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Colorado Economy and Employment Data Through June 2017

Colorado-based Business and Economic Research
Prepared
July 25, 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 for the first 6 months of 2017. Colorado employment through June is on track to add 51,400 jobs this year, a number that may be slightly understated. The greatest deterrent to stronger job and real GDP growth is an unemployment rate of 2.3% and the lack of qualified workers.

U.S. Economy

- Midway Through 2017.
- The United States Economy.
 - Leading Index, Real GDP, Personal Consumption, Domestic Private Investment, Government Expenditures.
 - Employment, Unemployment, Unemployment by Occupations, Labor Productivity.
 - Equities, Equity Volatility, Corporate Profits.
 - Manufacturing, Non-manufacturing, Trade Weighted Dollar, CPI, Retail, Auto Sales.
 - Summary.

The Colorado Economy

- Real GDP Growth, Real GDP Growth by Industry, Real per Capita GDP by MSA, Real GDP by MSA, CPI.
- Population, Employment, Unemployment by MSA and Select Counties.
- Employment in Strong Growth, Solid Growth, Volatile Categories.
- Other Key Data Sets – Case Shiller, Building Permits and Valuation, Oil and Gas Industry, Auto Sales, DIA Passengers.
- Summary.

The complete 2017 cber.co forecast can be found at <http://cber.co/economic-forecasts/>

Midway Through 2017

United States

Many business leaders were optimistic that a Trump presidency would result in “business friendly” fiscal policy, investment in the infrastructure, and a stronger economy.

The fiscal policy has not been adopted and there are not enough workers to complete the infrastructure investment program proposed by Trump; however:

- U.S. housing prices continue to appreciate (5+%),
- The S&P 500 is up 10+%.
- The unemployment rate is 4.4%.
- The Fed is optimistic about the U.S. economy.
- Manufacturing appears to have rebounded.
- The U.S. is on track to add 2.2 million jobs in 2017.



Colorado

Colorado's economy can be described as the “Coulda, woulda, shoulda” economy. If only there were enough qualified workers to fill the vacant jobs, the state “ coulda, shoulda, and woulda” been experiencing an unparalleled expansion.

The upside to the economy growing below potential is that the current rate of growth is manageable. There are a number of great plans on the drawing board for Colorado over the next 10 years. Growth at a slower, more manageable rate will decrease the chances of Colorado being in an overbuilt situation when the next economic downturn arrives.

Sometimes it is good if the economy grows at a steady, but slower pace. The tortoise and the hare are experts on this topic.



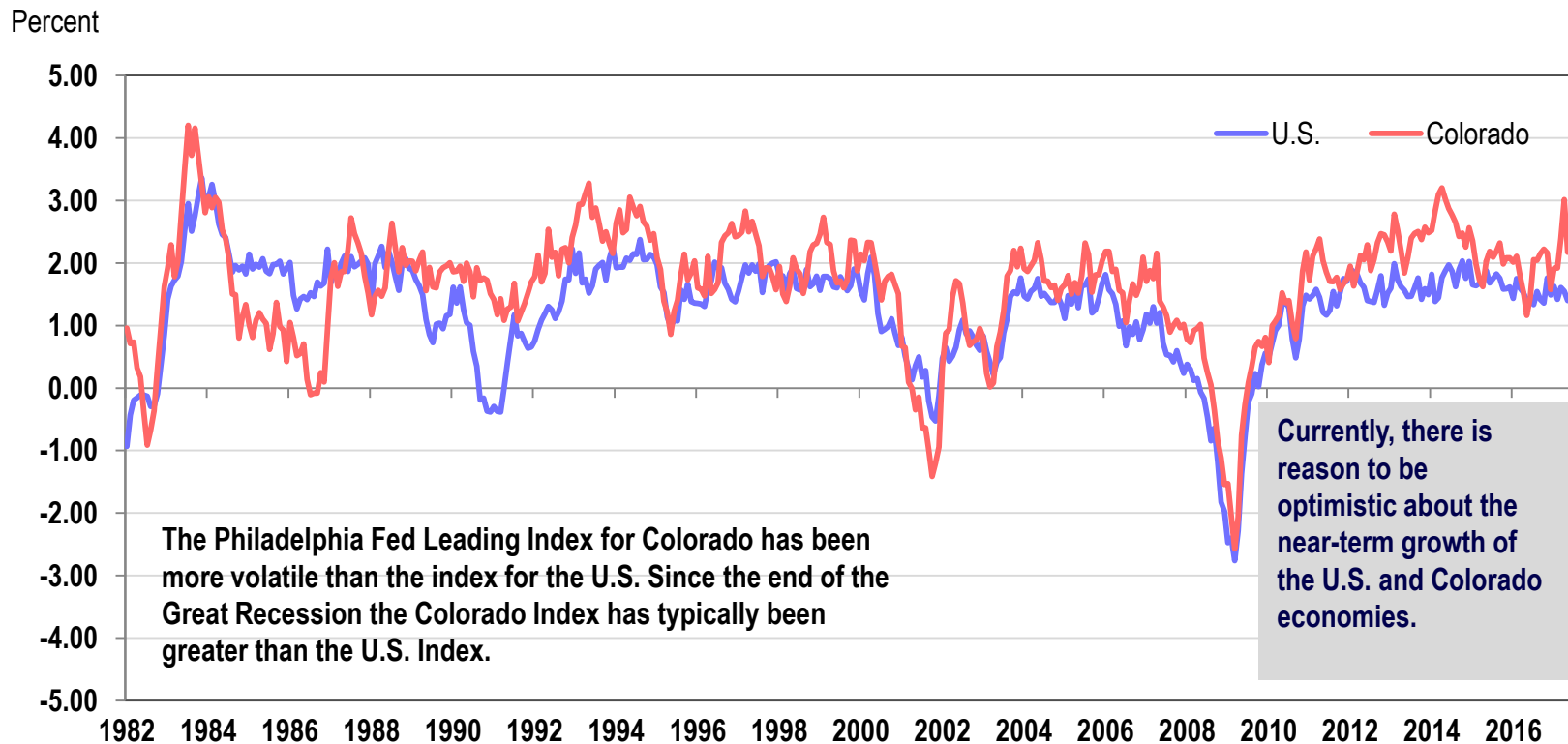
The U.S. Economy

Leading Index, Real GDP, Personal Consumption, Domestic Private Investment, Government Expenditures

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

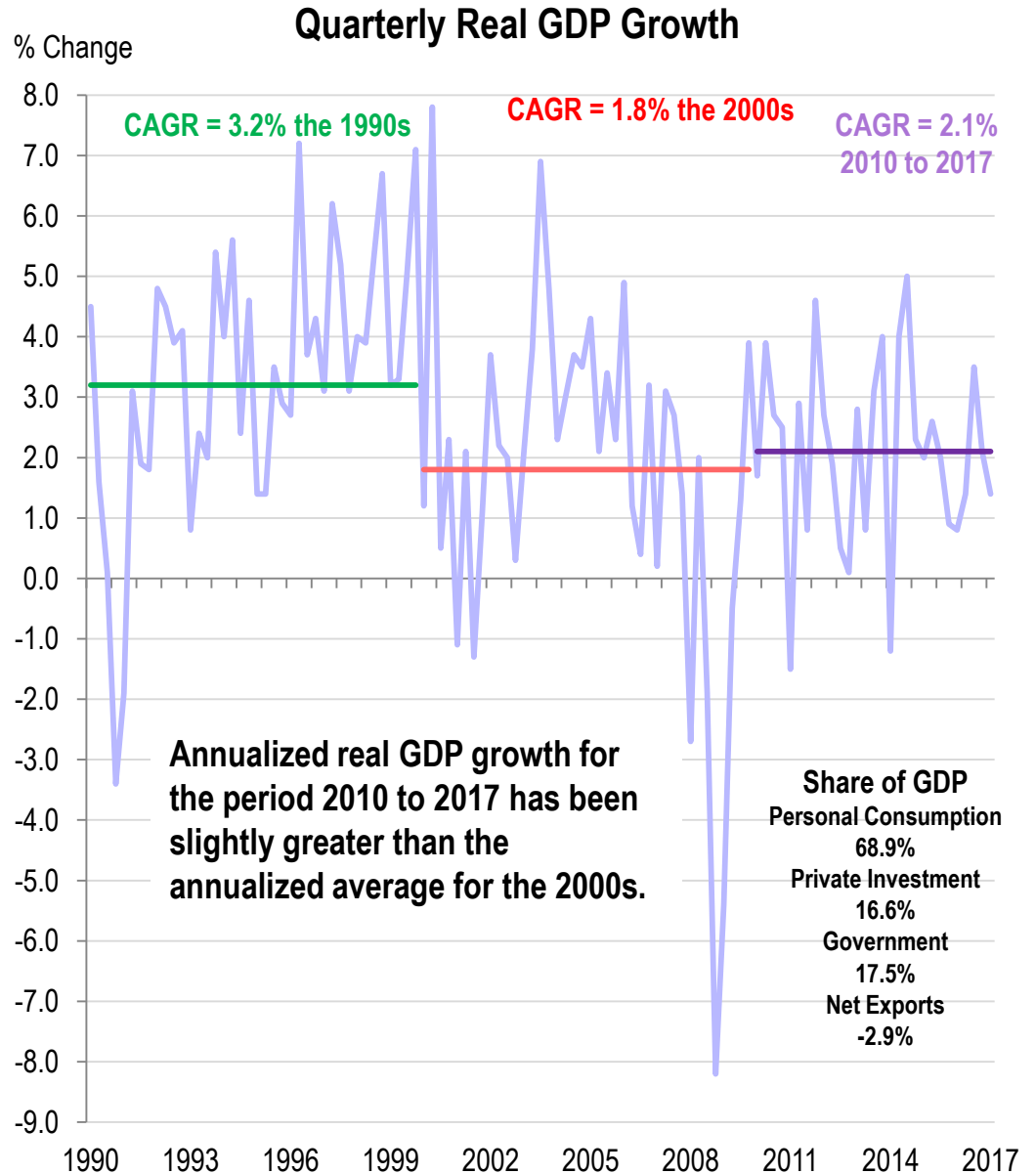
Historical annualized real GDP growth was:

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

The third estimate of real GDP growth for Q1 2017 was revised upwards to 1.4%.

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



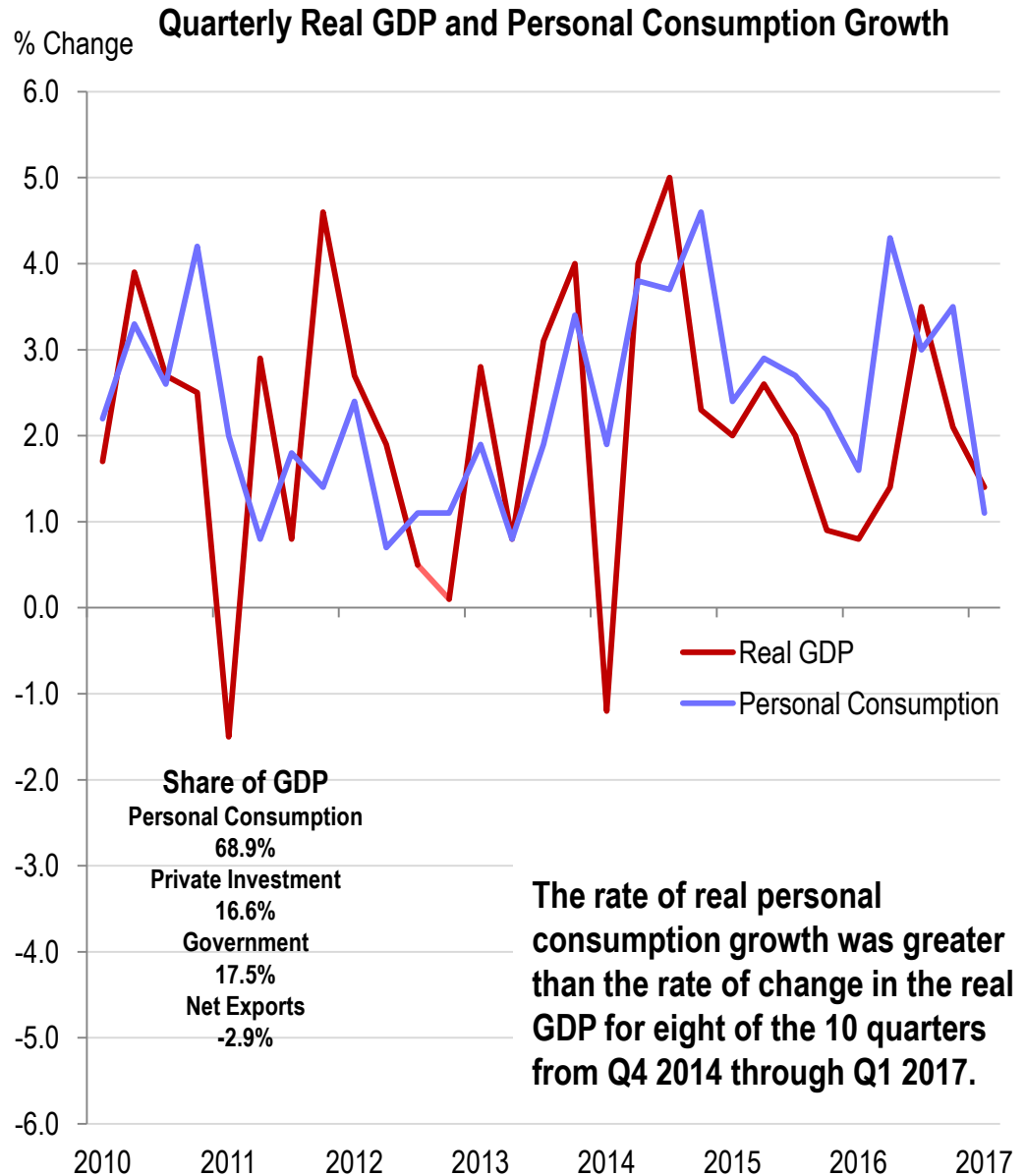
Source: Bureau of Economic Analysis, cber.co, Note GDP chained on 2009.

Quarterly Real GDP Growth United States

The third estimate of real GDP growth for Q1 2017 was 1.4%. Real personal consumption increased at a rate of 1.1%. Stronger growth is expected in Q2 and the remainder of the year.

Real personal consumption growth for recent years was:

- 2010 1.9%
- 2011 2.3%
- 2012 1.5%
- 2013 1.5%
- 2014 2.9%
- 2015 3.2%
- 2016 2.7%



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

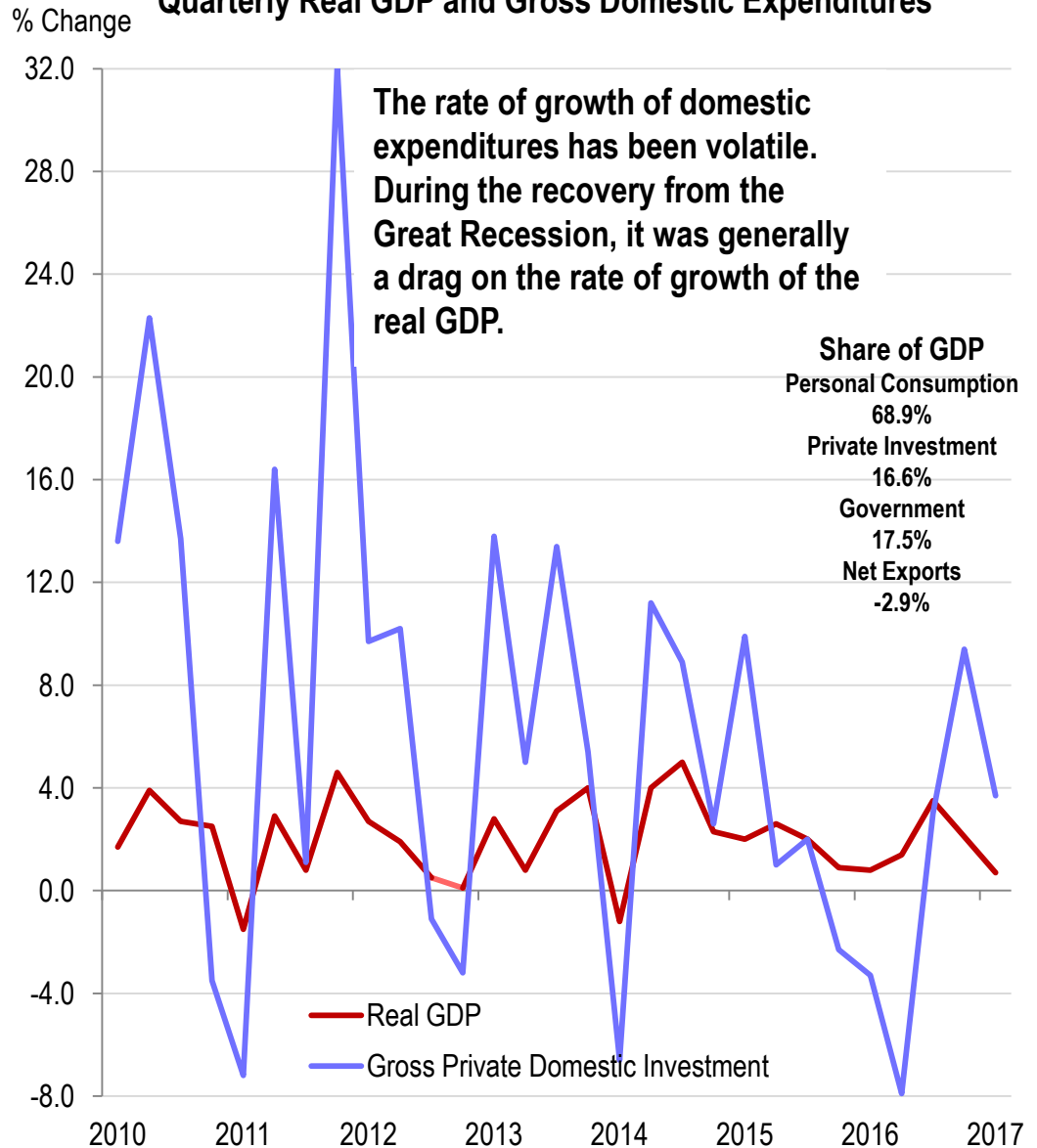
Quarterly Real GDP Growth United States

Real GDP growth for Q1 2017 was 1.4%. Gross private domestic investment grew at a rate of 3.7% in Q1 2017. Stronger growth is expected for the remainder of the year.

Gross private domestic investment for recent years was:

- 2010 12.9%
- 2011 5.2%
- 2012 10.6%
- 2013 6.1%
- 2014 4.5%
- 2015 0.5%
- 2016 -1.6%

Quarterly Real GDP and Gross Domestic Expenditures



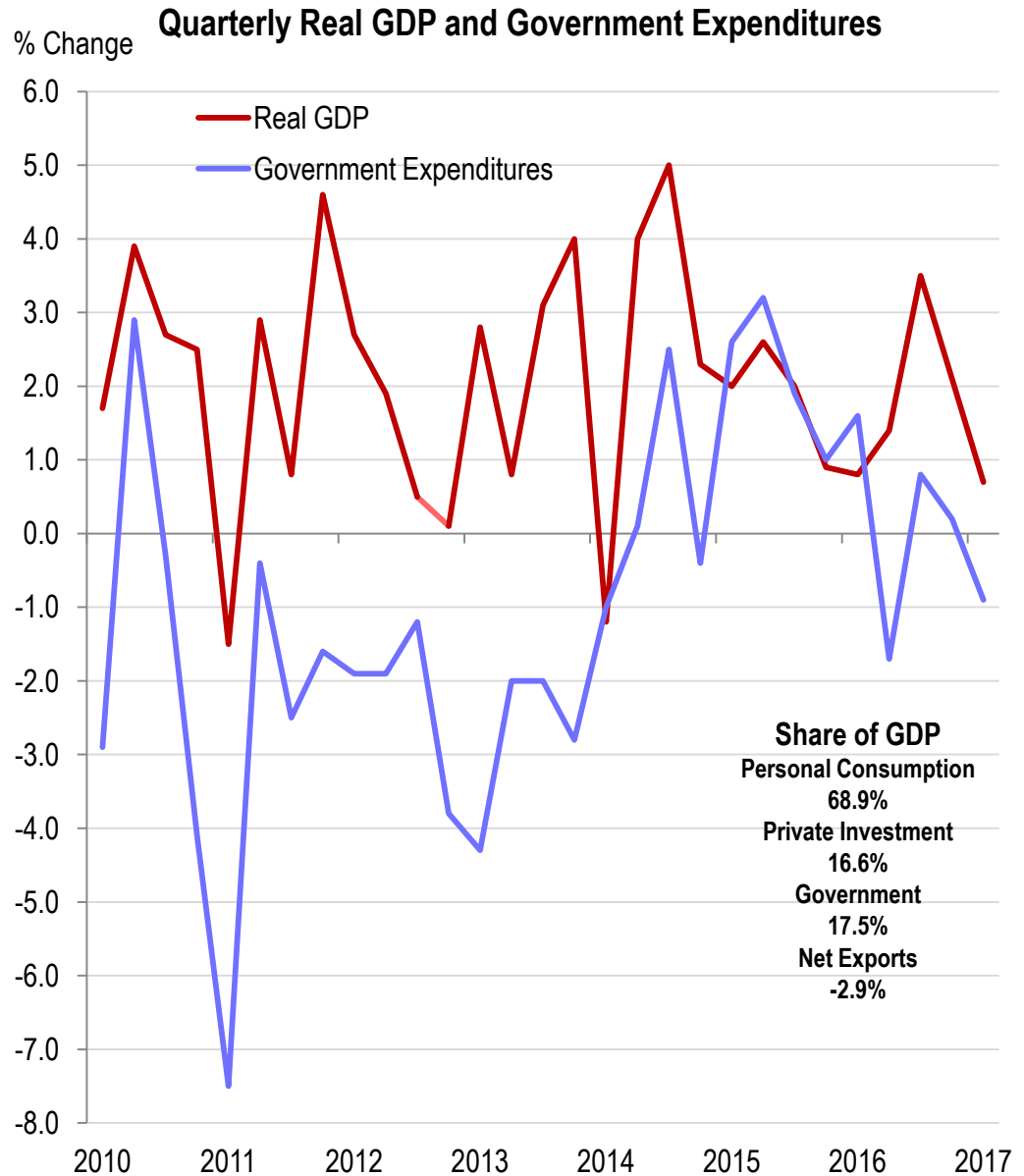
Source: Bureau of Economic Analysis, cber.co, Note GDP chained on 2009.

Quarterly Real GDP Growth United States

Real GDP growth for Q1 2017 was 1.4%. Government expenditures changed at a rate of -0.9%. The rate of growth of real government spending has been a drag on the GDP since 2010.

Real government spending for recent years was:

- 2010 0.1%
- 2011 -3.0%
- 2012 -1.9%
- 2013 -2.9%
- 2014 -0.9%
- 2015 1.8%
- 2016 0.8%



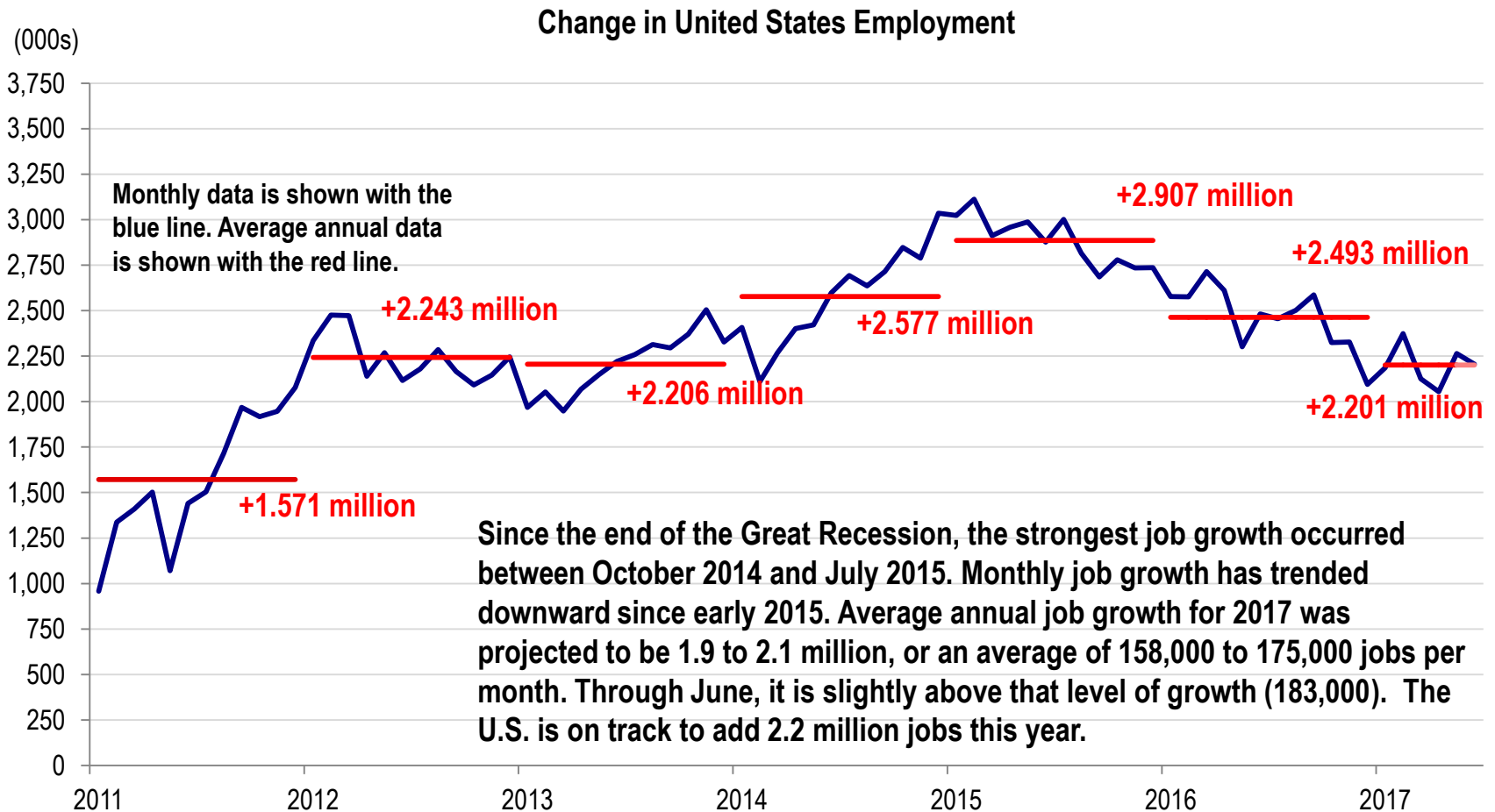
Source: Bureau of Economic Analysis, cber.co, Note GDP chained on 2009.



