



cber.co

# Review of Colorado Employment Data Through June 2018

Colorado-based Business and Economic Research  
Prepared  
July 25, 2018

# Overview of Analysis

This chartbook provides a series of graphs, charts, discussions, and data that tell the story about the changes in the U.S. and Colorado economies for the first six months of 2018. It is divided into the two sections listed below. The U.S. economy is slightly stronger than in 2017 and the release of the Colorado employment data for June shows that average employment is 70,100 jobs greater than the same period in 2017. At the end of 2017, all Colorado economists projected weaker job growth in 2018. The current level of strong job growth is a pleasant surprise!

---

## U.S. Economy

- ✓ Real Gross Domestic Product, Employment, and Productivity.
- ✓ Leading and Coincident Index – U.S. vs. Colorado
- ✓ S&P 500 Performance and Volatility, and Crude Oil Prices
- ✓ Mortgage Rates, Housing Prices, and Construction Spending
- ✓ Inflation, Index for Services and Manufacturing, Retail Sales, and Light Truck and Auto Sales
- ✓ Summary

## The Colorado Economy

- ✓ Population
- ✓ Employment, Change in Employment, Unemployment and Change in Labor Force
- ✓ Wages
- ✓ Employment in Strong Growth, Solid Growth, and Volatile Growth Categories
- ✓ Employment in Strong Growth Category
- ✓ Employment in Solid Growth Category
- ✓ Employment in Volatile Growth Category
- ✓ Summary

---

The complete 2018 cber.co forecast can be found at <http://cber.co/economic-forecasts/>



# The U.S. Economy

Real Gross Domestic Product, Employment, and Productivity

# Quarterly Real GDP Growth

## Historical United States

Historical annualized real GDP growth by decade was:

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

Between 2010 and 2017, the annual real GDP growth ranged from 1.6% to 2.9%

The 2017 rate of growth by quarter was:

- Q1 1.2%
- Q2 3.1%
- Q3 3.2%
- Q4 2.9%.

Annual real GDP growth for 2017 was 2.3%.

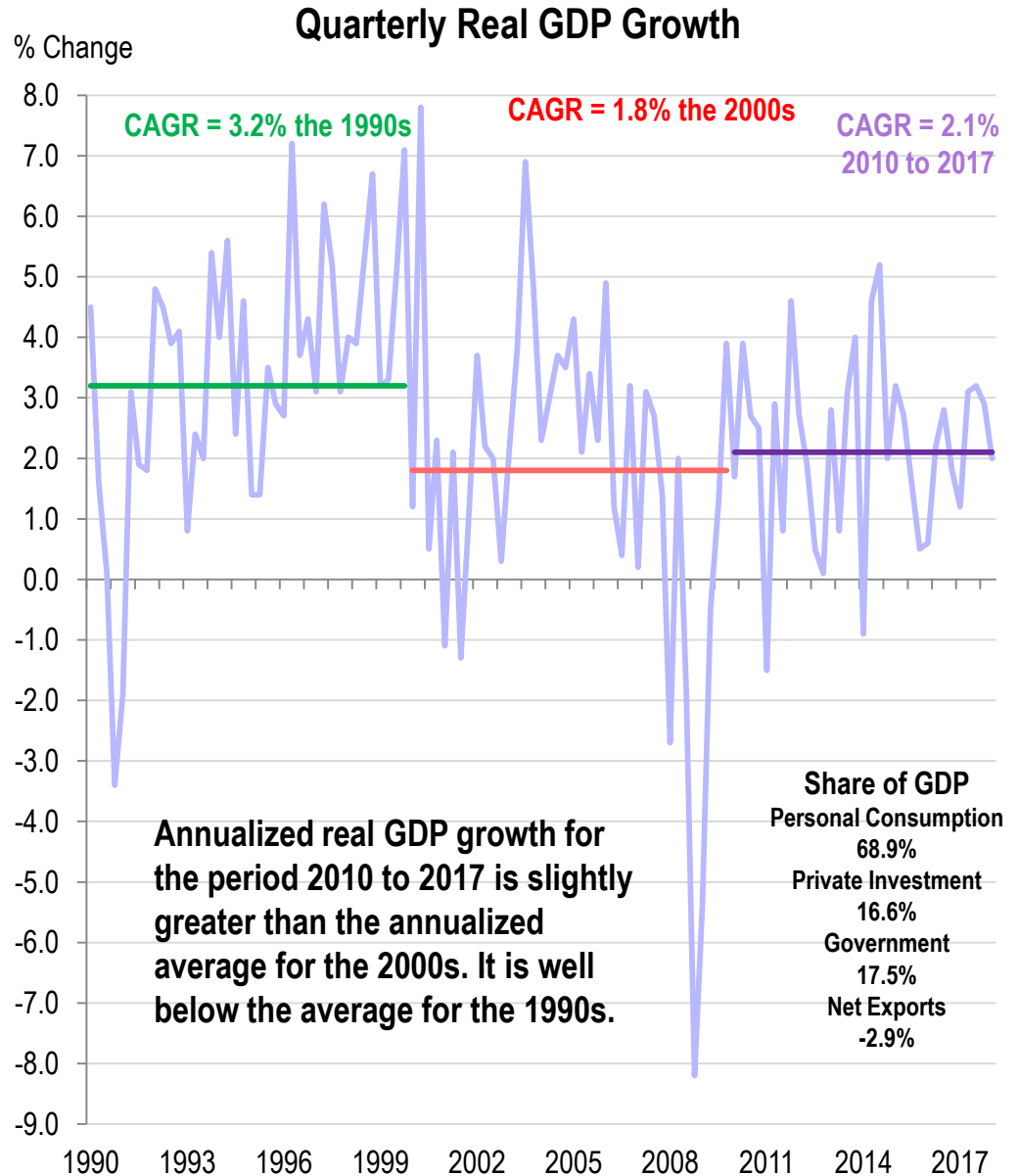
cber.co originally projected the rate of real GDP growth in 2018 would be in the range of 2.3% to 2.7%, with greater upside potential than downside risk.

Q1 2018 real GDP growth was 2.0%. The Conference Board projects real GDP growth of 4.2% in Q2, 3.6% in Q3, and 3.5% in Q4.

As usual, growth in 2018 will be driven by consumer spending. In addition, there will be stronger business investment and government spending.

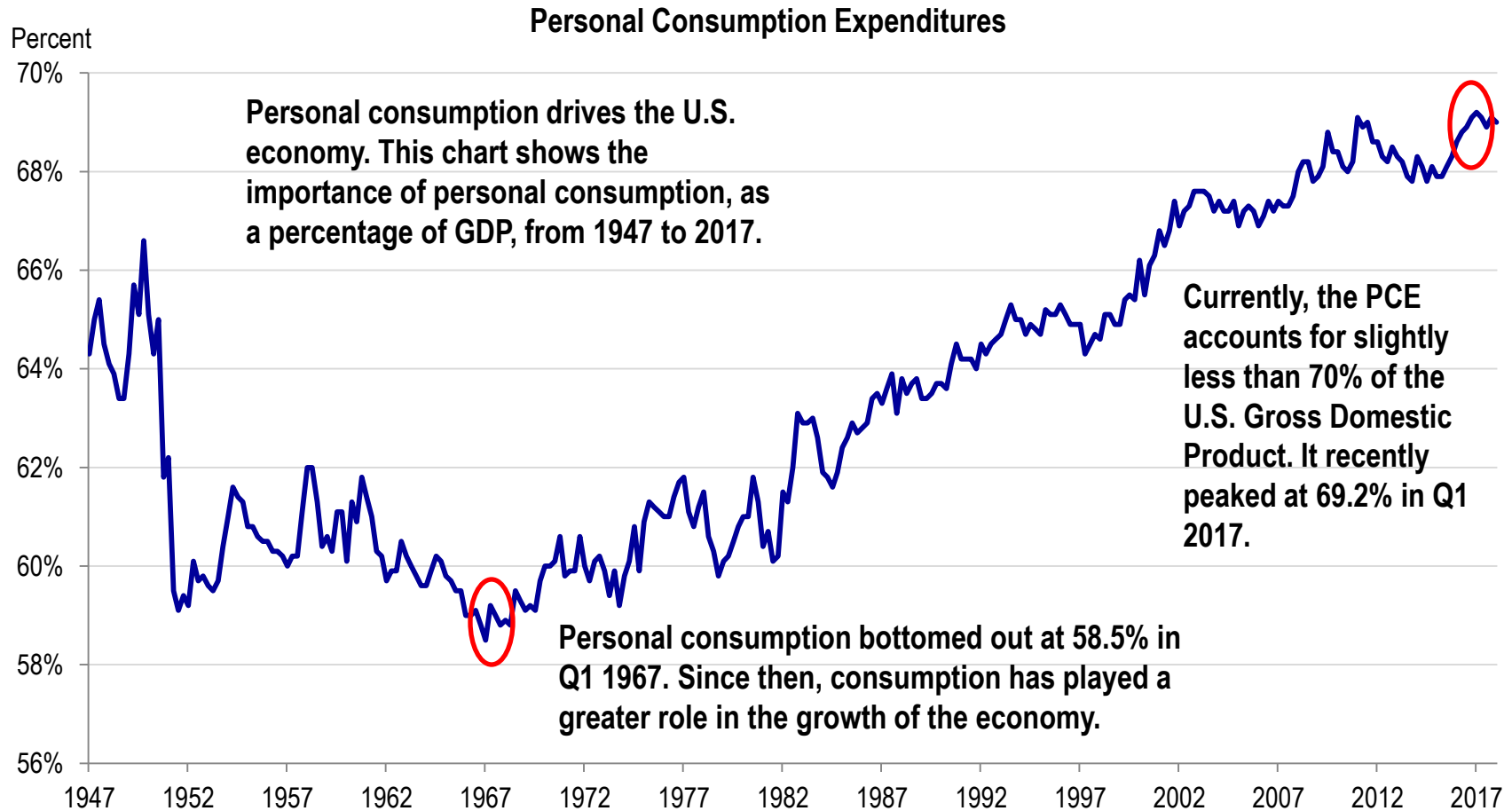
Source: Bureau of Economic Analysis, The Conference Board, cber.co, Note GDP chained on 2009.

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



# Personal Consumption Expenditures

Percentage of Gross Domestic Product

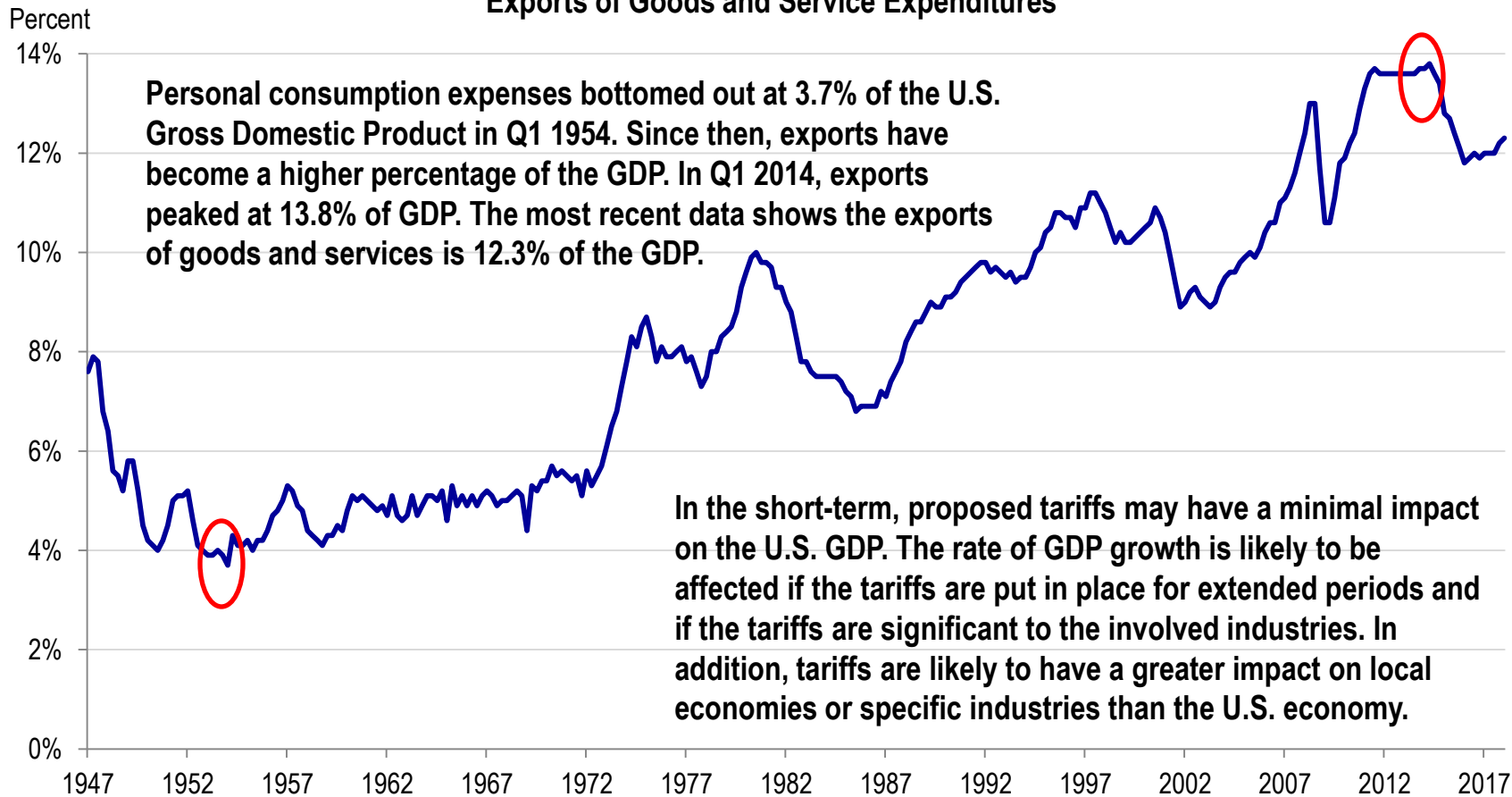


Source: FRED, BEA, cber.co.

