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Colorado Economy and Employment Data Through October 2017

Colorado-based Business and Economic Research
Prepared
November 20, 2017

Overview of Economic Review

This chartbook provides a series of charts, graphs, and discussions that review the Colorado wage and salary employment data published by the Bureau of Labor Statistics. Based on the information from the October report, Colorado employment is on track to add 48,700 jobs this year. The unemployment rate of 2.7% indicates there is a lack of qualified workers in most industries. It is a deterrent to stronger job and real GDP growth.

U.S. Economy

- The Economy Through October 2017.
- The United States Economy.
 - Leading Index and Real GDP.
 - Employment and Unemployment Rate.
 - S&P 500 and Equity Volatility.
 - Manufacturing, Non-manufacturing, Retail Trade, Holiday Sales, and Auto Sales.

The Colorado Economy

- Real GDP, Employment; Labor Force and Number of Unemployed Workers, Colorado Unemployment Rate; and Unemployment by MSA.
- Employment in Strong Growth, Solid Growth, Volatile Categories.
- Key Sectors and Trends to Watch.
 - Extractive Industries.
 - Construction, Housing Prices.
 - Retail Trade, New and Used Car Registrations, DIA Passenger Traffic, Transportation.
- Election 2017.
- Highlights from the State Demography Meeting.
 - Economic Outlook.
 - Population of Colorado.
- Summary.

The 2017 cber.co forecast can be found at <http://cber.co/economic-forecasts/>; 2018 forecast available in January 2018.

The Economy Through October 2017

United States and Colorado

United States

From an economic perspective, very little has changed in the past couple of months.

- The Fed is optimistic about the U.S economy.
- The Q3 real GDP growth rate was 3.0%.
- The Philly Fed's U.S. Leading Index is positive.
- YTD retail sales are up 4.5%. Strong retail sales are projected for the 2017 Christmas season.
- Auto sales were strong in September, 18.0 million.
- U.S. Y-O-Y housing prices are up 6.1%.
- The S&P 500 is up 15.2%; the VIX shows little volatility.
- The unemployment rate is 4.1%.
- Purchasing managers are optimistic about the future (manufacturing and non-manufacturing).
- The U.S. is on track to add 2.1 million jobs in 2017.

Despite uneasiness in the U.S. and abroad, economic growth in the U.S. remains solid.

Colorado

If only there were enough qualified workers to fill the vacant jobs, the state would be experiencing stronger job growth.

The Good News

- Construction permits are solid.
- Housing prices are increasing at a decreasing rate.
- Auto sales are strong.
- Retail trade sales are solid.
- DIA passenger traffic is strong.
- Job growth is modest.
- The proposal for Amazon HQ2 has been submitted.

The Best News

- Activity on the streets is positive.

Areas to Watch

- The Colorado CPI is higher than the U.S. rate.
- The Philly Fed's Colorado Leading Index is solid.
- Price for a barrel of oil is up.
- Employment data may be understated.



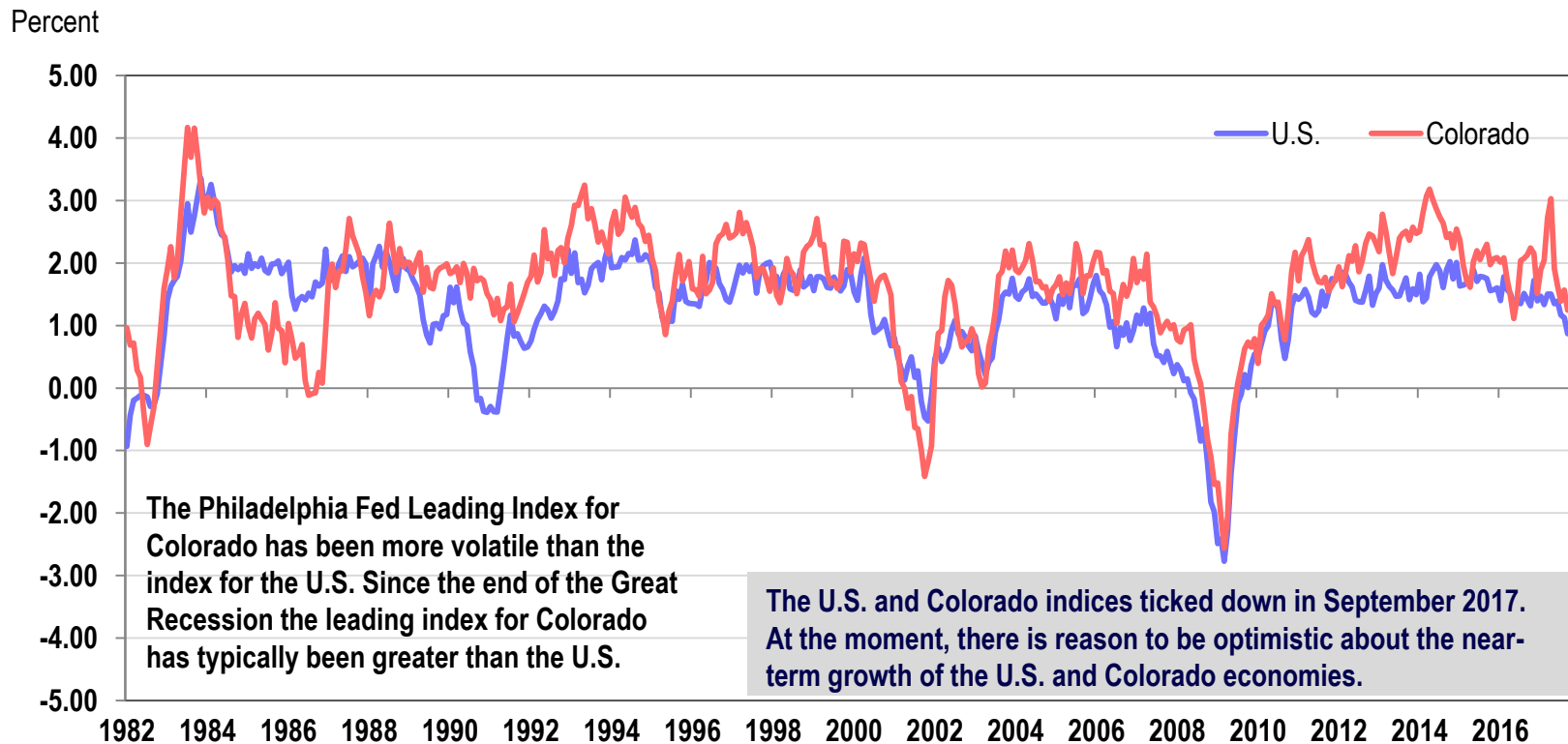
The U.S. Economy

Leading Index and Real GDP

Leading Index

Colorado vs. United States

Philadelphia Federal Reserve Leading Index - Colorado vs. U.S.



Source: Philadelphia Federal Reserve, cber.co. Note: The leading index predicts the six-month growth rate of the U.S. and state's coincident index.

Quarterly Real GDP Growth United States

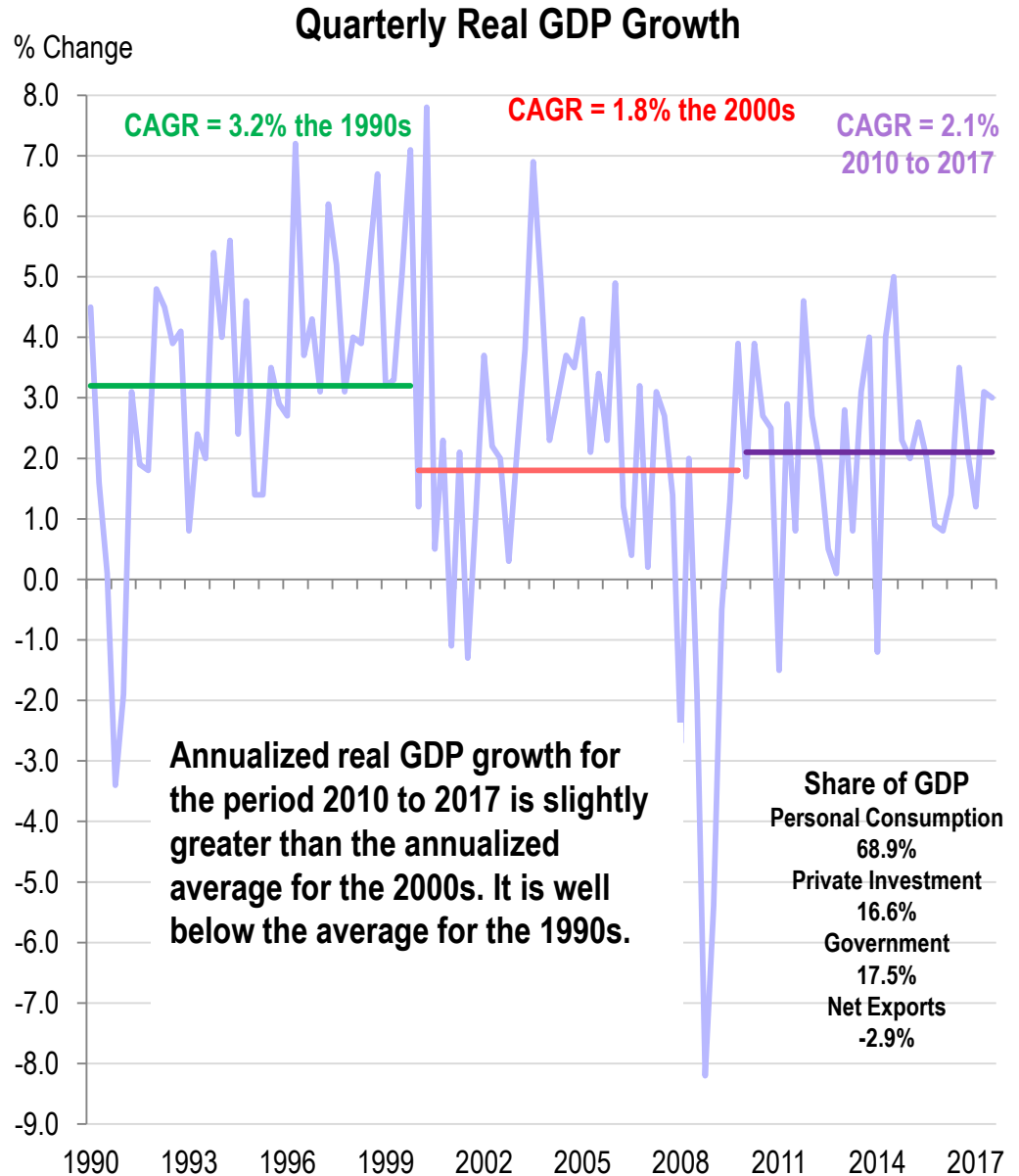
Historical annualized real GDP growth is:

- 1990s 3.2% (green line).
- 2000s 1.8% (red line).
- 2010 to 2017 2.1% (purple line).

The advance estimate for Q3 real GDP growth was 3.0%. The third estimate for Q2 was bumped up to 3.1% and the final estimate for Q1 is 1.2%.

Real GDP growth for recent years was:

- 2010 2.5%
- 2011 1.6%
- 2012 2.2%
- 2013 1.7%
- 2014 2.4%
- 2015 2.6%
- 2016 1.6%
- 2017 2.1% to 2.5% projected.



Source: Bureau of Economic Analysis, cber.co, Note GDP chained on 2009.

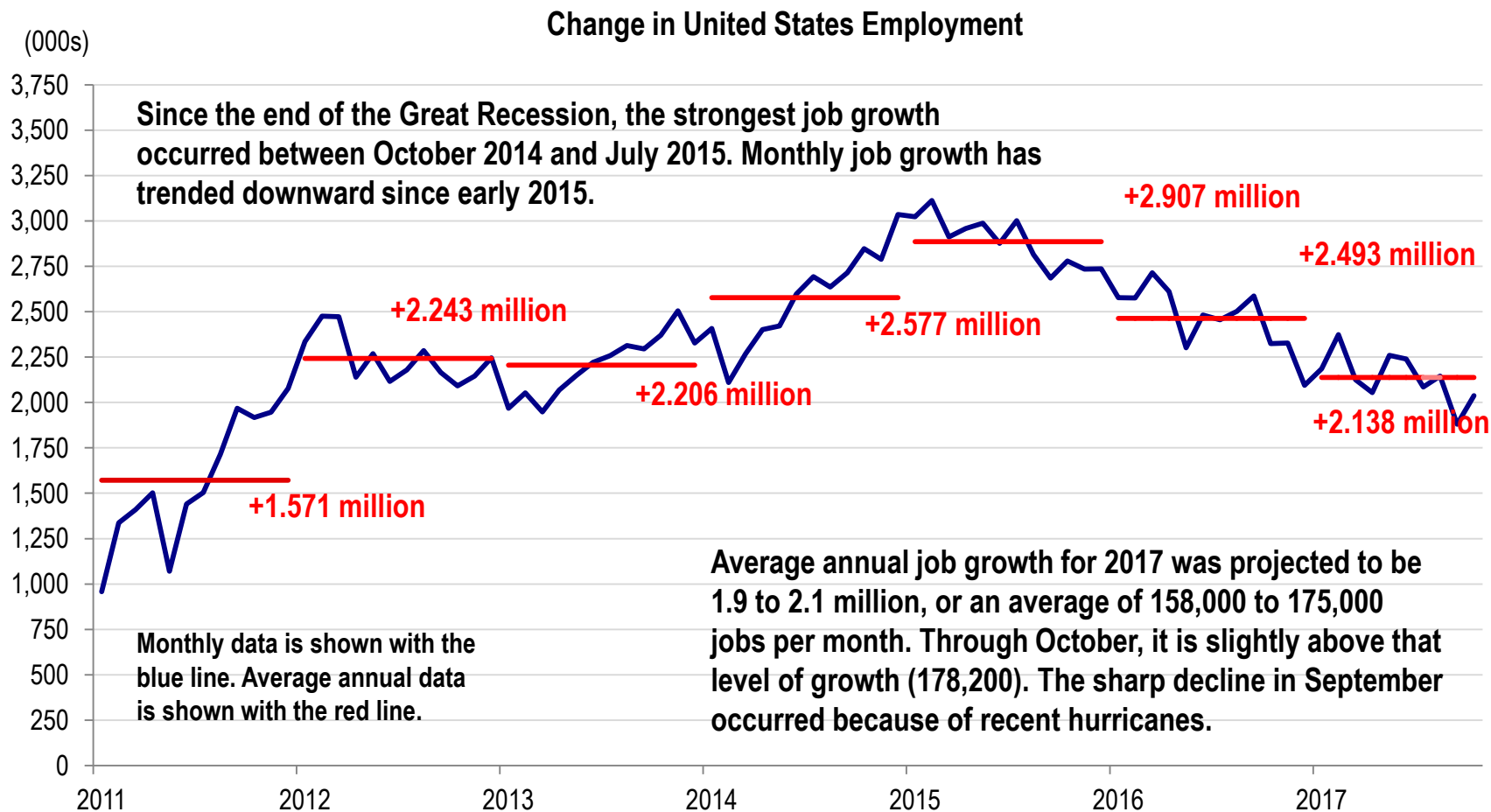


The U.S. Economy

Employment and Unemployment Rate

Change in United States Employment

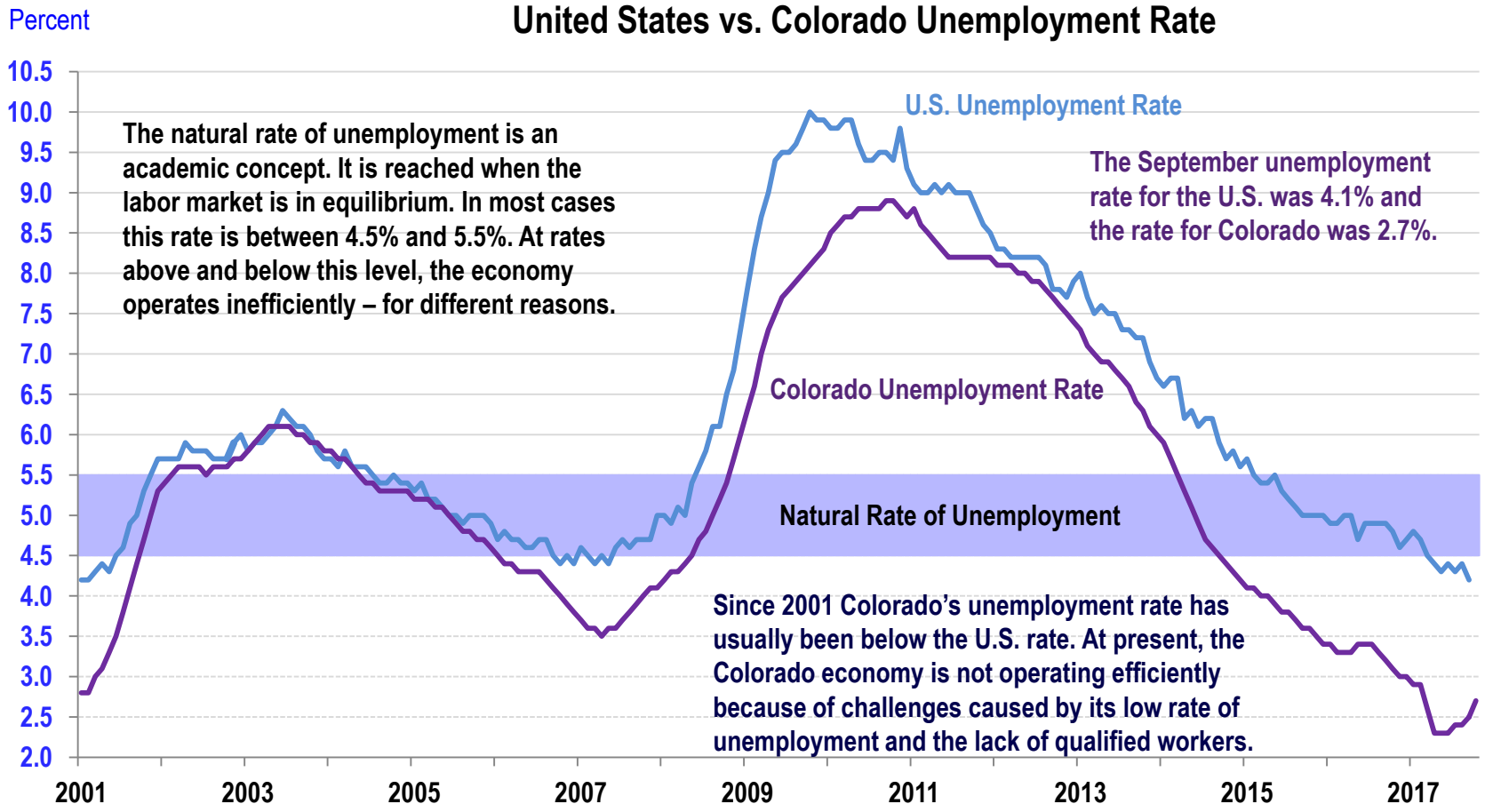
Year-Over-Year



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

Unemployment Rate

United States vs. Colorado



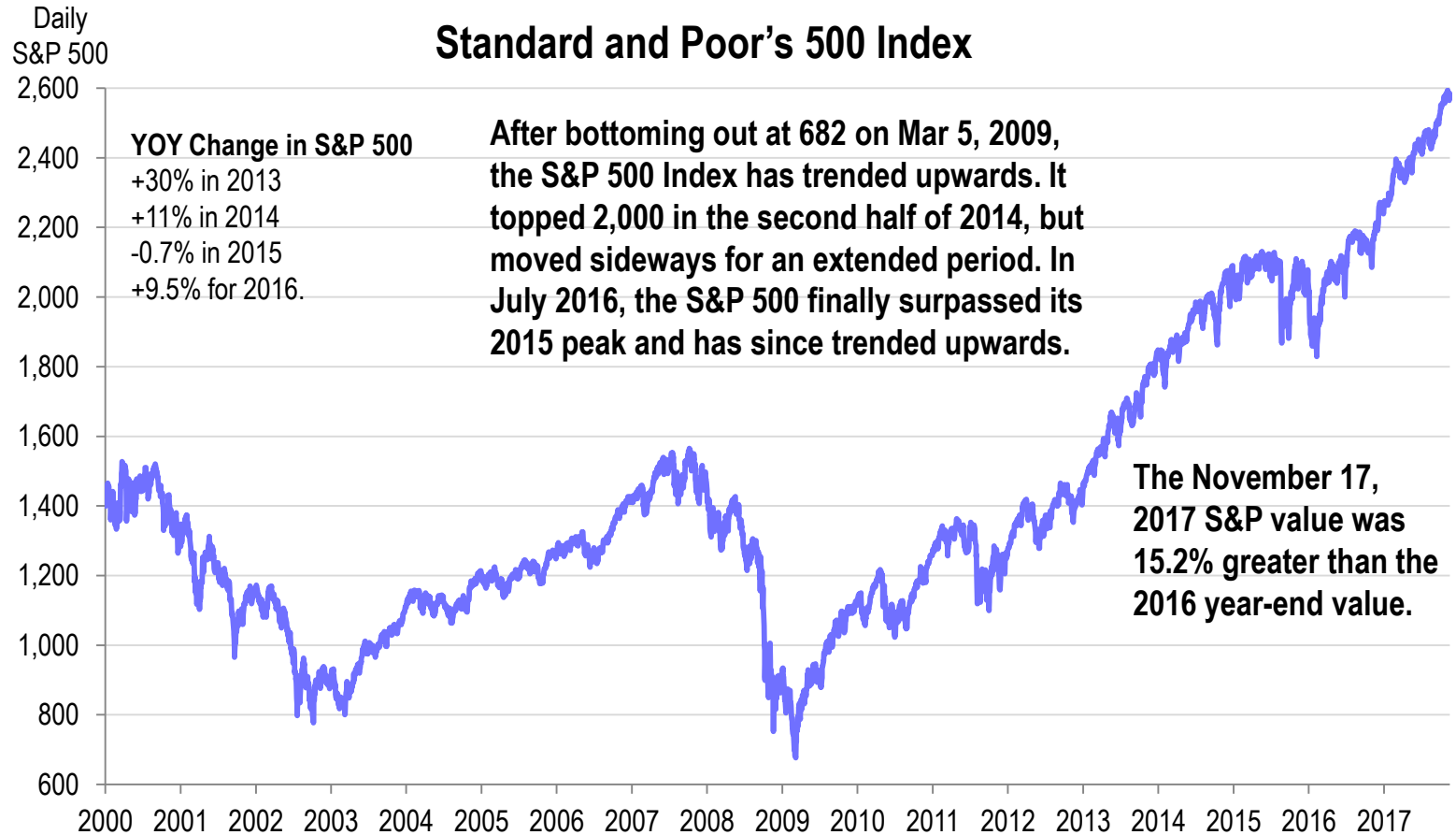
Source: Bureau of Labor Statistics, SA, cber.co.