The U.S. Economy

Employment, Unemployment, Unemployment by
Occupations, Labor Productivity

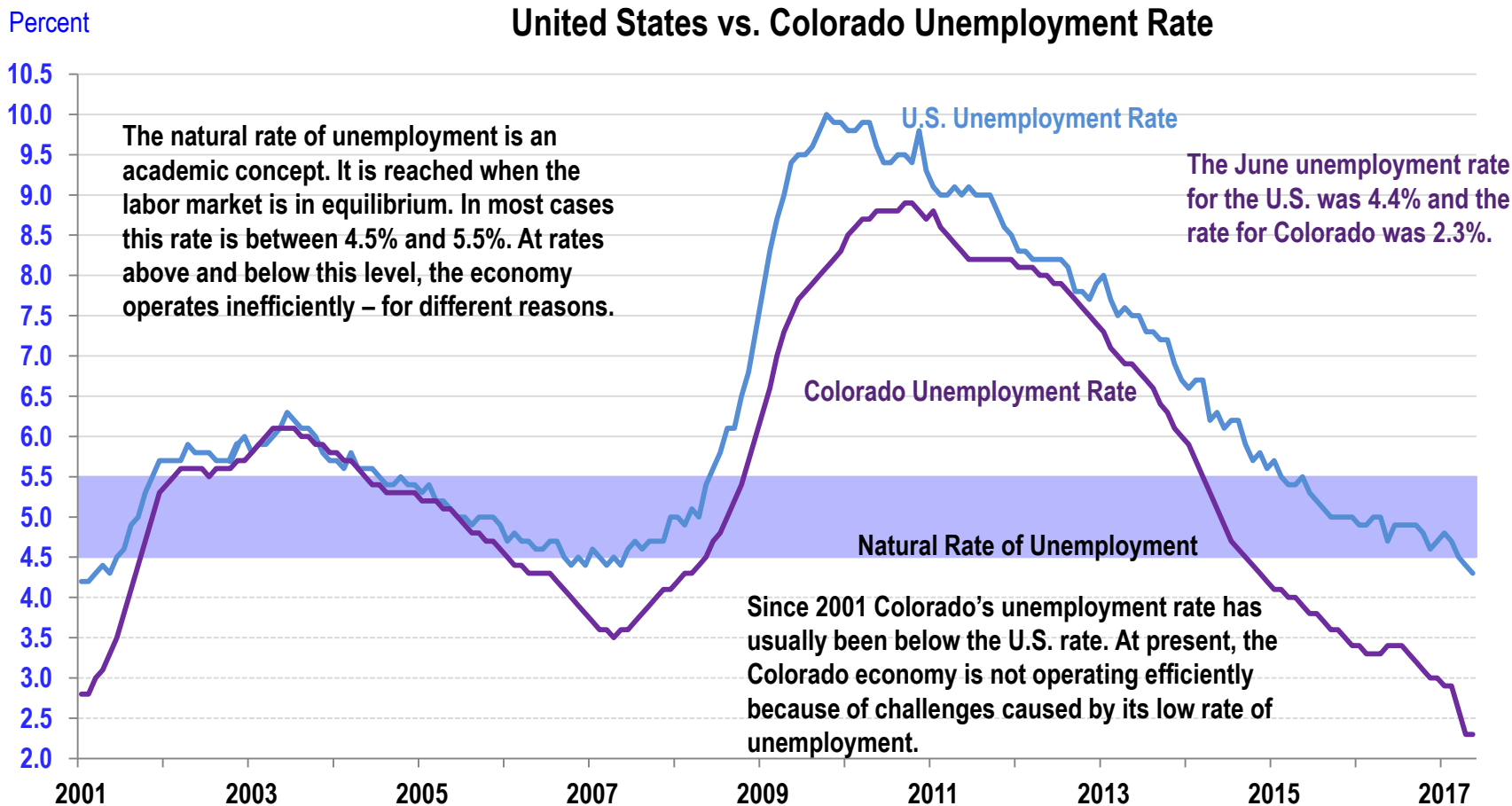
Change in United States Employment Year-Over-Year



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

Unemployment Rate

United States vs. Colorado



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

U.S. Unemployment by Occupations

In a perfect world, monthly statewide data would be produced that would allow economists to evaluate changes to both employment and occupation by industry. If that data existed, economists could produce both forecasts and analysis that looked at both employment and occupation changes by industry.

The following charts are based on BLS data that provides the unemployment rate for 22 SOC occupations at the national level. Such data is not available at the state level.

The first chart shows the unemployment rate for 9 SOC codes that have an unemployment rate of 4.4% or greater; 4.4% is the U.S. rate of unemployment .

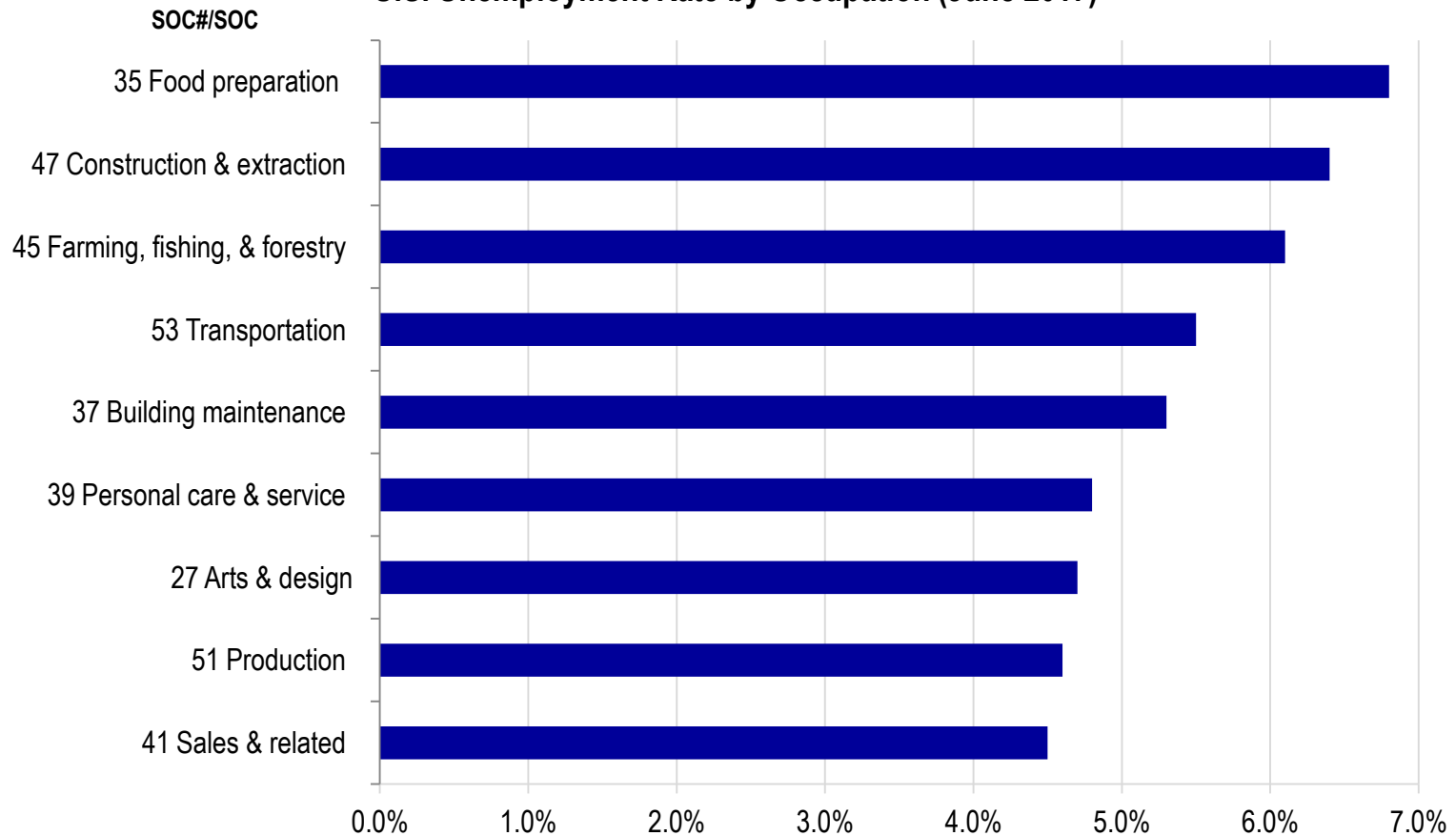
The second chart shows the unemployment rate for 13 SOC codes that have an unemployment rate less than 4.4%. Seven of the occupation codes have unemployment rates below 3.0%, i.e. companies may have extreme difficulties filling job openings for these occupations. Many of these occupations require on-the-job training, plus certification, or advanced degrees, which makes it more difficult to fill these positions.

U.S. Unemployment Rates by Occupation

Occupations with Unemployment Rates at or Above 4.4% (U.S. rate)



U.S. Unemployment Rate by Occupation (June 2017)



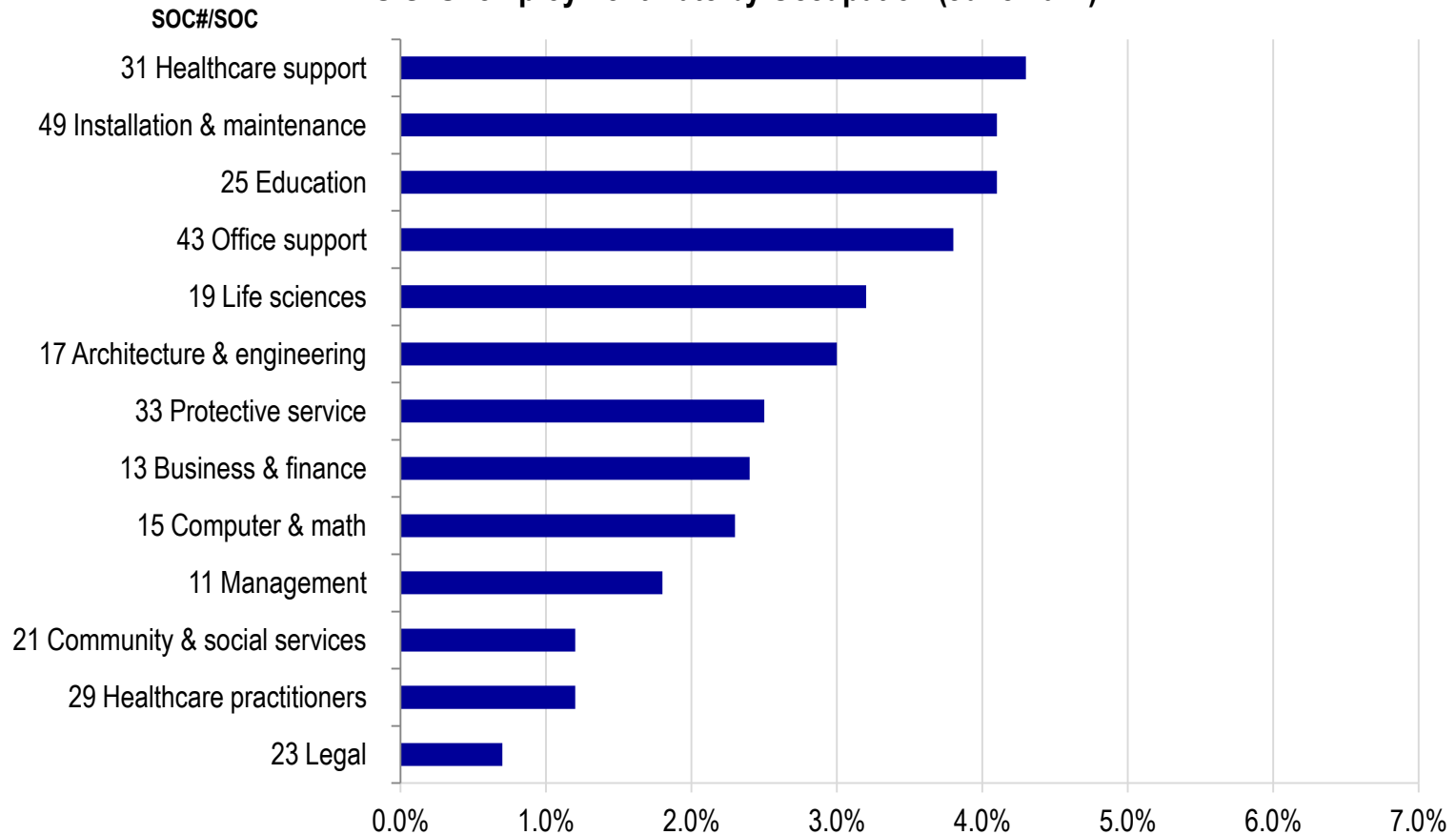
Source: Bureau of Labor Statistics, NSA, cber.co.

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U.S. Unemployment Rates by Occupation

Occupations with Unemployment Rates Below 4.4% (U.S. rate)

U.S. Unemployment Rate by Occupation (June 2017)

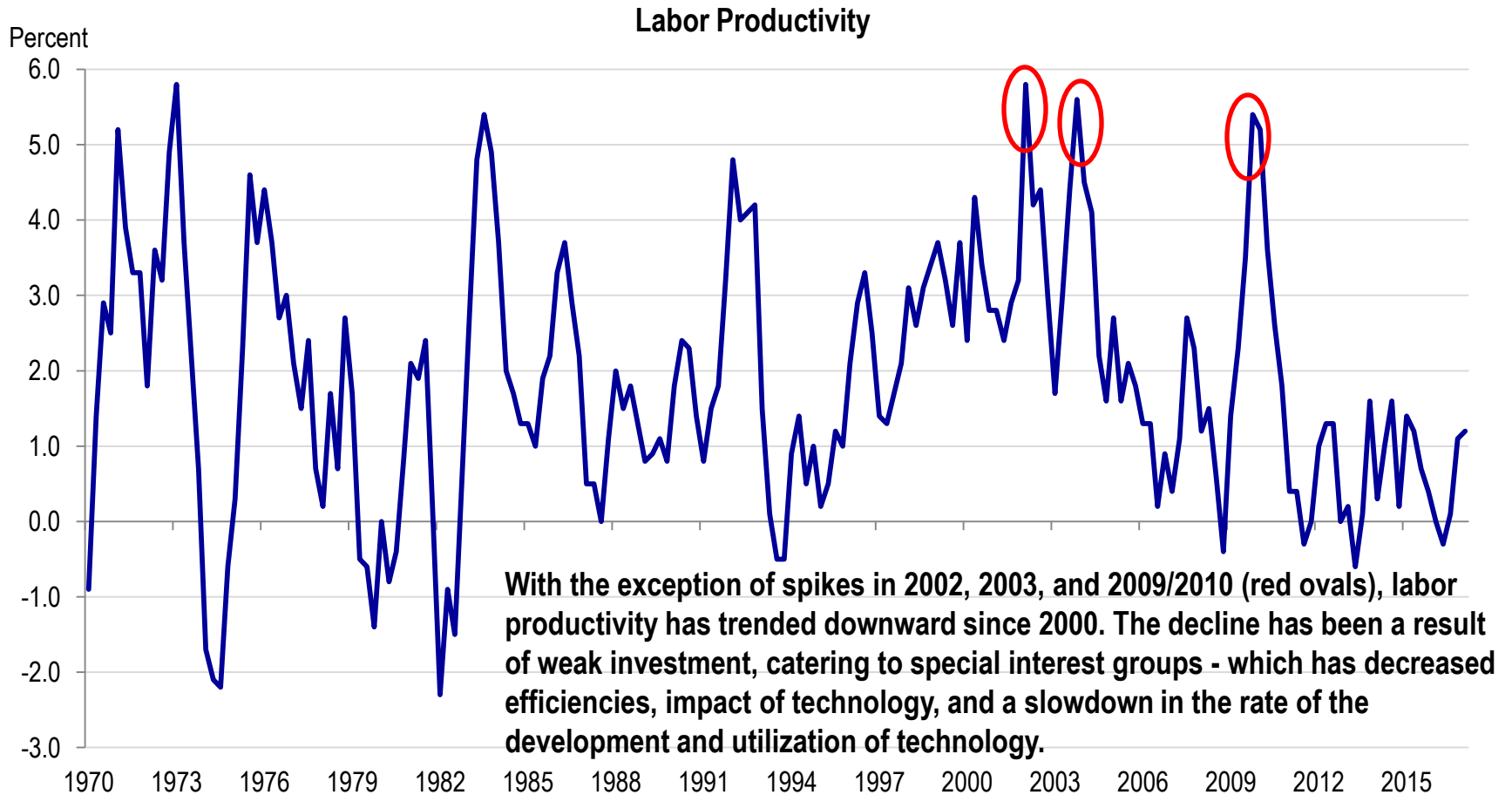


Source: Bureau of Labor Statistics, NSA.

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U.S. Labor Productivity (Output per Hour)

Percent Change Same Quarter Prior Year Nonfarm Business



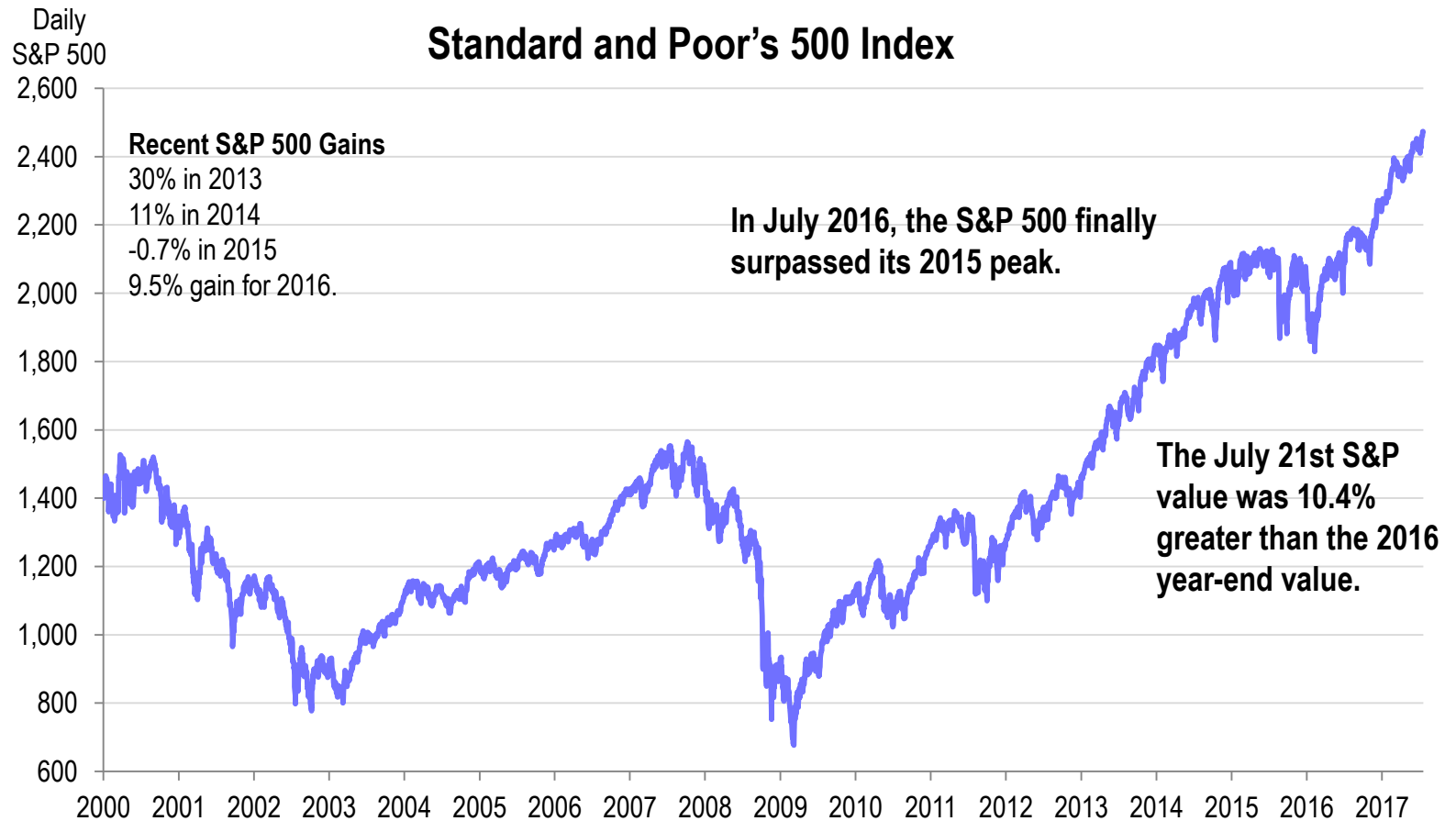
Source: Bureau of Labor Statistics, NSA, cber.co.



