ranging from consumer electronics casings to industrial safety matting.

Photo provided by *CompanyWeek* and photojournalist Jonathan Castner.

Employment in this subsector fell to under 5,700 jobs in 2017, largely as a result of cuts made in late 2016, but has since stabilized. Job gains in this area are expected to resume at a slow pace, with the subsector growing to 5,760 workers in 2018 and 5,800 workers in 2019.

Overall, employment in the other nondurable goods subsector will average an estimated 18,000 employees in 2018, an increase of 4.5%, and grow to 18,500 in 2019, up 2.9%.

Durable Goods

Durable goods industries represent about 64% of the employment in the manufacturing sector. Durable goods manufacturing includes the production of goods lasting longer than one year, such as nonmetallic minerals, fabricated metals, computer and electronics, transportation equipment, and other durable goods. Durable goods employment is expected to increase 1,200 job (1.3%) in 2018, to 91,400 employees, and add 600 jobs (0.7%) in 2019.

The *nonmetallic minerals* subsector employs approximately 8,500 workers in Colorado. The forecast for 2019 call for the addition of about 100 jobs. 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. 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 14,800 workers in roughly 875

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Manufacturing

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establishments in 2018. 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 2019, reflecting normalized energy and construction activity after a volatile period the past four to five years.

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.

Momentum in Colorado's computer and electronics subsector picked up in the second half of 2017, and continued into 2018. By the end of 2018, employment for the year will be an estimated 22,300 jobs, an increase of about 2.3%, and the second-consecutive year of growth in the subsector. Computer and electronic products are Colorado's largest export industry. Through the first six months of 2018, year-to-date export activity was up more than 10% compared with the same months in 2017. The boost is largely in Asian markets, including China, Malaysia, South Korea, and Taiwan. Looking ahead, the positive momentum in Colorado will continue into 2019. Based on national data, gross private domestic investment in computers and peripheral equipment is strong, and new orders activity in the subsector is up over-the-year. Employment is forecast to increase to 22,500 jobs in 2019.

Photo provided by *CompanyWeek* and photojournalist Jonathan Castner.

Large aerospace companies dominate the *transportation equipment* manufacturing subsector, which includes the manufacture of spacecraft, satellites, and aircraft parts, as well as truck and auto parts, boat parts, and bicycles. The subsector is sensitive to international demand and federal spending on national defense and space exploration.

A strong outlook for defense spending, together with a firming international economy, is expected to produce some acceleration among these firms. Lockheed Martin, the largest employer in the subsector, has announced a multiyear plan to relocate workers on one of its programs from the San Francisco Bay Area to existing facilities in Denver and Orlando. The federal government's focus on defense projects provides some upside risk to employment among large contractors. 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 10,100 workers in 2018, up 3.1%. Total transportation equipment manufacturing employment is expected to grow 2% in 2019 to total nearly 10,300.

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 employed an average of 35,700 workers in 2018, an increase of 0.9%–losses in the miscellaneous manufacturing subsector more than offset by gains elsewhere. 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 remain flat in 2019.

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, compressors, and canning assemblies. The subsector employed about 12,000 workers in 2017, down 3.7% from the year prior on an uncertain outlook for investment in renewable energy production. Preliminary data for the first quarter of 2018 indicate that employment in the subsector has already rebounded, and this forecast assumes that recent gains are base building for the current forecast period.

Employment in the subsector is expected to increase 2.6%, to over 12,300 workers, in 2018 before adding an additional 1.1% to average 12,450 workers in 2019. The outlook for the industry is constrained by labor market conditions, but expansion among the subsector's leading firms is expected to drive slight additional growth. Toward the end of the forecast period, labor shortages, wage appreciation, and opportunities for automation are expected to suppress the employment outlook. These conditions also present some downside risk to the forecast through 2019.

Employment in Colorado *furniture and related products* manufacturing firms grew 0.4% in 2017 and accounted for about 5,550 jobs. The subsector has seen slow but consistent employment growth, with increases posted in each of the last six years. Furniture makers are expected to average about 5,575 jobs in 2018 and just over 5,600 jobs in 2019. Large firms in this subsector include window, shade, mattress, door, and other furniture firms.

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 subsector has a relatively small employment base in Colorado, averaging about 2,200 employees in 2017.

The electrical equipment, appliances, and components subsector is influenced by household formation, consumer spending activity, and utility infrastructure. While employment in the subsector fell in 2017, growth was positive from fourth quarter 2017 to first quarter 2018. Export activity for the industry through the first half of 2018 was strong, and national indicators, such as shipment activity and new orders, are positive. While U.S. tariff policy is causing some uncertainty in the sector, employment is expected to remain stable in 2018. Positive economic conditions will influence growth in the sector in 2019, with employment increasing to 2,300 jobs.

Employment in the *primary metals* manufacturing subsector, which includes firms that smelt or refine metals from natural ore and scrap, finally stabilized in 2017 after preceding years of job losses. Employment in this small subsector averaged about 2,030 workers during 2017, a 3% gain during the year after an 11% drop the prior year. Firms in this subsector stand to benefit from tariffs imposed on foreign metal products. The forecast assumes some growth from trade policy with additional upside risk. The subsector is expected to employ about 2,100 workers in 2018 and about 2,160 workers in 2019.

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 those that produce a slew of consumer goods, industrial goods, and various other products. Together, the firms in this subsector employed roughly 10,650 workers on average during 2017. Employment declined in 2018, with contraction motivated by a constrained labor market and some firms' migration out of the subsector. Employment at these firms is estimated to average 10,340 employees in 2018 before falling to about 10,000 workers in 2019. Labor market constraints limit opportunities for strong employment growth in this sector, though the addition of new small and mid-size firms into the sector could offer moderating upside risk.

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The Colorado Cannabis Market

Colorado's legal cannabis market has been the subject of international curiosity since it opened in 2014. This is the first system designed to control and tax the cannabis market, and state and local governments have implemented a comprehensive set of policies and regulations that span agriculture, zoning, advertising, security, transportation, food safety, dosing, packaging, and beyond. To date, there are 39 Colorado counties that allow recreational (or adult-use) or medical cannabis dispensaries, 5 that allow only medical dispensaries, and 25 counties where all cannabis sales have been banned or have a moratorium in place. Most of the state's population, however, lives in areas that allow production and sale of cannabis.

Colorado's model of local autonomy and clearly defined rules have become the model system for other governments seeking to legalize cannabis. Government officials from many states and nations have visited to tour facilities and learn from Colorado businesses and government officials.

Annual cannabis sales (medical and adult-use) in Colorado started at $669 million in 2014, and has grown significantly each year since then, hitting $1.3 billion in 2016 and on pace to eclipse $1.5 billion in 2017. In January 2014, statewide sales were about $47 million, and now, in 2017, every month of sales is over $100 million. This remarkable growth will not last, however, as this represents an absorption or shift of sales from the existing illicit market to the regulated market. Within five years, this growth is expected to slow considerably once this absorption is complete and as other states legalize. It is expected that market growth in the future will be driven by more secular factors, such as population growth and changes in prevalence of use.

The state of Colorado taxes adult-use cannabis at the wholesale and retail levels with special excise and sales taxes, and medical cannabis is subject to the standard state sales tax. There are additional license and administrative fees as well. As of September 2017, the state has collected nearly $600 million in taxes and fees since the market opened in 2014. The state is on pace to collect about $200 million in taxes and fees in 2017. To put that in context, the state collects about $44 million in alcoholic beverage taxes per year and $201 million in cigarette and tobacco product taxes per year, putting cannabis on par with other "sin" taxes in the state. The annual state budget is about $29 billion, so cannabis revenue is just a tiny drop in the ocean, compared to more traditional tax sources.

The state uses the funds in various ways through a complex apportionment system. The first $40 million of taxes collected through the state wholesale excise tax goes to a school capital construction grant fund for competitive grants, anything over that amount is allocated to the state public school fund. State marijuana retail taxes are appropriated to a host of state agencies and shared back to local governments to fund regulatory and enforcement systems, public health efforts, youth prevention, and substance abuse programs.

The Colorado cannabis industry is growing to resemble other industries in Colorado that produce consumer products. This industry, however, is highly localized, due to its continued status as federally illegal. Most industry inputs are sourced locally, unlike many consumer products purchased in the state, leading to relatively high economic multipliers compared to other industries (see MPG economic impact report for more details, www.mjpolicygroup.com). At the end of 2016, there were about 31,000 credentialed cannabis industry employees in the state, nearly double the 16,000 credentialed employees in December 2014. As of November 2017, there were 1,011 dispensary (adult-use and medical) licenses approved in the state, along with 1,461 cultivation licenses and 524 product manufacturer licenses.

Early on in 2017, the Trump administration's lack of a clearly defined position on cannabis, and recreational cannabis in particular, heightened the perceived level of risk and uncertainty within the cannabis industry. However, after almost a year of maintaining the cannabis policy status quo, much of the initial concern has been alleviated. The overall cannabis industry outlook is generally positive, as the nation and the world continue to evolve their views towards drug policy, the stigma of cannabis use gradually subsides and the therapeutic benefits of cannabis are further researched. We see market growth fueled by an increased number of product offerings, as consumers shift from traditional flower cannabis to concentrates, oil extract products, and edibles.

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 2.2% in 2018, to a total of 470,500. The sector is expected to grow another 1.8% in 2019, to total 479,200 jobs.

Trade

Wholesale

The wholesale trade industry employed an estimated 108,100 Coloradans in 2018, 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 37,000 nondurable wholesale jobs. The remaining workers are employed by business-to-business sellers, electronic marketers, and agents and brokers.

Wholesale trade employment has been cyclical. In Colorado, the sector lost jobs during the recession and posted growth averaging 3% between 2012 and 2015 before slowing. The state's wholesale firms are forecast to add 1,600 jobs in 2019 for a gain of 1.4%.

Retail Trade

The retail sector accounts for $96 billion in sales and 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 strong in 2018 buoyed by plentiful jobs and good income growth. The recent federal tax cut has added a further boost to purchasing power. Preliminary third quarter GDP figures show real consumer spending rising at a 4% annual rate and spending on goods growing at 5.8%. U.S. retail sales through July were up a healthy 5.6%, a pace somewhat faster than in 2017. Household debt levels are high, although below peaks reached before the last recession. Delinquency rates are low, except for auto loans and student debt. Consumer confidence remains high; the Conference Board Index reached an 18-year high in October. In Colorado, households are benefiting from strong employment growth and rising incomes. State personal income in the second quarter increased 5.7% over the previous year, and average hourly earnings in June were up 4%. At the same time, high housing and

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INDUSTRY SNAPSHOT
TRADE, TRANSPORTATION, AND UTILITIES

Nominal GDP, 2017 ($ Billions)	55.4
Real GDP, 2017 ($ Billions, 2012 Dollars)	51.8
2017 Real GDP Growth Rate	3.8%
Total Employment, 2017 (Thousands)	460.3
2017 Employment Growth Rate	1.4%
Employment Growth National Rank	11
Share of Colorado Employment	17.3%
Share of National Employment	18.8%
Average Wage, 2017	48,601
Percent of Statewide Average Wage	84.8%
2017 Average Wage Growth Rate	4.3%

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

TRADE, TRANSPORTATION, AND UTILITIES EMPLOYMENT, 2009-2019
(In Thousands)

Year	Wholesale Trade	Retail Trade	Total Trade	Transportation and Warehousing	Utilities	Total TTU
2009	93.3	237.8	331.1	64.3	8.4	403.8
2010	90.8	236.3	327.1	62.3	8.2	397.6
2011	91.9	239.3	331.2	62.4	8.2	401.8
2012	94.1	243.0	337.1	64.6	8.0	409.7
2013	96.5	248.3	344.8	67.6	7.8	420.2
2014	99.9	254.4	354.3	70.4	8.1	432.8
2015	103.4	262.1	365.4	72.2	8.2	445.8
2016	104.8	268.0	372.9	73.0	8.2	454.1
2017[a]	106.6	270.1	376.7	75.6	8.1	460.3
2018[b]	108.1	275.2	383.4	79.1	8.0	470.5
2019[c]	109.7	280.0	389.7	81.6	7.9	479.2

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

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

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

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WHOLESALE TRADE EMPLOYMENT
2009-2019
(In Thousands)

Year	Wholesale Trade Durable Goods	Wholesale Trade Nondurable Goods	Other Wholesale	Total
2009	50.1	31.5	11.7	93.3
2010	48.6	30.7	11.5	90.8
2011	49.4	31.0	11.6	91.9
2012	51.0	31.8	11.3	94.1
2013	53.6	33.0	9.9	96.5
2014	56.7	34.3	8.9	99.9
2015	59.5	35.5	8.4	103.4
2016	60.8	36.1	8.0	104.8
2017[a]	62.2	36.8	7.6	106.6
2018[b]	63.1	37.3	7.7	108.1
2019[c]	64.1	37.8	7.8	109.7

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

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

health care costs have limited funds available for retail purchases. Although current data are not available, other indicators, including state collections of sales and use taxes, suggest that Colorado enjoyed strong retail sales in both 2017 and 2018. Weakening auto sales were largely offset by gains elsewhere.

The past year has seen major retailers facing difficult conditions. Toys R Us and Sears have both entered bankruptcy. E-commerce, which now accounts for 10% of U.S. retail sales, continues to grab a growing share of the market. National online sales were up 15.2% in the second quarter, but brick-and-mortar stores are becoming competitive in the online space. Retail giants Target and Macy's reported strong sales due, in part, to upgrading online efforts. Goldman Sachs recently described a "retail renaissance" for firms that survived the past year's carnage. June's Supreme Court ruling allowing states to require online retailers to collect sales taxes could help in-store sales.

Denver's retail real estate market is in sound condition. The real estate services and investment firm CBRE reports that Denver's retail market is reasonably robust compared to peers and that absorption is healthy. Nonetheless, online competition is creating pressures. An executive with a firm that invests in malls said in Denver that he expects half of the regional malls in the United States to eventually close. Large malls, such as Cherry Creek and Park Meadows, are doing well. Smaller regional malls are struggling, resorting to new entertainment options to remain competitive. For example, malls in Edgewater and Glendale are planning "common consumption" areas that allow adults to carry around to-go alcoholic drinks in a designated section of the mall.

Spending is expected to hold up well for rest of 2018. Holiday sales should be healthy. The National Retail Federation projects U.S. gains of 4.3 to 4.8%, somewhat slower than in 2017. Spending is anticipated to cool somewhat in 2019 in both Colorado and the nation. Although solid income gains are likely to continue, consumers face headwinds in 2019. Rising interest rates will increase debt service, which will deter some spending. Wealth effects may weaken due to likely smaller gains in home prices and equities, although rising household wealth appears to have had less influence than in past recoveries, and the impact of moderation in wealth appreciation might be weaker than usual. Slowing of increases in Front Range home prices and rents should free up more funds. An expected slowdown in home sales will depress demand for appliances and furniture. Automobile sales have softened in recent months and are expected to weaken further in 2019. Possible tariffs on automobile imports raise the risk of even further weakness. Inflation should remain in the 2% range, which means very small price increases for items included in retail sales. Over the longer term, increasing concentration of income and wealth in the most affluent who spend smaller portions of their income raises concerns about future sales gains. State retail sales are forecast to grow 5.3% in 2019 compared to a 5.5% gain in 2018.

A very tight labor market will make hiring for the holidays and in the new year challenging. This is reflected in Amazon's recent decision to raise its minimum wage to $15 per hour. As a result, growth in retail employment is expected to be slightly slower than the average over the past eight years. The retail sector is forecast to add just under 5,000 jobs in 2019, a gain of 1.7%.

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 79,100 jobs in 2018 and 81,600 in 2019. The

RETAIL SALES, 2009-2019 (In Billions of Dollars)

Year	Total Retail Trade Sales[a]	Percentage Change
2009	$58.3	-12.3%
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[b]	96.7	5.5
2019[c]	101.9	5.3

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

Sources: Colorado Department of Revenue and Colorado Business Economic Outlook Committee.

RETAIL TRADE EMPLOYMENT, 2009-2019 (In Thousands)

Year	Food and Beverage Stores	General Merchandise Stores	Other Retail	Total
2009	44.7	50.7	142.4	237.8
2010	45.0	50.0	141.3	236.3
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	248.3
2014	49.3	49.6	155.5	254.4
2015	51.1	50.3	160.7	262.1
2016	52.4	52.0	163.7	268.0
2017[a]	52.9	52.3	164.9	270.1
2018[b]	53.3	53.5	168.4	275.2
2019[c]	53.6	54.6	171.8	280.0

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

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

sector is projected to add 3,500 jobs in 2018 and 2,500 in 2019, or growth of 4.6% and 3.2%, respectively. Modest gains are projected for most of the subsectors, with other transportation and air transportation gaining the largest number of jobs.

Transportation

Air Transportation

National data from the Bureau of Transportation Statistics show that U.S.-based airlines carried 885.4 million passengers for the 12 months ending September 2018, an increase of 5.2% 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 increased 3.6 percentage points, to 85.5%, over the past 12 months compared to the previous year. The load factor is the ratio of revenue passenger miles (RPMs) to available seat miles (ASMs). While both increased year-over-year, RPMs (10.5%) increased faster than ASMs (5.9%), hence, the ratio increased. Five U.S. carriers accounted for 68% of domestic passenger traffic in the 12 months ending July 2018: Southwest Airlines (21%), Delta Air Lines (16%), American Airlines (16%), United Airlines (11%), and JetBlue Airways (4%).

Airlines are highly dependent 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.

According to the International Air Transport Association's (IATA) October 2018 Airline Business Confidence Index, airline leadership expect increases in input costs over the year ahead but expect to see higher yields that will help offset the rising costs.

Colorado air transportation jobs grew 7.1% in 2018 with increased passenger traffic. In September year-to-date, passenger traffic was up 4.5% at Denver International Airport (DEN). Through July year-to-date, passengers through Colorado Springs Airport (COS) were up 15.7%. In 2017, Colorado Springs saw nearly 1.7 million passengers pass through the airport, up from 1.3 million the prior year. Despite the impressive 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 2018. Total passenger traffic (enplanements and deplanements) were estimated at 65.3 million in 2017, an increase of 5.6%. The only airport without scheduled commercial flights is Fort Collins/Loveland (FNL), which had service

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COLORADO AIRPORT STATISTICS, 2009-2017
(In Thousands)

Passengers and Cargo	2009	2010	2011	2012	2013	2014	2015	2016	2017
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
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	1,678.9
Grand Junction Regional (GJT)	457.7	443.7	444.2	439.3	422.2	427.7	428.8	465.3	481.0
Aspen-Pitkin County Airport (ASE)	433.7	445.4	442.5	429.8	413.4	435.3	467.0	508.8	489.6
Durango-La Plata County Airport (DRO)	296.2	327.2	351.3	373.1	385.6	387.5	373.6	375.6	373.8
Eagle County Regional Airport (EGE)	363.3	402.2	378.6	335.8	334.3	330.0	313.9	327.7	309.2
Montrose Regional Airport (MTJ)	184.4	193.2	174.5	145.3	169.2	175.1	204.6	230.3	245.1
Yampa Valley Airport (HDN)	245.0	220.1	213.1	119.9	183.6	184.5	187.8	214.7	192.8
Gunnison-Crested Butte Regional Airport (GUC)	84.3	74.6	73.0	62.4	61.6	63.5	68.8	70.0	64.5
Fort Collins-Loveland Municipal Airport (FNL)	62.2	71.3	90.0	69.6	5.5	4.2	6.9	9.1	6.4
Cortez Municipal Airport (CEZ)	15.4	12.7	14.0	15.1	16.4	7.7	4.6	9.1	15.8
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
Pueblo Memorial Airport (PUB)	10.4	23.3	44.9	19.6	13.5	13.6	7.3	4.8	7.7
Telluride Regional Airport (TEX)	13.5	18.5	22.0	15.7	12.9	7.2	0.1	0.3	4.8
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	65,261.9
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
DEN Air Mail	26.6	37.5	35.4	33.7	28.8	32.9	55.0	47.5	59.7
DEN Total	494.8	555.2	547.2	521.8	498.9	519.4	545.8	551.6	584.9
Colorado Springs Total Cargo, Freight, and Air Mail	23.0	22.3	21.7	23.8	23.0	23.8	24.4	17.7	15.8

Note: Excludes airports with few passengers.

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

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.

to Rockford, Illinois, (RFD) on Elite Airways end in 2016. Three of Colorado's airports fall under the federal Essential Air Service (EAS) program: Alamosa (ALS), Cortez (CEZ), and Pueblo (PUB). These three EAS airports only have commercial nonstop service to Denver.

Southern airports Alamosa (ALS) and Pueblo (PUB) more than doubled their seat capacity in 2018 compared to 2017. Mountain airports—Aspen (ASE), Vail/Eagle (EGE), Steamboat Springs (HDN), and Telluride (TEX)—experienced 19% growth in 2018 capacity. Notably, Steamboat Springs (HDN) will gain new service on JetBlue for the winter 2018–19 period, with flights to Boston, Fort Lauderdale, and Long Beach. Vail/Eagle Airport experienced expanded service to San Francisco and Washington, D.C., and announced a new route to Los Angeles in 2018. Telluride welcomed a new airline, Boutique Air, with service to DEN in 2018. Western Slope airports—Cortez (CEZ), Durango (DRO), Grand Junction (GJT), Gunnison (GUC), and Montrose (MTJ)—did not experience any capacity growth compared to 2017. In August, Grand Junction broke ground on a new runway.

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.

DEN served 61.4 million passengers in 2017, ranking the 5th-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 5.3% in 2017 compared to 2016, primarily driven by growth on DEN's two largest carriers, United and Southwest. For the year-to-date period ending September 2018, DEN's passenger traffic was up 4.5%. Airline capacity and passenger traffic growth at DEN is expected to increase through the end of 2018, and the year is forecast to end with over 64 million passengers, surpassing the 2017 record of 61.4 million passengers by more than 5%. Twenty-four airlines provide nonstop service to over 205 destinations from Denver: 180 are domestic destinations, propelling DEN to boast the second-largest domestic air service network in the United States, after Dallas-Fort Worth.

DEN's largest carrier, United, accounts for 42% of the airport's passengers, and the carrier provides nonstop service to over 145 domestic destinations from Denver. Denver ranks as the fourth-largest hub in United's network, behind Houston, Chicago, and Newark. It is important to note that Denver is the second-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 transcontinental connecting passengers. In 2018,

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TRANSPORTATION AND WAREHOUSING EMPLOYMENT 2009-2019 (In Thousands)

Year	Truck Transportation	Couriers and Messengers	Warehousing and Storage	Air Transportation	Other Transportation	Total
2009	17.3	8.7	7.0	13.4	17.9	64.3
2010	17.1	8.5	6.7	12.5	17.5	62.3
2011	17.9	8.5	6.9	12.3	16.8	62.4
2012	18.7	8.6	6.9	13.0	17.4	64.6
2013	19.4	8.9	7.1	14.2	18.0	67.6
2014	20.3	9.4	7.3	14.7	18.7	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[a]	20.1	11.3	8.7	15.4	20.1	75.6
2018[b]	20.3	12.5	9.1	16.5	20.7	79.1
2019[c]	20.5	13.1	9.4	17.3	21.3	81.6

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

United started new domestic service to Jacksonville, Florida; Appleton, Wisconsin; and Monterey, California. For the period of March through October 2018, United operated daily, summer seasonal service to London-Heathrow, United Kingdom. United previously served this route from Denver from 2008 to 2010. In December 2018, United will start service to Mammoth Lakes, California. In 2019, United plans to start service to the previously unserved domestic destinations of Flagstaff, Arizona; Santa Rosa, California; Fairbanks, Alaska; and Eureka, California.

Southwest Airlines ranks as Denver's second-largest carrier, accounting for 30% of DEN's passengers. In terms of destinations, DEN ranks as the second-largest station in the Southwest network, with 64 nonstop destinations. Among Southwest's top 10 stations, Denver recorded the third-largest capacity growth from 2017 to 2018, behind Houston and Oakland. Denver is the third-largest station for Southwest in terms of seat capacity, behind Chicago-Midway and Baltimore. In 2018, Southwest initiated new domestic service from Denver to Panama City, Florida; Memphis, Tennessee; El Paso, Texas; and Lubbock, Texas.

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 2018, Frontier inaugurated service to 34 destinations from DEN, including Calgary, Canada, and 9 previously unserved domestic destinations, including Buffalo, New York; Myrtle Beach, South Carolina; Savannah, Georgia; Syracuse, New York; and Greenville, South Carolina. These markets were all among the 50 largest unserved domestic markets from DEN prior to Frontier's initiation of service.

Through September 2018, international passenger traffic at DEN increased 16.1% compared to the same period in 2017. The expansion of nonstop flights to international destinations continues to be a high priority for DEN. Service to a record number of new international destinations has been initiated in 2018, some noted above and also including:

- March 2018: Canadian low-cost carrier WestJet launched year-round flights to Calgary, Canada
- April 2018: Norwegian started summer seasonal service to Paris, France—a new destination for Denver
- June 2018: Edelweiss launched summer seasonal service to Zurich, Switzerland—another new carrier and new destination for Denver
- March 2019: Cayman Airways will add seasonal service to Grand Cayman, Cayman Islands—another new carrier and new destination for Denver

Air Canada, Aeroméxico, British Airways, Copa, Icelandair, Lufthansa, and Volaris continue to offer nonstop international service at DEN. Combined with these new airlines and new routes, 11 foreign-flag airlines serve DEN and, along with United, Southwest, and Frontier, these carriers operate nonstop service to 26 international destinations in 12 countries.

Growth in air service and passenger traffic in Denver has prompted the initiation of several major expansion and infrastructure projects. DEN finalized a gate expansion plan, which will bring 39 new aircraft gates to the airport's three concourses by 2021. At the same time, 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. This $1.8 billion contract is expected to create 450 construction jobs and over 800 permanent jobs. It will also generate an estimated $3.5 million annually in city taxes, and continue to contribute to the airport's $26 billion annual economic impact. The project broke ground in July 2018 with construction expected to last until late 2021.

Utilities

Colorado natural gas rates fell with lower wholesale prices in 2018. Natural gas production moved up 4.2% with associated higher oil production. Continued economic growth and favorable weather helped push up retail natural gas consumption compared to 2017.

Electricity rates were flat in 2018, with growth in utility infrastructure offsetting lower fuel costs. Residential and commercial growth pushed up electricity demand in 2018, offsetting energy efficiency efforts. In 2019, continued advances in efficient products for home and commercial use and additional rooftop solar installations should more than offset natural growth in demand, dropping electricity usage.

The Colorado Public Utilities Commission (PUC) approved the early retirement of units 1 and 2 at the Xcel Energy Comanche generation station as part of the Colorado Energy Plan. Overall, the plan calls for investment of $2.5 billion in eight Colorado counties to add 1,000 megawatts of wind generation, more than 700 megawatts of solar generation and 275 megawatts of large-scale battery storage. When complete, Xcel Energy will achieve nearly 55% renewable energy on the grid by 2026 and reduce carbon emissions by 60% from 2005 levels. Xcel Energy also completed its 600-megawatt Rush Creek wind generation project in October 2018 on schedule and under budget.

Several Colorado investor owned electric and natural gas utilities had proceedings before the PUC related to corporate tax reductions under the Tax Cuts and Jobs Act. The commission reviewed utility proposed mechanisms for refunds, rate case deferrals, and other treatments to address higher potential utility earnings due to lower income tax rates under the act. Utility rates were generally reduced with the tax savings passed back to customers.

Colorado natural gas consumption grew by 7.2% in 2018, to an estimated 470 billion cubic feet. Electricity consumption also moved up by 2% in 2018, to an estimated 55,933 million kWh. Utilities employment fell slightly in 2018 and is expected to continue to decline in 2019 due to retirements from an older than average workforce. ✥

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COLORADO ELECTRIC POWER AND NATURAL GAS CONSUMPTION
2009-2019
(In Millions of Kilowatt Hours)

	Electric Power (In Millions of Kilowatt Hours)				Natural Gas (In Billions of Cubic Feet)	
Year	Nonresidential	Residential	Total Electric Consumption	Percentage Change	Total Gas Consumption	Percentage Change
2009	33,623	17,413	51,036	-2.1%	523.7	3.7%
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[a]	36,668	19,265	55,933	2.0	470.2	7.2
2019[b]	36,446	18,877	55,323	-1.1	480.6	2.2

[a]Estimated. [b]Forecast.
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 2017, Information industry employment was revised down, recording a loss of 200 jobs (0.3%), driven by declines in the Telecom Sector. Data in early 2018 point to a rebound in that sector, as well as growth in Publishing, Motion Picture and Sound Recording, Data Processing, and Broadcasting. The industry is expected to grow by 2,900 jobs in 2018 and 1,400 jobs in 2019.

Publishing

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 Publishing Sector is expected to post modest employment gains in 2018 and 2019, increasing 4% and 1.9%, respectively.

Newspaper Publishing

Newspapers across the country continue to face significant headwinds, from dailies to weeklies and from print to online. Nationally, print circulation is down about 10% year-over-year in 2017, while digital circulation is down approximately 9% when the top three national publications are excluded. Similarly, advertising revenue dropped close to 10% between 2016 and 2017, ending the year at $16.5 billion, the lowest it has been since 1981 according to the Pew Research Center.

In Colorado, employment in the newspaper publishing sector contracted by almost 50% over the last 10 years, mirroring a decline in circulation of over 50% between 2004 and 2018. Employment fell by 7.6% year-over-year, to 2,726 jobs, in 2017. This trend is expected to continue through 2018 and 2019, albeit at a slower pace, since newsrooms across the country are cutting staff to offset the loss of subscribers and to bolster profit margins. This also equates to below-average salaries for staff, particularly in newsrooms that seek college-educated employees. In 2017, the median annual salary of a college-educated newsroom employee was $51,000, while the average for all workers with the same level of education was $59,000, over 15% higher. Colorado's average annual salary in the newspaper publishing industry was slightly lower in 2017, at $49,000.

Another hit to the industry came in the form of international trade tariffs imposed in 2018. A 20% tariff on newsprint imports from Canada, and a subsequent increase in U.S. paper mill prices, further exacerbated the financial hardship of some newspapers across the country. Staff layoffs covered part of the increased costs, up to millions of dollars annually, while other papers opted to reduce the number of days the paper is printed. The *Grand Junction Sentinel* cited the tariffs as the reason for converting its Monday and Tuesday editions to digital only; however, the spike in newsprint prices merely accelerated the trend toward further digitization of the news.

In 2018, the *Denver Post* cut its newsroom staff by 30%. In its wake, the Colorado Sun arose on a blockchain-based, digital-only platform called Civil, mostly with top journalists and editors who left the *Post*. Civil states it is democratizing the news and making it more ethical by connecting readers directly to journalists. It does this by selling tokens to cover the cost of ad-free journalism, which will allow purchasers to partially influence the content produced. Additionally, the blockchain underlying the sites allows for a permanent record of the content published, helping to ensure content is not stolen or lost. In the continued push away from print, digital platforms will flourish, but monetizing the content will remain a challenge.

INDUSTRY SNAPSHOT INFORMATION	
Nominal GDP, 2017 ($ Billions)	18.8
Real GDP, 2017 ($ Billions, 2012 Dollars)	20.0
2017 Real GDP Growth Rate	-2.2%
Total Employment, 2017 (Thousands)	71.7
2017 Employment Growth Rate	-0.3%
Employment Growth National Rank	22
Share of Colorado Employment	2.7%
Share of National Employment	1.9%
Average Wage, 2017	100,781
Percent of Statewide Average Wage	175.9%
2017 Average Wage Growth Rate	5.5%

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

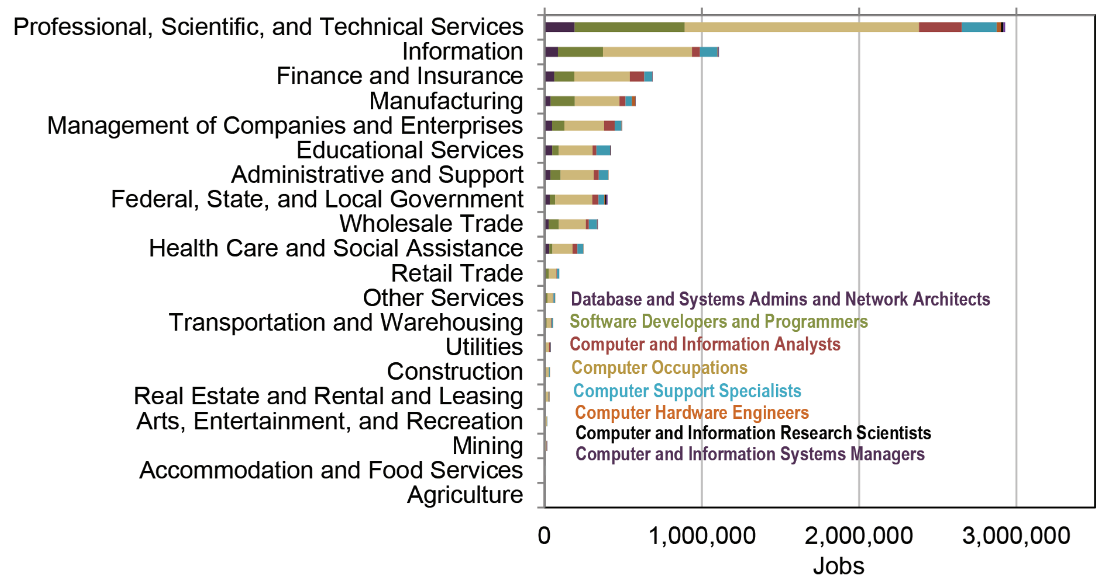
Book Publishing

Trends in the book publishing industry show a continued move toward digital publication and consumption. Authors continue to self-publish in record numbers, primarily though digital platforms, and the sale and consumption of books is predominantly an online endeavor. 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 expanded by over 20% from 2016 to 2017, with audiobook subscription services providing access to myriad genres. The primary consumers of this format are people under the age of 40, contributing to a strong outlook for further growth in this burgeoning digital medium. Along with the record growth in audiobook sales, hardback book sales are up almost 7% year-over-year through the third quarter in 2018.

Sales revenue for general books, also known as trade books, is up 4.4% through the third quarter in 2018. Religious presses, which represent about a quarter of publishing jobs in Colorado, saw the fastest growth in that category, at 7.6%. Nonfiction adult book sales drive part of this increase as well; there has been a resurgence in popularity of history and political books over the past two years. Professional, university, and other educational book sales revenues are all down an average of 7% through September 2018 according to the American Association of Publishers.

Akin to the newspaper publishing industry in Colorado, employment has declined year-over-year in the book publishing industry, shedding 30% of its employees in the state over the last 10 years. The book publishing industry in Colorado is quite small, with a total of 767 employees in 2017, down just 2% from 2016. Annual salaries for the industry have remained essentially flat the last couple years, at around $72,000, while the number of establishments increased to 96 in 2017, the most in the state since 2010. The largest employers are concentrated in Boulder and Colorado Springs in niche publishing sectors. The outlook for the industry is stable for 2019 as the gains in niche and upcoming segments of the industry will offset those in decline.

NATIONAL COMPUTER AND IT JOBS BY OCCUPATION ACROSS INDUSTRIES, 2017



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 29 establishments in Colorado, the directory publishing industry employed 1,192 people during 2017. Both the number of establishments and employment have slowly declined annually for the past decade, and that trend is expected to continue in 2019 due to both the high concentration of large companies in the industry and lower spending on advertising.

Software Publishing

Colorado continued to record gains in software publishing in 2017, marking three consecutive years of growth. Fueled by organic, homegrown growth, as well as through acquisitions and company relocations, the sector expanded by 8.2% in 2017, to 13,700 jobs. Growth continued in 2018, averaging 2.3% year-over-year through September. The sector is poised to grow further in 2019.

In 2017, there were 620 software publishing companies adding 67 establishments year-over-year—an increase of 12.1%. Average industry wages in Colorado are more than twice the state average ($131,391).

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. While Colorado has a high concentration of employment in the software industry (twice the national average), more than 80% of the state's software publishers have fewer than 25 employees. Industry workforce is predominately male (67%) and in the age group from 35 to 55. Significant competitors in the software publishing space include Utah, Oregon, and Washington in terms of industry sector growth. According to the CompTIA *Cyberstates 2018* report, Colorado ranks 9th in tech

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innovation, 10th in net new tech jobs, and 15th overall in tech employment.

A report from CBRE in Q2 2018 illustrates the aggressive growth in the tech industry. It has placed 22 new tech firms, which absorbed 849,000 square feet—more than double the industry's absorption rate from the previous four quarters. Katie Murtaugh, senior research analyst with CBRE, states, "Colorado is witnessing tech industry expansion to a degree not yet seen in this business cycle. The State's Tech pipeline continues to grow, fueled by both homegrown talent coming out of Colorado Universities and in-migration of highly educated professional ... all supported by Colorado's unique entrepreneurial culture and extensive resources for start-ups as they launch and mature." The report adds that software makes up the single-largest component (911,000 square feet) of the almost 2 million square feet of tech space in the Denver Tech Center.

INFORMATION EMPLOYMENT
2009–2019
(In Thousands)

Year	Publishing	Telecommunications	Other	Total
2009	24.1	30.2	20.4	74.7
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	21.8	69.8
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[a]	20.5	25.8	25.4	71.7
2018[b]	21.0	26.6	27.0	74.6
2019[c]	21.4	27.2	27.4	76.0

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

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

Telecommunications

National Trends

The telecommunications industry continues to experience intense consolidation worldwide. Consolidation strategies take on a number of approaches, including vertical integrations like Verizon/AOL/Yahoo and AT&T/DirectTV/Time Warner. Just as common are horizontal integrations like Vodafone/Idea, T-Mobile/Sprint, and Level3/CenturyLink. In addition, nontraditional players are beginning to disrupt the industry, including companies like Facebook and its acquisition of WhatsApp, and Reliance Jio providing free network access.

These forces are applying continued downward pressure on margins and resulting in redundancies across the board that are contributing to an accelerated reduction of telecommunications workforce.

As a result of these pressures, telecommunications ("telcos") companies are looking to technology for optimizations, growth in services, and additional revenue streams to help offset continually decreasing profit margins.

5G

It is estimated that 5G-based (fifth-generation) subscription revenue will grow from $1 billion in 2019 to $40 billion in 2025. However, it is not anticipated that the increased revenue will result in a comparable increase in workforce, since at the root of the technology is virtualization and automation. This will allow the telcos to grow this business without a significant increase in labor. As well, the standards for 5G are still not fully defined and as a result, 2019 will mostly consist of trials and pilots. Large-scale deployment of 5G with the associated increase in device and application ecosystem is not expected for another three to five years.

Edge Computing

A total of 5.6 billion Internet of things (IoT) devices will use edge computing for data processing by 2020. IoT and edge are seen as significant opportunities for the telcos, and they are investing heavily. Many are already supporting business lines for IoT, including AT&T and Telefonica. Since IoT begins to generate most of the data outside the data center four walls, edge is about moving the workload closer to the data to address specific use cases that have latency and data policy restrictions. This will enable uses that before were not possible, like autonomous cars. The upside to the telco industry is unclear at this time. Some will develop specific lines of business and services around these capabilities; others will simply provide connectivity. Artificial intelligence (AI) and automation will play a key role in enabling these technologies, so again minimal labor increases are expected in the near term. However, the ecosystem that will be generated as a result could be potential and have significance in creating new companies and labor requirements.