# Export of Goods and Service Expenditures

Percentage of Gross Domestic Product

### Exports of Goods and Service Expenditures



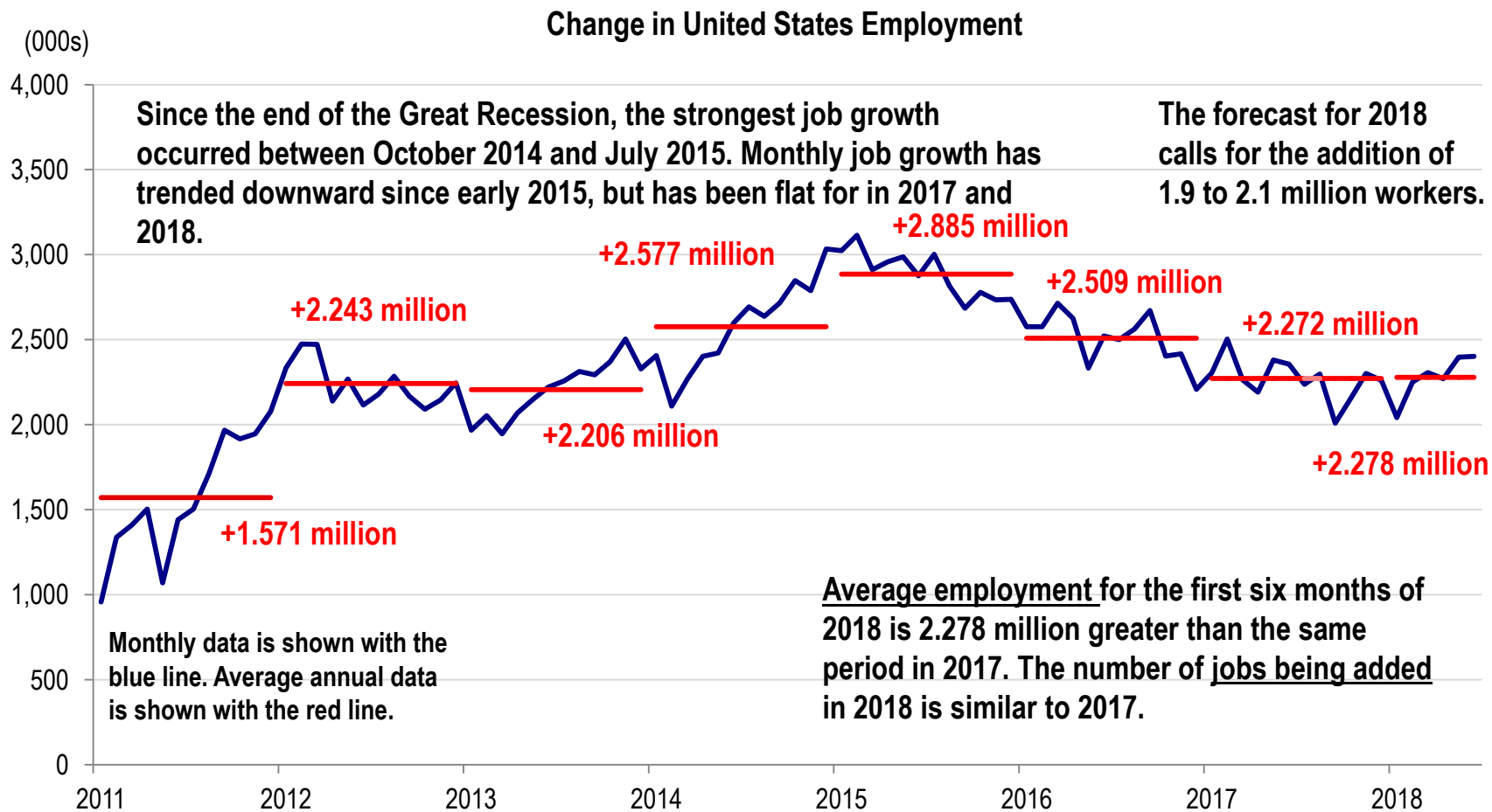
**Personal consumption expenses bottomed out at 3.7% of the U.S. Gross Domestic Product in Q1 1954. Since then, exports have become a higher percentage of the GDP. In Q1 2014, exports peaked at 13.8% of GDP. The most recent data shows the exports of goods and services is 12.3% of the GDP.**

**In the short-term, proposed tariffs may have a minimal impact on the U.S. GDP. The rate of GDP growth is likely to be affected if the tariffs are put in place for extended periods and if the tariffs are significant to the involved industries. In addition, tariffs are likely to have a greater impact on local economies or specific industries than the U.S. economy.**

Source: FRED, BEA, cber.co.

# Change in United States Employment

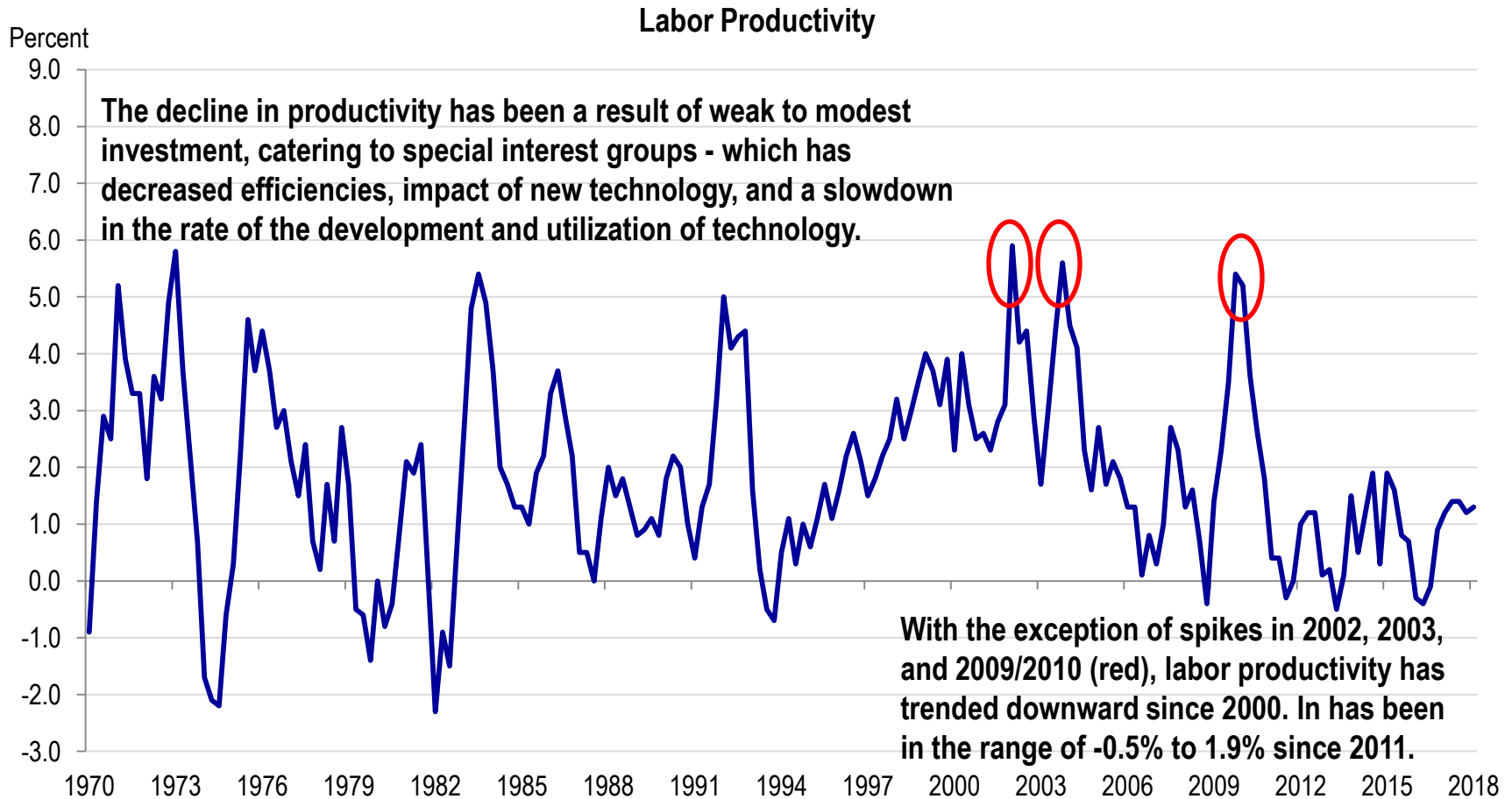
## Year-Over-Year



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

# U.S. Labor Productivity (Output per Hour)

Percent Change Same Quarter Prior Year Nonfarm Business



Source: Bureau of Labor Statistics, Major Sector Productivity (NonFarm Business) NSA, cber.co.





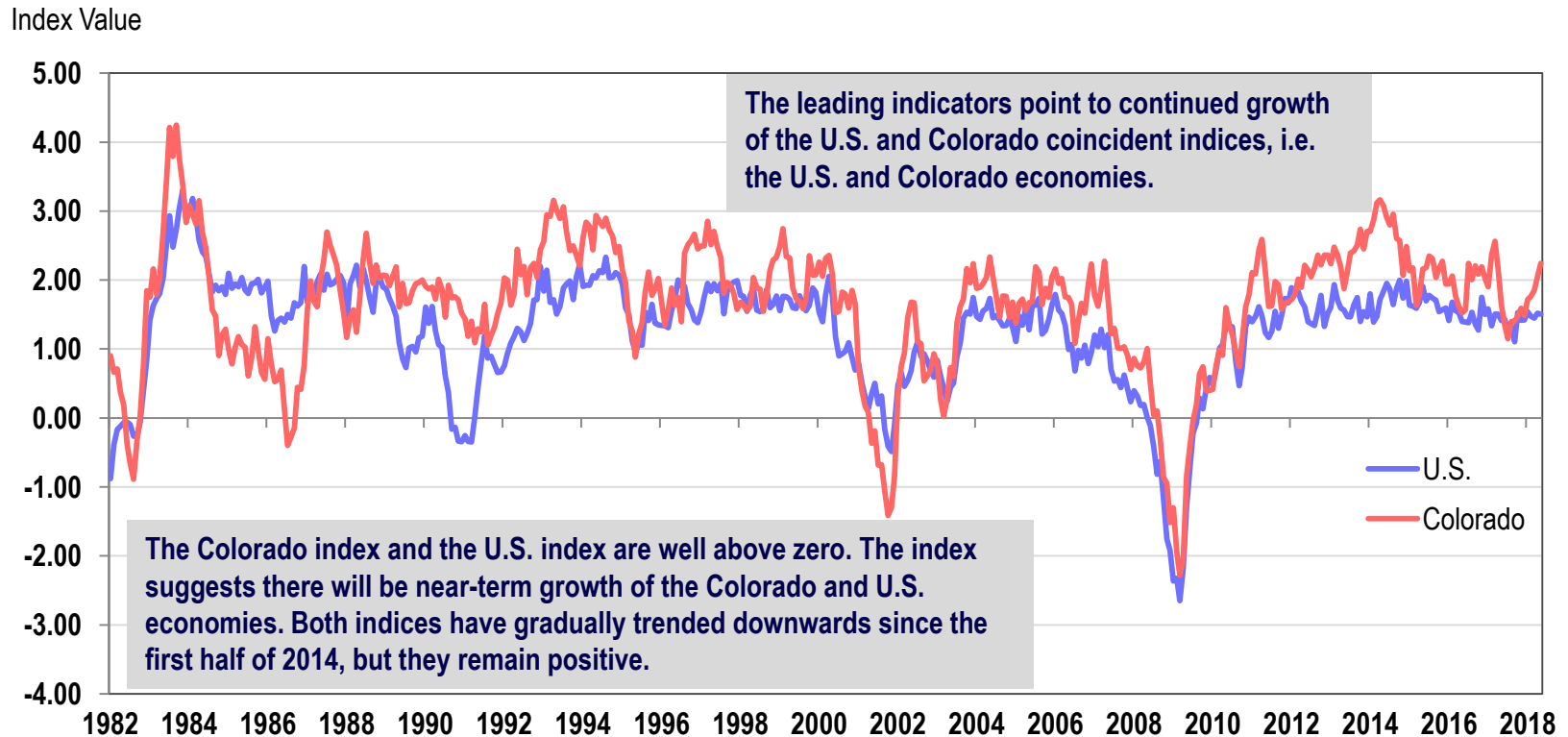
# The U.S. Economy

Leading and Coincident Indices (U.S. and Colorado)

# Philadelphia Fed Leading Index

## Colorado vs. U.S.

Philadelphia Federal Reserve Leading Index – Colorado and U.S.



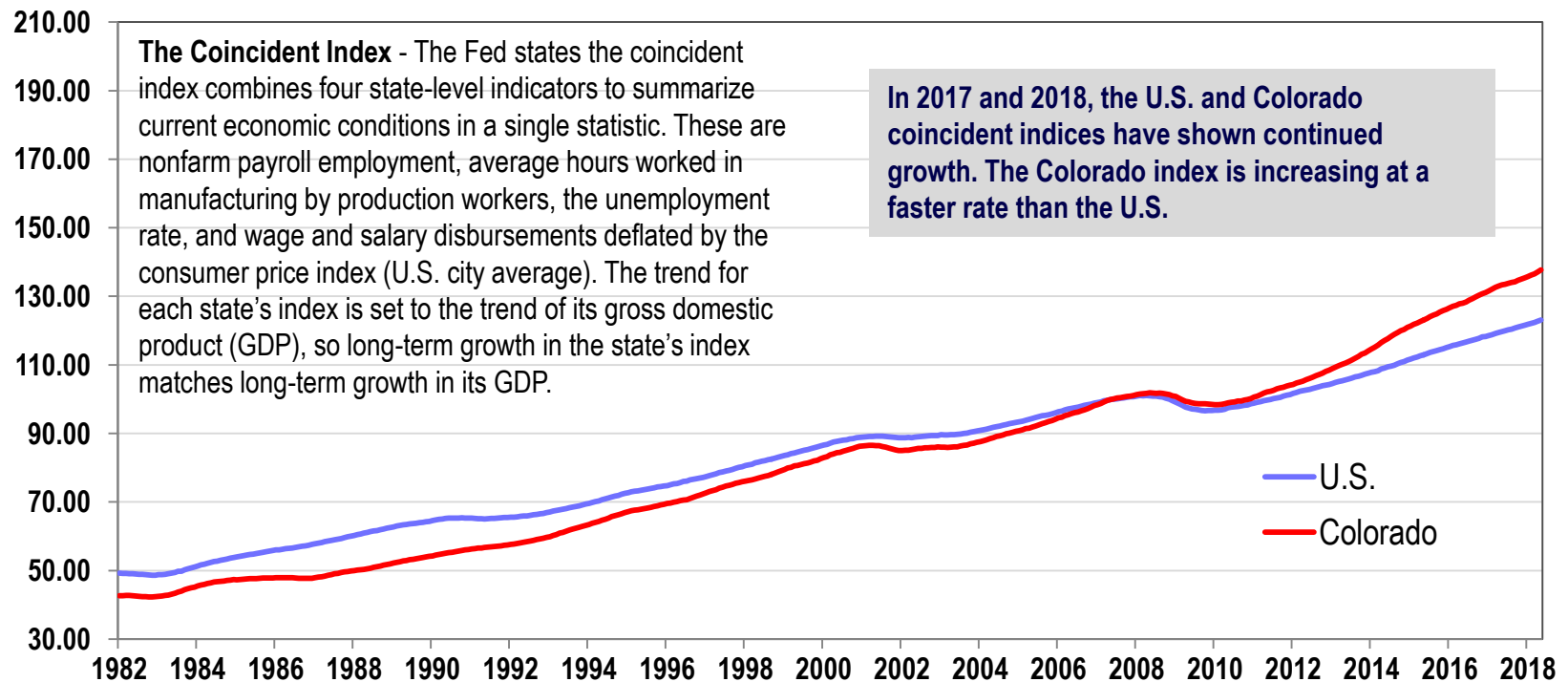
Source: Philadelphia Federal Reserve, [cber.co](http://cber.co). Note: The leading index predicts the six-month growth rate of the U.S. and state's coincident index.

# Philadelphia Fed Coincident Index

## Colorado vs. U.S.

Philadelphia Federal Reserve Coincident Index – Colorado and U.S.