The U.S. Economy

S&P 500 and Equity Volatility

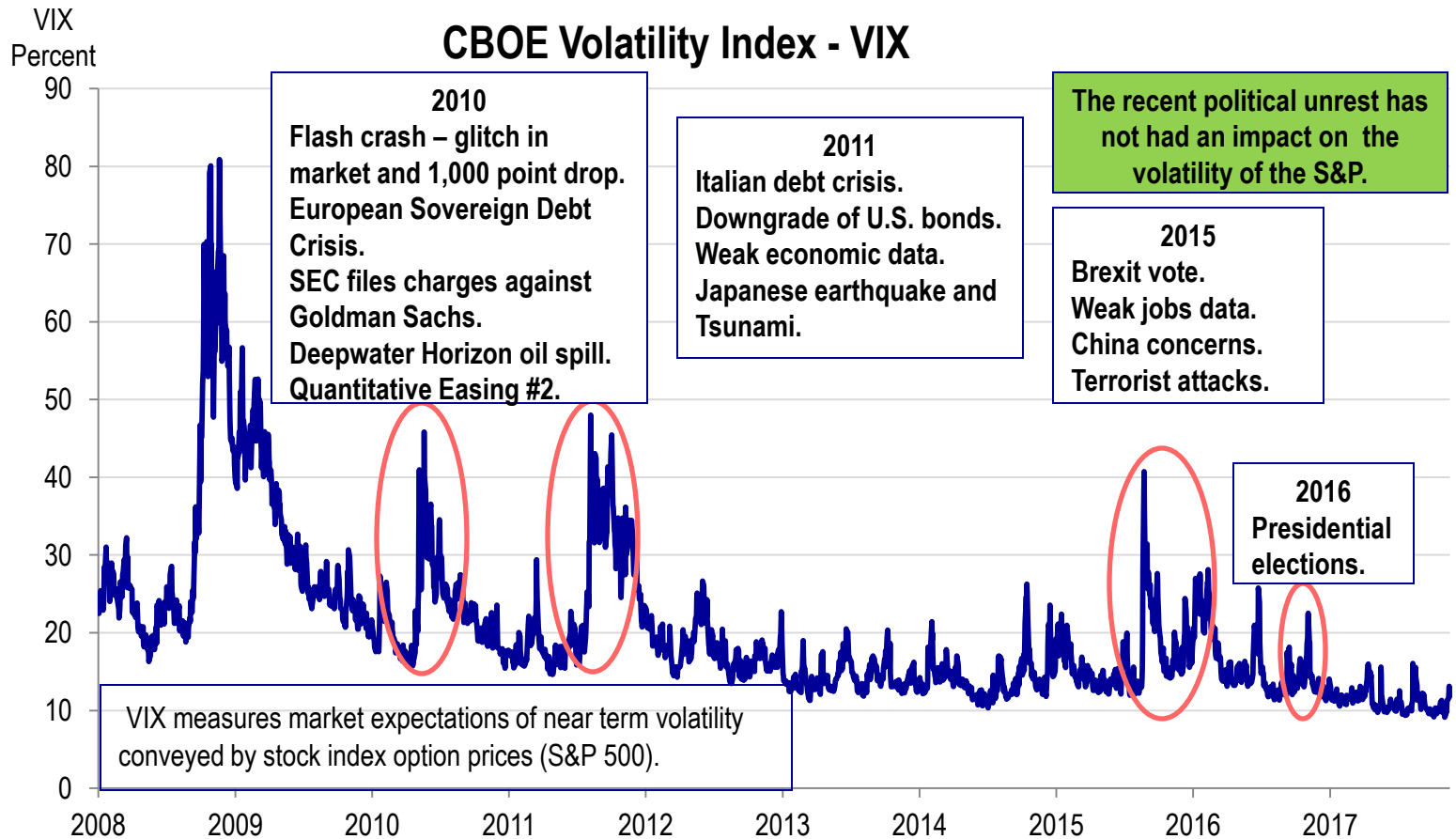
Standard and Poor's 500 Index



Source: FRED, S&P 500, cber.co.

CBOE Volatility Index

VIX (VIXCLS)



Source: FRED, Chicago Board Options Exchange, cber.co.

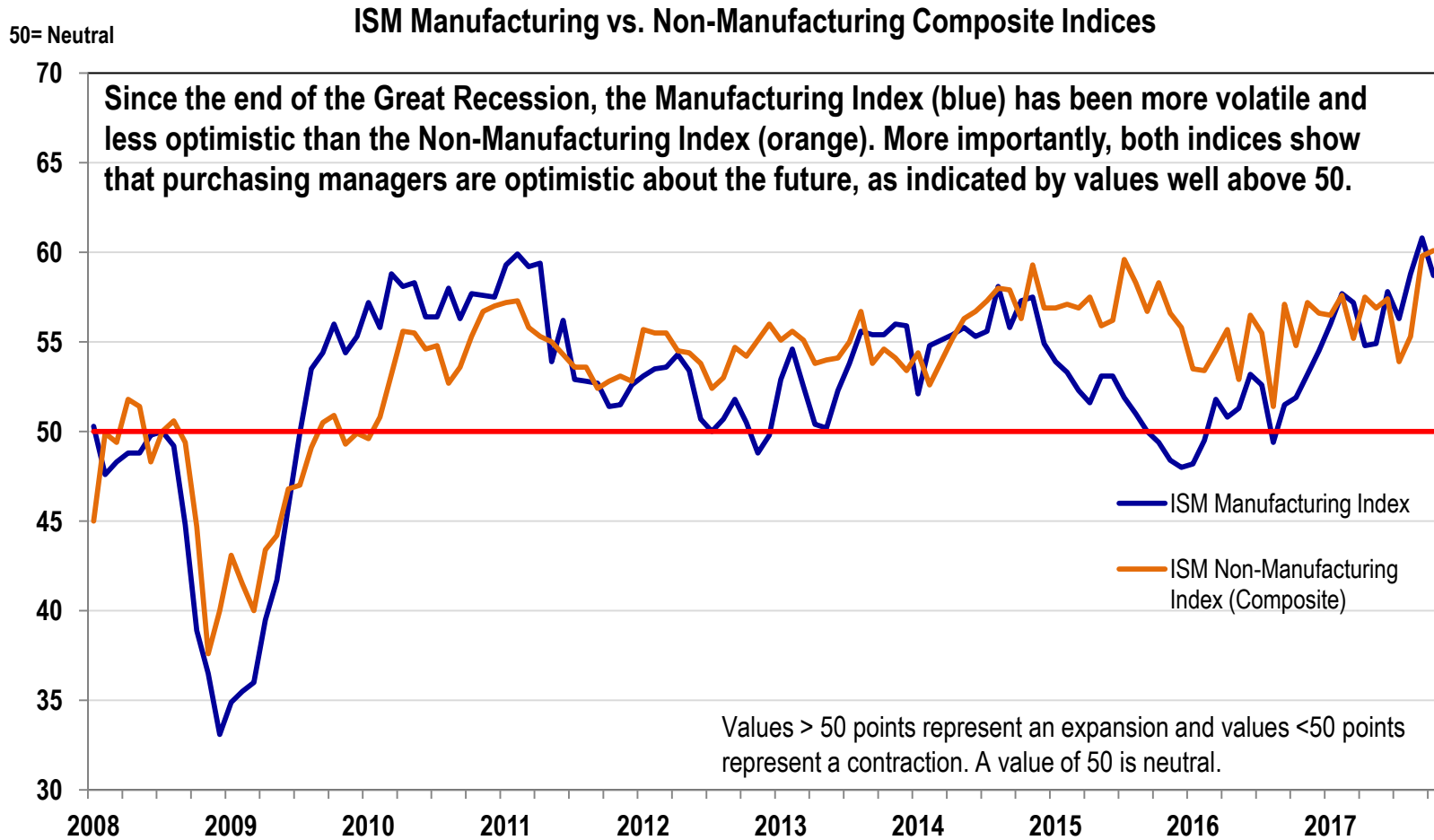


The U.S. Economy

Manufacturing, Non-Manufacturing, Retail Trade Sales, Holiday Sales, Auto Sales

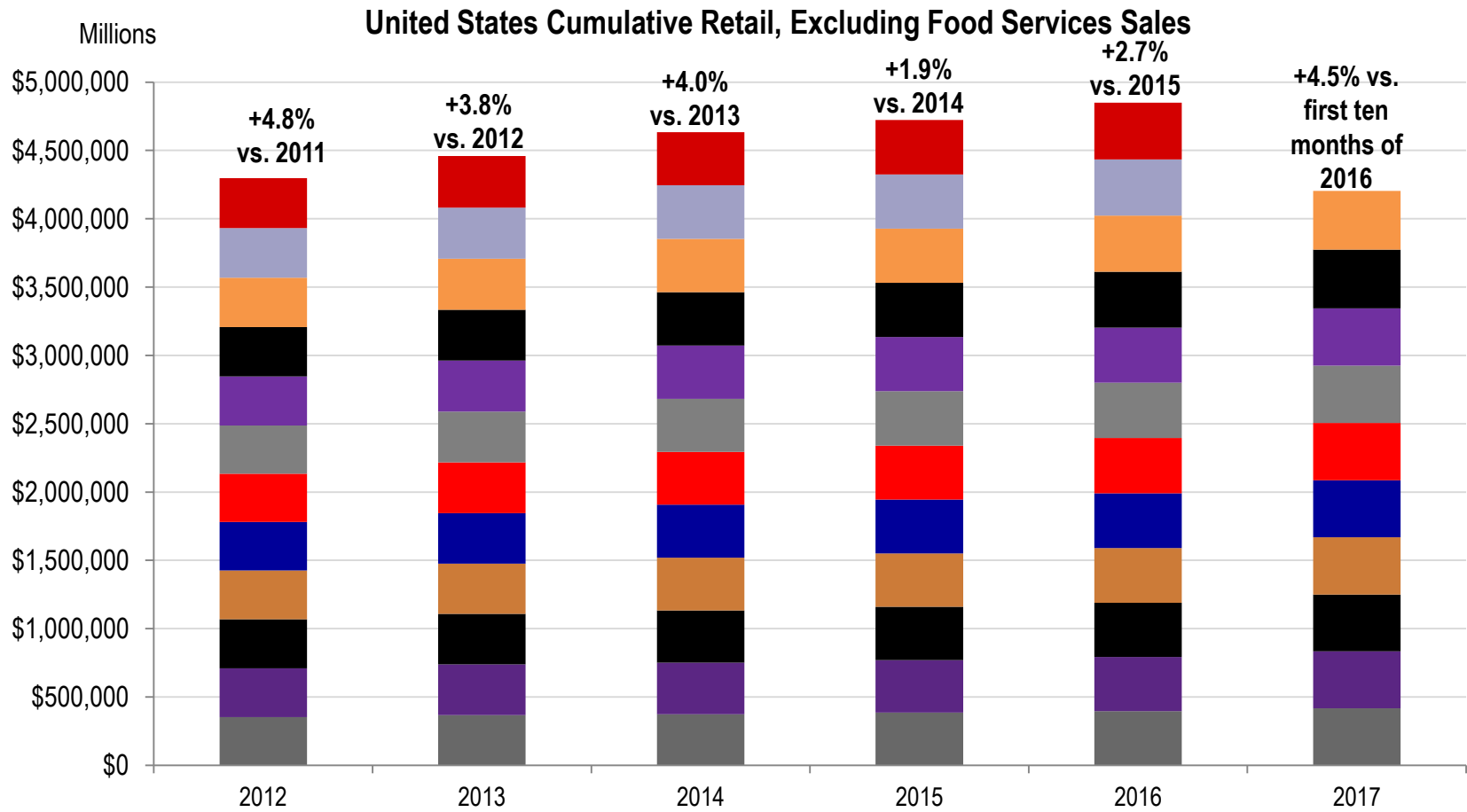
ISM PMI Composite Indices

Manufacturing vs. Non-manufacturing



Sources: Institute for Supply Management (ISM), FRED, ISM, cber.co.

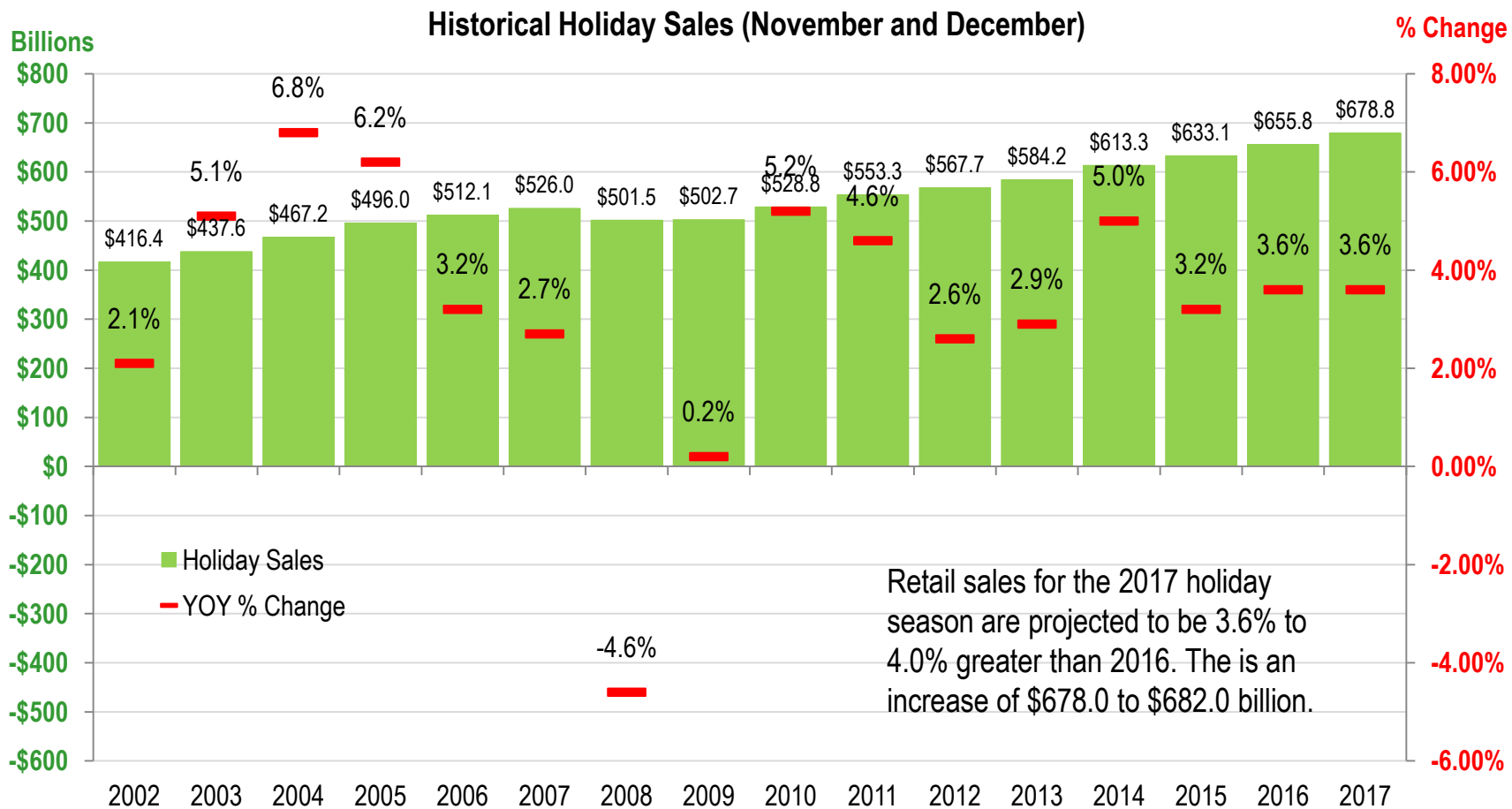
Cumulative Retail, Excluding Food Services Sales



Source: U.S. Census Bureau, FRED, cber.co.

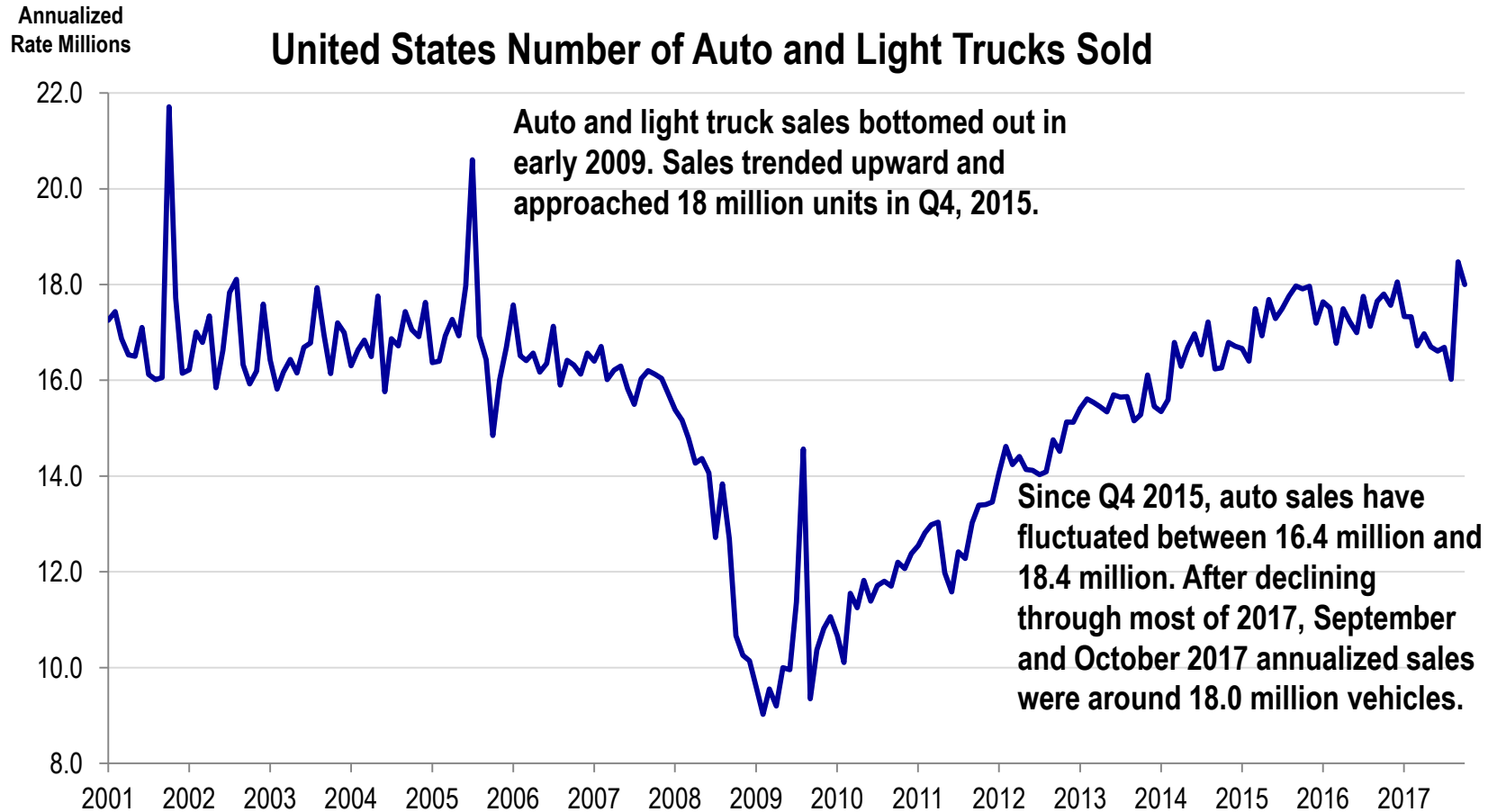
Note: Data is in descending order with December at the top and January at the bottom, not adjusted for inflation.

Historical Holiday Sales and Forecast



Source: National Retail Federation, U.S. Census Bureau, cber.co.

U.S. Weekly Auto and Light Truck Sales



Source: FRED, BEA, cber.co.

Note: Seasonally Adjusted Annualized Rate.

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The Colorado Economy

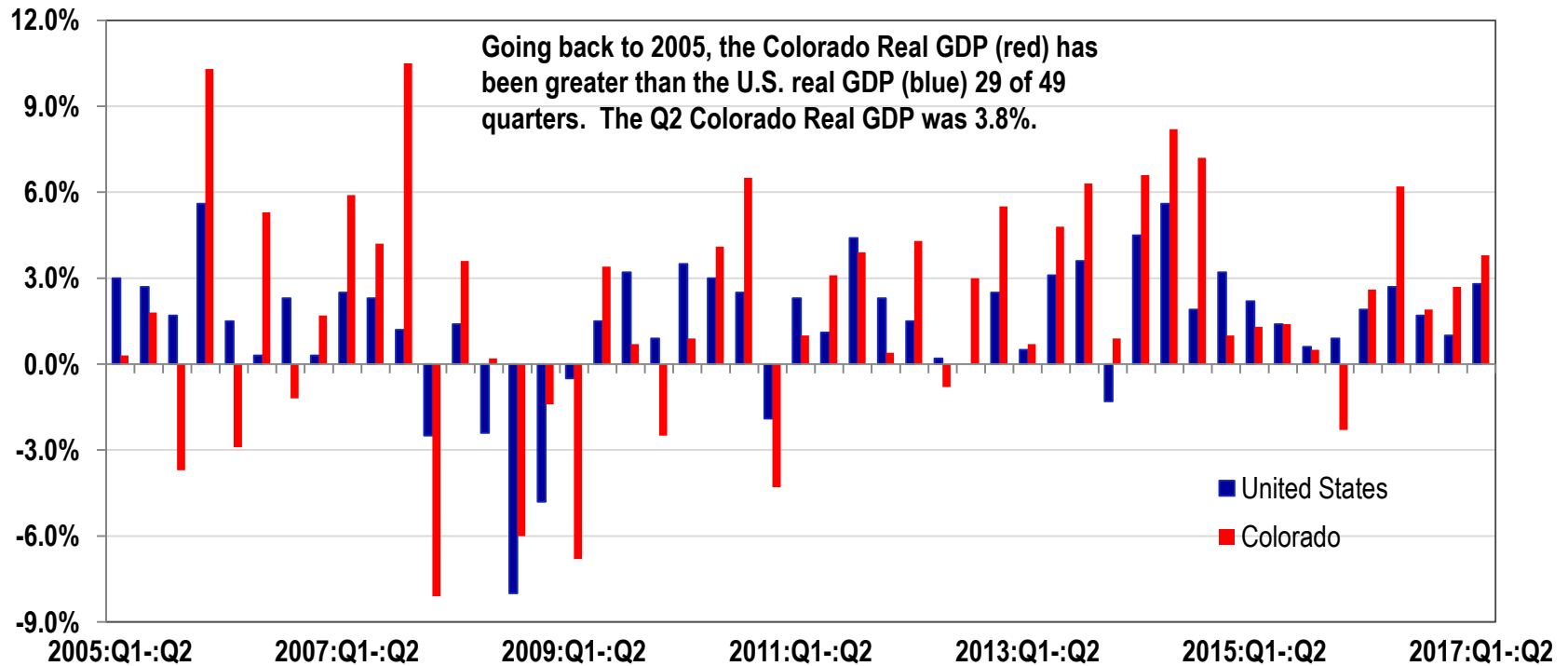
Real GDP, Employment, Colorado Unemployment, Unemployment
by MSA

● Real Gross Domestic Product

● Colorado vs. U.S.



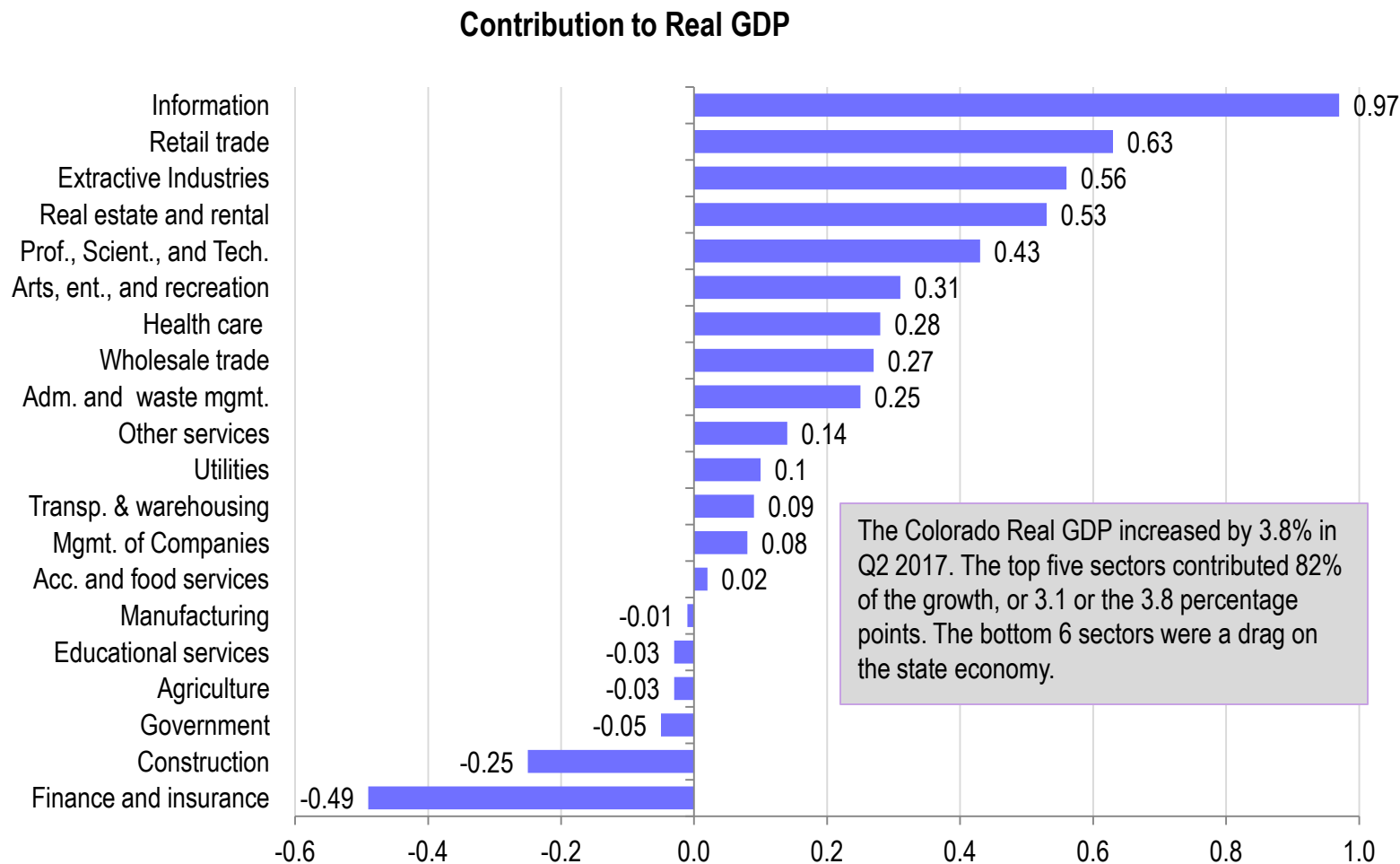
Real Gross Domestic Product



Source: Bureau of Economic Analysis. Note: U.S. real GDP is summary of states GDP.