Network Function Virtualization

Network function virtualization (NFV) is all about optimizing the network with automation and virtualization. Total spend is expected to grow to $110 billion by 2022. However, the majority of spend will be capital and will not result in increased labor needs. In fact, NFV is expected to reduce labor required to manage and provision the network. Finally, NFV is seen as a prerequisite for 5G, so pressure for 5G will create urgency for NFV.

AI/Automation

Telcos are beginning to invest significantly in AI to help automate previously manual processes in the telecommunications business. Call center and field tech processes that previously required a person will be done in the future with AI. It is seen as crucial to lower operating expenses and improve margins. The year 2019 will see a significant uptick in AI applied to telco automation and

Smart Cities

The phrase *smart cities* has become a buzzword, but what exactly does it mean, and why is there so much excitement and energy around it?

Essentially, a smart city is a municipality that employs technologies and uses data to improve operations, plan strategically, and better advance the quality of life of its citizens. While this term is often used to refer to a city, increasingly smart cities are turning into smart regions, where multiple jurisdictions are coordinating in order to ensure services and opportunities do not end at boundary lines, but rather flow across them. Smart city technology can also be deployed beyond municipalities and can be integrated into real estate developments, hospital campuses, etc. Leaders, cities, and the private sector see great opportunity in this space locally, nationally, and globally.

Colorado Collaboration

In Colorado, there has been growth in the number of municipalities adopting smart city technologies and projects. For example, the Greenwood Village Police Department has partnered with the company Adventos to use its products to create a secure collaboration workspace for information and intelligence threads that helps the department organize communication between disparate units, track problem areas, and coordinate the appropriate resources. Likewise, the City and County of Denver has partnered with the company Lunar Outpost to design and build air quality sensor systems that send data to a centralized database where it will be stored and analyzed, allowing the city to better plan for localized air quality hotspots and guide management strategies for healthier air.

These examples are just the tip of the iceberg. To coordinate efforts around smart cities stakeholders, the Colorado Smart Cities Alliance was launched in 2017. The Colorado Smart Cities Alliance is a statewide, multijurisdictional collaboration of public, private, and academic sector leaders committed to accelerating the adoption of smart cities projects and initiatives in their respective communities. Their members include municipalities such as the City of Aurora and the City of Grand Junction; federal laboratories such as the National Renewable Energy Laboratory (NREL); state agencies, including the Colorado Department of Transportation; and private sector partners, such as Arrow Electronics and Zayo. The Alliance and Open Lab also bring global attention to Colorado's growing smart city ecosystem and support economic development efforts in attracting cutting-edge smart city technology companies to Colorado.

Colorado Initiatives

In September 2018, the Colorado Smart Cities Alliance announced the creation of the Colorado Open Lab in Arrow Electronics' Centennial office to help cities work with academic, private, and public partners on new technology opportunities. It will include an engineering and innovation facility and showcase areas, involving, for instance, smart street lighting, smart buildings, resource conservation, and connected vehicles.

Another exciting Colorado smart cities project is Peña Station NEXT in collaboration with Panasonic. As a connected community, it is demonstrating leading technologies in smart, sustainable, healthy, and connected places and serves as a living lab to evaluate current and emerging technologies and business models. Panasonic recently opened an immersive and interactive Smart City Innovation Showcase that enables stakeholders, including cities, utilities, and real estate developers, to experience and engage in a real-world smart city environment to better understand how, why, and when they should deploy smart city solutions in their communities.

Interest in smart cities has led to gatherings of leaders, and the public and private sectors in Colorado to discuss related issues and opportunities, including the Denver Smart City Forum in June 2018 and the Colorado Technology Association's Inaugural Colorado Smart City Symposium in September 2018. In April 2019, Denver will host the Smart Cities Connect Conference & Expo.

Contributor: Matt Wendel, Colorado Technology Association

will certainly have a negative impact on workforce going forward in the telecommunications industry.

Cloud

Telcos are looking at the cloud to offset capital expenditures and get out of the data center business. More and more workloads are being shifted to the cloud as telcos get more comfortable with security aspects of cloud service providers. This trend is resulting in a reduction of labor for the telcos, with those resources shifting to the cloud service providers and resulting in transition of capital expenditures to operating expenditures for the telcos.

Telecom in Colorado

A total of 26,000 people were employed in the Telecom Sector in 2017 in 649 establishments throughout Colorado. Just over half of these establishments are located in metro Denver; however, since many larger companies are based in the metro area, about 70% of all telecom jobs are in the Denver metropolitan statistical area. Broadcasting and telecommunications are combined for GDP reporting; this combined sector recorded GDP growth of 6.8% in 2013, but contracted for the past three years, declining 1.6% in 2014, 8.2% in 2015, and 2.3% in 2016 (latest available data). In 2017, GDP in the information industry posted its largest increase since 2013, growing by 3.6%,

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indicating that broadcasting and telecom, a subset of Information, likely stemmed the trend of declining GDP in 2017.

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.

In October 2016, AT&T announced that it would acquire Time Warner in a deal valued at $85.4 billion; this merger was finally completed in mid-2018. With this deal, AT&T added Warner Bros, HBO, and Turner Broadcasting to its media offerings and built upon its 2015 merger with DirecTV valued at nearly $50 billion. With these acquisitions, the line between telecommunications and broadcasting becomes less obvious. AT&T has evolved over the years from a wired telephone company to a wireless phone provider and now has become the largest pay television provider, and a producer of television and movie content. However, this buying binge has now saddled the company with $250 billion in debt that could lead to slower growth and job cuts in the near term. By contrast, AT&T's largest wireless competitor, Verizon Wireless, was involved in three mergers in 2017 totaling about $10 billion, but has not undertaken any major mergers in 2018.

Merger mania continued in 2018. Comcast and Disney engaged in a bidding war for 21st Century Fox, with Disney emerging as the winner after offering $71.3 billion in July. 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, the third-largest wireless provider in the United States, T-Mobile, announced a merger with Sprint at the end of April 2018, valued at $26.5 billion. This deal is awaiting regulatory approval and likely will not close until sometime in 2019, but it has the promise to help spur a faster 5G network build-out among the big three wireless providers.

Employment in the Telecom Sector experienced a 40.6% 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 14.7% (with a considerable portion of this loss due to the aforementioned cuts at CenturyLink after its merger with Qwest).

After 2012, large employment losses in this sector abated through 2016. The trend of losses reversed in 2013 and 2014, with sector payrolls edging up about 263 combined over these two years. Employment trended down 375, or 1.4%, in 2015. In 2016, telecom employment expanded by 589, growth of 2.2%.

Industry losses resumed in 2017, with employment falling 1,600, or 5.8%. Two component sectors—wired (telephone, internet, and cable) and wireless (cell phones and wireless internet service providers) telecommunications carriers—were combined into a single industry last year. These sectors accounted for roughly 1,100 of the industry's job losses. The catch-all other telecommunications components relinquished its 2016 employment gains, with the loss of 563 jobs in 2017. The smallest industry group, satellite telecom, added 36 jobs in 2017. This component grew by 75% from 2011 to 2017, but totaled only 241 new jobs.

Telecom sector employment is expected to increase by 800 in 2018. The sector is projected to gain 600 positions in 2019. 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 was intended to proscribe unfair competition between publically and privately provided broadband, has presented barriers to broadband efforts in many rural parts of the state.

Over the past decade, a number of municipalities and 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 Colorado Municipal League, as of May 2018, a total of 122 cities and counties have voted to override the provisions in SB 05-152. However, these referenda are costly to hold and do not require the areas to build the networks but gives them the power to do so. Partnering 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, has issued $142 million in bonds for broadband build-out, and expects to have its first customers online in just over one year. 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.

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

Department of Local Affairs that has awarded over $20 million in matching grants for a statewide investment of $34 million to numerous rural communities throughout the state, like 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 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 a 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 of reducing health care costs while improving outcomes. Senate Bill 2 passed in 2018 should help with 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.

Broadband availability to schools and educators across the state, especially in rural areas, is also a critical need that has been addressed over the past decade by the state. The Kids Link Colorado initiative is entering its third year of helping local schools take advantage of federal programs to close the connectivity gap. In partnership with EducationSuperHighway and managed through the Office of Information Technology, the effort will work with local school districts to identify gaps and find solutions. Julesburg, in northeastern Colorado, has realized benefits from this program that allowed it to double its broadband bandwidth while shrinking the school district's monthly bill.

Telephone

Telephone, the legacy business for telecom providers, has been experiencing a protracted decline since the turn of the century. In June 2018, the Centers for Disease Control and Prevention, which tracks landline use to assure representative samples in its health studies, reported that nearly 54% of U.S. households had only cellphone service as of late 2017—an increase of 3.1 percentage points from the second half of 2016. According to this study, less than 43% of all households still had a landline (and about 3% have no phone service at all). Among young adults age 25–34, about 75% 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.

Television

Similar to the decline in land telephone subscriptions, pay TV companies have been losing subscribers at a continued steep rate. An August 2018 report from Leichtman Research Group revealed that cable, satellite, and telecom pay TV providers lost about 415,000 subscribers in second quarter 2018 compared to a loss of about 660,000 reported in second quarter 2017. As internet speeds have become more reliable and faster, and increased competition has caused prices to drop in some markets in recent years, customers have been "cord-cutting," leaving traditional cable and satellite services for subscription video on-demand services such as Netflix, Hulu, and Amazon Prime. Leichtman reported that 69% of U.S. households have a subscription to one of these services in 2018 (up from 64% in 2017), with 63% of households subscribing to multiple services. Additionally, over-the-top video services, such as Roku, Sling TV, AT&T's DirecTV Now, Sony's PlayStation Vue, and YouTube TV, continue to rise in popularity. Sling TV is a subsidiary of DISH Network Corp., based in Douglas County. (Over-the-top refers to the delivery of video content through the internet.) Telecom companies are trying to stem this decline through the use of new technologies like high-definition, on-demand, online, mobile, and multicasting. 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 455,000 broadband internet subscribers in the second quarter 2018, up from 235,000 in the same quarter in 2017. Of the 97 million broadband subscribers, cable companies provide broadband service to 63 million while telephone companies provided service to 34 million.

Wireless

Advances in wireless communications have enabled consumers to continue to move away from landlines and pay TV providers. As more content is delivered wirelessly and with 5G 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, 95% of Americans own a cell phone and 77% own smartphones (more than double the 35% share reported in the first smartphone ownership study in 2011). Additionally, tablet computers are owned by 53% of Americans (up from just 3% in 2010), and about 20% own an e-reader. The uptick in

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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. The FCC launched an Incentive Auction in two stages during summer and fall 2016. This plan, which was authorized by Congress in 2012, helped align the use of broadcast spectrum with consumer demands for video and broadcast services by enabling broadcast TV stations to generate additional revenue by making "low-band" broadcast TV airwaves available for wireless broadband. Eighty-four megahertz of spectrum were repurposed, and the auction brought in nearly $20 billion in revenue, with more than $7 billion going to the U.S. Treasury.

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 6 GHz band, an unlicensed spectrum used by Wi-Fi networks. This additional spectrum will help ease congestion on wireless networks and help 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 will now issue licenses at the county level rather than the smaller census tracts.

The 5G networks have the promise of being 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 street lights. However, existing streetlights will have to be replaced with a new design that will not be introduced to the market until 2019. The deployment of these small cells will likely occur a few blocks at a time and could take a few years before big population centers in Colorado are covered.

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% for films, television, commercials, and video games produced in Colorado. Since the incentive's inception, the increase in inquiries and applications has been palpable; just under $17 million was awarded to productions as of June 30, 2018. The Colorado Office of Film Television & Media (COFTM) estimates that the productions brought to Colorado under the incentive generated $207.9 million in economic impact to 55 counties in Colorado and created over 8,123 cast and crew positions. The multiplier effect was calculated based on the reported actual and predicted expenditures of $115.6 million and 3,673 jobs. The multiplier effect was extrapolated from the University of Colorado's Leeds School of Business 2011 study *Economic and Fiscal Impact Analysis of Actual Film Budget Scenario on Colorado* and *Colorado Film Incentives and Industry Activity* reported in 2015, which were updated to include more recent data.

After completing an internal review process within COFTM, each project is presented to the Economic Development Commission. 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 will be issued to the production company.

COFTM recently started collecting new data to estimate the return on investment (ROI) to the State of Colorado for each incentive project. Given a 20% incentive, COFTM estimates that, on average, every dollar of net state cost associated with film incentives returns $12 to Colorado in the form of either wages or vendor purchases. Of the 10 projects for which COFTM has the necessary data, these projects have on average a 12:1 ROI. When COFTM can negotiate an incentive lower than 20% of total expenditure, which typically occurs on larger budget productions, the projected ROI increases above 12:1. The 40:1 ROI included in the table on the next page illustrates what occurs when COFTM negotiates a lower incentive percentage.

Over the last six 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 growing video game industry was boosted by two separate incentives for the choose-your-own-adventure game "Project Siren," 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 projects produced locally to air on the Food Network, PBS, Facebook Live, HGTV, and Velocity. Colorado continues to

COLORADO FILM INCENTIVES PROGRAM 2013-2018

Number of Completed Projects	63
Incentives Paid	$16.1M
Economic Impact	
Total Production Spend	$111.2M
Estimated Tax Revenue	$13.3M
Net Cost to State	$2.8M
Estimated ROI	40:1

Source: Colorado Office of Film Television & Media.

be a hub of commercial production and has incentivized big brands, such as Coors Brewing Company, UC Health, Hyundai Motors, Toyota, and Kia.

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 10 COFTM-activated regional film commissions and local film liaisons, the office now has a better scope of commercial activity. During FY 2018–19, nearly 20 commercials were filmed in Colorado. Additionally, out-of-state reality-style programming, such as Bravo TV's "The Real Housewives of Dallas," filmed in Colorado.

Colorado's infrastructure continues to grow. There are a number of rental houses statewide, which enable production companies—both local and out-of-state—to access gear within Colorado. This infrastructure is attractive to out-of-state companies, which do not incur the added expense of traveling with gear. However, due to reduced General Fund allocation for the incentive program, many Colorado rental houses are seeing a decline in local rentals and are including out-of-state productions as part of their clientele. In addition to a few smaller soundstages across the Denver metro region, a number of warehouse spaces have become available over the past few years, enabling productions to build sets for feature productions. Plans are in the works for RedBarre to open a $750 million, large-scale soundstage and media center along the Front Range.

Following the inception of the film incentive, Colorado saw a substantial increase in film and television crew. Anecdotally, producers who have worked in the state were so pleased that several have elected to return 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 CU Denver's College of Arts and Media, have reported an increase in film and video students. At the same time, with a smaller film incentive and a decrease in larger, out-of-state productions, Coloradans have begun to look for opportunities in other film-friendly states, such as New Mexico and Georgia.

In the first six years of the 20% performance-based rebate, the Colorado Office of Film Television & Media was allocated a total of $17.9 million for incentives. The COFTM must compete annually for General Fund funding. COFTM was allocated $750,000 for FY2017–18 and FY2018–19, which is a dramatically smaller amount than the $3 million allocated in FY2016–17 and FY2015–16. In an effort to support Coloradans who live and work within the state, COFTM made the decision to only award incentive dollars to in-state applicants during FY2017–18. Fewer funds resulted in fewer incentivized productions and a lower impact on both the state's workforce and economy.

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.

COMPETING WESTERN STATES OFFERING FILM INCENTIVES

State	Incentive	Allocated Funds FY2018 (Millions)
California	20-25% tax credit	$330.00
New Mexico	25% film / 30% TV tax credit	$50.00
Utah	25% tax credit	$8.79
Oklahoma	35-37% rebate	$4.00
Colorado	20% rebate	$0.75

Source: Colorado Office of Film Television & Media.

Additionally, Georgia offers an incentive of up to 30%, with no cap on annual incentive funds.

As of the end of FY2018–19 first quarter, four projects had been incentivized, consisting of three television shows and one video game. Given the smaller amount of funds allocated, the COFTM anticipates fewer and smaller projects incentivized throughout the fiscal year. To accommodate the influx of inquiries, more incentive funding is required. As long as the state keeps the incentives flowing, content creation will build to a significant Colorado business within the next few years. ✜

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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 the 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.

Commodities

Blockchain tokens have also been created to represent commodities, such as oil, coffee, and gold. Tokenizing commodities increases supply chain efficiency—when tokenized, a product like a diamond can be tracked from the mining operations all the way to the point of sale at a jewelry store, ensuring and validating quality along the way. Several major companies, including Walmart, are also using blockchain in their supply chain to ensure food security. Furthermore, the trading and exchange of commodity tokens make it much easier to exchange the commodity at any given time and create futures on the commodities using smart contracts.

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 are also popping up, such as SALT Lending in Colorado, which will loan borrowers U.S. dollars based on their cryptocurrency and digital assets.

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 transactions 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.

Advertising Identity

Right now, a social media's user 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.

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. On the international level, Estonia is a leader in creating a true e-society built on blockchain.

Colorado Blockchain Companies

BurstIQ — A marketplace for health-related data secured via blockchain.
Gitcoin — A new payment method to incentive workers contributing to open source projects.
KeepKey — A hardware wallet to store cryptocurrencies and tokens.
Origin —A decentralized marketplace similar to Airbnb and Craigslist that allows users to transact with one another without giving up personal data or high fees.
Radar Relay — An Ethereum-specific token exchange that allows users to trade with anyone in the world.
ShapeShift — A blockchain token and currency exchange that allows users to trade with anyone in the world.
SALT Lending — A lending platform that lends fiat (U.S. dollars) based on the value of the digital assets an individual owns.
Zcash — A privacy coin that allows users to transact with one another anonymously.

Outlook

Blockchain technology, industry, and regulations are still in nascent form, and more use cases are popping up every day. Interest in blockchain across Colorado is high, but the true potential of this technology remains 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 seven consecutive years of growth in 2018, adding 2,500 jobs to total 170,000. However, 2018 also marks the third consecutive year of slowing industry growth, decreasing from 3.3% in 2015 to 3% in 2016, 2.3% in 2017, and 1.5% in 2018. Growth is projected for 2019—1%, or 1,700 jobs—as factors, such as higher mortgage rates, adversely impact some subsectors within Financial Activities. Foundationally, the strong economy will support banking, insurance, and real estate employment.

Approximately 70% 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 30% of the workers are employed in the Real Estate and Rental and Leasing Sector, which includes real estate-related payroll jobs and companies that lease anything from real estate to equipment to formal wear.

FINANCIAL ACTIVITIES EMPLOYMENT 2009-2019 (In Thousands)

Year	Finance and Insurance	Real Estate and Rental and Leasing	Total
2009	103.8	44.2	148.0
2010	101.7	42.6	144.3
2011	101.4	42.5	143.9
2012	103.4	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	163.8
2017[a]	115.5	52.0	167.5
2018[b]	116.4	53.6	170.0
2019[c]	117.0	54.7	171.7

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

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.

Finance and Insurance

Capital Markets

As 2018 closes out, the capital markets have been buffeted with significant volatility, not unlike how the year began. After surging to a record high in January 2018, the S&P 500 declined more than 10% from that peak into February. The S&P 500 reached another record high in September 2018, only to decline approximately 10% from that peak heading into November. The Russell 2000 stock index, a proxy for small businesses in the United States, peaked at more than 13% year-to-date in August 2018, only to dive into negative year-to-date returns entering November. At the time of this writing, the best performing major U.S. index was the NASDAQ. It also peaked in August 2018, posting a year-to-date return of more than 17%, only to decline to a low single-digit return heading into November. Given the level of volatility, how the U.S. stock market closes out 2018 is anybody's guess. Modest single-digit returns seem probable. What are the factors to consider in 2019?

An Uncertain Environment

There is an old saying, prices change more often than facts. What are the facts? Many economic levers have been pulled over a short period of time that impact the U.S. economy. Predicting the second and third derivative impacts of the many pulled levers has the experts scratching their heads. The price action in the capital markets reflects this uncertainty. Money is agnostic and much like water, it seeks the path of least resistance, providing the greatest return. Deregulation can release pressure and result in an increase in economic output. Deregulatory levers have been pulled. Similarly, changes to the tax code can result in an uptick in economic activity where tax rates or rules related to deductions have created undue economic friction. Such changes have been made to the tax code.

INDUSTRY SNAPSHOT FINANCIAL ACTIVITIES

Nominal GDP, 2017 ($ Billions)	70.3
Real GDP, 2017 ($ Billions, 2012 Dollars)	60.1
2017 Real GDP Growth Rate	1.0%
Total Employment, 2017 (Thousands)	167.5
2017 Employment Growth Rate	2.3%
Employment Growth National Rank	13
Share of Colorado Employment	6.3%
Share of National Employment	5.8%
Average Wage, 2017	81,536
Percent of Statewide Average Wage	142.3%
2017 Average Wage Growth Rate	3.0%

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

In 2018, there has been a marked increase in economic output. One concern is that like a storm surge that can undercut a riverbank and alter the course of a river, the end result to the economy remains to be seen. In Q2 2018, GDP rose to 4.2%. This is a level of output that has not occurred since 2014 when GDP came in at a whopping 5.1% and 4.9% in Q2 and Q3, respectively. However, much like past surges, sustainability is in doubt. The initial read on Q3 2018 GDP has come in at 3.5%, an impressive number to be sure, but the devil is in the details. Upon closer inspection, it appears that *business fixed investment* has stalled. *Trade* was a drag of -1.78%, suggesting that part of the Q2 2018 surge was a rush to fill orders before tariffs were imposed in the current blossoming trade war. Meanwhile, *government spending* added a bit more than 0.5% to Q3 GDP, which, in light of the president's recent call for a budget reduction to

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Financial Activities

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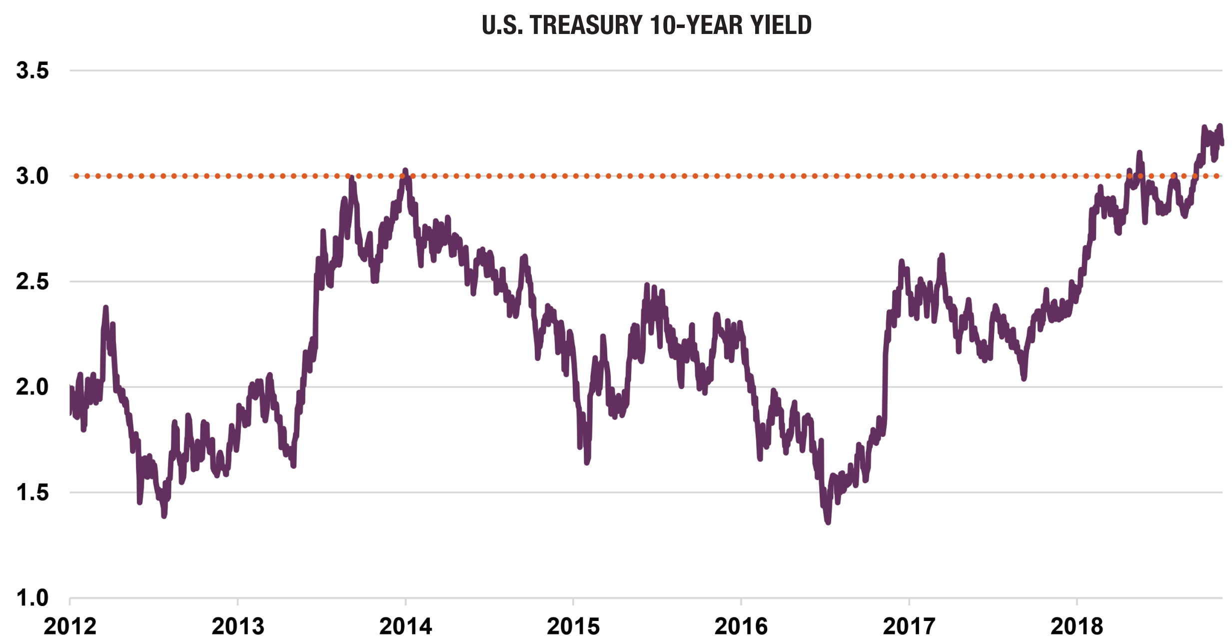


Source: Bloomberg.

address ballooning deficit spending, puts that economic driver in question. Which leaves us with the consumer. *Personal consumption* spiked in Q3 2018, validating increases in consumer confidence measures. The problem is that consumption alone is unlikely to carry the economy too far; the consumer can manage a brief sprint but then tends to return to a more sedate pace.

Policy Impacts

Then there are the pulled levers that have added friction to the economy. Most notable is the blossoming trade war. Tariffs, no matter how justified they may or may not be, are generally viewed as being economically destructive. CNBC reported on October 24, 2018, that of the 110 companies that had reported Q3 earnings, 41 of them, or 37%, had referenced the challenges of tariffs. Companies as different from each other as Costco and Caterpillar have indicated that key inputs to their businesses are being negatively impacted. More to the point, if the Q3 2018 GDP figures are foreshadowing the future, then the economy will continue to be dependent upon consumer spending at a time when tariffs may detract from discretionary income by increasing the cost of goods, effectively adding stress to the consumer at an economically tenuous time.

The distinct lack of any semblance of bipartisan unity in our federal government is a friction creator, as well, in trade and immigration policy. All it takes is the perception of chaos to inhibit capital expenditures. A perception of instability leads to a "wait and see" attitude as reflected in the decline in business fixed investment evident in Q3 2018.

The principal goal of free trade is to reduce friction, but presently our free trade agreements are in flux.

Immigration has become a growing friction point as well. The National Association of Home Builders estimates nearly 25% of construction workers are foreign born. This concentration is believed to have occurred, in part, due to native-born workers seeking opportunities in the energy industry and elsewhere. Changes to the visa system and increased vitriol toward foreign-born laborers has created a labor shortage that has been exasperated by demographics and an already-tight labor market. The skilled tradesperson workforce is aging and there are not enough young people choosing construction-related careers to replace those retiring, thereby adding to construction costs and delays in completing projects.

Then there is the Federal Reserve's push to normalize interest rates and to return to a more neutral policy stance. Nine years into the recovery, one could argue that we should have returned to a neutral policy stance a long time ago. The general consensus is that we are closer to the end of the expansion and that the Fed is taking away the punch bowl (increasing the Fed Funds target rate) just as latecomers are coming to the party. Higher interest rates have drawn the ire of the president and has created sideshow drama regarding Fed independence. Higher interest rates have pushed mortgage rates toward 5%, raising concern as to how this will impact the housing market and asset valuations in general.

Similarly, higher interest rates could be the spark that ignites a debt crisis within the debt markets. Looking at the speculative grade debt market in the United States, Bloomberg published an article on October 11, 2018, examining the 50 largest corporate acquisitions over the last five years. What it found is that most of the deals, $1.9 trillion, were financed with debt, more than half of which have pushed their leverage ratios to levels normally associated with junk debt. However, those companies, which have nearly $1 trillion in debt, have been allowed to retain an investment grade rating by Moody's and S&P. In fact, more than half of the entire

U.S. investment grade index sits in the lowest rating tier (approximately $2.47 trillion corporate debt is rated BBB, the lowest investment grade tier). Any economic hiccup could lead to a surge of companies to be downgraded to junk, which could overwhelm that market and lead to the weakest companies losing access to capital. For comparison, the subprime mortgage market was estimated to be $1.3 trillion in size in 2007.

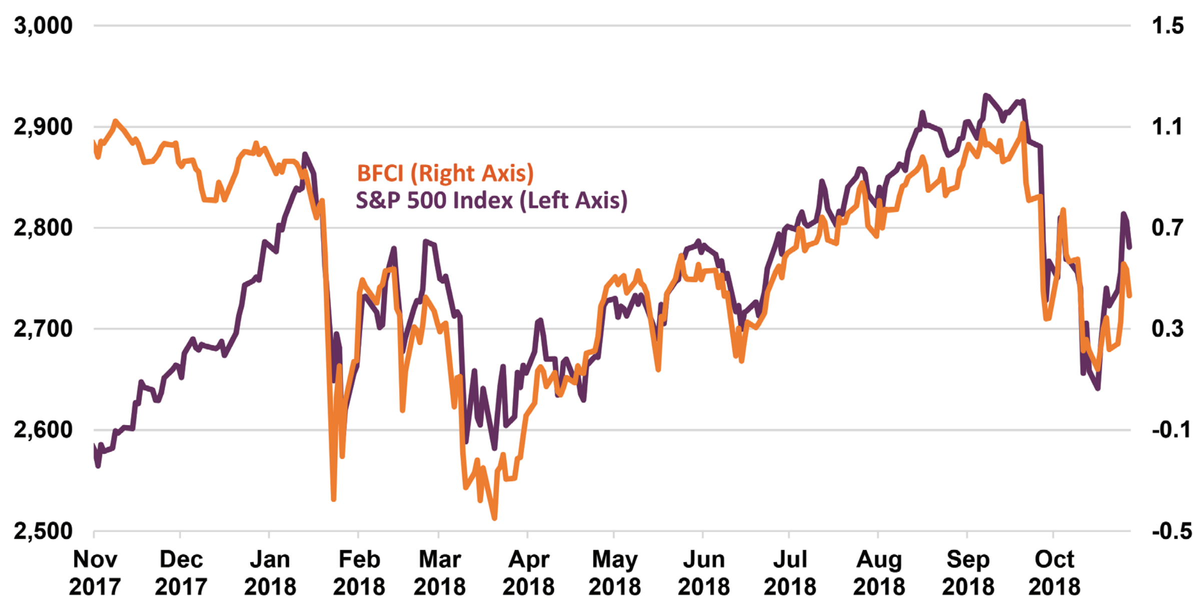
On a More Optimistic Note...

Here are some factors that could have a favorable economic impact on 2019 and prolong the expansion. On October 25, 2018, the *Wall Street Journal* published an op-ed piece written by the Federal Reserve Bank of Minneapolis President, Neel Kashkari. In it, Kashkari made the case for a pause in the Fed's march to increasing the Fed Funds rate, stating, "If the 2% [inflation] goal is truly symmetric, the Fed should be as tolerant of core inflation of 2.4% over six years as it has been with its downside misses over the last six years." A sensible pause by the Fed, provided that inflation remained within acceptable bounds, could provide added runway for the current expansion.

A prompt resolution of the trade war with China and European trading partners, coupled with sensible resolution of free trade agreements, would go a long way toward reducing economic friction. This would eliminate a key uncertainty for the many industries impacted and might encourage new business fixed investment.

The challenge in forecasting 2019 as 2018 closes is that on the current trajectory, it appears a loss of economic momentum is in the works. However, as is so often the case when the economy is at a crossroad, the outcome will be dictated by policy action that involves the executive branch, the legislative branch, and the Federal Reserve. Harmonious action could accelerate our forward momentum, and disharmonious action could exasperate our push/pull experience in 2018 or bring the expansion to a hard landing.

S&P 500 INDEX AND THE BLOOMBERG U.S. FINANCIAL CONDITIONS INDEX



Source: Bloomberg.

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).

Capital and Earnings

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 2018, equity capital rose by $15.3 billion (0.8%) from the first quarter. Retained earnings contributed $22.4 billion to equity growth but were partly offset by a $7.8 billion reduction in accumulated other comprehensive income.

In 2018, net income for U.S. banks increased on higher net operating revenue and a lower effective tax rate. Loan balances continued to rise, and net interest margins improved.

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Looking at the community bank subset, they also reported positive numbers. Their net income benefited from higher revenue and a lower effective tax rate, and loan growth that was stronger than the overall industry.

It is worth noting that the current economic expansion is the second longest on record, and the nation's banks are stronger as a result.

The nation's largest banks posted double-digit profit increases in the third quarter of 2018, largely because of a pickup in income from consumer lending and spending.

More than 7 out of 10 community banks (73%) reported higher net income in Q2 2018 compared with a year earlier. Reports from 5,111 insured community banks reflected net income of $6.5 billion—up $1.1 billion (21.1%) from second quarter 2017 according to the Federal Deposit Insurance Corporation (FDIC).

Rising Interest Rates

The U.S. economy is performing well, which has led to the Federal Reserve raising rates upward over the past two years. The market—and customers—are going to have to react and adjust to somewhat of a return to a more normal short-term rate structure.

Interest rates have been hiked three times in 2018, and Federal Reserve policymakers have indicated a fourth increase could come before the end of the year. Fed officials overall expect federal funds rates to rise to 3.1% next year and 3.4% in 2020, just above their 3% estimate for the long-run "neutral" rate at which borrowing costs are neither braking nor stimulating economic growth.

For years, banks have been preparing for a return to a more normal rate environment. They will continue to manage their interest rate risk while ensuring their ability to lend and support their communities. Banks, as well as consumer and commercial customers, have grown accustomed to the highly unusual period of historic low interest rates from which we are just emerging. That artificial rate environment was not normal, and customers need to adjust now and in the future to higher rates that are closer to the historic norm. That puts strains on all concerned.

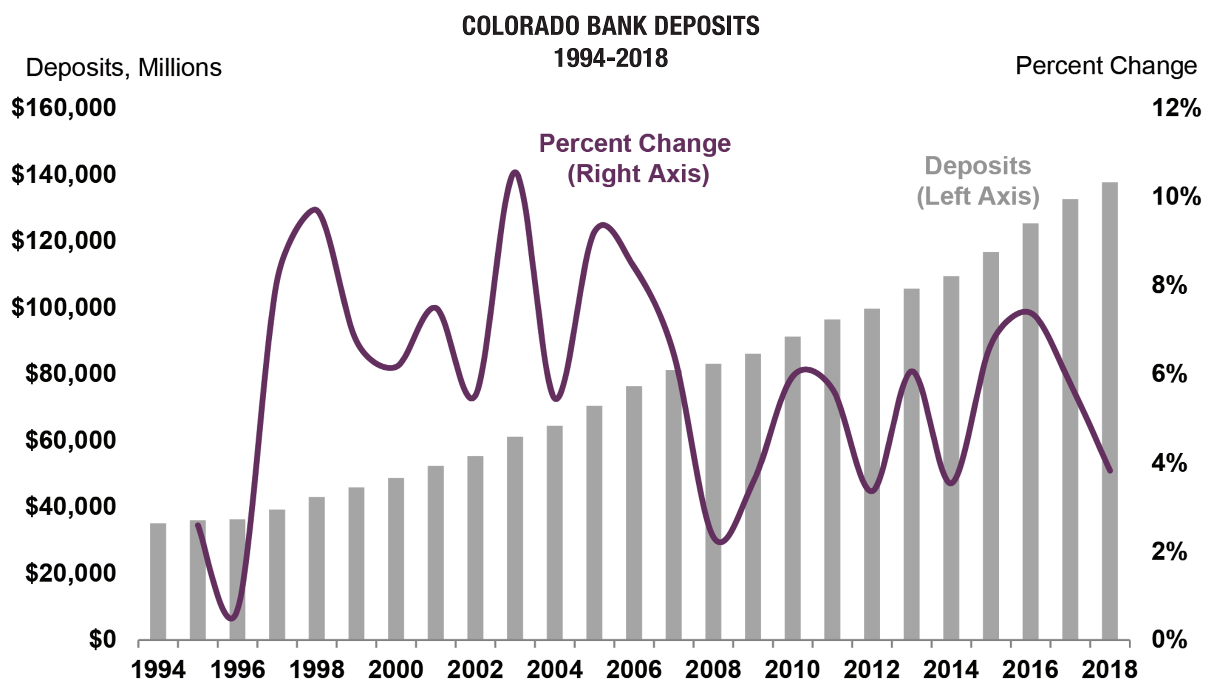
In fact, abnormally low rates can have some adverse consequences—especially for savers who may seek out investments that could be too risky in pursuit of a higher return.

U.S. consumers, excluding their mortgages, 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 interest will not increase with the recent rate hike. However, consumers should plan accordingly and manage any variable interest rate debt as rates rise.

Loan Demand and Mergers and Acquisitions

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, while 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



Note: Includes Inside of Market deposits. Source: FDIC, Deposit Market Share Report.

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.

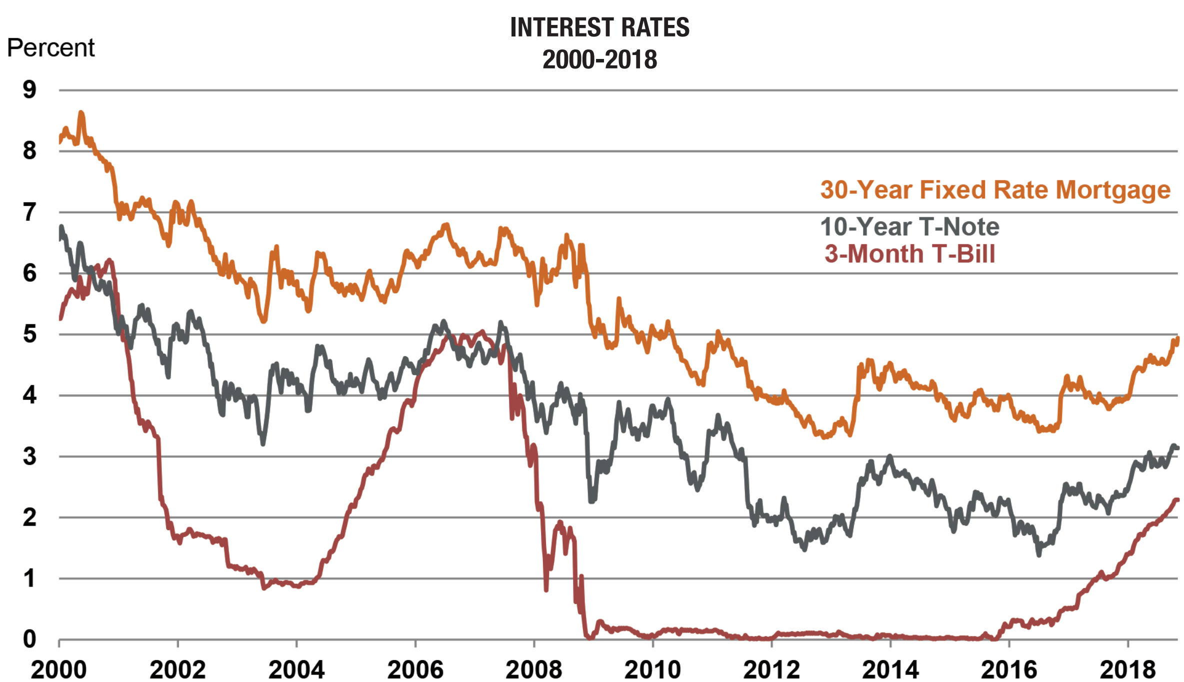
The competition to attract loan customers is, and will continue to be, intense.

Total loan and lease balances increased in Q2 2018 by $104.3 billion, to $9.7 trillion (1.1%) from the first quarter as more than three out of four banks (76.2%) reported quarterly increases. All major loan categories registered quarterly increases.

Between Q2 and Q3 2018, Colorado banks' loans and leases increased to $40.87 billion from $40.02 billion. It is important to note that FDIC data reflect only Colorado domiciled banks (81) and do not reflect out-of-state banks, both large and small, doing business in Colorado (54).

Meanwhile, the state continued to experience a steady stream of mergers and acquisitions activity in 2018. Mergers and acquisitions among banks stand at 203 nationally in 2018, up from 173 at the same time last year. In Colorado, five mergers have been completed and five more are in process. 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.

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.