Index Value



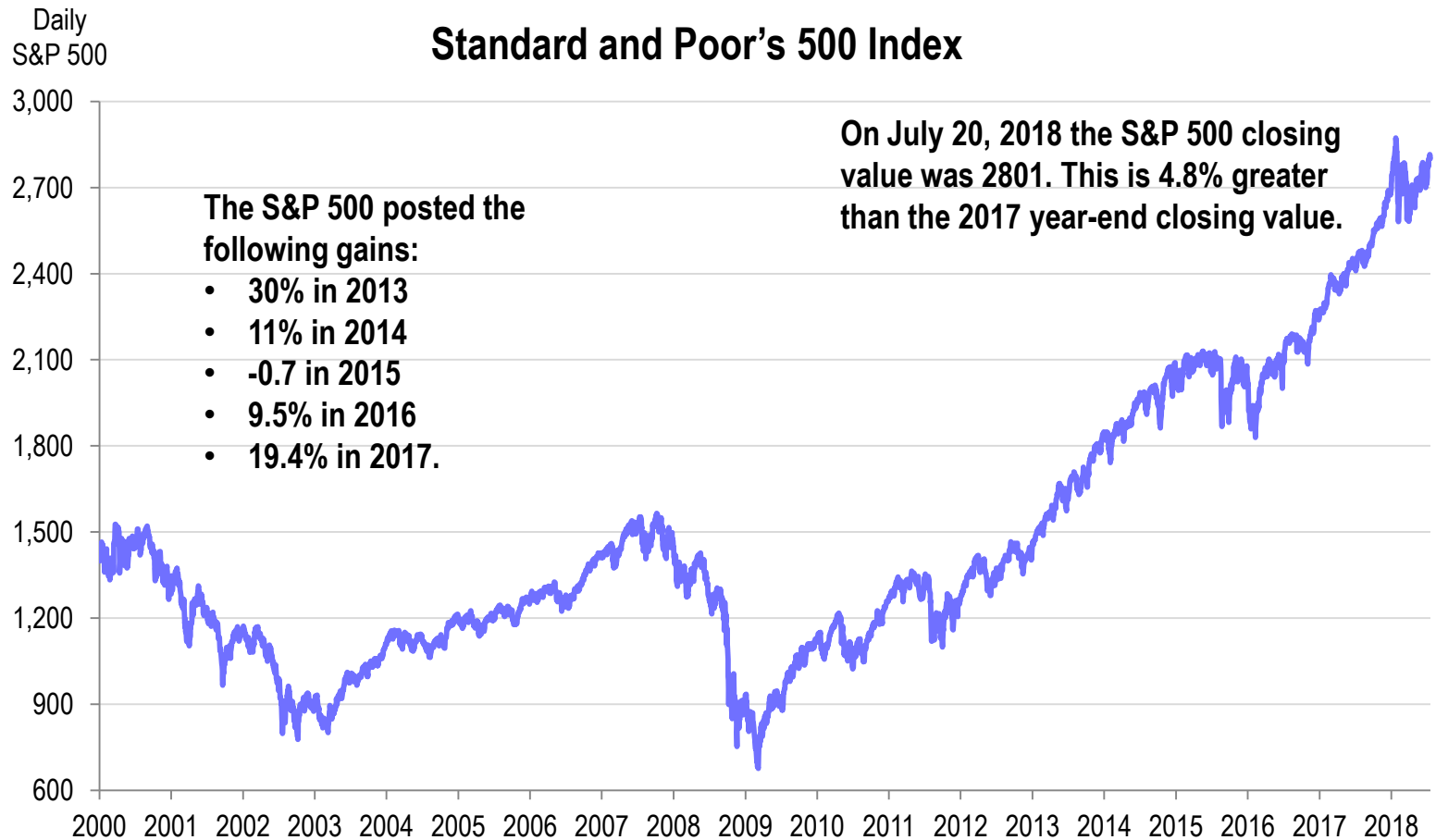
Source: Philadelphia Federal Reserve, [cber.co](http://cber.co). Note: The leading index predicts the six-month growth rate of the U.S. and state's coincident index.



# United States Economy

## S&P Performance and Volatility, and Crude Oil Prices

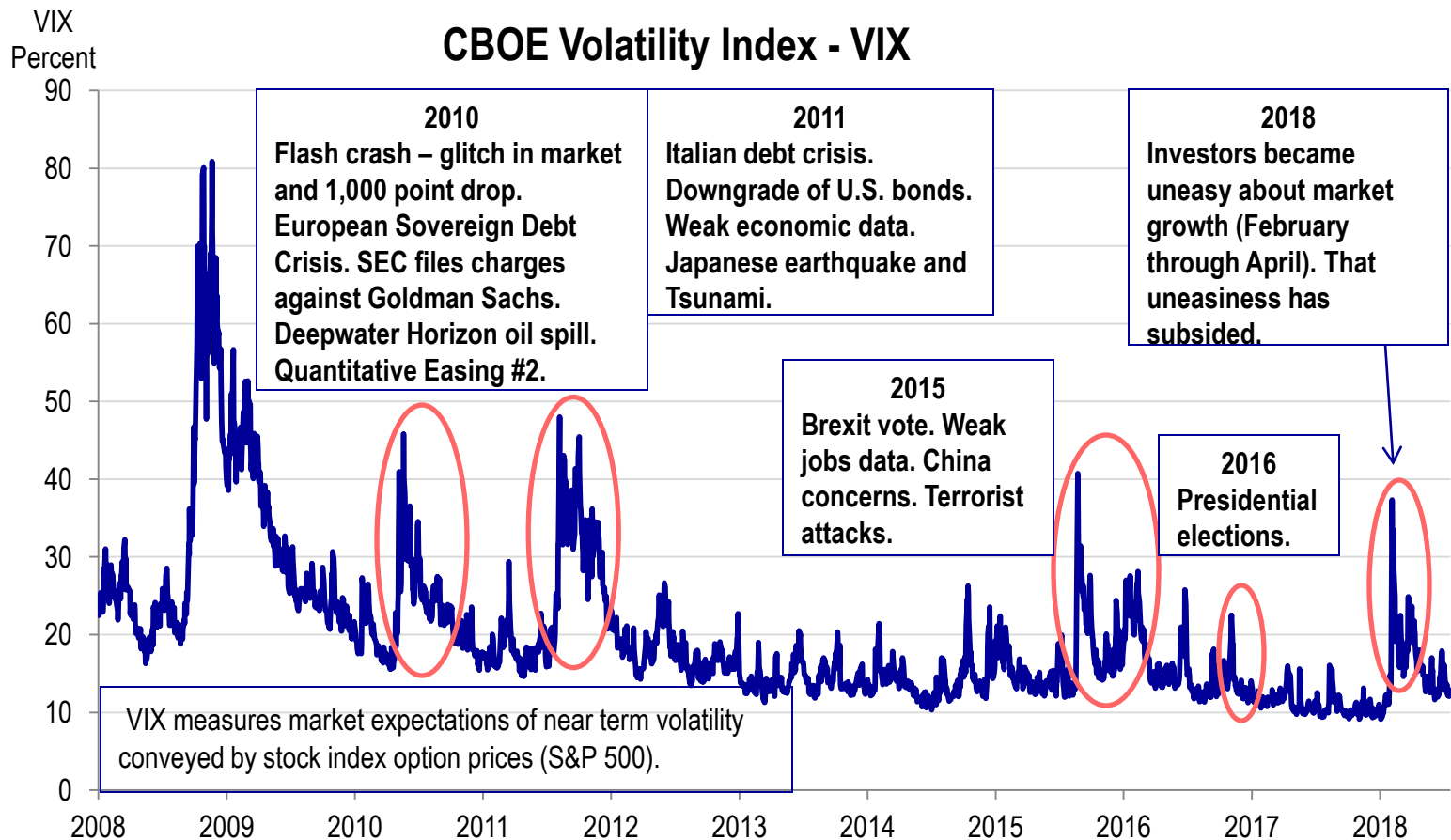
# ● Standard and Poor's 500 Index



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

# CBOE Volatility Index

## VIX (VIXCLS)



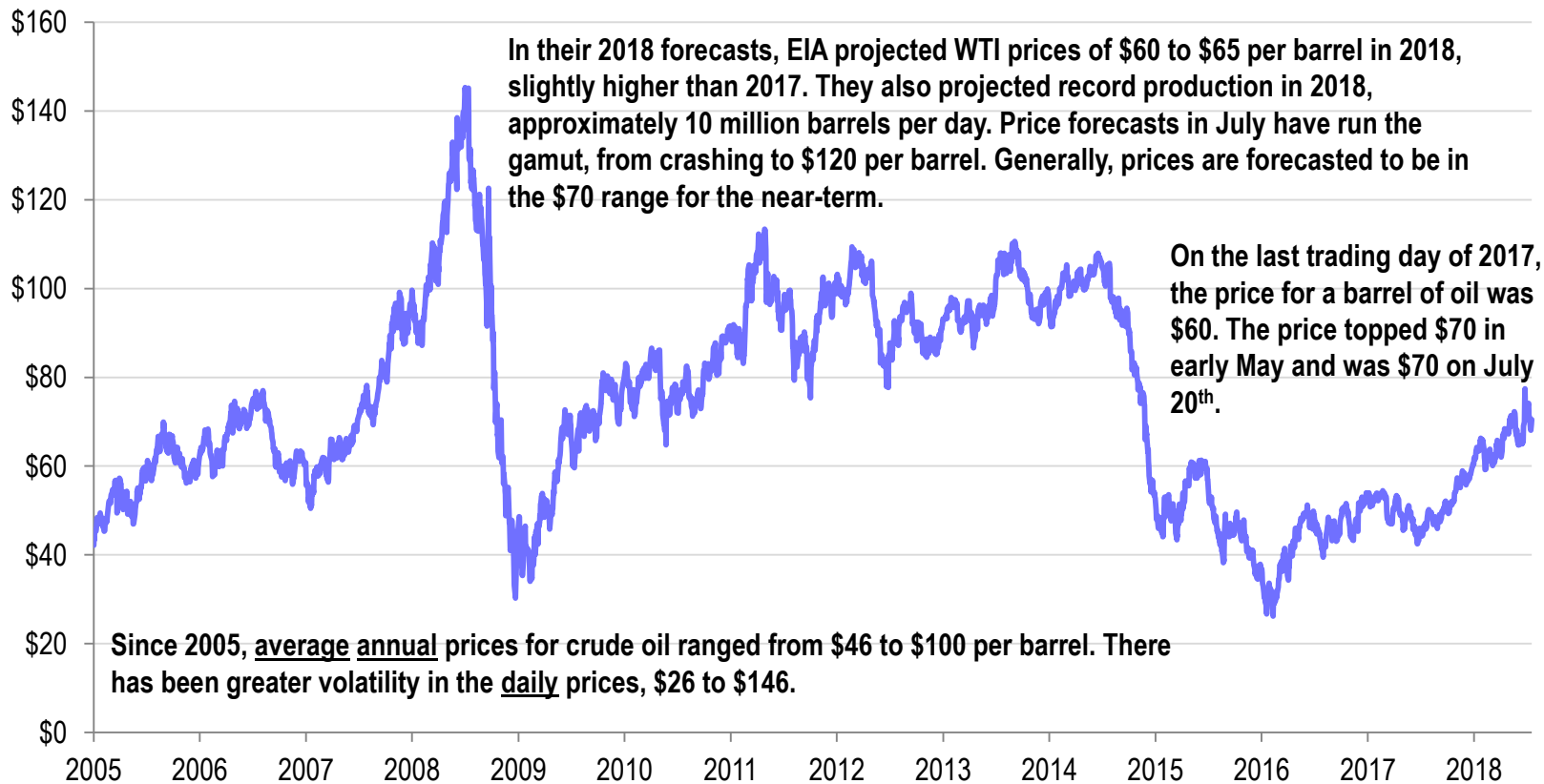
Source: FRED, Chicago Board Options Exchange, cber.co.

# Crude Oil Prices

## West Texas Intermediate

Dollars  
per Barrel

### Crude Oil Prices: West Texas Intermediate, Cushing, Oklahoma



Source: FRED, EIA, cber.co.