The U.S. Economy

Equities, Equity Volatility, Corporate Profits

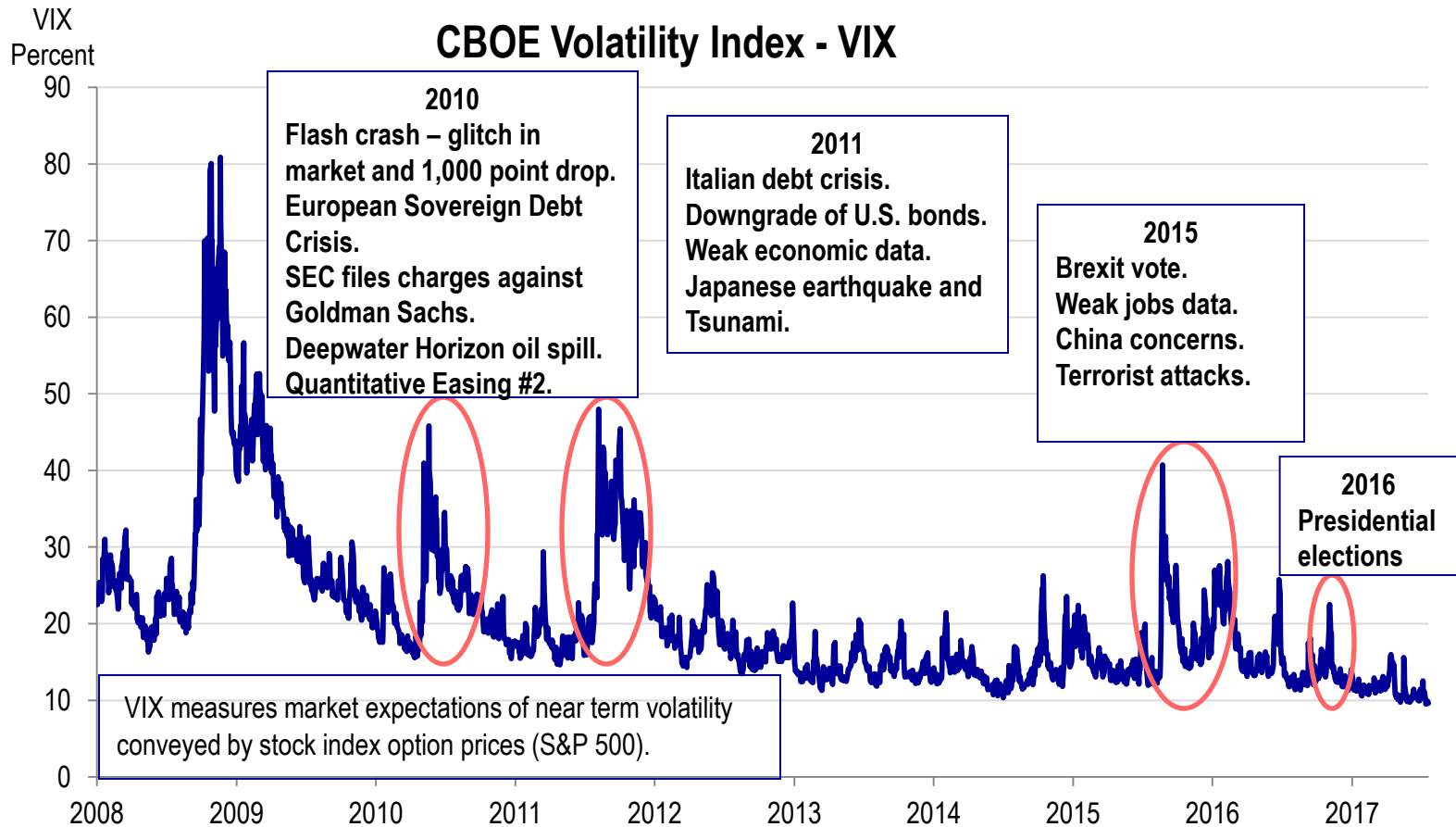
Standard and Poor's 500 Index



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

CBOE Volatility Index

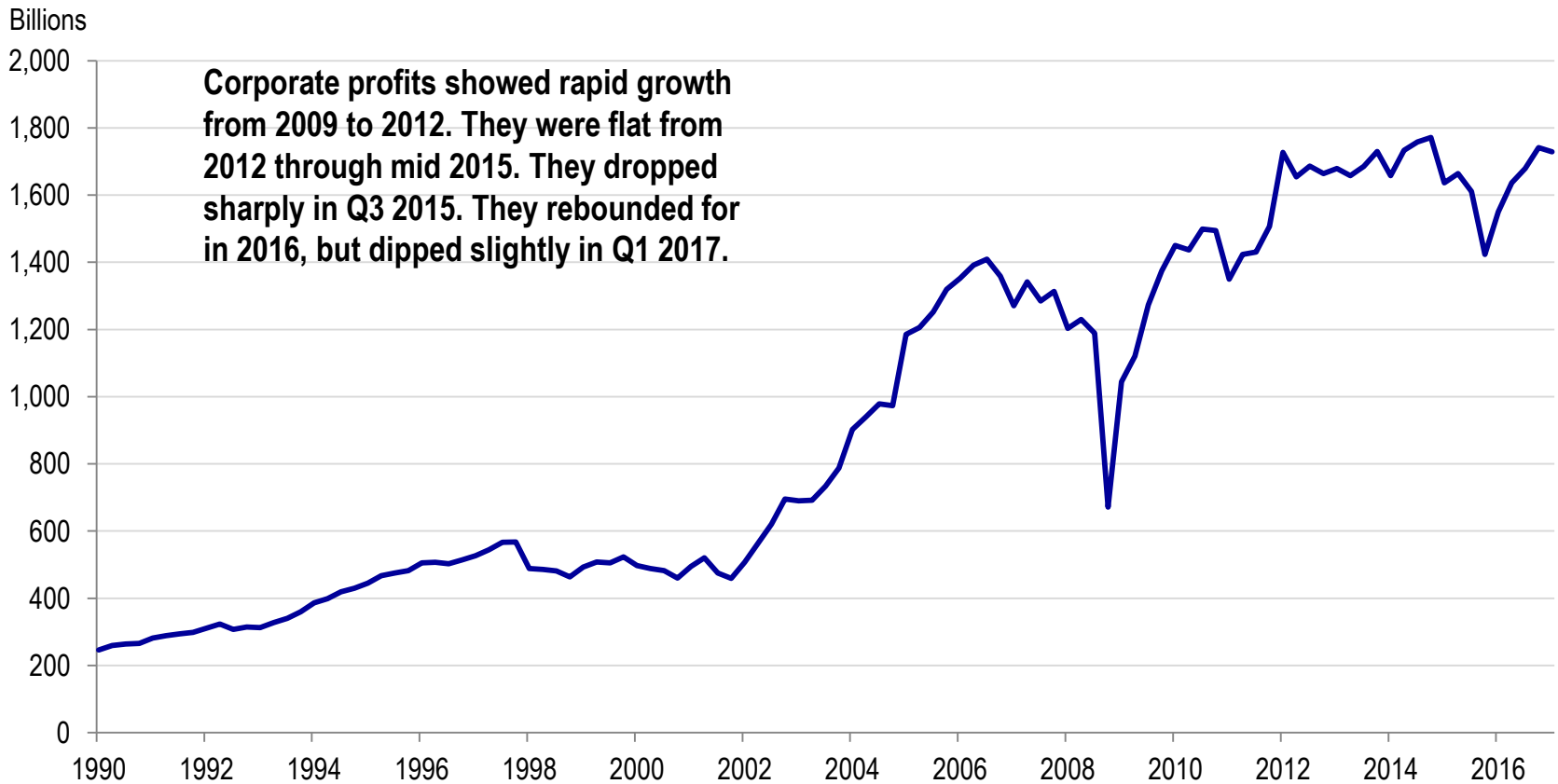
VIX (VIXCLS)



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

Corporate Profits After Tax (without IVA and CCAdj)

Corporate Profits After Tax



Source: FRED, BEA.

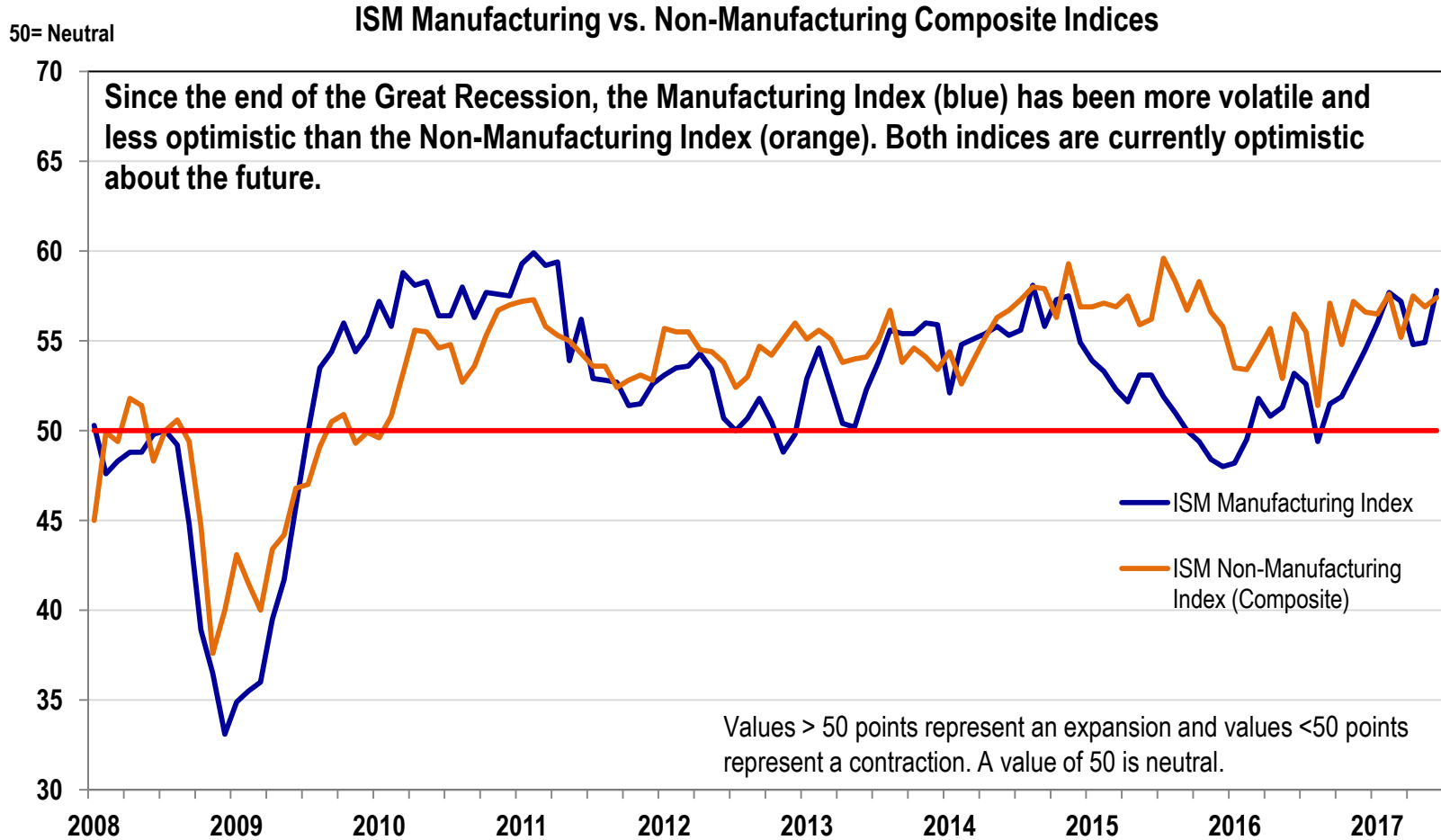


The U.S. Economy

Manufacturing, Non-Manufacturing, Trade Weighted Dollar, CPI,
Retail, Auto Sales

ISM PMI Composite Indices

Manufacturing vs. Non-manufacturing



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

United States Manufacturing Shipments

All Industries vs. Nondefense Capital, Excluding Aircraft

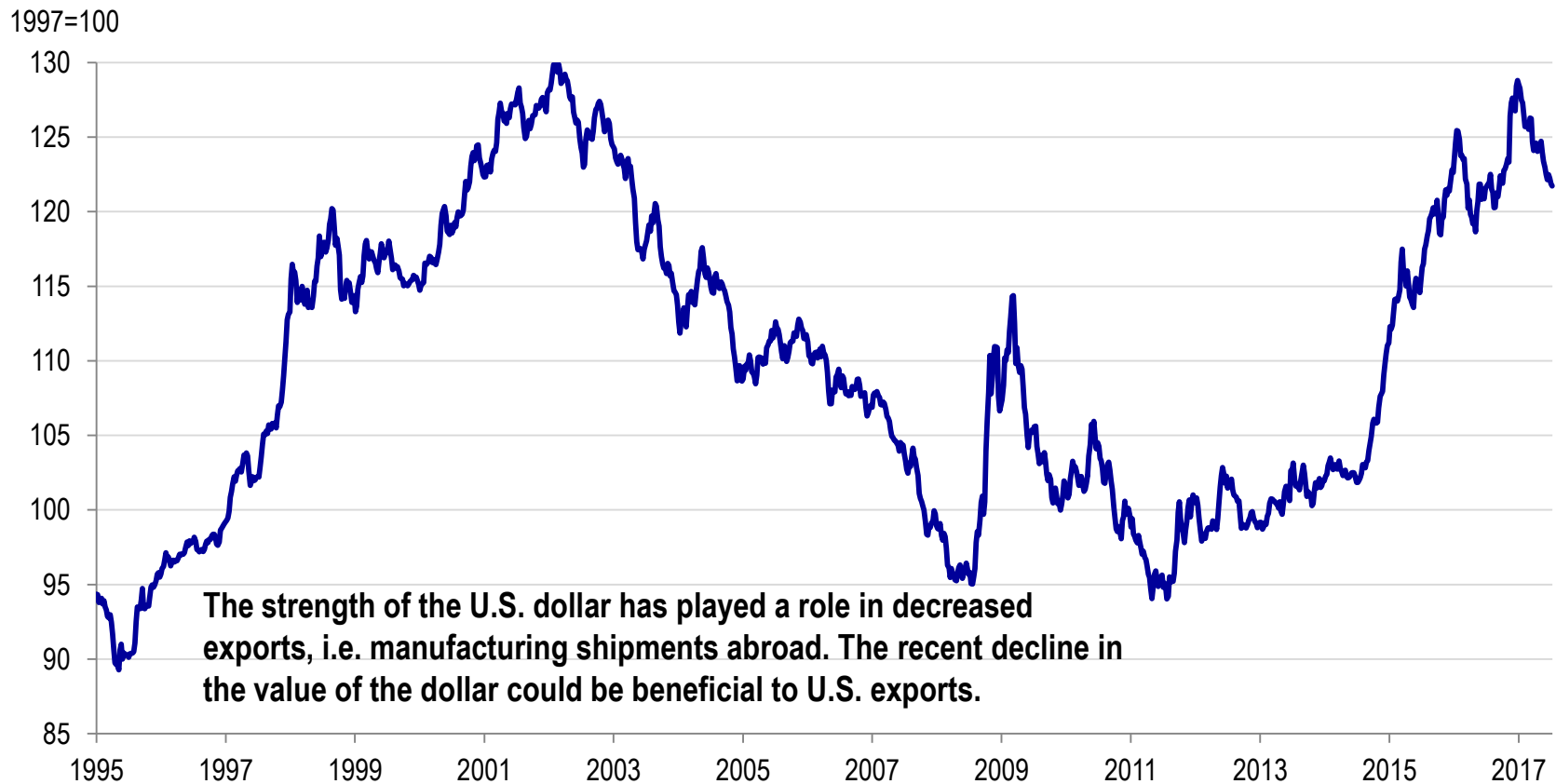


Source: FRED, SA. U.S. Bureau of the Census, cber.co. Note: Not adjusted for inflation.

Trade Weighted U.S. Dollar Index: Broad



Trade Weighted U.S. Dollar Index: Broad



Source: FRED, The Federal Reserve, cber.co.

Colorado-based Business and Economic Research <http://cber.co>

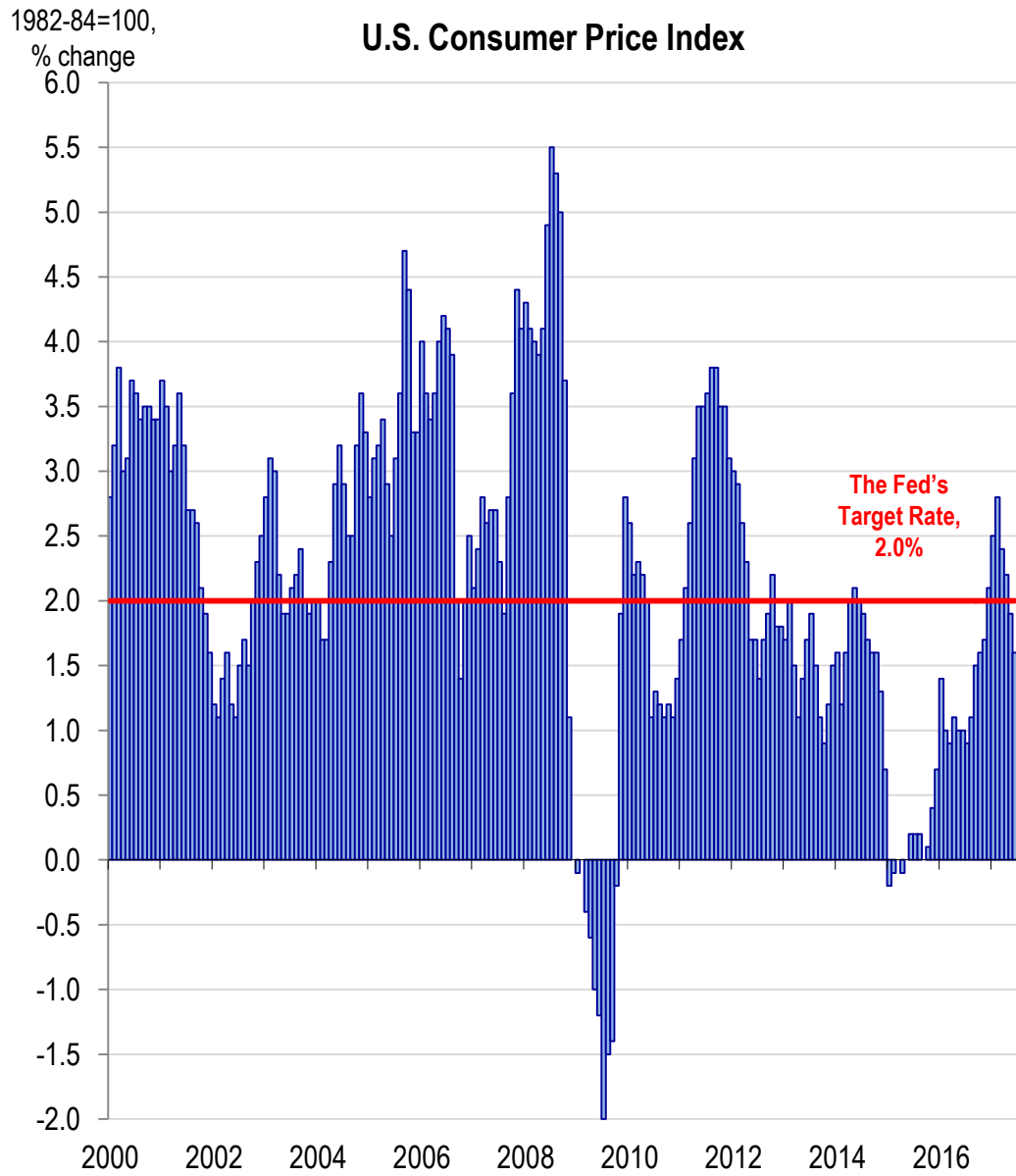
Consumer Price Index (CPI)

In 2015, U.S. inflation, as measured by the seasonally adjusted CPI, dropped precipitously because of lower fuel costs. It increased in the second half of 2016 and peaked at 2.5% in 2017.

In 2017 the rate of Inflation has ranged from 1.6% to 2.5%. The recent decline could impact the Fed's stance on monetary policy.

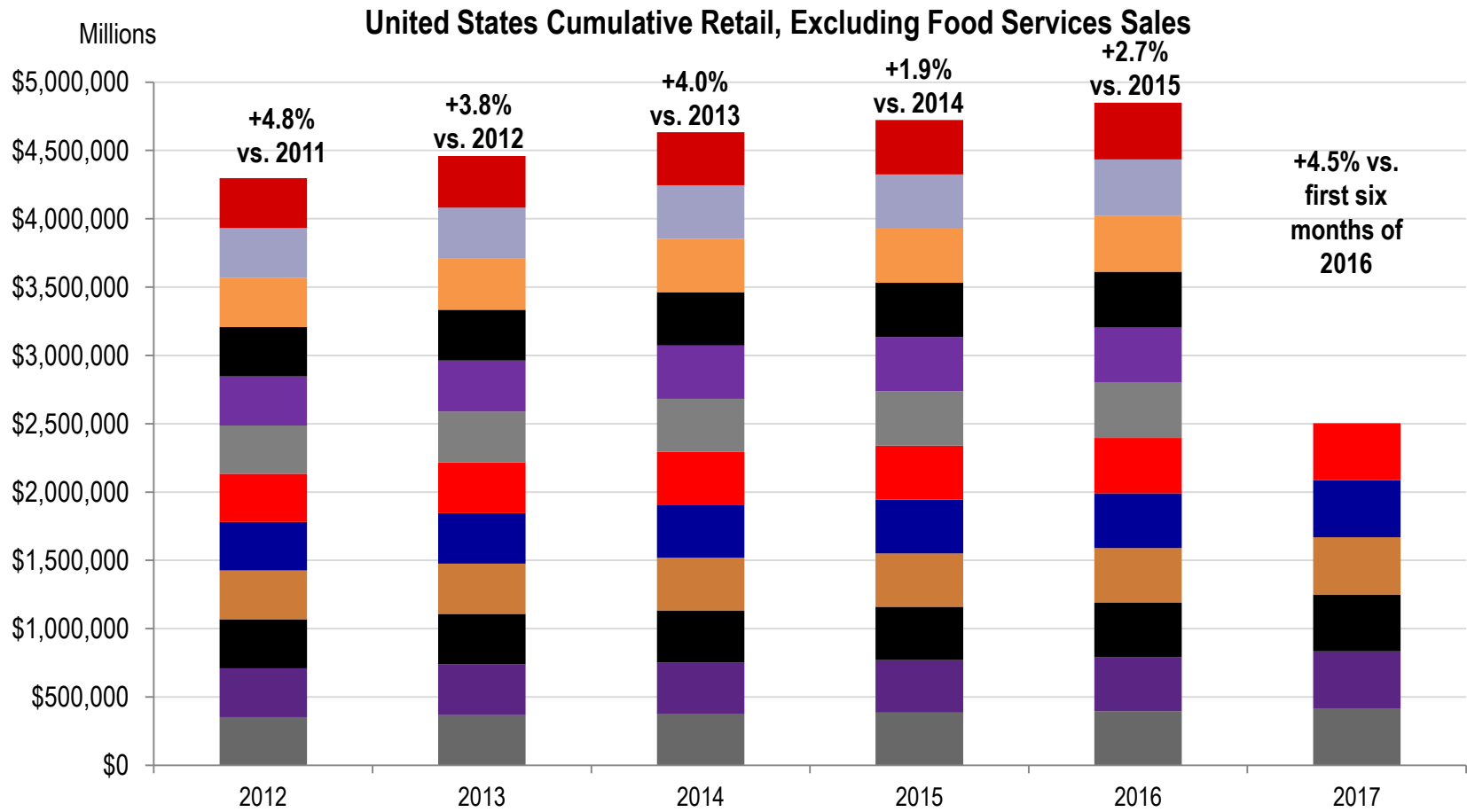
Annual rates for recent years are:

- 2010 1.6%
- 2011 3.2%
- 2012 2.1%
- 2013 1.5%
- 2014 1.6%
- 2015 0.1%
- 2016 1.3%



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

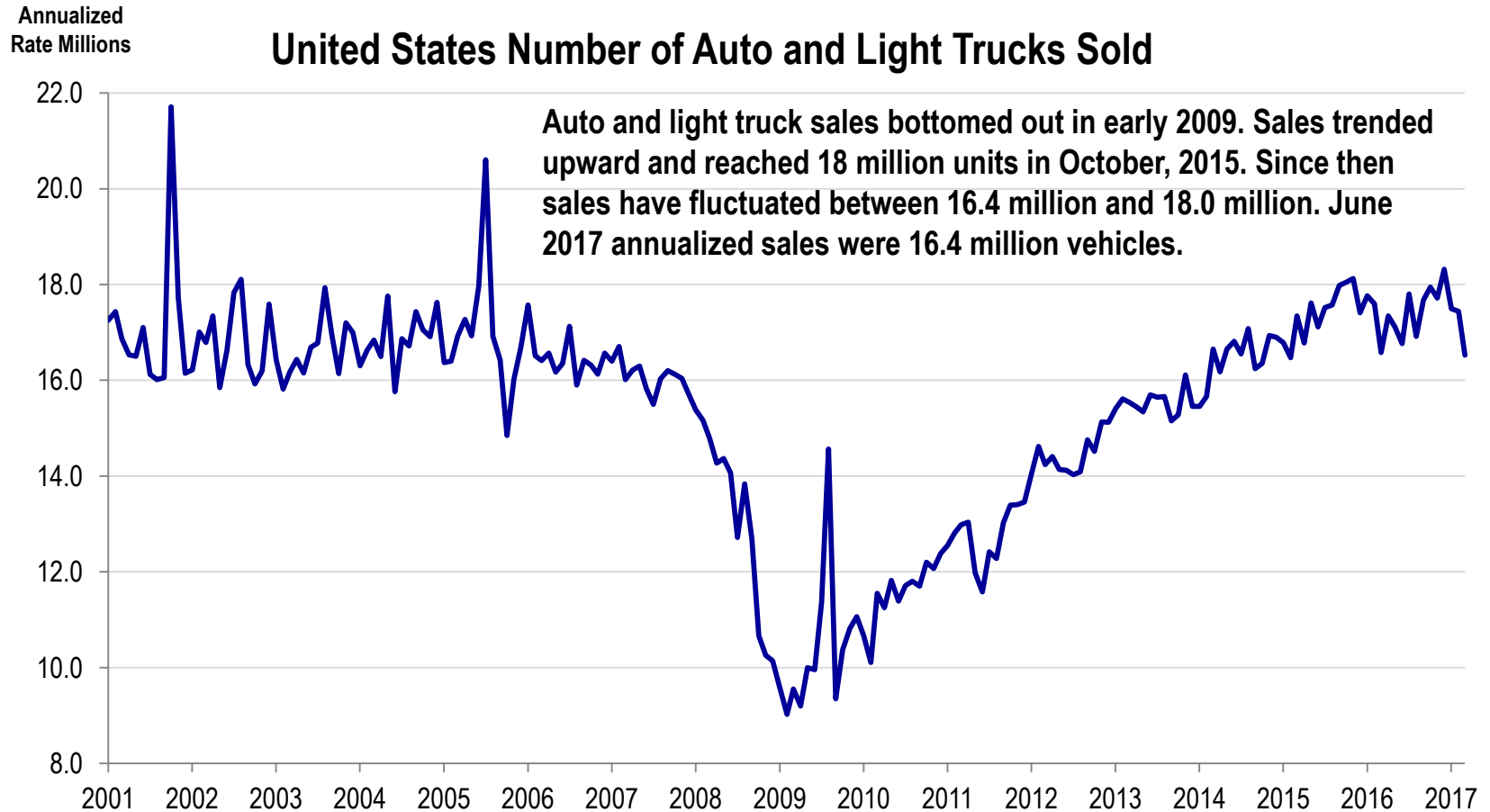
Cumulative Retail, Excluding Food Services Sales



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.