Sources: Board of Governors of the Federal Reserve System and Federal Reserve Board of Governors and Freddie Mac.

Regulation

A decade after the financial meltdown, banks have finally begun to experience some modest relief from regulations imposed by the Dodd-Frank Act (DFA).

In May 2018, President Trump signed S.2155 that was passed by a bipartisan majority in the Congress into law. The new law, which is a critical first step toward bringing much-needed regulatory relief to help banks better serve their customers and communities, came as a result of a persistent, eight-year advocacy effort on the part of bankers, state associations, and others to address some of the unintended consequences of DFA.

Among its 16 provisions, the bill:

- Designates all mortgages held in a bank's portfolio as qualified mortgages for banks with less than $10 billion in assets. This has the effect of returning flexibility to lend to certain customer groups previously precluded by government regulation.
- Provides relief from appraisal requirements for smaller mortgages (under $400,000). The current shortage of appraisers causes great delays in mortgage lending, sometimes resulting in the buyer losing the transaction.
- Removes three-day waiting period requirement in the Truth in Lending Act and the Real Estate Settlement Procedures Act (TILA/RESPA) mortgage disclosures if the consumer receives a second offer of credit with a lower rate. Now, the lower rate triggers redisclosures that delay the closing.

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FINANCIAL MARKETS: STOCKS
2009-2018 YTD
(Year-End Close)

	Index				Annual Percent Change			
Year	S&P 500	Dow Jones	NASDAQ	Russell 2000	S&P 500	Dow Jones	NASDAQ	Russell 2000
2009	1,115.1	10,428.1	2,269.2	625.4	-24.1	-21.4	-14.4	-18.4
2010	1,257.6	11,577.5	2,652.9	783.7	12.8	11.0	16.9	25.3
2011	1,257.6	12,217.6	2,605.2	740.9	0.0	5.5	-1.8	-5.5
2012	1,426.2	13,104.1	3,019.5	849.4	13.4	7.3	15.9	14.6
2013	1,848.4	16,576.7	4,176.6	1,163.6	29.6	26.5	38.3	37.0
2014	2,058.9	17,823.1	4,736.0	1,204.7	11.4	7.5	13.4	3.5
2015	2,043.9	17,425.0	5,007.4	1,135.9	-0.7	-2.2	5.7	-5.7
2016	2,238.8	19,762.6	5,383.1	1,357.1	9.5	13.4	7.5	19.5
2017	2,673.6	24,719.2	6,903.4	1,535.5	15.5	18.6	25.5	8.7
YTD Nov. 13, 2017	2,584.8	23,439.7	6,757.6	1,475.1	15.5	18.6	25.5	8.7
YTD Nov. 12, 2018	2,726.2	25,387.2	7,200.9	1,518.8	2.0	2.7	4.3	-1.1

Note: YTD represents the growth year-to-date through November 8 from the prior end-of-year close.

Source: Yahoo! Finance.

- Provides an exception to escrow requirements for banks with less than $10 billion in assets and that have originated 1,000 or fewer loans secured by a first lien on a principal dwelling during the preceding calendar year.

Select provisions took effect immediately—for example, an exclusion from the Volcker Rule for most community banks—while others depend on regulatory action. Regulators are taking action to ensure full implementation on a timely basis.

Marijuana Banking in Colorado

Six years after the passage of Amendment 64 that legalized recreational marijuana in Colorado, related businesses are no closer to accessing secure financial services. Despite consistent efforts to find work-arounds and other local-level solutions, federal rules continue to preclude banks from serving these businesses.

In January 2018, former United States Attorney General Jeff Sessions withdrew support of an Obama-era policy that issued a temporary stay of enforcement of federal drug laws related to serving the marijuana industry, known as the "Cole Memorandum." While banks are more concerned about the actions of their regulators than they are about federal prosecution, this move further blurs the direction the Cole memo gave banks as a temporary stay of enforcement. That has likely resulted in additional caution and perhaps retreat by both bank regulators and banks that are serving the industry or contemplating doing so.

Despite Session's action, the Colorado Bankers Association (CBA) is aware that 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 Financial Crimes Enforcement Network (FinCEN) guidance and operating on a small scale. Out of the 135 banks and more than 80 credit unions operating in Colorado, about 20 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, 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. Currently, two proposals are moving through Congress:

- The SAFE Banking Act (H.R. 2215 and S.1152) sponsored by Rep. Ed Perlmutter (D-CO) and Sen. Jeff Merkley (D-OR). This bill would make 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 has 93 cosponsors in the House (80 Democrat, 13 Republican) and 17 in the Senate (12 Democrat, 4 Republican, 1 Independent).
- STATES Act (S.3032) 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. The legislation has 9 cosponsors (5 Republican, 4 Democrat).

The CBA is supportive of legislation that would bar regulators from punishing banks that serve legitimate, state-sanctioned marijuana businesses, while maintaining banks' right to choose not to offer those services.

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

Expected Headwinds and Challenges

Colorado banks will continue to face the following headwinds:

- Regulatory reform 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.
- Succession planning remains a challenge. 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.
- Unstable commodity prices are a concern in the wake of tariffs. Many of the country's crops are caught in the crosshairs of governments seeking retaliation against U.S. duties on steel, aluminum, and other products. In 2018, China introduced tariffs on U.S. soybeans, corn, wheat, and cotton. Mexico, one of the largest buyers of U.S. grain, levied duties on U.S. goods, including pork and cheese.

Small Business Administration

U.S. Small Business Administration (SBA) lending held steady nationwide, but declined slightly in Colorado. A key change in the 504 owner-occupied real estate loan program and a streamlining of the franchise lending process will likely increase loan demand in both categories going forward. Many factors contribute to small business loan volume, including demand, and it is difficult to know exactly which factors are driving change.

SBA lending in Colorado declined in fiscal year 2018, which runs from October 1, 2017, to September 30, 2018. Total dollar volume was down slightly (2.3%), to \$882 million, with total numbers of loans off 9.1%. SBA guaranteed 150 fewer loans in Colorado in 2018—1,598 verses 1,758 in fiscal year 2017. With loan numbers down more than dollar volume, SBA average loan amounts increased 7.5%, to \$551,730. The increase is at least in part attributable to rising commercial real estate costs.

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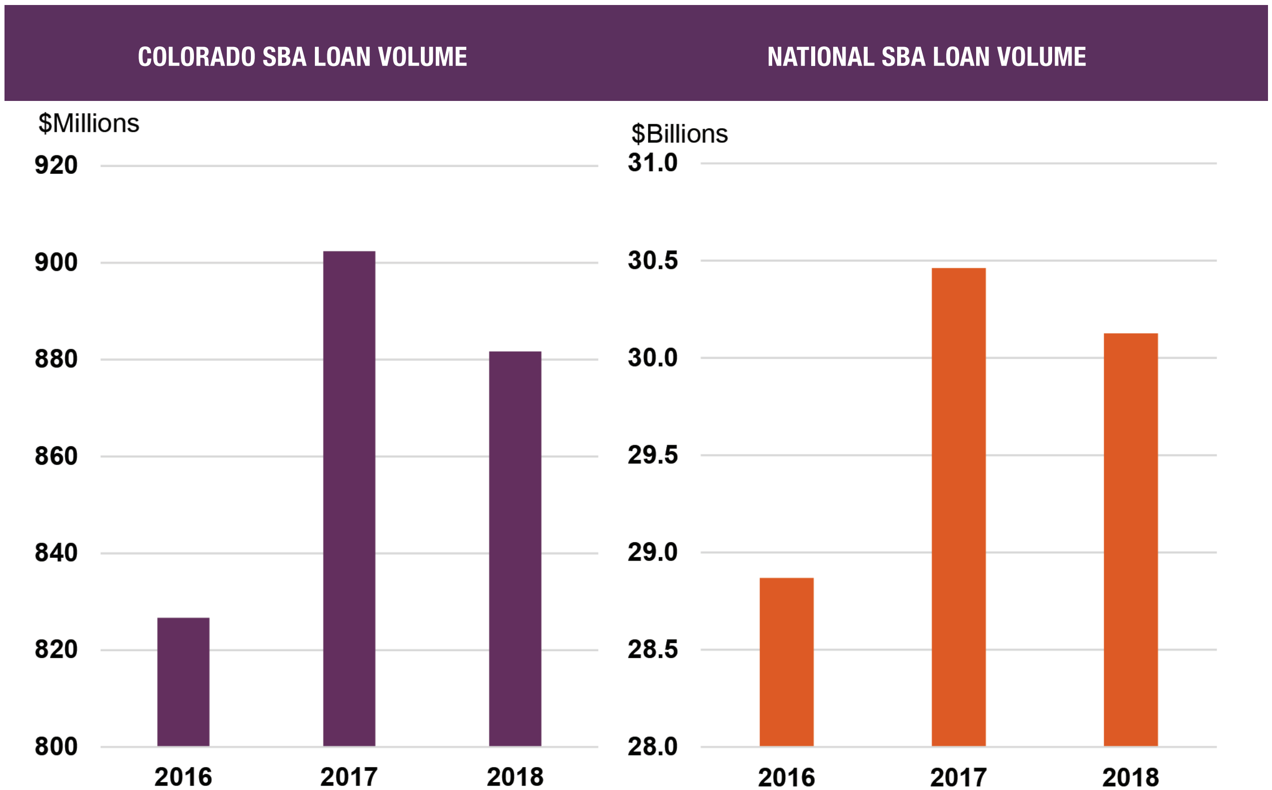

Source: Small Business Administration.

Financial Activities

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The SBA 504 program for owner-occupied commercial property saw average loan size climb by 10.9%, to $935,691.

Nationally, SBA lending was essentially flat coming in at $30.1 billion, off 1.1% from 2017. Two administrative changes had major impacts on SBA lending. A streamlined franchise lending processes boosted loans to new franchise businesses by 20%. A midyear change to the 504 Loan program added 60 months to the maximum allowable term, bringing it to 25 years. The change resulted in increased demand for this loan program after going into effect in the second quarter of 2018. Both changes will remain in effect permanently.

It is difficult to pinpoint a cause for the slight decline in SBA lending in Colorado. Robust economic growth could result in small business borrowers with healthier balance sheets and thus no need for a government guaranteed loan, or any loan at all. Alternatively, the same growth may encourage lenders to ease credit standards and lend conventionally.

The SBA provides loan guarantees to lenders that encourage them to make loans that would otherwise be outside their standard credit risk profile. Borrowers pay an SBA guarantee fee that acts as an insurance premium, offsetting the potential default risk.

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 witnessed double-digit loan growth during the 12-month period ending June 2018. Growth in Colorado credit union memberships ranked sixth nationally.

Colorado credit union memberships continue to grow at remarkably fast rates. Through June 2018, year-over-year memberships grew 6.1%, significantly faster than the 4.3% national rate and over four times the growth rate of state population. Colorado memberships now total 1.94 million, or over one-third (35%) of the state's 5.61 million population.

More than three-quarters of Colorado's 81 credit unions experienced increasing assets from June 2017 to June 2018. Total assets grew 6.5%, and savings balances increased by 5.8%.

Although annual loan growth has slowed slightly since the recent peak of 16.4% in 2015, at 11.3% Colorado credit union loan portfolios are on pace for the sixth straight year of double-digit loan growth, which would be the first time that has happened since the 1970s. The recent loan growth has been led by home equity lines and second mortgages, which grew 17% during the four quarters between June 2017 and June 2018, followed by new automobile loans (15.7%), first mortgages (10.1%), used automobile loans (9.4%), personal unsecured loans (7.4%), and credit cards (4.1%). It is noteworthy that all loan portfolio categories tracked by credit union regulators showed strong increases. 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 over three times the national rate of 5.1%. On the other hand, the growth rate of credit cards at Colorado credit unions is less than half the national rate of 9.1%.

As loan growth has outpaced savings in recent years, Colorado credit unions have experienced an increasing loan-to-savings ratio, which grew from 79.2% at midyear 2015 to 89.6% through June of 2017, well above the national level of 83.2%. However, core deposits represent roughly half of total deposits—a sign that credit unions in the state are managing interest rate risk and are well positioned for any future Federal Reserve increases in market interest rates.

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 0.37% and 0.38%, respectively—and both remain near cyclical lows and both are substantially below national levels of 0.67% and 0.60%, respectively. These figures also reflect significant improvements from the 25-year averages of 0.86% for delinquencies and 0.58% for net charge-offs. Annualized return on assets (ROA) (net income as a percentage of average assets) totaled 0.88% in the first half of 2018, essentially equal to the 0.90% national figure. Overall, 84% of Colorado's credit unions experienced positive ROA during the first half of 2018.

The Colorado credit union capital ratio (net worth as a percent of assets) remains near its all-time high of 11.6% reported in June 2015. As of June 2018, the ratio was 11.3%, down slightly due to the strong savings (and asset) growth; however, the figure is still above the national aggregate capital ratio of 11% and well above the 7% threshold level at which federal regulators deem credit unions "well capitalized." In fact, all 80 of Colorado's credit unions are above this threshold.

Colorado credit unions also have a significant impact on the state's economy. Using an economic input-output model with data from the U.S. Bureau of Economic Analysis, the Credit Union National Association (CUNA) economists estimate the impact of credit unions on employment and economic output. This is accomplished by totaling the following: (1) direct impacts: the output, jobs, and earnings within credit unions; (2) indirect impacts: the additional demand for goods and services in other sectors of the economy that are stimulated by direct expenditures from credit unions; and (3) induced impacts: expenditures of employees directly and indirectly supported by credit union operations. In total, the estimated economic contribution of Colorado credit unions to the state's economic output in 2017 was $3.2 billion. In addition, CUNA economists estimate that credit union operations led to 4,670 direct credit union jobs and another 10,508 indirect and induced jobs for a total 15,178 jobs created by the credit union industry.

Looking forward, CUNA economists expect the strong Colorado credit union performance to continue through 2018 and into 2019, with strong U.S. economic growth, high stock market values, low unemployment rates, and moderate employment growth.

FHFA HOME PRICE INDEX

Colorado MSA	Compound Annual Growth 1-Year	5-Year	10-Year
Boulder	8.8%	10.6%	5.5%
Colorado Springs	11.5	7.6	3.2
Denver-Aurora-Lakewood	10.2	11.3	5.9
Fort Collins	7.5	9.9	5.2
Grand Junction	9.0	5.6	0.1
Greeley	9.5	10.9	5.2
Pueblo	10.7	7.2	2.5
Colorado	9.6%	10.1%	4.7%

Data Source: Federal Housing Finance Agency, All Transactions Index (NSA), through Q2 2018.

According to the FHFA, Colorado home prices grew 10% during the past 12 months through August 2018, the sixth-highest rate in the nation. This has led to increased wealth via home equity and significant demand for HELOCs and second mortgages. With historically low interest rates, this trend is anticipated to continue. CUNA economists also expect continued strong demand for new and used automobile loans as there remains significant pent-up demand from the recession. With low unemployment and increased wealth, overall consumer demand should stay strong, driving loan growth. However, the combination of continued, gradual Federal Reserve interest rate increases, and (more importantly) rising prices due to tariffs, credit unions expect to see loan demand fall modestly in 2019.

Real Estate and Rental and Leasing

Commercial Real Estate

Incredibly, July 2018 marked Colorado's 21st consecutive month of sub-3% adjusted unemployment, the longest streak for the state since comparable records began in 1976. Compared to other states, organic business growth and corporate relocations, like VF Corporation, Arrow Electronics, and Molson Coors Brewing, 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 Texas metros. Still, in-migration and job growth are generating much improved property operating fundamentals among all commercial real estate (CRE) types, 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 and rising construction costs are real hindrances stakeholders face daily but positive market trends have yet to be deterred.

Office—Since the beginning of 2017, at least 26 companies have opened a headquarter location in Colorado—accounting for an estimated 4,250 new jobs and 660,000 square feet of office space or the equivalent of an entire 30-story office skyscraper. The Denver metro area has seen the bulk of corporate activity, resulting in strengthening office market fundamentals in 2018. Net absorption through Q3 2018 is nearly 2.0 million square feet—already well above the 2017 annual total. Average asking lease rates increased to a record $27.88 per square feet full service gross (FSG) for a 5.7% gain year-over-year, while direct vacancy decreased 80 basis points year-over-year, to 12.8%.

Amid increasingly costly financing, the construction pipeline slowed in 2018, to 2.8 million square feet—the smallest pipeline since Q4 2015. As of Q3 2018, construction activity was largely speculative but evenly distributed between downtown and suburban markets. Major projects underway are Block 162 and 16 Chestnut, which is completely pre-leased to DaVita and Slack Technologies. Notably, the RiverNorth (RiNo) office market took a big leap in 2018 with the opening of HomeAdvisor's headquarters and the Catalyst development.

Large corporate users in the technology, professional and business services, and energy industries are leading market activity. The footprint of technology companies now reaches 11.6 million square feet in Metro Denver, and is primarily dispersed between the Northwest, Downtown, Boulder, and Southeast submarkets. Apple, Facebook, Netflix, Strava, SwitchFly, and Slack all recently opened offices in the area. While most of these companies occupy traditional office space, some technology companies are drawn to Denver's 2.0 million square feet inventory of co-working space.

Confidence remains strong for the office sector, although the 940,000 square feet expected to deliver in Q4 2018 will elevate vacancy in the near term as tenants finish and occupy their space. Positive absorption is anticipated into 2019 with several large users occupying already-leased large blocks of space.

Industrial—Denver's industrial market is primarily driven by distribution users servicing a growing regional population, along with service business 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 2018, the industrial market had recorded 34 consecutive quarters of positive net absorption, which goes well beyond the six-year trend in the 1990s and reflects national industrial market trends.

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COLORADO COMMERCIAL REAL ESTATE FUNDAMENTALS

	Net Rentable Area SF	Direct Vacancy Rate	Asking Lease Rate PSF	SF Under Construction	Net Absorption YTD SF
Denver Metro					
Office	115,509,519	12.8%	$27.88 FSG	2,769,728	1,988,106
Industrial	240,350,082	6.1%	$8.22 NNN	4,734,163	2,495,603
Retail	81,403,281	7.2%	$18.90 NNN	1,204,928	339,256
Northern Colorado					
Office	10,463,126	4.3%	$15.58 NNN	63,748	85,464
Industrial	31,270,571	4.2%	$10.07 NNN	328,651	231,309
Retail	22,858,642	3.4%	$17.04 NNN	674,696	34,627
Colorado Springs					
Office	28,488,009	9.4%	$12.47 NNN	201,505	193,053
Industrial	31,450,550	8.2%	$7.79 NNN	64,906	556,052
Retail	34,938,030	6.3%	$13.44 NNN	255,256	(25,724)

Source: CBRE Research, Q3 2018. Note: Colorado Springs and Northern Colorado data from Q2 2018.

Total rentable square feet surpassed 240 million square feet in 2018, and construction of 4.2 million square feet is underway. The bulk of development activity is occurring in the Northeast/Airport submarket; however, nearly all regions of Denver metro are seeing industrial development activity. Of note, Amazon's Thornton e-commerce facility (855,000-square-foot footprint/2.3 million square feet, including mezzanine space) and Denver's largest speculative building on record, at 701,900 square feet in Majestic Commercenter, delivered.

Construction deliveries are tracking with demand in large part but vacancy has increased nonetheless. Direct vacancy, excluding sublease space, increased 70 basis points from a year ago, to 6.1%, but remains about 30 basis points below the long-term average.

New construction is also helping to elevate asking lease rates, as is pent up demand from users seeking newer, more functional space to lease. Asking lease rates across all industrial property types increased to $8.22 per square foot triple net (NNN) in Q3 2018, an impressive 8% year-over-year gain eight years into the economic expansion cycle. Flex space commands the highest rental rate of $10.36 per square foot NNN (+4.2% year-over-year), followed by manufacturing space, at $7.96 per square foot NNN (+11.8% year-over-year), and warehouse space, at $7.29 per square foot NNN (+11.6% year-over-year).

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.

Retail fundamentals were mixed in 2018 with vacancy up 39 basis points from a year ago and lease rates still elevated but down slightly from the 2017 peak of $18.97 per square foot NNN. Denver's highest retail lease rates of $32.22 per square foot are found in the Colorado Boulevard/Midtown submarket that includes Cherry Creek. Through the first three quarters of 2018, retail net absorption neared 340,000 square feet and was on pace to exceed 2017, led by entertainment, fitness, grocery, and food and beverage users. About 500,000 square feet of space recently delivered, largely driven by the 328,000-square-foot Denver Premium Outlets in Thornton and the 28,000-square-foot urban concept Target on the 16th Street Mall. Another 1.2 million square feet is underway, including 235,000 square feet of retail space at the 9th Avenue and Colorado Boulevard development.

New retailers to the market include Warby Parker, Peloton, SoulCycle, Zara, Shake Shack, Bonobos, Vineyard Vines, and CVS Pharmacy. Notably, Warby Parker and Bonobos were traditionally e-commerce retailers that have opted to open brick and mortar stores in key markets as part of the omni-channel retail strategy.

Other key trends include the "urbanization of the suburbs" via denser, more walkable mixed-use projects; the opening of popular downtown restaurants in suburban outposts; pop-up shops; and right-sizing retailer footprints. Marketplaces, such as Dairy Block, Zeppelin Station, Denver Central Market, and Stanley Marketplace, have become a popular way to give consumers a unique experience not replicable by the internet 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. According to the 2018 CBRE Americas

Investor Survey, Denver is the seventh most sought after market for commercial real estate investment, up from eighth in 2017. Industrial assets are the most desired with half of investors seeking such product, followed by 20% interest in multifamily product. The influx of capital seeking multifamily, core, and value-add office and industrial assets is driving up pricing and overall sales volume. Overall sales volume on a year-to-date basis is up 23% through Q3 2018 encompassing office, industrial, retail, multifamily, and hotel transactions. All property types, with the exception of multifamily, are reporting increased sales volume, led by a 254% increase in hotel and a 68% increase in industrial sales volume according to Real Capital Analytics.

Northern Colorado

Larimer County's unemployment rate was 2.7% in September, just below the state's rate. Demographers forecast 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. Although the region accounts for just 11% of the state's population, it generated nearly half 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 2019.

During the first half of 2018, CBRE reported positive year-to-date net absorption for office, retail, and industrial commercial markets with rising lease rates in all sectors. Vacancy was stable or had decreased in all sectors, and construction activity was especially vigorous in the retail and industrial sectors with nearly 675,000 square foot and 329,000 square feet in development, respectively. The bulk of retail development is the 425,000-square-foot Brands at the Ranch power center in Loveland. Just over 60,000 square feet of office product was underway in Fort Collins of which over half is pre-leased. Tenant demand is the office sector is stemming largely from the agriculture, technology, research and development, government, and health care sectors.

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 2018, the unemployment rate in Colorado Springs was 3.6%, creating a tight job market. The Colorado Springs metro population grew 11.3% between 2010 and 2017, driven primarily by those age 20 – 34 (millennial), which jumped a remarkable 21%. Growth is occurring principally in the east and northeast 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 cost of living is also lower compared to Denver. Through June, the Regional Building Department issued 2,181 single-family residence permits, up nearly 25% from same time in 2017 and a pace that will top the 4,000 mark last seen in 2005.

The City 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 2018. The office sector reached its lowest vacancy rate this business cycle, while year-to-date net absorption was particularly strong in the industrial sector. Office demand is increasing from technology and cyber security companies as venture capital reaches record levels. The retail market continues to thrive with ongoing new construction, especially heavy in northern Colorado Springs, which has seen a population boom this cycle. For example, Scheels All Sports Inc. will open its second Colorado store at the Interquest Marketplace comprising 220,000 square feet. National and regional companies are attracted to the area's solid growth dynamics. For 2019, new construction will occur across all property types, followed by positive net absorption and increasing lease rates.

Western Slope

With government cooperation through the Rural Jump-Start Program, Western Slope communities are experiencing positive momentum on efforts to diversify business and attract new industries, and decrease historical dependence on the oil and gas industry. Growth along the Western Slope is occurring due to a combination of factors, among them increasing enrollment at Colorado Mesa University, pent-up demand for housing and services—perhaps as a direct result of comparatively higher housing prices in Denver—and an attractive lifestyle. The seasonally unadjusted unemployment rate for Grand Junction decreased four-tenths of a point, to 3.6%, in September according to the latest estimates from the Colorado Department of Labor and Employment. In Q3 2018, Heritage Title Company reported that Mesa County real estate sales transactions totaled 4,448 and volume was $1.2 billion—gains of 9.7% and 24%, respectively, compared to the previous year. The August 2018 average home price in Mesa County climbed to $249,950, an 8.7% increase year-over-year, and total building permits grew to 642, or a 30% increase, during the same time period. Commercial business is experiencing strong gains, yet the challenges of future growth now seem to be with a shortage of labor, higher operating costs, and a limited inventory of available real estate. Western Slope communities will work hard in 2019 to add new inventory to meet increasing demand, but developers would be prudent to guard against changes in the economy that could significantly soften demand for CRE space.

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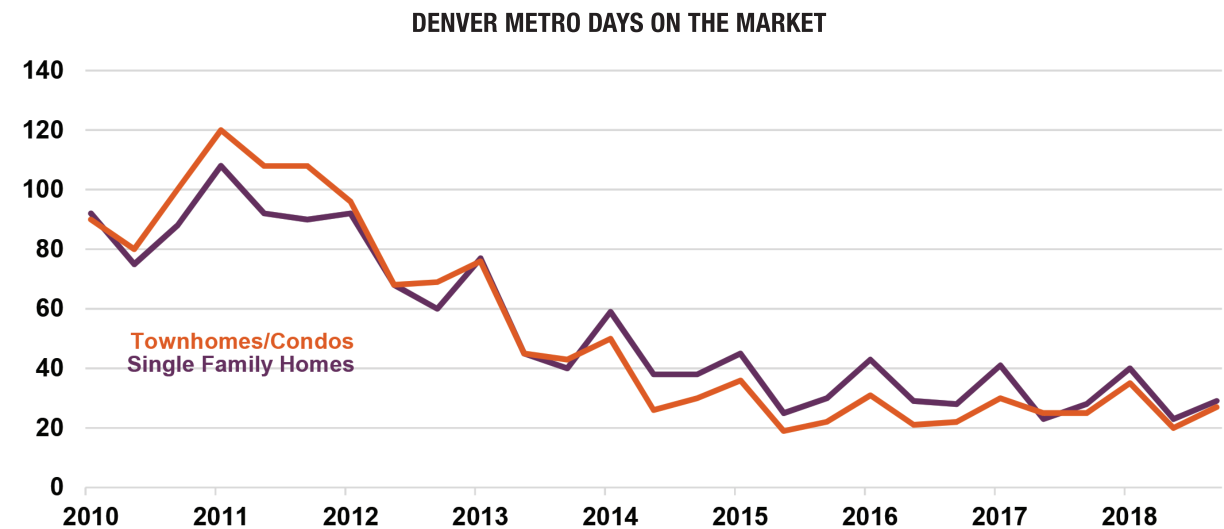
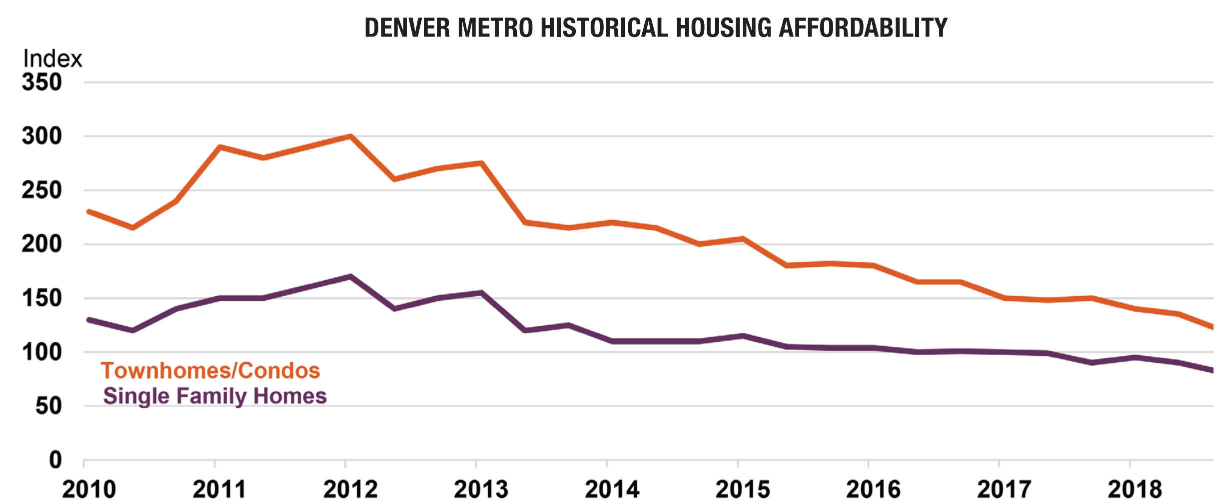


Source: Denver Metro Association of Realtors.



Source: Denver Metro Association of Realtors.

Population rising, unemployment rate declining—that describes Colorado in 2018. Nearly all metro markets reported improved CRE property operating fundamentals. Tight property vacancies and increasing rents encourage continued construction activity in 2019. However, the challenge to continued economic growth will be addressing labor shortages in some markets and increasing construction costs.

Residential Real Estate

General Economic Conditions

Overall, the U.S. economy has performed well in 2018; however, it is starting to show signs that it may be in the late stages of the expansion cycle. The stock market and corporate earnings are beginning to run out of steam, which typically means a recession may be on the horizon. So what does this mean for the residential real estate market? The residential real estate market is driven by a number of factors, such as interest rates, job growth, consumer confidence, the stock market, and migration patterns. GDP growth for 2018 is projected at 2.9%. Interest rates are on the rise but are still tracking at historically low levels, making homes relatively affordable. The national unemployment rate is 3.9%, which is a historic low, meaning that most people who are looking for work are able to find jobs. Additionally, the stock market is in record-high territory, adding to individual wealth. This is all good news for the residential real estate market; however, other conditions pose concern to economists, such as housing affordability, fear of a trade war with China, and rising interest rates.

Colorado Real Estate Market

The Colorado real estate market continues to outpace the national market. Colorado is an attractive place to live and with the advent of telecommuting, people are able to live in Colorado and work remotely. Additionally, many companies, such as British Petroleum and VF

Corporation (owner of North Face, JanSport, etc.), have chosen to relocate their corporate headquarters to Colorado, adding to the net migration of residents.

The median price of a single-family home in Colorado is $421,050. This represents a 7.1% appreciation rate in 2018 according to REcolorado. Overall, the statewide real estate market is expected to appreciate in 2019 because of moderate job growth and net migration. Housing prices will likely appreciate but at a slower pace than in 2018, notably due to rising interest rates and affordability.

Denver Real Estate Market

The Denver MSA has grown significantly since 2010. This growth has brought great change to the Denver landscape.

Ryan Finch, founder of Tangible Wealth Solutions, believes that real estate markets can be broken into three categories—primary, secondary, and tertiary. Large institutions (real estate investment trusts) tend to invest in primary markets (e.g., New York City, Chicago, Los Angeles) as they are considered attractive to the affluent population and tend to be less speculative. Secondary markets (e.g., Oklahoma City, Seattle, Denver) are characterized by greater than average appreciation because they are somewhat speculative. Institutions have begun investing in the secondary markets but have not fully bought in. Tertiary markets (e.g., Boise, Oklahoma City, Des Moines) are characterized by rapid appreciation, tend to be more volatile than primary and secondary markets, and are viewed as speculative. Denver was considered a tertiary market 10 years ago but is now considered a secondary market, according to Finch.

As the large institutional real estate investors have moved into the Denver market, home prices and rents have increased dramatically. The speculative residential real estate investors have been forced to explore other tertiary markets, such as Colorado Springs, and out-of-state markets, including Boise, Idaho, and Oklahoma City, Oklahoma, in search of better rates of return. So what does this mean for Denver long term? As Denver matures as a real estate market, appreciation rates should become less extreme, and the market should exhibit less volatility in future economic recessions and expansions.

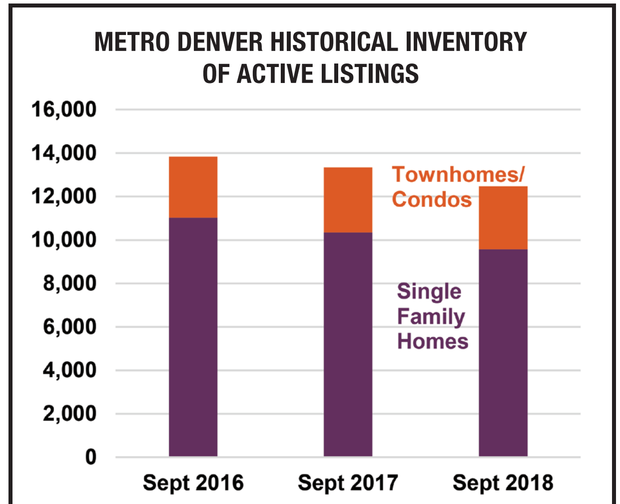
Is there a bubble forming in the Denver market? This is a common topic in Denver real estate conversations. The data do not suggest that a bubble is forming; rather, it suggests that Denver will continue to experience appreciation, albeit at a slower rate based on four metrics: supply and demand, number of days on the market, months of inventory, and affordability.

Supply and Demand—Lack of supply is the key factor driving Denver real estate prices higher. Inventory has been decreasing according to the Denver Metro Association of Realtors, while population growth remains strong. According to the Colorado Demography Office, population growth within the 10-county region grew 36,419 in 2017, and is forecasted to increase 40,677 in 2018 and 38,608 in 2019, with more than half coming from net migration. (The average household size in the Denver Metro region was 2.66 among owner-occupied units and 2.41 among renter-occupied units.) The number of homes listed is going down year-over-year relative to stable population growth. This supply/demand imbalance suggests that prices will go up in the near term.

Days on the Market—Denver listings have been going under contract very quickly. Days on the market measures the number of days elapsed from the date of the listing to the date the property goes under contract.

The average days on the market was 28 days in September 2018. The days on the market have been trending downward from a high in 2011 of 120 to 28 in 2018. (Note that this is the average days on the market across all price points.)

More interestingly, the average days on the market for houses in the $315,000–$480,000 range is eight days according to REcolorado. Buyers in this price point have been forced to pay over the asking price and/or agree to terms, such as waiving inspections and bridging gaps between offer and appraisal price.



Source: Denver Metro Association of Realtors.

Months of Inventory—Months of inventory measures the number of months it would take to sell all of the listings on the market. The Denver market is currently running at 1.5 months of inventory. A healthy balanced market typically runs 5–6 months. Once again, this means that there are more buyers in the market than homes for sale, suggesting that Denver housing prices should continue at an upward trend. (Note: it may take 2–3 years to bring enough housing units online to accommodate the steady influx of new residents.)

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Housing Affordability—There is concern that Denver is becoming too expensive and current Denver residents who are renters will not able to afford to purchase a home. Housing prices cannot continue to go up in perpetuity. Eventually, the rising prices will eliminate buyers from the market.

Data from the Denver Metro Association of Realtors indicate that in September 2018, the median income is only 84% of the required income to purchase the median priced single-family home in Denver (compared to 170% in January 2012). This implies that Denver has an affordability issue and that the current market is not sustainable. Townhouses and condos are comparatively more affordable—the median income in September 2018 was 114% of the required income to purchase the median priced townhome/condo in Denver.

Colorado Springs Real Estate Market

The Colorado Springs market has also been appreciating with the broader markets. The median home price in Colorado Springs is $300,000, up 7.9% in 2018, according to REcolorado. The months of inventory in Colorado Springs has dropped rapidly from 5 in 2015 to 1.6 in 2018. The tight inventory exhibited by the Colorado Springs market indicates that it should continue to appreciate at a higher rate than Denver as buyers leave the Denver market for the relatively more affordable market in Colorado Springs. Overall, Colorado Springs is appreciating in the neighborhood of 7 – 8%, which exceeds the other Front Range markets.

Fort Collins Real Estate Market

The current (2018) median home price in Fort Collins is $400,000, representing 11.1% appreciation over the last year, according to REcolorado. Months of inventory in Fort Collins is 3.2, indicating a better balance of supply and demand than Denver, but still a sellers' market. Fort Collins housing prices will likely appreciate in the neighborhood of 6 –7% in 2019, which exceeds expectations for Denver but is slower than in 2017 largely because of the additional inventory in the market.

Conclusion for the Colorado Residential Real Estate Market

The overall Colorado residential real estate market will likely appreciate 5 – 6% in 2019. This appreciation rate is slower than previous years largely because of rising interest rates, housing affordability, and the effects of Denver becoming a mature/primary real estate market. Additionally, committee members do not see a bubble forming in this market. So those considering buying real estate in Colorado should take comfort in the fact that the state has a diversified economy and will, in all likelihood, not be subject to the level of volatility that it experienced in previous recessions when it was considered a tertiary real estate market. ✜

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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 over the last eight years, adding nearly 100,000 jobs across Colorado since 2010. Growth in 2018 is estimated at 3.2%, or 13,100 more jobs. As a result, PBS will retain its position as the largest private industry, with 18.8% of all private-sector jobs. The PBS Committee projects overall PBS growth of 2.7% in 2019, adding 11,300 jobs.

Professional and Business Services Concentration by County

Geographically, PBS positions continue to self-reinforce the "clustering effect" seen along Colorado's Front Range. In terms of PBS industry concentration, the top 10 counties are in the Fort Collins, Boulder, Denver, and Colorado Springs metropolitan statistical areas; some counties are recording strong increases in the concentration of activity.

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

Concentration		Increase in Concentration	
County	Percent in 2017	County	Change 2010-2017
Broomfield	26.0%	Custer	4.3%
Denver	23.5	Elbert	3.1
Arapahoe	23.3	Sedgwick	2.9
Boulder	22.9	Jackson	2.7
Douglas	20.7	Rio Blanco	2.7
El Paso	19.8	Phillips	2.2
Jefferson	19.2	Douglas	2.2
Elbert	17.6	Broomfield	1.9
Larimer	16.2	San Miguel	1.8
Park	14.6	Garfield	1.7
Statewide	18.8%	Statewide	0.5%

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

The PBS subsectors generally employ high-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.

Incidentally, Colorado has one of the highest educated populations in the country. The state ranks second in the percentage of bachelor's degrees among people 25 and over—9.2 percentage points higher than the national average. A total of 41.2% of Colorado residents held a bachelor's degree or higher compared to 32% nationally in 2017. Colorado has postsecondary institutions that add to the high educational attainment, and the state attracts talent from other states through migration.

A closer look at the 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 tend to be higher in Colorado compared to the national averages. In particular, computer science, engineering, natural science, and business are about 1% higher than national averages.

While Colorado ranks very high on college attainment (including net in-migration), it still struggles with high school graduation and college matriculation. The Colorado Department of Education shows 79% of the class of 2017 graduated in four years, and 58.1% of Colorado's 2017 high school graduating class went on to enroll in a postsecondary institution immediately after graduation according to the Colorado Department of Education.

According to the Colorado Department of Higher Education's 2018 Legislative Report on the Postsecondary Progress and Success of High School Graduates, in the top 10 school districts with highest college-going rates (which are often along the Front Range), more than 70% of students go on to enroll in college; in the bottom 10 districts, only 13 – 35% of students enroll in college directly out of high school.