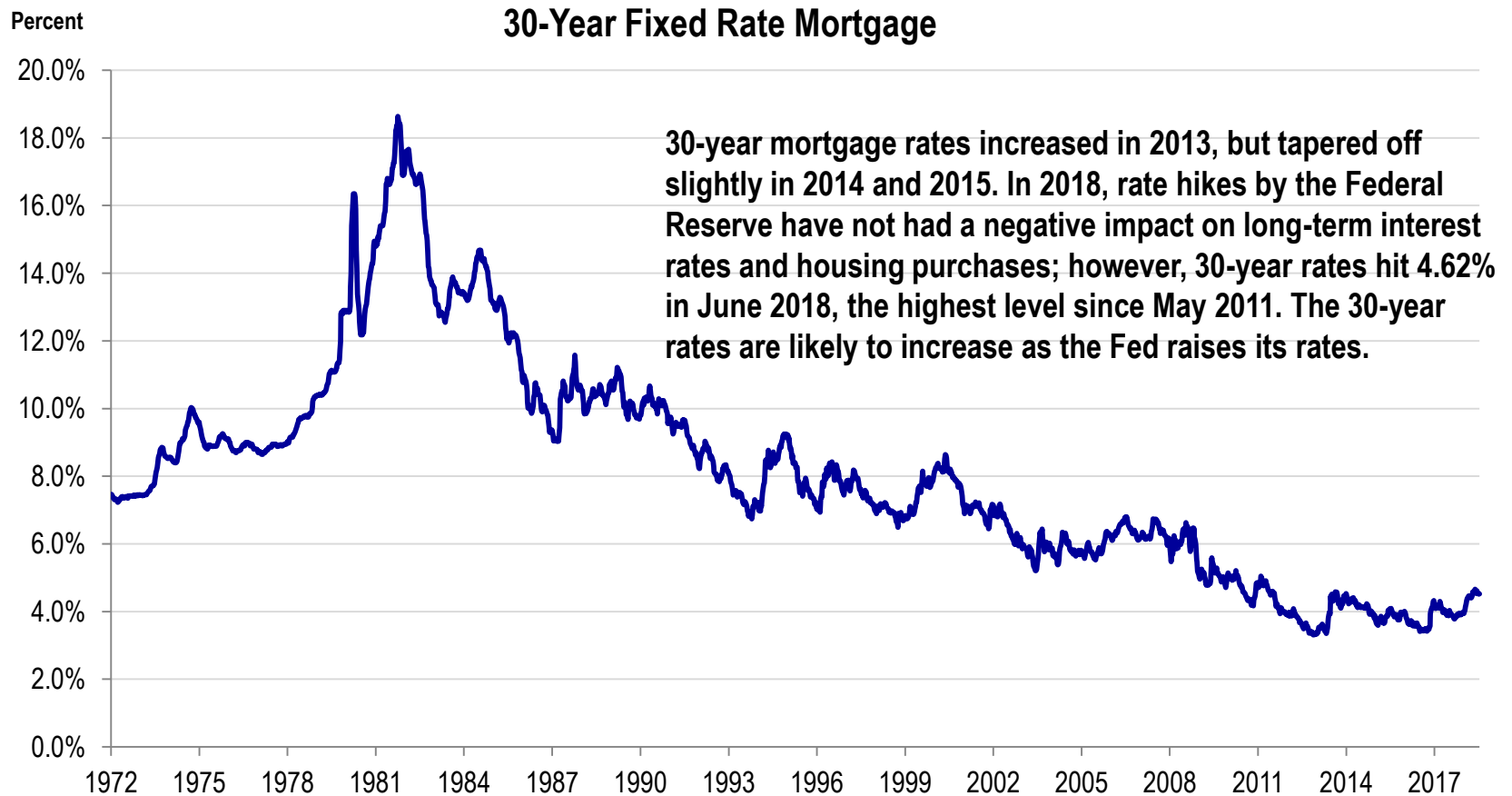


# The U.S. Economy

Mortgage Rates, Housing Prices (U.S. and Denver), and  
Construction Spending



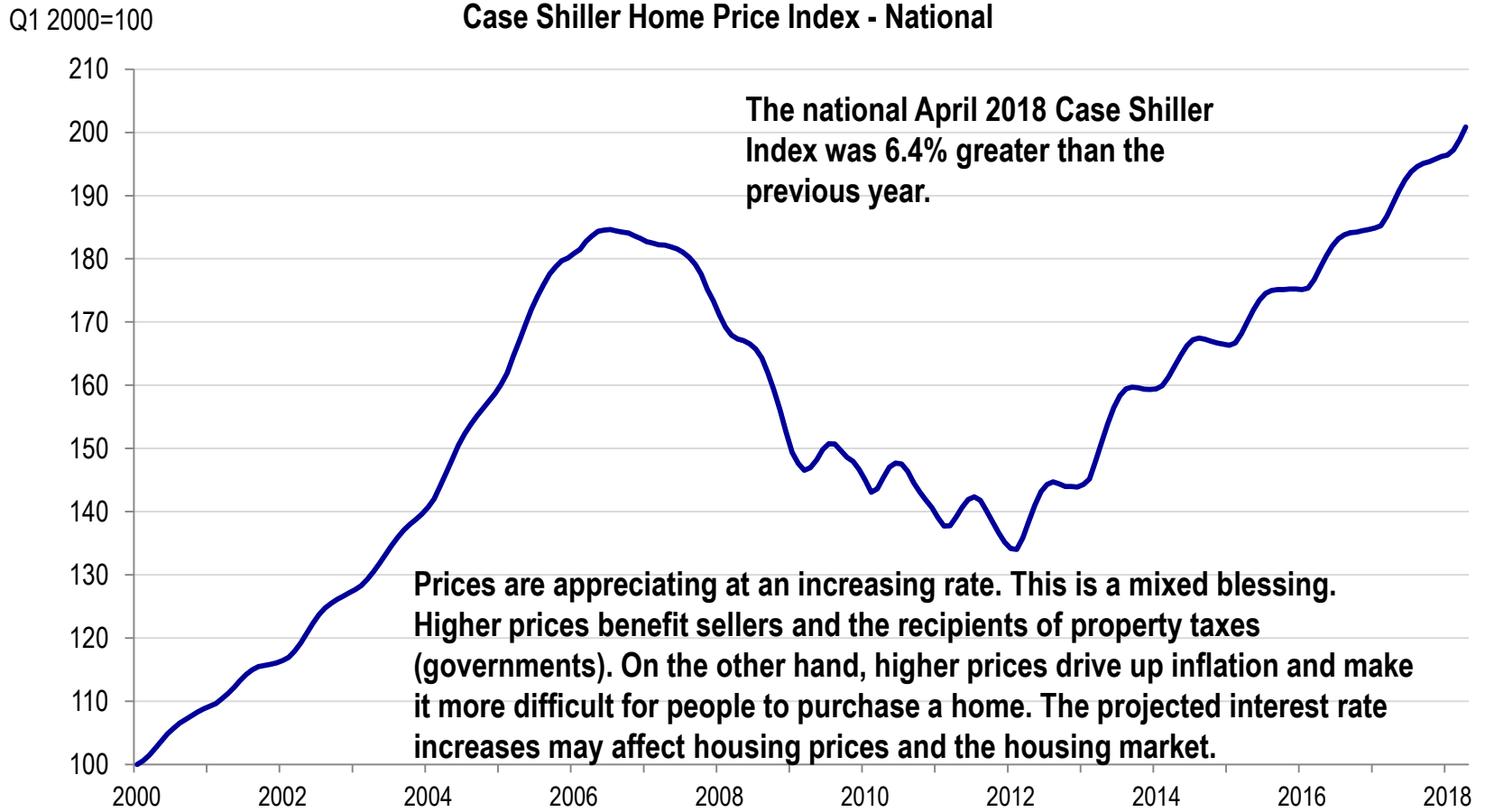
# 30-Year Fixed Rate Mortgage



Source: FRED, Freddie MAC, cber.co.

# Case Shiller Home Price Index

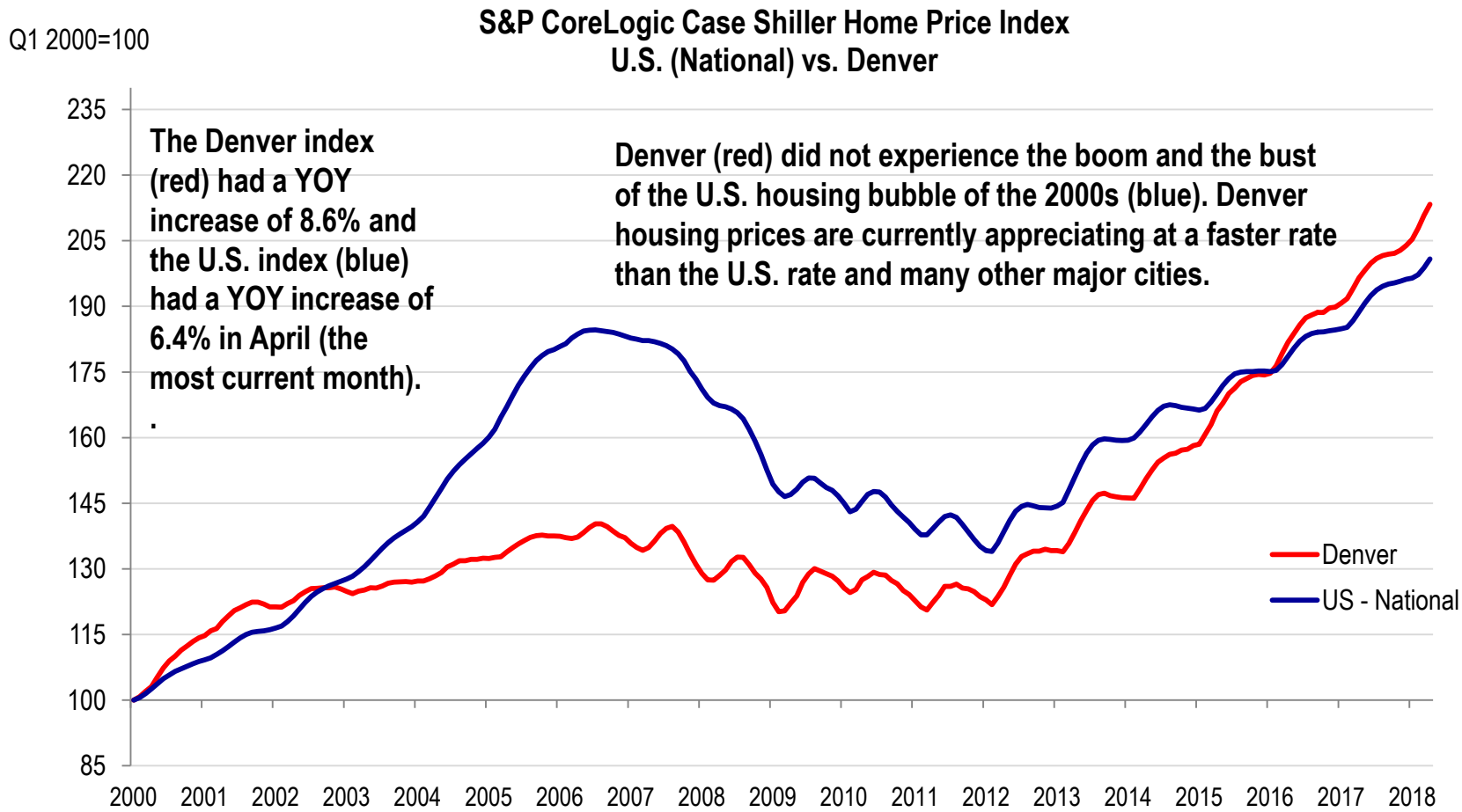
## National Index



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

# Case Shiller Home Price Index

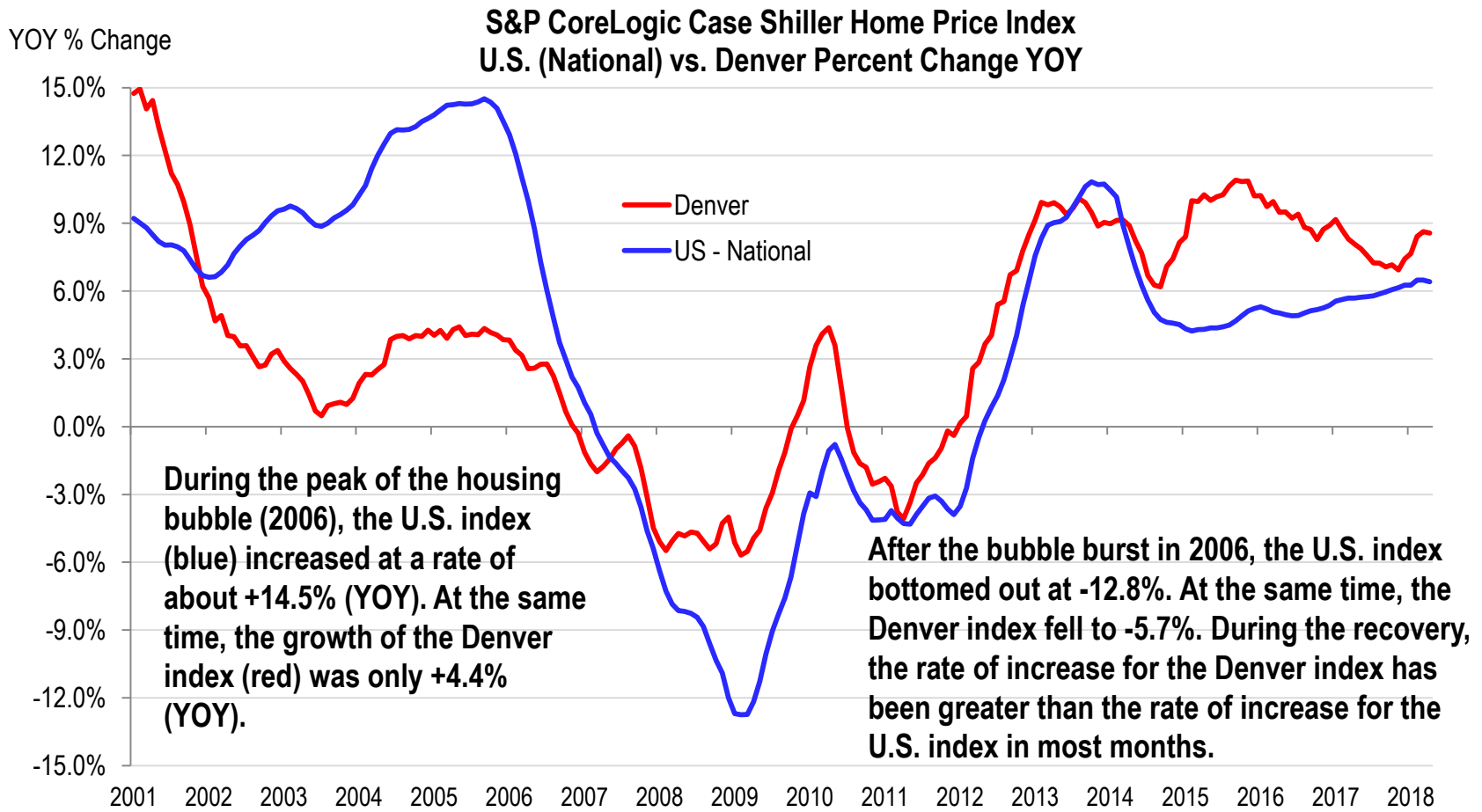
## National vs. Denver Index Value



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

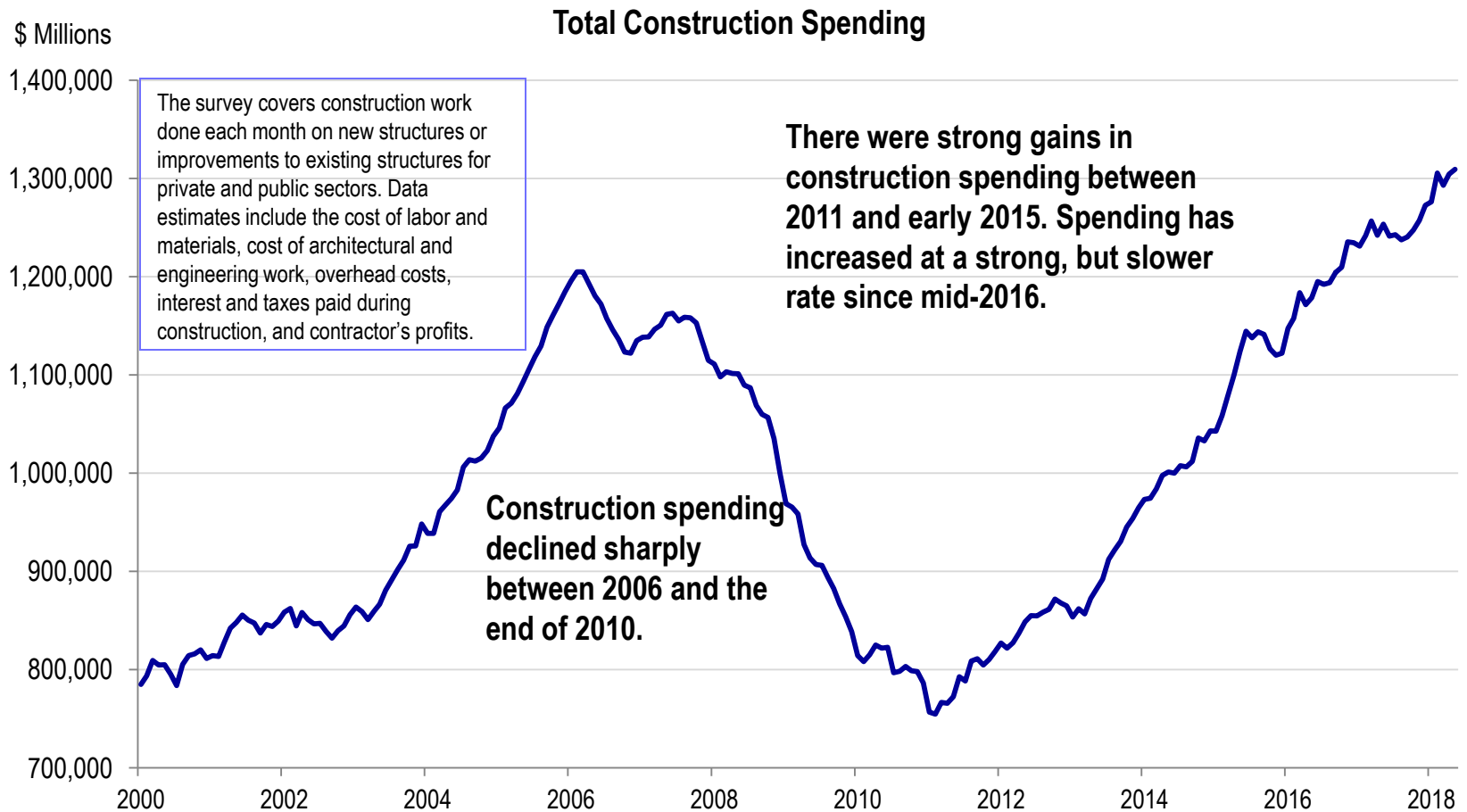
# Case Shiller Home Price Index

## National vs. Denver YOY Rate of Change



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

# Total U.S. Construction Spending



Source: FRED, Census Bureau, not adjusted for inflation, SAAR, cber.co.