U.S. Weekly Auto and Light Truck Sales



Source: FRED, BEA, cber.co.

Note: Seasonally Adjusted Annualized Rate.

Colorado-based Business and Economic Research <http://cber.co>



The U.S. Economy

Summary

Summary of the Global and U.S. Economy

Despite the political discord, the U.S. economy is on solid footing.

Summary of the Global and U.S. Economy	
Global Economy – The IMF is more optimistic about the global economy than a year ago. It has lowered its expectations for real GDP growth in the U.S. to 2.1% in 2017 and 2018.	Service Industries – Nonmanufacturing businesses are optimistic about the future.
Brexit – Great Britain and the EU are trying to understand how to implement Brexit	Manufacturing – The dollar has weakened and there has been a slight turnaround in manufacturing.
Global Geopolitical Tensions – Is North Korea a threat? When will the war in Syria end? Which country is next?	Productivity – Will business investment improve and the downward trend in labor productivity be reversed?
U.S. Real GDP – Consumers are continuing to spend and business investment should increase.	U.S. Auto Sales – Light automobiles and trucks are being sold at a slower rate in 2017.
The Fed – The Fed is optimistic about the economy and plans to continue rate increases.	Debt – Will the level of personal and government debt become an issue in 2017?
Jobs - The U.S. is on track to at 2.2 million jobs in 2017.	Housing Prices - U.S. housing prices continue to rise, which keeps consumer confidence in positive territory. Despite high prices, home sales continue to be solid.
Labor Shortages – There are critical labor shortages in key occupations and industries in many states.	Equity Markets – We are in a bull market. Long may it run!



The Colorado Economy

Real GDP Growth, Real GDP Growth by Industry, Real per Capita GDP by MSA, Real GDP by MSA, CPI

2016 Real GDP Growth Colorado

Reasons for Evaluating real GDP

Most economic forecasts focus on employment because it is a concept the public understands. In addition, employment data is produced on a monthly basis.

It is also important to look at the various industries based on their real Gross Domestic Product, although GDP data is not available on as timely a basis as employment data.

Some industries make small contributions to employment, but significant contributions to real GDP. The opposite is also true. In other words, all sectors contribute to the economy in important, but different ways.

What to Look for in this Analysis

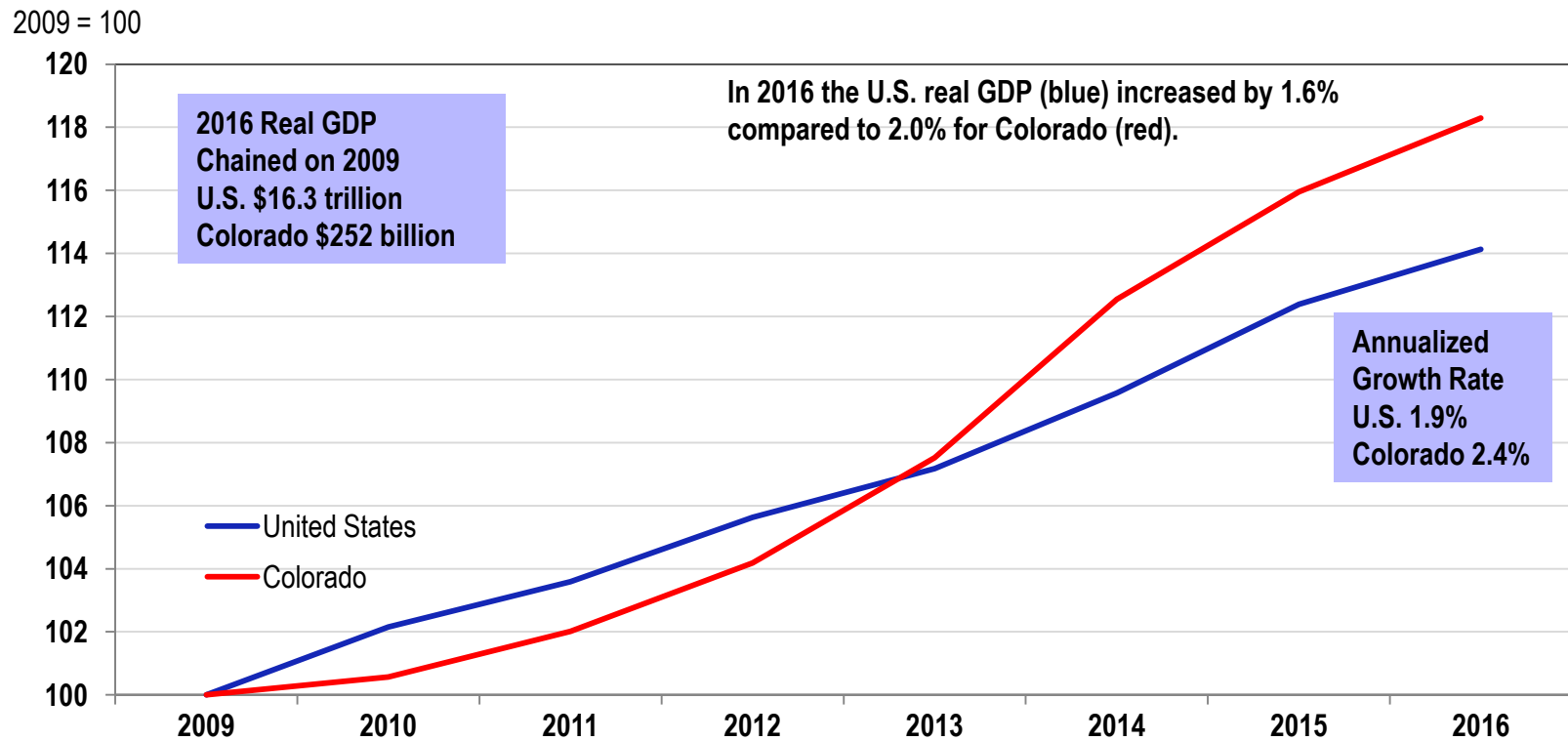
The next four charts analyze the GDP in the following ways.

- The analysis compares the rate of change in the real GDP for Colorado and the U.S for 2015 vs. 2016.
- The analysis lists the sectors where the change in real GDP (2015 vs. 2016) is less than the state average (2.0%). It also lists the sectors where the change in real GDP (2015 vs. 2016) is greater than or equal to the state average.
- The analysis looks at the annualized rate of change in the real GDP for Colorado's MSAs for the years 2009 to 2016.
- The analysis compares the real GDP per capita for Colorado's MSAs.

Index of Real GDP

Colorado vs. U.S.

Index of Real GDP 2009 to 2016

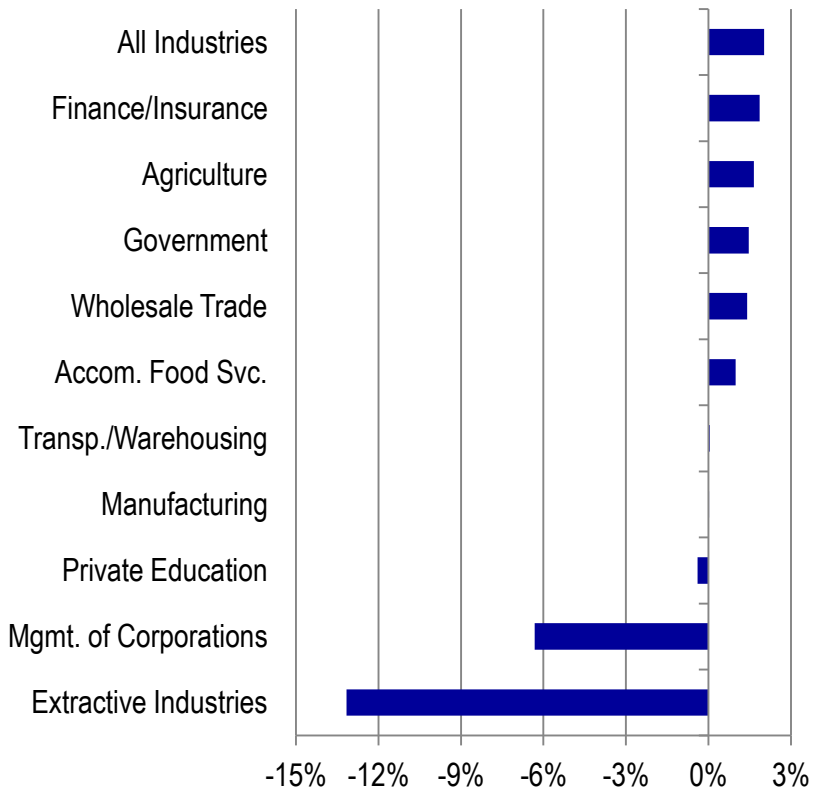


Source: Bureau of Economic Analysis. Note: U.S. real GDP is summary of states GDP.

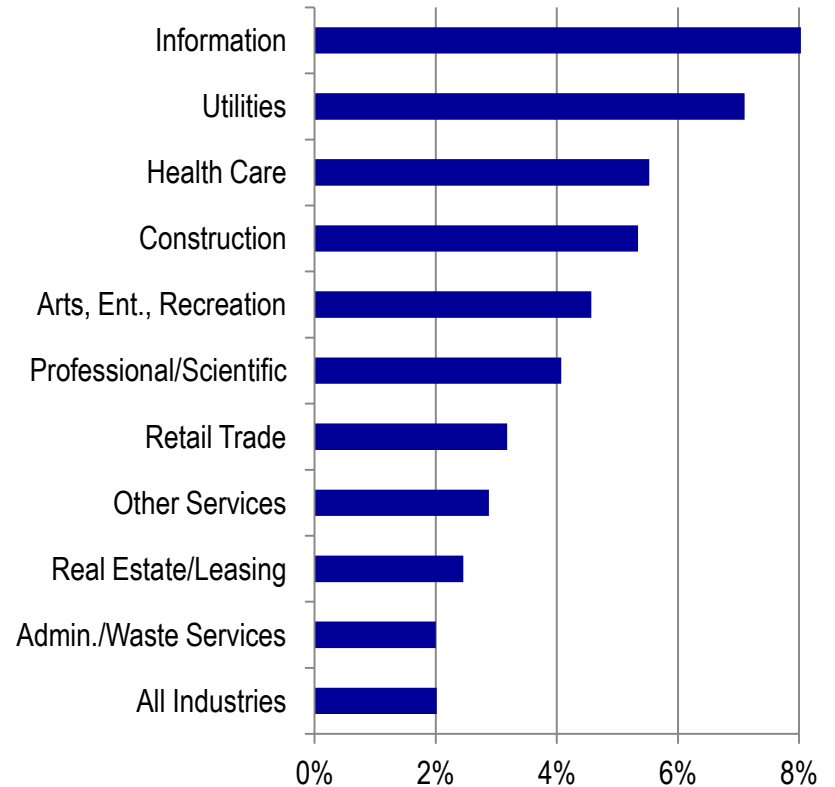
2016 Real GDP Growth Colorado

Major Sectors

**2016 Real GDP by Sector
Less than State (2.0%)**



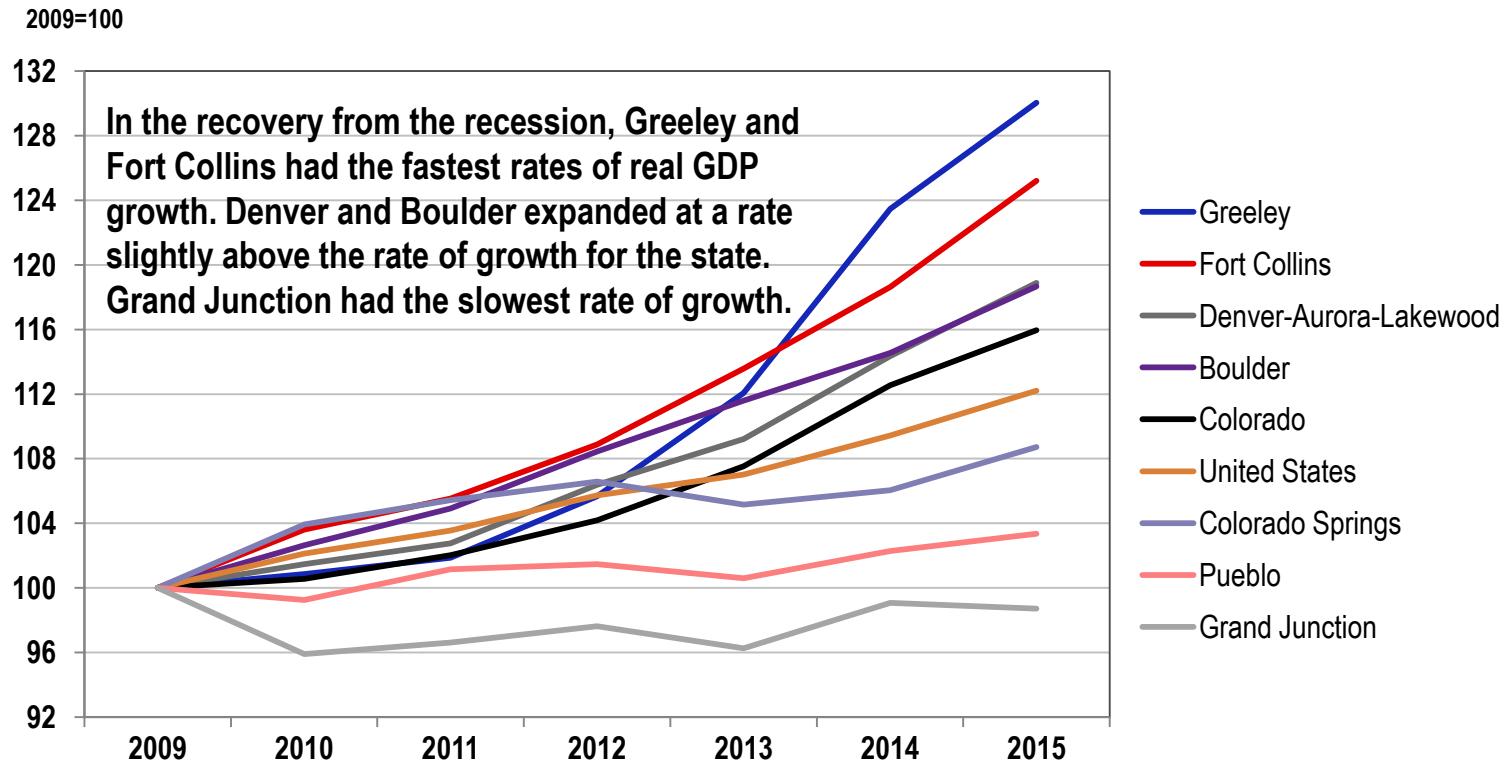
**2016 Real GDP by Sector
Greater than or Equal to State (2.0%)**



Colorado Real GDP

by MSA

Real GDP (2009-2015)

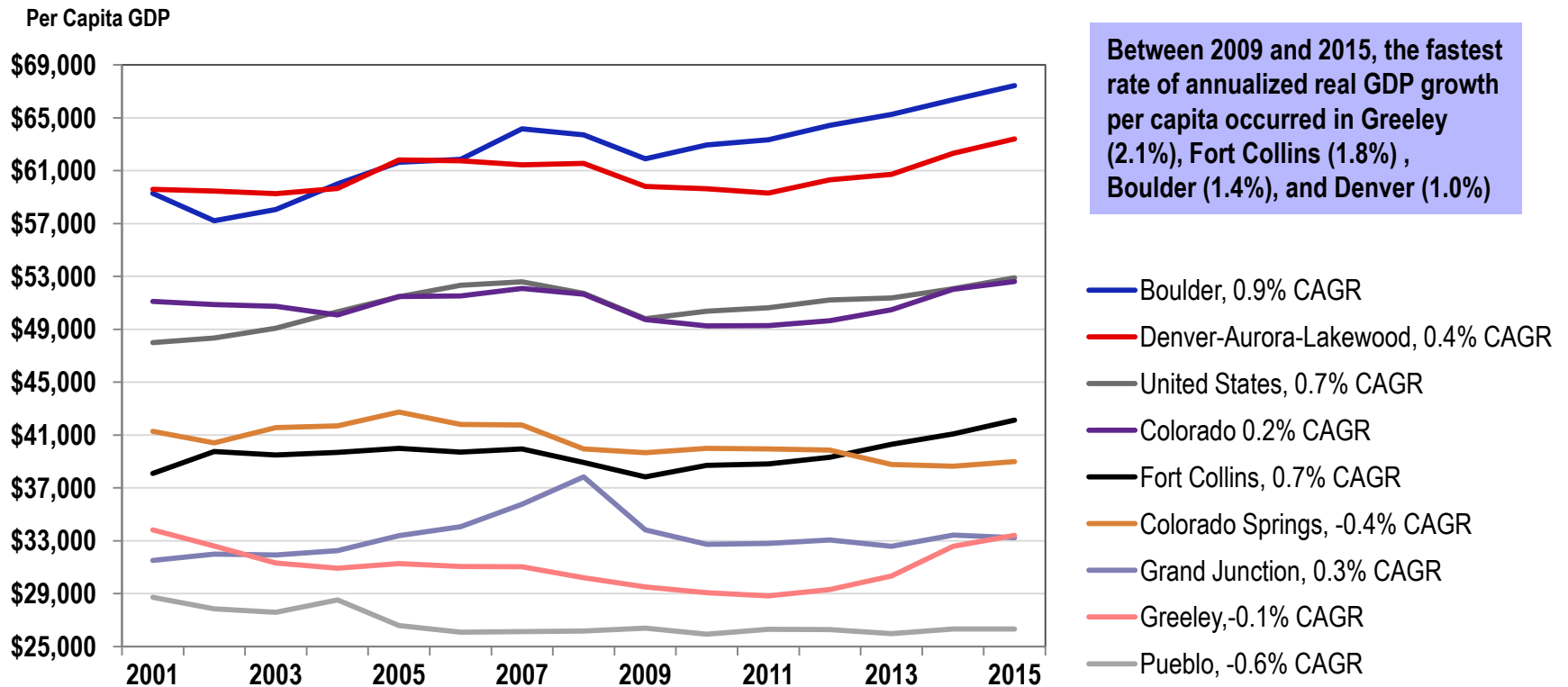


Source: Bureau of Economic Analysis, cber.co. Note: 2015 is the most current year.

● Real Per Capita GDP by MSA and Annualized Growth Rates

● Growth Rates

Per Capita GDP and Annualized Growth Rates (2001-2015)



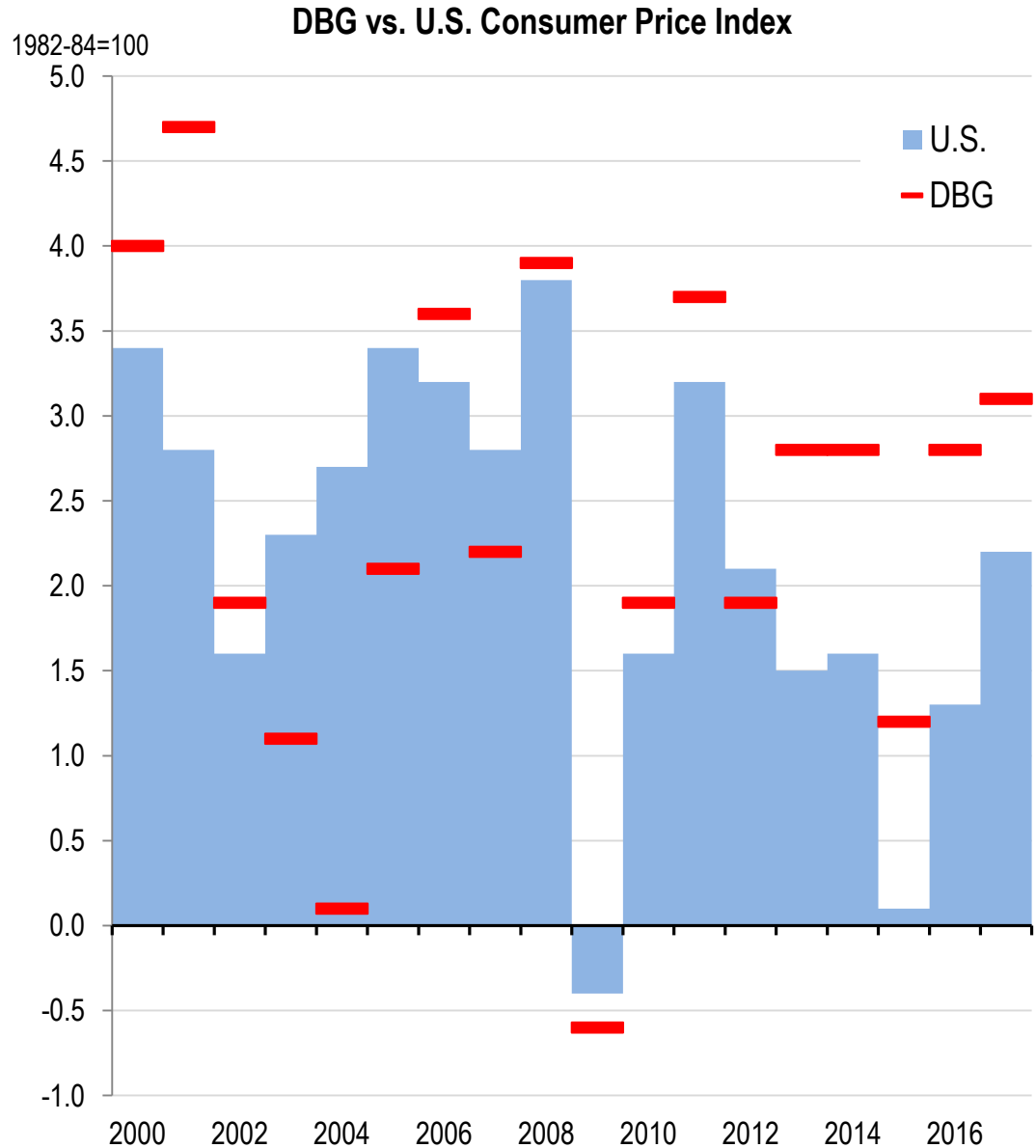
Source: Bureau of Economic Analysis, cber.co.

Consumer Price Index (CPI)

The Denver-Boulder-Greeley (DBG) CPI (red bars) has been greater than the U.S. CPI 12 of 18 times between 2000 and 2017. The DBG inflation rate was lower than the U.S. rate for five of the six years between 2003 and 2009.

Recently, higher housing prices and medical costs have caused Colorado to be a more expensive place to live.

After the first six months of 2017, the Denver-Boulder-Greeley CPI is 3.1% and the U.S. rate is 2.2%.



Source: Bureau of Labor Statistics, cber.co.



The Colorado Economy

Population, Employment, Unemployment by MSA, Unemployment by Select Counties

Colorado Population Components of Change

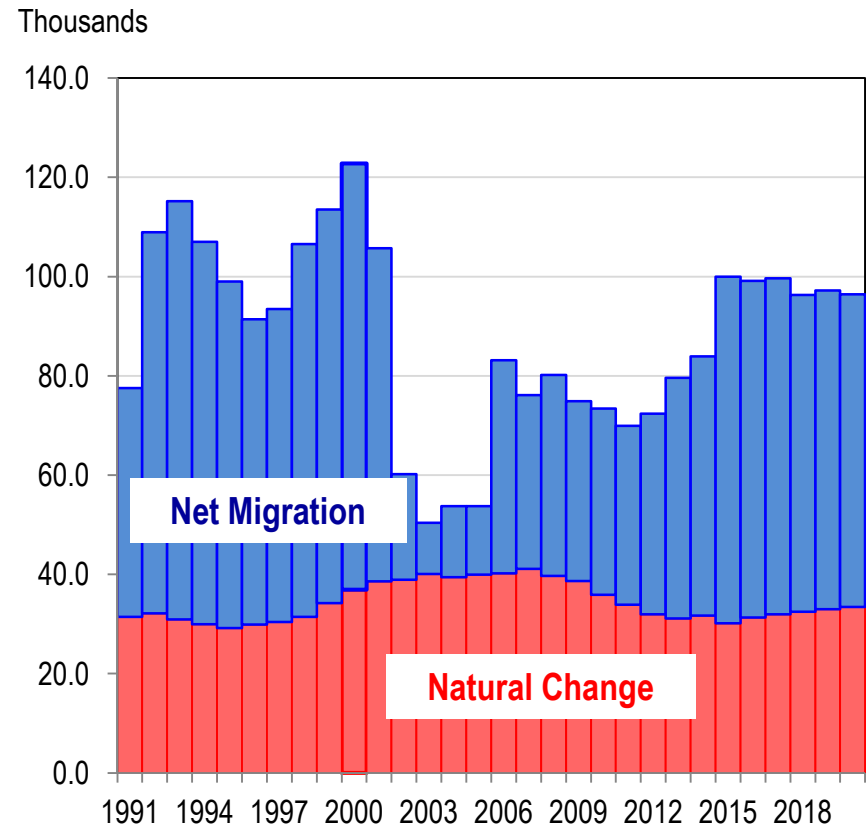
The population increases and decreases are a result of the natural rate of change (births minus deaths) and the change in net migration (people moving into the state minus people moving out of the state).