INDUSTRY SNAPSHOT
PROFESSIONAL AND BUSINESS SERVICES

Nominal GDP, 2017 ($ Billions)	51.1
Real GDP, 2017 ($ Billions, 2012 Dollars)	48.4
2017 Real GDP Growth Rate	6.8%
Total Employment, 2017 (Thousands)	413.2
2017 Employment Growth Rate	1.8%
Employment Growth National Rank	18
Share of Colorado Employment	15.5%
Share of National Employment	14.0%
Average Wage, 2017	78,698
Percent of Statewide Average Wage	137.4%
2017 Average Wage Growth Rate	6.8%

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

Of the 2016 high school graduates, 42.9% enrolled at a Colorado college or university, while 13% went out of state to attend college. This limits the talent base for STEM and other skills needed to compete for PBS jobs.

Key headwinds to further PBS job growth in 2019 include low unemployment and the resulting lack of available talent to fill positions, the increasing cost of housing and childcare, rising interest rates, underinvestment in transportation infrastructure, and a tempering of expectations for national economic growth. Due to the nature of professional services, a strengthening dollar and increasing

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Professional and Business Services

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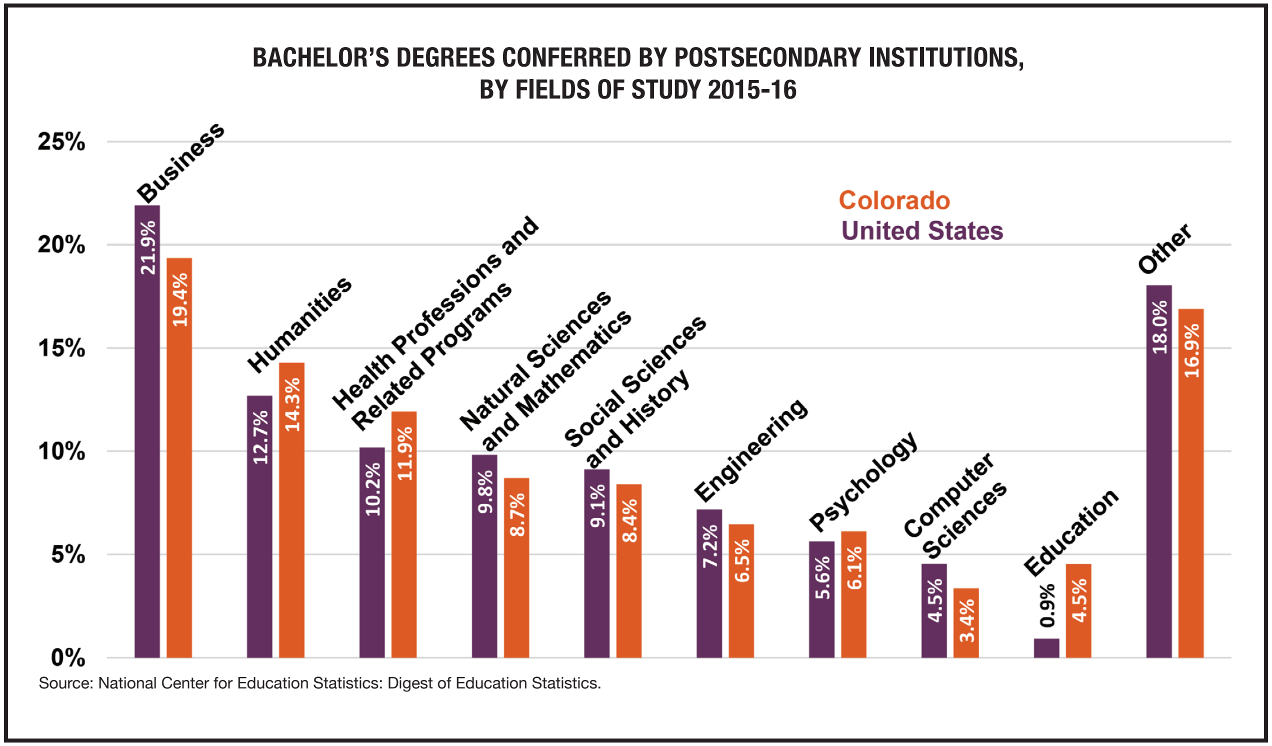


tariffs are not a direct threat. However, sustained troubles in other industries eventually reduces funds available for spending on professional services. Further challenges of globalization, automation, and commoditization are taking a toll on legal, engineering, architecture, accounting; computer systems design; services to buildings; and business support services sectors.

Because PBS customers are largely businesses, the number of new business filings is a reliable predictor of future PBS job growth. Filings in Colorado increased by 9.3% over the past year. The most recent University of Colorado Boulder report released by Secretary of State Wayne Williams indicates the state added 31,014 new business filings in the third quarter.

Despite the headwinds, the great quality of life, opportunity, climate, outdoor recreation, and other environmental 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 our 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. The PST Sector will increase employment by 2.7% growth, adding 5,800 jobs in 2018. It anticipates continued growth of 2.9% in 2019, another 6,400 jobs, to 227,600.

Legal Services

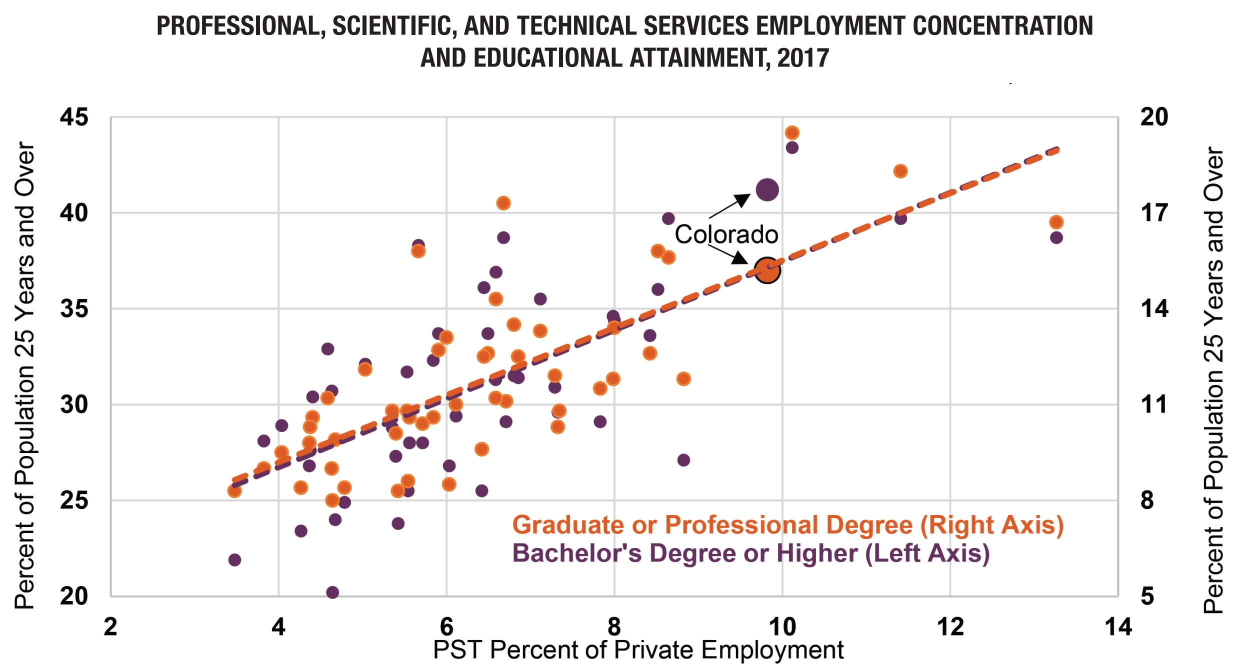
Demand for legal services is increasing in some specialty areas but is also shifting due to technology, outsourcing, and innovation in delivery models. Legal Services employment across Colorado grew by 100 jobs year-over-year through September 2018, to 19,100.

According to the 2018 Legal Industry Outlook, published by Greentarget, another year of slow growth in the legal industry is expected as competition increases both from work moving in-house and from alternative legal service providers (ALSPs). ALSPs have become increasingly active in the U.S legal market. ALSPs are non-law firm providers of legal and quasi-legal services consisting of big accounting and audit firms, legal process outsourcing (LPO) firms (many of which are offshore), managed legal services firms, contract lawyers, and staffing firms.

Competition is fierce for top talent, especially young, high-potential lawyers. Traditional firms are competing for talent with similar firms but also with in-house legal departments and alternative service providers. Firms are also faced with a growing number of retiring or soon-to-retire partners, which makes succession planning and retention of top talent critical.

The trend of legal innovation continues beyond technology to include how legal services are delivered. To slash expenses at a rate similar to that of falling revenues, many firms are adjusting their staffing models, reducing the ratio of professional and administrative staff to lawyers. They are also hiring more contract, staff, and part-time lawyers. The use of contract lawyers is becoming increasingly common, giving firms the flexibility to adjust quickly to changes in demand.

Technology to increase firm efficiency and enhance service offerings includes the use of deep learning



Source: Bureau of Labor Statistics, QCEW; Census, ACS.

technologies and artificial intelligence (AI). For example, AI is especially critical of efficiencies in legal research. (Erin Hichman. July 17, 2018. "Law Firms Need Artificial Intelligence to Stay in the Game," Law.com.)

One industry source mentioned that AI is becoming increasingly popular with law firms, not only in the legal assistant realm, but also as a "virtual lawyer." She expects staffing to shrink more for support roles and less for lawyer positions. The rollout of AI for firms is a long process as law tends to fall behind other industries with updating technology. She sees the impact on staffing to be spread out over the next few years. In addition, younger attorneys are more tech-savvy and have less need for support staff. (Hannah Roberts. June 20, 2018. "Hogan Lovells Sheds 54 Support Staff Jobs," The American Lawyer.)

Price sensitivity has increased for clients, and legal firms are taking steps to consolidate and streamline in order to save on overhead. Firms are moving into smaller office spaces and cutting some overhead that way. Despite price sensitivity, salaries for attorneys are still increasing year-over-year. As the market becomes more price sensitive, and attorneys continue increasing wages, other areas of the firm must make up difference.

The legal market is increasingly competitive and subject to out-of-state firms using a coworking space as the legal business address and only needing a license for that single attorney. Lawyers are also able to use the internet to do (mainly) contract work, competing with local firms for that type of customer. Demand is not expected to slow, so normal staffing needs will remain. As baby boomers retire, firms are adjusting processes and staffing plans.

According to Eric Bono, assistant dean for career opportunities at the University of Denver Sturm College of Law, the employment outlook for entry-level attorneys has accelerated significantly over the past three years. This improved picture is not only reflected in the number of positions that are filled but also in the quality of those positions. Along the Front Range, Bono sees high demand for attorneys who also have a strong computer science or electrical engineering background. This combination is highly sought after in the areas of intellectual property and patent law. This demand is likely attributable to the high level of innovation on Colorado's Front Range.

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 between a decline of 2.1% and a gain of 3.7%. In this context, the committee expects this subsector to add 200 positions in 2018, or 0.9% growth, and another 0.5% in 2019.

Architectural, Engineering, and Related Services

Employment in the Architectural, Engineering, and Related Services Sector exhibited steady growth of 1.6% to 4% over the last five years. Strong growth early in 2018 suggests the sector will sustain 7.1% growth for the year and 5.5% growth in 2019.

Economic growth continues to lead to increases in appropriations for infrastructure expansion and renewal for public services, such as roads, transit, bridges, water, wastewater, and drainage, and for private-sector growth in warehouses, office buildings, single-family and multifamily housing, recreation, health care, and other commercial facilities. The voters in the November 2017 election also approved many bond issues in Denver and other municipalities, and these projects are starting to affect the design

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community. However, Colorado voters defeated major transportation funding initiatives on the 2018 ballot.

The legislature increased the appropriations for roads and transit significantly at the end of the 2018 session. Some of the funding of the Colorado Department of Transportation projects is being leveraged with local funding and RTD, which will keep the pace of design and related construction at a high level. Local tax revenues continue to increase; however, increases in costs and recent construction bids temper the size and number of infrastructure projects.

Single and multifamily housing continues to be built at a rapid pace. Multifamily permits have decreased in 2018 while single-family permits continue at an increased level. This situation is expected to continue through 2019, even though some softness in new and existing sales is being seen in the latter part of 2018.

Employment in this sector has also been impacted by mergers and acquisitions. Many firms have absorbed other companies and brought staff into their Colorado offices. School construction and improvements have led to additional contracts for the industry. The state's population growth has also increased demand for additional public and charter schools. Similarly, detention centers are at maximum capacity, so many are expanding and therefore needing architectural and engineering services.

According to an industry source, Jonathan Anderson, mechanical engineering lead with DLR Group, the tight labor market has caused firms to raise wages in order to keep and attract new employees, rising between 5 and 10%. Headhunters are reporting about 50% of new hires in the field are coming from out of state. Many firms indicated that they increased their head count around 10% in 2018, and intend to grow again by at least 5% in 2019.

The shortage of technical personnel is also being addressed with productivity technology 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. Engineering

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

TOTAL PROFESSIONAL AND BUSINESS SERVICES SUPERSECTOR EMPLOYMENT, 2009-2019
(In Thousands)

Year	Professional, Scientific, and Technical Services	Management of Companies and Enterprises	Administrative and Support and Waste Management and Remediation Services	Total[a]
2009	171.7	28.5	131.5	331.8
2010	169.0	29.0	132.8	330.8
2011	173.7	30.2	137.5	341.5
2012	180.2	32.3	144.4	356.9
2013	189.2	34.6	148.8	372.6
2014	196.8	35.5	154.2	386.5
2015	204.5	36.6	157.3	398.4
2016	209.9	37.4	158.4	405.7
2017	215.4	39.0	158.8	413.2
2018[b]	221.2	39.3	165.8	426.3
2019[c]	227.6	39.7	170.3	437.6

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

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

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.

Some of the more visible future projects that will involve engineering design services are the interstate and state highway work, expansion at Denver International Airport and surrounding support services (*Denver Business Journal,* October 19, 2018), RTD expansions for additional corridors (both new and extensions), and the expansion of the National Western complex.

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, and with the higher than normal job openings, individuals can be more selective in choosing a company.

Some of the headwinds that may cause highly technically skilled people to avoid Colorado are the higher costs for buying residences and renting apartments, the lack of available housing, increasing traffic congestion on highways and streets, and higher competition for goods and services due to population growth that increases faster than the infrastructure can support.

PROFESSIONAL, SCIENTIFIC, AND TECHNICAL SERVICES SECTOR EMPLOYMENT 2009-2019 (In Thousands)

Year	Legal Services	Architectural and Engineering Services	Computer Systems Design Services	Management, Scientific, and Technical Consulting Services	Other	Total[a]
2009	17.8	41.5	41.7	17.3	53.4	171.7
2010	17.8	39.0	41.3	18.0	52.9	169.0
2011	18.3	39.2	43.0	19.4	53.8	173.7
2012	18.8	40.4	45.3	20.6	55.1	180.2
2013	19.5	42.0	47.9	22.5	57.3	189.2
2014	19.2	43.4	50.6	23.9	59.7	196.8
2015	19.1	44.1	53.6	25.7	62.0	204.5
2016	18.7	44.8	56.3	27.1	63.0	209.9
2017	19.0	45.7	58.1	29.0	63.6	215.4
2018[b]	19.2	48.9	57.0	30.7	65.3	221.2
2019[c]	19.3	51.6	57.9	32.3	66.6	227.6

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

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.

Computer Systems Design and Related Services

The Computer Systems Design (CSD) subsector has seen seven 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. Surprisingly, however, Computer Systems Design and Related Services lost 1,500 jobs year-over year to total 57,200 in September 2018. The committee believes this is a combination of two emerging forces in the sector. First, following the 3 – 6% increases from 2012–2017, the sector is experiencing a correction that is preventing job growth and even causing layoffs in some companies. Additionally, mergers and acquisitions across IT software companies have created scale and synergies that are resulting in additional job churn. In this context, the committee anticipates a contraction of 1.9% in 2018, resulting in a loss of 1,100 jobs. Growth is expected to return in 2019 at about 1.5%, or 900 additional jobs.

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.

In August 2018, the Metro Denver Economic Development Corporation (EDC) shared that OverWatchID, a Denver-based cybersecurity company, moved its headquarters from the Denver Tech Center to downtown Denver and expanded from 2,500 square feet to 9,000 square feet. Currently, the company employs 30 people and plans to add 12 more employees in 2018. Its local customers include Frontier Airlines and Datavail.

Similarly, the Metro Denver EDC reported that Broomfield-based technology company Conga will consolidate its facilities from four states into a global headquarters in Broomfield, adding as many as 570 new jobs, with an

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average salary of $90,426, in the next eight years. The company currently has about 200 local workers. Conga makes tools to help companies compose and edit documents and check contracts from within Salesforce.com.

Management, Scientific, and Technical Consulting Services

Management, Scientific, and Technical (MST) Consulting Services averaged 7.1% growth over the last five years. Additionally, the sector is up 5% year-over-year in September 2018 to a total of 30,900 jobs. The committee expects MST to end the year up 6% in 2018 and moderating to 5% in 2019.

Tata Consultancy Services, based in India, is expanding its presence in Denver, bringing 120 new jobs to its business consultancy operation. The company's long-standing relationship with Colorado and Denver's booming tech scene was a driving factor in the decision to expand in Denver. Tata is looking for employees in a range of sectors, including computer science specialists, analysts, developers, and architects.

KPMG LLP, one of the largest professional services networks in the world, is expanding its Metro Denver head count. Over the past five years, the company has increased its headcount from 350 to 800 professionals, and the company expects to hire another 200 people during fiscal year 2019, according to the *Denver Business Journal.* The expansion of the firm's Denver footprint has been driven by the growth in the Denver metro area and increased client needs, mainly changes in tax law and advances in technology.

The Colorado Springs *Gazette* reported in September 2018 ("Colorado ranked fifth for aerospace manufacturers in new study") that Colorado has the fifth-most attractive aerospace and defense market in the country according to a new study by PricewaterhouseCoopers. Colorado's ranking has improved every year since it started in 16th place in 2013. The state's educated labor force and infrastructure support the aerospace industry and attract major aerospace contractors.

Anyone interested in unmanned aircraft, supersonic, hypersonic, Dream Chasers, polar satellites, and 21st century space knows Colorado is the place to be. This generation of kids may be the first civilian space travelers.

With current contract wins such as the Ball Aerospace Wide-Field Infrared Survey Telescope and Joint Polar Satellite System Follow-On, and prototype wins including Future Operationally Resilient Ground Evolution (FORGE) for Raytheon and Lockheed Martin, the Colorado space economy needs every one of those sharp kids. They will be earning back their college education within five years. They will also become the program, proposal, and hiring managers for the next set of graduates. A report by the Metro Denver EDC indicates the industry generates $15.4 billion with average salaries of $131,200. Colorado won close to $7 billion in contracts in 2017, and Colorado academic institutions continue to win numerous research projects.

The Colorado Advanced Industries Accelerator Grant Program continues to foster innovation among academics, small business, and government along the Front Range. A total of $4.7 million was awarded in 2018, and Advanced Space in Boulder and PlanetiQ in Golden were among the recipients. The Advanced Industry Investment Tax Credit Program is also available to encourage small business development.

Spaceport Colorado received an operator license in 2018 with exciting plans to launch into suborbital space within 10 years. It is the 11th facility in the United States to be awarded a license.

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 – 7% 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.

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.

Site Selection Magazine released its 2018 sustainability rankings list in July, and Colorado ranked fourth. The magazine uses the following criteria: number and percentage of LEED buildings, number and percentage of Energy Star buildings, renewable energy generation, investments in "green energy," corporate and social responsibility rankings, Measurabl sustainability rankings, brownfield grants and cleanups, green laws and incentives, and Gallup/Health Ways Well-Being rankings.

The continuing national meme regarding the future location of Amazon's HQ2 continues to drive favorable publicity for Colorado among relocation decision makers who may be now more likely to short-list the Front Range for future headquarter relocations. That said, the increasing cost of living is becoming an emerging liability and may be discouraging some companies from considering a move to Colorado.

The sector is expected to post a modest gain of 0.8% growth in 2018. It is anticipated to gain 1% in 2019 to total 39,700 positions.

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 is anticipated to grow 4.4%, to

165,800 in 2018. Additional growth of 2.7%, or 4,500 jobs, is expected in 2019.

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. That said, the sector continues to record strong jobs growth in 2018. Given this strong employment trend, the PBS Committee expects the subsector to grow 9.5%, or 4,500 jobs, in 2018, and another 3,000 jobs, or 5.7%, in 2019.

Services to Buildings and Dwellings

The Services to Buildings and Dwellings subsector has more than fully recovered from the previous recessionary period. The sector is projected to grow 0.5% in 2019, to 44,300 positions.

Job growth in this sector correlates to construction as well as rental and occupancy rates. These continued to improve in 2018, and the overall outlook remains positive due to Colorado's growing labor pool and its ability to attract corporate relocations and expansions. The most recent example is the third quarter announcement that VF Corporation is relocating its corporate headquarters from Greensboro, North Carolina, to Denver, taking 285,000 square feet of space in downtown. Several new developments have been announced or are in the planning stages, spurred on by rising rental rates, positive absorption, and strong preleasing activity for speculative projects.

RISE Commercial Property Services is a full-service property management company overseeing buildings from North Denver to Colorado Springs. According to T.J. Tarbell, president of RISE, "It's great to see our clients benefiting from increasing rents, occupancies, and an overall strong real estate market. One of our primary focuses continues to be finding, developing, and retaining quality managers and facilities personnel to support our clients and their properties."

ADMINISTRATIVE AND SUPPORT AND WASTE MANAGEMENT AND REMEDIATION SERVICES SECTOR EMPLOYMENT, 2009–2019 (In Thousands)

Year	Employment Services	Services to Buildings and Dwellings	Business Support Services	Other	Total[a]
2009	30.0	38.0	25.2	38.3	131.5
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	47.7	44.5	23.1	43.6	158.8
2018[b]	52.2	44.1	22.0	47.4	165.8
2019[c]	55.2	44.3	20.9	49.9	170.3

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

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

Wage growth remains strong and there is heavy competition for quality real estate personnel (property managers, facilities/maintenance technicians, property accountants, etc.). Tarbell asserts that while hiring quality talent remains a concern, many companies have adopted techniques to find the people they need. This includes planning further ahead for resource needs and improving recruiting tactics.

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, we continue to be faced with a shortage of qualified people. The shortage of craftsman and abundance of work has drawn many out of state contractors into the local market. The trades continue to experience a shortage of the younger generation entering into the trade profession."

According to Bales, CSI continues to have a generous backlog of business. Many school districts along the Front Range passed bonds for new schools and are retrofitting existing facilities. Multifamily housing continues to dominate the construction market in Denver.

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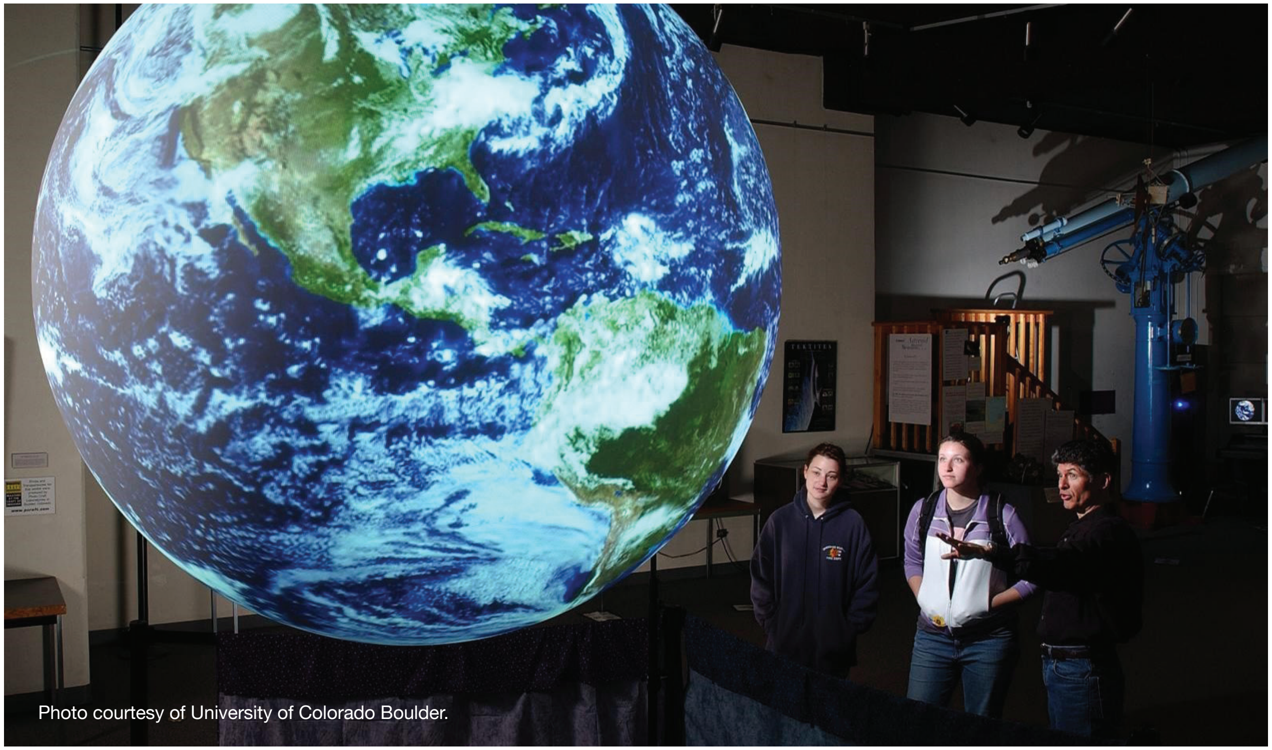
Photo courtesy of University of Colorado Boulder.

For the first time in several years, growth was elusive in this sector, but industry representatives see slow job growth in 2019.

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 28,500 in 2013 to 23,100 in 2017. 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 PBS Committee expects Support Services to shrink again by 4.6% or 1,100 jobs, in 2018. Similarly, another reduction of 4.9% is anticipated in 2019.

Waste Management and Remediation Services and Other

This subsector will likely see a seventh-consecutive year of employment gains as these services are a trailing indicator of overall population growth and development. The committee expects an 8.9% increase in 2018 and 5.1% in 2019, or another 2,400 jobs, to 49,900 jobs.

These jobs 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, and housing and commercial growth.

CNBC reported in August 2018 that waste recyclers were one of the fastest growing "green" jobs. These jobs average $10–$17 per hour and face new threats from automation and AI. Colorado-based Plexus and ZenRobotics are pioneering new intelligent waste sorters to ensure optimal separation at much higher speeds and quality.

PBS Sector Summary

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 3.2% in 2018 and 2.7% in 2019.

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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 333,500 jobs in 2017. The industry is on track to add about 6,700 jobs in 2018, a growth rate of 2%. In 2019, jobs are projected to grow by 6,500, a gain of 1.9%.

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 numbers for the private education sector for 2018 are projected to be up by 1,100 compared to 2017, with growth of 1,000 jobs in 2019.

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. The three biggest schools for enrollments (Regis University, University of Denver, and Colorado College) claim the majority of employees (*Denver Business Journal,* April 21, 2017) and help to maintain the employment stability in this subsector.

Johnson & Wales University is a multicampus system with a Denver location, with 49 full-time faculty and 80 part-time and full-time staff. The Denver campus added several new programs in fall 2018. In response to the growing demands for health care, the Denver campus added a Public Heath degree and a Health Sciences degree. The university will launch a Master of Science in Addiction Counseling starting in fall 2019. Johnson & Wales recently released career outcomes data for the 2017 graduates across the system and found that 95.4% find successful career outcomes. The university is also expanding MBA programs to include an information security/assurance concentration and sports leadership. 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.

COLORADO EDUCATION AND HEALTH SERVICES EMPLOYMENT, 2009–2019 (In Thousands)

Year	Educational Services	Health Care and Social Assistance	Total
2009	31.3	225.3	256.5
2010	32.3	231.6	263.9
2011	33.7	239.1	272.9
2012	35.4	246.4	281.8
2013	36.1	249.8	285.9
2014	37.1	260.9	298.0
2015	38.5	274.7	313.2
2016	39.8	286.0	325.7
2017[a]	40.2	293.3	333.5
2018[b]	41.3	298.9	340.2
2019[c]	42.3	304.4	346.7

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

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

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

INDUSTRY SNAPSHOT EDUCATION AND HEALTH SERVICES

Nominal GDP, 2017 ($ Billions)	25.3
Real GDP, 2017 ($ Billions, 2012 Dollars)	23.4
2017 Real GDP Growth Rate	1.8%
Total Employment, 2017 (Thousands)	333.5
2017 Employment Growth Rate	2.4%
Employment Growth National Rank	19
Share of Colorado Employment	12.5%
Share of National Employment	15.8%
Average Wage, 2017	48,754
Percent of Statewide Average Wage	85.1%
2017 Average Wage Growth Rate	2.1%

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

Private for-profit accredited colleges include Arizona-based University of Phoenix, which has two locations in Colorado. In fall 2018, a total of 85 private accredited colleges are listed on the Colorado Department of Higher Education website; 64 of those are nonprofit and 21 are for-profit, 43 are private seminary schools, and 21 are not based in Colorado

In 2018, a total of 289 in-state occupational schools (down from 333 in 2017) and 16 (down from 23 in 2017) out-of-state occupational schools (approved to market in Colorado) are registered with the Colorado Department of Private Occupational Schools. Among Colorado-based private accredited colleges are schools as diverse as General Air Welding Academy in Denver; Bartending and Casino College (Denver); Paul Mitchell The School,

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a cosmetology school in Colorado Springs and Denver; and IBMC College, with three locations in Colorado (down from four in 2017). Universal Technical Institute (UTI) and WyoTech are out-of-state schools that are approved to operate in Colorado.

Additionally, 441 nonpublic-sector schools provide education to children of compulsory school age (the term nonpublic schools applies to private, parochial, and independent schools). Of this group, 224 are preschool or kindergarten schools and 217 schools are listed as serving 1st- through 12th-grade students.

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. 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, formerly the Association of Private Sector Colleges and Universities) describes training for high demand occupations being met by private schools, such as skilled commercial drivers, surgical technologists, electricians, nursing, construction, manufacturing, and others.

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

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

- Reported enrollments were down across the private-for-profit college sector, with reported declines of as much as 55% between 2011 and 2015. There were no signs of a rebound in 2016 and 2017. However, according to the National Center for Education Statistics, overall undergraduate enrollment is projected to increase by 14% (from 17 million to 19.3 million students) between 2015 and 2026.
- Closures related to legal and financial difficulties will also limit growth.
    - “Over 2,000 campuses have been closed since 2010—most were part of the many large publicly traded systems that no longer exist” (CECU, 7/25/2018).
    - Pressure from the U.S. Department of Education has led to past closures in Colorado of three Everest College campuses. Similar pressure forced the closure of ITT Technical Institute in September 2016.
    - Heritage College closed 10 schools (one in Colorado) at the beginning of November 2016 due to cash flow concerns.
    - The Art Institute of Colorado, a Denver institution for more than 50 years, will close in December 2018, with 150 employees losing their jobs.

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, little had changed.

Private K-12 Education in Colorado

Private secondary education is alive and well in Colorado. Examples along the Front Range include Regis, Denver Academy, Colorado Academy, and Valor Christian, just to name a few. According to the Council for American Private Education (CAPE), attendance at private schools and primarily private secondary schools is on the rise, not only in Colorado but also across the nation. Market share growth has been among the nonsectarian private high schools, with 13.2% of schools nonsectarian in 1989–90, 15.7% in 1997–98, and 21.8% in the latest survey, which is 2015–16 school year. Of the 78.2% of the sectarian private schools open in 2015–16, almost 39% were Catholic private schools, which is down from 53% in 1991–92.

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. In addition, 55% of eighth-graders in private Catholic grade schools are reading at or above grade appropriate proficiency compared to 35% students in public schools (Council for American Private Education. CAPE Outlook, Number 409, November 2015). In terms of eighth-grade math proficiency, it is at 44% for students in Catholic schools and 33% for public K–8 school students.

Consider that 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.

A national movement is underway to make a college preparatory, Catholic high school education available to families that 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 one day each week at a participating corporate employer partner. Students attend classes four days a week. This shortened school week results in a longer school day and a longer academic year. The "Corporate Work Study Program" provides access to a private college preparatory education to Coloradans that otherwise would not be available to them. A demonstration of the program's success, every student, 100%, across the 12 graduating classes has been accepted to college with a 70% persistence rate. The 2018 class of 84 graduates earned $13.4 million in merit/academic based scholarships.

Like public educational institutions across the nation, private K–12 education is struggling to find and retain permanent teaching staff and is especially struggling with filling substitute teacher positions.

Educational Support Organizations

Educational support organizations located in Colorado include, for example, Pearson Education, which has offices in Colorado and is a subsidiary of a multinational company headquartered in London. Other software businesses in the learning and education delivery sector in Colorado include Amplifire, which focuses on 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 e-learning.

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 293,300 in 2017, and growth has been strong, with projected increases of 1.9% in 2018 and 1.8% in 2019.

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

In 2018, Colorado's projected population is about 5.7 million people of which about 14%, or 806,000, are 65 or older. Colorado's State Demography Office forecasted that between 2010 and 2018, overall population grew 12.7%, while the senior population grew by 45.2%. This disproportionate growth in the 65 and older population will increase overall health care spending as spending increases with age. Conversely, Colorado seniors are reporting better levels of overall health. A total of 82% of seniors reported that their health was good, very good, or excellent in 2017 compared to 75% in 2009 (Colorado Health Institute. *Colorado's New Normal, State Maintains Historic Health Insurance Gains, Findings from the 2017 Colorado Health Access Survey,* September 2017, page 29).

Select Populations and Health Status

Colorado improved in the America's Health Rankings from ninth in 2016 to seventh in 2017. The state continues to rate well with relatively low prevalence in the following: obesity (1), physical inactivity (2), children in poverty (2), diabetes (1), cancer deaths (2), and cardiovascular deaths (2). However, weaknesses for the state include a high prevalence of excessive drinking (42), low high school graduation (45), large disparities in health status by educational attainment (48), and high incidence of whooping cough (46).

- Obesity increased 2 percentage points, from 20.2% to 22.3%
- The percentage of uninsured dropped over a five-year period, from 14.3% to 7.8%
- Drug deaths increased from 14.8 to 16.0 deaths per 100,000
- Cardiovascular deaths increased from 196.2 to 203.0 deaths per 100,000 population

Overall, even though Colorado is faring relatively well compared to the nation as a whole, many negative trends continue. For example, despite the fact that Colorado ranks first (best) for obesity, the state continues to see the number of obese Coloradans grow year-over-year (United Health Foundation. *America's Health Rankings, 2017 Annual Report*).

Opioid Epidemic

Drug overdoses claimed the lives of 1,012 Coloradans in 2017, a record-setting year that follows 912 drug-related deaths in 2016. The biggest culprit: opioids. Just over half of the 2017 overdose deaths were caused by prescription opioids or heroin according to data provided by the Colorado Department of Public Health and Environment.

Fatalities traced to prescription opioids (a category that includes fentanyl, methadone, and other drugs) spiked from 5.3 to 6.5 deaths per 100,000 Coloradans in 2017—after three years of steady decline. Fentanyl misuse is increasingly to blame. This powerful synthetic opioid is typically prescribed to treat patients with severe pain but it may also be produced illicitly. It contributed to 81 deaths in 2017, up from 49 in 2016.

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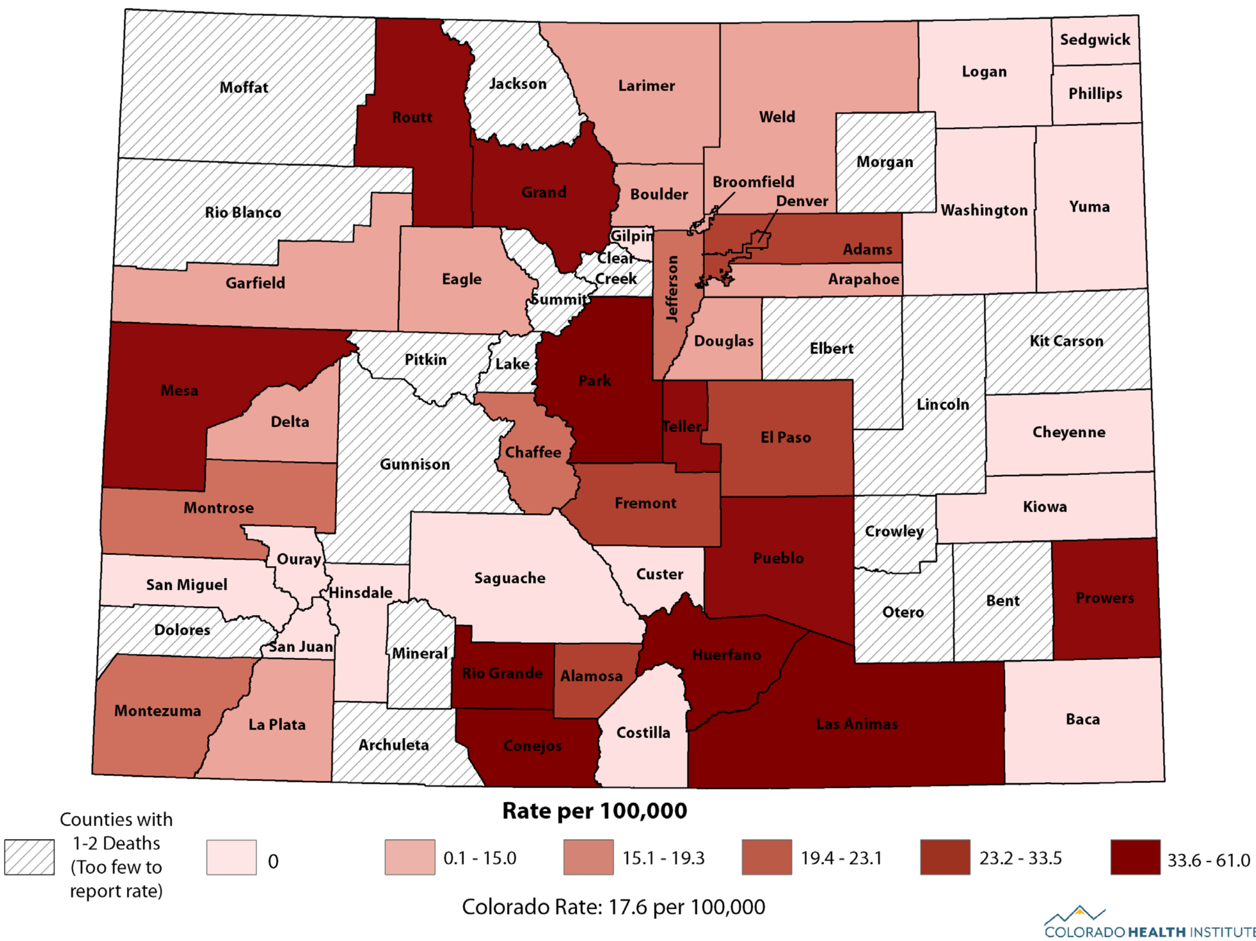
Only five fentanyl-related deaths were recorded in 2000. This count includes all deaths in which fentanyl was involved, either as the primary killer or one of a number of drugs involved.