Q2 2017 Contribution to Real GDP by Sector

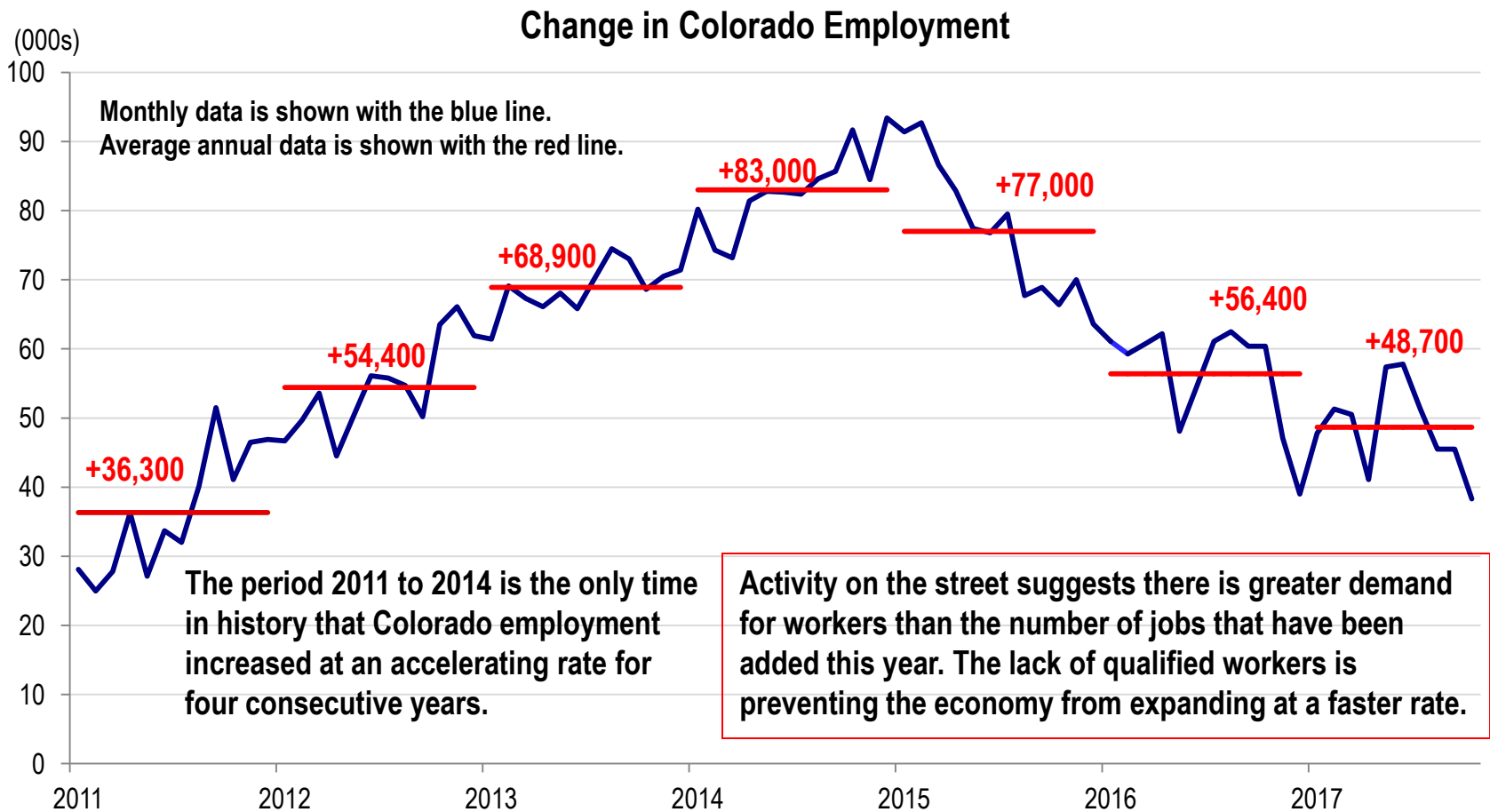
Colorado



Source: Bureau of Economic Analysis. Note: This reflects change from the prior period.

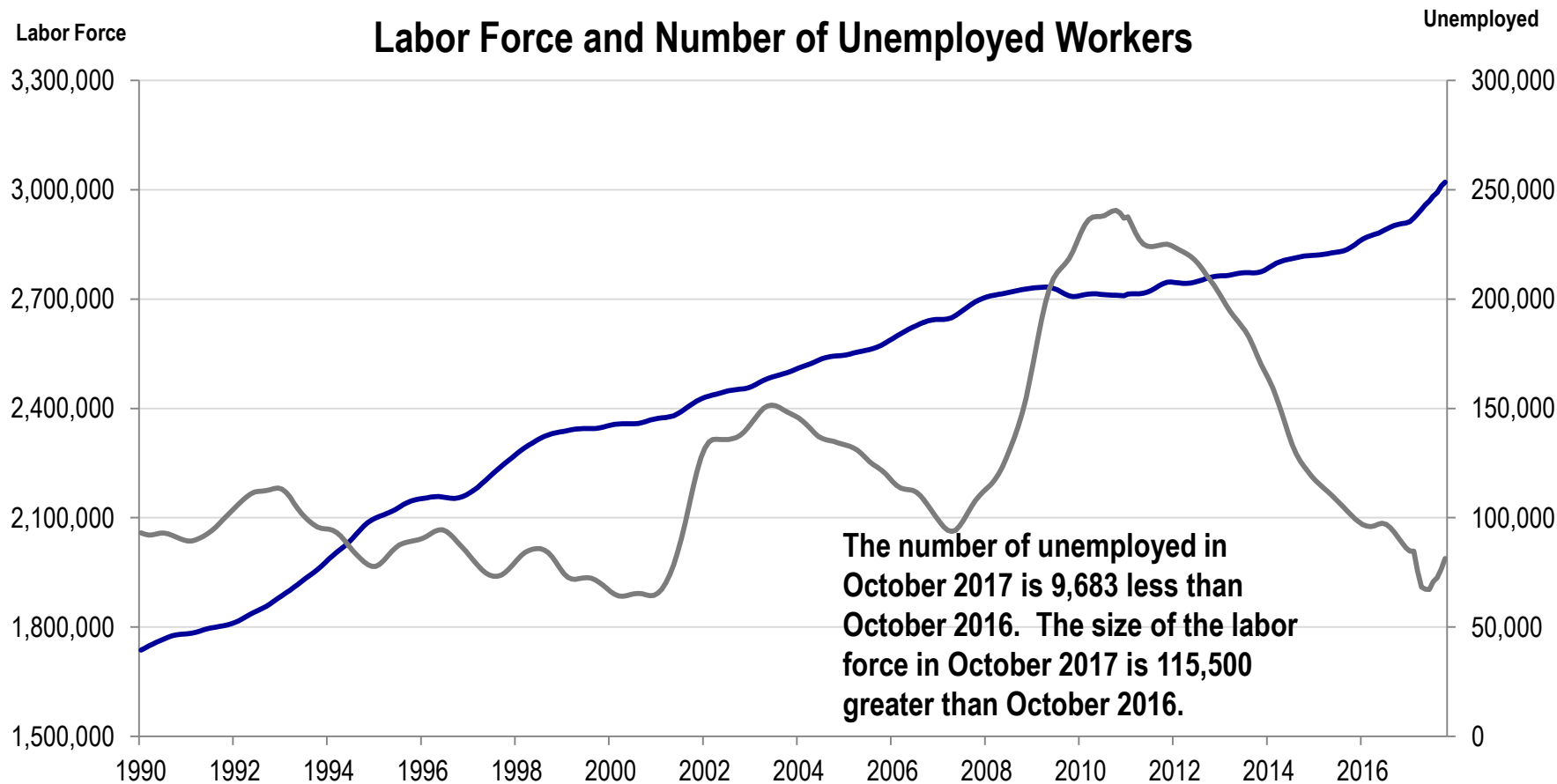
Change in Colorado Employment

Year-Over-Year



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

Colorado Labor Force and Number of Unemployed Workers



Source: BLS, cber.co.

Note: Seasonally Adjusted .

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Unemployment Rate

Colorado

Colorado's unemployment rate remains near record lows. From 2015 to the present, there have been 23 consecutive months when the unemployment rate was below 3.5%. The rate has been below 3.0% for all of 2017 and was at or below 2.5% for six consecutive months during that period.

Prior to 2017, there were 31 consecutive months during 1998 to 2001 when the unemployment rate was below 3.5%. Unlike the current situation, the unemployment rate did not drop below 2.5% during that period.

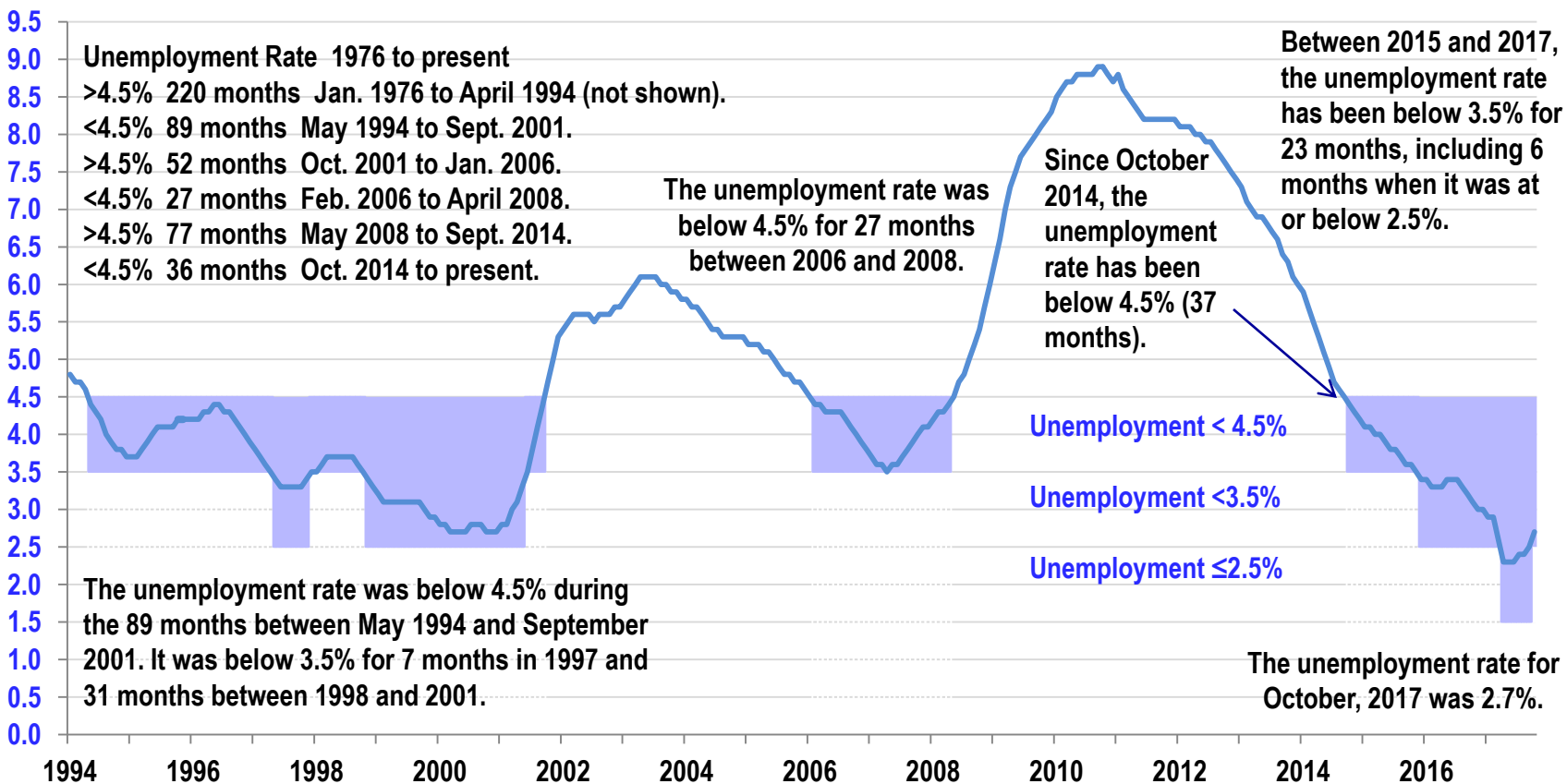
Over the past year, developers and business leaders have announced aggressive development plans for the Front Range. Currently, the supply of qualified workers does not meet the labor needs of employers. This mismatch is likely to get worse in the months ahead, particularly with the need for construction workers as a result of hurricanes in Texas, Florida, Puerto Rico, and the Virgin Isles and the passage of bond issues to update schools throughout the state.

Unemployment Rate

Colorado

Percent

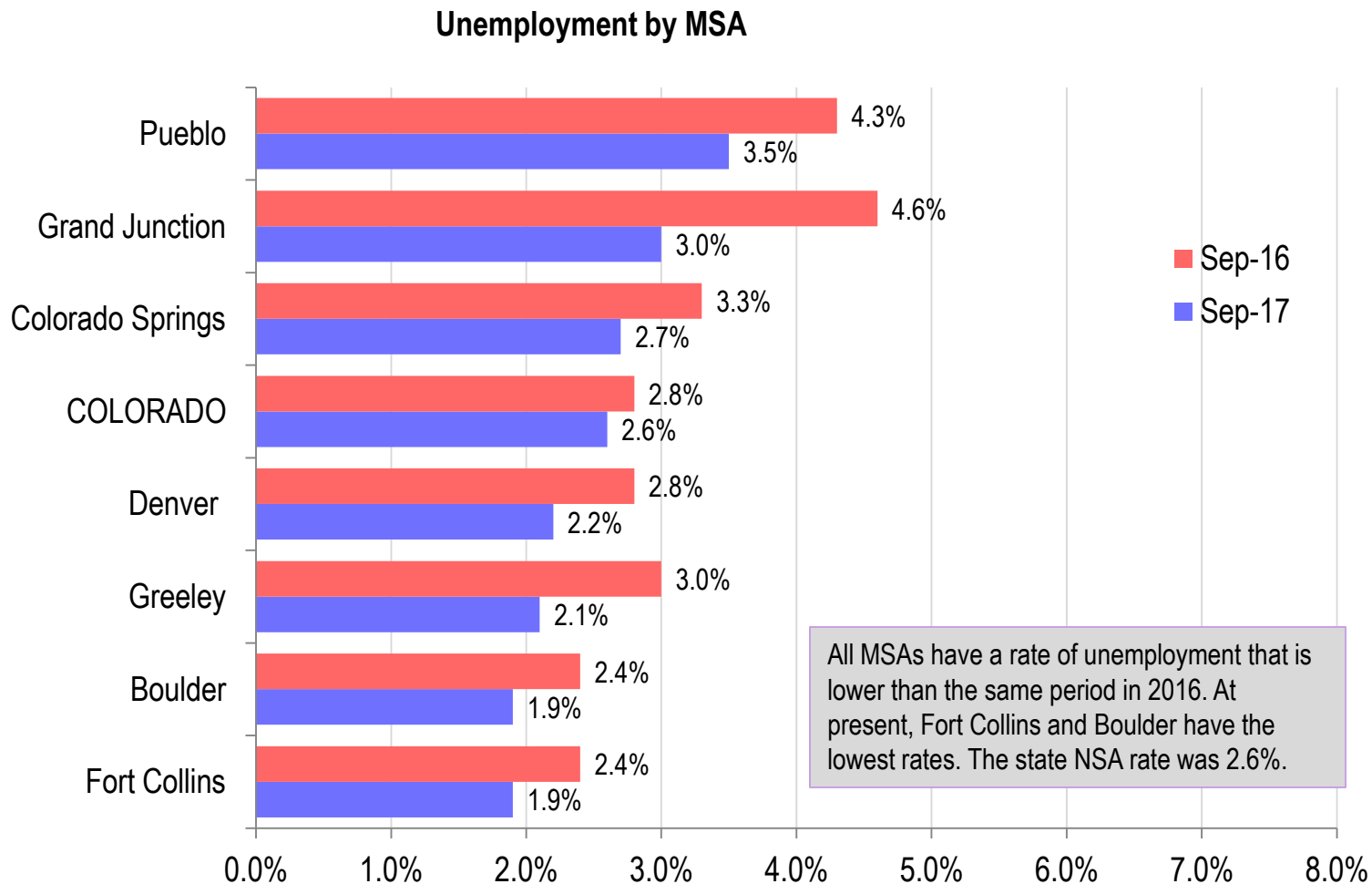
Colorado Unemployment Rate



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

Unemployment by MSA

2016 vs. 2017



Source: Bureau of Labor Statistics, NSA, cber.co. Note: MSA unemployment lags by two months and is reported only on a non-seasonally adjusted basis.



Colorado Economy

Employment in Strong Growth, Solid Growth, Volatile Categories

Change in Employment Summary of Strong, Solid, and Volatile Growth Categories

Strong Growth Category – 22,300 jobs added, 2.6% growth rate.

Health care and professional, business, and personal (other) services are the major sectors.

Solid Growth Category – 18,100 jobs added, 1.8% growth rate.

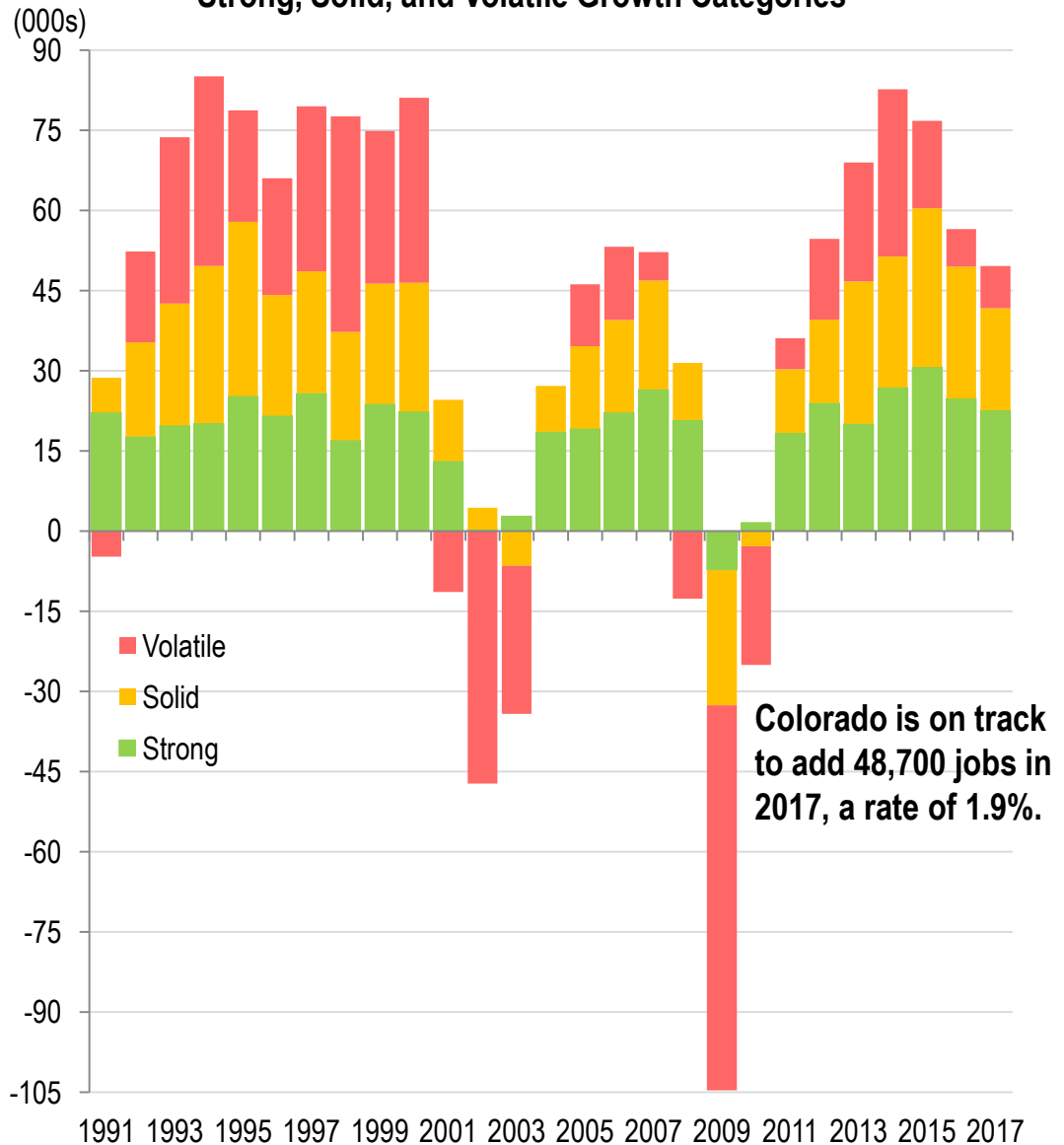
Accommodations and food services, trade, and state and local government are the major sectors.

Volatile Category – 8,300 jobs added 1.1% growth rate.

Boom or bust industries – such as the extractive industries, manufacturing, information.

Colorado is on track to add **48,700 jobs** in 2017, a rate of **1.9%**, based on employment data through October.

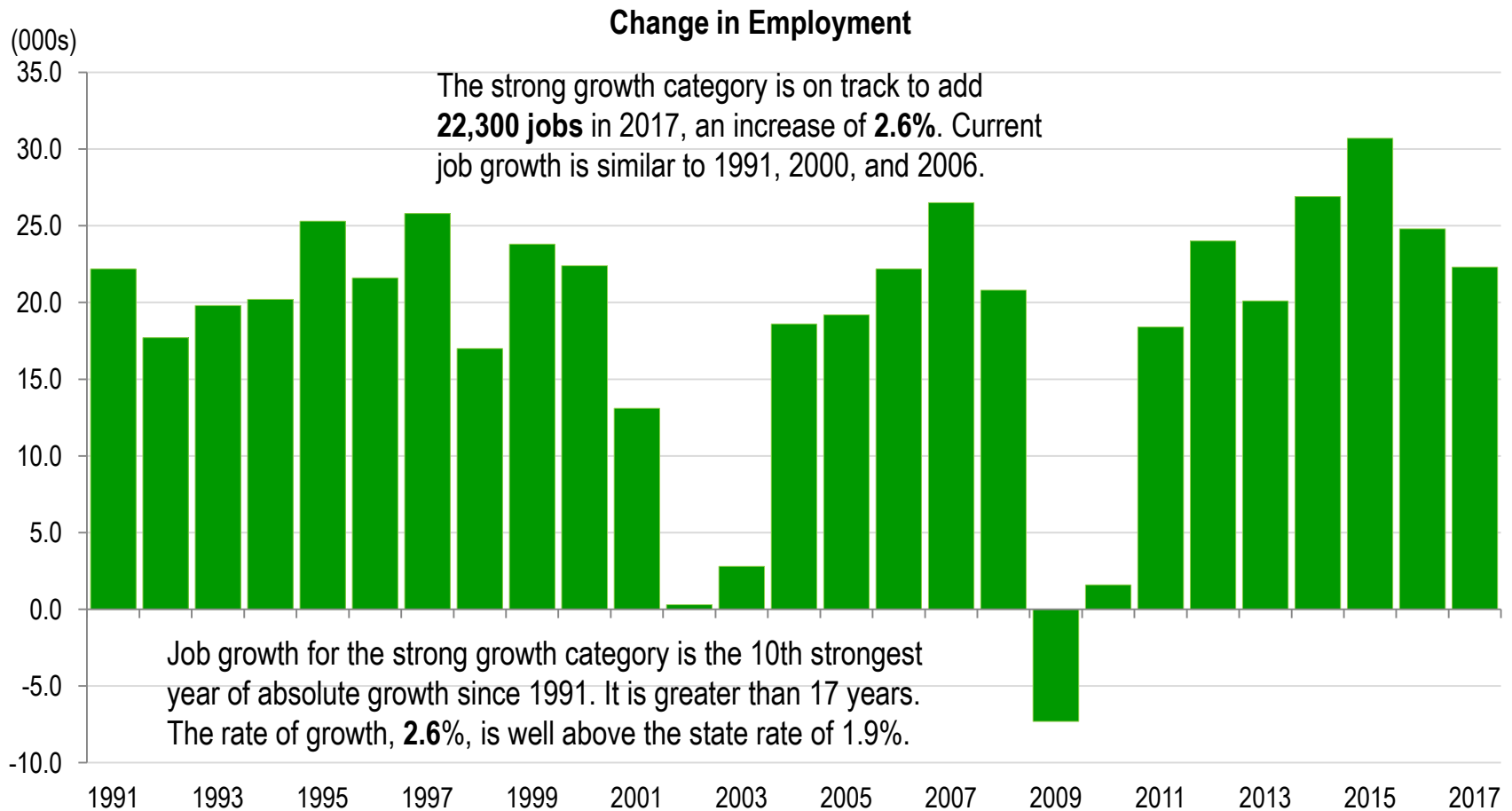
Strong, Solid, and Volatile Growth Categories



Source: Bureau of Labor Statistics, cber.co.