Over the past 2½ decades the natural rate of change (red bars) varied from a low of 29,145 in 1995 to a peak of 41,124 in 2007. For the past 10 years it has been slightly above 30,000.

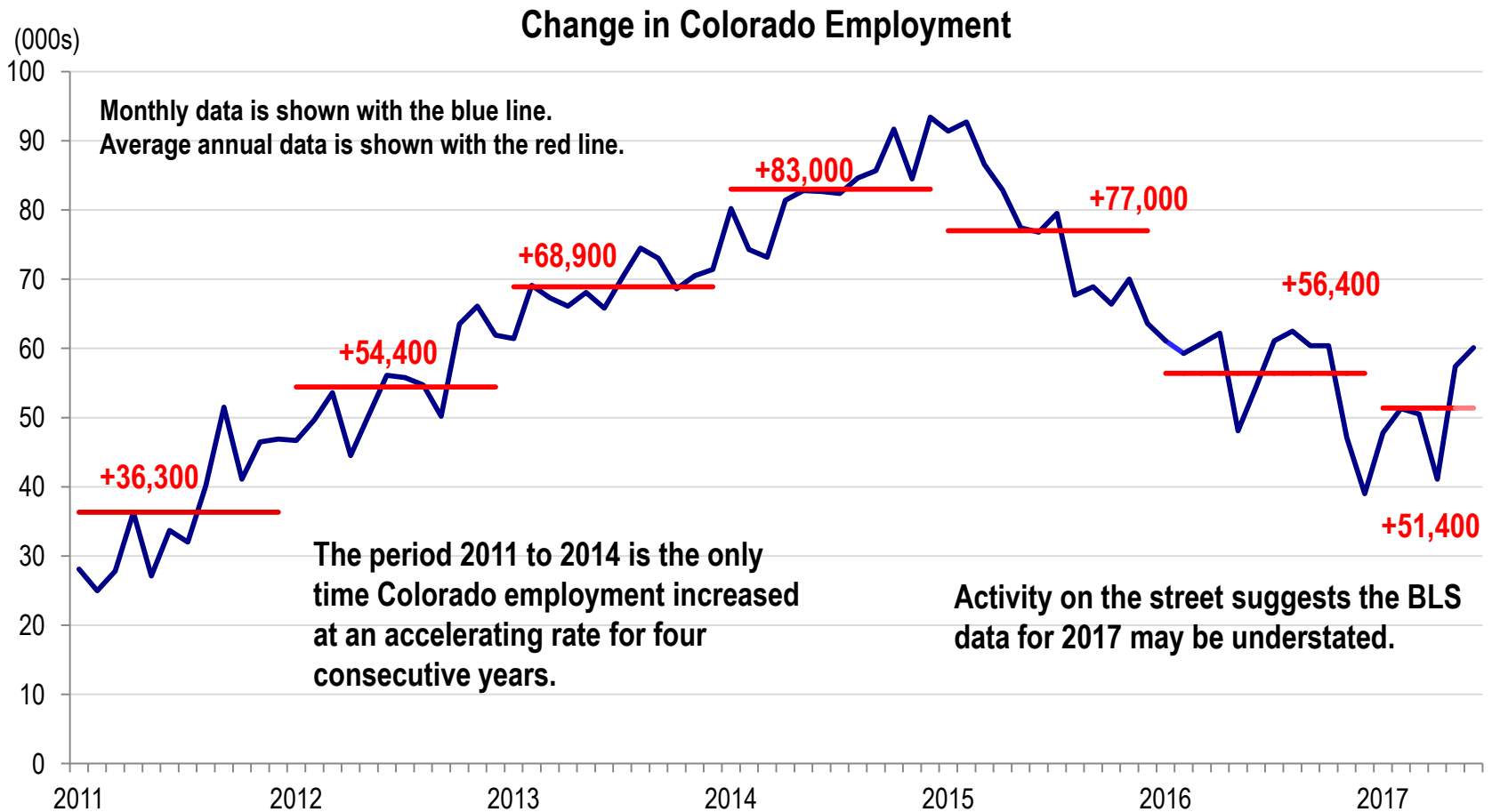
Changes resulting from net migration (blue bars) are closely tied to the strength of the economy and the change in state employment. For example, there were five years, from 1986 to 1990, when net migration was negative (not shown on this chart). More people moved out of state than moved into the state to escape a regional recession. During the past two recessions, net migration declined, but did not turn negative. It was difficult for people to move anywhere to escape the downturn.

The Colorado population will increase by about 100,000 in 2015, 2016, and 2017. In 2017 the state's population will increase by 1.8% to 5.655,405.

Change in Colorado Population 1991 - 2016



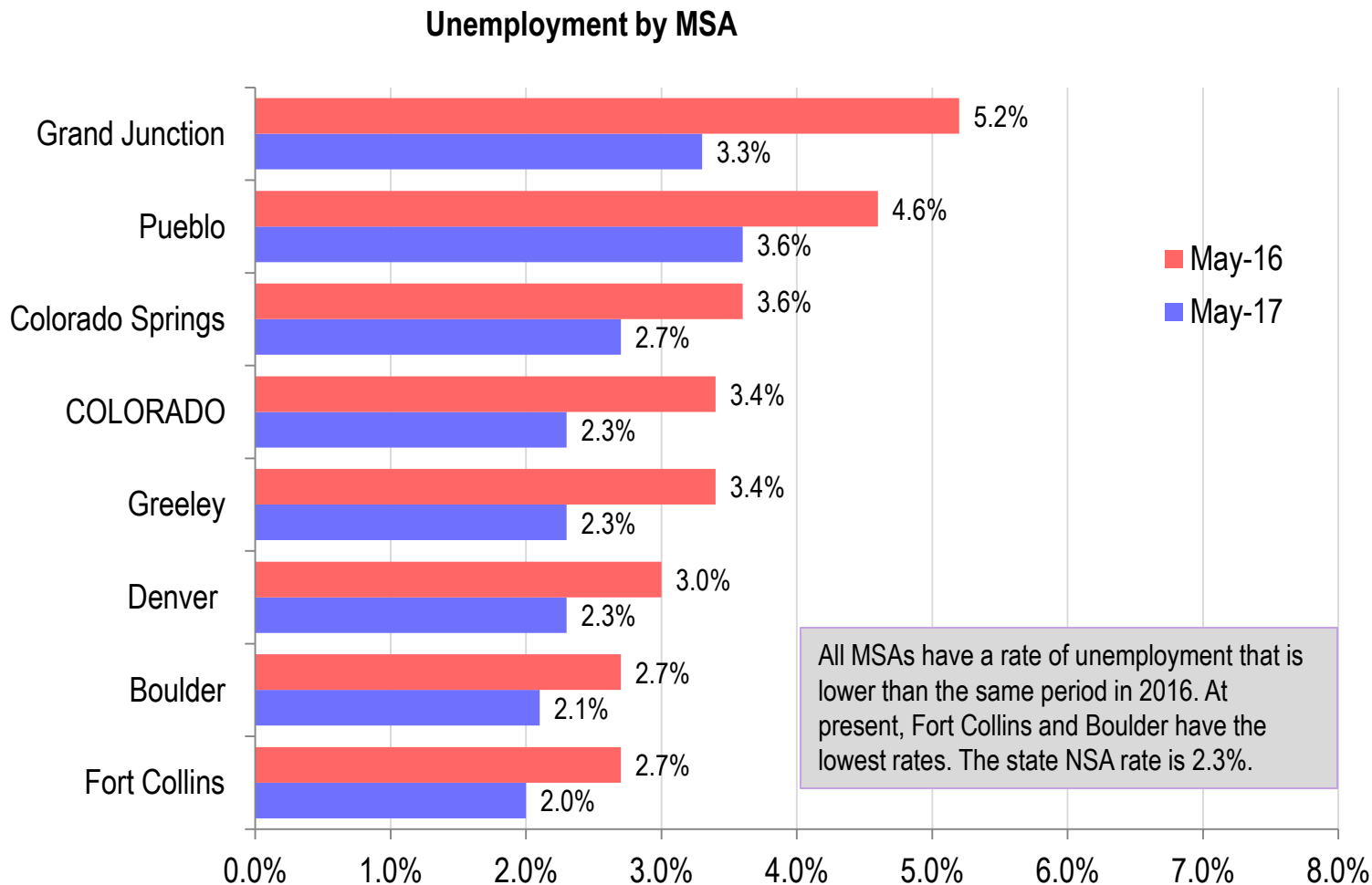
Change in Colorado Employment Year-Over-Year



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

Unemployment by MSA

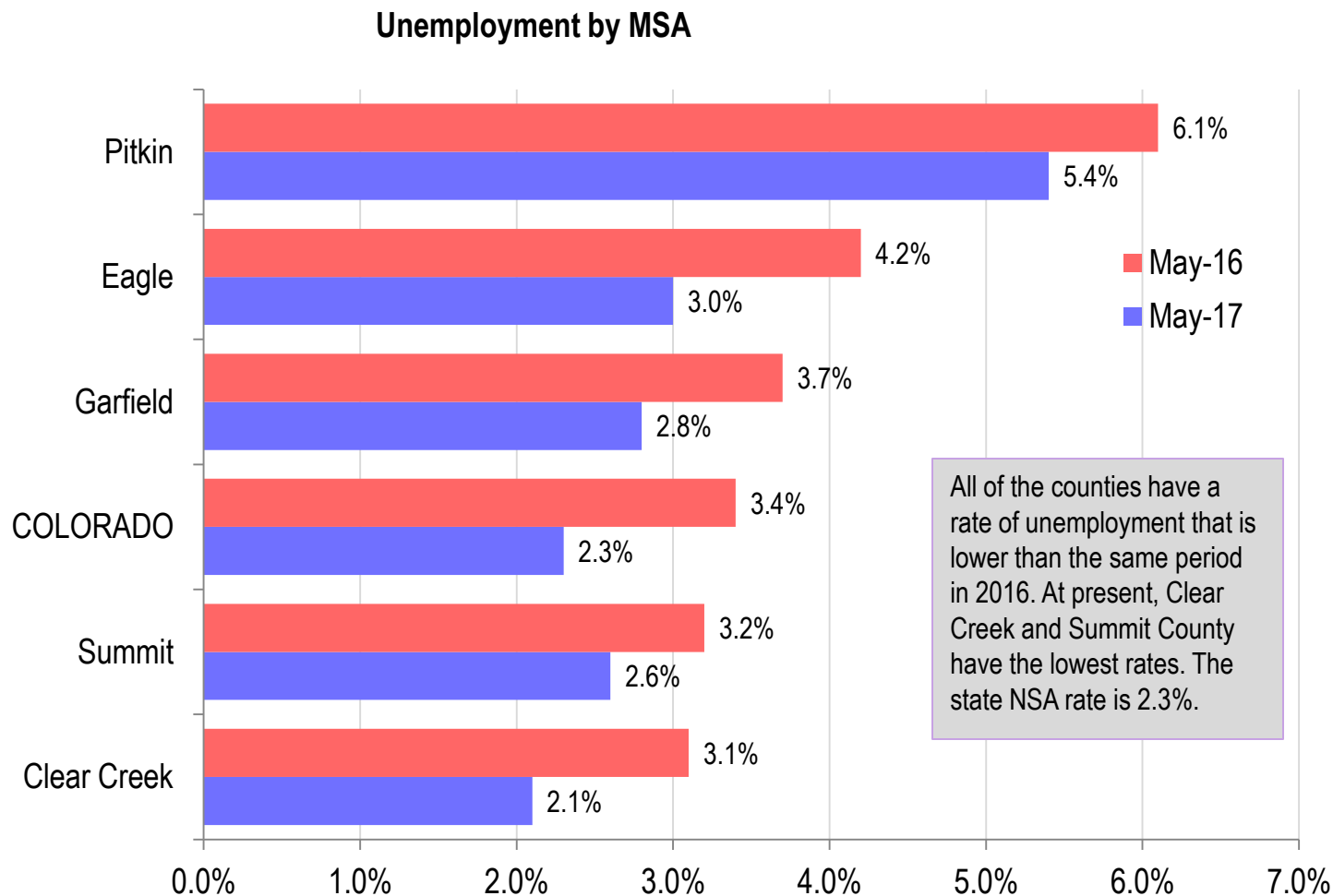
2016 vs. 2017



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.

Unemployment by County (I-70)

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 – 22,800 jobs added, 2.7% growth rate.

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

Solid Growth Category – 20,800 jobs added, 2.1% growth rate.

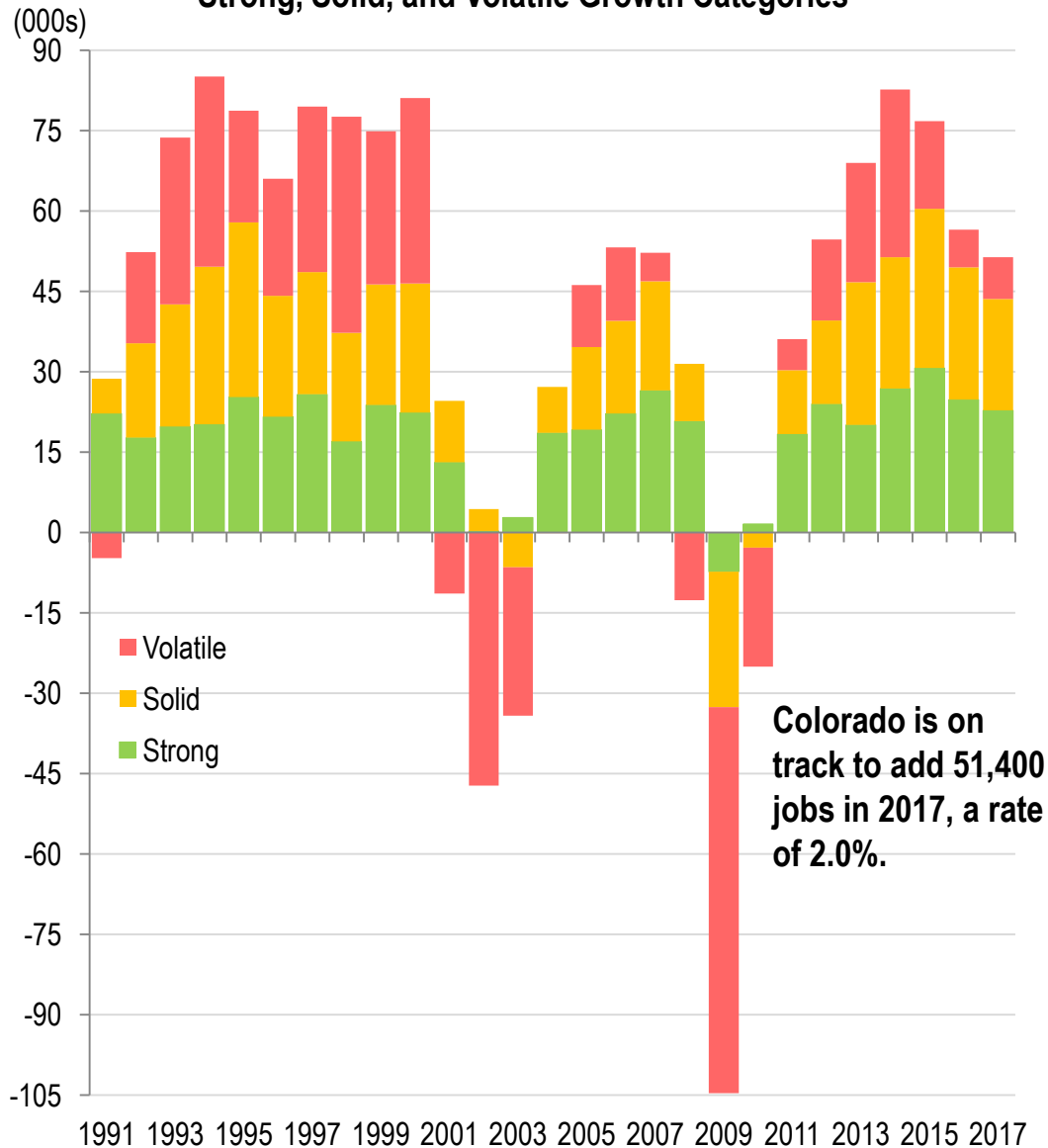
Accommodations and food services, trade, and state and local government are the major sectors.

Volatile Category – 7,800 jobs added 1.1% growth rate.

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

Colorado is on track to add **51,400 jobs** in 2017, a rate of **2.0%**, based on employment data through June.

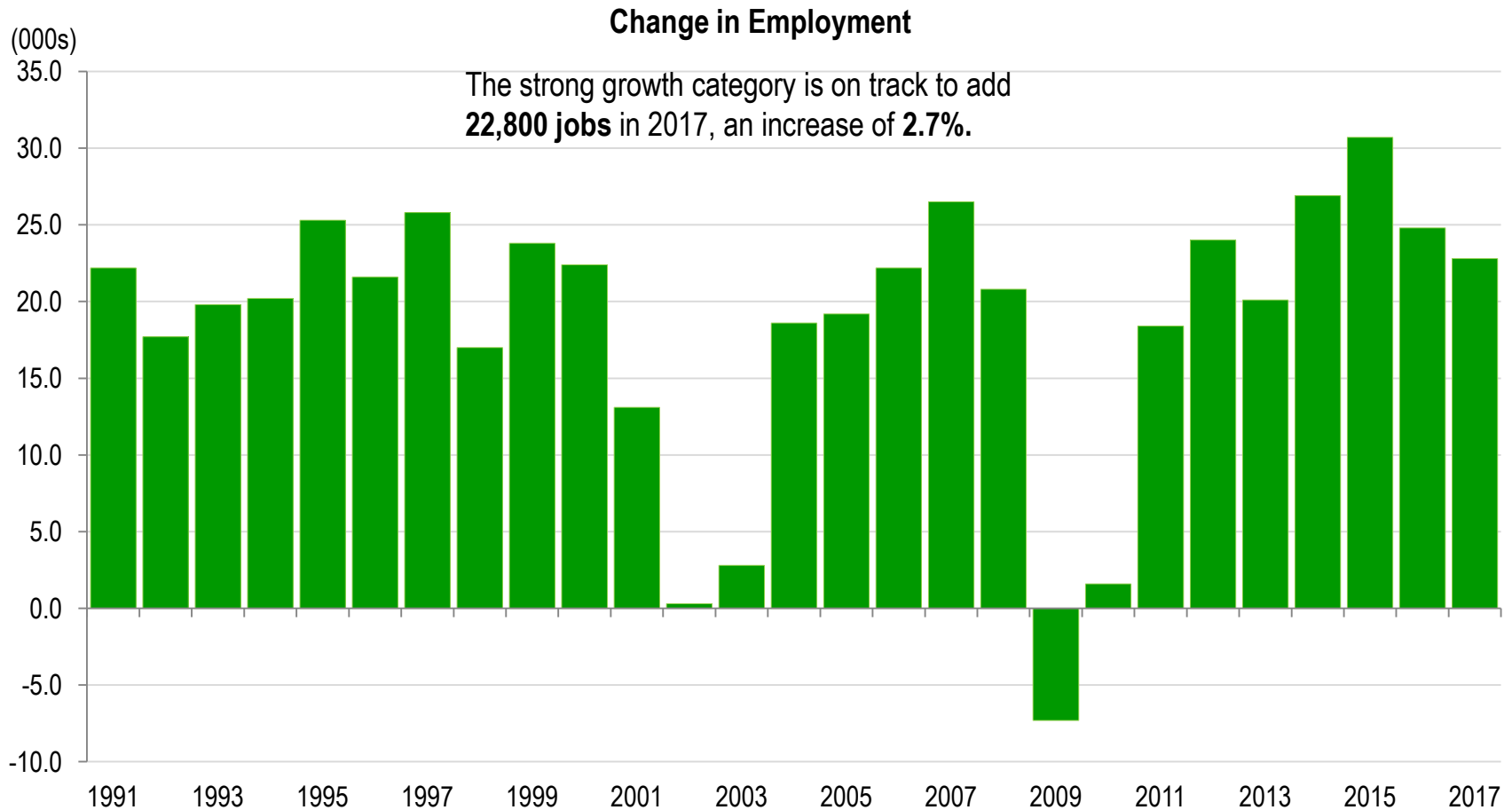
Strong, Solid, and Volatile Growth Categories



Source: Bureau of Labor Statistics, cber.co.

Change in Employment

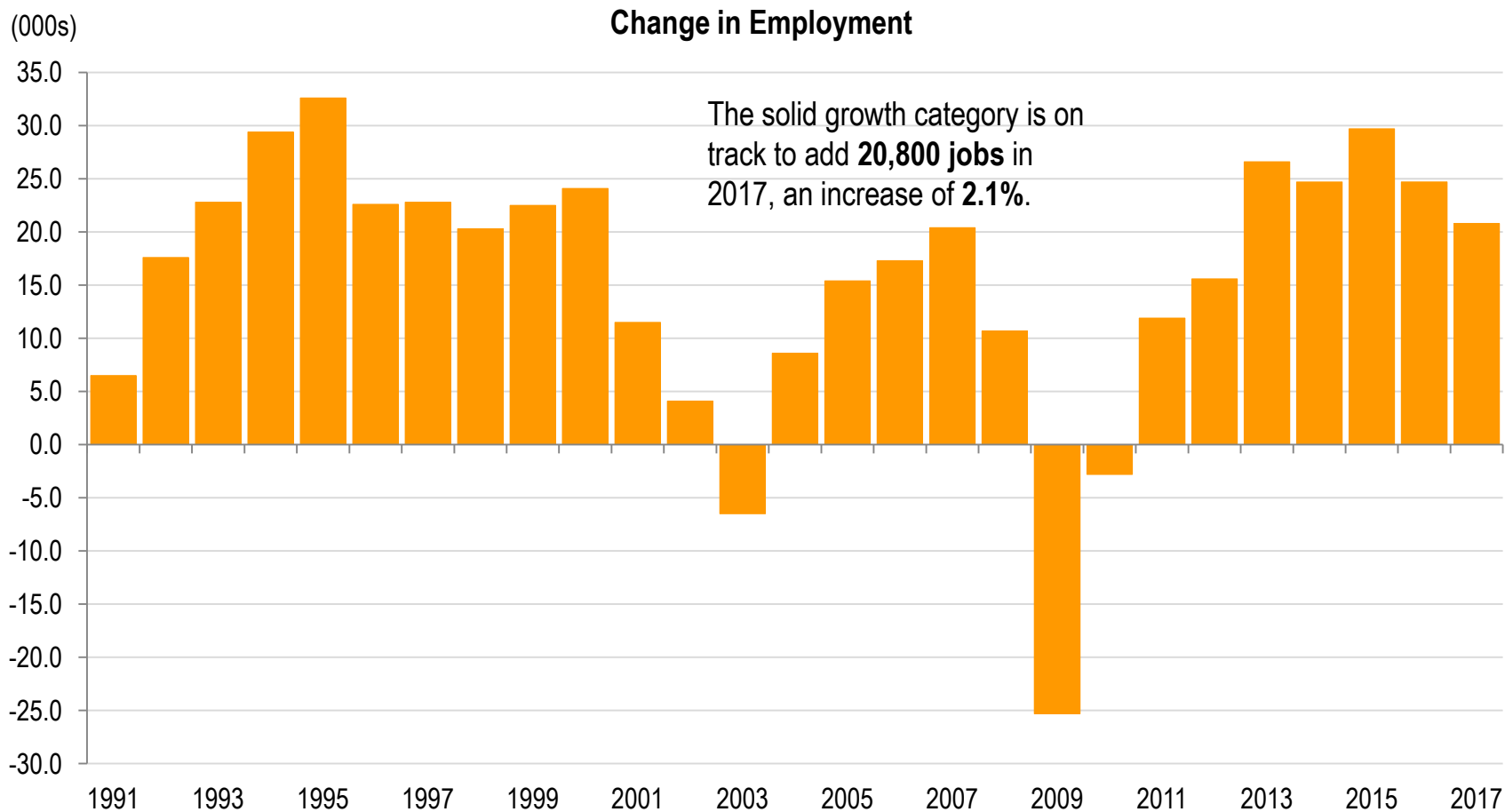
Strong Growth Category



Source: Bureau of Labor Statistics, cber.co.