As prescription opioid overdose deaths have increased, overdoses from heroin, which is also classified as an opioid, leveled off from 2016 to 2017, dropping from a rate of 4.1 to 3.9 per 100,000 Coloradans. There were 10 deaths recorded that involved both fentanyl and heroin, compared to zero in 2015.

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 2017.

COLORADO DRUG OVERDOSE DEATH RATE, 2017



Source: Colorado Department of Public Health and Environment.

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 Centers for Disease Control and Prevention (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 2017, marked by the transition to synthetic opioids, such as fentanyl, that can be made illegally and added to other substances such as heroin, 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 than heroin. The number of methamphetamine (meth) overdoses in Colorado has increased from 38 just a decade ago to 299 in 2017.

There is some overlap in deaths due to methamphetamine 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

Employer Sponsored

Less than half of Coloradans receive health insurance through an employer—a symbolic milestone in a decade-long decline in employer-sponsored health insurance. According to the 2017 Colorado Health Access Survey, a total of 49.4% Coloradans get insurance though their employers, down from 57.7% in 2009. Adults approaching retirement age saw the biggest decline in job-based insurance. In addition, lower-income Coloradans and those in rural counties are much less likely to have health insurance through their jobs.

Employees of large businesses are more likely to have job-based insurance than those who work for small companies. In 2017, only 45.5% of Colorado employees and family members of a small employer (0 to 50 employees) had employer-based health insurance. In contrast, 82.7% of employees and family members of a large employer (more than 50 employees) had employer-based health insurance coverage. This change is partially driven by the ACA, which requires large companies to provide insurance or pay a penalty while small companies have no requirement. However, Colorado's competitive job market and low unemployment rate has also contributed, pushing large employers to use health insurance and other benefits to appeal to potential employees.

Lockton's 2018 Colorado Employer Benefits Survey showed that the cost of health insurance is increasing for employers, and many are passing those costs along to employees even as wages in the state have remained mostly flat. For the 15th year in a row, the increasing cost of health insurance continues to be employers' greatest concern regarding their benefits program. The Colorado market is experiencing higher rate increases when compared to national surveys. Colorado employers are seeing an average premium increase, before plan changes, of 7.7%, which is 1.3 – 1.7% higher than national surveys.

To control rising rates, employers are deploying numerous approaches that include both cost management strategies and cost-shifting strategies that ensure employees will share in the cost of coverage. Top cost-management strategies include changing insurers, encouraging employee migration to high deductible health plans (HDHPs), telemedicine, narrow networks, and consumerism tools. Top cost-shifting strategies include increasing employee and family contributions, increasing deductibles, increasing employee out-of-pocket expenses for prescription drugs, and reducing benefits. In 2017, for the first time in the 17-year history of the Lockton

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PRIVATE HEALTH CARE AND SOCIAL ASSISTANCE EMPLOYMENT, 2009–2019
(In Thousands)

Year	Ambulatory Care	Hospitals	Nursing Care	Social Assistance	Total[a]
2009	93.3	54.9	39.1	38.0	225.3
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[a]	131.5	62.1	43.6	56.1	293.3
2018[b]	135.7	61.5	43.9	57.8	298.9
2019[c]	139.5	61.8	44.3	58.8	304.4

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

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

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survey, the number of employers offering a self-funded plan (47.7%) outpaced the number of employers offering fully insured plans (35.5%). This indicates employers are willing to embrace self-funding as a means of managing their costs more intentionally rather than ceding this responsibility solely to carriers.

HDHPs, which ask patients to pay out of pocket for care—sometimes thousands of dollars—before insurance coverage kicks in, are particularly prevalent in Colorado. A total of 60.6% of Colorado employees are enrolled in a HDHP, while the national median is 48.6%. HDHPs became a popular strategy for employers to control costs by promising that consumers will make smarter medical choices if they bear greater expense at the point of care. However, recent research has shown that the appeal of these HDHPs is waning; over half of consumers have low or nonexistent health care literacy and those with HDHPs often defer care to avoid the cost of deductibles, only to compound health issues and emergency room costs. Companies across the nation have slowed enrollment in such coverage and reinstated more traditional plans as the strong job market gives workers more bargaining power over pay and benefits.

Individual and Family Coverage

About 266,000 Coloradans are enrolled in the individual and family market. Approximately 160,000 have plans through the state's exchange, Connect for Health Colorado (Mark Farrah Associates. *A Brief Analysis of the Individual Health Insurance Market,* August 6, 2018). A total of 69% of the exchange enrollees are receiving financial assistance in the form of subsidies in 2018, up from 61% in 2017.

In October 2018, the Division of Insurance (DOI) released approved individual plans and premiums for 2019. Overall, premiums for individual health insurance plans are increasing by an average of 5.6%—a significant improvement over the previous year's 32% average increase. The same seven health insurance companies that sold individual plans in 2018 are returning for 2019: 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.

The 2019 rate increase for plans will differ depending on the metal tier (whether a plan is gold, silver, or bronze is contingent on how much the plan covers in health care costs) because of how Colorado has chosen to manage subsidies, or cost-sharing reductions (CSRs). CSRs are available on silver on-exchange plans to people with annual incomes 2.5 times below the federal poverty level. When the Trump administration ended CSR payments in 2018, the subsidies became extra costs for insurance companies that were, in turn, passed to consumers in the form of higher premiums across all metal tiers. For 2019, the DOI has instructed health insurance companies to place the extra costs onto only on-exchange silver plans—this is called "silver loading." Consumers who do not qualify for a subsidy should therefore actively avoid on-exchange silver plans in 2019 and instead look for on-exchange gold or bronze plans, which have significantly smaller increases. They could also shop off-exchange for a substantially similar silver plan without the silver load.

A number of pressures on the individual market could lead to a much smaller market size in 2019. Both within Colorado and nationally, individual enrollment declined between June 2017 and June 2018. This reduction in market size has mainly occurred off-exchange, where subsidies are not available. The individual mandate penalty—the federal tax penalty for going uninsured—was removed for 2019, which could result in healthy people leaving the market and sicker people remaining.

Despite the decline in membership over the past couple of years and the ongoing health care debate at the federal level, there are indications of improvement for 2019. The low rate increases and lack of carrier exits in 2019 may be pointing to a more stable market. Insurers reported improved financial results for their exchange business in 2018, with medical loss ratios at a record low point for the first six months of 2018 (Rachel Fehr, Cynthia Cox, and Larry Levitt. *Individual Insurance Market Performance in Mid-2018,* Kaiser Family Foundation, October 5, 2018). As Colorado goes through its 2019 open enrollment period—which runs from November 1, 2018, through January 15, 2019—the individual market stability remains a wait-and-see proposition for the health insurance industry.

Medicaid and Uninsured

Colorado's Medicaid program, known as Health First Colorado, covers approximately 1.3 million people, which represents approximately one of every four people in the state. Among the enrollees, approximately 511,000 are children, 616,000 are adults without disabilities, and 175,000 are seniors and people with disabilities. Colorado opted to increase Medicaid eligibility under the ACA beginning January 1, 2014; more than 410,000 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. Colorado also covers another 84,000 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. Expenditures of over $10.1 billion are expected in state fiscal year 2018–19, including $2.9 billion from the 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 caseload 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 approximately 1.3 million people in September 2018. The decrease in caseload has come almost entirely from low-income adult and children populations. At the same time, caseload in the CHIP program increased by 21.7% between FY2016–17 and FY2017–18. 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% in FY2018–19 before returning to growth of 1.4% in FY2019–20 and 1.8% in FY2020–21.

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 to pay providers for the increased value they deliver instead of a strict fee-for-service reimbursement. Over 1.2 million members of Health First Colorado are enrolled in the Accountable Care Collaborative.

To continue to improve health and streamline costs, Colorado was awarded a State Innovation Model (SIM) grant in 2015, resulting in federal funding for health delivery system transformation to better coordinate physical and behavioral health. The state will improve health by:

- Providing access to integrated primary care and behavioral health services in coordinated community systems,
- Applying value-based payment structures,
- Expanding information technology efforts, and
- Finalizing a statewide plan to improve population health.

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 Colorado Futures 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.

Consolidation and Competition in Health Insurance

In October 2018, it was announced that the Department of Justice approved CVS Health's acquisition of Aetna. The CVS Health and Aetna union pairs one of the nation's largest drugstore chains, its pharmacy benefit firm, and one of the nation's largest health plans. Earlier in the year, Cigna announced its acquisition of Express Scripts, the largest pharmacy benefit manager (PBM) in the United States. Prior to this, Anthem created its own PBM, IngenioRx in 2017, and UnitedHealth Group has run its own PBM, OptumRx, since 2015. These strategic moves demonstrate that health care's biggest insurers recognize the need to branch into other businesses to forge integrated products aimed at improving customer experience and curbing costs. After the failed horizontal mergers (Aetna with Humana and Cigna with Anthem, both of which were blocked by antitrust regulators) in 2017, M&A strategies are shifting toward conglomerates that join insurance and other health care sectors.

In another example of the blurring boundaries in the health care industry, UnitedHealth Group bought DaVita's large physician group for $4.9 billion to add to its existing roster of 30,000 doctors in 2018. With the purchase, UnitedHealth is increasingly moving into the direct delivery of medical care. DaVita also sold its subsidiary Paladina Health to venture capital firm New Enterprise Associates. Paladina Health has 14 direct primary care (DPC) clinics in Colorado and several more in 9 other states. DPC is not insurance but a type of treatment plan that allows individuals to pay a monthly subscription service for an unrestricted amount of primary care. It is gaining popularity with more than 600 locations nationally—over 10% of which are in Colorado—and presents a growing competitive threat to the traditional health care model. In September 2018, Paladina Health expanded its delivery of DPC to approximately 7,400 state employees in partnership with the State of Colorado and UnitedHealthcare.

The Health Care Workforce

The number of Coloradans with health insurance surpassed the five million mark for the first time in 2017 according to the Colorado Health Access Survey (CHAS). This reflects the general growth in the state's population, but it also reflects the fact that Coloradans have gained greater access to insurance. Only 6.5% of residents are uninsured. This means strong demand for health care services.

Another important trend is that the growth in health care jobs is not restricted to doctors and nurses. For example, 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.

There is an unmet demand for health workers in entry-level health care jobs that pay minimum wage, such as caregivers in the home health setting. This trend reflects the strong economy and competition from other minimum wage employers that offer less intensive work, for example, food service. As baby boomers continue to age into Medicare, the increased demand will put even greater pressure on the supply shortage. This could have negative consequences to affordability as home health services allow seniors to maintain independent living longer than they would otherwise (Chris Farrell. "The Shortage of Home Care Workers: Worse Than You Think," *Forbes,* April 18, 2018).

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Physical Health

Colorado gained 355 physicians between 2017 and 2018, which brings the total number of active licensed physicians to 16,041 according to data from the Colorado Department of Regulatory Agencies. With 2.8 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 counties that are more rural have much lower rates, and three counties do not have any licensed physicians.

Registered nurses (RNs) make up the largest subcategory of the health care workforce, with more than 60,000 RNs 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 2018, there are about 3,100 PAs and 4,400 NPs—slight upticks from 2017. 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). Seven RAEs will coordinate physical and behavioral health care for Health First Colorado members. This is part of the Accountable Care Collaborative Phase Two, which began looking to make policy and payment changes in mid-2018, including increasing integration of physical and behavioral health care, replacing regional care collaborative organizations (RCCOs) and behavioral health organizations (BHOs) with 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, which 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 even as the need for CACs has grown with the opioid epidemic. This rate is equal to just 0.3 CACs per 1,000 Coloradans, and 12 counties do not have any licensed CACs.

Licensed addiction counselors (LACs) are even scarcer, with only 823 in the state. However, 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. In addition, the state has added 1,595 licensed professional counselors since 2014, bringing the 2018 total to 6,355. However, psychologists saw a slight decrease in their ranks, down to 2,597 from 2,641 in 2017.

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 39% between 2005 and 2018, reaching 5,561.

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 4,047 licensed dentists in 2018, a slight increase from 2017. The state average rate is 0.7 dentists per 1,000 residents, but this is not evenly distributed across the state. Population centers have much higher concentrations of dentists, while 18 rural counties have either one or no practicing dentists. Medicaid added an adult dental benefit in 2014, further expanding the number of Coloradans with oral health care.

Dental hygienists, who provide much of the care received in an average dental visit, saw a slight increase, from 3,757 in 2017 to 3,951 in 2018. 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.

Health Connectors

Health connectors are an emerging area of the health care workforce that aims to connect community members to health services through various means. Regional health connectors (RHCs) are locally based individuals whose full-time job is improving the coordination of local services to advance health and to address the social determinants of health. Colorado has 21 RHCs who focus on connections between clinical care, community organizations, and public health and human services.

Numerous initiatives are underway to train and develop health connectors. For example, the Colorado Department of Public Health and Environment is leading an effort to establish a competency-based credentialing program and registry for the state's rapidly growing patient navigator workforce. A patient navigator is a part of a health care team that helps an individual overcome barriers to quality care, including access, literacy, transportation, and more. Funding from the Colorado Department of Public Health and Environment has helped to establish the Patient Navigator Training Collaborative. Partnering with the Center for Public Health Practice at the University of Colorado School of Public Health, the Denver Prevention Training Center, the Denver Health and Hospital Authority, and Red Rocks Community College, this initiative offers a range of patient navigation curricula for individuals seeking to enter the job market. The collaborative offers consultation to transform health care systems through innovative, evidence-based approaches to deploying patient navigators, improving patient outcomes and satisfaction, and reducing costs.

There is a growing demand for a qualified unlicensed workforce to provide patient navigation services in urban and rural areas of Colorado. Health navigators assisted 195,000 underserved Coloradans in 2016. Lack of sustainable funding and limited reimbursement continue to be barriers for hiring patient navigators.

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 first quarter 2018, the Colorado Department of Labor and Employment identified that 99,900 Coloradans are employed in 157 public and private establishments, including general, surgical, psychiatric, substance abuse, and other specialty hospitals. More than 61% (61,000) of whom are in private establishments.

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 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 increased significantly since 2009, increasing by 76%, with administrative costs doubling during the same period. The report also cites that costs at Colorado hospitals significantly exceed the national average; furthermore, the growth in Colorado hospital overhead costs since 2009 is roughly double the national average growth rate.

In an effort to bring greater transparency to hospital charges nationally, Centers for Medicare and Medicaid Services (CMS) announced that it would start requiring hospitals to publish their standard charges online beginning January 1, 2019. CMS has not identified what the term standard charges refers to or whether median charges or minimum and maximum charges will be provided. These charges are required to be updated on an annual basis. While this is unlikely to be of much value to the average consumer due to the differences between chargemaster prices and patient contributions, it is intended to the first of a series of transparency efforts focused around the cost of hospital care (Robin Brand and Kenna Hawes. "Prepare for January 2019: Take Steps Now to Craft Your Price Transparency Response," Advisory Board, October 9, 2018).

Pharmacy

According to the *American Journal of Health-System Pharmacy,* in 2017 prescription drug spending in the United States was about $456 billion. This was an increase of 1.7% over 2016. The drug adalimumab (rheumatoid and psoriatic arthritis) had the highest expenditure, at $17.1 billion. The drugs insulin glargine (diabetes) and etanercept (rheumatoid arthritis) were second and third in overall spending, respectively (Glen T. Schumock, JoAnn Stubbings, Michelle D. Wiest, Edward C. Li, Katie J. Suda, Linda M. Matusiak, Robert J. Hunkler, and Lee C. Vermeulen. "National Trends in Prescription Drug Expenditures and Projections for 2018," *American Journal of Health-System Pharmacy,* May 2018).

Prescription drug spending grew 0.6% between 2015 and 2016. This is significantly slower than growth of 11.5% in 2014 and 8.1% in 2015. The previous spikes correlate to costs in new specialty drugs for cases that are complex, chronic, or rare in nature. For example, the new specialty drugs for hepatitis C cure entered the market with three new medications in 2014. In 2015, growth in this area was 7%. In 2016, it fell by 34% as the initial pool of eligible patients completed the curative treatment. Continued growth in pharmacy expenditures is driven by new brands, price increases, and fewer patients expiring. The CMS projections expect more moderate growth through 2026 (Rabah Kamal and Cynthia Cox. "What are the recent and forecasted trends in prescription drug

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spending?" Peterson-Kaiser Health System Tracker, December 20, 2017).

Notable new specialty drugs are coming into the market in oncology. The first CAR T-cell therapy drugs were approved in 2017, including Kymriah for a form of pediatric leukemia and Yescarta for one type of lymphoma in adults. These drugs are the first wave of approved gene therapy, which is a process that involves harvesting the patient's own immune cells, modifying them, and then placing the modified cells back into the patient. This is notable because this type of therapy is extremely costly, with some net total costs estimates of $1.5 million per patient. Kymriah currently has a list price of $475,000 with hundreds of potential patients, and Yescarta's current list price is $373,000, with a potential market of thousands. Current market estimates are around $72 million, with expansion to $3.5 billion over the next 10 years (Sharon Worcester. "CAR T-Cell Therapy: Moving from Cost to Value," Hematology News, November 21, 2017).

Other notable new specialty drugs include Spinraza (Nusinersen), which treats spinal muscular atrophy in pediatric and adult patients, and was approved in December 2016. This drug is $125,000 per dose and with five to six doses; the cost in the first year ranges from $625,000 to $750,000. This cost decreases in subsequent years to $375,000 for three doses (Katie Thomas. "Costly Drug for Fatal Muscular Disease Wins F.D.A. Approval," *The New York Times,* December 30, 2016).

It should be noted that not all drugs are exceedingly expensive. For instance, zoster vaccine, a new, highly effective, and long-lasting vaccine for shingles, was introduced in October 2017. This drug is $213 for two shots. The CDC recommends getting this new vaccine even if a patient has already received a previous vaccination and recommends that patients get the vaccine at 50 rather than previous recommendations of 60. So while this is a relatively low cost drug, it is expected to affect a very broad population (Diane Umansky. "The New Shingles Vaccine: What You Should Know About Shingrix," *Consumer Reports,* January 25, 2018).

According to the Peterson-Kaiser Foundation Health System Tracker, the top five conditions for traditional drug spending, with per member per year expenditures, are:

- Diabetes, $108.80
- Pain and inflammation, $51.64
- High blood cholesterol, $38.45
- Attention disorders, $36.30
- High blood pressure/heart disease, $34.52

The top five conditions for specialty drug spending are:

- Inflammatory conditions (such as arthritis), $118.21
- Oncology, $60.70
- Multiple sclerosis, $58.63
- HIV, $39.92
- Hepatitis C, $25.26

Public Policy

During the 2018 legislative session, the General Assembly devoted a significant amount of time to health care legislation: 144 bills regrading health were introduced during the session, which is more than any year since 2004. Among the approved bills affecting the State's Medicaid program, the General Assembly authorized the Medicaid program to implement a substance use disorder treatment benefit covering residential and inpatient treatment (HB 18-1136), with expected costs of $174 million by FY2020–21.

Conclusion

Health care costs and health care coverage remain a core focus of government officials. While ACA continues to be a contentious topic at the national level, in 2017 and 2018 the number of insured Coloradans has remained stable. This has shifted much of the focus in health care back to affordability.

Pharmacy and hospital cost trends continue as key factors associated with rising costs and questions of affordability. While pharmacy trends have stabilized after a significant spike in 2014 and 2015, the continued emergence of high cost specialty drugs such as CAR T-cell cancer drugs and Spinraza (Nusinersen) are likely to drive up the overall impact of pharmaceuticals on health care costs. Recent reports on Colorado hospital cost trends highlight research from the state's Medicaid office indicating steep increases in administrative costs since 2009.

The shortage in home health workers is another trend that will have long-term impacts on affordability. These services allow seniors to maintain their independent status and avoid more costly assisted living facilities.

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Leisure and Hospitality

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 one in eight jobs in Colorado. The industry has grown by nearly one-third since the recession, with 2018 marking nine years of consecutive employment growth. Leisure and Hospitality employment grew by an estimated 7,100 jobs (2.1%) in 2018 and 7,500 (2.2%) in 2019.

National Trends in the Tourism Industry

Optimism again prevailed at the Travel and Tourism Research Association's annual Travel Outlook Forum held in Las Vegas, Nevada, in late October 2018. Tourism Economics reported the U.S. economy is 111 months into economic expansion. The longest expansion on record is 120 months. GDP is on track for 2.9% growth in 2018 and if it reaches 3%, it would be the fastest growth since 2005. The unemployment rate fell to 3.7% in September, the lowest on record since 1969. Equities remain near record highs. Household net worth is 26% ahead of the prior peak. Despite a trifecta of policy risks—trade, fiscal, and monetary—the economy should maintain momentum heading into 2019.

U.S. consumers remain exuberant about travel. Consumer confidence continues to rise and the Traveler Sentiment Index stands at 110. International visitor spending in the United States is expected to outpace domestic travel spending in 2019. In 2018, foreign visitor expenditures will increase 4.7% and U.S. resident spending will increase 5.1%. This will reverse in 2019, with international visitor spending increasing 5.2% and resident spending rising 4.3%. The long-term trend for U.S. arrivals from overseas is up.

Highlights include:

- Growth is expected to continue in the U.S. attractions industry. The forecast is for a 1.4% gain in 2018 and 1.7% in 2019.
- Millennials are now the largest generation, and in 2018, their annual income surpassed that of the baby boomers. Travel is important to millennials, and they will be a force in the future.
- The years 2017 and 2018 were the best two years for business travel since the recovery from the recession. The year 2019 will bring more modest growth in business travel volume and spending as economic headwinds begin to build (particularly the lingering threat of trade war). The 2019 forecast is a 4.4% increase in business travel spending for a total of $326 billion and a 2.1% increase in person trips, to 565 million.
- Global data benchmarking firm STR reported the hotel industry is strong and still growing, setting new records after eight good years. In 2019, the U.S. hotel industry will see supply increase 1.9%, demand rise 2.1%, average daily rate (ADR) climb 2.4%, and revenue per available room (RevPar) increase 2.6%.

Among the negative drivers for 2019 are political environment, economy uncertainties, trade war, climate threats, and hotel supply.

In 2018, the U.S. Bureau of Economic Analysis (BEA) conducted an economic analysis of the outdoor recreation industry satellite account nationally. This study includes a variety of supersectors as the full picture of outdoor recreation encompasses several industries. The outdoor recreation industry accounted for $412 billion of U.S. GDP in 2016, or 2.2% of the U.S. economy. (See the overview at the end of this section for additional analysis of the economic impacts of outdoor recreation.)

INDUSTRY SNAPSHOT LEISURE AND HOSPITALITY	
Nominal GDP, 2017 ($ Billions)	17.9
Real GDP, 2017 ($ Billions, 2012 Dollars)	15.3
2017 Real GDP Growth Rate	4.3%
Total Employment, 2017 (Thousands)	333.4
2017 Employment Growth Rate	3.0%
Employment Growth National Rank	7
Share of Colorado Employment	12.5%
Share of National Employment	10.9%
Average Wage, 2017	24,462
Percent of Statewide Average Wage	42.7%
2017 Average Wage Growth Rate	4.3%

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

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 FY2018, 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.

With a unanimous vote, the Colorado Tourism Board endorsed the designation of eight new travel regions designed to inspire travelers, regional tourism collaboration, and the creation of new traveler experiences. A

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strategy under the Roadmap's Compete pillar, the CTO gathered an 11-member Regional Branding Task Force with representation from across the state and engaged an internationally renowned place-branding agency, Destination Think! The consulting team analyzed nearly 19 million online conversations, fielded industry and consumer surveys, and gained direct input from about 800 Coloradans during 20 workshops in 11 Colorado destinations around the state in formulating the new map.

The CTO in October 2017 became the first state tourism office in the United States to form a partnership with the Leave No Trace Center for Outdoor Ethics to promote responsible tourism. Working closely with Leave No Trace, the CTO developed the Care for Colorado Principles, sharing them through CTO channels, including a new "Are You Colo-Ready?" brochure and animated video. The CTO also engages in traveler dispersion strategies and broadened its online Colorado Field Guide to include new social sharing features encouraging travelers to explore off-peak seasons and less-visited destinations, while inspiring them to travel like a local, engage in "voluntourism," and support causes dear to Coloradans.

The CTO continues to promote rural economic development. Its Destination Development program founded the Colorado Rural Academy for Tourism (CRAFT) in spring 2018, creating a collection of training resources to help small and rural communities embrace tourism as part of their economic development strategies.

The CTO Marketing Matching Grant Program awarded $650,000 in tourism marketing dollars to 30 tourism industry organizations with marketing projects covering 46 counties.

LEISURE AND HOSPITALITY EMPLOYMENT
2009–2019
(In Thousands)

Year	Arts, Entertainment, and Recreation	Accommodation	Food Services	Total Accommodation and Food Services[a]	Total Leisure and Hospitality[a]
2009	44.6	39.9	178.0	217.9	262.4
2010	44.7	39.5	178.8	218.3	263.0
2011	45.6	41.0	184.8	225.8	271.4
2012	46.5	41.8	191.4	233.2	279.7
2013	47.3	42.8	199.3	242.1	289.4
2014	49.0	43.6	207.8	251.4	300.4
2015	50.8	44.5	217.5	262.0	312.8
2016	52.9	45.6	225.2	270.8	323.6
2017[b]	55.7	47.6	230.1	277.7	333.4
2018[c]	57.1	48.8	234.6	283.4	340.5
2019[d]	58.5	50.3	239.2	289.5	348.0

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

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

Colorado Tourism Highlights

- Total direct travel spending in Colorado in 2017 reached an unprecedented $20.9 billion, up 6.5% from 2016, double the national average.
- Marketable leisure trips reached an all-time high of 18.9 million, representing a 2% increase over 2016.
- While several top-tier travel states lost market share in 2017, Colorado retained its record-high 3.1% share of the coveted travel segment.
- In 2017, domestic visitor trends boosted Colorado up a notch to rank eighth nationally for its share of marketable leisure travelers, who are the target of the state's "Come To Life" marketing campaign.
- The Colorado tourism industry generated $1.28 billion in local and state tax revenues in 2017. Replacing those taxes generated by visitors would have required an additional $228 tax payment from each of Colorado's 5.61 million residents.
- The CTO's $8.1 million media spend from April 2017 through March 2018 directly generated $4.45 billion in traveler spending and 2.66 million incremental trips.
- Based on those numbers, the return on investment for the "Come to Life" marketing campaign in 2017 was $546 in traveler spending for every $1 invested in paid media, up from $534 the previous year.

International Travel to Colorado

In 2017, Colorado attracted more than 989,000 international visitors, an increase of 5.4% over 2016 and 29.2% over the five years since 2012. Colorado's top international markets are Mexico and Canada, followed by the overseas markets of the United Kingdom, Australia, Germany, France, China, and Japan.

In the last year, the CTO supported Denver International Airport's (DEN) marketing efforts for the launch of six new nonstop international flights, bringing DEN's total nonstop international flights to 26. The new flights are


Photo courtesy of Tony Gurzick/CPW.

operated by Norwegian to London-Gatwick and Paris, Copa Airlines to Panama City, United Airlines seasonal service to London-Heathrow, WestJet to Calgary, and seasonal service by Edelweiss to Zurich. See the airport section in Trade, Transportation, and Utilities for more information on flights.

VISIT DENVER hosted the U.S. Travel Association's annual IPW trade show in May 2018, where more than $4.7 billion of travel business was transacted at the Colorado Convention Center. The CTO joined Denver as premier sponsors of the event, which hosted 6,185 total attendees, including 1,432 international travel buyers and media from more than 70 countries. The CTO's Taste of Colorado VIP Reception at the start of IPW hosted 126 international journalists at the grand opening of the Denver Milk Market.

Tourism and Conventions in Denver 2017–18

For the 12th consecutive year in 2017, Denver had record tourism results, and trends show that 2018 is on pace to be another strong year for both conventions and leisure tourism.

Research firm Longwoods International indicated that Denver welcomed a record 31.7 million total visitors in 2017 (the latest figures available), including 17.4 million overnight visitors, an increase of 1% over 2016. Since voter approval to increase tourism marketing dollars in 2005, Denver tourism has grown by 65% compared to 24% nationally. Travel spending by overnight visitors climbed 6% to a record $5.6 billion. For the 14th straight year, the number of marketable visitors also grew, increasing 8% from 2016.

Denver set a record for lodger's tax collections in 2017, generating $99.3 million, up 11.7% from 2016. In addition, the city collected $13.4 million in lodger's tax related to a settlement with online travel companies for lodger's tax collection not paid in prior years. Through the end of August 2018, lodger's tax collections in Denver were up 14.7% year-over-year. Furthermore, the implementation of the new Tourism Improvement District (TID), which collects an additional 1% of lodger's tax in hotels with 50 rooms or greater, is expected to generate an additional $9.5 million in lodger's tax in 2018.

According to STR, through September, occupancy in the City of Denver increased 0.2 percentage points, to 77.6%, in 2018 from about 77.4% in 2017. The average room rate increased 1.6%, to $154.67, in 2018 from $152.30 in 2017. RevPAR increased 1.8%, to $120.03, in 2018 from $117.88 in 2017. For Metro Denver, occupancy increased 0.3 percentage points, to 75.9%, in 2018 from 75.6% in 2017. The average room rate increased 0.8%, to $132.93 in 2018 from $131.82 in 2017. RevPAR increased 1.2%, to $100.86 in 2018 from $99.71 in 2017.

2017–18 Convention Highlights

Denver is very strong for both conventions held and future bookings.

- In hosting conventions, 2017 was a very strong year, with 934 meetings attracting 390,074 delegates who spent $781 million. This included 84 groups that used the Colorado Convention Center and 850 individual hotel groups. During the first six months of 2018, a total of 531 conventions were booked that will draw 207,246 future attendees who represent $378.3 million in spending.
- In January and July, Denver hosted two of the three annual Outdoor Retailer shows that will take place in Denver over the next five years. These shows constitute the largest convention booking in Denver's history. Together, these shows will annually bring about 85,000 delegates to Denver and generate an economic impact of nearly $110 million.
- The Colorado Convention Center expansion project is making progress with the selection of Fentress Architects and Trammel Crow to begin the design and construction of the project. The expansion will add an 80,000-square-foot rooftop ballroom and 50,000-square-foot terrace.

2017–18 Tourism Highlights

Denver is experiencing an unprecedented period of tourism growth. Top Denver tourism industry stories include:

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- The Denver Tourism Roadmap, which was launched at the end of 2016, is wrapping up its second full year of implementation in 2018. The Roadmap is 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.
- Denver hotels voted in November 2017 to create a Tourism Improvement District (TID). The TID started collecting revenue from the new 1% lodging tax on January 1, 2018, that will help pay for the expansion of the Colorado Convention Center and provide additional funds for Denver tourism and convention marketing. New marketing programs launched in 2018 using TID resources include a buyer education trip for meeting planners, a new weekend marketing campaign targeting short-term travel from regional visitors, and incentives to ensure Denver stays competitive.
- Denver hosted the 50th anniversary of U.S. Travel Association's IPW in May 2018, the largest international travel trade show held in America. In total, Denver hosted 1,300 of the most influential international tour operators and nearly 550 media from nearly 70 countries. Delegates conducted more than 100,000 appointments in the Colorado Convention Center.
- In sports, Denver hosted several successful major events, including two international rugby matches during summer 2018. For the second year, the Colorado Classic featured 100+ professional men and women riders in Denver and throughout the state. Finally, an exploratory committee was formed and recommended that Denver and Colorado should seek a potential future Winter Olympic and Paralympic Games if a bid opportunity arises.
- Denver hosted the inaugural Grandoozy three-day music festival at the Overland Park Golf Course in September 2018. In total, 55,000 attendees enjoyed national music acts, local food and beverages, and additional entertainment. The event elevates Denver's brand and music scene at regional and national levels.

- Residents and visitors alike continued to enjoy blockbuster exhibitions in 2018, such as Degas: A Passion for Perfection at Denver Art Museum and Creatures of Light and Dead Sea Scrolls at the Denver Museum of Nature & Science. In addition, the new Kirkland Museum of Fine & Decorative Art opened in the Golden Triangle Arts District. Other cultural milestones included the first touring production of Tony-award winning hit *Dear Evan Hansen* and the November opening of Dior: From Paris to the World at Denver Art Museum.
- For the third year, VISIT DENVER ran a winter tourism marketing campaign, targeting key regional markets, as well as Houston, Dallas, and Chicago, to encourage visits to the Mile High City in the first quarter of the year.
- Denver's $6 million spring/summer tourism consumer campaign targeted markets in Houston, Dallas, Chicago, and San Francisco, as well as

Photo courtesy of Dustin Doskocil.

expanded the campaign's national presence. The campaign highlighted summer exhibitions and activities in Denver.

- Coming up on its 16th year in 2018, the Mile High Holidays campaign, valued at $1 million, 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 & Rodeo.
- The culinary scene in Denver is receiving increased national and international attention. The hit TV show "Top Chef" selected Denver and Colorado as the location for the 15th season and episodes aired in late 2017 through early 2018. For the second consecutive year, Denver welcomed the Slow Food Nations festival.
- CityPASS, a private nationwide program available in many major cities, entered the Denver market. It features eight Denver attractions.

Denver is upgrading its tourism infrastructure and appeal in many ways, including projects that will begin in earnest in 2019. While they 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:

- Denver International Airport's $1.5 billion plan to add 39 new gates and $1.8 billion to remodel the Great Hall to improve the customer experience
- The $1.17 billion widening of I-70 between Colorado Boulevard and I-25
- The $1 billion reconstruction of the National Western Complex
- Improvements to Brighton Boulevard
- The $100 million reconstruction of the 16th Street Mall
- The $233 million 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 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 hotel supply will eventually have an impact on occupancy, and already Denver is seeing a flattening and decrease in some submarkets around the metro area. This new supply has had a dramatic impact on the 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 service jobs. The same shortages apply to low- and mid-level hospitality management workers, which are also in demand.

Denver Hotel Supply

New hotels add to Denver's lodging package for leisure and convention visitors. Metro Denver opened 2,400 new hotel rooms in 2017, with an additional 2,059 rooms to open in 2018 and 4,363 new rooms projected to open in 2019. In 2018, the following properties began welcoming guests:

- The 100-room Source Hotel adjacent to The Source artisan food market
- The 50-room Ramble Hotel in the River North (RiNo) district
- The 111-room Staybridge Suites Denver Downtown
- The 170-room Moxy in Cherry Creek North
- The 123-room Origin Hotel near Red Rocks
- The 233-room Hilton Garden Inn near Union Station
- The 201-room Jacquard Hotel in Cherry Creek North
- The 157-room Element Hotel in downtown is under construction

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Denver International Airport

Denver International Airport is the 5th-busiest airport in the United States and 20th-busiest in the world, with more than 205 nonstop destinations, including 26 international cities in 12 countries. It serves the second-most domestic destinations of any U.S. airport. Air traffic set a record in 2017, serving 61.4 million passengers and making it the busiest year for passenger traffic in Denver's aviation history. It was also the 10th-consecutive year with more than 50 million passengers.

Casinos

Colorado's casino and gaming industry has continued to experience a slow, but steady economic growth with customers feeling more 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 that 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 CTO.

For the fiscal year ending June 2017, Colorado casino adjusted gross proceeds (AGP), which is defined as the amount wagered by players less payout from the casinos to all players, were $828 million. Gaming taxes paid to the state were $125 million, reflecting a small increase from the previous year and a steady increase over the last five years.

Black Hawk continues to dominate the Colorado casino sector with 15 casinos, 7,354 devices, and a majority of the AGP. Cripple Creek has 12 casinos and 3,579 devices; Central City has 6 casinos and 2,049 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. 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. Moving into 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.

COLORADO CASINOS
2008–2018

Year	Casinos Open	Devices (Thousands)	Adjusted Gross Proceeds[a] (In Millions) Black Hawk	Central City	Cripple Creek	Total
2008	41	16.8	$508.7	$67.1	$140.1	$715.9
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
YTD. Sept. 2017	33	12.8	468.4	54.2	103.0	625.7
YTD. Sept. 2018	33	13.0	472.8	59.9	106.3	639.1

[a]AGP calculated on an annual basis, hence different from the state fiscal year.

Source: Colorado Division of Gaming.

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 topped 11,900 in Q1 2018, a 2.3% increase from the Q1 2017 level, and marked seven consecutive years of growth.

Along with growth in the number of restaurant and foodservice locations in Colorado, employment opportunities also continue to rise. Restaurant employment is on pace to increase 2% in 2018.

At the same time, 2018 is projected to be the second-straight year of job growth below 3%, which follows six consecutive years (2011–2016) with gains above 3%. 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.

This was illustrated by the fact that there were approximately 900,000 job openings nationally in the combined restaurants and accommodations sector in August 2018 according to data from the BLS. This represented the highest level on record, and was more than four times higher than the number of monthly job openings during the depth of the recession.

Restaurant operators confirm that competition for employees is intensifying in the industry. According to the National Restaurant Association Restaurant Trends Survey, roughly 3 in 10 operators indicate that they have job openings that are difficult to fill, a sentiment that was most common among fine dining (37%), quick service (33%), and casual dining (32%) operators.

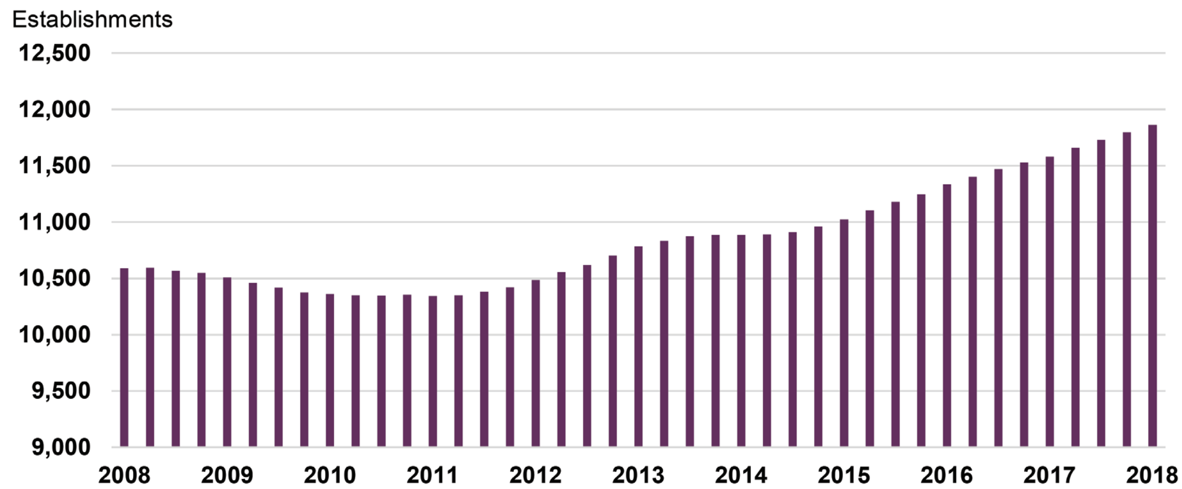
Among restaurant operators who say they have job openings that are difficult to fill, the biggest challenge is finding applicants for back-of-the-house positions. This is most pronounced in the table service segment, with 84% of fine dining operators, 75% of casual dining operators, and 73% of family dining operators reporting they are having trouble filling back-of-the-house job openings.