Change in Employment

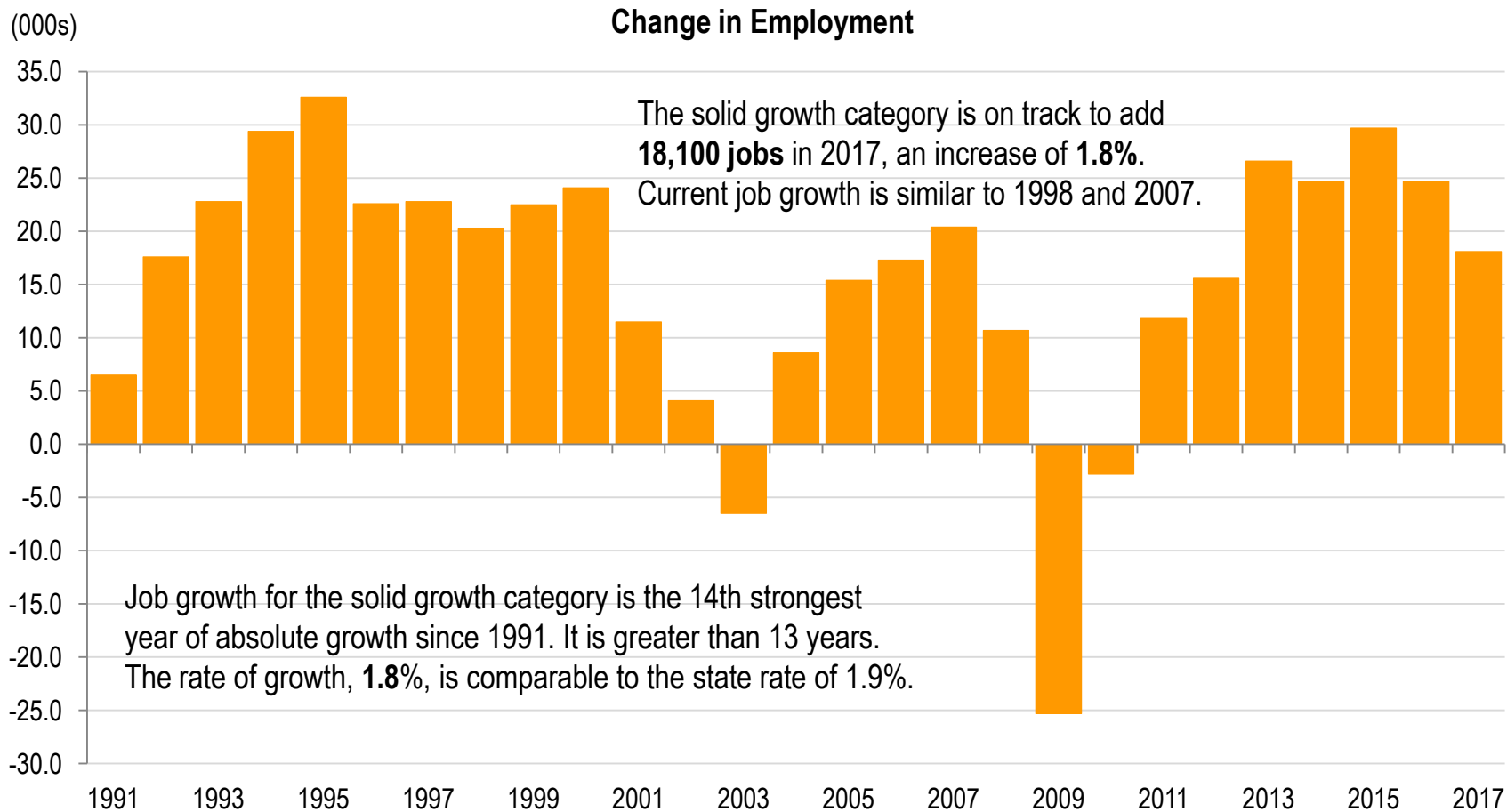
Strong Growth Category



Source: Bureau of Labor Statistics, cber.co.

Change in Employment

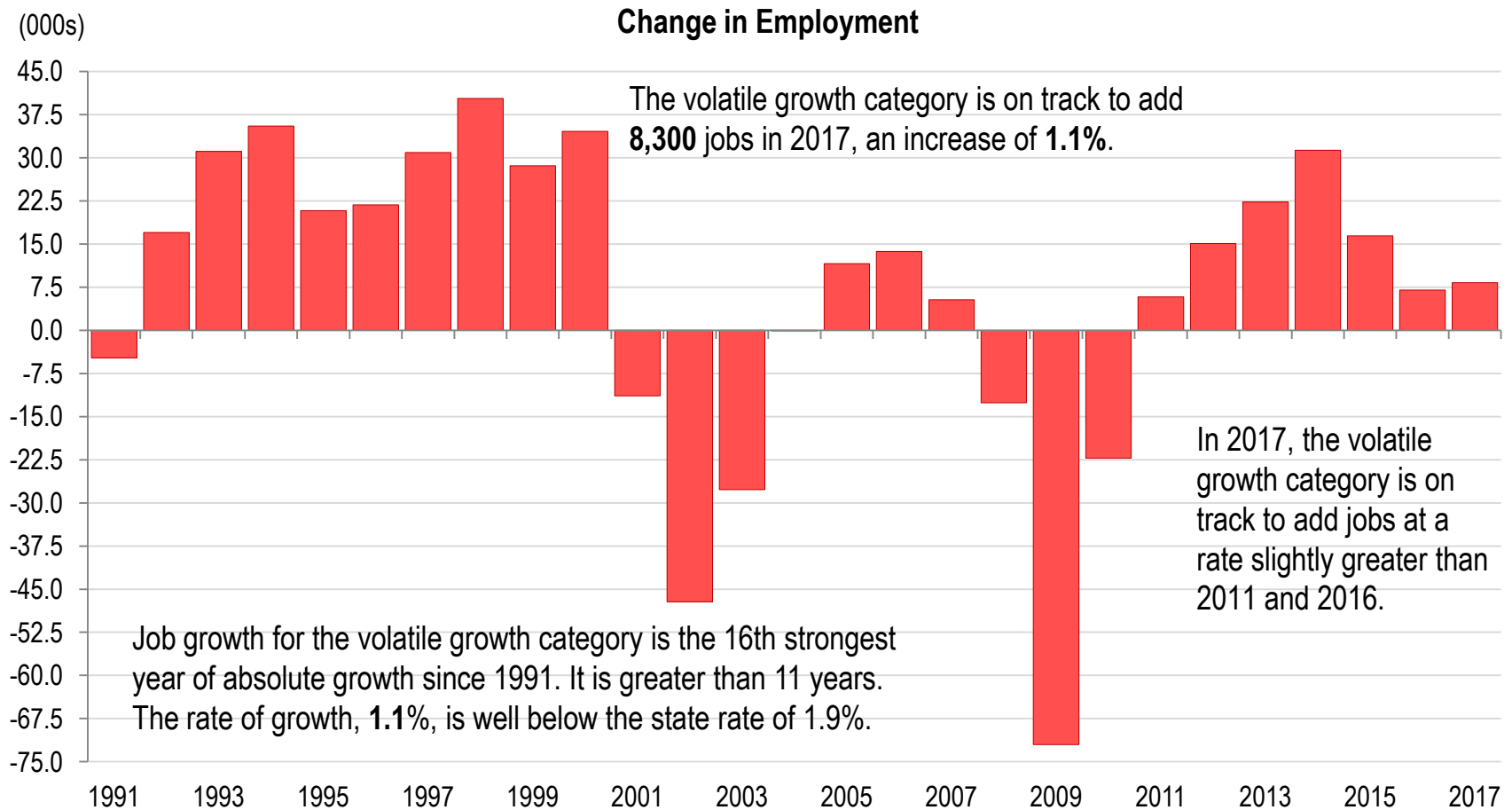
Solid Growth Category



Source: Bureau of Labor Statistics, cber.co.

Change in Employment

Volatile Growth Category



Source: Bureau of Labor Statistics, cber.co.

Six Industries That Are Important to Employment Growth for Different Reasons

The following six charts look at two sectors from each of the strong growth, solid growth, and volatile job categories that are contributing significant job growth. Combined, these sectors are responsible for 67% of the jobs added in 2017.

Strong Growth Category

- Healthcare
- Professional, Scientific, and Technical Services

Total 30% of jobs added, or 14,600 jobs.

Solid Growth Category

- Accommodations and Food Services
- Retail

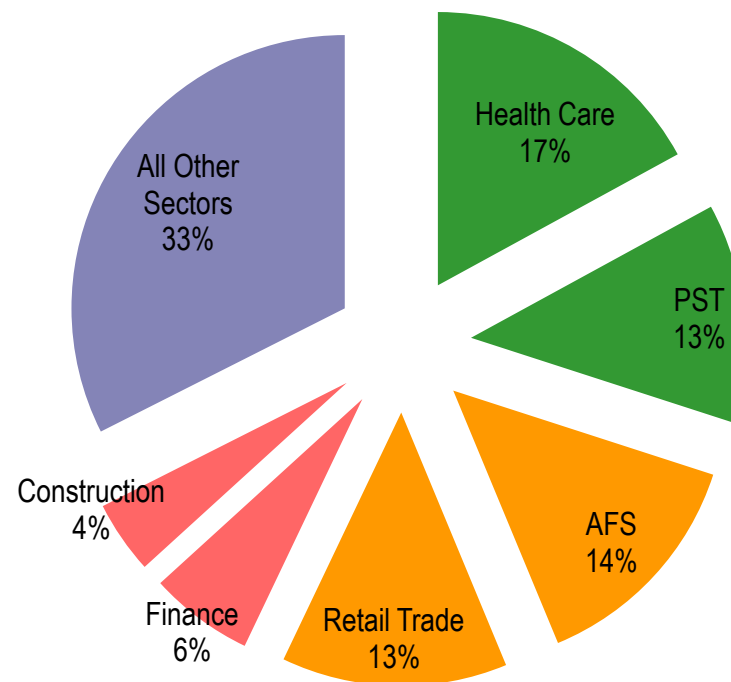
Total 27% of jobs added, or 13,200 jobs.

Volatile Category

- Financial Activities
- Construction

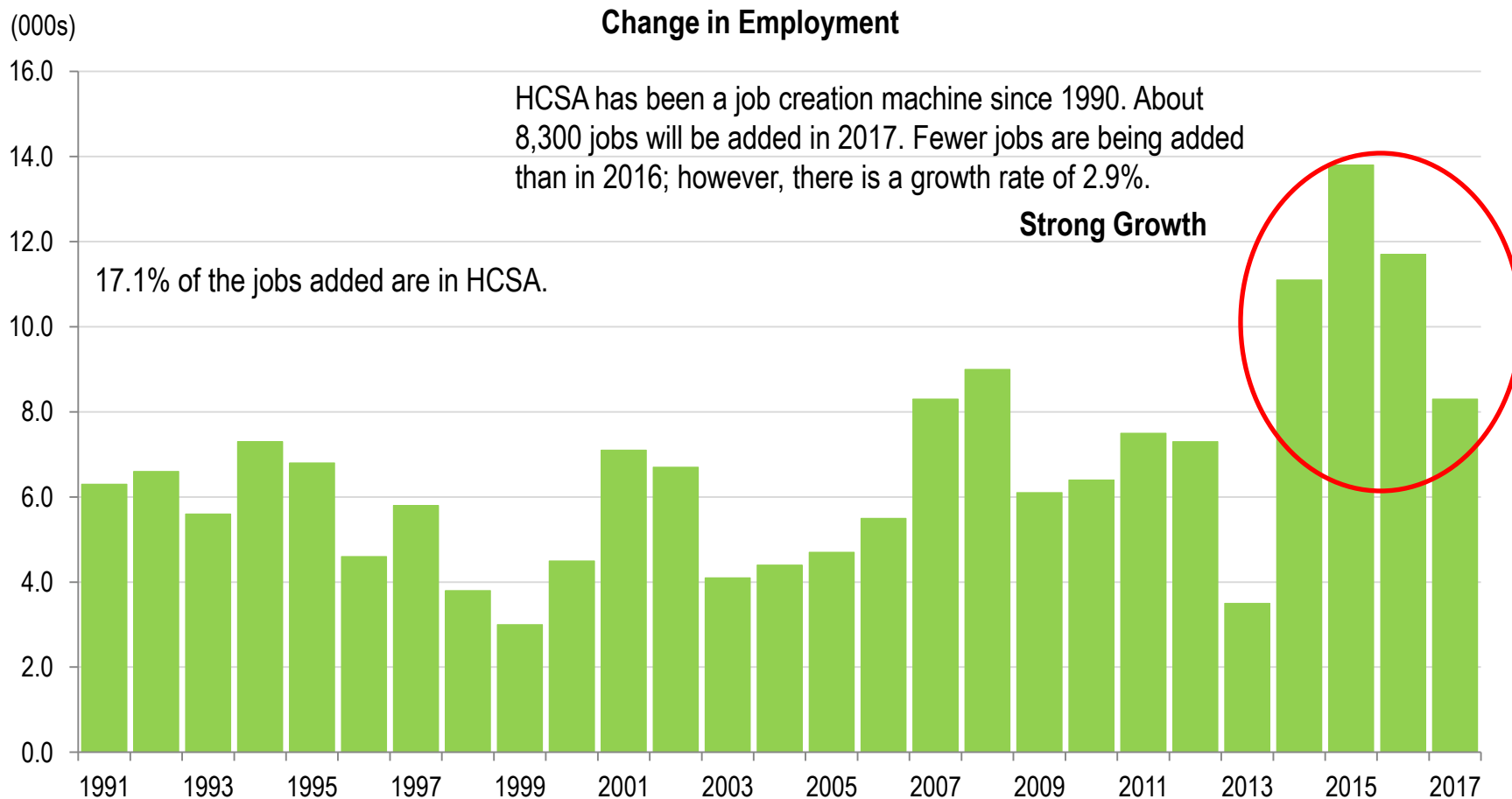
Total 10% of jobs added, or 5,100 jobs added.

Top Sectors by Category



Change in Employment

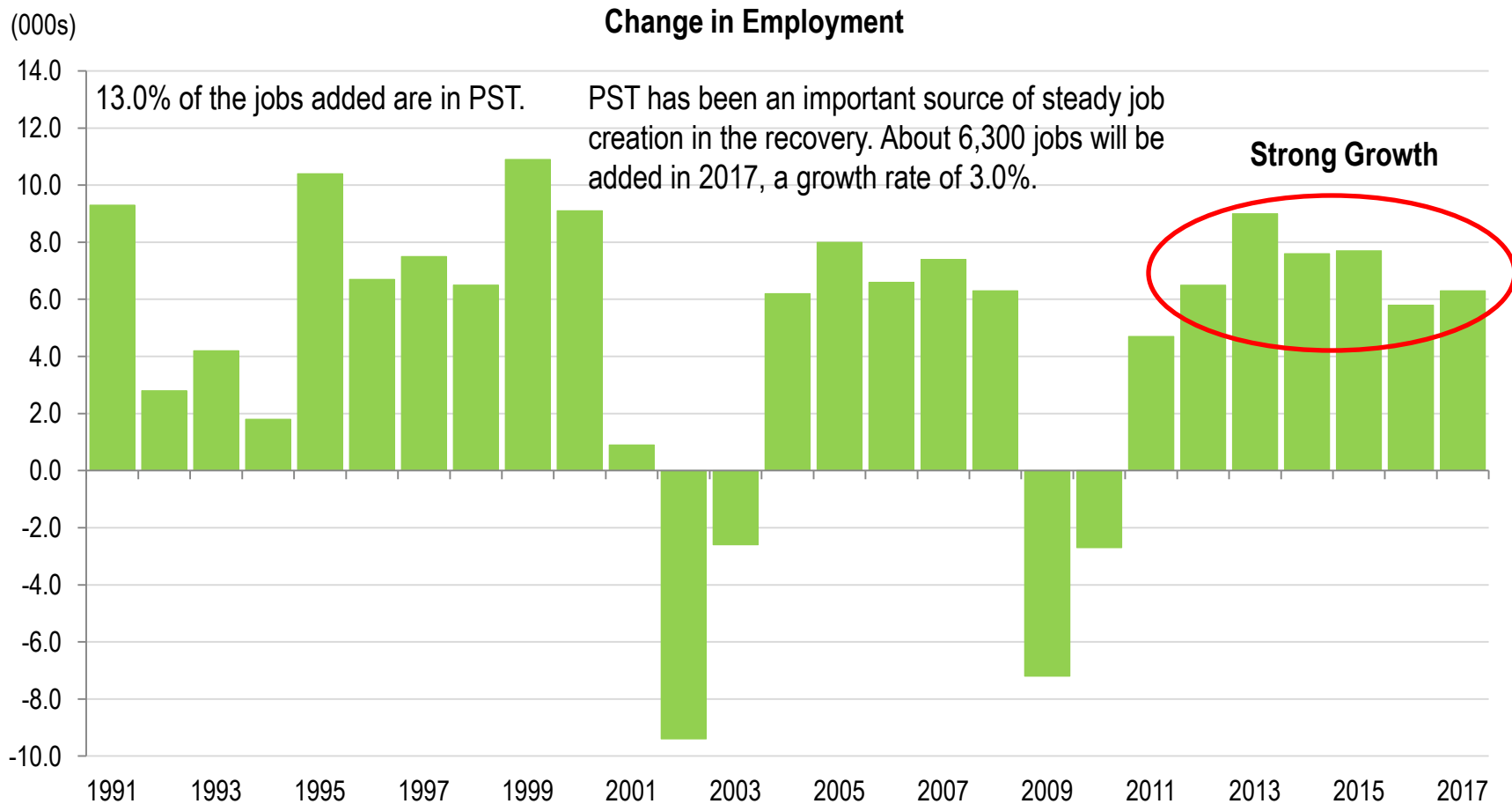
Health Care and Social Assistance



Source: Bureau of Labor Statistics, cber.co.

Change in Employment

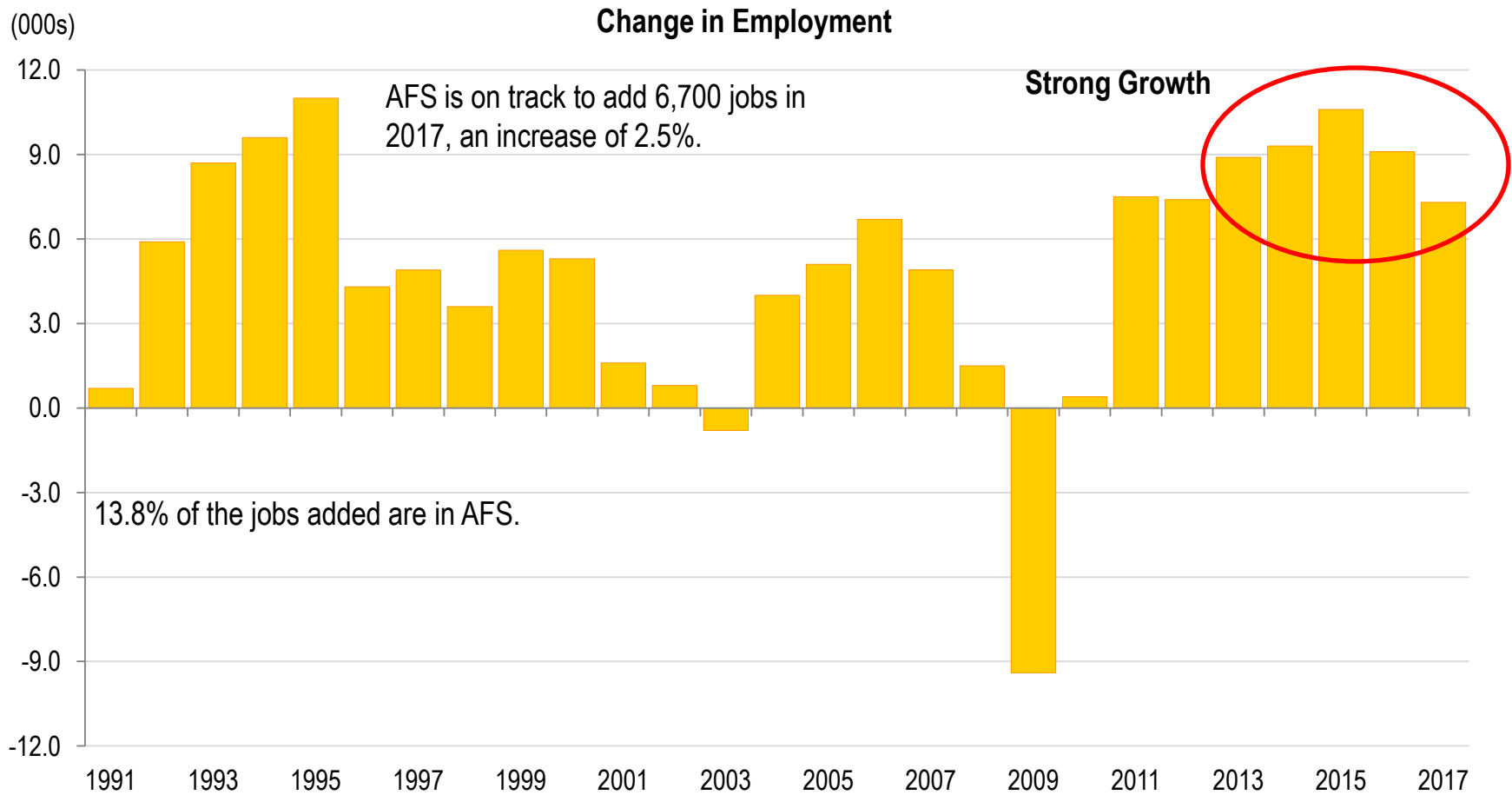
Professional, Scientific, and Technical Services



Source: Bureau of Labor Statistics, cber.co.