# The U.S. Economy

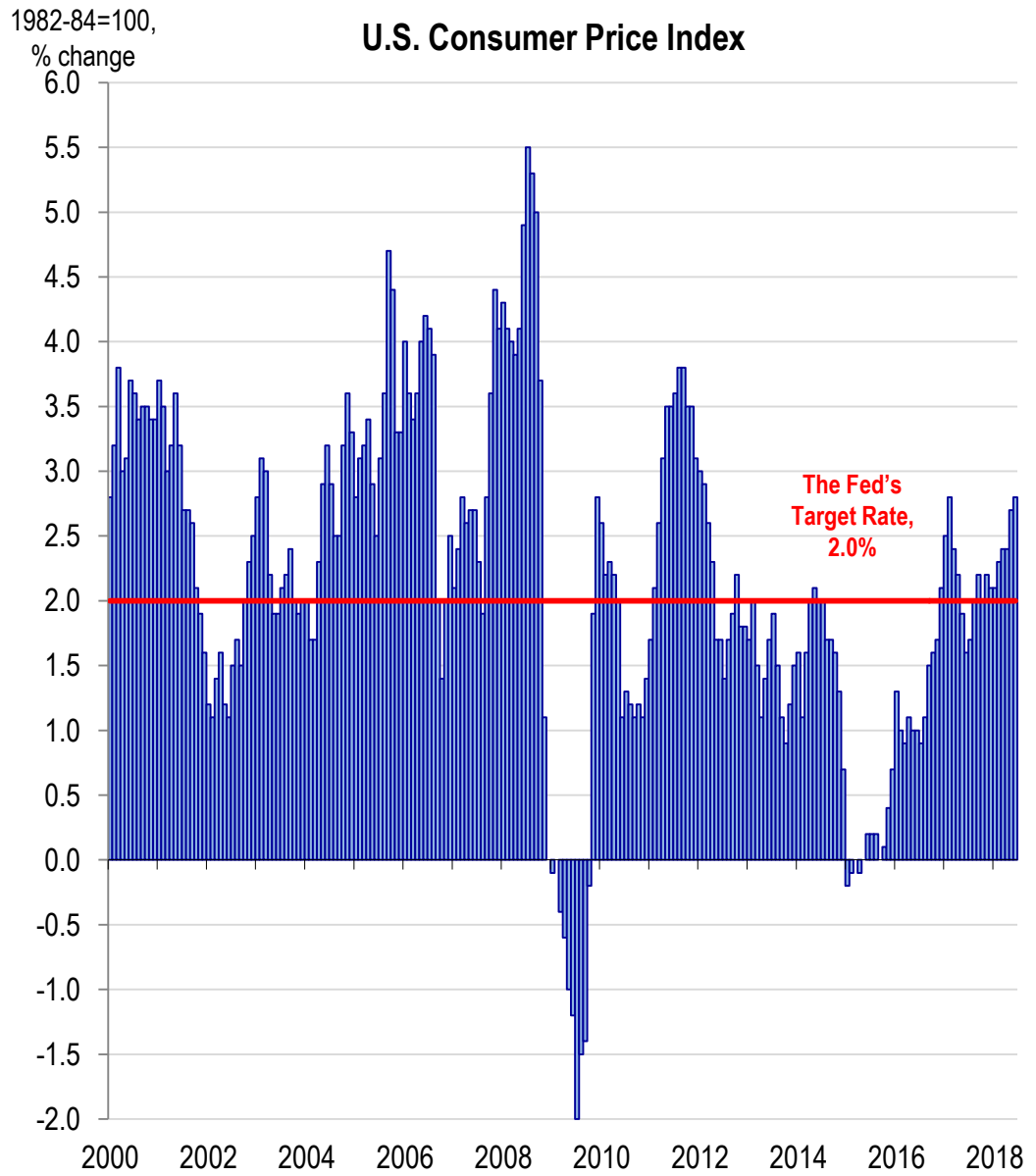
Inflation, Index for Services and Manufacturing, Retail Sales, and Light Truck and Auto Sales

# Consumer Price Index (CPI)

U.S. inflation, as measured by the seasonally adjusted CPI, will increase by 2.3% in 2018 (forecast). This is slightly above the Fed's target rate of 2.0%. Increases in 2018 will be a result of higher interest rates, housing costs, health care costs, and gasoline prices. The increase in the June CPI rate was 2.8%. The average rate for the first half of the year is 2.5%.

Recent annual rates are:

- 2012 2.1%
- 2013 1.5%
- 2014 1.6%
- 2015 0.1%
- 2016 1.3%
- 2017 2.1%
- 2018 2.3 %.



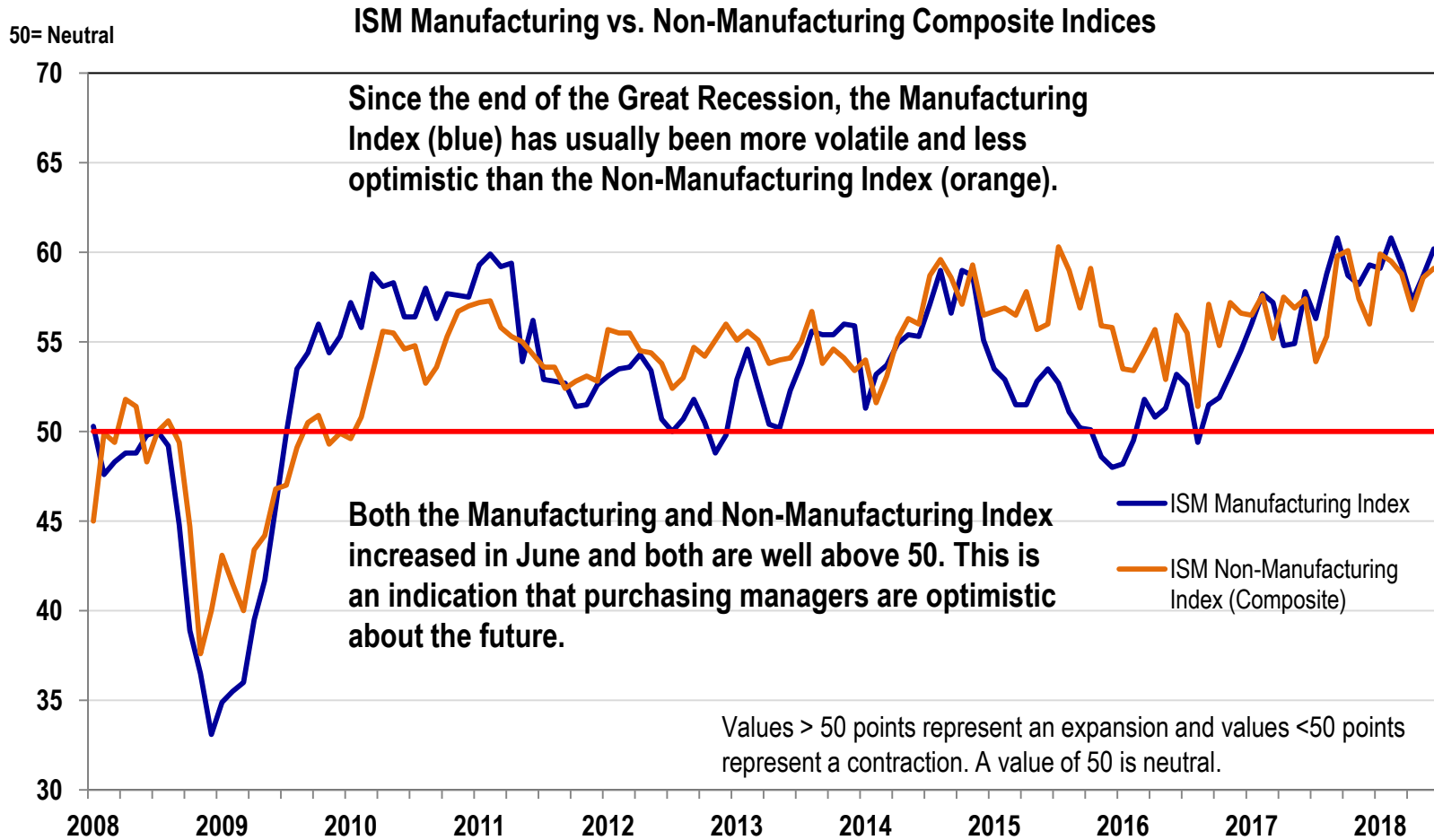
Source: Bureau of Labor Statistics, SA, [cber.co](http://cber.co).

Note: the Federal Reserve uses the PCE for establishing inflation target rates; the CPI tends to be slightly higher than the CPE.

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

# ISM PMI Composite Indices

## Manufacturing vs. Non-manufacturing

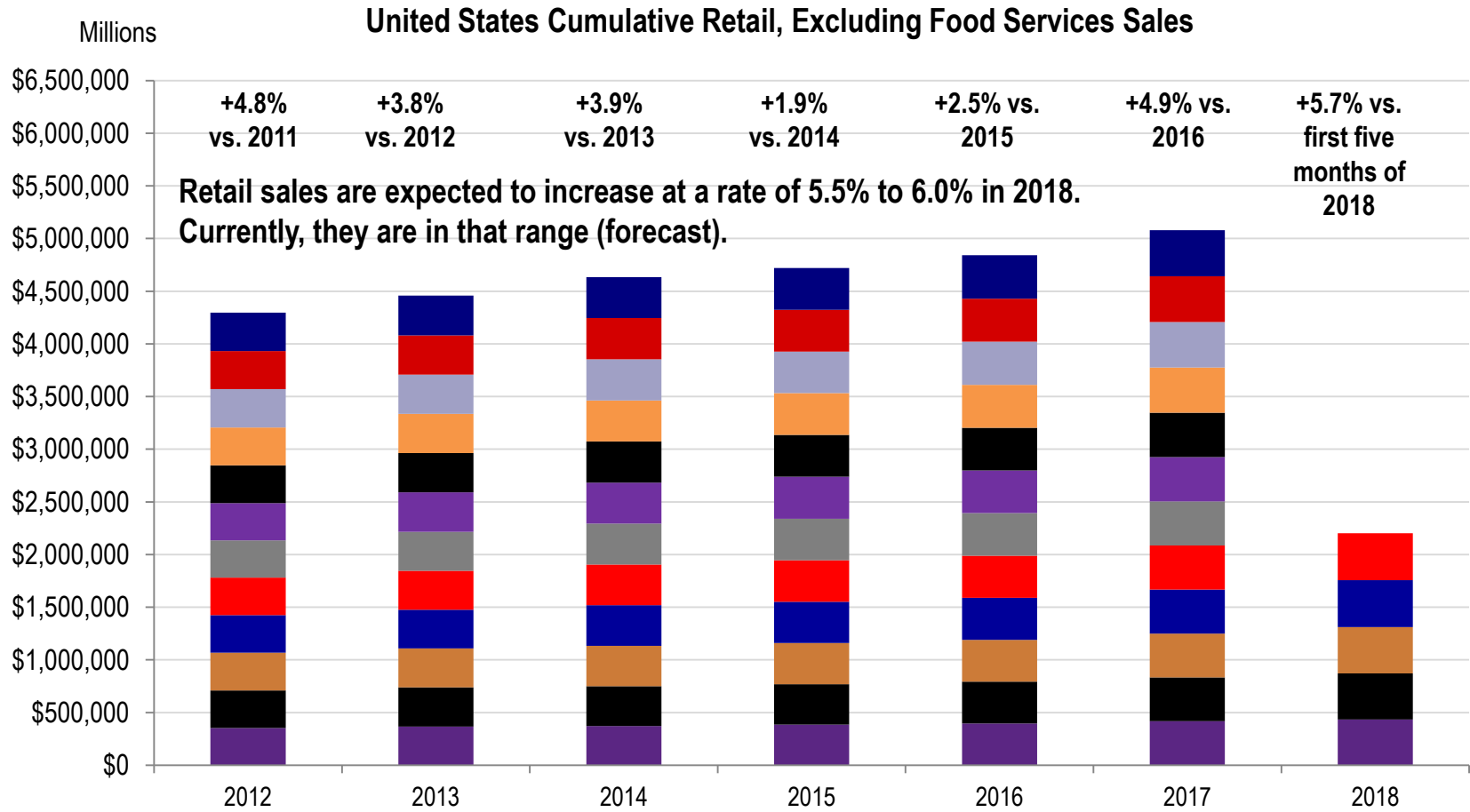


Sources: Institute for Supply Management (ISM), FRED, cber.co.



# Cumulative Retail, Excluding Food Services Sales

## Monthly

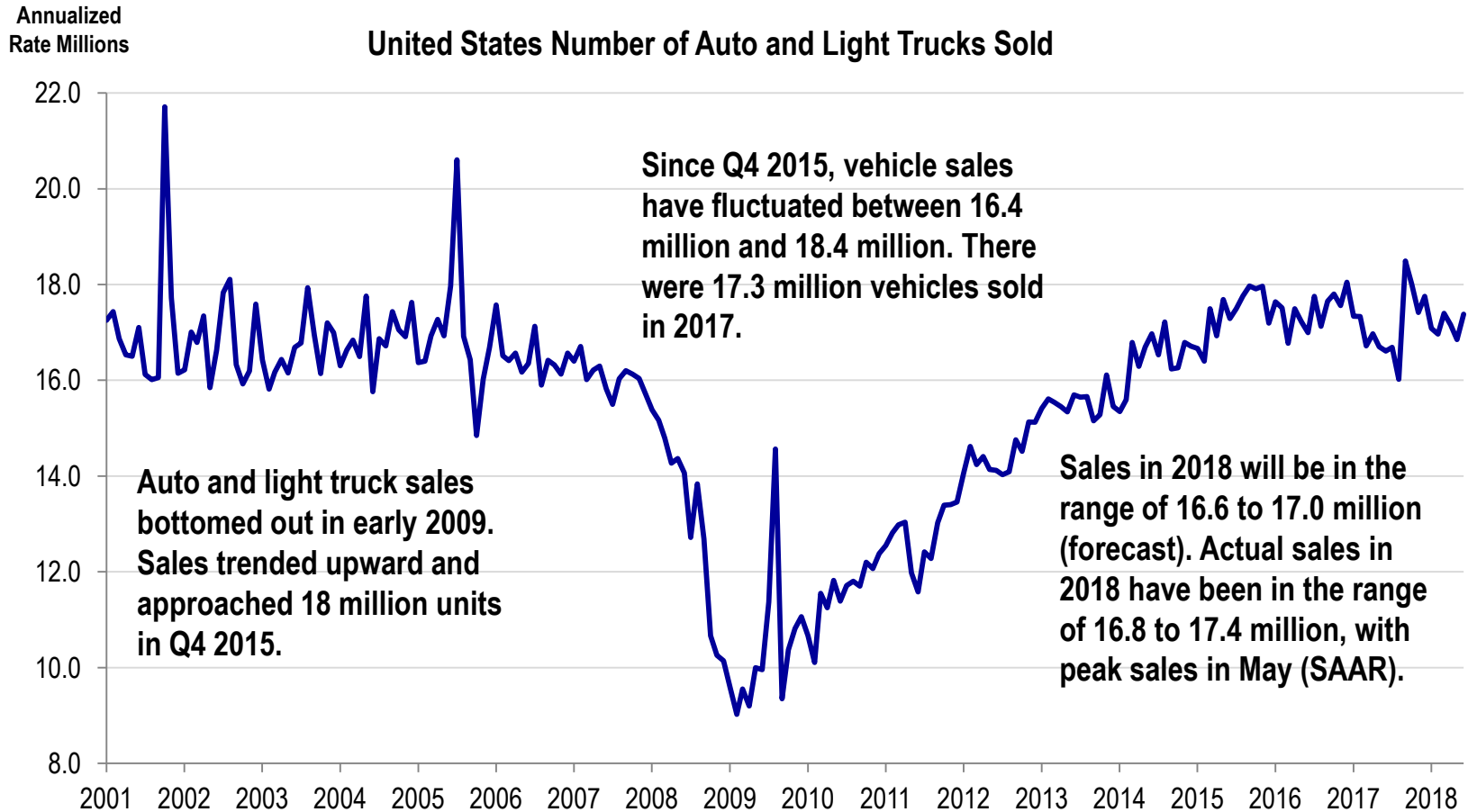


Source: U.S. Census Bureau, FRED, cber.co.

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

## Monthly (Annualized Rate Millions)



Source: FRED, BEA, cber.co.

Note: Seasonally Adjusted Annualized Rate.

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

# The United States Economy

## Summary

**Despite the Political Turbulence, The Economy is Currently on Solid Footing**

### Positives

The current strengths of the U.S. economy are:

- Job growth is solid.
- Job growth is diversified across industries and geographic regions.
- Real GDP growth is solid and expected to improve in the second half of the year.
- Retail sales (consumption) is solid.

In addition, business leaders are confident and the Philadelphia Federal Reserve leading and coincident indicators point to continued growth.

The Conference Board is bullish on the U.S. economy. TCB projects 3.1% real GDP growth in 2018 and 2019. Over time, their forecasts have been conservative and reasonably accurate for the past decade.

### Headwinds

Even strong economies have economic headwinds. The following challenges are unlikely to derail the economy during the next 18 months:

- Level of public and private debt – long-term issue.
- Boomers moving into retirement years without savings.
- Worker shortages in many parts of the country.
- Rapid appreciation in housing prices in some parts of the U.S.
- Rate hikes by the Federal Reserve.
- Moderation in the growth of the European economy and slower growth in emerging countries.
- Trade conflicts (tariffs).
- Political unrest.
- Foreign policy.