Eighty percent of fine dining operators with difficult-to-fill job openings also report challenges finding front-of-the-house employees as do a majority of quick service operators (68%) and fast casual operators (63%).

A Tech-Forward Future

Driven in part by the difficulty in finding workers, as well as by consumers increasingly interested in streamlining their restaurant experience, technology adoption will keep growing among restaurant operators. Guest-facing restaurant technologies are gaining ground as guests are increasingly familiar with using tech in other areas of their lives. Consumers are willing to use more restaurant technology in the future, and many say the availability of certain tech may sway them to choose one restaurant over another. However, research shows that the human element is still considered crucial to a positive restaurant experience. Challenges facing restaurant operators when introducing technology include the financial costs as well as the risks associated with cybersecurity and the liability associated with handling customer data.

COLORADO FOOD SERVICES AND DRINKING PLACES ESTABLISHMENTS



Source: Colorado Department of Labor and Employment, Quarterly Census of Employment and Wages.

Food and Menu Trends: From Item to Idea

A new era of concept-based food trends focuses more on how food is produced and prepared than on specific ingredients or items. Local, vegetable-forward, and ethnic-inspired menu items will reign supreme on menus in 2019. Guests are implementing these trends in their own lifestyles and want to see them reflected in the food they eat at restaurants. In response, chefs are creating more items in-house and turning to global flavors to infuse their menus.

State of the Plate

The dining landscape is changing, but some things remain the same—Americans' love for restaurants. Eight in 10 consumers say dining out is a better use of their leisure time than cooking at home, and more than two in five consider it an essential part of their lifestyle.

Colorado's rate of growth is slowing somewhat, but the restaurant industry is once again projected to register sales of more than $12 billion in 2019, a 40% increase in restaurant sales since 2010.

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Source: Colorado Parks and Wildlife.

Parks and Outdoor Recreation

Outdoor recreation is a significant driver in Colorado's economy generating billions of dollars toward the state's GDP and supporting thousands of jobs. Whether it is improving the quality of life for Colorado residents, or tempting visitors from far and wide to revel in the wild Rocky Mountains, it is the diversity of outdoor experiences that draws people to our state. This outdoor lifestyle also drives a very active citizenry with the lowest obesity rate in the country.

In 2018, Colorado Parks and Wildlife (CPW) led the efforts in writing the state's 2019 Statewide Comprehensive Outdoor Recreation Plan (SCORP). This plan, written every five years takes a look at all forms of outdoor recreation in the state, explores how and where people recreate, and provides land managers and policymakers with tools to help evaluate management decisions.

As reported in the 2019 SCORP, approximately 92% of Colorado residents recreate outdoors at least every few weeks. Sixty-four percent of Coloradans use local parks, open spaces, and trails at least weekly. The diversity of outdoor recreation activities is as varied as the Colorado landscape; however, the top 10 outdoor activities in Colorado are:

- Walking
- Hiking/Backpacking
- Picnicking and tent camping
- Fishing
- Playground activities
- Jogging/running outdoors
- Skiing (alpine/tele)/snowboarding
- Wildlife viewing/(excluding birdwatching)
- RV camping/cabins
- Team or individual sports

Although many people recreate outside, there are barriers that limit the number of trips or the amount of time spent in the outdoors. As reported, the top three barriers to Coloradans' recreation participation were: (1) limited time due to family/work/other commitments, (2) traffic congestion, and (3) crowding.

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 7% increase in 2017 with 15,389,000 park visits. Although state park visitation was on track to set a new visitation record in 2018, wildfires and drought conditions throughout the state impacted visits to many state parks. State park visits for 2018 will likely come in at about 15,096,000, a 2% decline. Reservoir parks, like Navajo State Park and Ridgway State Park, saw fewer visits in 2018. Although surveys were not conducted, low water levels due to extreme drought likely played a role in decreased visitation. In addition, significant wildfires in the state may have also played a role in decreased visitation.

Although environmental conditions impacted certain state parks, visitors may have shifted to other parks. For example, through August of 2018, Cherry Creek State Park welcomed 1.8 million visitors while during the same time period in 2017, Cherry Creek saw 1.7 million visitors. Additionally, Sylvan Lake State Park was closed for most 2018 for construction work but is scheduled to resume operations in 2019.

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 2017 was approximately 7.6 million visitors. Like state parks, national parks were on track to set a new visitation record; however, extreme drought and wildfires

COLORADO PUBLIC LAND VISITS
2009–2019
(In Thousands)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018[a]	2019[b]
Colorado State Parks[c]	12,000.0	12,300.0	12,300.0	12,200.0	11,500.0	11,900.0	13,200.0	14,296.0	15,398.0	15,096.0	16,597.6
National Parks and Sites											
Bent's Old Fort NHS	28.1	29.1	26.8	25.8	23.3	24.6	26.2	31.9	26.4	25.4	27.6
Black Canyon of the Gunnison NP	171.5	176.3	168.3	192.6	175.9	183.0	209.2	238.0	307.1	321.9	359.0
Colorado NM	400.3	433.6	435.5	454.5	409.4	419.9	588.0	391.1	375.0	376.6	347.3
Curecanti NRA	953.2	969.5	924.5	862.6	814.2	931.4	944.7	982.5	1,041.4	851.7	938.7
Dinosaur NM[e]	150.9	146.4	158.0	224.1	203.1	185.4	215.9	225.2	233.8	228.3	259.1
Florissant Fossil Beds NM	64.3	65.4	61.3	62.6	58.0	63.3	69.1	73.6	71.8	83.4	84.5
Great Sand Dunes NP	290.0	283.3	280.1	254.7	242.8	271.8	299.5	388.3	486.9	445.3	549.3
Hovenweep NM[e]	12.3	12.1	11.4	11.7	11.0	11.8	15.4	18.9	17.6	18.4	20.7
Mesa Verde NP	550.4	559.7	572.3	488.9	460.2	501.6	547.3	583.5	613.8	574.5	614.9
Rocky Mountain NP	2,822.3	2,955.8	3,176.9	3,229.6	2,991.1	3,434.8	4,155.9	4,517.6	4,437.2	4,631.2	4,954.6
Sand Creek Massacre NHS[d]		4.1	3.9	4.4	4.8	7.4	5.9	6.8	6.5	6.1	5.6
Total Visitors to Parks and Sites	5,443.3	5,635.3	5,819.0	5,811.5	5,393.8	6,035.0	7,077.1	7,457.4	7,617.5	7,562.8	8,161.3
Bureau of Land Management	5,576.0	6,448.0	6,844.0	7,310.0	6,963.0	7,536.0	7,694.0	7,739.0	8,310.0	8,403.1	8,662.4
National Forest[f]	24,000.0	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
Total Public Land Visitation[g]	47,019.3	51,383.3	51,963.0	52,321.5	50,856.8	52,471.0	54,971.1	56,492.4	57,425.5	62,061.9	64,421.3

[a]Estimated. [b]Forecast. [c]42 state parks managed by Colorado Parks and Wildlife. [d]Sand Creek Massacre NHS was dedicated as an official park unit in April 2007.

[e]Dinosaur NM and Hovenweep NM cross into Utah, but the number of visitors reported in this table is only for the Colorado portion of the parks.

[f]Yearly visitor numbers were not available; reported numbers based on limited data.

[g]Due to rounding, the sum of the individual items may not equal the total.

Note: Yucca House National Monument does not report visitations, therefore it is not included.

Definition: NHS = national historic site, NP = national park, NM = national monument, and NRA = national recreation area.

Sources: National Park Service Visitor Use Statistics and Colorado Business Economic Outlook Committee.

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Leisure and Hospitality

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Photo courtesy of CPW.

likely contributed to a decline in park visitation. For 2018, national park visits will be about 7.6 million. Looking at individual parks helps understand what may have caused the slight decrease. For example, Mesa Verde National Park in southwest Colorado experienced a 6% decline. News coverage portrayed the 416 fire in Durango as near to Mesa Verde. Curecanti National Recreation Area (Blue Mesa Reservoir) had a 15% drop in visitation, likely due to lower water levels of Blue Lake. Conversely, some parks, like Rocky Mountain National Park enjoyed a 5% increase, setting another record with 4.6 million visitors.

This past year highlights how dependent certain outdoor recreation locations are on climate, fires, and weather conditions. Drought and fires will cause people to alter their trip preferences. As well, this past year also showed the resiliency of outdoor recreation. Despite extreme drought throughout much of Colorado, as well as many destructive wildfires, visitation to outdoor spaces only slightly decreased in 2018.

Skiing Industry

According to the National Ski Areas Association (NSAA), the United States recorded 53.3 million downhill skier and snowboarder visits during the 2017–18 season, down from 54.8 million visits during the 2016–17 season, primarily due to warm temperatures and below-average snowfall for resorts in much of the western half of the country.

In Colorado, the state's 30 ski areas had a solid year, with approximately 12.1 million skier/snowboarder visits in the 2017–18 winter season, down 3.7% from 12.6 million visits in 2016–17. The state exceeded the 12-million-visit mark for the fifth-consecutive season and the ninth season on record. Increases in affordable season passes have helped spur growth in local visitation. Additionally, a well-established reputation for reliable, consistent snow conditions, resort investments in the on-mountain experience, strong airlift to Denver and mountain airports, and recent improvements along the I-70 corridor, among other factors, have contributed to industry's strength. However, resorts did experience significant headwinds in 2017–18 as well, most notably record warm temperatures and much below average snowfall, including during the important early season period.

Colorado continued to maintain its dominance as the leading skiing destination in the nation in 2017–18, capturing 22.7% of total U.S. resort skier visits—far ahead of the next closest states (California, with a 10.2% share and Utah with 7.7% share). Colorado was home to 7 of the country's 10 most visited ski resorts in 2017–18.

Photo courtesy of Nora Logue/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. While winter visitation may have dipped in the 2017–18 ski season, visitor spending continued to climb. For several consecutive years, resort-anchored communities, like Aspen, Vail, Breckenridge, Steamboat Springs, Winter Park, Crested Butte, and Telluride, have seen healthy annual increases in winter taxable sales at area lodges, restaurants, bars, and shops. Between the 2016–17 and

2017–18 ski seasons, despite often-challenging snow and weather, each major Colorado resort community saw taxable sales climb between November and April: Aspen up 3%; Breckenridge up 8.2%; Crested Butte up 1.3%; Frisco up 6.8%; Snowmass Village up 2.1%; Steamboat Springs up 5.6%; Telluride up 0.1%; Vail up 1.2%; and Winter Park up 11.1%.

With strong levels of visitation in the past five seasons, early snowfall and October openings of a handful of resorts, and enhanced season pass offerings, Colorado resorts have strong momentum going into the 2018–19 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 within Colorado and nationally. Early indicators of business volumes are favorable, including announcements of strong preseason pass sales from leading ski resort companies and solid resort town lodging bookings for the 2018–19 season as reported by Inntopia. Weather remains uncertain, with the National Oceanic and Atmospheric Administration issuing an El Niño Watch in October 2018 for the winter 2018–19 season. El Niño favors wetter winters in the southern United States and drier conditions in the northern part of the country. Located between these northern and southern regions, Colorado and its snow and weather advantage relative to other western ski regions is unknown. ✤

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Photo courtesy of Chris Stark/CPW.

Leisure and Hospitality

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Outdoor Recreation Economy

Colorado is known for its outdoor lifestyle and recreational opportunities. Whether a person enjoys walking, climbing, 4x4ing, hunting, or skiing, Colorado offers seemingly limitless opportunities to spend time outdoors. Colorado's outdoor lifestyle is not only part of the state's identity; it is also an important part of the state's economy.

Colorado's outdoor recreation generates substantial economic benefits to the state through direct spending on travel and equipment. However, the economic impacts do not stop there—outdoor recreation spending has positive ripple effects across other sectors through the purchase of goods, wages, and other factors. People and businesses are drawn to Colorado by its outdoor recreation opportunities, further driving the state's economic engine.

Southwick Associates conducted a study for Colorado Parks and Wildlife to estimate the economic contributions of outdoor recreational activity in Colorado during 2017 (Colorado Parks and Wildlife. 2018. *The 2017 Economic Contributions of Outdoor Recreation in Colorado.* Denver, CO).

In 2017, outdoor recreation in Colorado contributed:

- $62.5 billion in economic output
- $35 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), the majority of which are outside of Metro Denver

Over the last five years this is a 63% increase in economic output and a 75% increase in wages and salaries. The survey included a set of 30 activities that were grouped into five categories: trail/road, water-based, winter, wildlife-related, and other outdoor activities. All outdoor recreation activities contributed to the $62.5 billion in economic output. For example, over $5 billion comes from hunting, fishing, and wildlife watching, supporting nearly 40,000 jobs. Off-highway vehicles, four wheeling, and motorcycling generate $1.3 billion in consumer spending each year.

The Colorado Parks and Wildlife study used spending profiles (i.e., spending per day or participant) from the Outdoor Industry Association (OIA) (Outdoor Industry Association. 2017. *The Outdoor Recreation Economy.* Boulder, CO). However, the OIA and Colorado Parks and Wildlife study methodologies differ. Southwick expanded the OIA study to look at a larger pool of outdoor recreation activities, including those in local communities, like walking, playground activities, and team sports. The following factors were used to get a comprehensive picture of economic output:

- 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 direct and indirect industries

A Rapidly Expanding Economy

Outdoor recreation is not only a robust sector, but also a growing one. Since 2014, total economic output and tax revenue from outdoor recreation in Colorado nearly doubled, and the number of jobs increased by almost 200,000. What is causing this rapid growth?

Participation in outdoor recreation remains high—92% of public survey respondents indicated they participated in outdoor recreation activities, similar to the overall level of participation seen in the same study five years prior. However, some recreation activities showed strong increases. The number of days Coloradans recreate on a trail grew 44% between 2012 and 2017. In addition, spending profiles increased across most activities, with trail sports, snow sports, RV camping, and running contributing the largest increases.

It is important to note that Colorado has had one of the fastest-growing economies over the past five years, recording strong GDP, employment, and personal income growth.

Tourism contributes to economic development. Colorado's tourism industry generates about $20 billion in traveler spending annually through attraction of more than 84 million U.S-based visitors and nearly 1 million international visitors. Combined, these travelers generate $1.2 billion a year in state and local taxes. The Colorado tourism industry, enjoyed strong growth from 2012 to 2017, with overnight trip expenditures by Colorado visitors increasing from $9.6 billion to $15.3 billion.

This strong economic growth in recent years also contributed to higher spending on outdoor recreation. According to OIA, national consumer spending on outdoor recreation increased by 37% between 2011 and 2016.

Nationally, the Bureau of Economic Analysis estimated national industry activity in the new Outdoor Recreation Satellite Account (ORSA) (T. Highfill, T. Franks, and P. Georgi. 2018. Outdoor Recreation Satellite Account. Washington D.C.). The outdoor industry contributes 2.2% to the U.S. GDP, or $412 billion. The top industry contributor to chained-dollar GDP in 2016 was the arts, entertainment, recreation, accommodation, and food services industry ($94 billion), contributing 24.8% to total ORSA GDP. The next largest industries were retail trade ($85.4 billion), manufacturing ($59.7 billion), wholesale trade ($33.4 billion), and transportation and warehousing ($29.7 billion).

The largest core outdoor activity in the United States was fishing/boating, with an economic output of $38.2 billion. This was followed closely by outdoor games (e.g., golf, tennis, etc.), with a real gross output of $34.7 billion; RVing, with $30 billion; and guided tours/outfitted travel, with $25.7 billion. Nationally, 4.5 million people are employed by the outdoor recreation industry. Employment for the outdoor recreation economy grew 1.1% annually, on average, between 2012 and 2016.

Contributor: *Tony Gurzick, Colorado Parks and Wildlife*

Other Services

The Other Services Supersector comprises establishments that provide services not specifically categorized elsewhere in the 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 2017, close to 16,000 businesses were classified in Other Services, while the average number of employees per employer was approximately five. Industry growth is influenced by the demographics of the population, disposable income, and strong consumer confidence. In 2017, Colorado total employment for this sector was approximately 108,700, up 1.3% from the previous year. The supersector is expected to end 2018 with approximately 110,100 jobs. In 2019, the supersector is expected to add another 1,300 jobs, a 1.2% gain. Improvement is expected across all three subsector groups.

OTHER SERVICES EMPLOYMENT, 2009-2019 (In Thousands)

Year	Repair and Maintenance Services	Personal and Laundry Services	Religious, Grantmaking, Civic, Professional, and Similar Organizations	Total
2009	21.5	22.6	49.6	93.7
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	28.8	54.5	108.7
2018[b]	26.0	29.3	54.8	110.1
2019[c]	26.5	29.9	55.1	111.4

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

Note: Due to rounding, the sum of the individual items may not equal the total.
Sources: Colorado Department of Labor and Employment, and Colorado Business Economic Outlook Committee.

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 subsector, comprising 50% of Other Services. Establishments include various labor unions, nonprofits such as the Denver Dumb Friends League and the Boy and Girl Scouts organizations. The sector also contains social advocacy and political organizations. As a result, employment in this sector increases in election years as political groups hire more workers. In 2017, job growth in this subsector was relatively flat. The subsector is expected to grow slightly in 2018 and 2019, increasing by 0.6% and 0.5%, respectively.

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. Employment is expected to total 26,000 in 2018, up 2% from the previous year. Job growth in this subsector is expected to continue to improve in 2019.

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 (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. The sector grew by a healthy 1.7% in 2018 and will grow 2% in 2019. The improvement is from strong demand for personal services, such as pet amenities, beauty salons, barbershops, and spas. ✤

***Contributor:** Louis Pino, Colorado Legislative Council*

INDUSTRY SNAPSHOT OTHER SERVICES

Nominal GDP, 2017 ($ Billions)	8.0
Real GDP, 2017 ($ Billions, 2012 Dollars)	6.8
2017 Real GDP Growth Rate	1.7%
Total Employment, 2017 (Thousands)	108.7
2017 Employment Growth Rate	1.3%
Employment Growth National Rank	11
Share of Colorado Employment	4.1%
Share of National Employment	3.9%
Average Wage, 2017	39,558
Percent of Statewide Average Wage	69.0%
2017 Average Wage Growth Rate	3.5%

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

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 2017, Government employment in Colorado increased 1.9%, to 436,900. Local government, including public K–12 education, represented 59.7% of government employment, followed by state government, including higher education, with 27.9%. Federal government made up the remaining 12.4%. Government employment is expected to increase to 443,500 in 2018, then rise 1.5%, to 450,200 in 2019.

Government employment is impacted by a variety of factors. 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. The federal government relaxed budgeting rules in the first half of 2018, which will allow reduce reductions in federal government employment growth over the next couple of years. 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.

Federal Government

The U.S. Government Accountability Office's Federal Fiscal Outlook and the Congressional Budget Office's (CBO's) 2018 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. Over the next decade the gap between revenues and outlays will remain persistently large, and this imbalance will cause federal debt to rise to nearly 100% of GDP. Federal spending in 2018 will total $4.1 trillion, which is 4% more than the amount spent in 2017. Spending is projected to grow at an average annual rate of 5.5% over the next decade, reaching $7.0 trillion in 2028. However, total revenues will rise by less than 1% in 2018, to just over $3.3 trillion, and are expected to decline as a percentage of GDP, to 16.6%, in 2018, which is below the average of 17.4% of GDP recorded over the past 50 years.

Budget deficits will continue increasing after 2018, rising from 4.2% of GDP in 2018 to 5.1% in 2022. Over the next few years, revenues will remain close to their 2018 level of 16.6% of GDP. Then they will rise steadily, reaching 17.5% of GDP by 2025. Federal spending for the next three years will remain near 21% of GDP, which is higher than its historical average of 20.3% over the past 50 years. After that, outlays will grow more quickly than the economy, reaching 23.3% of GDP by 2028. The main cause of this imbalance stems from increased spending on mandatory programs, including Social Security, Medicare, Medicaid, and other major health care programs.

Government spending on mandatory programs is expected to average 17.4% of GDP between 2038 and 2047 compared to 13% in 2017. The key factor driving this is the retirement of baby boomers who will increasingly live longer and will become beneficiaries of these federal programs. By 2047, 22% of the U.S. population is anticipated to be age 65 or older, a 7 percentage-point increase from today's level of 15%. Additionally, as interest rates rise from their current low levels, interest payments on existing and new borrowing are expected to grow alongside the federal debt.

The federal debt is projected to be on a steadily rising trajectory throughout the coming decade. Debt held by the public has doubled in the past 10 years as a percentage of GDP as it approaches 100% of GDP by 2028. The implications of this are: federal spending on interest payments will increase, federal borrowing will reduce total saving in the economy over time, lawmaking will be less flexible, the likelihood of a financial crisis will increase, and investors may require higher rates of interest on any future debt issued.

INDUSTRY SNAPSHOT
GOVERNMENT

Nominal GDP, 2017 ($ Billions)	42.3
Real GDP, 2017 ($ Billions, 2012 Dollars)	37.6
2017 Real GDP Growth Rate	1.5%
Total Employment, 2017 (Thousands)	436.9
2017 Employment Growth Rate	1.9%
Employment Growth National Rank	3
Share of Colorado Employment	16.4%
Share of National Employment	15.2%
Average Wage, 2017	54,894
Percent of Statewide Average Wage	95.8%
2017 Average Wage Growth Rate	2.5%

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

One of the biggest recent legislative actions that will impact the U.S. economy is the Tax Cuts and Jobs Act of 2017. Although many parts of the tax law are scheduled to sunset by 2028, it is projected to boost the level of real GDP by an average of 0.7% and nonfarm payroll employment by an average of 0.9 million jobs over the 2018–2028 period. The lower marginal income tax rates that will be in place in the next few years will encourage workers to work more hours and businesses to increase investment in productive capital, thereby raising employment, income, and potential output. The increase in after-tax income should boost spending in the near term. Many of the law's provisions are scheduled to phase out or expire over the 2023–2026 period, so by 2028, the anticipated economic effects are less pronounced but still positive.

As of October 1, 2013, the 2011 Budget Control Act (BCA) required the federal government to reduce spending by $109.3 billion in FY2014—half from defense programs and half from nondefense spending. In December 2013, the Bipartisan Budget Act of 2013 made additional changes to the mandated sequestration. It set new caps that kept defense and nondefense discretionary levels basically flat from FY2014 through FY2016. The act also extended the mandatory sequester for two years, through FY2023. In 2017, the adjusted BCA caps for defense and nondefense total $634 billion and $553.6 billion, respectively. The most recent Bipartisan Budget Act of 2018 is the third revision of the BCA that increased spending caps originally imposed by the Budget Control Act of 2011. The defense discretionary funding cap was increased by $80 billion in FY2018 and $85 billion in FY2019, while the nondefense domestic discretionary spending cap was increased by $63 billion in FY2018 and $68 billion in FY2019. In September 2018, President Trump signed a “minibus,” a continuing resolution spending measure. The measure included full, line-by-line fiscal 2019 spending levels for the departments of Defense, Labor, Education, and Health and Human Services. It also included a continuing resolution to provide funding at fiscal 2018 levels through December 7, 2018, for agencies that have not yet received regular appropriations. This further muddies the federal employment picture for 2019 as a full-year budget still needs to be signed into law.

The BCA threatens the $52 billion increase in defense spending recently proposed by the Trump administration. The White House has called for the end of the defense sequester, but under the current law, the Department of Defense (DOD)—Colorado’s largest federal agency—is anticipating substantial reductions in the military and civilian workforce over the next decade. While it is trying to absorb the cuts through retirements and attrition, the DOD may have to resort to reductions in the workforce and buyouts.

The U.S. Postal Service has also struggled in the past decade, but continues to show signs of a rebound. While total mail volume is down by over 27% since 2007, operating revenues have grown for five straight years—likely due to increased package volume from online retailers. The number of USPS delivery routes and vehicles both increased in 2017.

The federal government remains one of Colorado’s largest employers. Over 53,000 civilian employees and a diverse mix of DOD military installations employ more than 74,000 active duty military personnel, plus military contractors. Federal job growth slowed in Colorado between 2017 and 2018 due to the Trump administration’s hiring freeze on most federal agencies. In addition to policy changes, demographic changes are shaping the federal workforce as millennials are replacing retiring baby boomers. As this generational shift in the federal workforce begins, it will test the ability of federal agencies to successfully implement succession policy plans in order to attract and retain highly qualified federal workers. These factors contribute to the forecast that the federal workforce in Colorado will continue to decline for a second straight year, to 53,200 employees. This compares

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GOVERNMENT EMPLOYMENT IN COLORADO, 2009–2019
(In Thousands)

Government Sector	2009	2010	2011	2012	2013	2014	2015	2016	2017[a]	2018[b]	2019[c]
Federal	53.5	56.2	54.9	54.6	53.6	52.7	53.4	54.1	54.2	53.3	53.2
State	90.7	93.0	95.4	97.6	107.8	109.6	112.8	116.5	121.7	126.5	130.0
State General	32.6	32.7	33.2	34.0	42.7	43.2	44.2	45.6	46.8	47.8	48.8
State Education	58.1	60.3	62.2	63.6	65.1	66.4	68.6	70.9	74.9	78.7	81.2
Local	246.3	244.7	242.6	242.7	242.4	246.3	250.9	258.2	261.0	263.7	267.0
Local General	119.2	117.9	116.5	117.3	115.2	116.4	118.1	122.8	124.7	125.9	126.8
Local Education	127.1	126.8	126.1	125.4	127.2	129.9	132.8	135.4	136.3	137.8	140.2
Government	390.5	393.8	392.9	394.9	403.7	408.5	417.1	428.7	436.9	443.5	450.2

[a]Revised. [b]Estimated. [c]Forecast.
Note: Due to rounding, the sum of the individual components of government may not equal the total.
Sources: Colorado Department of Labor and Employment and Colorado Business Economic Outlook Committee.

Government

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to the last decade's average of 54,000 federal employees working in Colorado.

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, a number of Colorado's federally funded labs face an uncertain future as questions about funding levels in the yet-to-be passed FY2019 budget remain. The FY2019 Presidential Budget Request to Congress flattens funding for the National Science Foundation, the Department of Energy, and NASA at 0.0%, 0.02%, and 0.005%, respectively, compared to FY2018.

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.

Although growing state revenues have supported hiring growth since 2011, Colorado's unique constitutional requirements have recently restrained growth in the state budget. One provision, referred to as the Taxpayer Bill of Rights (TABOR), specifies a limit on the amount of revenue that can be collected and retained by Colorado governments. In 2017, the General Assembly passed a major budget bill to reclassify a fee for hospitals as exempt revenue, which was expected to drop the state below the spending limit for several years. A strong economy and growth in corporate and individual income taxes, and the rebound of oil and gas severance taxes, caused the state to exceed the state spending limit in FY2017–18, and spending will continue to be constrained for the next couple of years.

This revenue is being used to meet caseload growth in corrections, education, and health care, rather than translating into new government employment or major programs. State government employment, excluding higher education, is expected to increase to 47,800 jobs in 2018 and grow to 48,800 in 2019.

Higher Education

Employment in Colorado's higher education accounts for slightly more than 60% of total state government employment. These workers include both part-time and full-time faculty and nonfaculty staff. State higher education employment is anticipated to rise 5.1% in 2018 and 3.1% in 2019, partly due to reclassifications.

Colorado's higher education system includes 31 public institutions of higher education, 354 private occupational schools, and 103 degree-granting private colleges and religious training institutions. The 65,319 degrees or certificates awarded by these institutions during the 2016–17 academic year represented a 5.1% increase over the prior year. Of the degrees earned, 43.3% were bachelor's, 25.9% were certificates, 14.9% were associate's, and 15.8% were graduate or professional degrees.

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.

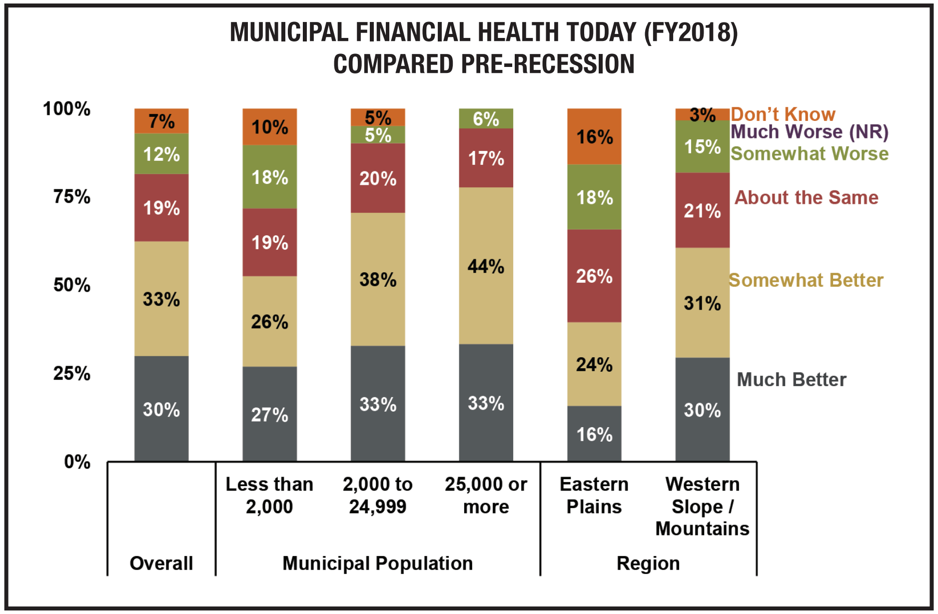
Local Government

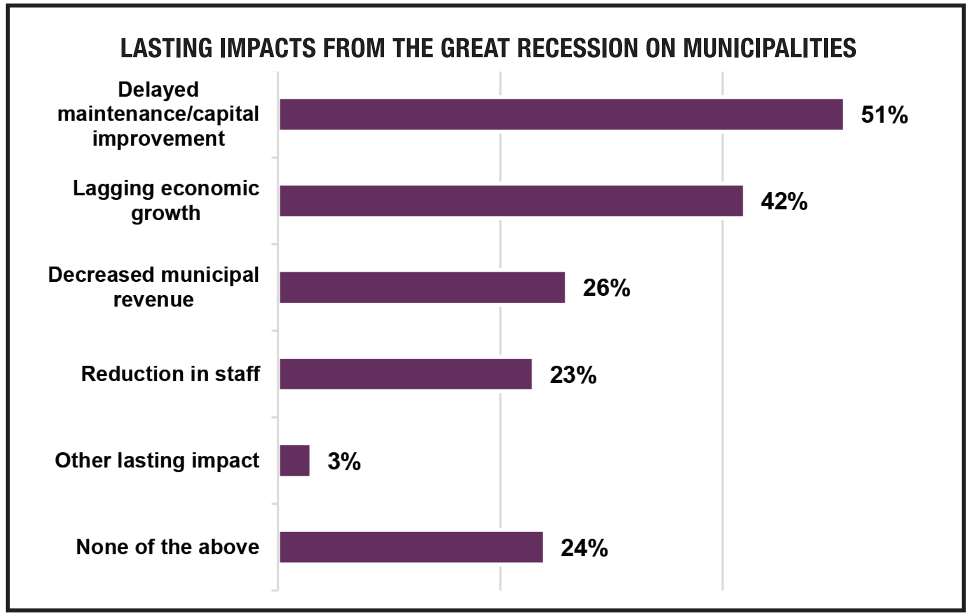
General

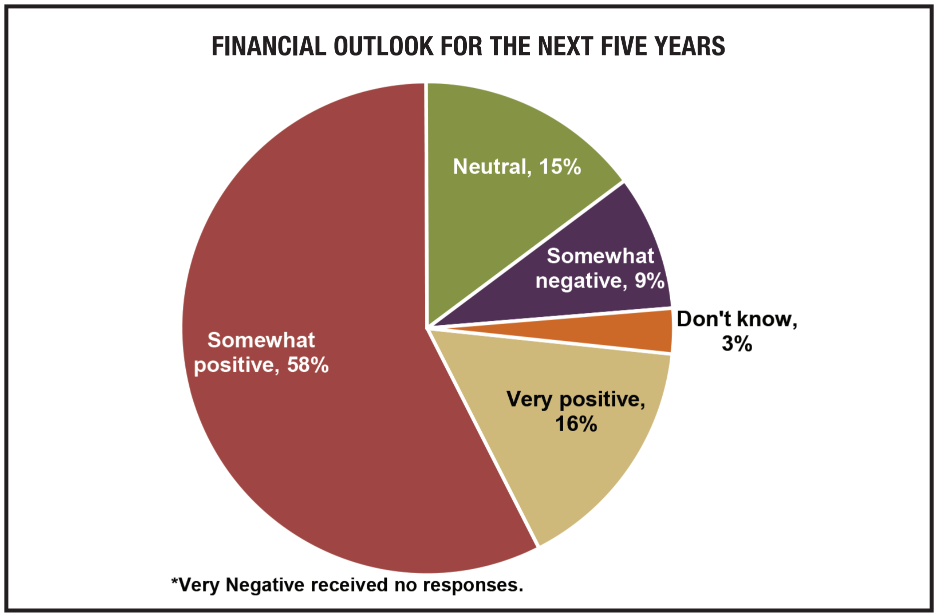
Local governments generally derive their revenues from property taxes, sales and use taxes, fees, and intergovernmental sources. More than 3,000 local governments in Colorado provide a variety of services through counties, school districts, special districts, cities, and towns. Their powers and duties 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. 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. The majority of revenue available to local governments is collected locally in Colorado through property and sales and use taxes. 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.

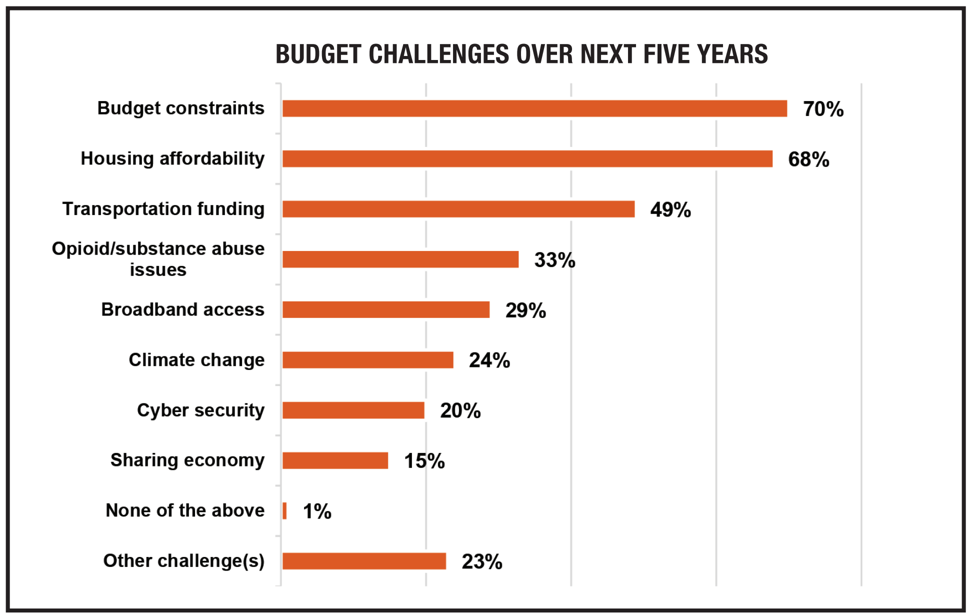
Each year, the Colorado Municipal League (CML) conducts a statewide survey, *In the State of Our Cities & Towns* report, as a way to measure the economic outlook of Colorado's communities compared to previous years. CML groups the responses received into three categories according to a municipality's size (i.e., population of less than 2,000, between 2,000 and 24,999, and 25,000 or greater). It does so regionally as well, 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 2018 survey paint an optimistic portrait of Colorado emerging from the Great Recession fully recovered and with economic confidence at a record high. Of the 159 municipalities that participated, most cities and towns reported better financial health today than just before the recession. Only 1 in 10 municipalities had worse financial health, and these were more likely to be small towns. Additionally, this enthusiasm appears to









Source: Colorado Municipal League.

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stretch far beyond 2018, with 74% of municipalities forecasting a positive or somewhat positive financial outlook over the next five years.

The same enthusiasm was confirmed on the revenue side as well, with more than two-thirds of respondents expecting an increase in sales and use taxes and almost half expecting an increase in property taxes. Larger municipalities were generally more likely to expect revenue increases than smaller municipalities, especially from property taxes and from investment and interest income. Much of this confidence is most likely due to the eight strong years of economic growth that occurred between 2011 and 2018, and the above average municipal revenue that followed over this time period.

As expected, large and medium-size towns were more likely to articulate economic confidence than their small town counterparts that have not benefited as directly from Colorado's economic resurgence. Additionally, large cities were also much more upbeat on revenue projections, with 74% anticipating "better" or "much better" revenue growth compared with 2017. The Western Slope also fared better on the revenue question compared to Eastern Plains communities, with 58% projecting a positive revenue forecast compared to 44%.

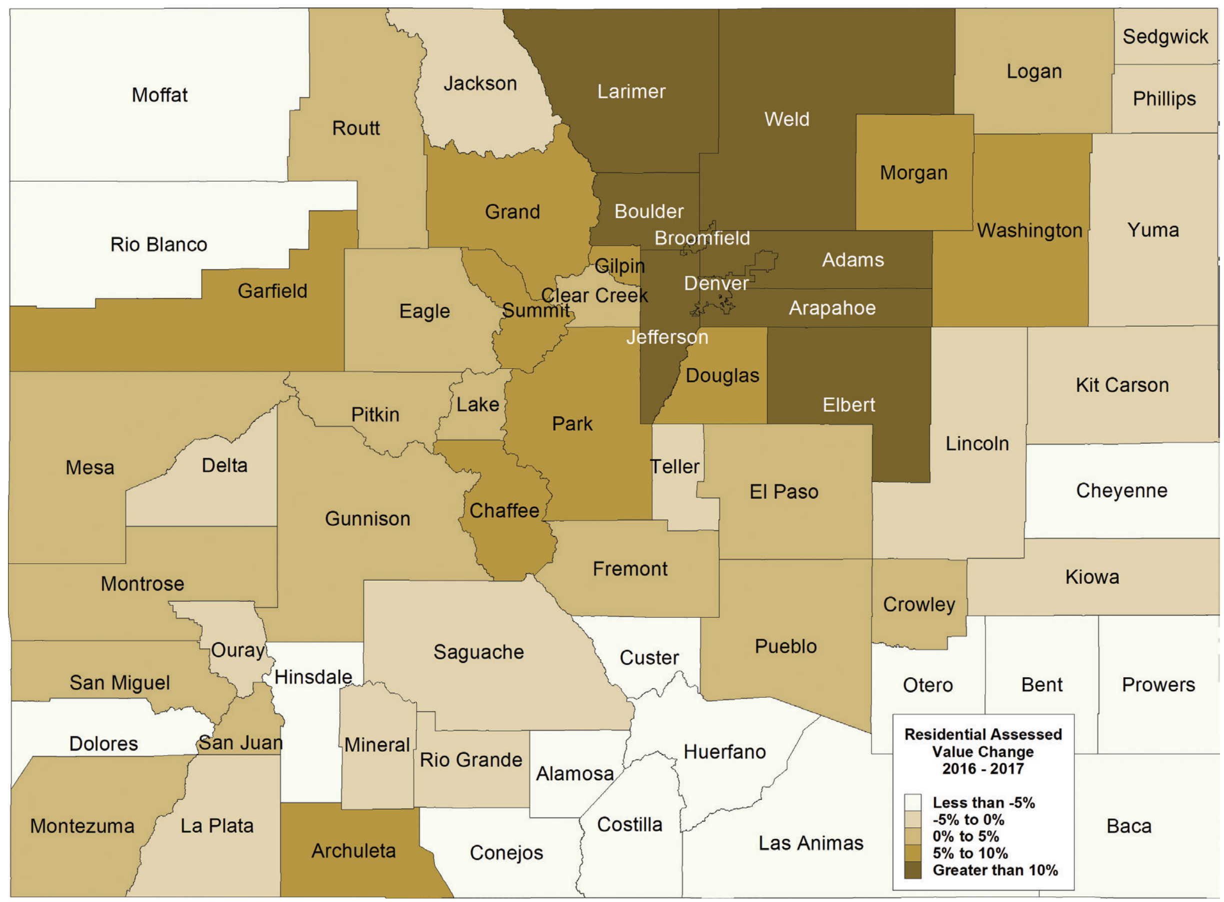
When asked about the greatest challenges municipalities are facing over the next five years, budget constraints, lack of affordable housing, and transportation funding were on the top of the list. This was similar to the previous year's survey but concerns over affordable housing and transportation have continued to grow. Affordable housing is somewhat better in only 1 in 10 municipalities. The most common impact of affordable housing challenges was workforce recruiting and retention, which was especially challenging on the Western Slope. Municipalities are also beginning to notice a rise in homelessness as housing becomes unattainable for more Colorado residents. This was particularly true in larger municipalities, 95% of which reported seeing an increase in homelessness compared to 35% and 24% in medium and small towns, respectively.