Change in Employment

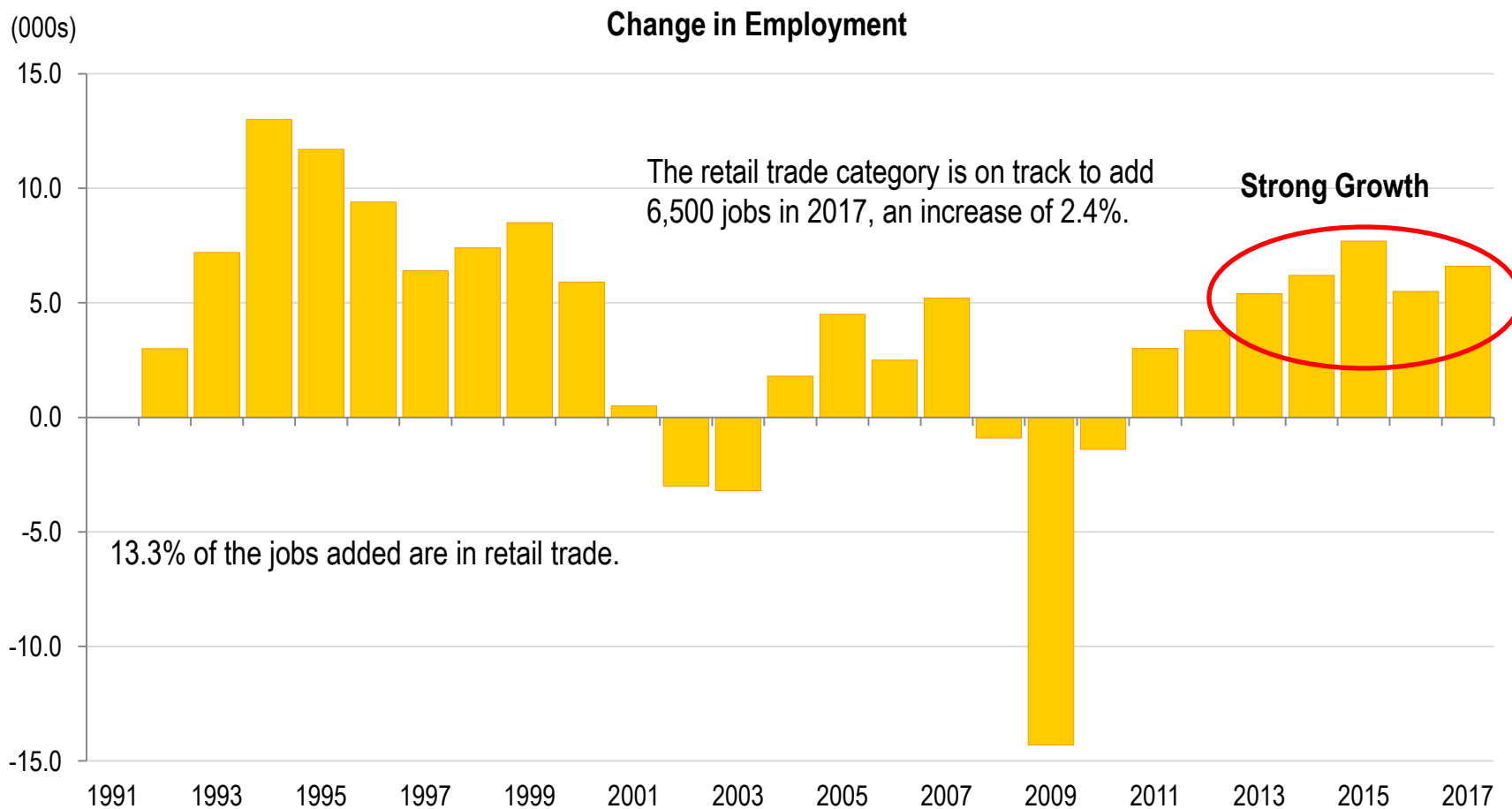
Accommodations and Food Services



Source: Bureau of Labor Statistics, cber.co.

Change in Employment

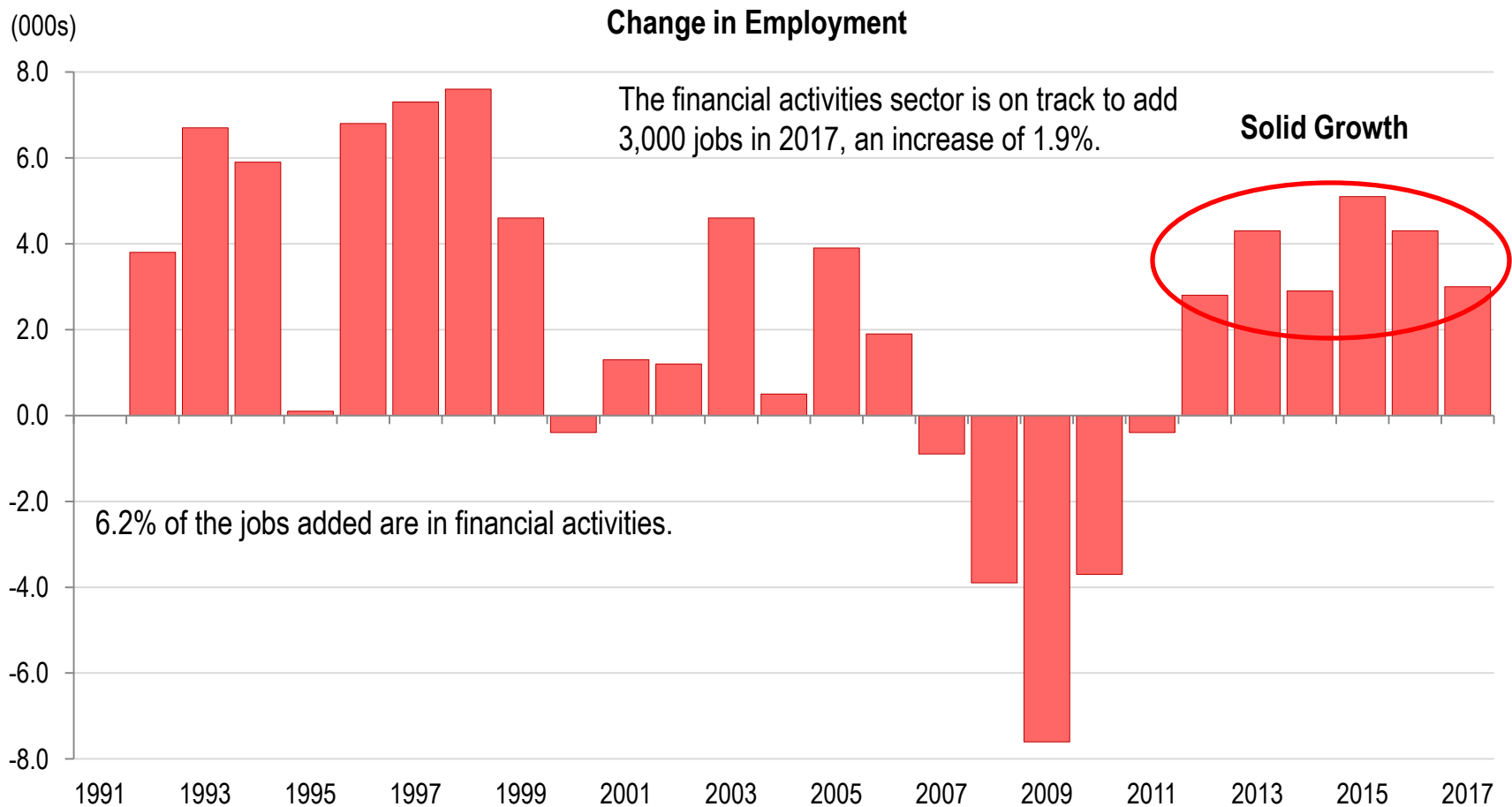
Retail Trade



Source: Bureau of Labor Statistics, cber.co.

Change in Employment

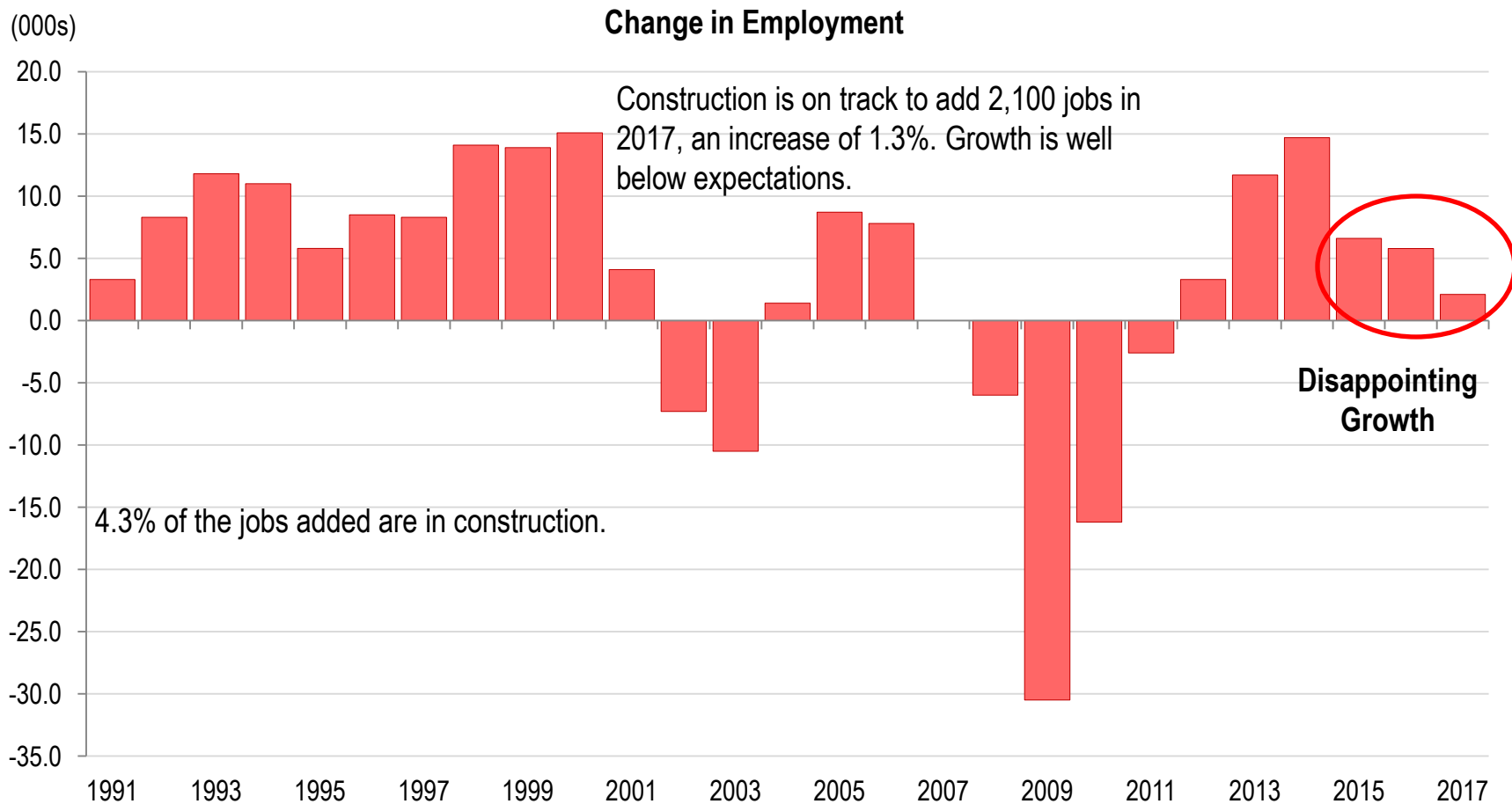
Financial Activities



Source: Bureau of Labor Statistics, cber.co.

Change in Employment

Construction



Source: Bureau of Labor Statistics, cber.co.



Colorado Economy

Key Sectors and Trends to Watch

Key Sectors and Trends to Watch

Within the three categories of employment (strong growth, solid growth, and volatile) there are key sectors and sources of economic activity that drive changes in the state economy. This section looks at “trends to watch” in those categories.

- Extractive industries – prices, rig count, and production.
- Construction – permits and valuation.
- Housing prices – appreciation rates.
- Retail trade – sales.
- Auto sales - new and used car registrations.
- DIA – passenger traffic.

● Key Sectors and Trends to Watch

● Extractive Industries – Prices, Rig Count, Production

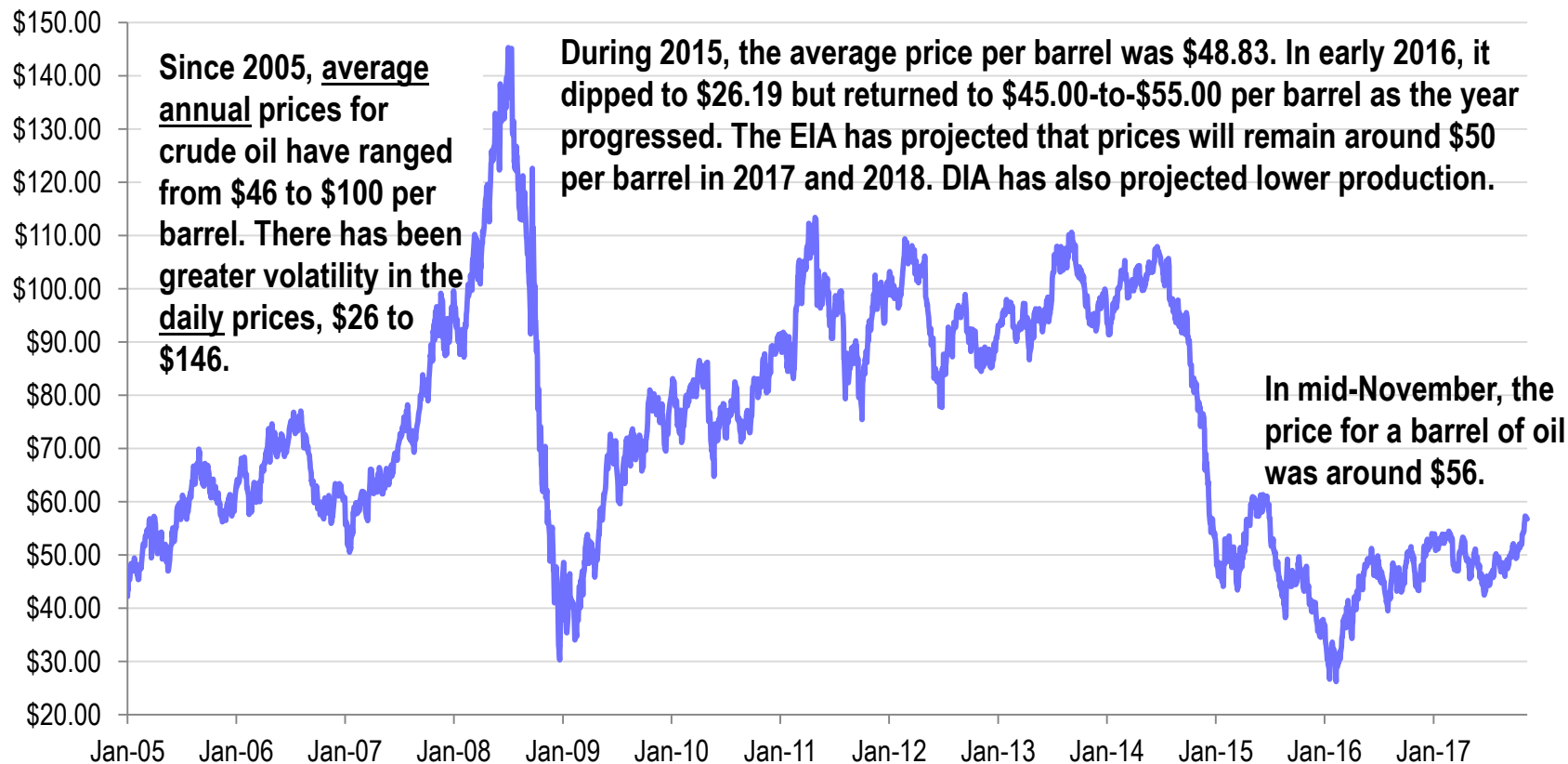
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Crude Oil Prices

West Texas Intermediate

Dollars
per Barrel

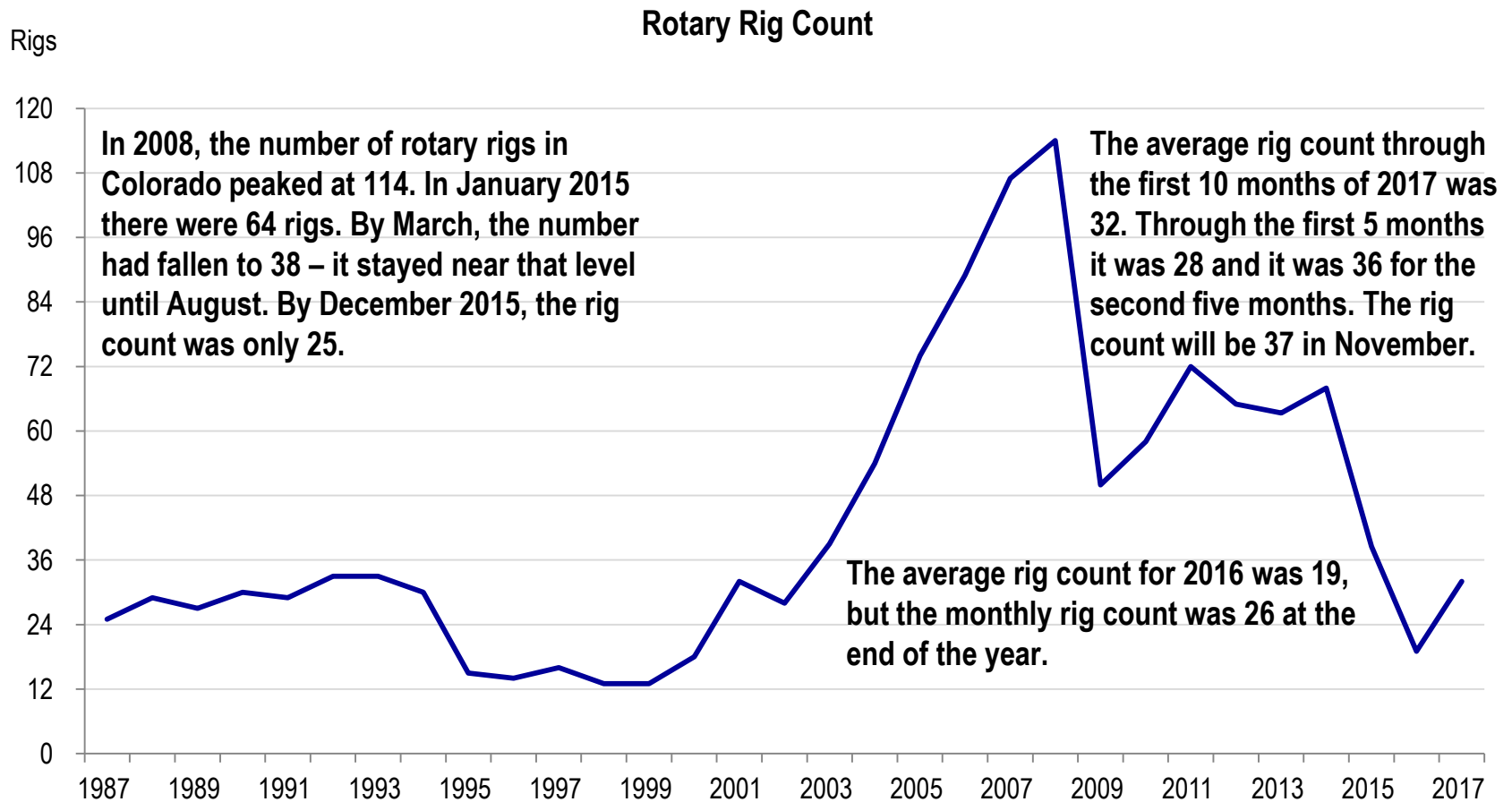
Crude Oil Prices: West Texas Intermediate, Cushing, Oklahoma



Source: FRED, EIA, cber.co.

Colorado Annual Rotary Rig Count

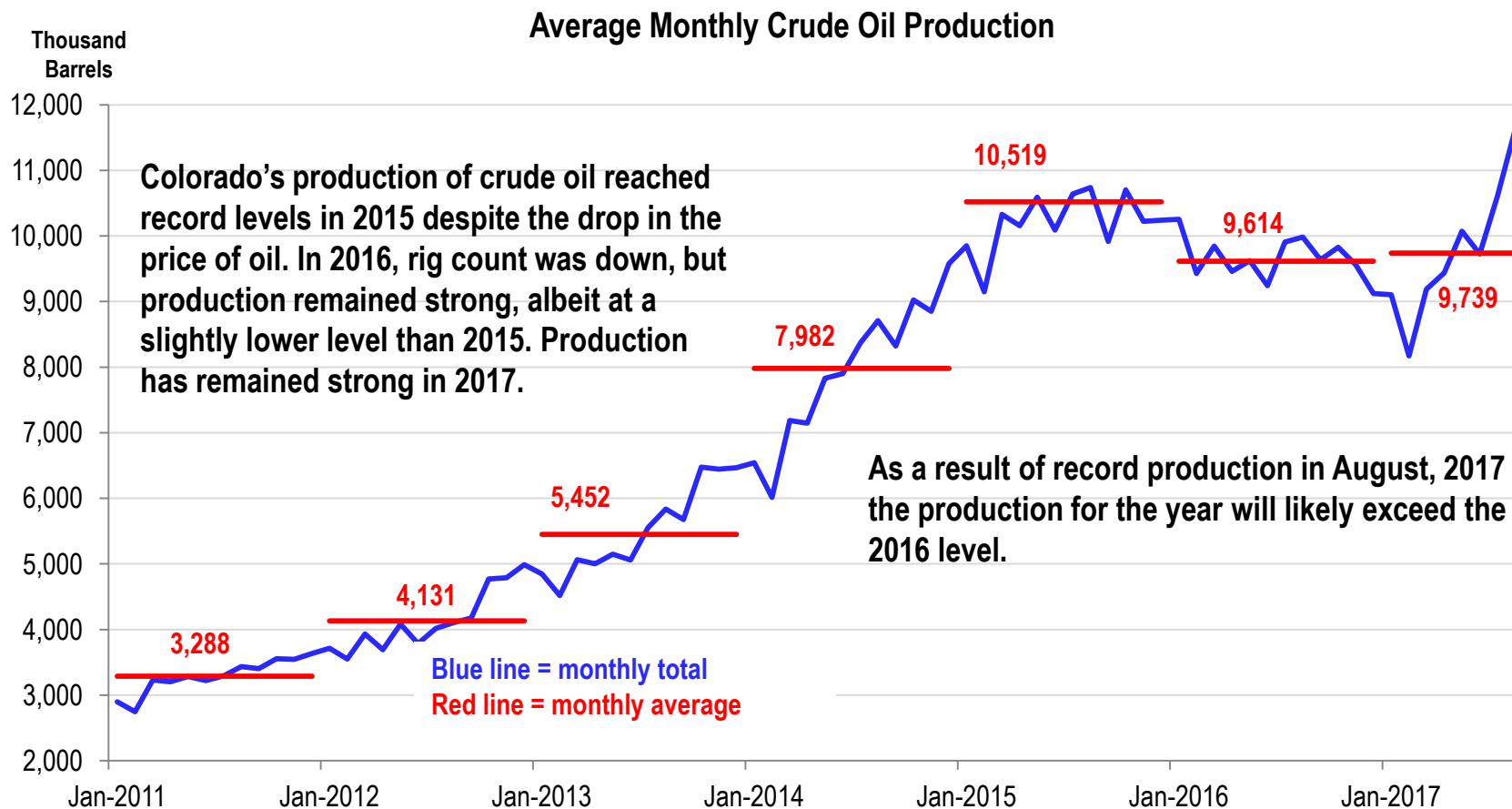
1987 to 2017



Source: Baker-Hughes, cber.co.

Average Monthly Colorado Crude Oil Production

2011 to 2017 (Thousand Barrels)



Source: EIA, cber.co.