Change in Employment

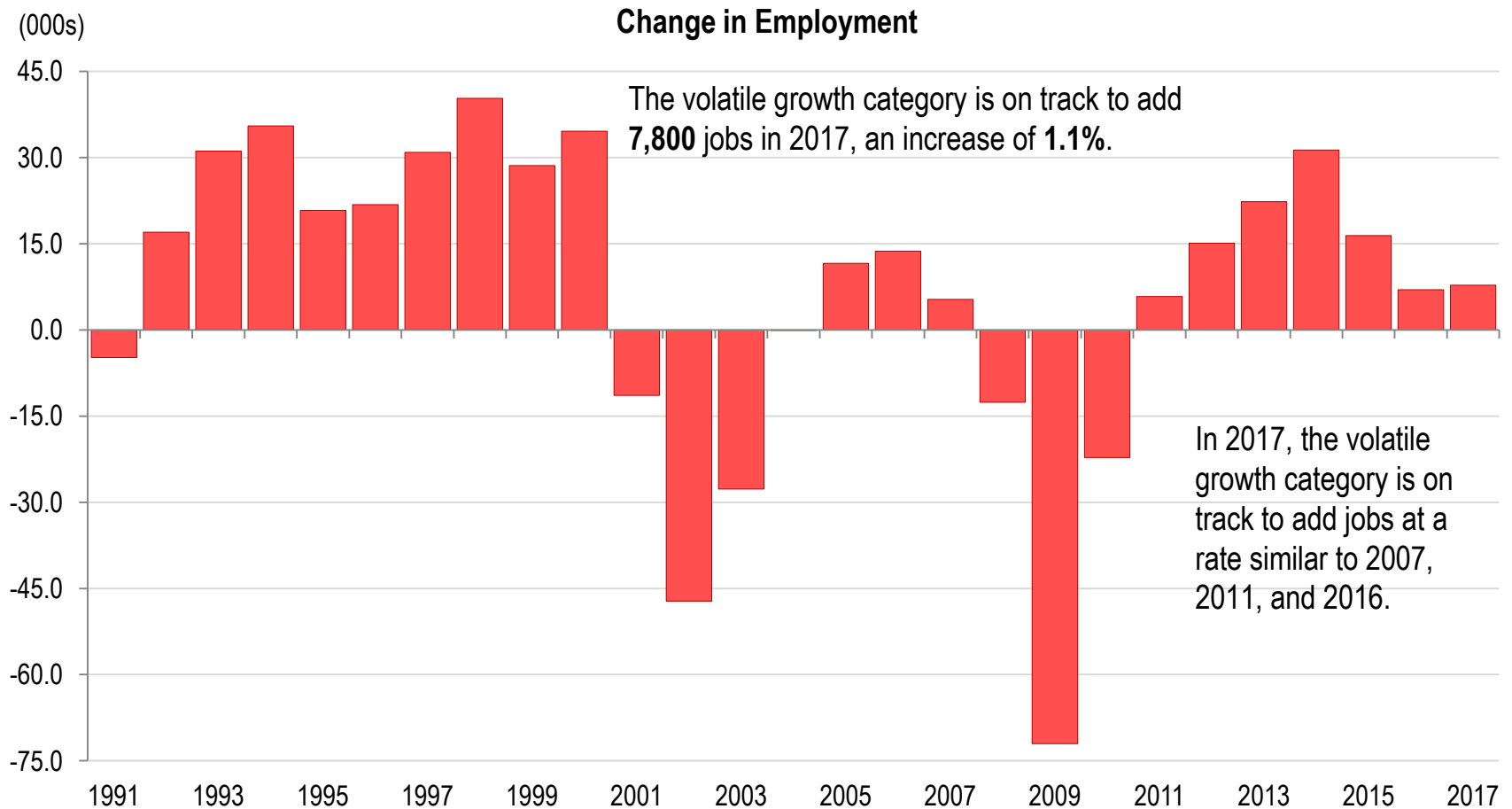
Solid Growth Category



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 that are contributing job growth to the strong growth, solid growth, and volatile job categories. Combined, these sectors are responsible for 70.5% of the jobs added in 2017.

Strong Growth Category

- Healthcare 16.9% of jobs added
- PST 12.8% of jobs added

Total 29.7% of jobs added, or 15,300 jobs.

Solid Growth Category

- AFS 17.7% of jobs added
- Retail 12.3% of jobs added

Total 30.0% of jobs added, or 15,400 jobs.

Volatile Category

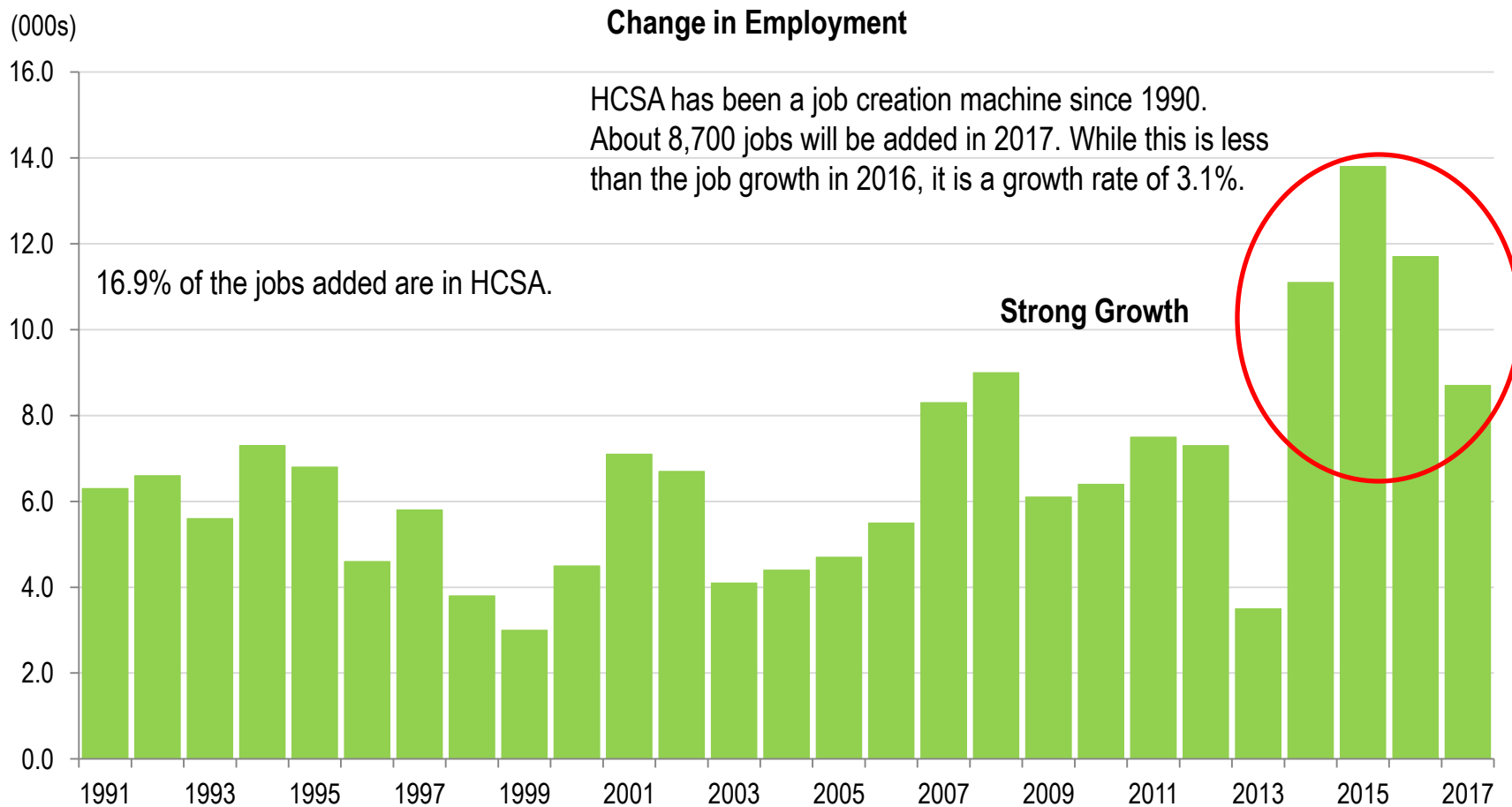
- Financial Activities 6.3% of jobs added
- Construction 4.5% of jobs added

Total 10.8% of jobs added, or 5,500 jobs added.

Combined, these six sectors are responsible for 70.5% of jobs added in 2017.

Change in Employment

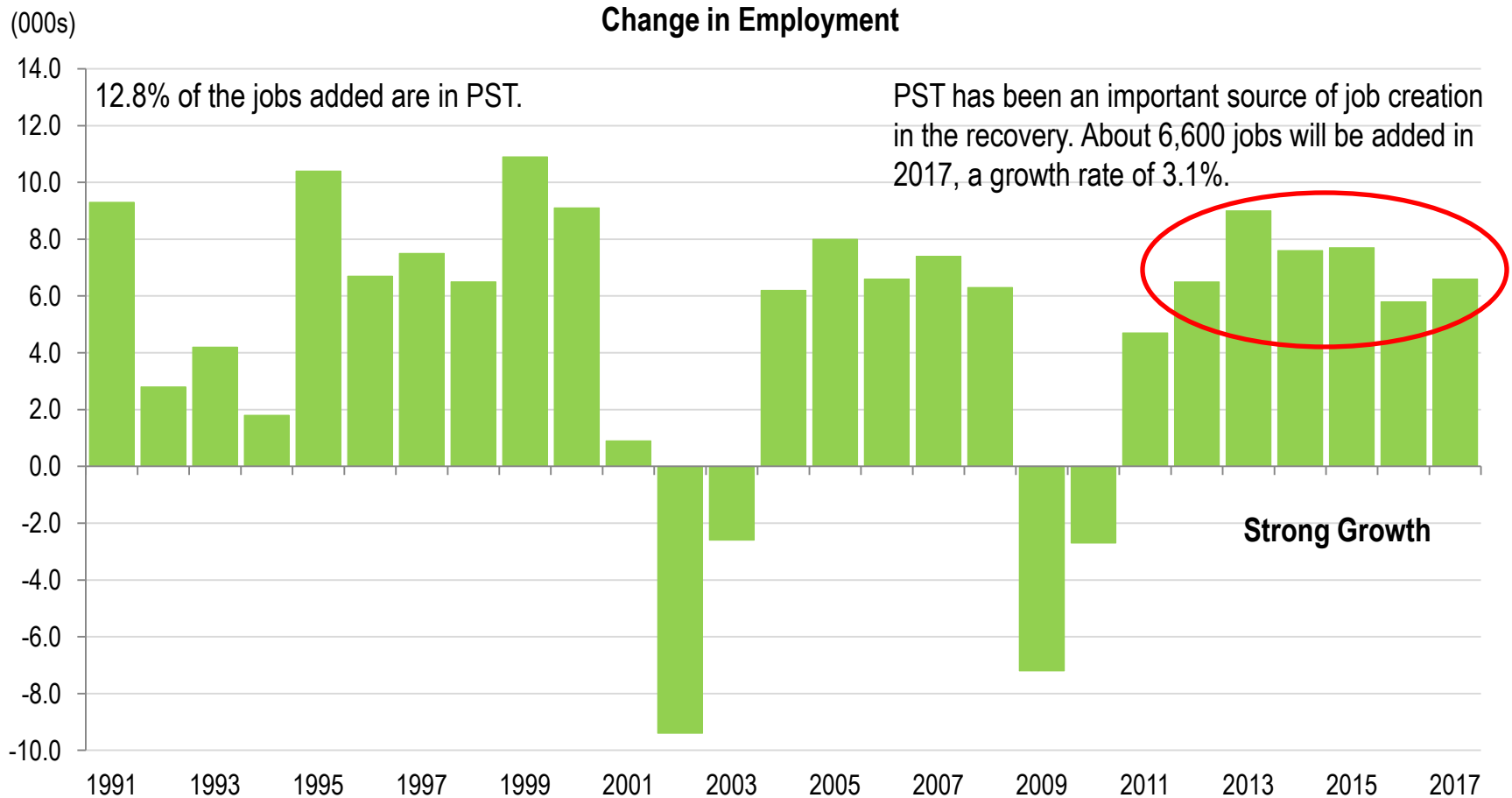
Health Care and Social Assistance



Source: Bureau of Labor Statistics, cber.co.

Change in Employment

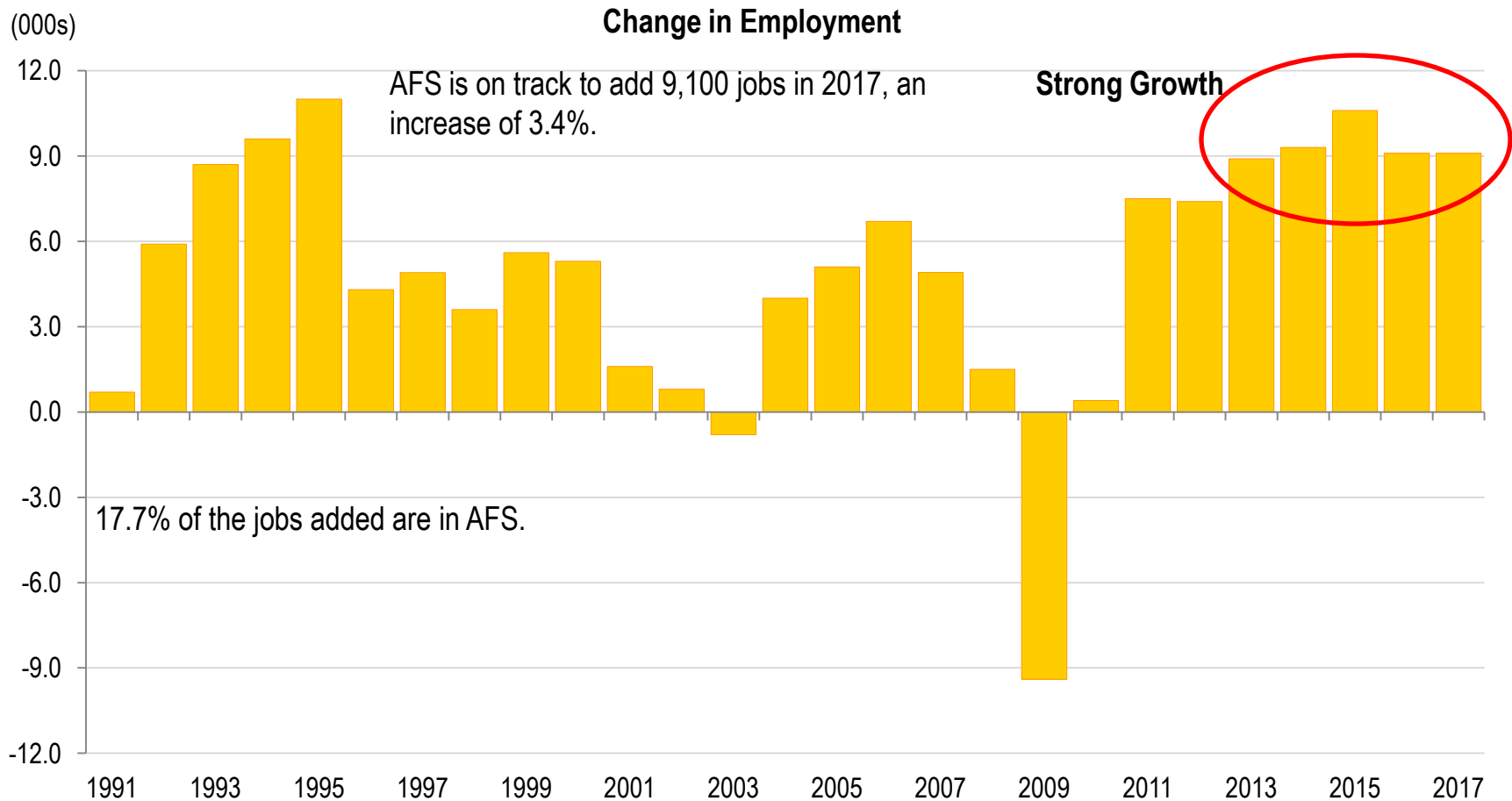
Professional, Scientific, and Technical Services



Source: Bureau of Labor Statistics, cber.co.

Change in Employment

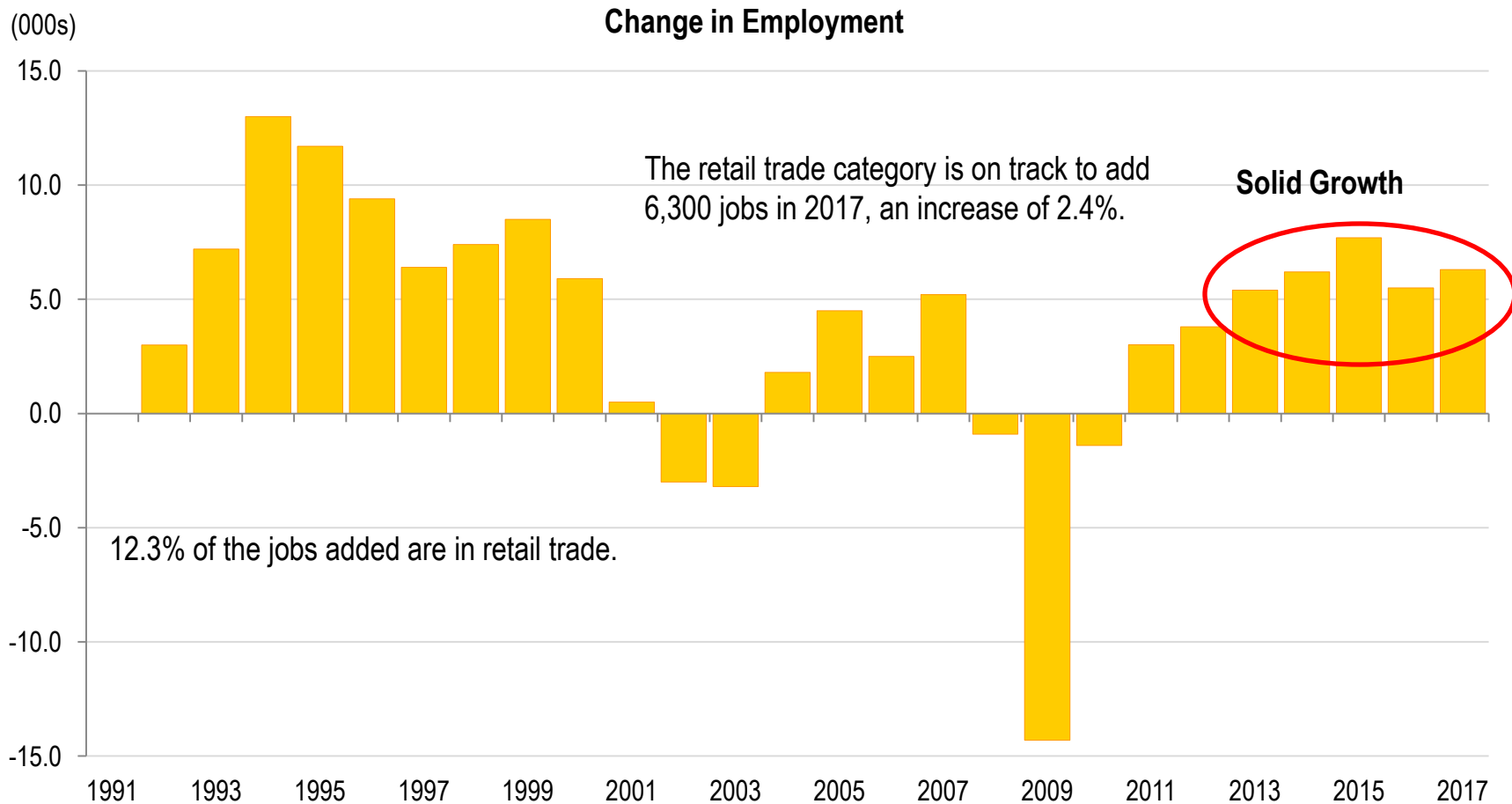
Accommodations and Food Services



Source: Bureau of Labor Statistics, cber.co.

Change in Employment

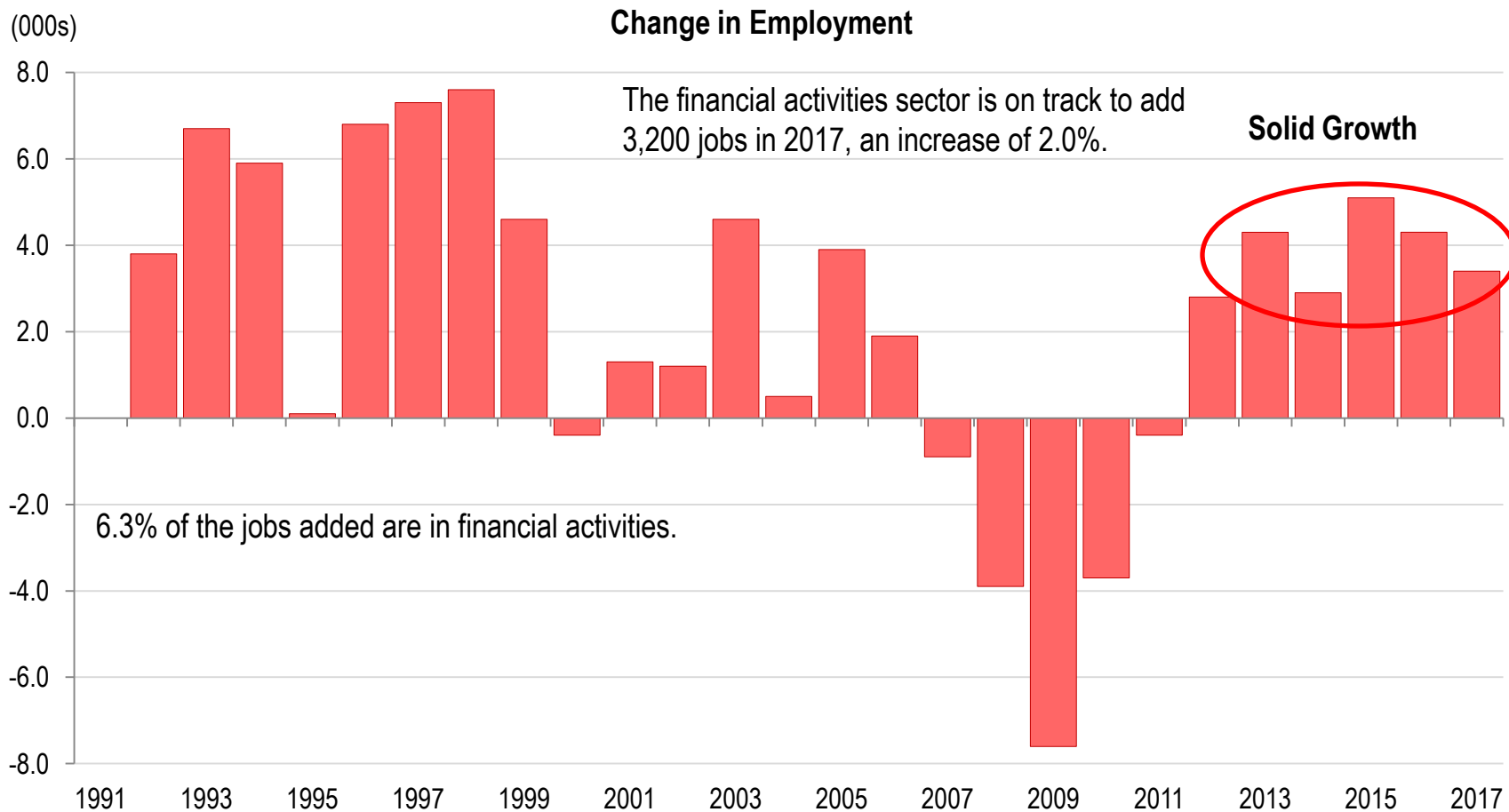
Retail Trade Category



Source: Bureau of Labor Statistics, cber.co.