Limited funding options are also 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 aging infrastructure such as roads, sewer, and water systems.

Education

More than half of local government employees in Colorado are teachers or staff in public K–12 education. Two factors that impact K–12 employment are the number of students and the amount of funding.

CHANGE IN RESIDENTIAL ASSESSED VALUES FROM 2016 TO 2017



Source: Department of Local Affairs, Division of Property Taxation.

The number of K–12 students increased 0.6% between the 2016–17 and the 2017–18 school years, to 910,280 students. These students include attendance at both traditional K–12 and charter schools. Charter schools are semiautonomous public schools operated by a group of parents, teachers, and/or community members that work under a contract with the local school board. In the past 10 years, charter school enrollment has increased 198% while total public school enrollment has increased 9.9%.

Another factor in determining local government employment growth is the level of funding that is available. In Colorado, two large components of school funding are property taxes and the state general fund.

Growing assessed residential property values reflect growth in housing and property values. However, the Colorado Constitution limits the growth in residential property values by requiring the share of residential and nonresidential property is constant between reassessment cycles. This is achieved by adjusting the residential assessment rate every two years. The residential assessment rate declined from 7.96% in 2016 to 7.20% in 2017, and is forecast to fall to 6.11% in 2019.

The state General Fund is facing other demands, including funding health care, corrections, transportation, and other state government services. While the state's share of education funding is the largest appropriation in the state budget, there is limited room to increase state spending on K–12 education because of other needs in the budget.

The number of public school and charter school students is expected to continue increasing, which means that demand will increase for school faculty and staff. An improving revenue outlook will allow school districts the finances to make those hires. As a result of these trends, local government education employment will grow 1.1% in 2018 and 1.5% in 2019.

Property Tax Explanation

The type of property, the value of the property, the assessment rate, and the mill levy determine property taxes. The actual value of individual properties are determined by the county assessor. Only a portion of the actual value of each property is taxed, which is determined by the assessment rate that varies by type of property, and is set by the state. Local taxing jurisdictions, like schools, cities, counties, and fire protection districts, set mill levies that determine the level of local services provided. Mill levies vary widely by location in Colorado. The average county levy in 2017 was 80.330 according to the Department of Local Affairs, Division of Property Taxation 2017 Annual Report.

EXAMPLE COLORADO PROPERTY TAX CALCULATION

Property	Value	Assessment Rate	Assessed Value	Example Mill Levy	Tax Calculation	Taxes
Residential	$500,000	7.2%	$36,000	100	$36,000 x (100/1,000)	$3,600
Commercial	$500,000	29.0%	$145,000	100	$145,000 x (100/1,000)	$14,500

Gallagher Amendment and Property Taxes

Property taxes are the largest source of government revenue in Colorado, generating over $8 billion in revenue for schools and local governments. Property taxes are determined by three things: the value of property, the assessment rate, and mills set by local governments. In 2017, the constitution required the assessment rate for residential property to decrease for the first time since 2003, impacting the tax base in every county and school district in the state.

The Gallagher Amendment, one portion of the constitutional amendment approved by voters in 1982, requires that the proportion of taxable value for residential and nonresidential property remain constant between each reassessment cycle. This proportion is known as the target percentage and is adjusted for any new construction and mineral production that occurs during the reassessment cycle. When the amendment passed, residential property constituted about 45% of the tax base. After adjusting for new construction and changes in mineral production, the Division of Property Taxation calculated a new target percentage of 45.67%. The vehicle for achieving the target percentage is the adjustment of the residential assessment rate, which was set at 7.20% in 2017. The residential assessment rate is forecast to fall to 6.11% in 2019.

The calculations for the Gallagher Amendment are done on a statewide basis. Home values increased the fastest in the largest housing markets in the state, which was primarily responsible for the reduction in the rate. The residential assessment rate decreased from 7.96 percentage points to 7.20 percentage points, a decline of 9.5%. If home values increased by more than 9.5% in any district, then residential assessed values in that district

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will increase between 2016 and 2017. If home values did not increase by 9.5%, the reduction in the assessment rate will lead to an absolute decrease in the assessed values of residential property in the district.

The map on the previous page shows the change in residential assessed values in counties across the state between 2016 and 2017. Assessed values are expected to increase along the Front Range, while rural areas of the state that had less home price appreciation in the 2017 reassessment cycle will have a decline in residential assessed values. Residential assessed values declined in 29 of the state's 64 counties between 2016 and 2017.

Property taxes are collected by K–12 schools, cities, counties, special districts, and community colleges. The change in the residential assessment rate directly impacts the finances of each of these jurisdictions and indirectly impacts state finances.

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. The reduction in the residential assessment rate has decreased from 21% in 1983, which coincided with a reduction in the local share of school financing as shown in the figure. Less local school property tax revenue puts more pressure on the General Fund, and less funding is available for other government services.

Cities and counties also receive property tax revenue. In some areas of the state, the reduced residential assessment rate will lead to a declining property tax base. Local governments may increase local mills with voter approval, or they may have to provide government services with less revenue.

Even institutions of higher education were impacted by the change in the residential assessment rate. In 2017, voters in western Colorado voted against a measure to increase the mill levy for Colorado Mountain College to offset future decreases in the residential assessment rate.

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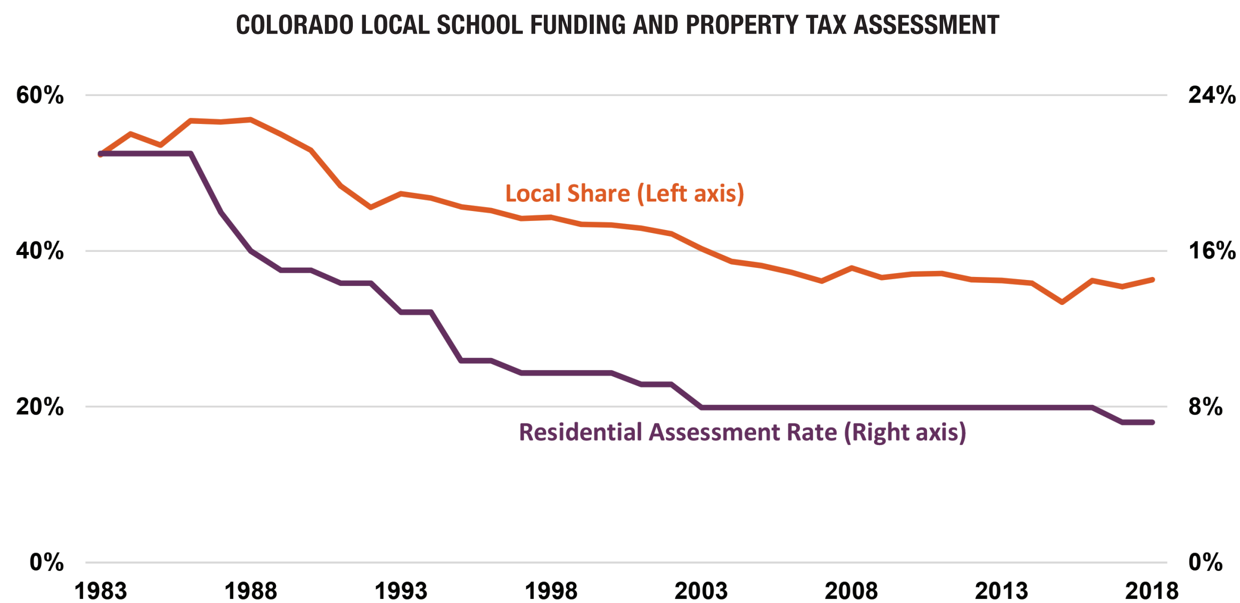

Source: Colorado Legislative Council.

International Trade

Through September 2018, Colorado exports year-to-date have lagged behind the nation in terms of growth. U.S. exports grew by over 9% during the period, while Colorado exports increased by only about 7% according to WISERTrade data. Of the top five export products for the United States in 2017, mineral fuels and oils grew the fastest by far in 2018, at over 40%. This continued the trend from 2017, which saw a 48% increase in these export products as the oil and gas industry ramped up production in response to rising crude prices.

Colorado exports were primarily driven up by industrial machinery including computers and optical, medical, and surgical instruments, which together accounted for 28% of all exports in 2017 and grew by 12.3% and 10.6%, respectively. This seems to suggest a reversal in the trends of the previous couple of years, where these products have seen declines or weak growth. For three of the top exports in 2017—meat, electric machinery, and photographic goods—growth has been minimal or, in the case of photographic goods, negative. This is the third straight year of losses for photographic goods, which declined 12% in both 2016 and 2017, and 19% year-to-date in 2018. In terms of 2018 year-to-date values, air/spacecraft and parts thereof has taken the fifth spot (formerly photographic goods), with substantial growth over 2017, at 40.2%. The top five products, in both 2017 and year-to-date 2018, accounted for 61% of all Colorado export value.

Some large losses have offset the gains in 2018, including raw hides and skins, miscellaneous chemical products, beverages and spirits, glassware, and non-meat animal products (dairy, eggs, honey, etc). These products were each down by about $20 to $30 million from year-to-date 2017, representing about an 18% – 37% decrease. The losses are very different when viewed in the context of monthly values. Raw hides and skins have been showing a downward trend since a post-recession peak around March 2014. Miscellaneous chemical products fell sporadically through the back half of 2017, but recent monthly values show that they may be rebounding. Beverages and spirits were strong and growing up until the beginning of 2018, with the biggest losses starting around May 2018. Glassware seems to be returning to its normal volume after exports shot up dramatically at the end of 2016. Non-meat animal products have always been volatile month to month, although recently the number of upswings has declined while the magnitude of downswings has increased. In 2017, these products accounted for nearly 8% of total Colorado export value, while year-to-date 2018 they accounted for 5%.

Canada and Mexico continue to be Colorado's largest markets. Exports to Canada rose by 4.5% year-to-date, while those to Mexico effectively remained flat from the previous year. Overall, they account for about 33% of Colorado's total exports. In 2018, Canada and Mexico were joined by China, South Korea, and Japan in the top five, with South Korea knocking Malaysia from its fifth spot in 2017. The top five account for over 51% of total exports. Of these markets, only Japan saw a loss in export value from Colorado of about 2.8%. China increased by about 2.6%, while South Korea saw a large jump from 2017 year-to-date values of over 40%. This rapid growth to South Korea is primarily attributable to strong growth in meat exports, which grew by over 72%, continuing a long-term trend for this market. Germany and the Netherlands also saw strong growth, driven up by air/spacecraft and industrial machinery, and molybdenum ore (which has applications in the refining process, electrical industry, and military and defense sector), respectively.

Colorado imports are also up year-to-date in September 2018, led by growth in mineral fuels and industrial machinery. Overall, imports rose by 5.6% over year-to-date values in 2017, with mineral fuels increasing by nearly 13% and industrial machinery by over 19%. Along with electrical machinery and optics, these made up the top four imports for Colorado in 2017 and year-to-date 2018, accounting for 62% of imports. Aircraft, spacecraft, and parts thereof rounded out the top five in 2018 due to strong growth over the year of 91.5%, adding nearly 4% to the top four's share of total import value. Canada, China, and Mexico, continued as Colorado's top three import sources in 2018, accounting for 55% of total value. Canada grew by nearly 12% over 2018, while China declined by almost 10%, and Mexico effectively remained flat. Canada's growth was driven by increases in industrial machinery and mineral fuels, which grew by about 48% and 13%, respectively, while China's decline was driven by losses in the value of industrial and electrical machinery, which decreased by about 30% and 14%, respectively. The largest growth among top source markets came from South Korea and Taiwan, which grew by 67.8% and 37.9%, respectively, and together accounted for 9% of 2018's value.

2018 Synopsis and Trends Affecting Future Trade

International trade in 2018 has been dominated by increasing tensions among the United States and its main trading partners. At the beginning of the year, several reports—initiated in 2017—were published by the Commerce Department and U.S. International Trade Commission, stating that volumes of certain imports and particular international trade and investment practices were detrimental to U.S. trade and business, and posed a nascent threat to national security. In particular, the reports focused on solar panels, washing machines, steel products, aluminum products, and China's trade

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and investment practices for U.S. (and other foreign) companies operating within the country. The national security assessment allowed the administration to take action under various sections of the U.S. Code to impose tariffs and other barriers to mitigate the negative impacts outlined therein. Throughout the year, global tariffs were raised on certain types of washing machines and solar panels, and a wide variety of steel and aluminum products, while targeted tariffs were raised on thousands of products from China.

Some of the U.S.'s largest trading partners did not accept the increase in tariffs, filed disputes with the World Trade Organization (WTO), and retaliated in kind—often mirroring the tariffs and targeting iconic U.S. products and agricultural goods. Canada, Mexico, the European Union, China, Turkey, and India all raised tariffs on a variety of U.S. imports in the months that followed the initial U.S. actions. China and the United States engaged in a series of tit-for-tat increases. As of September 2018, nearly all of these increases remained in place (China removed a steep tariff on U.S. sorghum a month after its implementation, when Beijing diplomats were visiting Washington in May).

While these tariff increases are in theory likely to cause major disruptions in trade volumes of the products affected, evidence has thus far been mixed. For articles of steel and aluminum, U.S. import values increased in June (when exemptions for top sources Canada, Mexico, and the European Union were eliminated) and July before dropping in both August and September, though not by extraordinary amounts. Likewise, U.S. export values of products targeted by retaliation have fallen over the last couple of months, but the magnitude of the drops is still in line with normal month-to-month fluctuations. Chinese imports increased at the national level since April, while U.S. exports to China fluctuated within normal ranges.

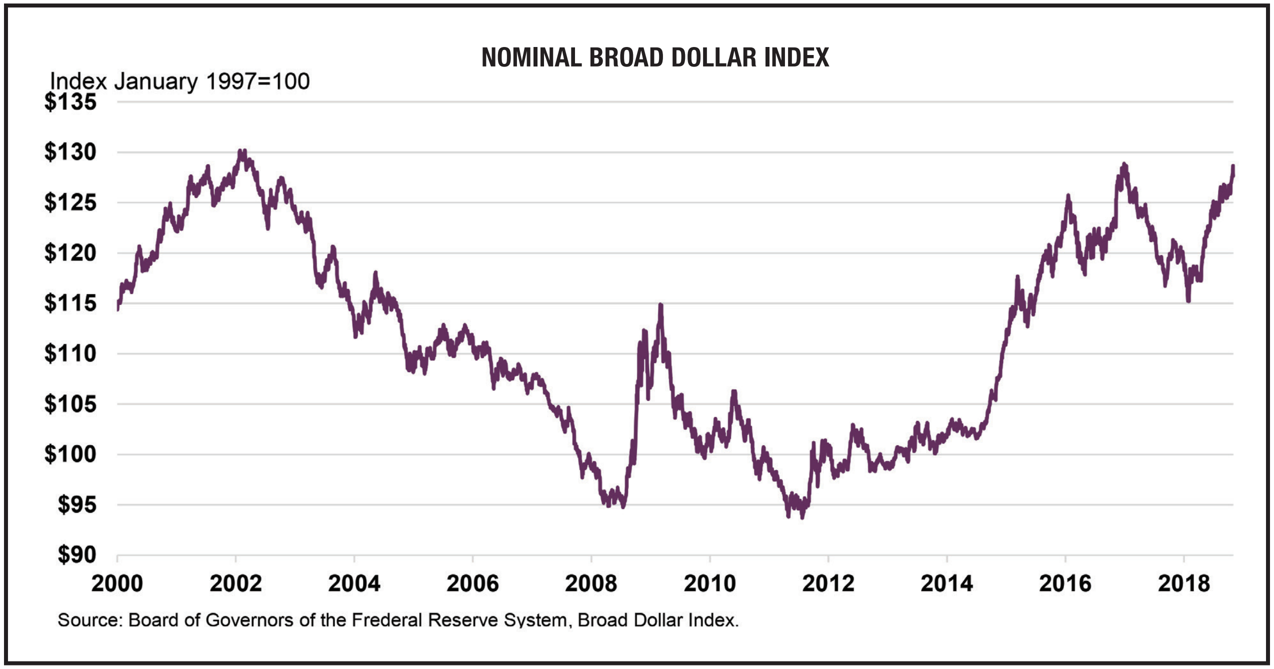
One explanation may be that the effect of tariff increases on trade volumes lags. In 2009, when the Obama administration raised tariffs on Chinese tire imports in September, China responded by raising tariffs on U.S. chicken part imports later in the month. Nonetheless, volumes increased through December 2009, before dropping substantially (90%) over the next three months.

Besides tariffs, renegotiations of long-standing agreements and the ratification of new agreements have also shaped the global trade profile in 2018. The United States pursued an aggressive tract in renegotiating the terms of NAFTA with Canada and Mexico throughout the year, first securing a bilateral agreement with Mexico and leveraging this advantage in discussions with Canada to extract additional concessions. On September 30, the three came to a trade agreement, now titled the United States-Mexico-Canada Agreement (USMCA), to replace NAFTA. The renegotiation primarily benefits the United States, with provisions that will likely increase production costs in Mexico, allow U.S. dairy producers access

TOP 15 COLORADO EXPORTS, 2015–2018 YTD
(In Millions of Dollars)

Description	2015	2016	2017	Sept 2017 YTD	Sept 2018 YTD	Percent of Total
Meat And Edible Meat Offal	$853	$1,037	$1,227	$918	$934	14.7%
Electric Machinery Etc; Sound Equip; Tv Equip; Pts	1,159	1,119	1,213	874	902	14.2
Optic, Photo Etc, Medic Or Surgical Instrments Etc	1,279	1,251	1,170	864	956	15.0
Industrial Machinery, Including Computers	1,207	1,030	1,087	786	883	13.9
Photographic Or Cinematographic Goods	312	275	241	188	170	2.7
Plastics And Articles Thereof	166	164	209	154	165	2.6
Aircraft, Spacecraft, And Parts Thereof	195	200	202	147	207	3.3
Aluminum And Articles Thereof	149	147	187	142	175	2.8
Raw Hides And Skins (No Furskins) And Leather	215	182	178	137	112	1.8
Articles Of Iron Or Steel	137	143	173	131	160	2.5
Vehicles, Except Railway Or Tramway, And Parts Etc	161	113	141	100	93	1.5
Miscellaneous Chemical Products	122	136	141	107	73	1.2
Beverages, Spirits And Vinegar	112	104	131	96	64	1.0
Pharmaceutical Products	149	101	118	84	77	1.2
Organic Chemicals	150	91	96	63	66	1.0
Total Top 15 Commodities	6,367	6,094	6,512	4,791	5,036	79.2
All Others	1,583	1,487	1,542	1,156	1,324	20.8
Total All Commodities	$7,950	$7,581	$8,054	$5,947	$6,360	100.0%

Source: World Institute for Strategic Economic Research (WISERTrade).



into the Canadian dairy market, and provide additional intellectual property (IP) protections in both Canada and Mexico for U.S. producers. However, the overall impact of some of the provisions, such as the regional value content rule, may increase costs throughout the bloc, which could divert trade flows.

In Europe, the United Kingdom and the European Union continued to work toward a Brexit separation deal that would be agreeable to both parties. The United Kingdom is set to formally leave the European Union on March 29, 2019, at which time their trade relationship with Europe will be set.

Finally, the remaining 11 countries of the Trans-Pacific Partnership (TPP)—Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, and Vietnam—continued without the United States after its withdrawal in January 2017 and redrafted the defunct agreement into the newly titled Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CP-TPP). The new agreement reached ratification in late October and will enter into force on December 30, 2018. Given the inclusion of major U.S. trading partners such as Canada, Mexico, Japan, Malaysia, Australia, and Singapore, it is possible that the newly formed bloc may shift trading patterns away from the United States.

These events of 2018 are likely to have real impacts on trade flows in the United States and Colorado in the coming years. Despite their intricacies and differences, overall they change the costs of production and sale across sovereign borders. As companies make decisions on where to produce and sell goods and services based on these costs, they are likely to shift operations in a way that maximizes profits. Moreover, the rapid genesis of these actions has increased uncertainty among the business community, which prefers to make long-term decisions. Many are suspending operational decisions to see if these tariffs remain in place, and many large public corporations are stating that they pose a threat to long-run profitability.

The Broad Dollar

If 2017 was the year of the weakening dollar, 2018 was the year of the strengthening dollar. Since the end of January 2018, the trade-weighted U.S. broad dollar index increased steadily from 115 to 128, signifying an increase against most currencies. Against the euro, British pound, Canadian dollar, Mexican peso, and Chinese yuan, the dollar appreciated by between 7% and 8%, while against the Japanese yen it appreciated by 3% over the year. With all else being equal, this should dampen export volume from the United States and Colorado as U.S. products become more expensive for the rest of the world, but strong global growth in 2018 likely pushed volumes higher. As many forecasts are projecting slower global growth in 2019, this effect may weaken (Federal Reserve of St. Louis economic data).

Foreign Direct Investment in Colorado

From January to September 2018, a total of 17 projects were initiated in Colorado by international companies, including those based out of the United Kingdom, Canada, New Zealand, Germany, Switzerland, Luxembourg, China, the Netherlands, India, and Australia. These projects generated a reported total of $31 million in capital investment in the state and created 450 jobs (these are reported figures; not all projects reported capital invested and jobs created). This follows closely with 2017, which saw 19 projects with $16 million in capital investment and 456 jobs created.

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From 2003 through October 2018, a diverse group of 210 companies has invested in Colorado, including Vestas Wind Systems, Envision Energy, Hitachi, and SAP. The sector with the most projects is software and IT services, which accounted for almost one-fifth of the total and is followed by business services, and engine and turbine manufacturing. The United Kingdom and Canada are by far the largest source markets, together accounting for almost 36% of projects. Germany, Denmark, and Switzerland complete the top five. The most popular destination for projects is Denver, with 48%, followed by Boulder and Fort Collins (fDi Markets, www.fdimarkets.com).

Global Economic Outlook

According to the International Monetary Fund (IMF) October 2018 World Economic Outlook, 2018 is looking at respectable levels of growth throughout much of the world. However, overall growth has been revised downward to 3.7% for 2018–19, 0.2% less than the April 2018 forecast. While many upside forces exist, on balance more downside risks to growth seem more evident compared to previous forecasts—among them increasing trade friction, less capital flow to emerging markets with weaker fundamentals, rising interest rates, and political risk. Rising debt levels and the potential for a new debt crisis in Europe from Italy are also possible negative influences.

Forecasted growth for the United States is projected to slow from 2018 to 2019. The eurozone's growth rate continues its relatively low rate, dropping from 2% to 1.9% for 2019. Canada, the United Kingdom, and Japan all continue to grow a bit more slowly than the United States (2%, 1.5%, and 0.9%, respectively). The remainder of the advanced economies are expected to grow at a rate of about 2.5%, down 0.3% since the April forecast.

Of the largest developing economies, China's growth is projected at 6.2% in 2019, India's at 7.4%, and the rest of the ASEAN five countries are expected to grow by 5.2%.

Agriculture

Colorado Food and Agriculture Exports

In 2017, Colorado food and agriculture exports topped $2 billion in sales, a record year for Colorado food and ag exports and an increase from $1.7 billion in 2016. Year-to-date through August, total food and agriculture exports from Colorado are comparable to this period in 2017. Accordingly, exports for 2018 are estimated to be around $2 billion.

The top five agriculture exports from Colorado are meat products (mainly beef), hides and skins, beverages, dairy, and animal feed. The top five export markets are Mexico, Canada, Japan, South Korea, and China.

Through August 2018, South Korea has become the third-largest market for Colorado, with 17% of market

MAJOR DESTINATIONS FOR COLORADO EXPORTS OF MANUFACTURED GOODS, MINERALS, AND AGRICULTURAL PRODUCTS, 2015-2018 (In Millions of Dollars)

Country	2015	2016	2017	Sept 2017 YTD	Sept 2018 YTD	Percent Change	Country Share of Total
Canada	$1,408.4	$1,356.7	$1,390.3	$1,045.5	$1,092.9	4.5%	17.9%
Mexico	1,077.4	1,069.5	1,315.9	1,004.1	1,004.8	0.1	14.1
China	658.8	589.5	585.8	426.4	437.6	2.6	7.8
Republic of Korea	332.8	400.0	389.0	269.9	379.3	40.5	5.3
Japan	466.5	444.1	445.0	358.2	348.2	-2.8	5.9
Malaysia	356.0	366.6	417.3	290.6	295.9	1.8	4.8
Germany	261.6	326.3	313.7	216.5	239.1	10.4	4.3
Netherlands	290.1	228.4	275.8	207.6	234.5	12.9	3.0
Hong Kong	238.0	207.0	233.7	166.9	177.5	6.4	2.7
United Kingdom	261.4	219.9	220.2	155.9	168.0	7.8	2.9
Taiwan	205.8	205.4	208.3	154.7	164.7	6.4	2.7
Switzerland	250.0	230.3	171.0	131.1	143.8	9.7	3.0
France	133.3	139.4	127.6	88.1	135.6	53.8	1.8
Australia	155.2	142.8	168.6	124.7	116.3	-6.7	1.9
New Zealand	19.2	27.2	24.7	17.3	34.6	100.3	0.4
Total Top 15 Countries	6,114.6	5,953.2	6,286.9	4,657.6	4,972.9	6.8	78.5
All Other Countries	1,835.0	1,627.5	1,767.2	1,289.5	1,387.2	7.6	21.5
Total All Countries	$7,949.6	$7,580.7	$8,054.1	$5,947.1	$6,360.1	6.9%	100.0%

Source: World Institute for Strategic Economic Research (WISERTrade).

share, surpassing Japan, with 12%. Beef sales alone to South Korea are up 73%. South Korea is now the number one importer of Colorado beef in 2018.

International Students in Colorado

After more than a decade of increasing numbers of international students enrolling in Colorado's colleges and universities, the 2017–18 academic year saw a leveling off. In the 2017–18 academic year, Colorado institutions of higher education reported 11,639 international students, a 1% increase from the previous year, according to the Colorado Department of Higher Education.

The number of international students in Colorado reflects national trends: the number of international students at U.S. universities had begun to show signs of slowing in recent years. New enrollments declined last year due to a number of factors, including increased competition from other English-speaking countries; the dollar and issues of affordability; concerns about physical safety; and perceptions about the United States being less welcoming than under past administrations. Nonetheless, Colorado remains an attractive destination for students. Higher education representatives who travel to recruitment fairs and other international events report that Colorado continues to be viewed as a welcoming place and having high-quality higher education institutions. Colorado's public and private institutions of higher education and English language schools continue to work together under the state's StudyColorado initiative to market Colorado's higher education opportunities.

The leading countries of origin for students coming to Colorado are China (31%), India (16%), 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 largest number of international students enrolled at the University of Colorado Boulder (with 3,645 students), Colorado State University, the University of Denver, the University of Colorado Denver, and the Colorado School of Mines.

International student expenditures in Colorado totaled an estimated $458 million for 2017-18, 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.

The number of Colorado students studying abroad increased from approximately 5,500 to 6,000 in 2016-17 (data for students studying abroad lag other data by a year). Colorado students who choose to study abroad cite preparation for the increasingly globalized economy as a key benefit.

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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	Percentage Change
University of Colorado Boulder	1,681	1,910	2,163	2,614	2,951	3,424	3,645	6.5%
Colorado State University	1,352	1,598	1,793	2,148	2,305	2,495	2,501	0.2%
University of Denver	1,430	1,590	1,617	1,690	1,688	1,494	1,404	-6.0%
University of Colorado Denver	1,116	1,348	1,457	1,463	1,446	1,051	1,068	1.6%
Colorado School of Mines	652	660	767	823	875	800	818	2.3%

Sources: Institute of International Education, annual Open Doors report.

Summary

Employment growth in 2018 is projected to close up 2.4%, or 65,000 jobs, reflecting an acceleration in growth that can be attributable to tax cuts, labor force entrants, and other factors. Colorado will continue to add jobs in 2019, extending employment gains to a ninth-consecutive year. Job growth will occur at a slower pace than in 2018 and the slowest pace since 2011. Constrained by slower industry growth and shortage of workers, Colorado will add 53,200 workers in 2019, or growth of 2%.

In 2019, the three private-sector industries projected to add the most jobs are Professional and Business Services; Trade, Transportation, and Utilities; and Leisure and Hospitality. The greatest pace of growth will be in Natural Resources and Mining; Construction; and Professional and Business Services.

Agriculture—The Agriculture Sector will post lower net income for the third-consecutive year in 2018 to the lowest level since 2002 before ticking up slightly in 2019. The industry has been under pressure due to low commodity prices, rising costs, and sinking trade relations resulting in tariffs on agricultural exports and imports of ag inputs.

Natural Resources and Mining—The value of Colorado oil production increased 62%, to $9.9 billion, in 2018 on higher production and higher prices, but the value will drop in 2019 on softer pricing. Overall, the value of Colorado's natural resources are projected to increase 1.7% in 2019 to over $18 billion. Industry employment is expected to post an increase of 4.8% in 2019. Compared to the rest of the nation, Colorado ranks 7th in petroleum liquids, 6th in wet natural gas, 13th in coal production, 3rd in gold production, and 2nd in molybdenum 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 in 2019 with continued strong in-migration totaling about 50,000. However, the supply of new homes will slow, with new single-family permits increasing 4.9% and new multifamily construction falling 7.1%. The value of residential construction is projected to climb to $11.5 billion in 2019. Summing residential with strong nonresidential values and major nonbuilding (infrastructure) projects will bring the total value of construction to a record $21.6 billion in 2019. Labor constraints and interest rates will weigh on the industry. Employment will increase 2.9% in 2019, or 5,000 jobs, to total 176,800.

Manufacturing—While Colorado is not a manufacturing-intensive state, industry growth has made Colorado a

ANNUAL EMPLOYMENT CHANGE IN NONAGRICULTURAL WAGE AND SALARY EMPLOYMENT SECTORS
2009–2019 (In Thousands)

Labor Force	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018[a]	2019[b]
Natural Resources and Mining	-4.3	0.2	3.5	2.4	0.3	3.5	-3.4	-7.0	2.0	3.7	1.4
Construction	-30.5	-16.2	-2.6	3.3	11.7	14.7	6.6	6.5	8.3	8.2	5.0
Manufacturing	-14.3	-3.8	3.9	2.8	1.9	3.8	4.4	1.7	1.3	2.7	1.7
Trade, Transportation, and Utilities	-25.5	-6.2	4.2	7.9	10.5	12.6	13.0	8.3	6.2	10.2	8.7
Information	-2.1	-2.7	-0.6	-1.6	0.0	0.5	0.4	1.2	-0.2	2.9	1.4
Financial Activities	-7.6	-3.7	-0.4	2.8	4.3	2.9	5.1	4.8	3.7	2.5	1.7
Professional and Business Services	-21.9	-1.0	10.7	15.4	15.7	13.9	11.9	7.3	7.5	13.1	11.3
Education and Health Services	6.7	7.4	9.0	8.9	4.1	12.1	15.2	12.5	7.8	6.7	6.5
Leisure and Hospitality	-10.5	0.6	8.4	8.3	9.7	11.0	12.4	10.8	9.8	7.1	7.5
Other Services	-1.1	-1.3	1.3	2.3	1.7	3.2	3.3	3.1	1.4	1.4	1.3
Government	6.4	3.3	-0.9	2.0	8.8	4.8	8.6	11.6	8.2	6.6	6.7
Total[c,d]	-104.7	-23.4	36.3	54.4	68.9	83.1	77.5	60.7	56.2	65.0	53.2

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

leader, ranking 7th for real GDP growth and 22nd for industry employment growth in 2017. Employment growth is projected to increase 1,700 jobs, or 1.2%, in 2019, with gains mostly in nondurable goods. The industry's strength in Colorado derives from the mix of subsectors, with comparative advantages in Computer and Electronic Products, Food and Beverage and Tobacco Products, Miscellaneous Manufacturing, Chemical Products, and Fabricated Metal Products.

Trade, Transportation, and Utilities—TTU employment is anticipated to increase by 1.8% to total 479,200 jobs in 2019, with trade (retail and wholesale) contributing the majority of industry growth. Retail sales point to continued growth of 5.3% in 2019. Denver International Airport, which reached new passenger records in 2018, began a three-year renovation project that will help it remain a key economic driver in the state. Overall, TTU is expected to add 8,700 jobs next year.

Information—The industry posted strong gains in 2018 on a rebounding Telecom Sector, as well as growth in Publishing, Motion Picture and Sound Recording, Data Processing, and Broadcasting. The industry is expected to grow by 1,400 jobs in 2019.

Financial Activities—The Financial Activities Sector is expected to continue to grow in Colorado in 2019, adding 1,700 jobs to reach total employment of 171,700. Rising interest rates post risks for some financial sectors (i.e., mortgage lending, residential real estate), but softening regulation will provide community banks some relief. Commercial real estate remains healthy, and residential real estate will continue to appreciate, but at a slower pace.

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 3.2% in 2018 and 2.7% in 2019, 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 modest growth, adding 6,700 and 6,500 jobs in 2018 and 2019, respectively.

Leisure and Hospitality—Tourism-related employment is expected to grow for the 10th consecutive year in 2019 with a broad suite of tourism assets and aggressive marketing from the Colorado Tourism Office and the state's various destination marketing organizations. The state and the Denver Metro region continue to post 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 continue through 2018 and 2019, with forecasted employment increases of 7,100 jobs and 7,500 jobs, respectively.

Government—Government employment within Colorado is expected to increase 1.5% in 2019, with gains in state and local government offsetting losses in federal government. Growth is response to population and school enrollment growth, as well as in gains in state and local government revenue.

International Trade—Colorado exports grew nearly 7% in 2018 year-to-date through September, but export growth is lagging the nation. Looking ahead to 2019, trade agreement negotiations, tariffs, and the strong dollar all pose risks to Colorado exports.

National and International

- U.S. output will grow at a slower pace in 2019, with real GDP growth at 2.7% in 2019 compared to an estimated 2.9% in 2018.
- Personal consumption expenditures will remain high with continued employment and wage growth and elevated consumer confidence.
- The Fed will continue with rate increases in 2019; inflation will remain at or above the Fed target rate.
- Interest rates, trade policy (i.e., tariffs), and the tight labor market pose risks to growth.

Colorado

- Despite slower growth, Colorado will still be in the top 10 states in 2019 for employment growth; wages will increase above the national average.
- Employment growth is projected in each of the 11 industries in both 2018 and 2019.
- Commodity prices will weigh on commodity-sensitive industries, including agriculture and energy.
- Population growth will slow modestly in 2019. The state will still add an estimated 76,200 people, with 50,000 coming from net in-migration according to the State Demography Office.

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 economic activity in 2017 and 2018 in these states and their top metropolitan statistical areas (MSAs) as measured by total employment, employment growth, unemployment rate, average annual pay, and GDP.

Wyoming was the only state in the region that did not show positive 10-year employment growth (-0.4%). Utah and Colorado recorded the highest 10-year employment growth rates, 2% and 1.6%, respectively. In September 2018, all of the regional states posted year-over-year job growth, led by Utah, Arizona, and New Mexico, with 3.3%, 2.9%, and 2.8% 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 3.5%, 2.8%, and 2.8%, respectively, in September 2018.

In terms of 2018 real GDP growth, Arizona and Colorado led the region with 3.1% and 2.7% growth, respectively. None of the regional states saw year-over-year declines in GDP; however, some regional MSA's posted real GDP

REGIONAL STATES								
September 2018 Total Employees (In Thousands)	2,875.3 Arizona	2,742.3 Colorado	1,524.8 Utah	1,425.0 Kansas	1,033.3 Nebraska	852.6 New Mexico	479.6 Montana	288.5 Wyoming
Employment CAGR September 2008 - September 2018	2.0% Utah	1.6% Colorado	1.0% Arizona	0.8% Montana	0.7% Nebraska	0.2% Kansas	0.0% New Mexico	-0.4% Wyoming
Employment Percentage Change September 2017 - September 2018	3.3% Utah	2.9% Arizona	2.8% New Mexico	2.7% Colorado	2.2% Wyoming	1.6% Nebraska	1.5% Montana	1.5% Kansas
September 2018 Unemployment Rate[a]	4.6% New Mexico	4.6% Arizona	4.1% Wyoming	3.6% Montana	3.3% Kansas	3.2% Utah	3.1% Colorado	2.8% Nebraska
2017 Average Annual Pay	$56,914 Colorado	$50,146 Arizona	$46,575 Utah	$46,270 Wyoming	$45,116 Kansas	$44,851 Nebraska	$43,535 New Mexico	$42,045 Montana
2017 GDP (Millions of Current Dollars)	$345,233 Colorado	$326,446 Arizona	$164,917 Utah	$159,108 Kansas	$119,588 Nebraska	$94,211 New Mexico	$47,079 Montana	$38,037 Wyoming
Real GDP Percentage Change 2016- 2017	3.1% Arizona	2.7% Colorado	2.5% Utah	1.4% Wyoming	0.9% Nebraska	0.3% Montana	0.2% Kansas	0.1% New Mexico

Sources: Bureau of Economic Analysis, Colorado Department of Labor and Employment, and Bureau of Labor Statistics (CES, QCEW, and LAUS data). [a]Not seasonally adjusted. Unless noted, all data is seasonally adjusted. Based on preliminary data.

losses. The Denver-Aurora-Lakewood MSA led MSAs in the region with growth of 3.6%, 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, Colorado's $56,914 average annual earnings exceeded all states in the region, including Arizona, with $50,146. Boulder and Denver-Aurora-Lakewood led Colorado with above-average annual pay levels exceeding $63,000. This far surpasses other MSAs in the region.