# The Colorado Economy

## Population

# Colorado Population

## Components of Change

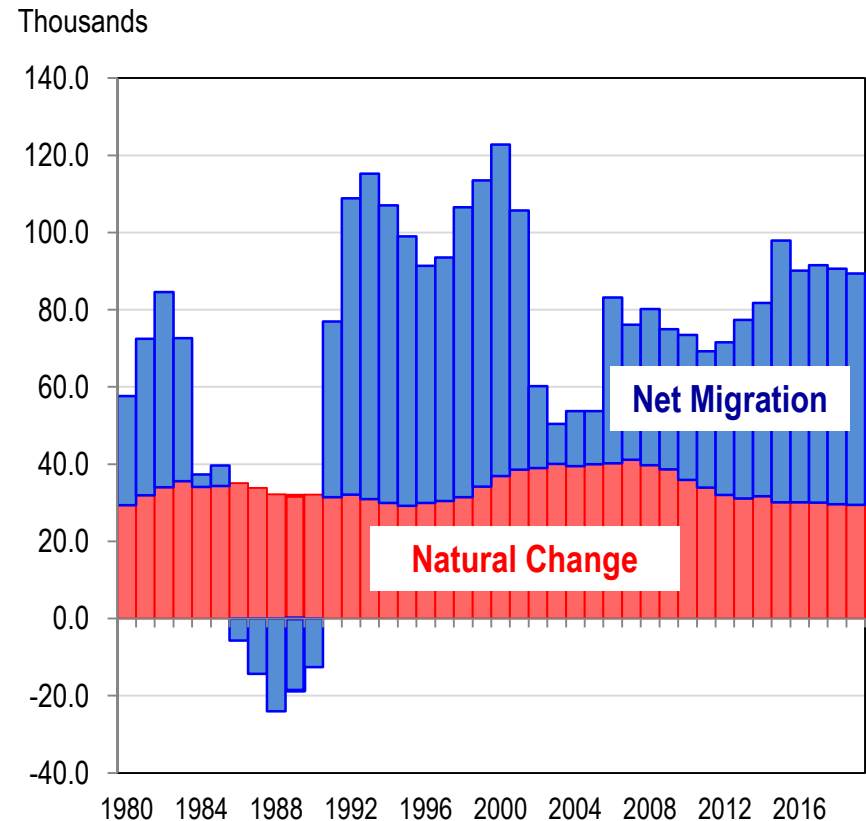
Population increases and decreases are a result of the natural rate of change (births minus deaths) and the change in net migration (people moving into the state minus people moving out of the state).

Over the past 3½ 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. In 2018 it is projected to drop to 29,400. Fertility rates in Colorado have declined and people chose not to have children during the Great Recession.

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 and the change in population were negative. During the past two recessions (2001 and 2007), 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 90,000 for the years 2015 to 2018. In 2018 the state's population will increase by 1.6% to 5,720,280.

Change in Colorado Population 1980 - 2019





# Colorado Population

## Net Migration

Throughout the recovery from the Great Recession, net migration has been the source of many new workers for Colorado. Net migration is projected to decline. In the near-term this will be caused by high home prices, an infrastructure that has not been properly maintained, and congestion. It will be more difficult to relocate to Colorado.

Looking ahead, this will make it necessary for Colorado industry, the work force system, higher education, and K-12 to more effectively provide training and education programs for managers, technicians, laborers, and employees at all levels.

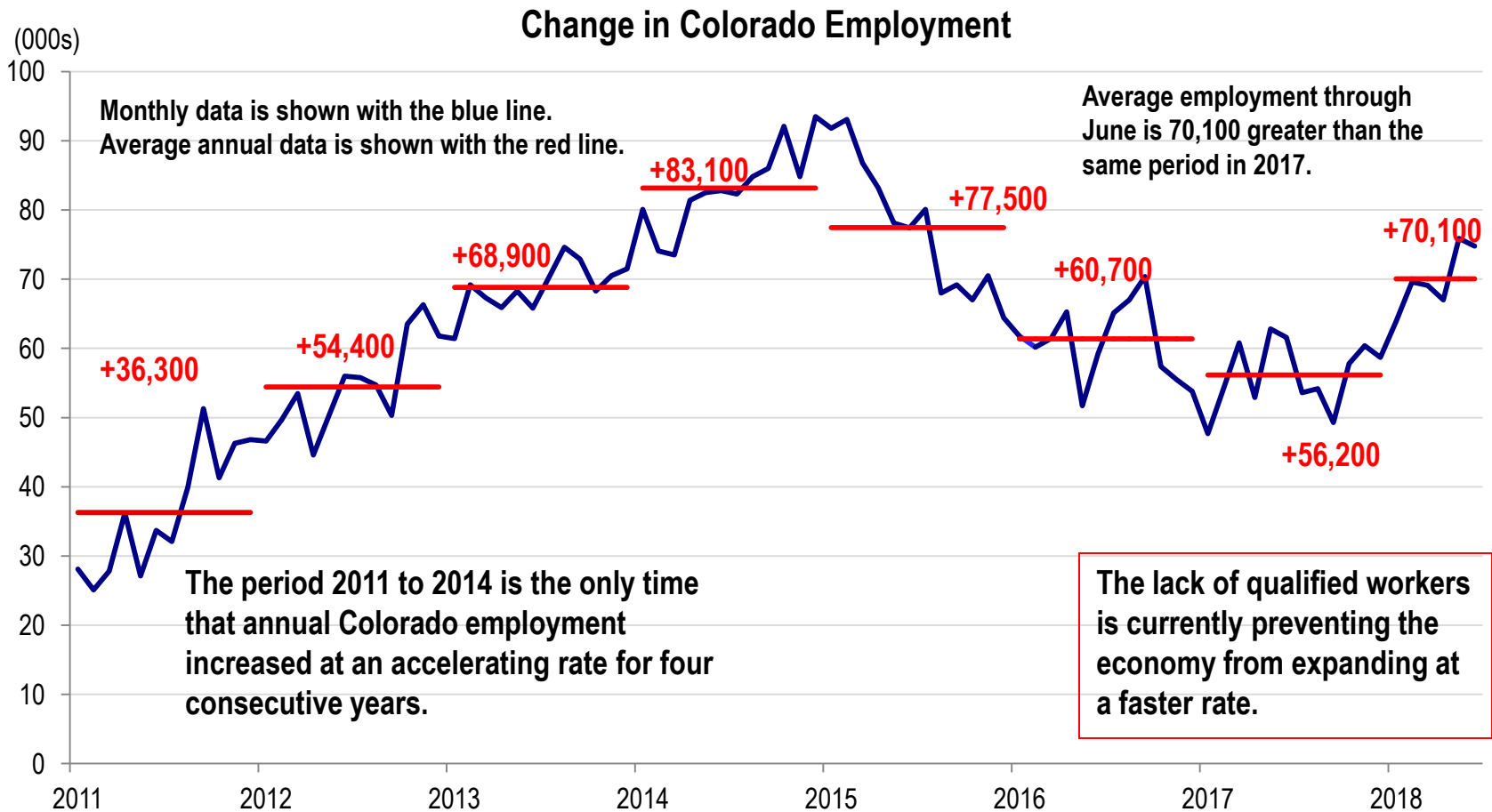


# The Colorado Economy

Employment, Change in Employment, Unemployment, and Change in the Size of Labor Force

# Change in Colorado Employment

## Year-Over-Year (YTD)



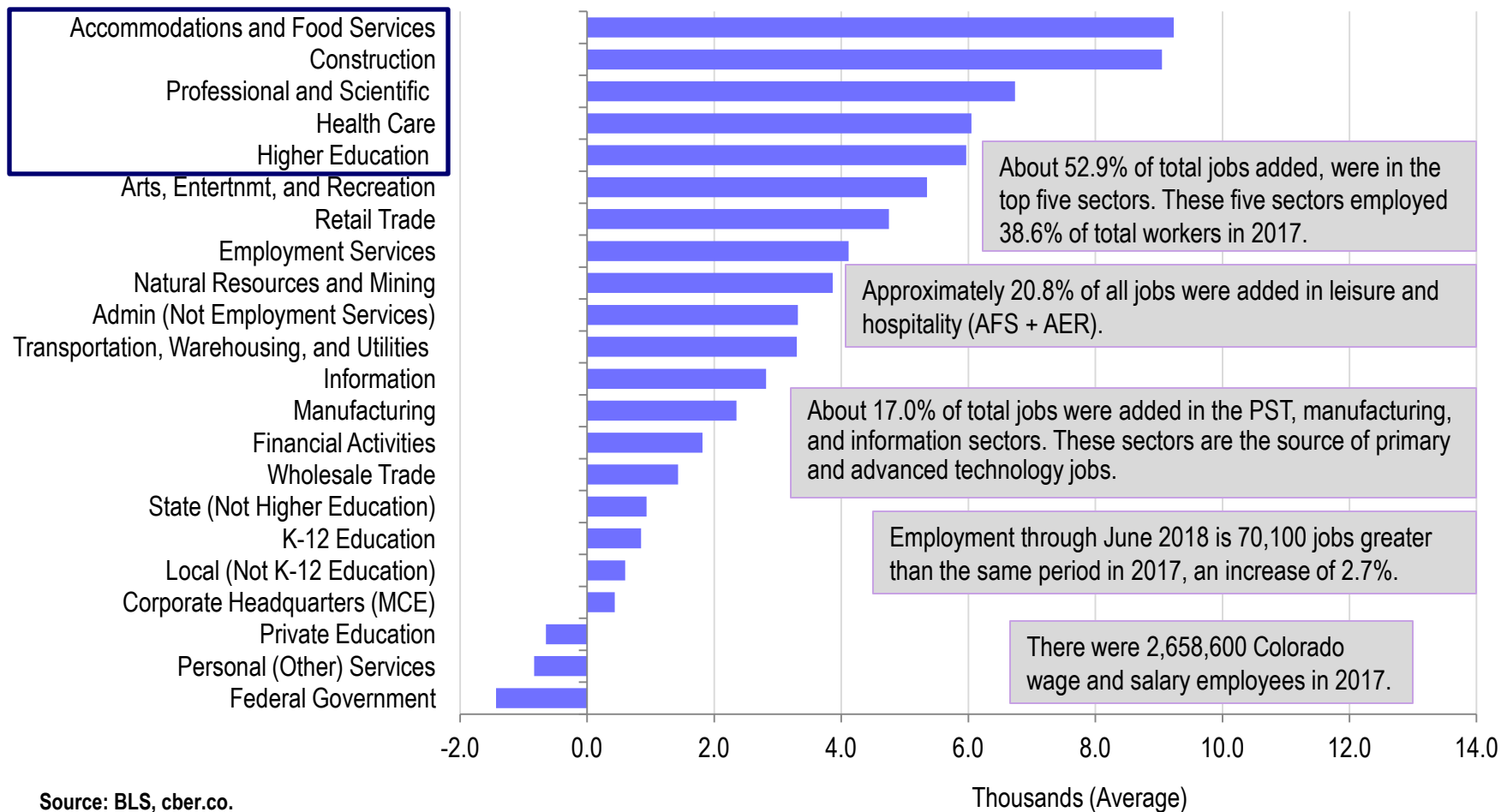
Source: Bureau of Labor Statistics, NSA, cber.co.