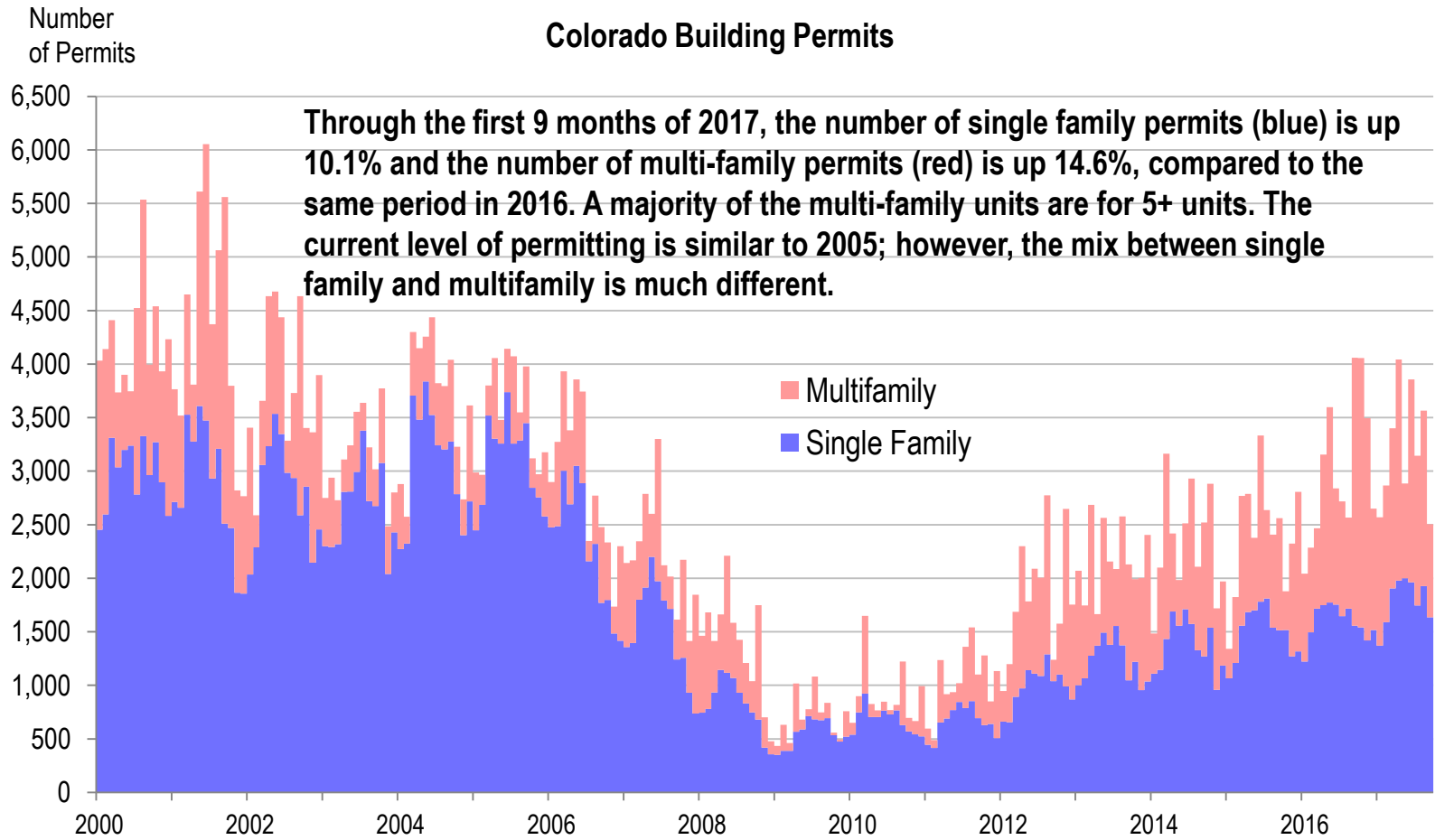
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Key Sectors and Trends to Watch

Construction and Housing Prices

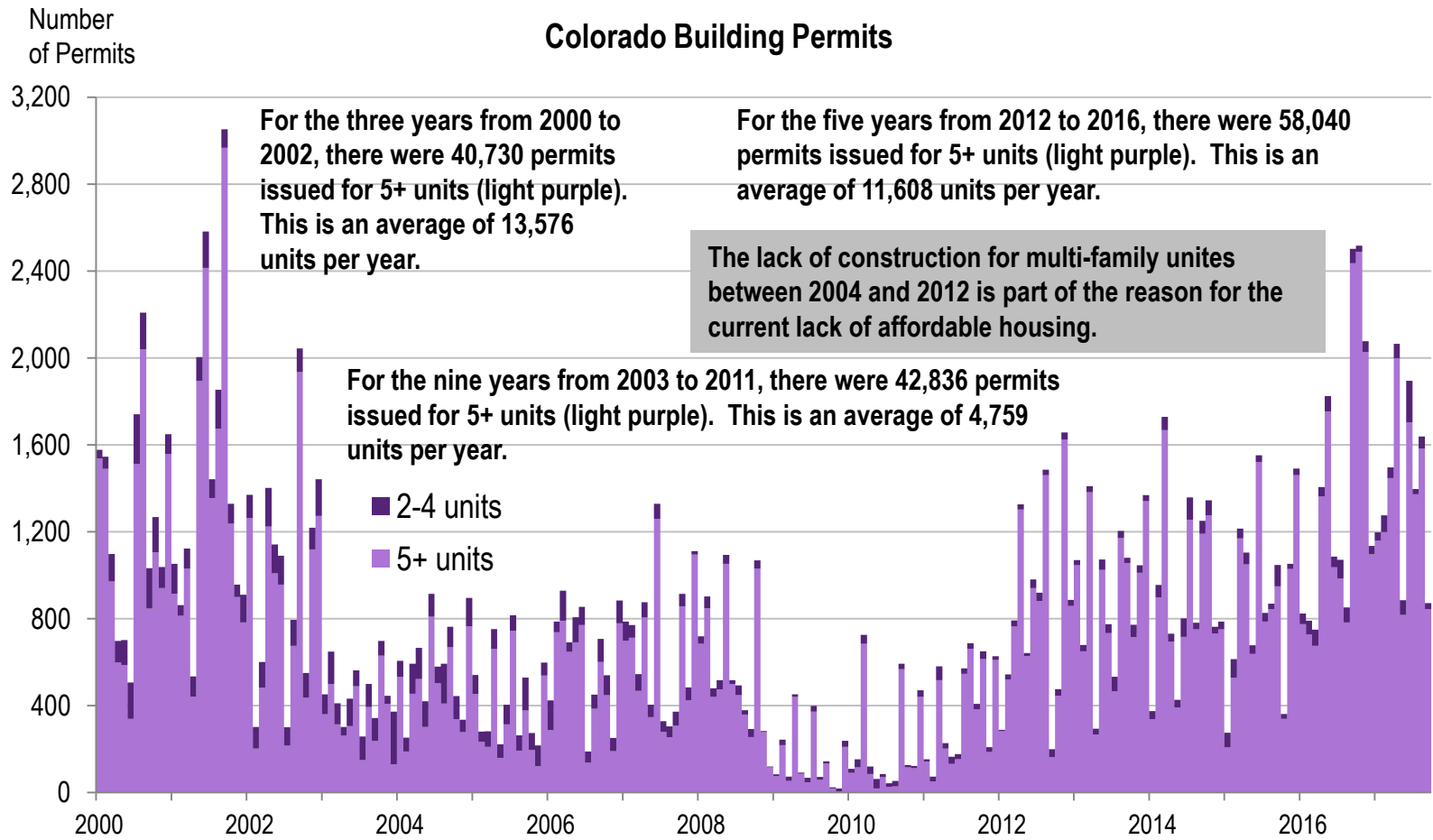
Colorado Residential Building Permits - Units



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

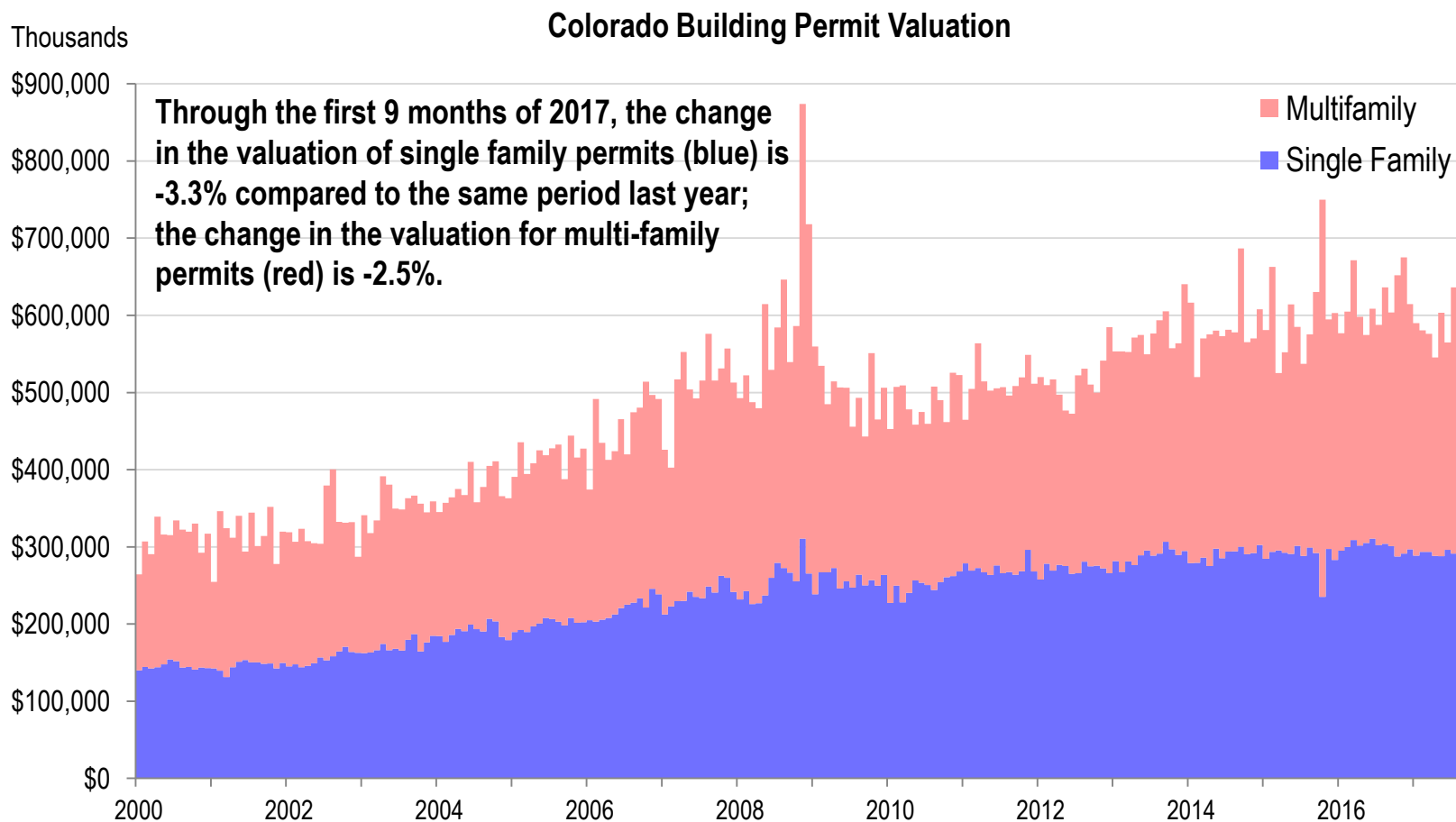
Colorado Residential Building Permits – Units

Lack of Construction Contributes to Lack of Supply



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

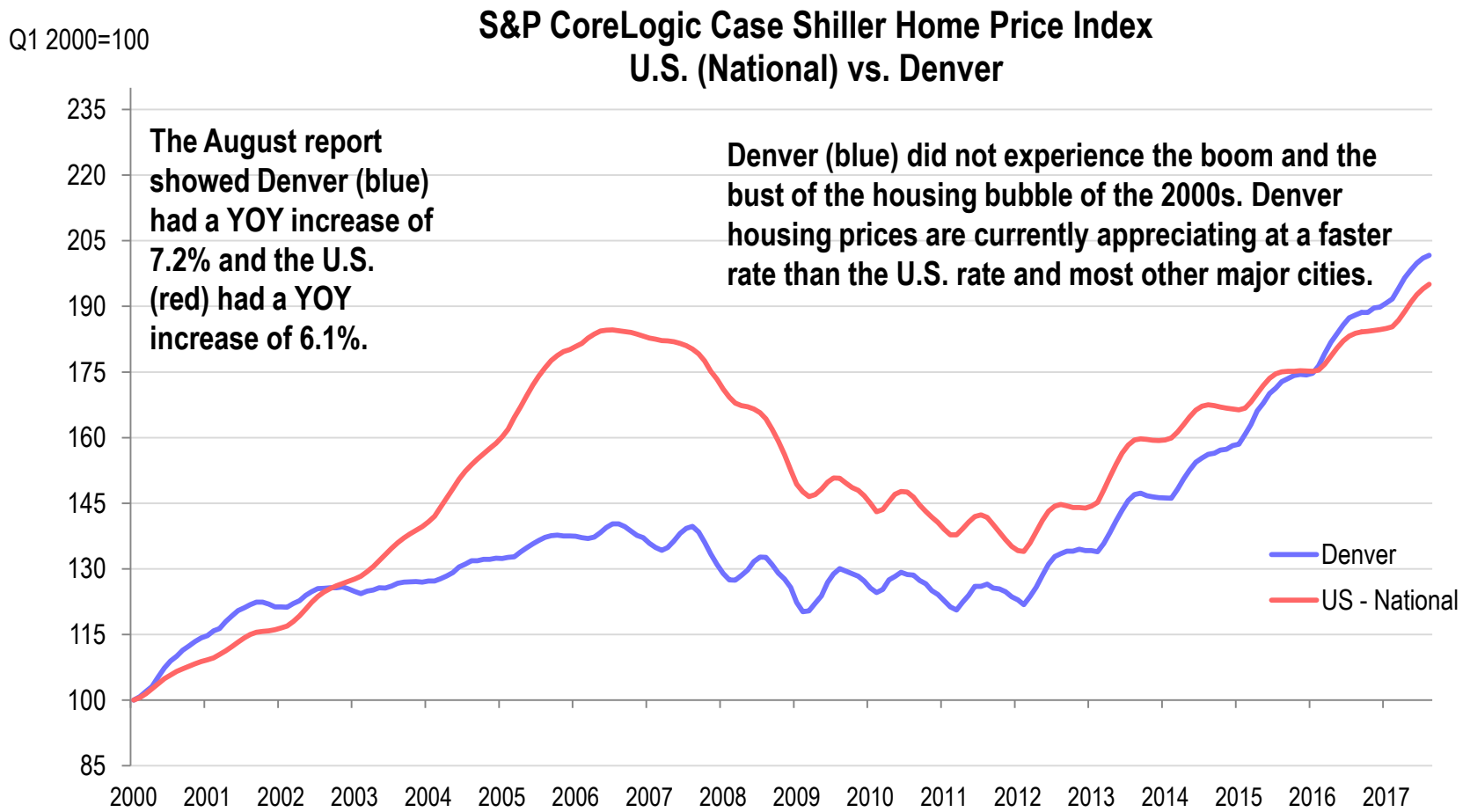
Colorado Residential Building Permits - Valuation



Source: TAMU Real Estate Center, U.S. Census Bureau, cber.co. Note: Not adjusted for inflation.

Case Shiller Home Price Index

National vs. Denver Index Value



Source: S&P Core-Logic Case-Shiller, cber.co.

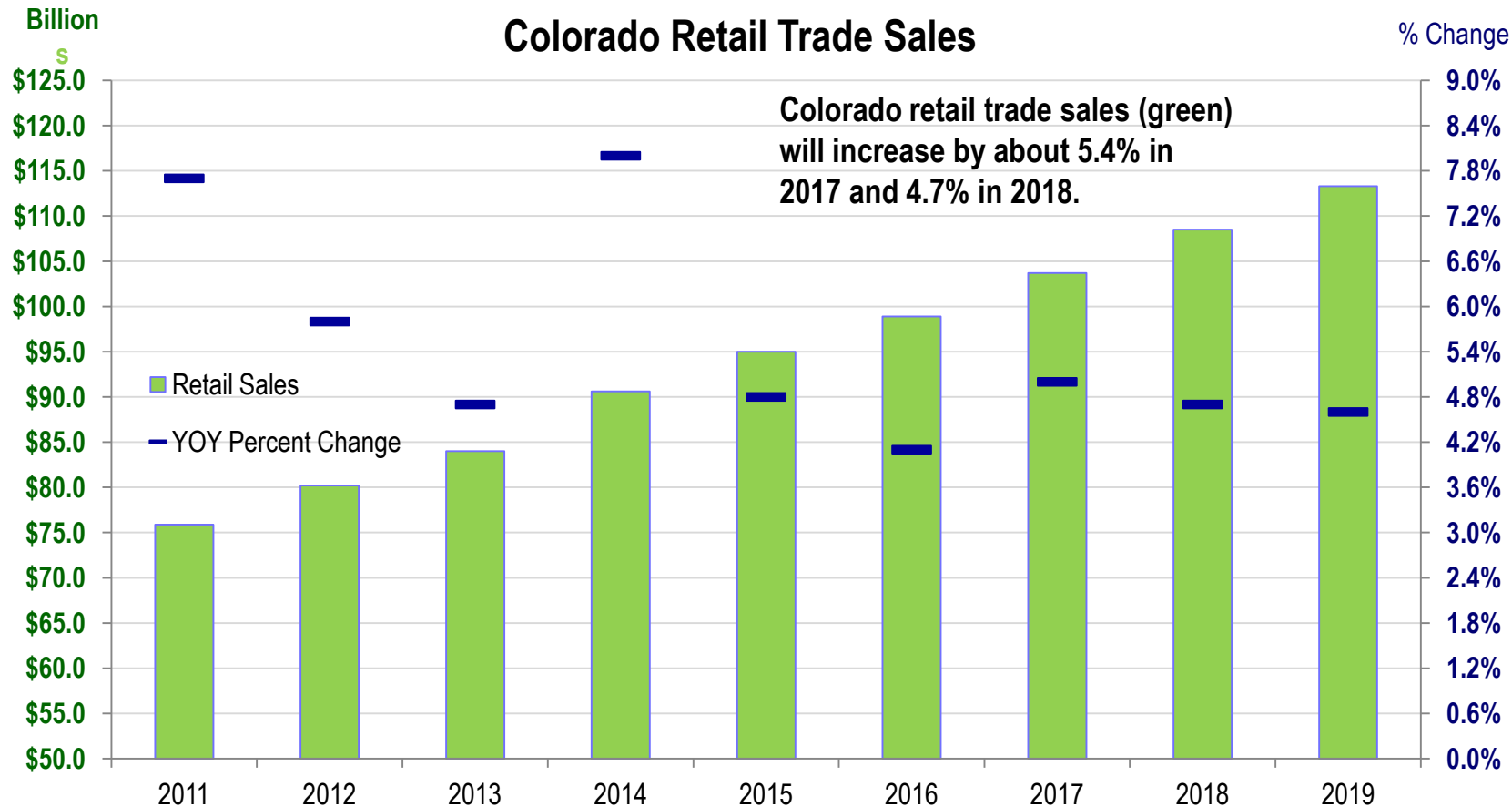


Key Sectors and Trends to Watch

Retail Trade Sales, New and Used Car Registrations, and DIA Passengers

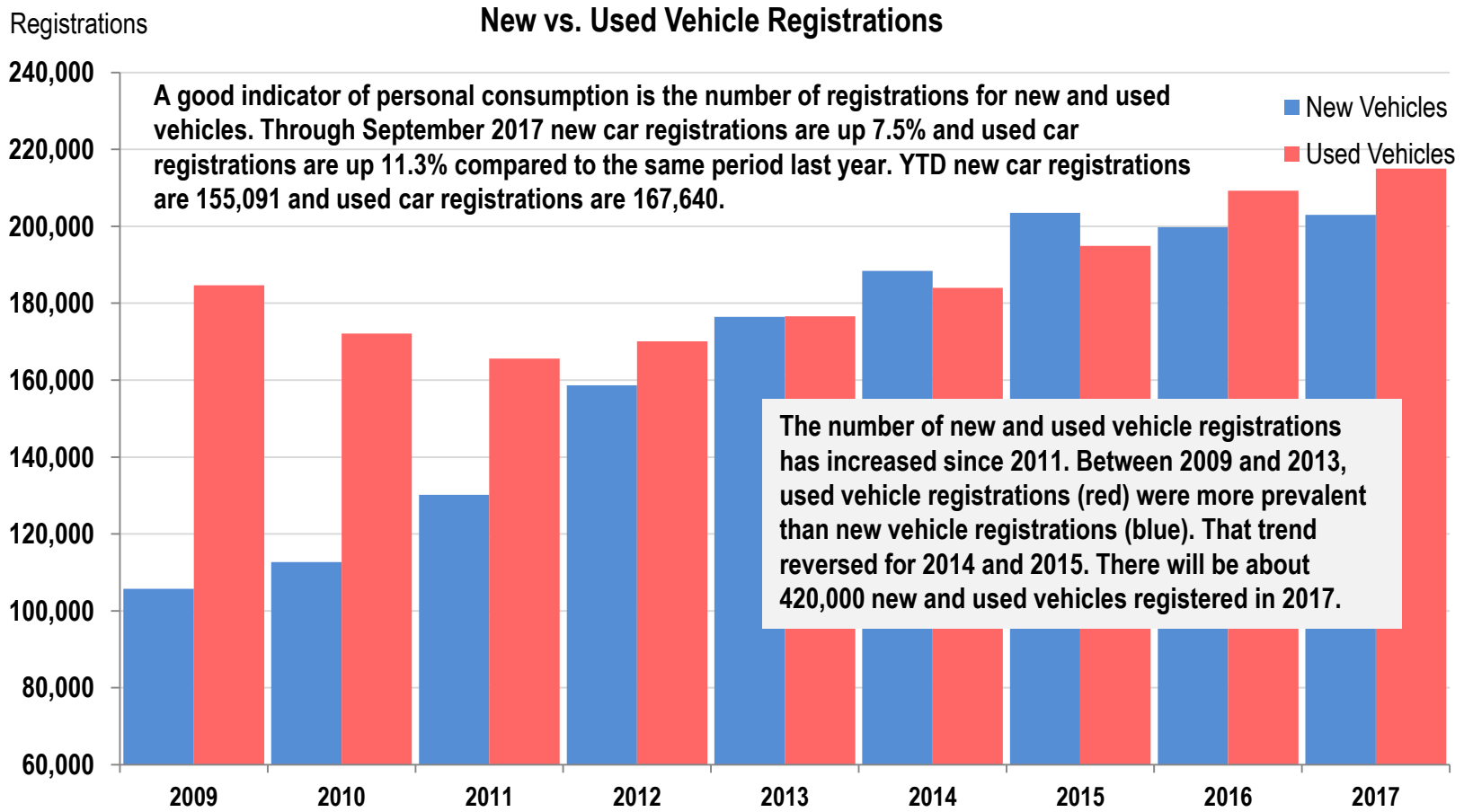
Colorado Retail Trade Sales

Sales and YOY Percent Change



Source: Based on data provided by OSPB and Colorado Legislative Council. Sales include retail sales as defined by the Department of Revenue, plus food and beverage.

Colorado New and Used Vehicle Registrations



Source: Colorado Auto Dealers Association, cber.co.

DIA Passengers

Up, Up, and Away



Source: flydenver.com, cber.co.

Key Sectors and Trends to Watch

Summary of Key Trends

- Extractive industries
 - YTD Prices, rig count, and production are stronger than last year.
 - Efficiencies within the industry have improved, which will impact future employment growth.
 - Employment is bouncing back – slowly.
 - Resistance to the industry has increased.
- Construction
 - Given the activity on the drawing boards, where is the industry going to find workers to meet the demand?
- Housing prices
 - Appreciation is increasing at a decreasing rate; however, it is above the national rate.
 - What affect will housing prices have on the growth of the Colorado economy?
- Retail trade
 - Retail trade sales are solid. Spending during the Christmas season is expected to be strong.
- Auto sales
 - State light truck and automobile sales are on a record pace.
- DIA
 - DIA traffic is on track to set a new annual record.



The Colorado Economy

Election 2017

The Colorado Economy

Election 2017

The economy is affected by politics and the changing will and dynamics of the voters. The decisions made in the 2017 election will impact the economy for years to come. In an off year, voter participation was low – 31% for the state and 22% for the city and county of Denver. An editorial in the Denver Post summed up the election results as follows, “Colorado Election Results Indicate a Progressive Monsoon is on the Way.” Some of the outcomes are provided below.

Slow Growth Measures Passed

- Lakewood.
- Greenwood Village.
- Boulder.

Urban Renewal Measures Passed

- Westminster.
- Wheat Ridge.

Social Issues Passed

- Denver – Green Roof measure passed.
- Broomfield – Anti-fracking measure passed.

Taxes Increases

- Denver approved a \$937 million bond issue to fund public infrastructure.
- Tax increase approved in Colorado Springs.
- Denver hoteliers voted to raise taxes on guests to expand convention center.

Schools

- Turnover of school board members to reflect a change in ideology in Douglas and Jefferson County.
- Improvements to school infrastructure and programs were approved in Greeley, Colorado Springs, and Mesa County.
- School funding to increase salaries, add counselors, and provide technology was voted down in Brighton District 27J.

The Colorado Economy

Election 2017

Winners

- Advocates of manageable growth.
- Tourism industry – improvements to convention center.
- City and County of Denver – improvements to infrastructure.
- Colorado Springs residents.
- Construction industry.
- Advocates of alternate energy sources.

Losers

- State of Colorado – only 31% of electorate voted.
- City and County of Denver – only 22% of electorate voted.
- Oil and gas industry.
- Advocates of lower taxation.
- Advocates of school reform.
- PK-12 education in Brighton.

Is a progressive monsoon really on the way as suggested by the *Denver Post*?



The Colorado Economy

Highlights from the State Demography Meeting 11/3/2017



The Colorado Economy

State Demography Office

The Colorado Demography Office is part of the Department of Local Affairs.

The agency (SDO) produces demographic data for Colorado and works with the U.S. Census Bureau to complete the decennial Census for the state. Preparations have begun for the 2020 Census.

Every year SDO hosts an annual conference/summit where they discuss how demographic changes affect the state economy. An important premise of their forecast is that a person is associated with every job.

Their annual forecast is slightly different from most forecasts because it is based on all workers, not just wage and salary workers. In other words, they include sole proprietors.

This section includes select slides from two of the Power Point presentations made at their November 3, 2017 annual summit. (Economic Outlook and Population of Colorado). Basic comments prior to each set of slides are provided by cber.co.