Change in Employment

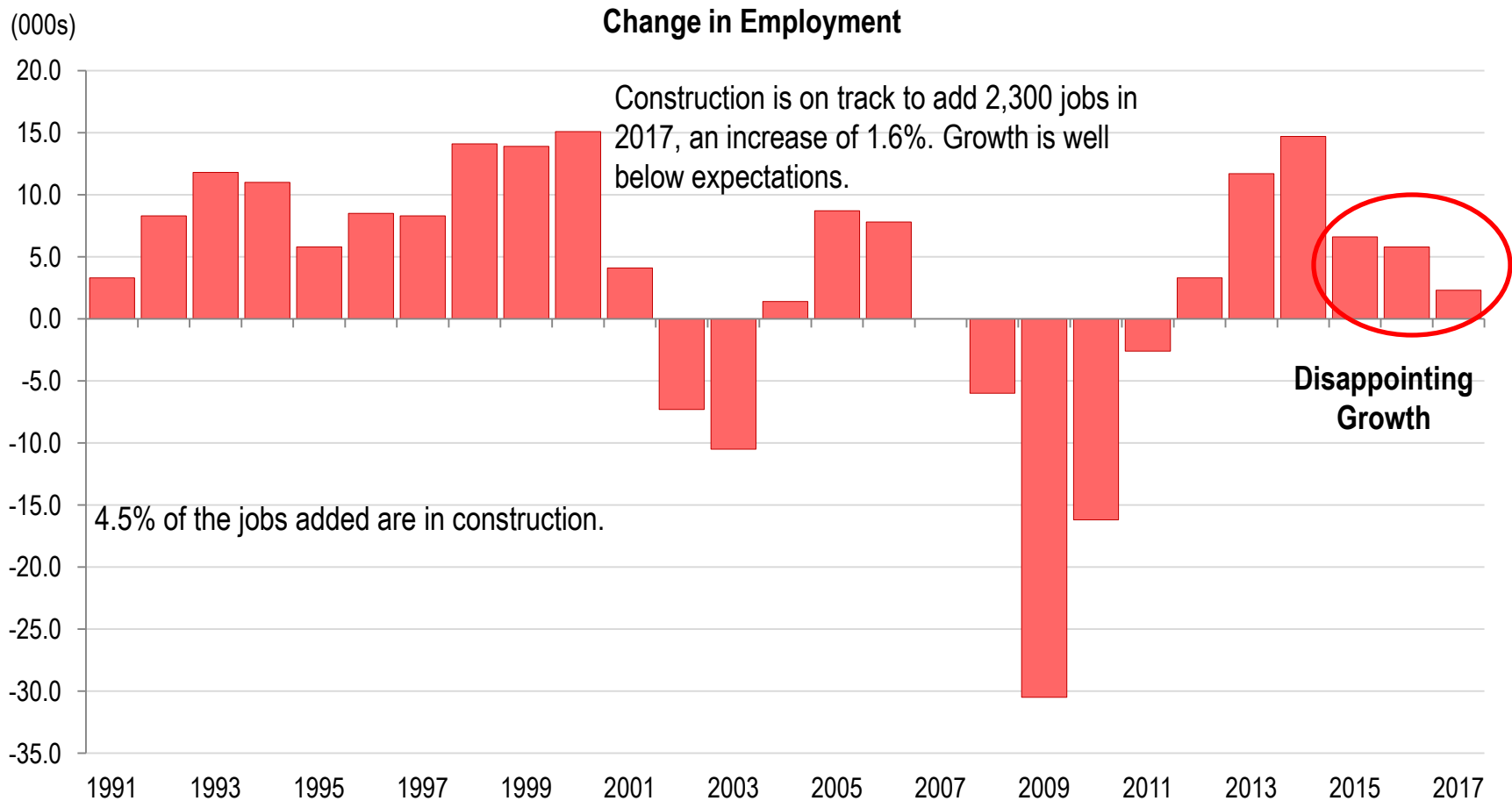
Financial Activities



Source: Bureau of Labor Statistics, cber.co.

Change in Employment

Construction Category



Source: Bureau of Labor Statistics, cber.co.



Colorado Economy

Other Key Data Sets – Case Shiller, Building Permits and Valuation, Oil and Gas Industry, Auto Sales, DIA Passengers

Additional Colorado Data

Key Industries

Housing Prices

- The Case Shiller Index shows that Denver housing prices are appreciating at a faster rate than most of the nation. This is a mixed blessing – it benefits homeowners and government entities that rely on property taxes for revenue. On the other hand, it creates issues related to affordable housing.

Colorado Building Permits – Units and Valuation

- The number of single family and multi family permits are up significantly compared to a year ago.
- The valuation of these properties is less than the same period last year.

Extractive Industries

- The price for a barrel of oil is \$45 to \$50.
- The number of Colorado rigs is up significantly.
- Production of oil in Colorado is stronger than last year.
- Production of natural gas is flat.

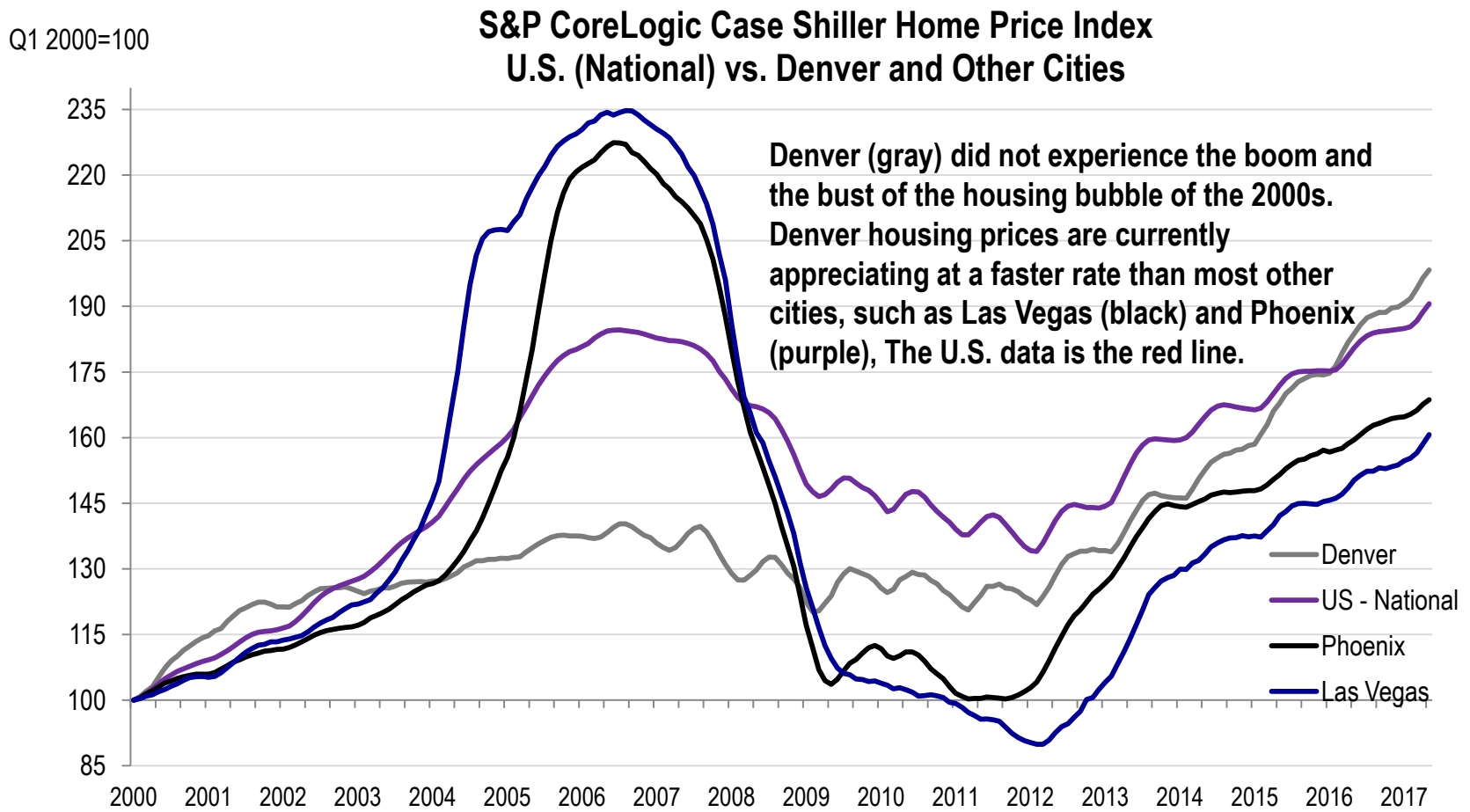
New and Used Car Registrations

- Nationally, auto sales have declined.
- The opposite has happened in Colorado. New auto sales for the first 5 months of the year are up 4.9%, while used auto sales are up 10.4%.

DIA Passengers

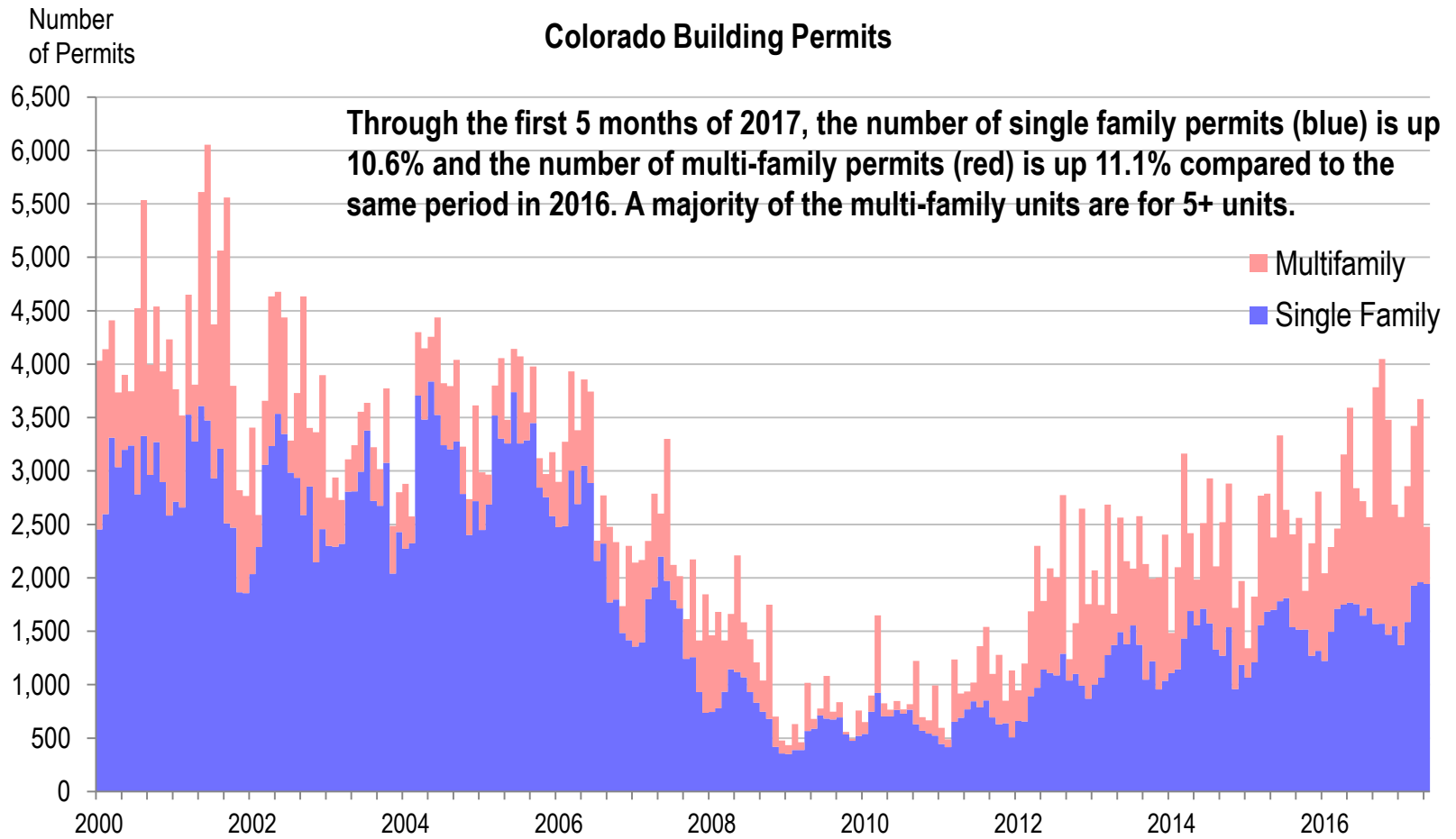
- About 58.3 million passengers traveled through DIA in 2016. Through the first 5 months of 2017, almost 24 million passengers have passed through DIA . This is 7.1% greater than the same period last year.
- In addition, the number of businesses surrounding the airport continues to increase.

Case Shiller Home Price Index National vs. Denver (Colorado)



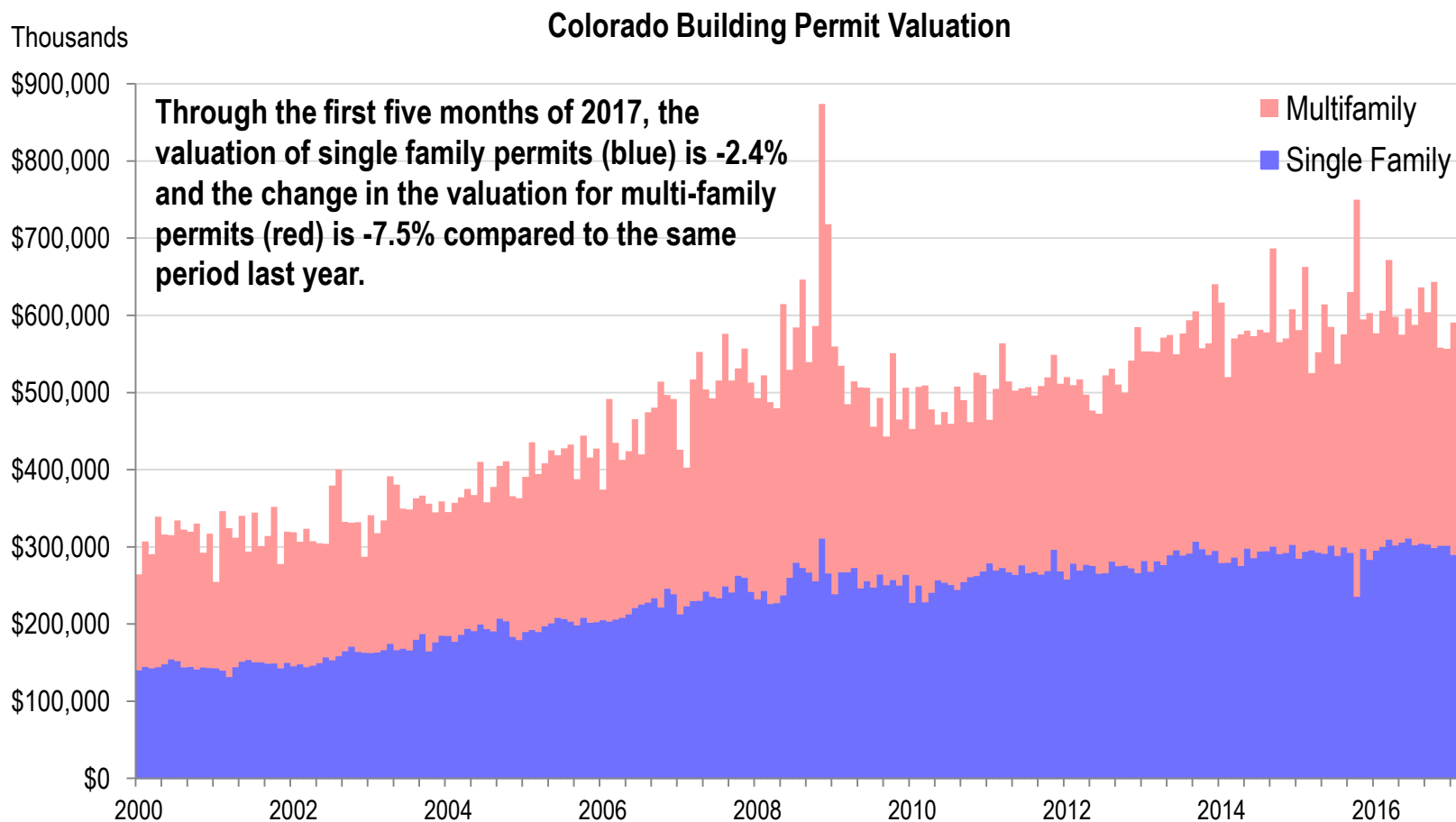
Source: S&P Core-Logic Case-Shiller, cber.co.

Colorado Residential Building Permits - Units



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

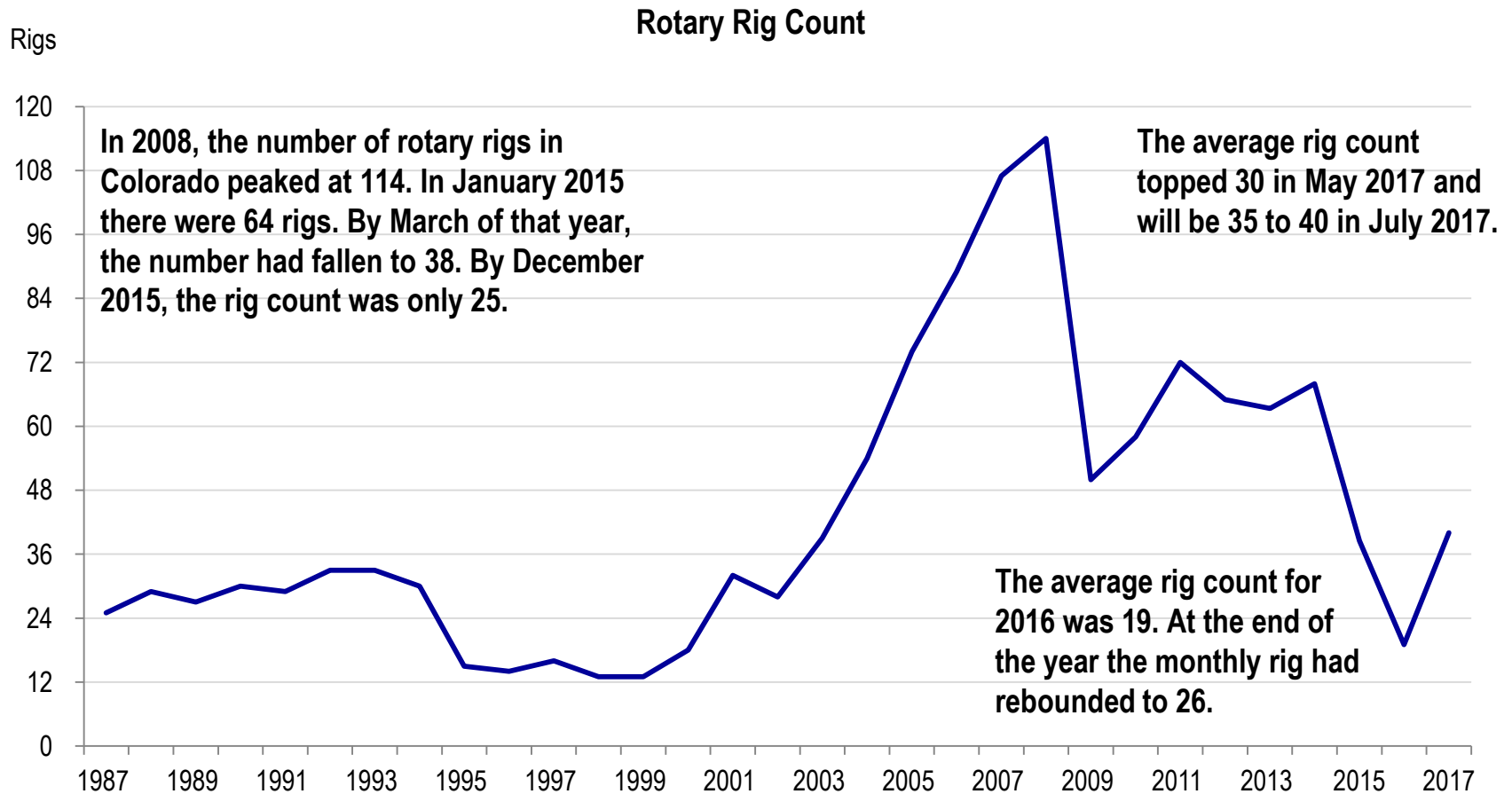
Colorado Residential Building Permits - Valuation



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

Colorado Annual Rotary Rig Count

1987 to 2017 (est.)

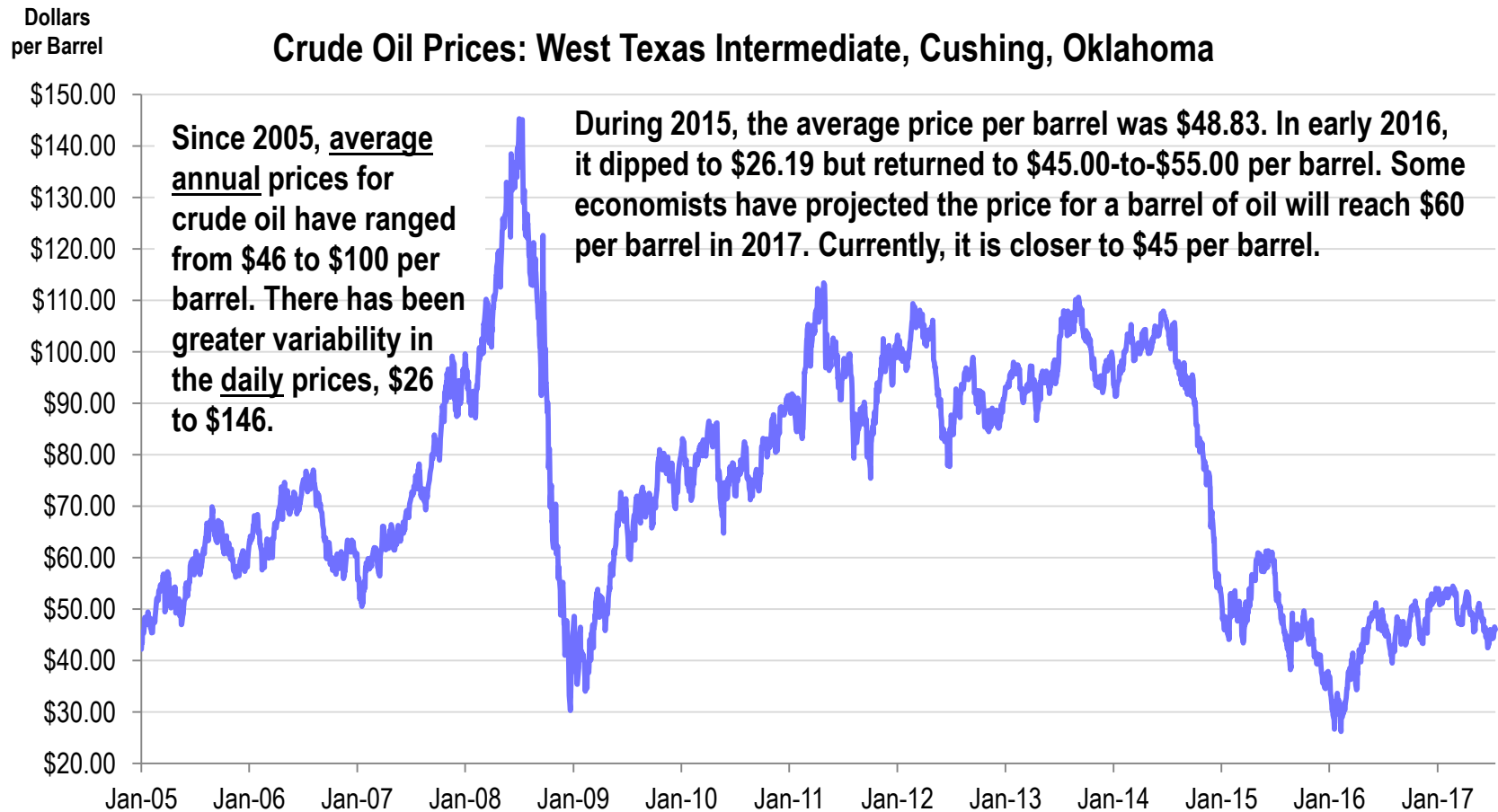


Source: Baker-Hughes, cber.co.