# Change in Employment

## First 6 Months of 2018 vs. Same Period of 2017

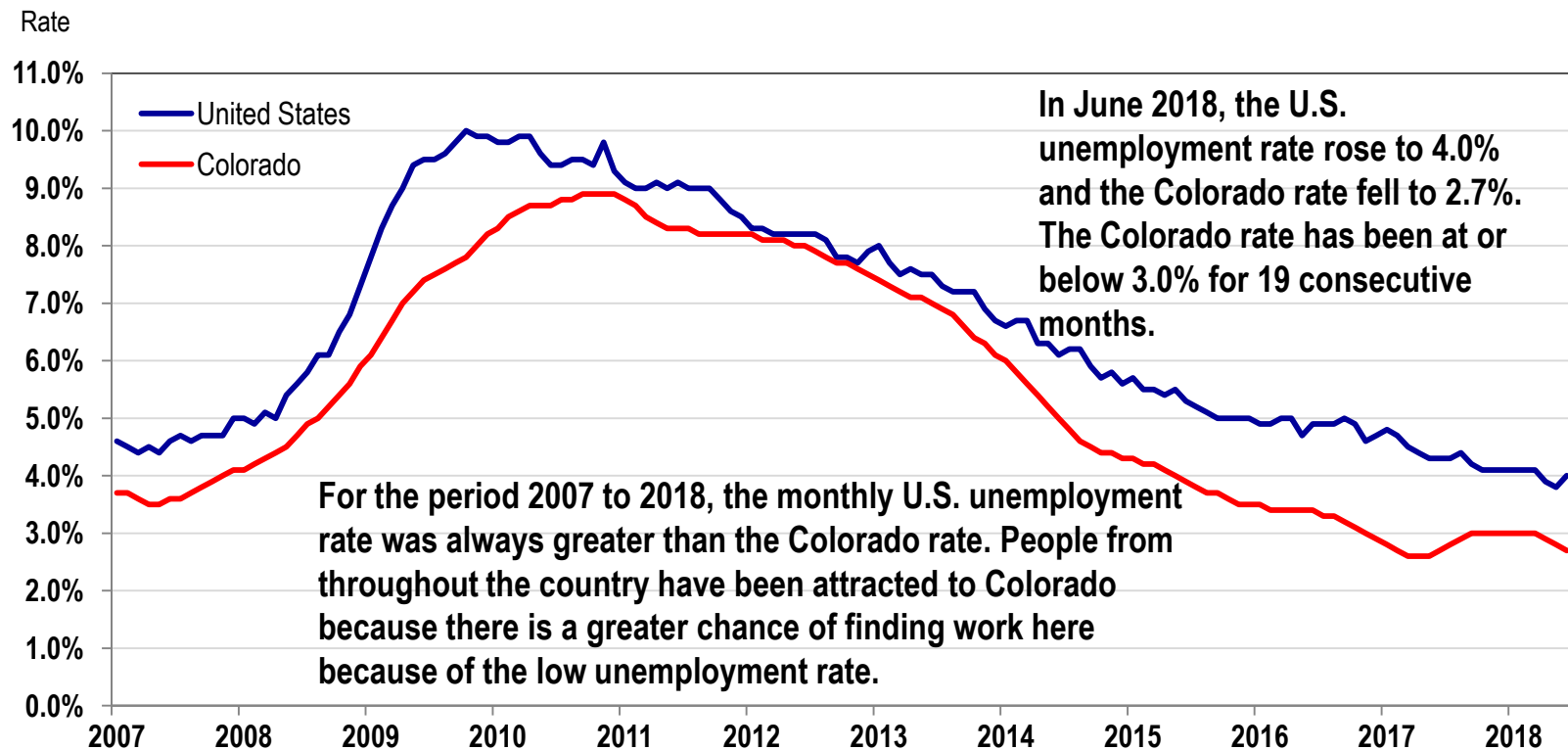
Job Change All Sectors



# Unemployment Rate

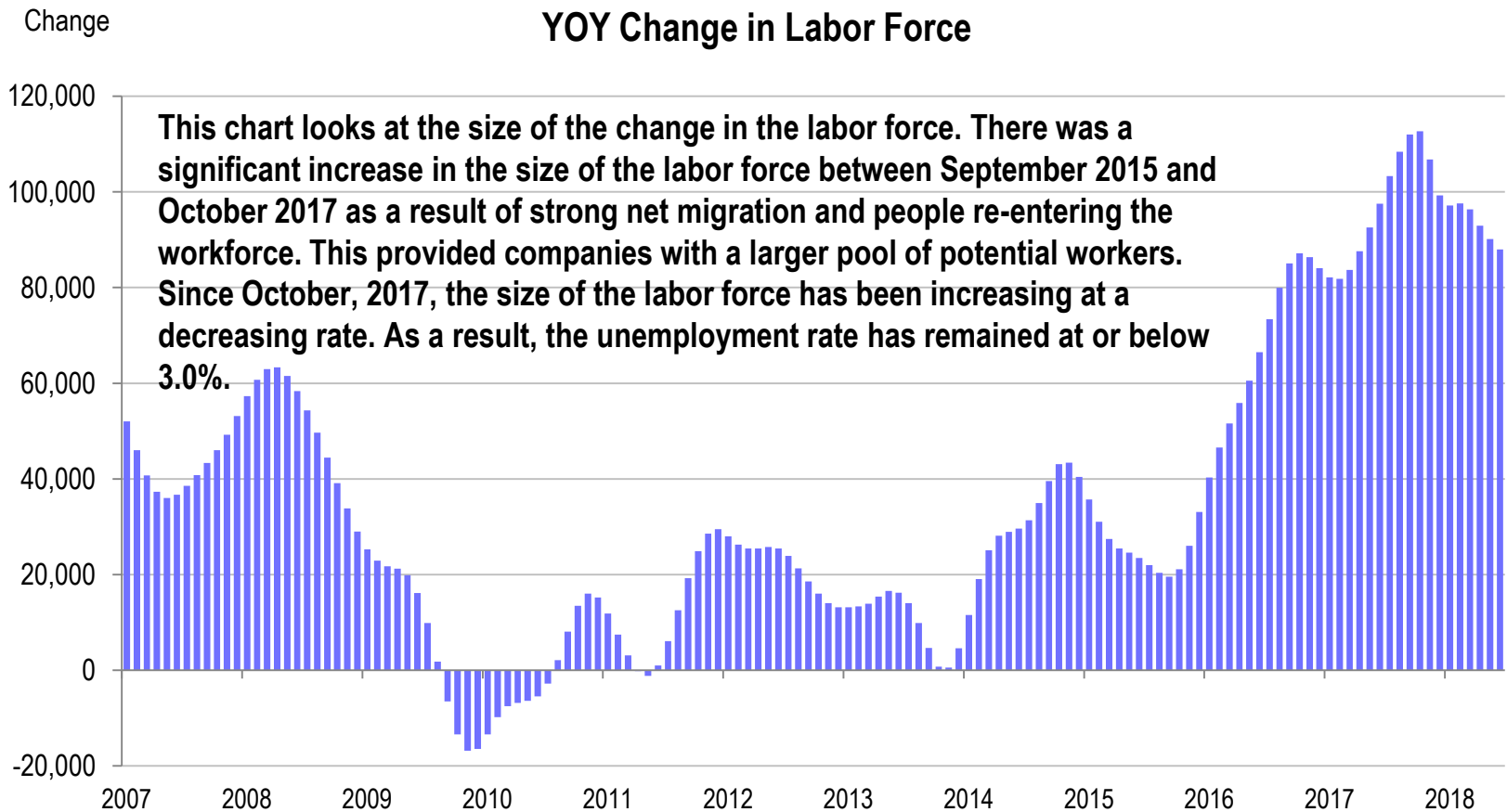
## Colorado vs. U.S.

Unemployment Rate – Colorado vs. U.S.



Source: Bureau of Labor Statistics, cber.co.

# YOY Change in Colorado Labor Force



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

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

# Colorado Unemployment Rate

Unemployment will remain low and the economy will continue to perform in an extremely inefficient manner. There are companies in all sectors of the economy that are not adequately staffed. As a result, their customers have to deal with poor service and long wait times – in some cases there is even no service.

Given the U.S. unemployment rate of 4.0%, most states are facing similar challenges as Colorado. There are low unemployment rates in key occupations, key industries, and in most geographic areas of the state and U.S. There is no way to get around the problem. Legal immigration may have minimal impact on the challenges facing American businesses.



# The Colorado Economy

## Wages

# Colorado Wages (Private)

Typically, wages increase when the unemployment rate declines and qualified workers are scarce. That has not been the case in the recovery from the Great Recession.

The following charts look at:

- The change in private sector wages from 2016 to 2017.
- The compound annual growth rate (CAGR) of change in private sector wages from 2010 to 2017.
- The average wages by sector (private).
- The average wages for the level of employment (private).

# Change in Private Sector Wages

Sorted by 2017 vs. 2016 Average Annual Wages

NAICS Sector	Change in Wages		Avg. Annual Wages	2017 QCEW Employment
	2017 v 2016	2010-2017 CAGR		
55 Mgmt companies	16.0%	2.6%	\$ 148,776	39,016
56 Adm/waste (B2B)	5.9%	2.8%	\$ 41,066	158,037
51 Information	5.5%	3.0%	\$ 100,782	71,640
72 Accom/food	5.4%	3.3%	\$ 22,137	277,674
48-49 Trans/wrhouse	5.3%	3.9%	\$ 55,885	72,560
31-33 Manufacturing	4.7%	2.1%	\$ 69,452	144,047
<b>ALL INDUSTRIES</b>	<b>4.4%</b>	<b>2.6%</b>	<b>\$ 57,294</b>	<b>2,197,281</b>
42 Wholesale trade	4.4%	2.9%	\$ 83,003	106,720
11 Agriculture	4.2%	3.3%	\$ 36,457	17,598
22 Utilities	4.2%	2.5%	\$ 99,728	8,079
53 Real est/rental	4.1%	4.6%	\$ 57,232	50,570
23 Construction	3.7%	3.2%	\$ 59,446	163,458
54 Prof/technical	3.5%	2.3%	\$ 93,611	215,760
81 Other services	3.5%	2.5%	\$ 39,555	80,040
44-45 Retail trade	3.1%	2.4%	\$ 31,568	270,785
52 Finance/insurance	2.9%	3.8%	\$ 81,535	111,293
61 Priv. education	2.4%	0.9%	\$ 40,324	35,375
21 Mining/extractive	2.1%	2.4%	\$ 117,032	25,578
62 Health care	2.0%	1.7%	\$ 49,770	293,470
71 Arts, ent, recreation	0.1%	2.6%	\$ 36,117	55,407

Private average annual wages (AAW) for all industries increased at a rate of 4.4% between 2016 and 2017.

About 34.7% of employees worked in sectors where wages increased at a rate greater than 4.4%.

About 4.9% of employees worked in sectors where wages increased at a rate of 4.4%.

About 60.4% of employees worked in sectors where wages increased at a rate less than 4.4%.

Source: Bureau of Labor Statistics, cber.co.

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

# Change in Private Sector Wages

Sorted by 2017 vs. 2010 CAGR

NAICS Sector	Change in Wages		Avg. Annual Wages	2017 QCEW Employment
	2017 v 2016	2010-2017 CAGR		
53 Real est/rental	4.1%	4.6%	\$ 57,232	50,570
48-49 Trans/wrhouse	5.3%	3.9%	\$ 55,885	72,560
52 Finance/insurance	2.9%	3.8%	\$ 81,535	111,293
72 Accom/food	5.4%	3.3%	\$ 22,137	277,674
11 Agriculture	4.2%	3.3%	\$ 36,457	17,598
23 Construction	3.7%	3.2%	\$ 59,446	163,458
51 Information	5.5%	3.0%	\$ 100,782	71,640
42 Wholesale trade	4.4%	2.9%	\$ 83,003	106,720
56 Adm/waste (B2B)	5.9%	2.8%	\$ 41,066	158,037
71 Arts, ent, recreation	0.1%	2.6%	\$ 36,117	55,407
<b>ALL INDUSTRIES</b>	<b>4.4%</b>	<b>2.6%</b>	<b>\$ 57,294</b>	<b>2,197,281</b>
55 Mgmt companies	16.0%	2.6%	\$ 148,776	39,016
81 Other services	3.5%	2.5%	\$ 39,555	80,040
22 Utilities	4.2%	2.5%	\$ 99,728	8,079
21 Mining/extractive	2.1%	2.4%	\$ 117,032	25,578
44-45 Retail trade	3.1%	2.4%	\$ 31,568	270,785
54 Prof/technical	3.5%	2.3%	\$ 93,611	215,760
31-33 Manufacturing	4.7%	2.1%	\$ 69,452	144,047
62 Health care	2.0%	1.7%	\$ 49,770	293,470
61 Priv. education	2.4%	0.9%	\$ 40,324	35,375

The CAGR for private sector wages was 2.6%, between 2010 and 2017.

About 46.9% of employees worked in sectors where wages increased at a faster CAGR than 2.6%.

About 4.3% of employees worked in sectors where wages increased at a CAGR of 2.6%.

About 48.8% of employees worked in sectors where wages increased at a CAGR less than 2.6%.

Not all sectors benefitted from strong wage increases.



# Change in Private Sector Wages

Sorted by Average Annual Wages 2017

NAICS Sector	Change in Wages		Avg. Annual Wages	2017 QCEW Employment
	2017 v 2016	2010-2017 CAGR		
55 Mgmt companies	16.0%	2.6%	\$ 148,776	39,016
21 Mining/extractive	2.1%	2.4%	\$ 117,032	25,578
51 Information	5.5%	3.0%	\$ 100,782	71,640
22 Utilities	4.2%	2.5%	\$ 99,728	8,079
54 Prof/technical	3.5%	2.3%	\$ 93,611	215,760
42 Wholesale trade	4.4%	2.9%	\$ 83,003	106,720
52 Finance/insurance	2.9%	3.8%	\$ 81,535	111,293
31-33 Manufacturing	4.7%	2.1%	\$ 69,452	144,047
23 Construction	3.7%	3.2%	\$ 59,446	163,458
<b>ALL INDUSTRIES</b>	<b>4.4%</b>	<b>2.6%</b>	<b>\$ 57,294</b>	<b>2,197,281</b>
53 Real est/rental	4.1%	4.6%	\$ 57,232	50,570
48-49 Trans/wrhouse	5.3%	3.9%	\$ 55,885	72,560
62 Health care	2.0%	1.7%	\$ 49,770	293,470
56 Adm/waste (B2B)	5.9%	2.8%	\$ 41,066	158,037
61 Priv. education	2.4%	0.9%	\$ 40,324	35,375
81 Other services	3.5%	2.5%	\$ 39,555	80,040
11 Agriculture	4.2%	3.3%	\$ 36,457	17,598
71 Arts, ent, recreation	0.1%	2.6%	\$ 36,117	55,407
44-45 Retail trade	3.1%	2.4%	\$ 31,568	270,785
72 Accom/food	5.4%	3.3%	\$ 22,137	277,674

Overall private sector AAW were \$57,294 in 2017.

The top 4 sectors for AAW were:

- MCE
- Extractive Industries
- Information
- Utilities.

These four sectors have AAWs near \$100,000 or greater. About 6.5% of all employees work in these four sectors.

About 40.3% of the employees work in sectors that have AAW above the state average. About 59.7% of the state's employees work in sectors with AAW below the state average.

Source: Bureau of Labor Statistics, cber.co.

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

# Change in Private Sector Wages

Sorted by 2017 QCEW Employment

NAICS Sector	Change in Wages		Avg. Annual Wages	2017 QCEW Employment
	2017 v 2016	2010-2017 CAGR		
ALL INDUSTRIES	4.4%	2.6%	\$ 57,294	2,197,281
62 Health care	2.0%	1.7%	\$ 49,770	293,470
72 Accom/food	5.4%	3.3%	\$ 22,137	277,674
44-45 Retail trade	3.1%	2.4%	\$ 31,568	270,785
54 Prof/technical	3.5%	2.3%	\$ 93,611	215,760
23 Construction	3.7%	3.2%	\$ 59,446	163,458
56 Adm/waste (B2B)	5.9%	2.8%	\$ 41,066	158,037
31-33 Manufacturing	4.7%	2.1%	\$ 69,452	144,047
52 Finance/insurance	2.9%	3.8%	\$ 81,535	111,293
42 Wholesale trade	4.4%	2.9%	\$ 83,003	106,720
81 Other services	3.5%	2.5%	\$ 39,555	80,040
48-49 Trans/wrhouse	5.3%	3.9%	\$ 55,885	72,560
51 Information	5.5%	3.0%	\$ 100,782	71,640
71 Arts, ent, recreation	0.1%	2.6%	\$ 36,117	55,407
53 Real est/rental	4.1%	4.6%	\$ 57,232	50,570
55 Mgmt companies	16.0%	2.6%	\$ 148,776	39,016
61 Priv. education	2.4%	0.9%	\$ 40,324	35,375
21 Mining/extractive	2.1%	2.4%	\$ 117,032	25,578
11 Agriculture	4.2%	3.3%	\$ 36,457	17,598
22 Utilities	4.2%	2.5%	\$ 99,728	8,079

The three largest sectors in terms of employment have AAW below the state average:

- Health Care
- AFS
- Retail Trade.



# Colorado Wages

The increase in wages during 2017 is partially responsible for bringing former workers back into the labor force. This momentum has carried into 2018. As a result, 2018 wage and salary employment is greater than expected.

While there was private sector wage growth of 4.4% in 2017 vs. 2016, only about one-third of workers were employed in sectors that enjoyed wage growth at this rate or higher. About half of all employees worked in sectors where wage growth was less than 3.7%, the 2017 rate of inflation for Colorado.

There was private sector annualized wage growth of 2.6% for the period 2010 to 2017. About 46% of workers were employed in sectors that enjoyed wage growth at this rate or higher.

On average, the annualized private sector wage growth of 2.6% was matched by inflation of 2.6% between 2010 and 2017. Colorado workers have not experienced “real” wage growth in the recovery from the Great Recession.



# Colorado Economy

Employment in Strong Growth, Solid Growth, Volatile Categories

# ● Employment in Strong, Solid, and ● Volatile Growth Categories

The remainder of the chartbook focuses on Colorado employment.

Total Colorado employment for the cber.co 2018 forecast was prepared using the following three categories of NAICS sectors:

- Strong growth
- Solid growth
- Volatile

The performance of the overall economy is measured by evaluating the change in employment within these three categories of NAICS sectors. In addition, it looks at the change in employment of key sectors within each category.

Additional information about the forecast is available in the Appendix.

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

**Strong Growth Category – 19,500 to 21,500 jobs added, 2.3% to 2.5% growth rate.**

Health care and professional and scientific services, and higher education are the top sectors for job growth.