Additional research presented at the SDO annual forecast conference can be found by viewing their website, <https://demography.dola.colorado.gov/>.



The Colorado Economy

State Demography Office – Economic Outlook

The Colorado Economy

State Demography Office – Economic Outlook

The slides in this section, produced by the SDO staff, tell the following story:

1. Moderating growth (U.S.).
2. Maturing recovery and workforce – the recovery from the last recession is getting long in the tooth.
3. There will be solid job growth in Colorado through 2018, 2.1% in 2017 and 1.8% in 2018.
4. The rate (%) of job growth will continue to decline for a variety of reasons.
5. Real wage growth has been miniscule.
6. The low unemployment rate will drive net migration.
7. Long-term job growth will average 50,000 jobs per year. This means wage and salary employment will be less.
8. Colorado job growth will increase at a declining rate and will be greater than the U.S. rate.

This handful of slides includes some of the key points from the SDO *Economic Outlook* presentation.

For more details, check out the full presentation at <https://demography.dola.colorado.gov/>.

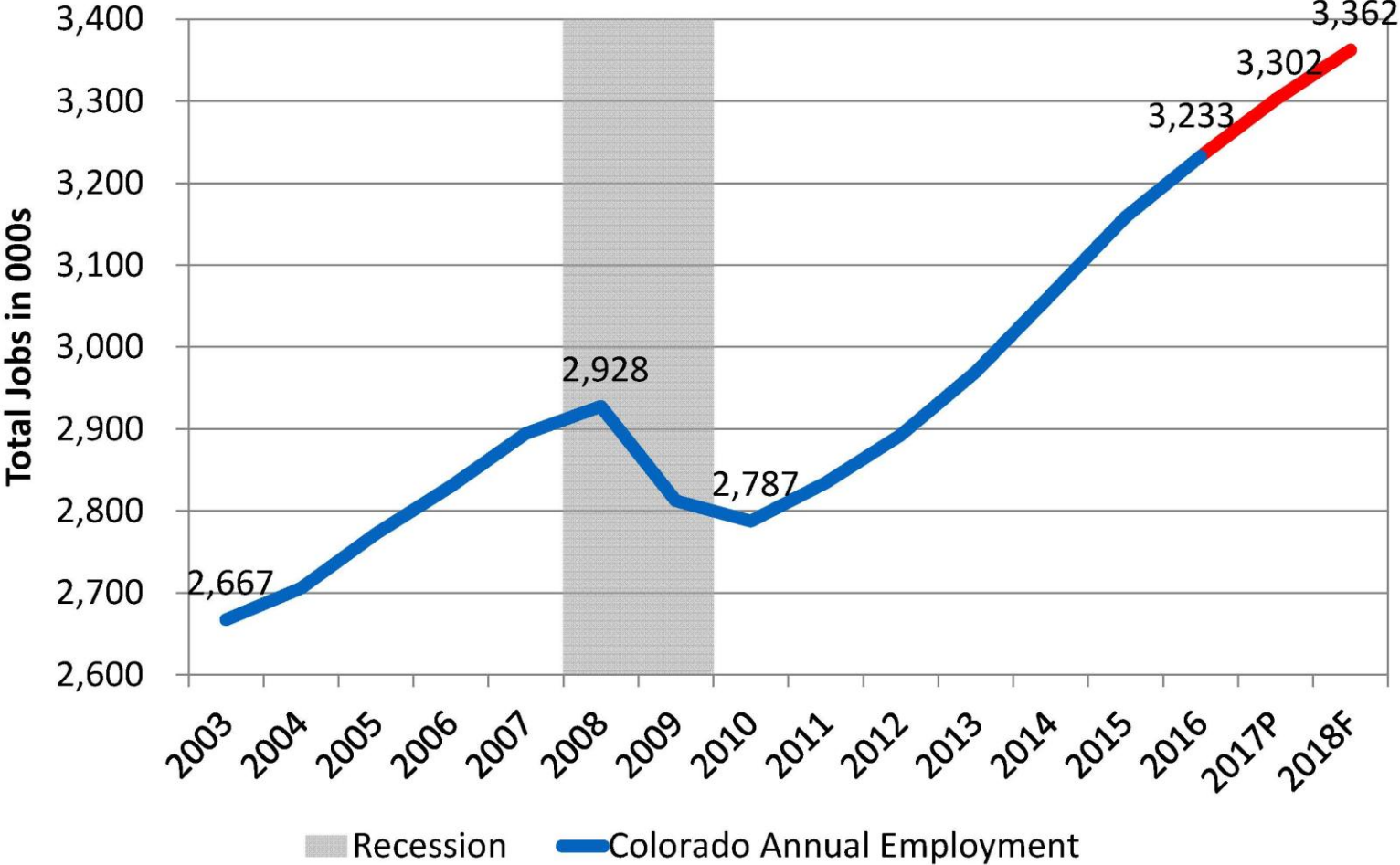
ECONOMIC HEADWINDS MODERATING NATIONAL GROWTH

- Monetary Policy had stimulated economic growth, but tightening projected to continue -> 1.4% Dec 2017, 2.1% in '18, 2.7% in '19
- Inflation has been under 2% from 2013-16, but has rebounded to 2.1% thru Sept 2017 as energy and shelter prices continue to rise
- Job Growth is projected to slow over each subsequent decade:
 - 2016-26 BLS Projects 10.75 million Wage & Salary Jobs (0.7%/yr)
 - 2026-36 Moody's projects 9.34 million W & S Jobs (0.6%/yr)
- Retail Trade likely to be a drag on employment into 2018 and beyond

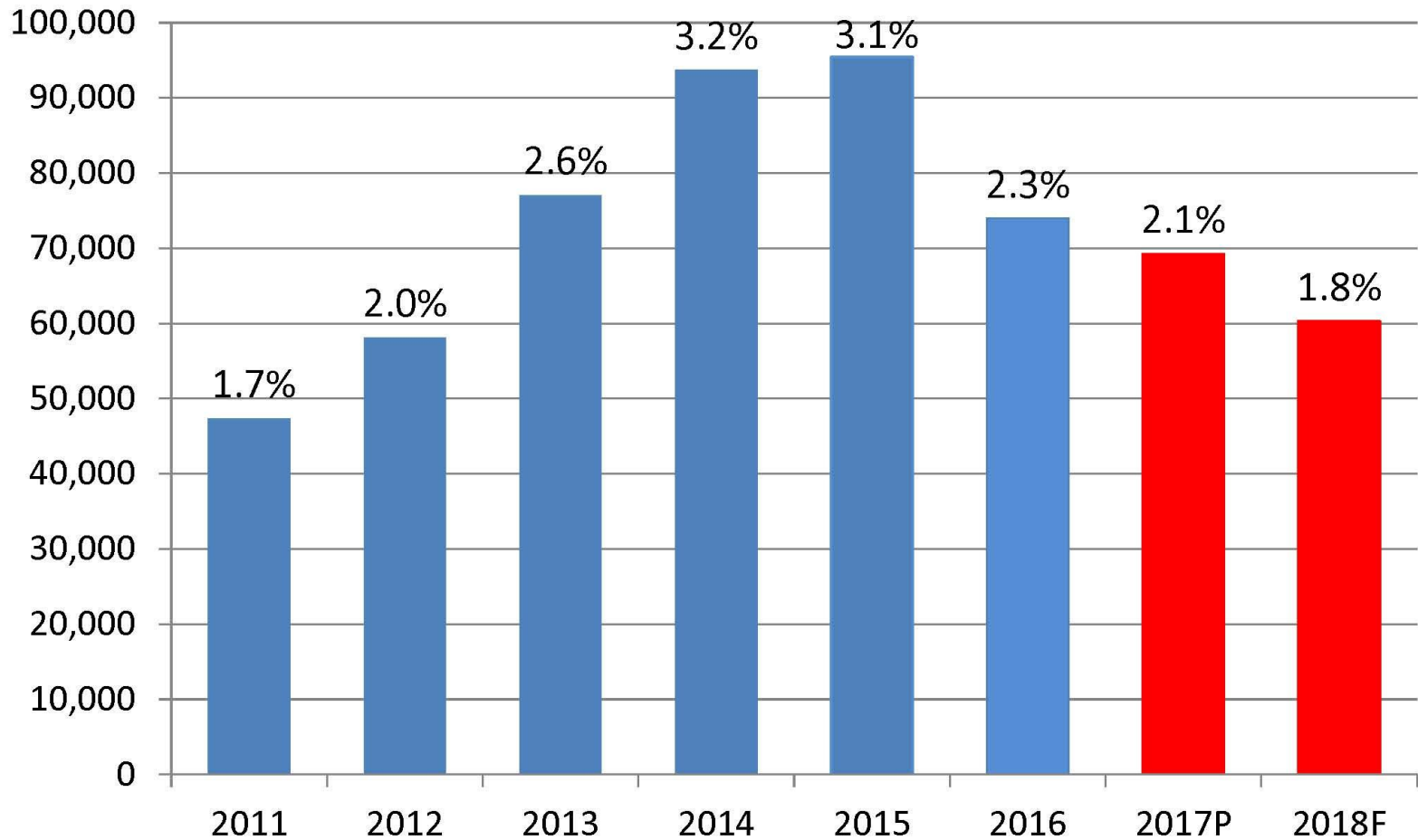
MATURING POPULATION'S IMPACT ON GROWTH

- “Demographic Headwinds” - falling labor force participation rate as older workers leave labor force will constrain economic growth
- By 2026 - Youngest of the Baby Boomers will be 62 and eligible for “early retirement.” Oldest Boomers will be 80 and presumably nearly all will be retired.
- More “replacement jobs” and fewer “new jobs”
- Growth in Health Care and service industries - 17 out of top 30 fastest growing occupations in over next decade (BLS 2016-26 projections)

SDO Total Estimated Jobs 2003 - 2018

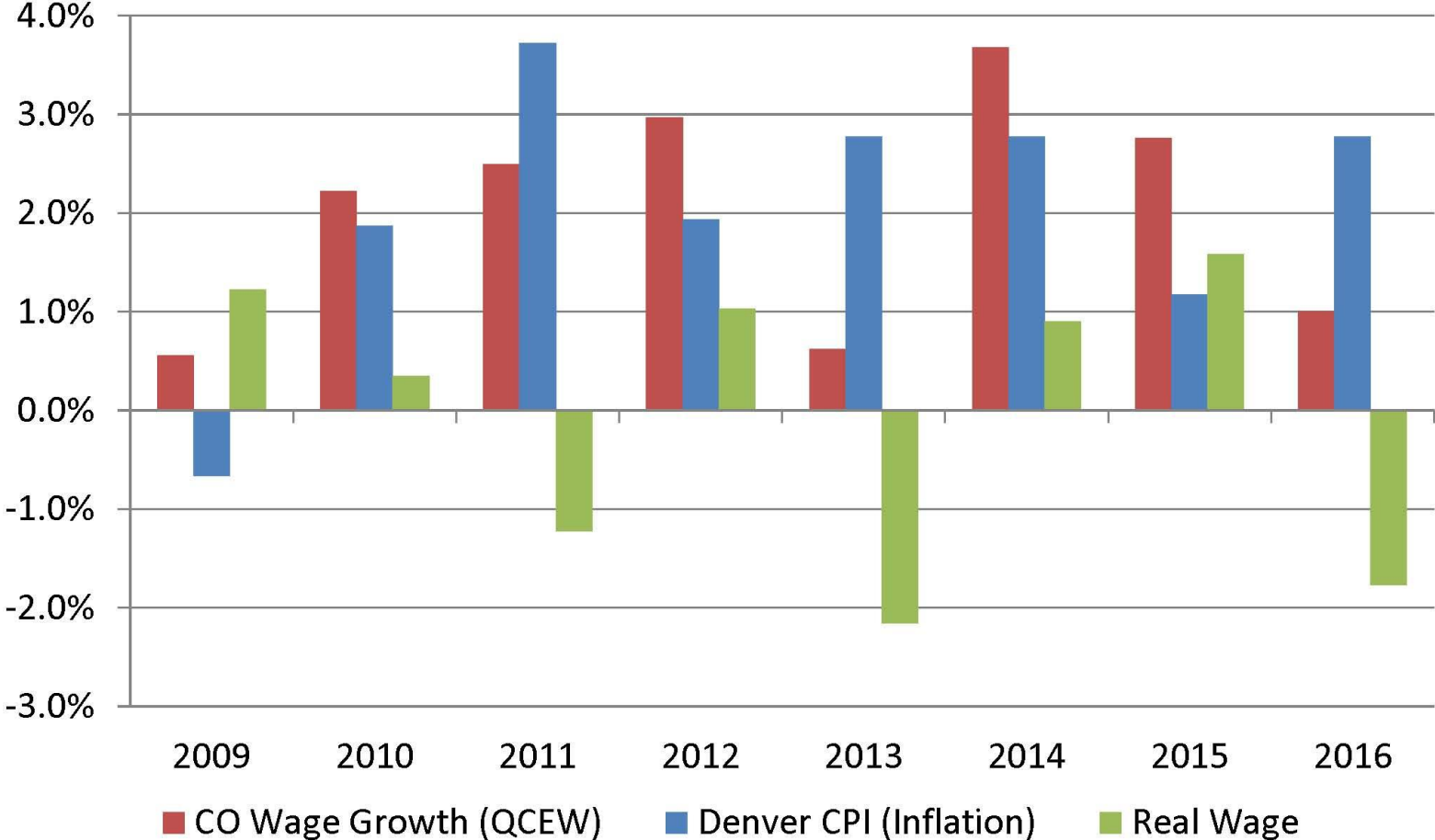


SDO Total Estimated Jobs Annual Increase 2011 - 2018



Source: SDO Total Estimated Jobs & 2017 Forecast

Colorado Wage Gains vs. Inflation



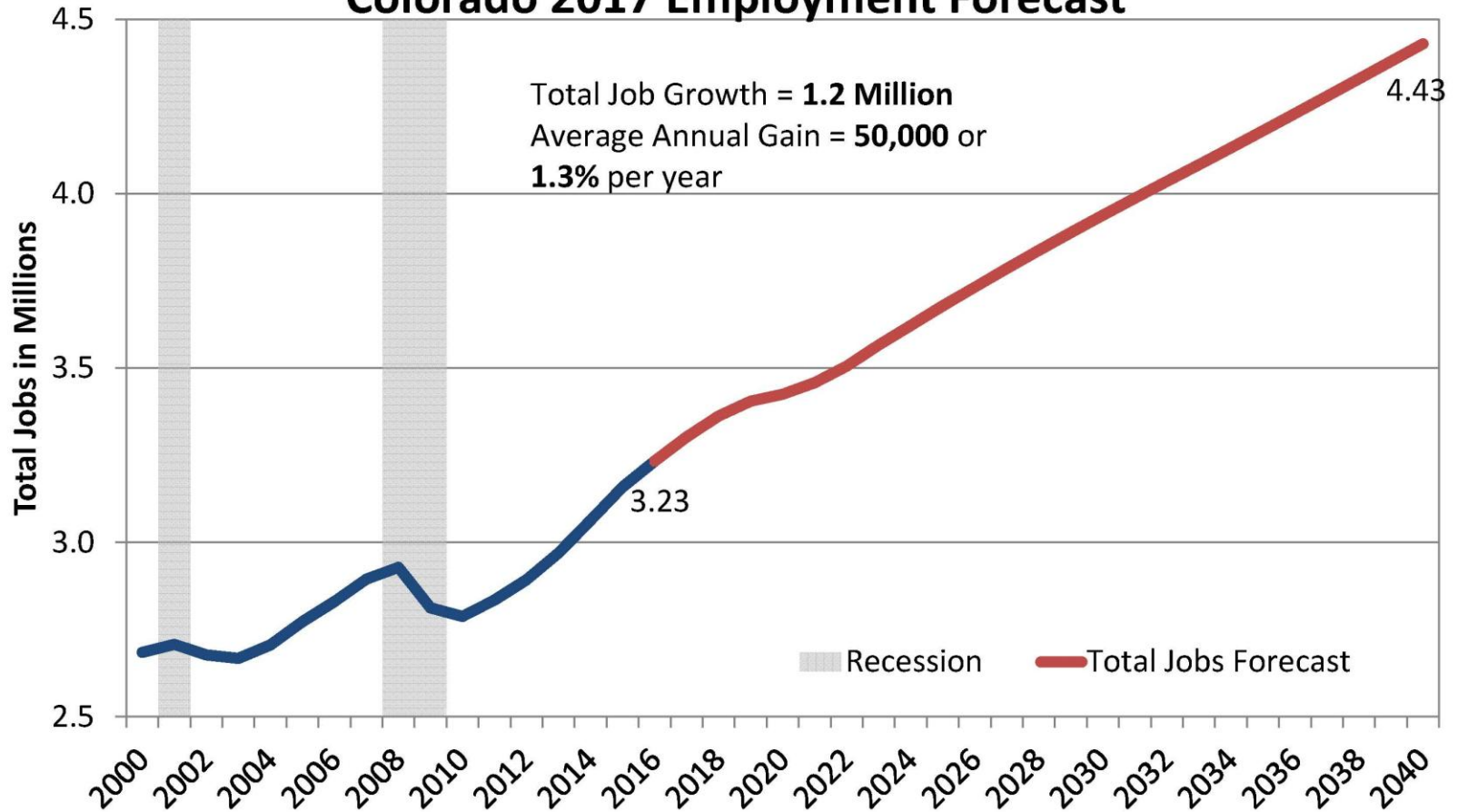
Source: U.S. Bureau of Labor Statistics

2017 UPDATE

- Employment Growth Rate will Continue to Slow
2017 Projected at **2.1%** Over the Year
- CO has one of the lowest Unemployment Rate's in U.S.
And has been below 3.0% all year
- Labor Force up 108,700 from September 2016 - over 3 million! # of Unemployed down 17,000 to 76,600
- 116,600 of Online Job Postings = S/D Rate of 0.66
- CO Unemployment rate 1.7 percentage points lower than U.S. -> Suggesting continued in-migration

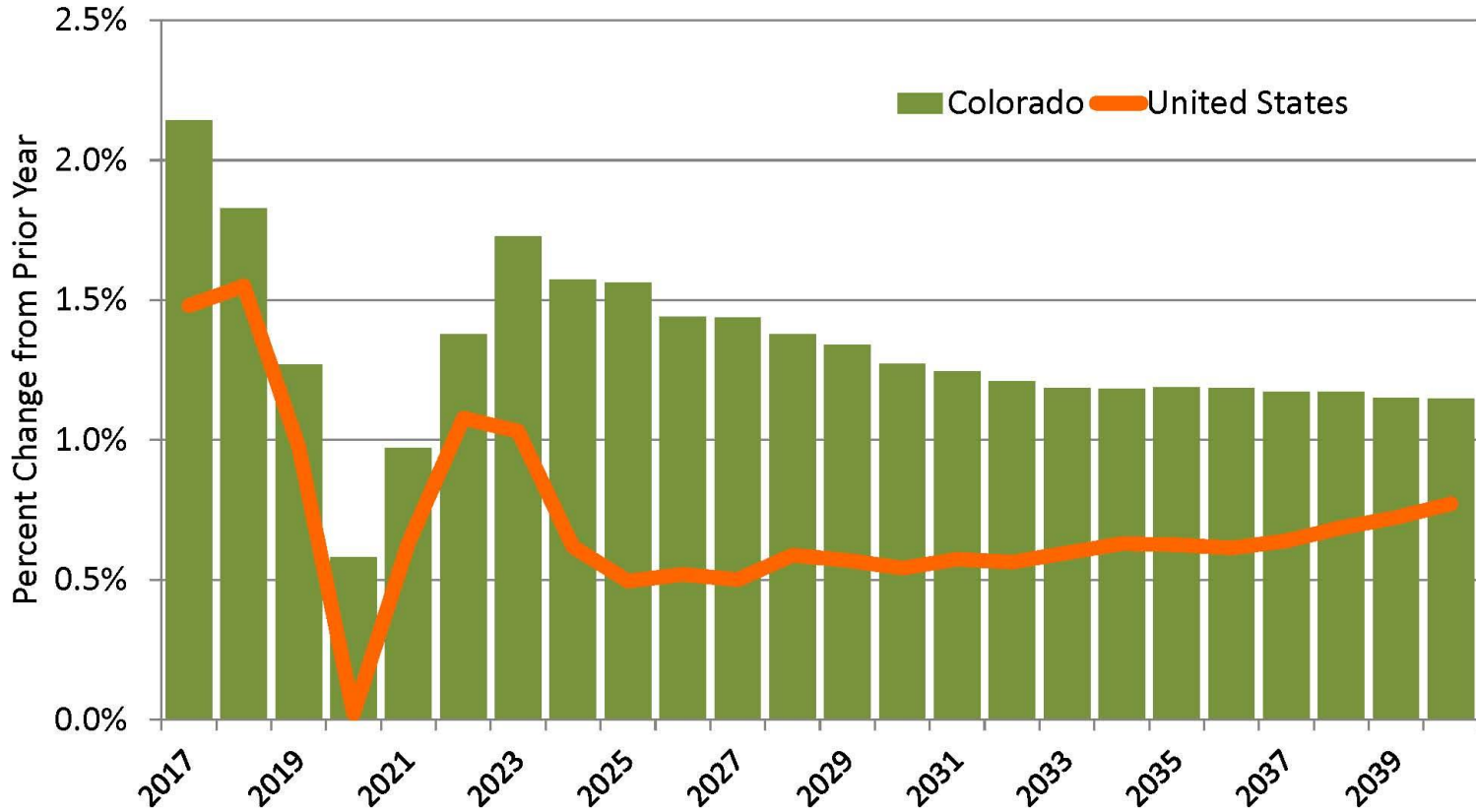
SDO FORECAST 2000 TO 2040

Colorado 2017 Employment Forecast



COLORADO VS. UNITED STATES ANNUAL JOB CHANGE 2017-2040

Employment Change by Year 2017-40 Forecast



FORECAST - TRENDS

- Slower job growth through 2020 as U.S. growth rate slows and # of leavers (retirees) increases.
- Increase in Household Jobs - those supported by spending of Retiree and Investment / Unearned Income
- Front-Range (+ Mesa, Garfield & La Plata) location of employment growth due to diversified Economic Base
- Local Resident Services jobs will expand to meet the needs of a growing population



The Colorado Economy

State Demography Office – Population of Colorado

The Colorado Economy

State Demography Office – Population of Colorado

The slides in this section, produced by the SDO staff, tell the following story:

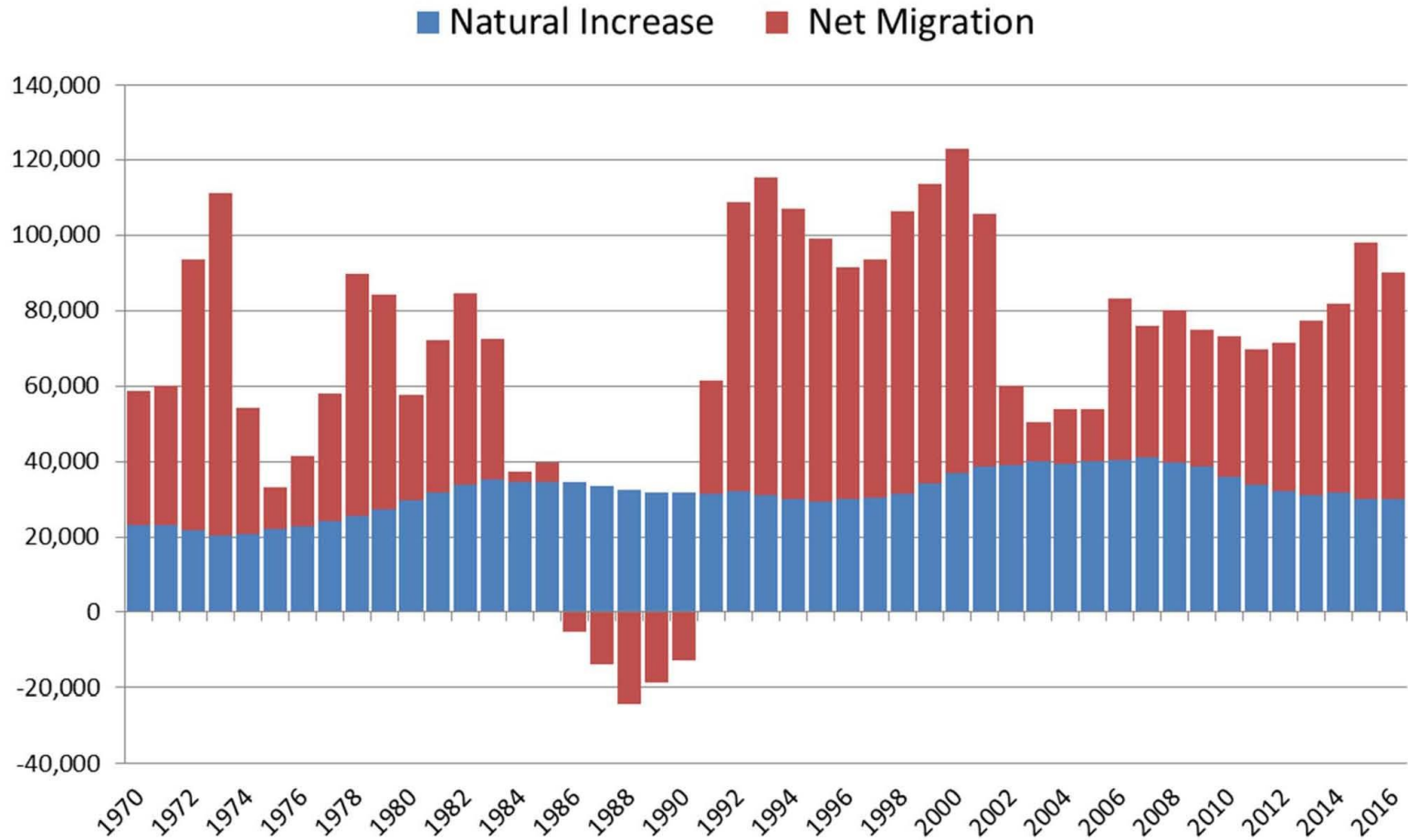
1. The Colorado population is growing at a faster rate than the U.S. and most other states.
2. The population and workforce is growing because of net migration and the natural rate of change. People move to Colorado to work and play. In the process jobs are created to support their lifestyle.
3. Colorado has large counties with almost 700,000 people and small counties with about 700 people. The population in some counties is increasing, while it is decreasing in other counties.
4. The largest municipalities and areas of absolute growth are along the Front Range.
5. In the years ahead, there will be a higher concentration of older people and a lower concentration of younger people in Colorado.
6. Over time, the population of Colorado will become more diverse.
7. With the passage of time, the number of working age people will increase at a rate that is slower than the growth rate of the population.