Colorado-based Business and Economic Research <http://cber.co>

Crude Oil Prices

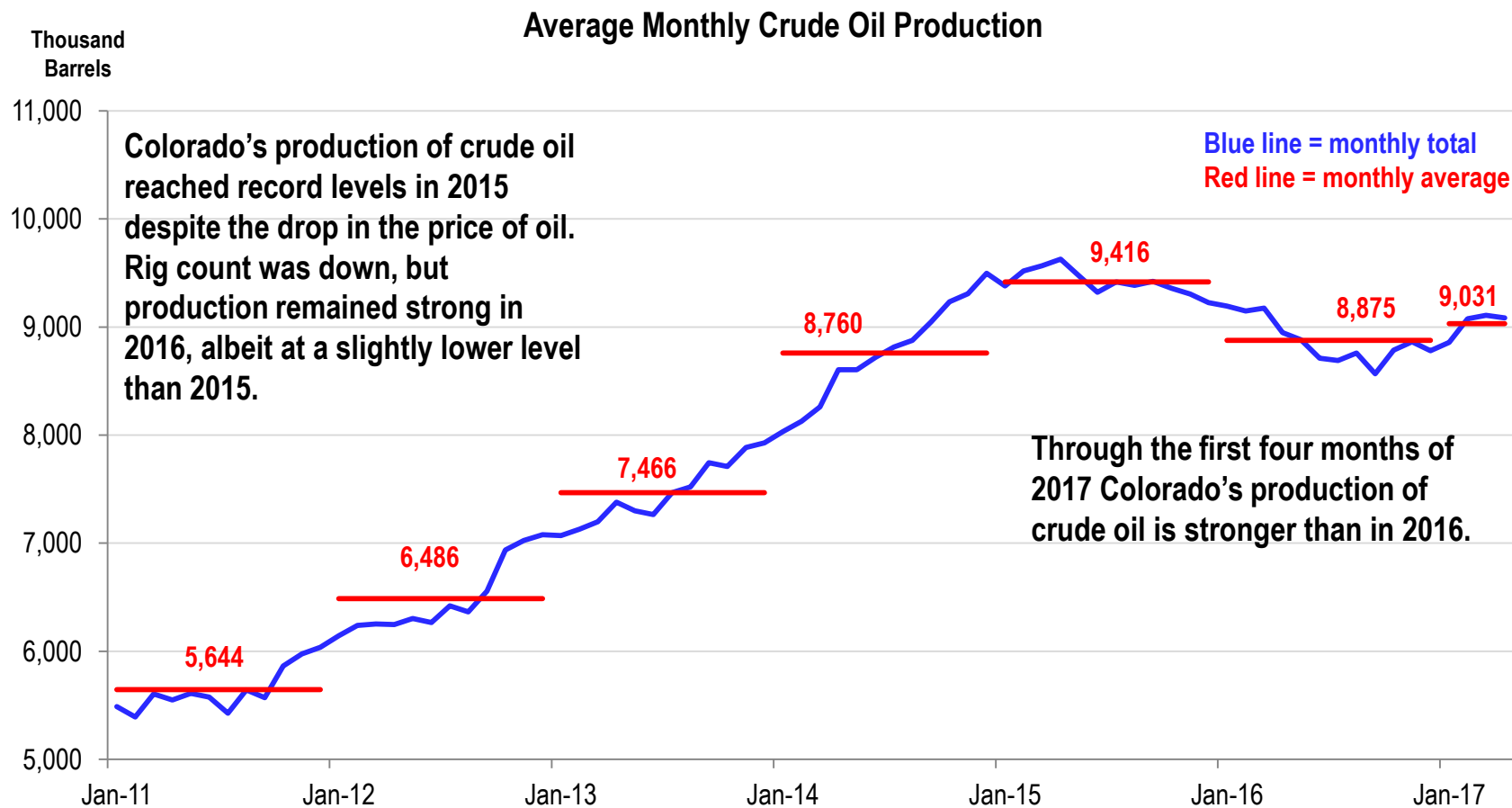
West Texas Intermediate



Source: FRED, EIA, cber.co.

Average Monthly Colorado Crude Oil Production

2011 to 2017 (Thousand Barrels)

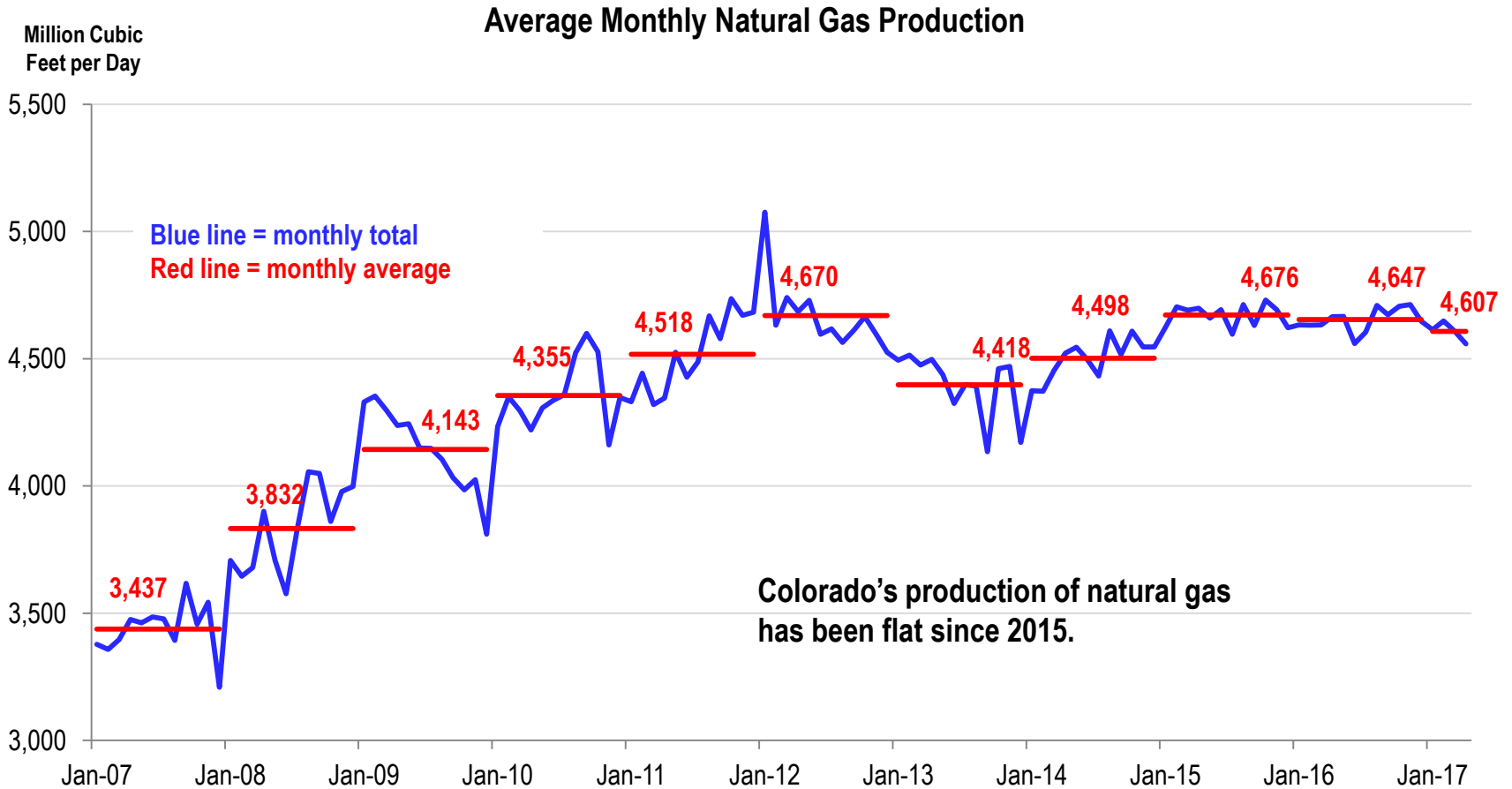


Source: EIA, cber.co.

Colorado-based Business and Economic Research <http://cber.co>

Average Monthly Colorado Natural Gas Production

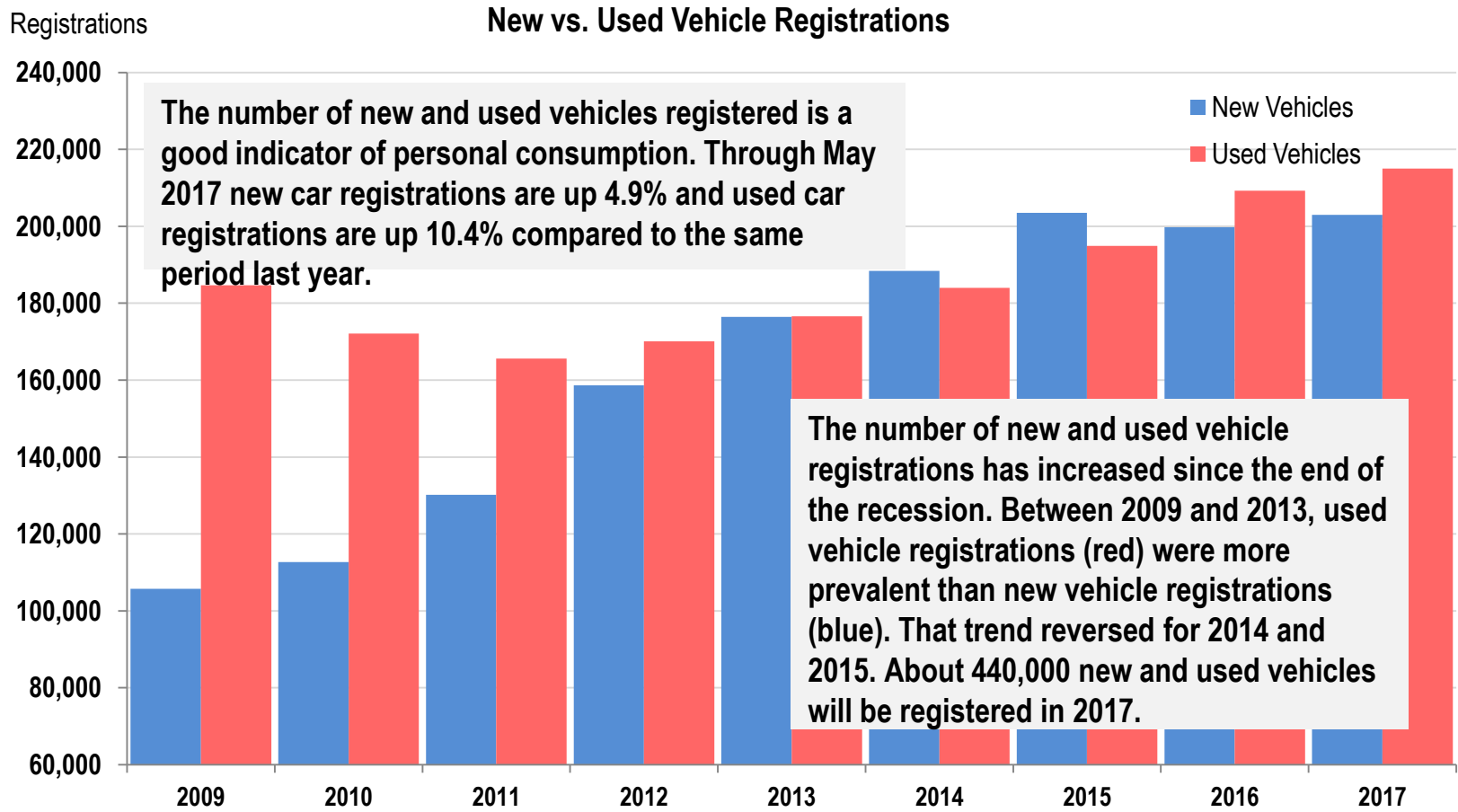
2007 to 2017



Source: EIA, cber.co.

Colorado-based Business and Economic Research <http://cber.co>

Colorado New and Used Vehicle Registrations



Source: Colorado Auto Dealers Association, cber.co.

DIA Passengers



Source: flydenver.com, cber.co.



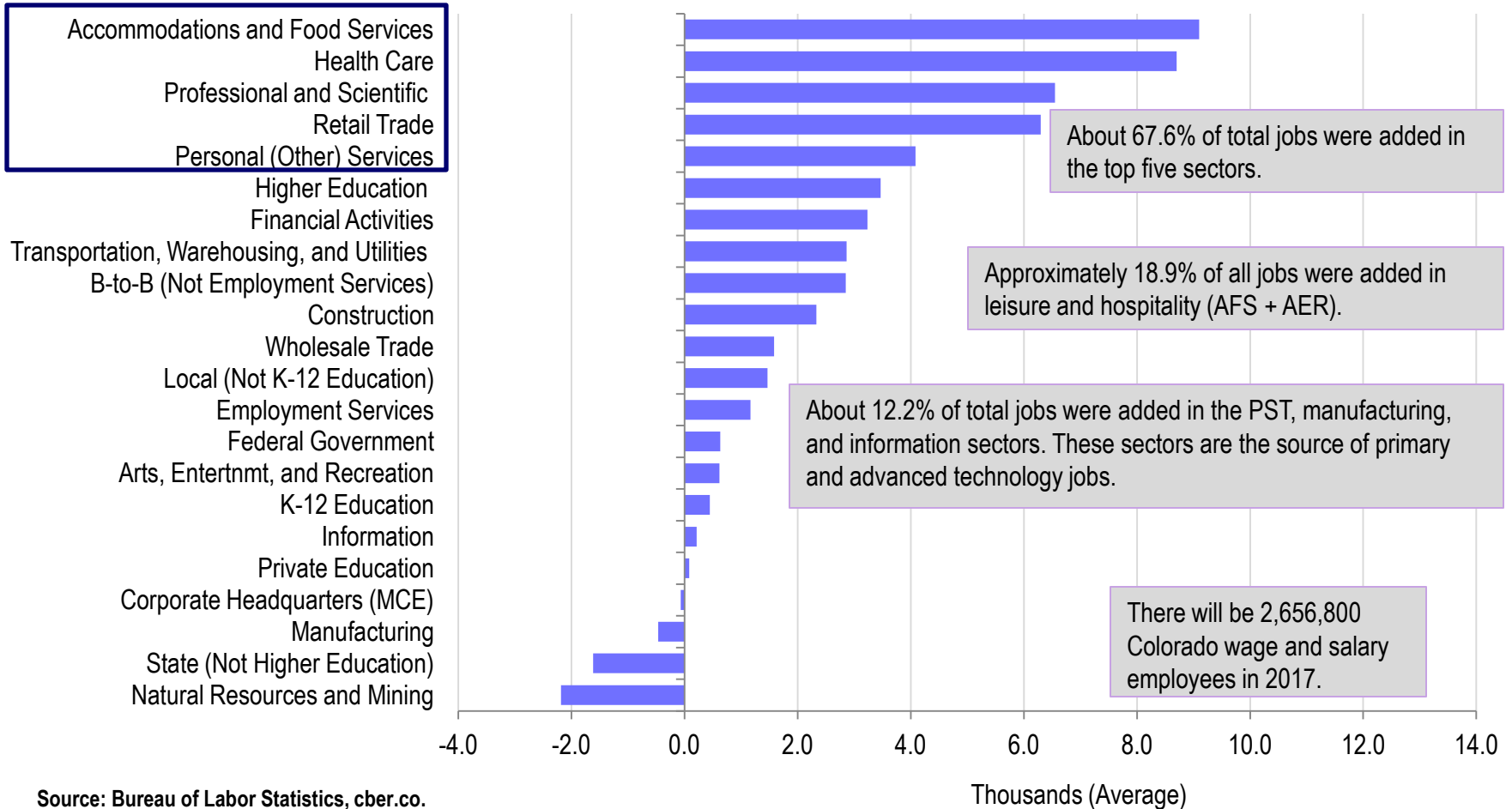
The Colorado Economy

Summary

Job Changes

2017 YTD Through June

Job Change All Sectors



Source: Bureau of Labor Statistics, cber.co.

Annual Employment Change in Colorado

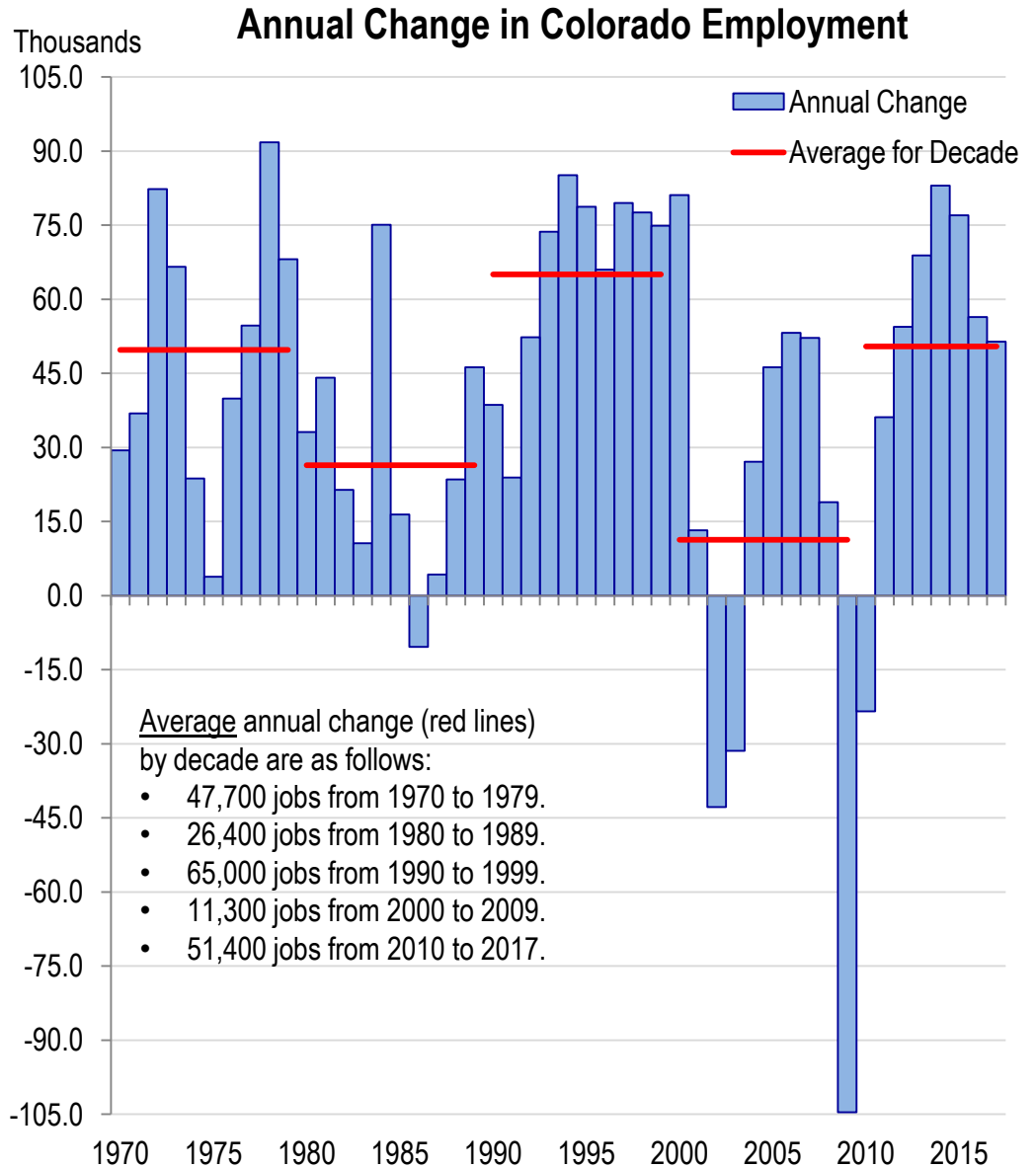
For the first 7 years of this decade, Colorado has added an average of 50,500 jobs.

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

The state is projected to add 57,000 to 63,000 jobs in 2017. Colorado employment will increase by 2.2% to 2.4%.

Through June 2017, the state is on track to add 51,400 jobs, an increase of 2.0%.

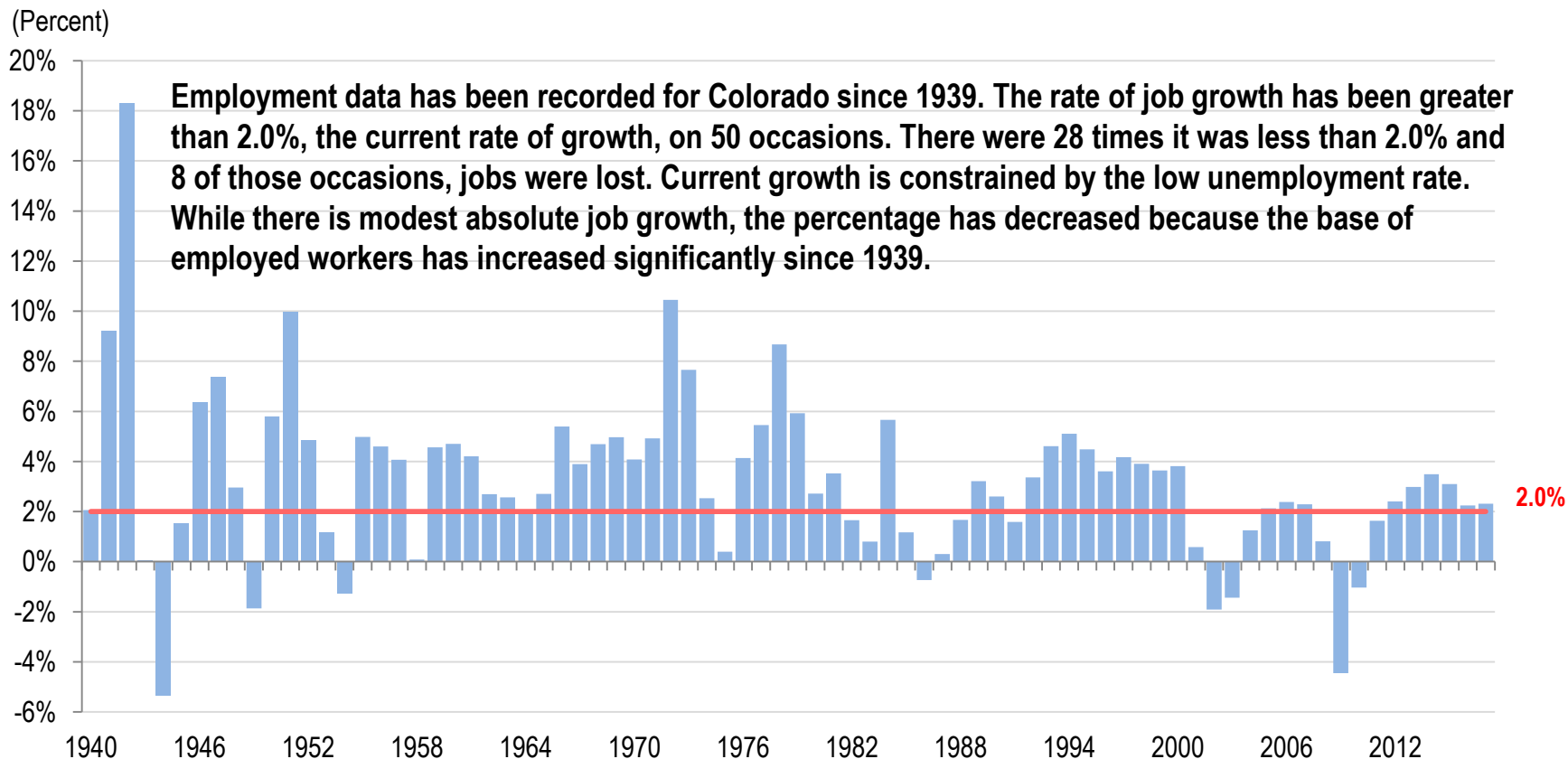
Based on “activity on the streets”, the BLS employment data for Colorado appears to be understated.



Source: Bureau of Labor Statistics, cber.co.

- The Projected Rate of Colorado Job Growth for
- 2017 will be the 50th Strongest in 78 Years
-

Percentage of Jobs Added



Source: Bureau of Labor Statistics, cber.co.

Colorado-based Business and Economic Research <http://cber.co>

Summary of Key Data

Colorado

Colorado

Population - Colorado's population will increase by 99,654 in 2017 to a total of 5,655,405. Some of these people will fill critical vacancies in the labor force.

Colorado GDP – The state posted weak real GDP growth in 2016, although it was stronger than the rate of growth for the U.S. In 2017, a strong real estate market, solid non-durable goods manufacturing and improvements in the extractive industries should push real GDP to the range of 2.1% to 2.5%. Having said that, the first estimate for real GDP for Q1 2017 was only 0.4%.

Wage and Salary Employment – Colorado was projected to add 57,000 to 63,000 jobs in 2017. Midway through the year, the state is on track to add 51,400 jobs.

Unemployment Rate – The state's current rate of unemployment is 2.3%, much lower than anticipated. The metro areas with the lowest unemployment rates are Boulder and Ft. Collins.

Consumer Price Index – The Denver-Boulder Greeley mid-year CPI was 3.1% greater than the same time last year. Shelter was responsible for much of the increase (5.3%). In addition, the food index increased by 2.1% and energy rose by 11.9%.

Construction – After 5 months, the number of single-family permits is 10.1% greater than the same period last year. Multi-family permits are up 11.1%.

Oil and Gas - The price for a barrel of oil is \$45 to \$50. The number of rigs is between 35 and 40, up significantly compared to a year ago. As a result, production of oil in Colorado is stronger than last year. Production of natural gas is flat.

Denver International Airport - Through the first 5 months of 2017, almost 24 million passengers have passed through DIA . This is 7.1% greater than the same period last year. In addition, the number of businesses surrounding the airport continues to increase.

Case Shiller Housing Prices – Y-O-Y state home prices for May 2017 were up 7.9%. Nationally, the rate of appreciation is 5.6%.

Automobile Registrations - Nationally, auto sales have declined. In Colorado, there is a different story. New auto sales for the first 5 months of the year are up 4.9%, while used auto sales are up 10.4%.



Review of Colorado Economy and Employment Data Through June 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.

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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.