REGIONAL METROPOLITAN STATISTICAL AREAS								
September 2018 Total Employees (In Thousands)	**2,122.8** Phoenix-Mesa-Scottsdale	**1,506.3** Denver-Aurora-Lakewood	**1,107.0** Kansas City	**740.0** Salt Lake City	**399.7** Albuquerque	**297.4** Wichita	**191.2** Lincoln	**46.9** Cheyenne
Employment CAGR September 2008 - September 2018	**1.9%** Denver-Aurora-Lakewood	**1.8%** Salt Lake City	**1.3%** Phoenix-Mesa-Scottsdale	**0.9%** Kansas City	**0.9%** Lincoln	**0.4%** Cheyenne	**0.0%** Albuquerque	**-0.5%** Wichita
Employment Percentage Change September 2017 - September 2018	**3.5%** Phoenix-Mesa-Scottsdale	**2.8%** Salt Lake City	**2.8%** Denver-Aurora-Lakewood	**2.5%** Albuquerque	**1.8%** Kansas City	**1.8%** Lincoln	**0.7%** Wichita	**0.6%** Cheyenne
September 2018 Unemployment Rate[a]	**4.4%** Albuquerque	**4.2%** Phoenix-Mesa-Glendale	**3.7%** Cheyenne	**3.3%** Wichita	**3%** Salt Lake City	**3%** Denver-Aurora-Broomfield	**2.8%** Kansas City	**2.4%** Lincoln
2017 Average Annual Pay	**$63,081** Denver-Aurora-Lakewood	**$52,436** Salt Lake City	**$52,245** Phoenix-Mesa-Scottsdale	**$52,120** Kansas City	**$45,454** Cheyenne	**$44,978** Albuquerque	**$44,923** Wichita	**$43,893** 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). [a]Not seasonally adjusted. Unless noted, all data is seasonally adjusted. Based on preliminary data.

Around the State

COLORADO METROPOLITAN STATISTICAL AREAS

September 2018 Total Employees (In Thousands)

1,506.3	302.1	194.1	171.6	110.0	64.4	62.7
Denver-Aurora-Lakewood	Colorado Springs	Boulder	Fort Collins	Greeley	Grand Junction	Pueblo

Employment CAGR September 2008 - September 2018

2.8%	2.2%	1.9%	1.6%	1.6%	0.7%	-0.3%
Greeley	Fort Collins	Denver-Aurora-Lakewood	Colorado Springs	Boulder	Pueblo	Grand Junction

Employment Percentage Change September 2017 - September 2018

5.0%	4.3%	3.1%	2.8%	2.1%	1.9%	0.5%
Colorado Springs	Greeley	Fort Collins	Denver-Aurora-Lakewood	Grand Junction	Boulder	Pueblo

September 2018 Unemployment Rate[a]

4.7%	3.6%	3.6%	3%	2.8%	2.8%	2.7%
Pueblo	Grand Junction	Colorado Springs	Denver-Aurora-Lakewood	Greeley	Boulder	Fort Collins-Loveland

2017 Average Annual Pay

$64,824	$63,081	$50,236	$49,008	$48,659	$42,492	$41,607
Boulder	Denver-Aurora-Lakewood	Fort Collins	Greeley	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). [a]Not 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 area 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 1.7% between September 2017 and 2018, creating an additional 3,200 jobs. In September 2018, the Boulder County unemployment rate was 2.8% (not seasonally adjusted) compared to state unemployment of 3.1% and a national rate of 3.6% (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 median household income for Boulder County residents was $80,834 in 2017 compared to $69,117 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 accelerating demand for new construction. The office vacancy rate for the region fell over the past year to 9.7% through Q3 2018 from 11.5% the year prior, according to data from Newmark Grubb Knight Frank Research. The industrial/flex vacancy rate in the county rose to 13.7% from 12.2%, and the retail vacancy rate stood at 7.2%.

Residential construction continues to be a strong component of Boulder County's economy, with residential sales and average home values steadily increasing in communities throughout the area. According to the Boulder Area Realtor Association, the number of single-family homes sold in Boulder County through August 2018 was nearly unchanged from 2017 (3,154 homes). The Federal Housing Finance Agency All-Transactions house price index for Boulder County increased 8.8% from midyear 2017 to 2018. During the same period, the house price index for Colorado increased 9.6%.

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, 2018, Boulder County had 30 FDIC-insured financial institutions with 103 offices and $10.3 billion in deposits, representing 7.5% of the state total. From midyear 2017 to midyear

2018, deposits in Boulder County institutions rose $185.1 million or 1.8% compared to an increase of 3.8% 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 continued venture capital investment in early-stage Boulder County companies. According to data from CB Insights, $412.3 million in venture capital funding was received by Boulder County companies in the first three quarters of 2018, representing 27.1% 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—A number of major aerospace companies operate in Boulder County, including Ball Aerospace, Custom Microwave, DigitalGlobe, 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 University Corporation for Atmospheric Research (UCAR).

Biotechnology—Boulder County is a well-established location for companies in the pharmaceuticals and medical devices industries. Major employers include Array BioPharma, AstraZeneca, Avista Pharma, ChromaDex, CordenPharma, Huvepharma, Medtronic, Mountainside Medical, and GHX. 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—Renewable energy, energy efficiency, and energy research companies continue to diversify in Boulder County. 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, 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, Carbon Black, CableLabs, Epsilon, Google, HP, IBM, NetApp, Qualcomm, Seagate, Twitter, Uber, and West Safety Services Division, among hundreds of other established and early-stage companies. Boulder ranked first in the nation for its concentration of high-tech startups by the Ewing Marion Kauffman Foundation. The area is home to many accelerators and mentorship programs such as Boomtown, Galvanize, MergeLane, and TechStars. Boulder County also offers makerspaces like BLDG 61, the Boulder Library makerspace, and TinkerMill, the largest makerspace/hackerspace in Colorado. Longmont ranked as one of the "Fastest Internet Speeds in the Nation" by *PC Magazine* in 2017.

Natural and Organic Products—Many leaders in the natural and organic products industry cluster got their start in Boulder, and the area remains an international hub of the industry. Area companies include Aurora Organic Dairy, Bhakti Chai, Boulder Brands, Boulder Organic!, Chocolove, Danone North America, Fresca Foods, Hain Celestial, 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 other programming.

Outdoor Products and Recreation—Widely recognized as a center for 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, HEAD, K2 Sports, La Sportiva, Newton Running, Pearl Izumi, Salewa, Sea to Summit, Spyder Active Sports, and Thule.

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 (#23 of 100 Best Places to Live) and *Westword* (#3 Most Family-Friendly Communities in Colorado).

The business and economic outlook is very positive for Boulder County. The region's robust economy built on

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Around the State

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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 2019. ✜

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Kit Carson County

In many respects, 2018 has proven to be a good year for some industries and businesses. One agricultural equipment dealer in Kit Carson County reported a good sales year while others are experiencing fewer than expected. Local contractors and hardware stores/lumber yards are doing well since the spring and summer hail storms caused wide spread damage in Kit Carson County's western side. Other retail businesses are frustrated as many consumers use e-commerce and direct shipping to the home—so much so that main street and local mom-and-pop retail businesses express concerns of their viability.

Local lenders report farmers may be doing a little worse than in 2017. Crop prices overall have been lower, and the large amount of hail in this region caused lower yields and may keep net income down. In 2017, even with low prices, excellent moisture kept yields higher than normal. In 2018, the combination of low prices and low yields may have a negative impact on the region. Some farmers are getting better at marketing their grain and closely watching their breakeven point. Farmers know how to grow the crop but must get better at the marketing side in these trying days, stated one hometown lender. Farmers need solutions to the shutdown of irrigation wells, which turns irrigated land into non-irrigated land and thereby reduces land prices and crop production.

Real Estate—Commercial and residential real estate prices have remained static to good over the past 17 years. Affordable housing continues to be a concern throughout most of the area. Housing stock is aging, and 25% of occupied homes are rental property. Over 10% of households pay 30 – 49% of their income on housing. A total of 757 commuters work in Kit Carson County and live in another Colorado or Kansas county. Another 1,142 people live in Kit Carson County and commute to other counties for jobs.

Twelve farmer-worker housing units were added to the Town of Stratton's housing inventory in summer of 2018 to fill a housing gap. At this time, half of the units are leased to qualified renters. The City of Burlington and nearby Bethune are in approved Opportunity Zone (OZ) Census Tracts in Colorado. The OZ program creates a fund for investments to address needs like housing, business development, and infrastructure. The western side of Kit Carson County was not selected for the OZ program, but all of Kit Carson County is eligible for Enterprise Zone tax credits.

The average annual pay in the county for the 12 months ending in 2017 was $34,797, which is $22,117 below the state average of $56,914 based on data from the Bureau of Labor Statistics.

County population declined from 2015 to 2016 due to the prison closure (inmates are reported in group quarters population). More correctional facility staff were relocated for corrections facility jobs, which led to a further population decrease in 2017. The county's population in 2017 was 7,154, a decrease of 1,113 from 2010. State Demography Office projections show the population will remain flat through 2020.

The civilian labor force in Kit Carson County was reported as 4,912 in September 2018, and the number of unemployed dropped to 93, resulting in an unemployment rate of just 1.9%—much lower than the state average of 3.1%.

Employment—Farm and sole proprietor employment still represent significant employment in the county. Recent construction of the Rush Creek Wind Farm and expansion of the Carousel Wind Farm have brought more renewable energy to the area. The Rush Creek Farm reaches into Cheyenne, Lincoln, and Elbert counties, which helps the Plains become more economically diverse. More wind turbines are planned for 2019 in Eastern Colorado along or near Interstate 70 into Kansas.

Common minimum education requirements for job openings advertised in October 2018 were a high school diploma or equivalent. Skilled labor, including welders, diesel mechanics, and CDL truck drivers, who earn higher wages, require more credentials. These positions can be difficult to fill.

Kit Carson County employers offer minimum wage pay, which is incrementally rising to $12.00 per hour by 2020. Many small businesses struggle even now to pay the required $10.20 per hour with a limited labor pool. The rate will increase in January 2019 to $11.10 per hour, causing more financial stress. Entry-level positions at retail establishments, quick service restaurants, and sit-down restaurants offer the largest opportunity for employment with entry level skills.

The Colorado Welcome Center in Burlington reported another record-breaking year of guests. Tourism remains an integral part of the Burlington economy and the county. For the third consecutive year, the Colorado Welcome Center had near-record visitor numbers. Burlington is fortunate to have a plethora of hotel rooms to accommodate guests and travelers on Highway 385 and Interstate 70 during winter's fury of snow or the hot days of summer. Flagler will soon have charging four stations for energy efficiency vehicles near Interstate 70, which will draw travelers off the interstate to dine while charging. ✜

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La Plata County

The La Plata County economy is highly seasonal and is related to tourism's impact on the local economy and construction. Durango is also one of two economic hubs in the Four Corners Region—the other being Farmington, New Mexico. In 2015, there was a daily net commuter inflow of 7,779 people, or 43% of the city's population, according to U.S. Census Bureau. Although significant winter tourism is associated with winter sports, most La Plata County tourism occurs during the summer. This summer concentration of tourism causes a third quarter seasonal upswing in economic indicators such as retail sales and employment each year.

The presence of Fort Lewis College, Walmart, Vantiv, the Southern Ute Tribe, the Mercy Medical Center, and natural gas and oil extraction in La Plata County provides some stability to the local economy, particularly in labor markets. They have helped to steadily reduce employment volatility over the past 20 years. Declines in natural resources will continue to be a challenge for regional county governments for some time to come. Particularly hard hit has been San Juan County, New Mexico, and its largest town, Farmington, which has an economy closely tied to energy—especially natural gas. In addition, the impact of the student population has fallen since 2002 when the student body peaked at 4,347 students. The decline of 0.4% in student enrollment in 2018 is dramatically lower than the 7% enrollment decline in the prior year.

Over the past 10 years or so, there has been a push to attract new and dynamic private companies, "growth companies," to regions, which has attracted higher skilled jobs to the area, including Ska Brewery, Vantiv, Tailwind Nutrition, Serious Texas BBQ, and Think Network Technologies. Two local business assistance programs, the SouthWest Colorado Accelerator Program for Entrepreneurs (SCAPE) and the Southwest Colorado Small Business Development Center, provide advice and training for new small businesses. The La Plata County Economic Development Alliance and the Region 9 Economic Development District offer advice, loans to small businesses, and data analysis to the region's government and businesses.

Employment and Unemployment—The La Plata County unemployment rate rose in 2018 (3.1% in August 2018 versus 2.3% in August 2017, not seasonally adjusted), and is slightly above the state unemployment rate, 2.9%. Through September 2018, the La Plata County labor force averaged 32,000, or about 2.3% higher than in 2017; the labor force remains about 1.6% above its peak in 2008. After remaining more or less constant between 2010 and 2016, the labor force has since been growing at about 2.5% per year since.

In terms of types of private employment, the sector with the largest number of workers in 2017 was Trade, Transportation, and Utilities, accounting for almost 22.5% of total employees, followed by Leisure and Hospitality, with 20.7%, which is unchanged from 2016. Health and Education represented about 18.3%, up from 16.4% in 2014. Overall, services accounted for 62.5% of employment. Construction remained at roughly 11%, and Manufacturing was up 0.6% from 2013, to 3.6%.

Natural Resources and Mining employment growth fell an average of 2.8% per year between 2013 and 2017, and Manufacturing employment has averaged 5.5% over the same period. Energy jobs have been negatively impacted by prices of both oil and natural gas. This is an issue that extends beyond La Plata County into the region as a whole, in particular San Juan County in New Mexico that has seen a decline in both overall labor force and population since 2009. The labor force and population are 8.6% and 2.3%, respectively, below 2009 levels. Given the close economic ties between Farmington and Durango, the economy of San Juan County, New Mexico, can explain up to 85% of the variation in La Plata County sales tax revenue, according to an unpublished analysis by the La Plata County Alliance.

Between 2013 and 2017, the share of federal employment as a share of total government employment fell an average of 3% per year, from 7.1% to 5.8%. Over the same period, state and local government employment, as a share of government employment, has risen to 19.7% and 74.4%, which is average annual growth of 1.3% and 1.1%, respectively.

Income—Total private income in La Plata has grown an average of 5.5% for the six years through first quarter 2018. Mean annual pay in La Plata in 2017 was $44,784, which is 9.4% higher than in 2010. However, average annual nominal income growth in La Plata between 2010 and 2017 was 1.1%, whereas the state average was about 2.2%, and in Denver County it was 2%. In 2017, this led to a decline in the ratio of La Plata to Colorado and Denver income to 79% and 66%, respectively, which is a fall of about 8% and 4%.

The sector with the highest average income growth rate over the period is Manufacturing, growing an average of 9.4% per year. The slowest growing sector is Information Services, with growth rate of −0.2%. All other sectors have positive growth income growth; of note are Natural Resources and Mining (3.1%) and Education and Health Services (5.5%).

In terms of share of total private income, the Trade, Transportation, and Utilities Sector is the largest, with 22.6%, about 1% higher than in 2013. In the first quarter of 2018, both the Natural Resources and Mining Sector, and the Construction Sector were down about 1% from the same year, at 8.3% and 11.3%, respectively. On the other hand, Manufacturing, and Education and Health Services were both up 0.5% from 2013, to 3.2% and 19% of total income, respectively. In 2017, with respect to countywide private employee shares, services accounted for about 54.6% of total income in La Plata County, up from 54.2% in 2013.

Energy has played a role in explaining some of the changes in Natural Resources and Mining income and employment. July 2018 year-on-year oil production

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in La Plata grew 7.1%. As prices rose over 50%, oil revenue increased 63%. On the other hand, the increase in natural gas production, which grew 1.4%, was overshadowed by the 5% decline in Henry Hub prices, leading to a 3.7% decline in gas revenue. However, while the overall share of income in Natural Resources and Mining fell, incomes grew an average of 3.1% between 2013 and 2017.

Given the fall in energy prices, it is not surprising that Natural Resources and Mining income as a share of county income fell 10% between 2013 and 2017. Income from Finance, which includes Real Estate Services, rose from 11.1% to 11.6% of total income over the same period, an increase of 4.3%. Meanwhile, Construction's share dropped 8.7% from 2013.

Tourism—In June and July 2018, La Plata County was home to the 416 fire north of Durango, which had a noticeable impact on the local tourist economy. However, in Durango, the effects were not as pronounced as originally feared. Sales taxes were down 3.2% from the previous year, and lodging taxes fell 13%. The Durango-Silverton Train was forced to shut down for about one month—the impact of this on Durango was not as large as on Silverton, 50 miles north of Durango. It experienced a 24.3% decline in tourism revenue in June from the previous year. Overall August year-to-date tax revenues in Silverton were down about 4.9%. A preliminary study by Economics Professor Robert Sonora estimated that the impacts of previous similar fires in Western Colorado have had a short-lived impact on the county economy, recovering to pre-fire conditions within two years.

Though the La Plata economy has become diversified, tourism continues to play a large role in the county, particularly in the number of employees. Mesa Verde visits are forecasted to decline just under 2% from 2017. Although Mesa Verde National Park is in Montezuma County, many tourists who visit the park stay in La Plata County during their time in the area.

Real Estate, Banking, and Business—Like many Colorado resort communities, La Plata County's economy is closely tied to real estate. Using the third quarter as representative of the overall housing market, the median inflation adjusted (2012=100) home price in La Plata County was about $373,375 in Q3 2018, 2.1% lower than the same quarter in 2017. Since 2011, the year real estate in La Plata began to recover from the recession, the number of houses sold has risen an average of 6.9% per year, and the number of days on the market has fallen an average of 2.8% per year.

Regarding bank deposits at the four local and regional banks, between 2009 and 2011 bank assets, defined as net loans and leases, experienced negative growth, then in 2012 and 2013 liabilities recorded strong growth. In 2018, bank liabilities were about 57% higher than in 2007, and assets are about 36% higher, which signals steady and relatively conservative growth of loans and leases in the region, even as deposits and income rise. The ratio of assets to liabilities, as defined above, has remained between 1.0 and 1.2 since 2010, whereas pre-recession it was consistently over 1.2, and in 2004, it rose to 1.4, signaling a more conservative approach to lending.

Challenges and Recent Trends—In general, La Plata County faces several challenges. First, wages continue to be low for low-skilled workers. The de facto Durango market wage for entry-level jobs is between $11 and $12 per hour, about $2 more than the Colorado state-mandated minimum wage. However, according to the MIT Living Wage Calculator, the per adult living wage for a family of four living in La Plata is $16.75 per hour and likely more in Durango. Persistent levels of underemployment are also anticipated—in 2016, 43% of La Plata County adults over age 25 have a BA degree or higher compared to 40% for the state.

In 2015, about 6% of La Plata households received Supplemental Nutritional Assistance Program (SNAP) assistance, the number of disconnected youth has increased 60% since 2011, and roughly 32% of households are burdened. The poverty rate in the county jumped 1% from 2015 to 2016. Another local concern is the suicide rate, which is over twice the national average.

A second challenge is transportation. Approximately 5,000 people commute to Durango every day, straining local infrastructure. Average commute time in the county is about 21 minutes per day, 5% higher than five years ago.

Another concern is declining La Plata County tax revenues. Over the past seven years, property tax revenue, which includes oil and gas, declined by 50%. The county cut 19 positions in 2018 to cut costs, with a savings of over $1 million. The 416 fire exacerbated this decline, at least in the short run.

Anecdotally, the spirits of most local business remain cautiously optimistic. Demand for Construction, Manufacturing, and Health Services will continue to provide a foundation for relatively good growth. ✜

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Mesa County

Mesa County comprises the City of Grand Junction, City of Fruita, and the smaller towns of Palisade, Collbran, DeBeque, Gateway, Mack, and Mesa. Most residents live in Grand Junction, the largest city between Denver and Salt Lake City, Utah. At the confluence of the Colorado and Gunnison Rivers on the western slope of the Rocky Mountains, this community of 151,900 people is a high-tech, growing innovation hub that offers an affordable cost of living and friendly business climate, as well as endless access to outdoor recreation.

Economy —The Mesa County economy is performing extremely well. As of September 2018, the unemployment rate in the county (not seasonally adjusted) was 3.6%, an exceptionally low unemployment rate by historical standards. This is slightly lower than the nation's rate of 3.9% and slightly higher than the state's rate of 3.1%. Mesa County's labor force of 76,282 was up 0.9%

since September 2017. Of this, 73,553 were employed and 2,729 were unemployed. The county also has a strong sales tax collection, up 9.5% since 2017. The average annual wage in Mesa County was $43,031 over the last four quarters ending in Q1 2018. Year-over-year growth topped 3.5%.

The Trade, Transportation, and Utilities industry remained the largest in the Grand Junction MSA in 2018, followed by Education and Health Services. The fastest year-over-year growth was recorded in Education and Health Services, Manufacturing, Mining, and Construction.

Real Estate—Mesa County real estate market was strong in 2018. It continued to be a seller's market, with appreciating home values, falling inventory, and rising new building permit applications. Single-family home permits rose 33.4% in 2017, and increased 29.6% year-to-date through September 2017 according to the U.S. Census Bureau. Total building permits were up 26.5% in 2017 and 11.5% year-to-date in 2018. The median sales price was $240,000, an increase of 10.1% since Q2 2017. Sold listings increased and current residential listings fell, meaning there was less inventory, which pushed prices higher.

According to numbers reported by Bray Commercial, 132 commercial transactions totaling $79 million were reported in Mesa County during the first half of 2018. Compared to the first half of 2017, transactions rose 30.7% and dollar volume increased 27.5%. As of September 2018, there were over 200 commercial sales in Mesa County totaling over $130 million.

Health Care—Mesa County is a regional medical and health care hub, serving a population of approximately 500,000 in western Colorado and eastern Utah; it is the largest hub between Denver and Salt Lake City. The county is a medical referral center for neighboring towns such as Moab in Utah and Montrose, Delta, Rifle, Eagle, Aspen, Glenwood Springs, Craig, Meeker, Rangely, Gunnison, Ouray, and Telluride in Colorado.

Mesa County has five large hospitals, including St. Mary's Hospital, which is the only Level II trauma center in the region, and the Grand Junction Veterans Health Care System that is part of the VA Western Colorado Health Care System. In addition, Mind Springs Health provides mental wellness, behavioral change, and substance abuse treatment to patients within 11 counties, and its West Springs Hospital is the only psychiatric hospital between Denver and Salt Lake City.

Education—Mesa County has strong higher education and technical training institutions. Colorado Mesa University is a four-year higher education institution encompassing 90 acres in Grand Junction with over 11,000 students and 288 full-time academic and technical faculty members. The Western Colorado Community College offers over 20 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 13th-largest school district in Colorado, with 46 schools, 2,844 teachers and support staff, and 22,084 students. District 51 had an 80% graduation rate in 2017.

Airport—The Grand Junction Regional Airport (GJT) is the premiere Class I airport serving western Colorado and eastern Utah with 6 nonstop destinations and an average of 16 flights per day. In addition to both private and public passengers, FedEx operates out of the facility. GJT reported 176,305 passenger enplanements as of September 2018.

In April 2018, GJT announced its electricity would be offset by solar power before the end of 2018. Due to a 20-year community solar subscription, the airport will have access to 1.16 MW of electricity annually from two community solar gardens—enough to power the terminal, runways, and parking lots. The agreement is projected to save the airport more than $1 million in electricity costs over the next 20 years.

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 and outdoor recreation, and technology and IT have emerged as strong and growing industries.

Energy—The mining industry made up 3.9% of Mesa County's total employment in Q1 2018 with 2,350 jobs. The industry, which saw a dramatic decrease in employment of 44% in 2010–2016, expects the total number of jobs to increase by 4.9% in 2019. The top regional businesses are Rocky Mountain Wireline Service, Halliburton, Calfrac Well Services, and Baker Hughes. Other major employers include Chevron and Exxon Mobil.

Agriculture—In 2017, Agriculture nominal GDP totaled $22.3 million. However, industry real GDP decreased by 4.7% year-over-year according to data from the Bureau of Economic Analysis.

Health Care—Health Care and Social Assistance makes up 16% of Mesa County's total employment. As of Q1 2018, Mesa County had more than 10,600 jobs in the Health Care and Social Assistance industry. This number is expected to increase by 3.9% in 2019.

Aviation and Aerospace—There are 553 people in the county employed in aviation, aerospace, and parts and manufacturing, which is expected to increase by 2.3% in 2019. The top regional business is West Start Aviation, followed by GJT. Wren Industries, another local aerospace parts manufacturer, became the first Mesa County company to join the esteemed list of approved suppliers to Lockheed Martin, with a contract to manufacture components for NASA's Orion project. Twin Otter

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Photo courtesy of Tyler Logan for Grand Junction Economic Partnership.

International, Armstrong Consultants, Jabil, StandardAero, and Tristar Aviation round out the list of leading employers in the local aviation and aerospace industry.

Manufacturing —The manufacturing industry makes up 4.5% of Mesa County's total employment. In 2018, Mesa County had 3,067 jobs, and the total number of jobs is expected to increase by 9% in 2019.

Tourism—Mesa County is a major tourism destination, with a mild climate and central location making it easy to access year-round. 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. 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.

Fruita, Grand Junction, and Palisade attract visitors from all over the world to ride world-class, single-track mountain bike trails. These trails have spawned the Grand Junction Off-Road, an endurance mountain bike event that has gained global attention. Other cycling races within Mesa County include the USA Cycling Collegiate National Road Championships, Maverick Classic, Icon LASIK Tour of the Moon, Tour of the Valley, Rumble at 18 Road, Palisade Brews and Cruise Festival, and the popular Fruita Fat Tire Festival.

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 downhill mountain-bike trail system enables the resort to operate year-round. In October 2018, Powderhorn announced a new investment partnership with ZOMA Capital of Denver and an operations partnership with Pacific Group Resorts Inc. from Utah. The new partnerships will help continue to expand affordable access to winter recreation, develop additional summer activities, and increase capital investment to support the resort's long-term success.

Mesa County also 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.

The Town of Palisade is the home of Colorado Wine Country with 17 wineries and 22 orchards. Palisade hosts many festivals, including the Bluegrass and Roosts Festival, the Lavender Festival, the Palisade Peach Festival, and the Colorado Mountain Winefest. In 2017, Palisade opened the Cameo Shooting Complex and Palisade Basecamp, an RV and campground. The town is currently working on a downhill single-track trail, the Palisade Plunge, with plans to open in 2019.

Fruita was ranked "Colorado's #1 Adventure Town" in 2015 and 2016 by *Elevation Outdoors Magazine* readers. Known for its unbeatable mountain biking, Fruita offers an outdoor playground of endless trails and year-round activities. In 2018, the city opened a cable wakeboarding park, the first of its kind in Colorado.

As the largest city on Colorado's Western Slope and a newly designated Creative District, Grand Junction has a diverse array of arts, culture, and entertainment attractions, including the Grand Junction Symphony, Historic Avalon Theater, Museum of the West, Two Rivers Convention Center, and a variety of locally owned shops, restaurants, and galleries.

In November 2018, the City of Grand Junction passed a measure to increase the lodging tax from 3% to 6% to increase funding for tourism and sporting events marketing and incentivize more direct flights into and out of GJT. Grand Junction collected $1.46 million in lodging taxes and saw an estimated $282.3 million in travel spending to local businesses in 2017. Tourism provided an additional $1.39 million in local sales tax revenue.

Outdoor Recreation—The outdoor recreation industry is attracted 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.

Mesa County is home to many outdoor recreation businesses, including Bonsai Design, DT Swiss, Mountain Racing Products, and Leitner-Poma of America to name a few. In 2018, Timberleaf Trailers and RockyMounts decided to relocate from other Colorado communities to Mesa County. The area has more than 14 bike shops, five ski shops, and two 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.

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 3.6% of the county's total employment, with nearly 2,200 jobs as of Q1 2018. The top regional businesses are FCI Constructors Inc., AR Service LLC, FedEx, JG Management Systems Inc., and Leitner-Poma of America Inc.

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. In turn, 13 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 visible 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 world-famous Kokopelli Trailhead, with bike trails to connect the park to both.

The Dos Rios Business Park on the Colorado River will break ground in 2019 and will be 44 acres of a "live, work, play" concept attracting high-density, mixed use, and light industrial uses.

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 extremely 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 2019. ✜

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Northern Colorado

Summary—Northern Colorado continues to grow in technological innovation and entrepreneurship while maintaining its diverse and 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 also neighbors the Colorado-Wyoming border and the greater Denver Metro area. Talent, innovation, and opportunity define Northern Colorado.

Prominent universities and community colleges attract companies searching for the next generation of talent. Northern Colorado's top industry clusters include energy, manufacturing, agriculture, information, and technology. Northern Colorado's bustling industry and assortment of residential growth has driven the region's economic success.

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 2017 estimate at just over 648,000, according to the Colorado State Demography Office. The estimated increase in population in Weld and Larimer counties was roughly 2.4% in 2017. Fort Collins and Greeley are the area's two largest cities, with a combined population of 269,800.

According to the Census Bureau, the Greeley Metropolitan Statistical Area was the third-fastest growing area in the nation in 2017 and ranked third in job growth by

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the Bureau of Labor Statistics. The median age in Northern Colorado is approximately 35.5, with the 20–24 age group forming the largest share of in-migration according to the State Demography Office.

Industry and Employment—Northern Colorado's job growth has outpaced the national rate, and labor force participation remains consistent, around 70%. Northern Colorado's top employment industries are Health Care, Retail, Manufacturing, Education, and Accommodation and Food Services. While the private sector is an economic driver, there is significant public investment through public health care providers, public universities, and local school districts. Northern Colorado's GDP rose by 7.2% between 2016 and 2017. 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 2018, the unemployment rate 2.7% (not seasonally adjusted), which is 0.3 percentage points higher compared to a year earlier. Despite the recent increase in the unemployment rate, Northern Colorado's labor market has continued to become increasingly tight over the past four years. In response, the region's educational institutions have developed and expanded training and experienced-based learning programs to ensure that the region's 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. Northern Colorado produces about 20,000 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 2,800 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 2016–17 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 strength in 2018. The countywide employment grew for five consecutive months through September 2018, and the unemployment rate declined to 4.7%.

Government (18%), health services (17%), and retail (12%) continue to be the three-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 2018. The year has also brought new companies to Pueblo in biomedical, construction-related manufacturing, as well as food and beverage processing. These industries add to the success Pueblo enjoys in manufacturing and metal fabrication. Additionally, Pueblo is actively recruiting company's aerospace and defense, chemicals manufacturing, and hemp-related manufacturing.

Pueblo is proud of the companies that have located in Pueblo and continued to enjoy tremendous success, including United Launch Alliance, United Technology Aerospace Systems, L3 Doss Aviation, EVRAZ, Vestas, Trane Corp., Professional Bull Riders, KMG Electronic Chemicals, Atlas Pacific, 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 include focusing on talent retention, development, and recruitment initiatives by aligning programs and partners. Pueblo enjoys a reputation of having strong customized training programs in the region.

Energy and the HARP Project—In addition to existing and developing clusters, other projects are in place. 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.

It was also announced in 2018 that EVRAZ Rocky Mountain Steel in Pueblo will install a 240-megawatt solar facility on property owned by EVRAZ. 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 (HARP). A loan from the city's economic development fund jumpstarted work on an ambitious complex that will include 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 athletics 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 3.7% on a nonseasonally adjusted basis at the end of September 2018. This compares to an unemployment rate of 3.2% in September 2017. The labor force increased from 332,598 to 345,360 from September 2017 to September 2018, a change of 12,762. Over the same period, employment increased from 322,089 to 332,743 for a change of 10,654. 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, 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 2018, the target number of new jobs is 5,400. El Paso County has been performing well in this metric since 2013. New jobs totaled approximately 5,000 in 2013 and 5,000 new jobs the following year. By 2017, there were more than 6,300 new jobs in El Paso County and 6,023 new jobs from Q1 2017 to Q1 2018.

Specific Sectors—Fifteen of the 21 QCEW industry sectors in El Paso County saw job gains in 2017. The most significant gains were in Health Care and Social Assistance, Accommodation and Food Services, Construction, Other Services, Professional and Technical Services, and Educational Services. Health Care and Social Assistance, combined with Accommodation and Food Services, represented 44% of total job gains in the county. Job losses occurred in five sectors, with the most notable losses in Retail Trade and in Information. Manufacturing employment stayed the same as 2016.

QCEW average annual pay across all categories increased in El Paso County, from $47,216 in 2016 to $48,932 in 2017. This 3.6% wage increase is similar to the national average (3.3%). Average annual pay in Colorado increased 4.1%. The average wage in El Paso County remains low compared to Colorado as a whole and was 14.1% below the 2017 state average of $56,914.

Average annual wages increased in 18 sectors in El Paso County in 2017. Average wage growth was strong in Management of Companies and Enterprises (up $33,644, to $177,008), Manufacturing (up $11,648, to $70,720), Finance and Insurance (up $3,016, to $67,600); Utilities (up $2,392, to $90,428); and Administrative and Waste Services (up $2,132, to $38,688). Average wages declined in Mining (down $1,404, to $64,636) and Information (down $988, to $73,112).

Per Capita Personal Income—Nominal per capita personal income in 2017 in El Paso County was 14.9% below the Colorado average and 9.9% below the U.S. average. Per capita personal income increased 3.3%, to $46,511, in 2017 over the 2016 level of $45,026.

Residential Real Estate—The residential real estate market in the Pikes Peak region remained very strong in the past year. From October 2017 through September 2018, a total of 4,154 single-family permits were issued in the region. This is an increase of 642 permits (18.3%) issued compared to the number issued from October 2016 through September 2017. The UCCS Economic Forum expects approximately 4,100 single-family permits to be issued in the Pikes Peak region in 2018. The Forum has estimated that for the population size and the demographic composition of the county, approximately 5,075 permits for dwelling units (both single-family homes and multifamily units) is appropriate in 2018. Through September 2018, permits for 68 multifamily projects and 1,474 units were pulled. By the end of 2018, permits for 2,000 multifamily dwelling units are expected to be pulled and another 2,060 units are forecast for 2019. As of Q2 2018, average monthly rents for apartments were $1,157 per month in the Colorado Springs Metropolitan Statistical Area (MSA).

Home sales in the Pikes Peak region remain strong and price increases continue to outpace the nation. The average sales price of a home, new or existing, is expected to increase to $347,780 in the Pikes Peak region in 2018, a 10.5% gain over 2017. The median price of a new or existing single-family home is anticipated to rise to

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$311,920 in 2018 compared to $280,000 in 2017. Sales are expected to reach 16,164 homes in 2018 and 16,487 homes in 2019.

Foreclosures decreased 15.4% in 2017, to 1,089. This is the eighth-consecutive year foreclosures declined in El Paso County. Through September 2018, foreclosures totaled 695 compared to 802 through September 2017. The UCCS Economic Forum projects a total of 910 foreclosures in 2018 and another 910 foreclosures in 2019.

Commercial Real Estate—Average commercial office vacancy rates in Colorado Springs stayed flat, at 10.9%, in 2016 and 2017. Through September 2018, the vacancy rate decreased to 10.1%. At the same time, average triple net lease rates decreased from $16.53 per square foot in 2016 to $15.53 per square foot in 2017. They increased to $15.79 per square foot in Q3 2018.

The average industrial vacancy rate increased to 8.7% in 2017 from 7.6% in 2016. Through September 2018, the rate decreased to 6.6%. Average rents rose from $6.03 per square foot in 2016 to $7.28 per square foot in 2017. This rate increased again, to $7.98 per square foot, in Q3 2018.

Average retail vacancy rates dropped to 5.3% in 2017 from 6.1% in 2016. Rates then increased slightly, to 5.5%, through September 2018. Average rents increased slightly, from $12.31 in 2016 to $12.49 in 2017. They climbed to $14.48 per square foot in Q3 2018.

Average medical office vacancy dropped from 9.8% in 2016 to 9.1% in 2017. Through September 2018, it had decreased to 7%. Average rents declined in this property type, from $19.32 in 2016 to $18.39 in 2017. In Q3 2018, they had dropped to $17.46. The UCCS Economic Forum uses the CoStar Group and Olive Real Estate Group to compile this commercial real estate information.

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 5%, or $8.1 million, to $170.2 million in 2017. Sales and use tax collections are expected to increase 5.7% in 2018 and another 3.3% 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 1.2% in 2018 and decrease by 1.1% in 2019.

Education—The higher educational attainment of a region's population is important because well-trained individuals are necessary for business growth, and therefore, overall economic growth. In 2017, Colorado started testing all high school juniors using the SAT instead of the American College Test (ACT) because this college entrance exam more closely aligns with Colorado Academic Standards and provides free test preparation services for all students. In 2017 and 2018, the average score of juniors in 5 of El Paso County's 15 school districts was higher than that of all Colorado juniors (1014). In Colorado, a downward bias is created in SAT results because all high school juniors are required to take the SAT, not only those who are college bound. Students in other grades, including seniors, are not included in the Colorado composite SAT results.

In 2017, 11 of the 17 school districts in the Colorado Springs MSA exceeded the state of Colorado's average high school graduation rate of 79%. The U.S. high school graduation rate in 2016 was 83.2%. Six of the 17 school districts surpassed this national graduation rate.

In 2017, 34.9% of the Colorado Springs MSA's population age 25 and older had some college or an associate degree, which is higher than the state (29.1%) and the United States (28.9%). In addition, 39.2% of this population had attained a bachelor's degree or higher, which is comparable to the state (41.2%) and significantly higher than the nation (32%) according to U.S. Census Bureau data on educational attainment.

Where Is the Economy Heading?

The Colorado Springs MSA is now solidly in the group of cities around the nation that are outperforming the nation. Real (or "inflation-adjusted") gross metropolitan product increased by 3.3% in 2017 compared to the U.S. metro average of 2.1%. The Forum is forecasting a growth rate of 3.7% for 2018, which is the same growth rate projected for the state of Colorado. The Colorado Office of State Planning and Budgeting was consulted for this projection and if anything, found it to be conservative.

Metrics for the first part of 2018 support the notion that employment levels will continue to climb (albeit at a slower rate); that the region will meet or exceed the 5,400 new jobs needed per year to match population growth; and that high-paying sectors, such as information technology and health care, will continue to expand. Indeed, there is a movement toward the diversification of industries that bodes well for a region that has traditionally been overly reliant on the military and (lower-paying) service sectors. In fact, the contribution of the military toward gross metropolitan product in 2001 was 15%, whereas in 2017, it was down to 12.3%. Various other industries, such as Professional and Business Services, increased during the same period (from 12.1% to 14.4%). Likewise, the location quotient for computer and mathematical occupations in Colorado Springs is currently 1.70—almost identical to Denver's (1.65). Colorado Springs now has a diverse representation of industries across low, middle, and higher skills sectors.

With the positive momentum, various community initiatives aim to address a plethora of important issues. These initiatives include access to workforce information and workforce readiness (e.g., wam.uccs.edu), affordable housing, infrastructure, and transportation, to name a few.

Like any other community across the nation, there is growing concern about "the next downturn." Business cycles are inevitable, and the incoming data on the relatively short-term impact of the tax cuts, increasing deficit, and ripple effects of the trade wars may prove to accelerate the movement toward a downturn. The hope is that the still-high consumer sentiment, relatively high savings rates, and high national (and local) job postings will buoy the economy a bit longer and/or moderate the effects of a downturn when it does happen. If indeed the nation stays on a positive growth trajectory, it will be particularly advantageous to the Colorado Springs economy since its "recovery" was delayed but is now in full swing, with great energy toward robust, sustainable, and diverse growth. ✜

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