This sampling of slides from the *SDO Population of Colorado* presentation tells only part of the story. Check out the full presentation at <https://demography.dola.colorado.gov/> for additional information.

BIG PICTURE

- United States Population 2016: **323.1 Million**
- Colorado 2016 (SDO): **5,538,180**
- Seventh fastest growth: **1.7%**
- Eighth largest growth: **90,125**

Components of Colorado Population Change 1970-2016



COUNTY POPULATION RANKINGS

Population Growth 2015-2016

1	El Paso County	14,029
2	Denver County	12,634
3	Weld County	9,826
4	Arapahoe County	8,188
5	Adams County	7,750

Largest by Population 2016

1	Denver County	693,292
2	El Paso County	690,207
3	Arapahoe County	637,254
4	Jefferson County	571,711
5	Adams County	497,673

Population Decline

1	Kit Carson County	-580
2	Crowley County	-355
3	Bent County	-221
4	Morgan County	-82
5	Logan County	-75

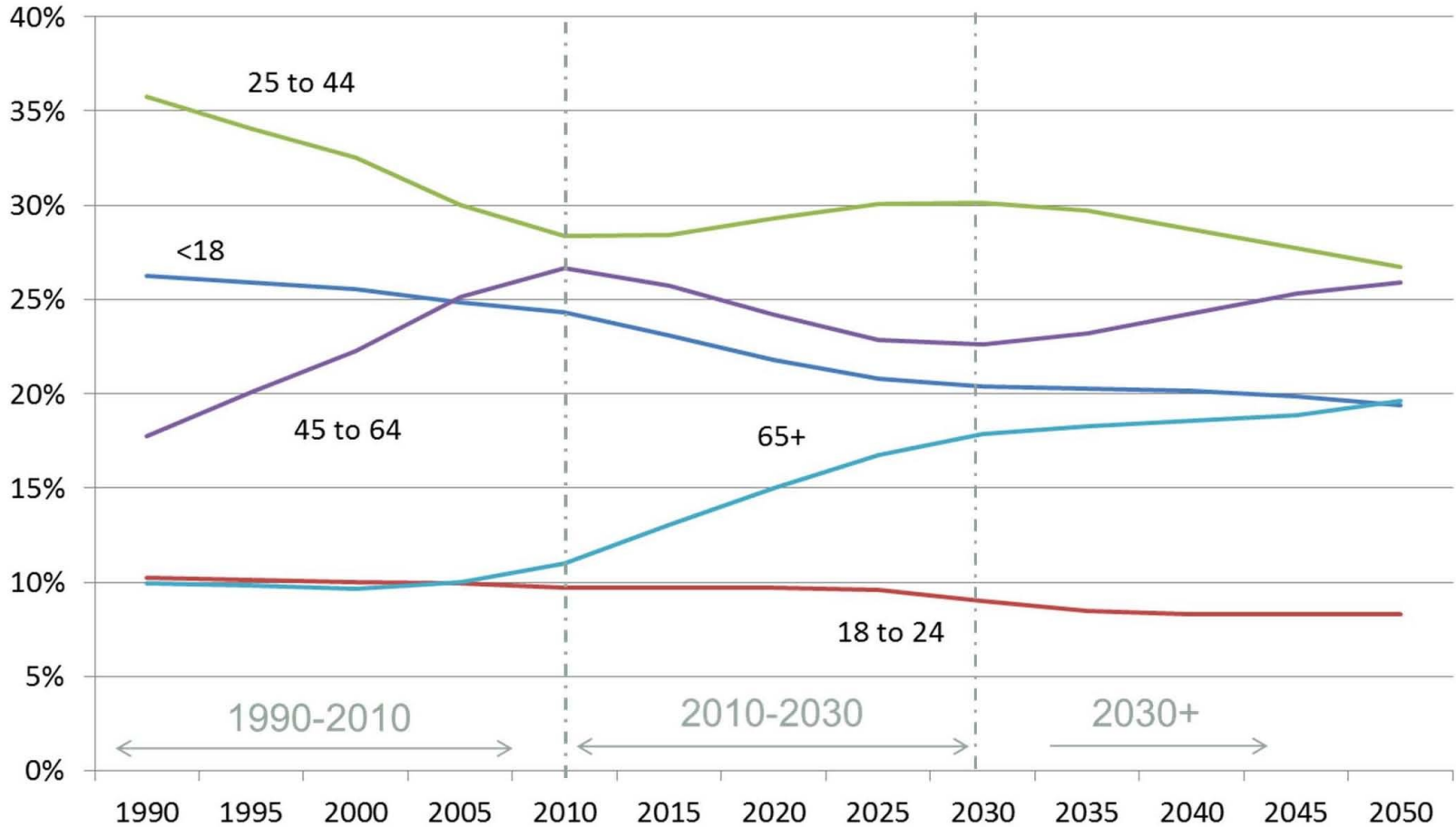
Smallest by Population

1	San Juan County	698
2	Mineral County	737
3	Hinsdale County	775
4	Kiowa County	1,347
5	Jackson County	1,351

MUNICIPAL POPULATION CHANGE 2015-2016

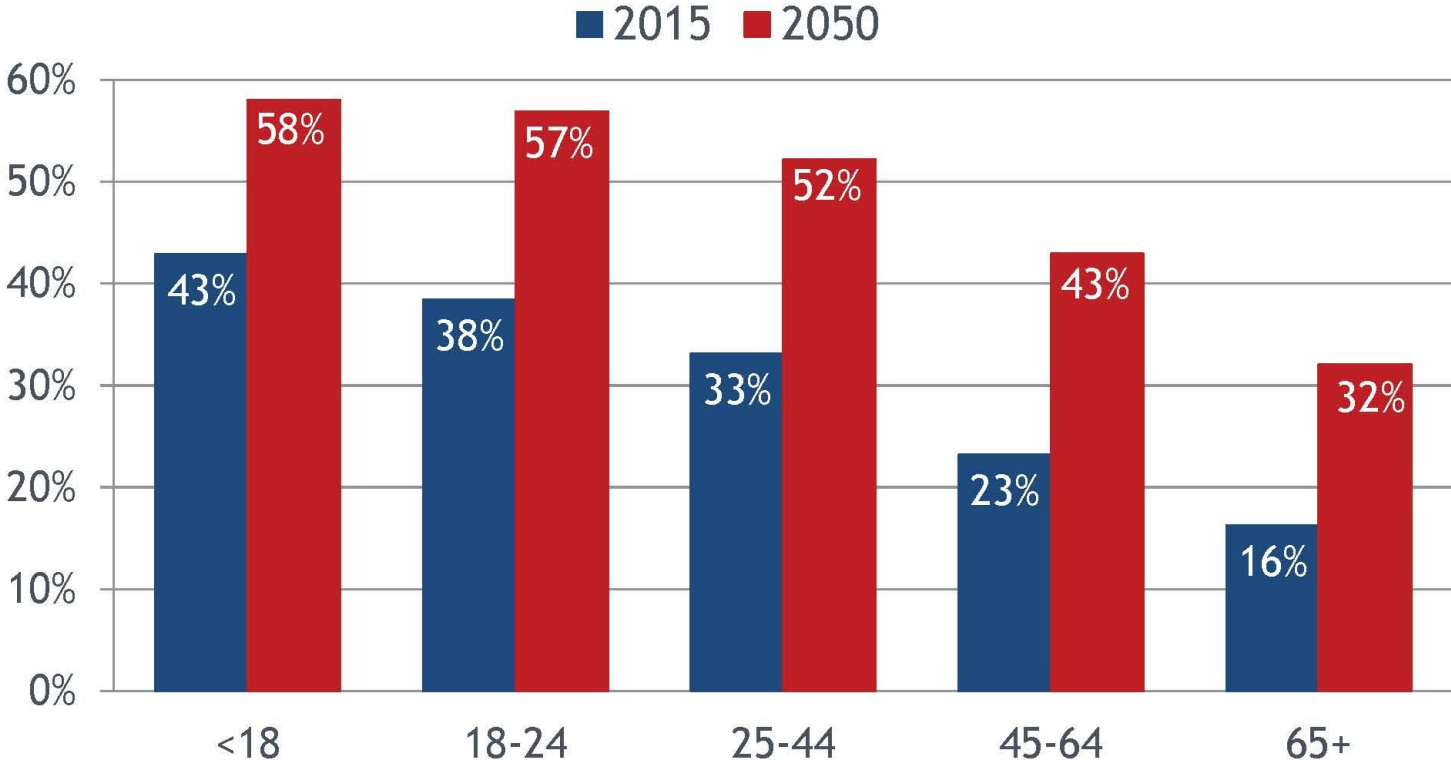
Largest Municipalities		Largest Population Change			
1	Denver	693,292	1	Denver	12,634
2	Colorado Springs	460,953	2	Colorado Springs	9,235
3	Aurora	361,967	3	Aurora	4,411
4	Fort Collins	162,919	4	Greeley	3,329
5	Lakewood	155,072	5	Thornton	2,369
6	Thornton	134,845	6	Fort Collins	2,345
7	Arvada	117,260	7	Arvada	2,332
8	Westminster	113,181	8	Lakewood	2,174
9	Pueblo	110,621	9	Broomfield	1,596
10	Centennial	109,439	10	Loveland	1,497

Share of Colorado Population by Age Group



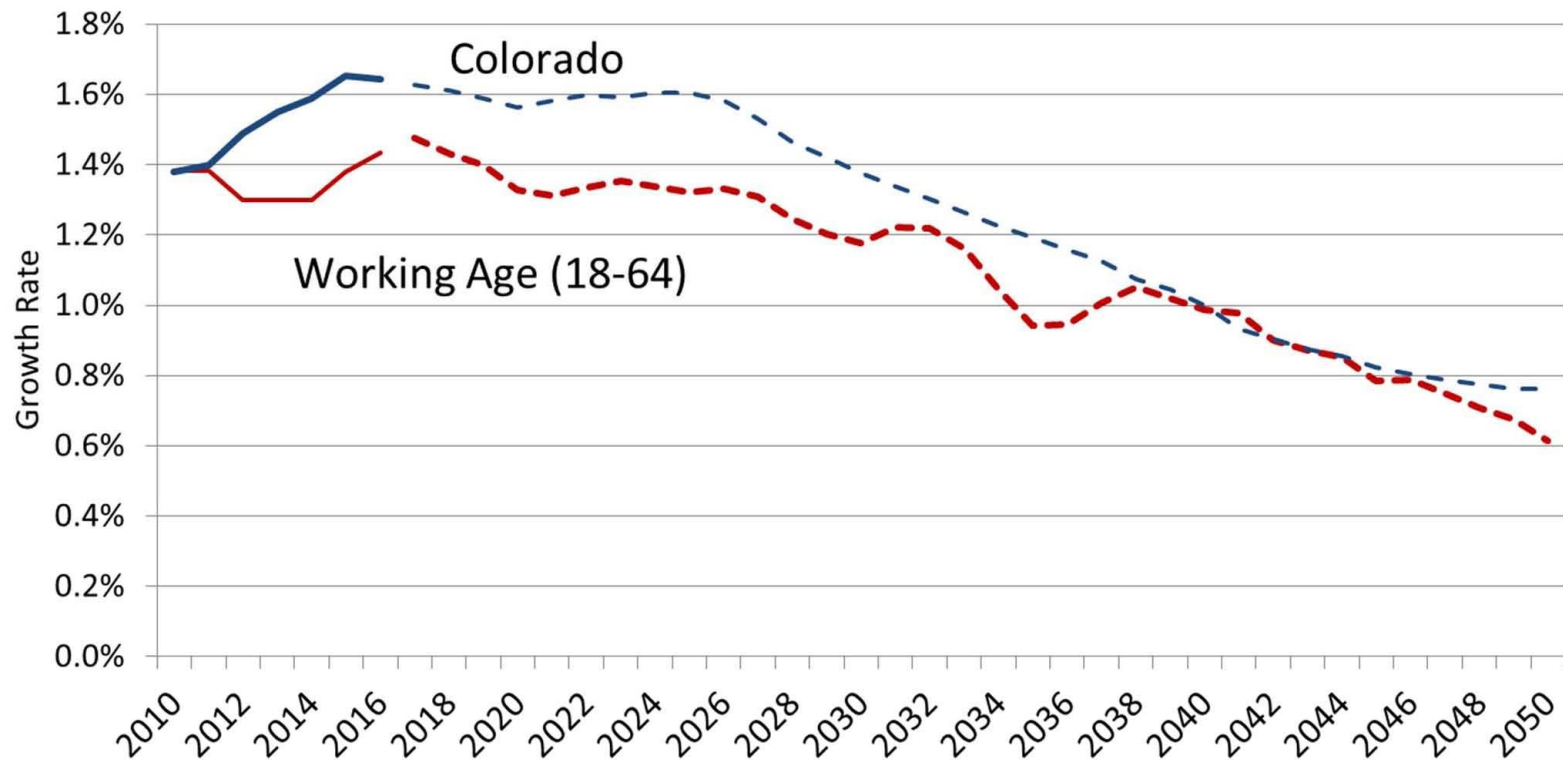
DIVERSITY BY AGE

Hispanic, Black, Asian, and other minority share



Working Age Population in Colorado

Colorado's population of working age will continue to grow more slowly than Colorado's population as a whole.





The Colorado Economy

Summary

Colorado Economy

Summary

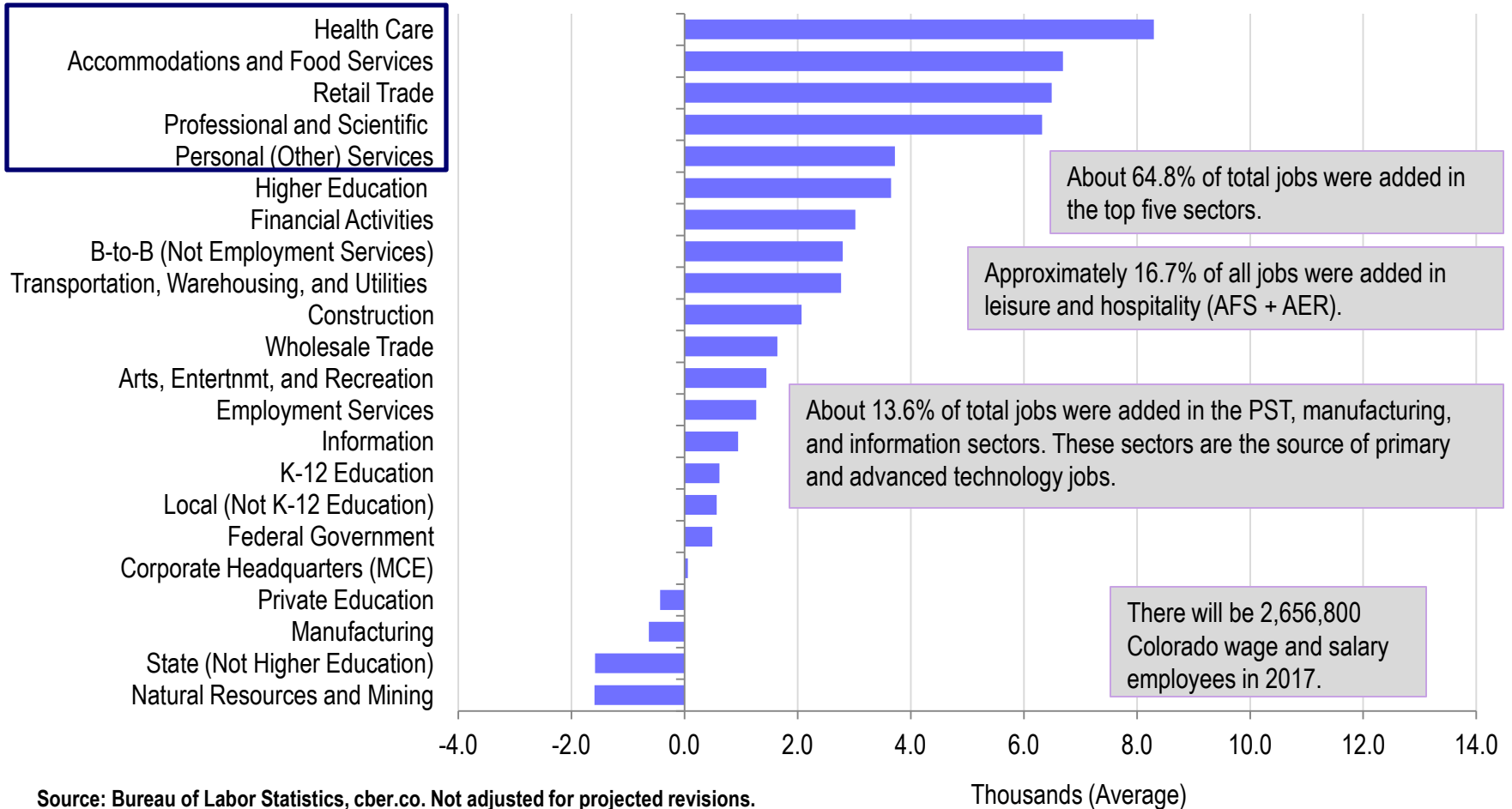
The Colorado economy can be summed up in one picture (see below). The dominant story is the low unemployment rate. It has been below 3.0% for the entire year. Signs such as the one below are everywhere. Businesses are desperate to find qualified workers. Job growth is severely strained by the lack of qualified workers.



Job Changes

2017 YTD Through October

Job Change All Sectors



Source: Bureau of Labor Statistics, cber.co. Not adjusted for projected revisions.

Thousands (Average)

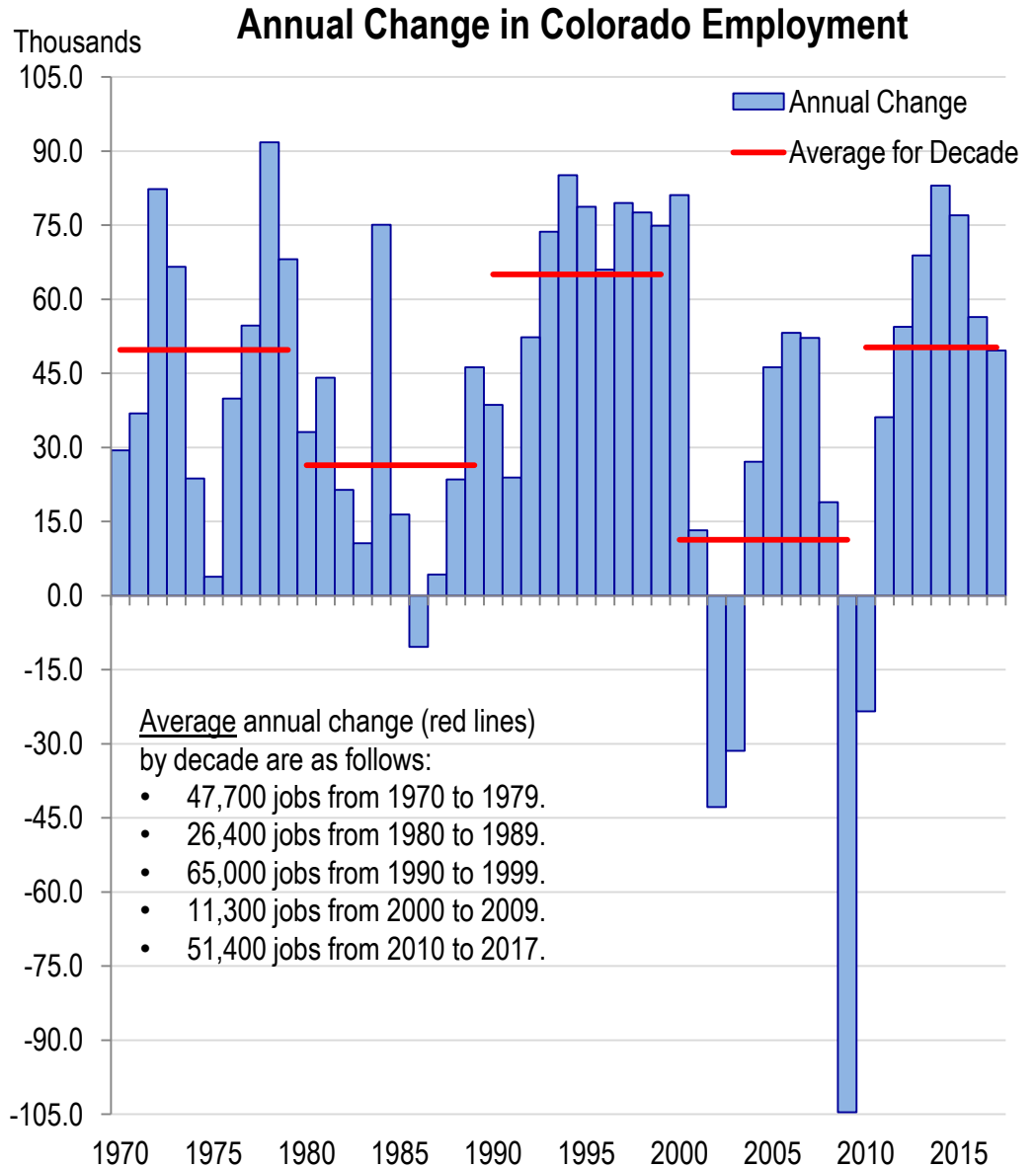
Annual Employment Change in Colorado

For the first 8 years of this decade (2010 to 2017), Colorado added an average of 50,250 jobs.

Colorado added 77,000 jobs in 2015 and 56,400 jobs in 2016.

The current data indicates the state is on track to add 48,700 jobs in 2017. Reports from the Labor Market Information suggest that 2017 job growth might be understated by as much as 8,000 to 8,400 workers. This estimate will be updated in early December.

The low unemployment rate has created a lack of qualified workers. This shortage is preventing the economy from expanding at a faster rate.



Source: Bureau of Labor Statistics, cber.co. Not adjusted for projected revisions.



Review of Colorado Economy and Employment Data Through October 2017

This analysis is for informational purposes only. Any opinions or interpretations of data are those of the presenter. As such, they do not represent the viewpoints of any group or particular organization.

For further information contact Colorado-based Business and Economic Research (cber.co).
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For additional information contact cber.co at cber@cber.co.

ABOUT THE AUTHOR

Gary Horvath has produce annual employment forecasts of the state economy for over 25 years. They have been supplemented by monthly economic updates and indices that track economic performance over the short term. In addition he has directed three statewide analyses that included reviews of all 64 county economies.

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

Horvath has also served on the Board of Directors for the Economic Development Council of Colorado, Northwest Denver Business Partnership, Adams County Economic Development, and Broomfield Economic Development Corporation. Horvath has also been the lead for the photonics/electronics cluster, which is part of OEDIT’s early stage and proof of concept programs.