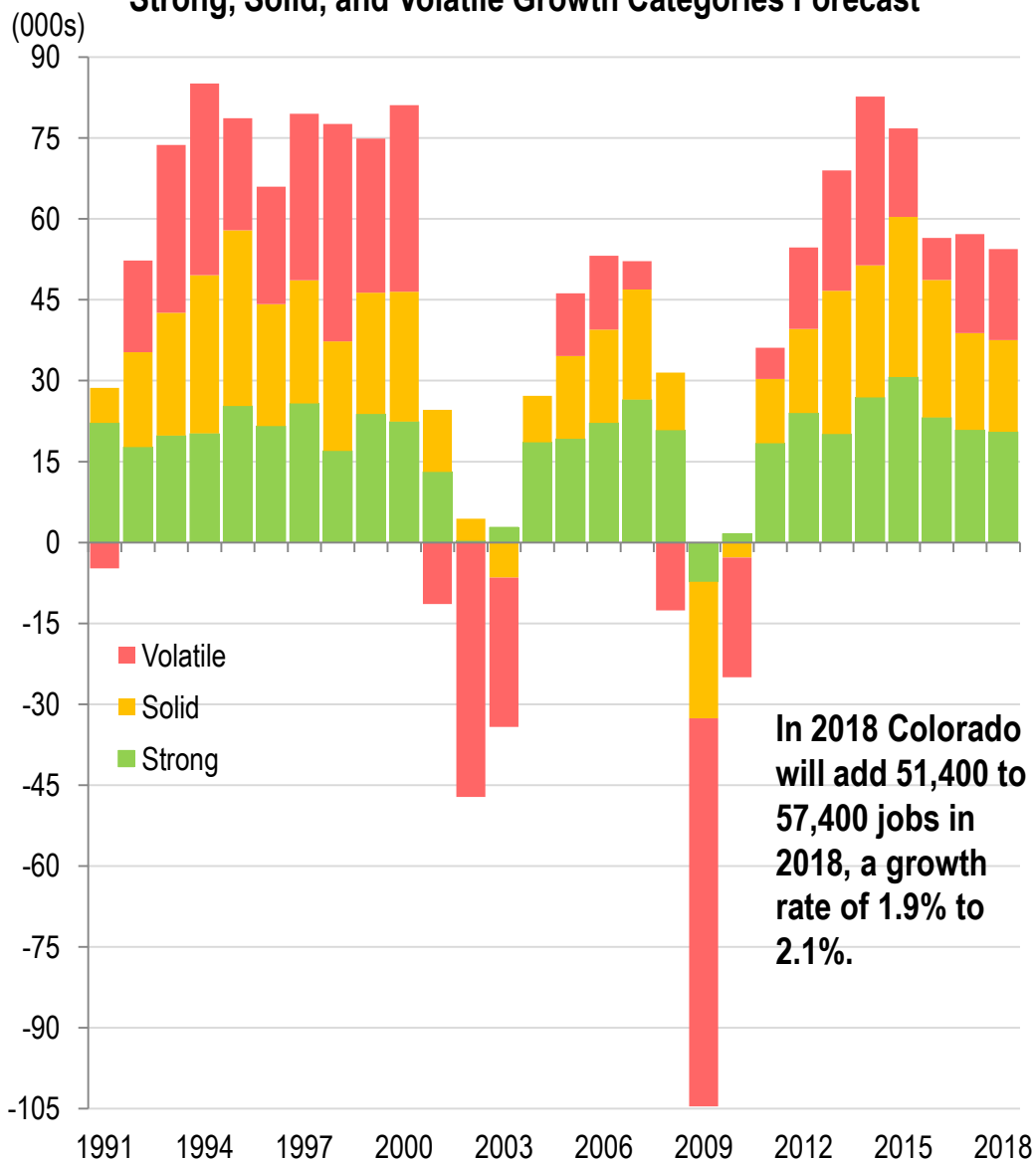
**Solid Growth Category – 16,000 to 18,000 jobs added, 1.5% to 1.7% growth rate.**

Accommodations and food services, trade, and state and local government are the leading sectors for job growth.

**Volatile Category – 15,900 to 17,900 jobs added 2.1 to 2.3% growth rate.**

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

**Strong, Solid, and Volatile Growth Categories Forecast**



Source: Bureau of Labor Statistics, cber.co.



# Colorado Economy

## Employment in the Strong Growth Category

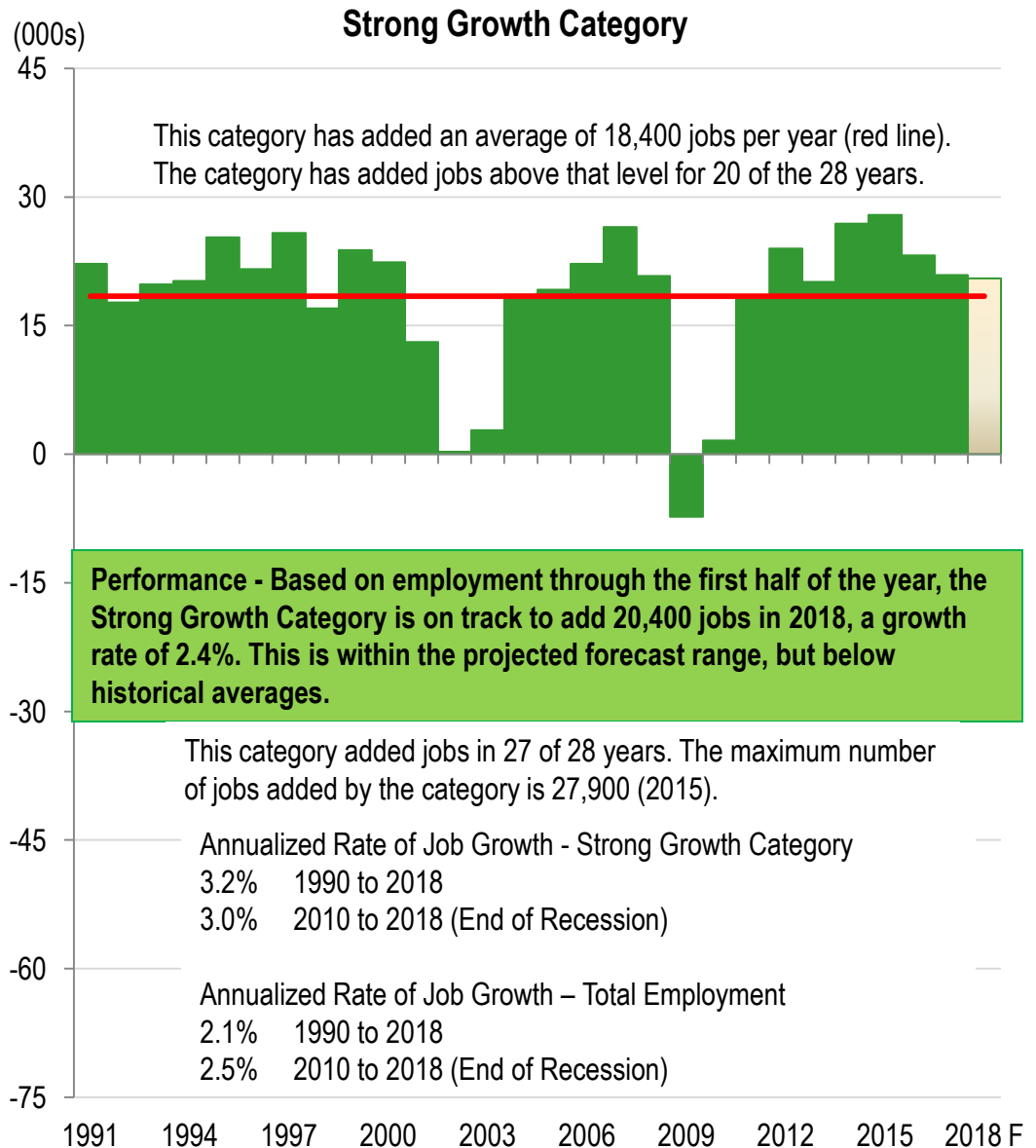
# Annual Employment Situation for the Strong Growth Category

Over the past two decades the following sectors have been the foundation for consistent growth in Colorado employment.

- Professional, Scientific, and Technical Services
- Management of Companies and Enterprises
- Administrative Services (Not Employment Services)
- Private Education
- Health Care
- Arts, Entertainment, and Recreation
- Other Services.

Total employment for this category was:  
 1997 517,900 workers, 26.2% of total employment  
 2007 683,800 workers, 29.3% of total employment  
 2017 863,100 workers, 32.5% of total employment

**Forecast - In 2018, between 19,500 and 21,500 workers will be added at a rate of 2.3% to 2.5%. The number of jobs added is slightly less than 2017.**

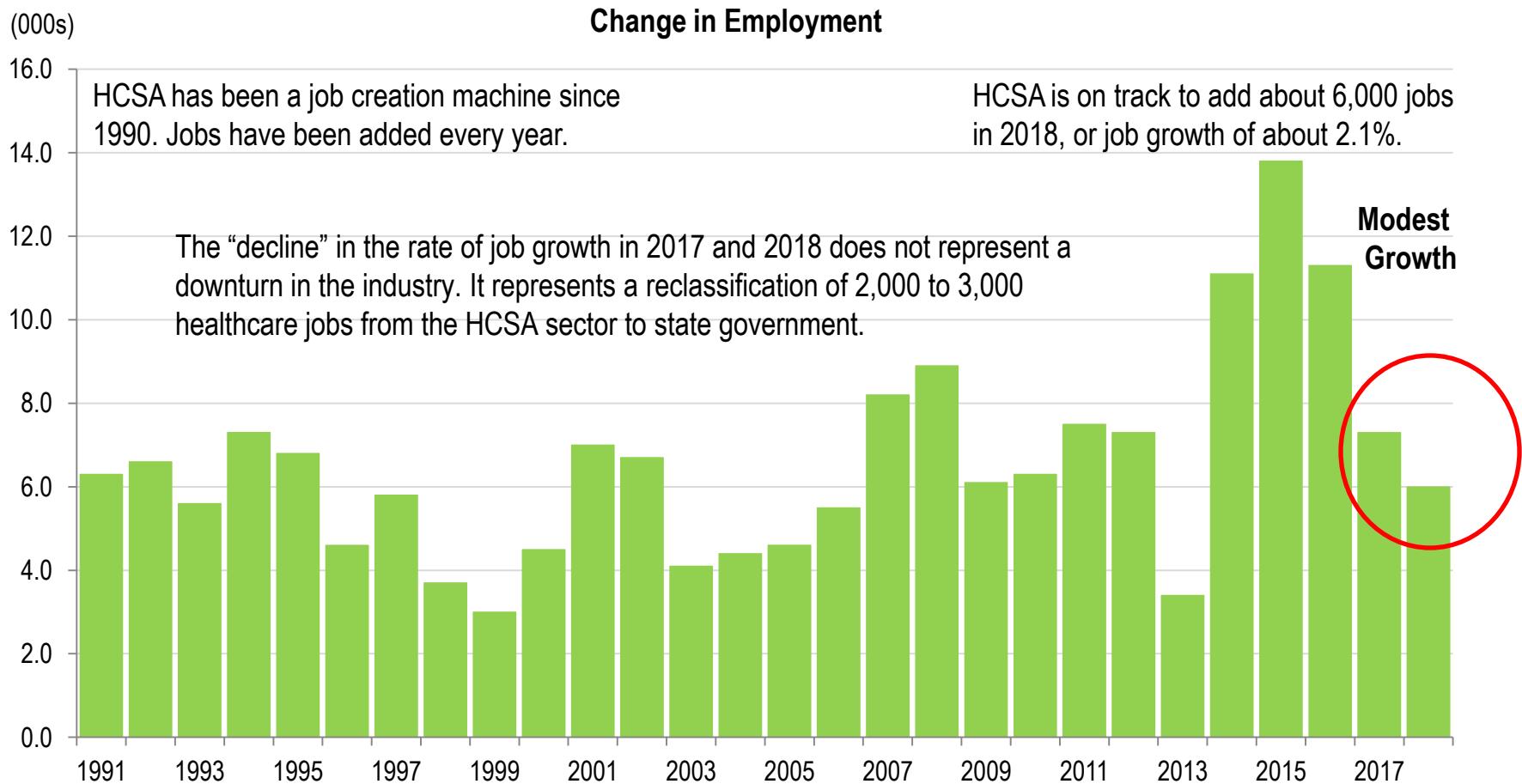


Source: Bureau of Labor Statistics, cber.co.



# Change in Employment

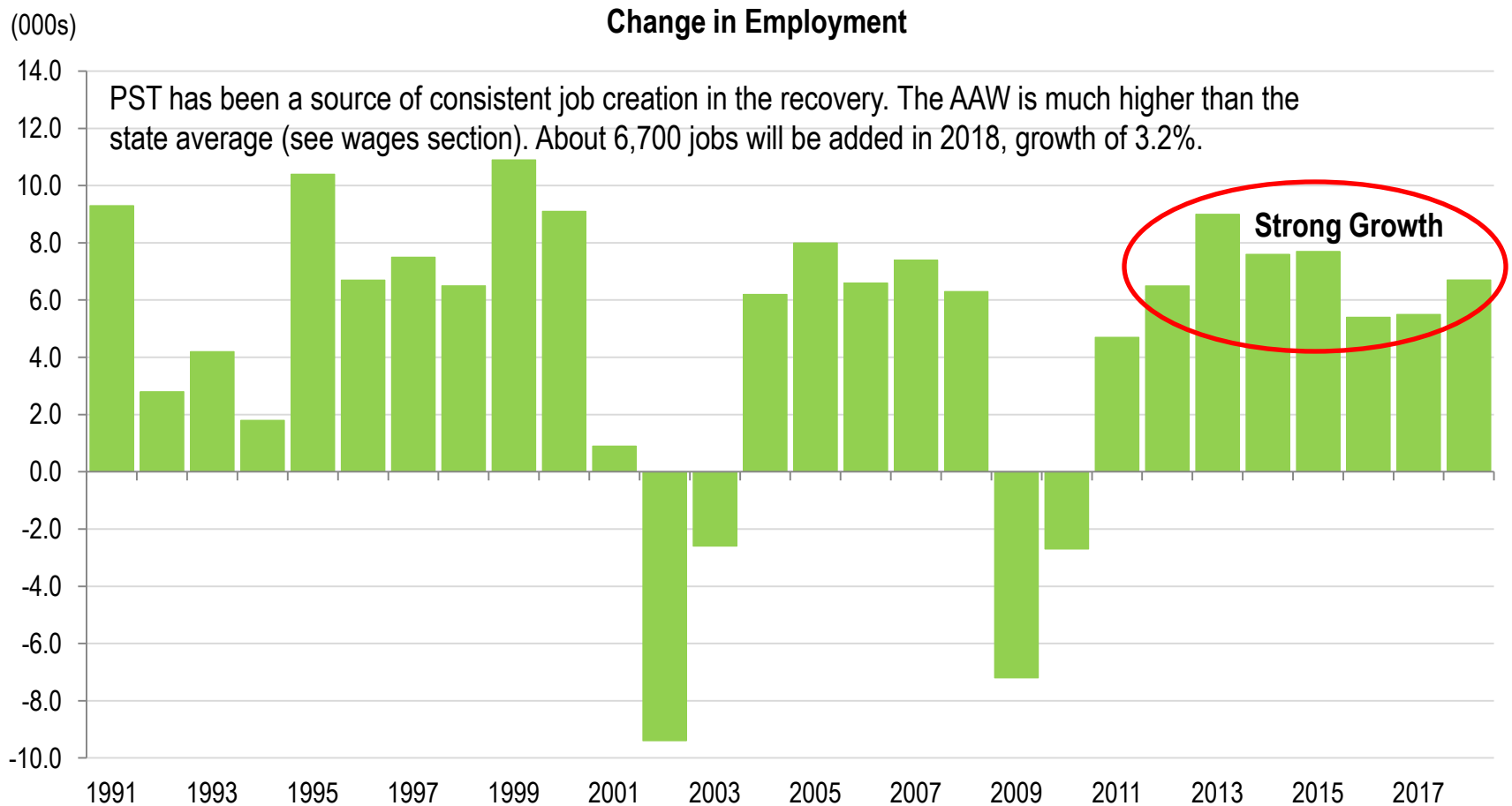
## Health Care and Social Assistance



Source: Bureau of Labor Statistics, cber.co.

# Change in Employment

## Professional, Scientific, and Technical Services



Source: Bureau of Labor Statistics, cber.co.

# Strong Growth Category

**Given the strength of the overall state economy, why is the Strong Growth Category growing at a rate of 2.4%, as opposed to a higher rate?**

- The Strong Growth Category is characterized by strong, but steady growth. The rate of job growth in 2018 is similar to 2017, but it is below historical averages.
- In addition to the HCSA and PST sectors, the administrative services and AER sectors have posted strong gains in the first half of the year.
- There is weak growth in the MCE, private education, and other services sectors. These are small sectors that usually have a minimal impact on the total job growth for the category.
- Between 2,000 and 3,000 jobs were re-categorized from HCSA (Strong Growth) to State Government (Solid Growth). If those jobs had not been reclassified, the Strong Growth Category would have added jobs at a rate of 2.6% to 2.7% and the Solid Growth Category would have added jobs at a rate of about 2.0%.



# Colorado Economy

## Employment in the Solid Growth Category

# Annual Employment Situation for the Solid Growth Category

Over the past two decades the following sectors generally posted gains. The category posted stronger jobs gains during the 1990s than the 2000s and 2010s.

- Wholesale Trade
- Retail Trade
- State (Not Higher Education)
- Higher Education
- Local (Not K-12 Education)
- K-12 Education
- Accommodations and Food Services

Total employment for this category was:

1997 763,400 workers, 38.6% of total employment

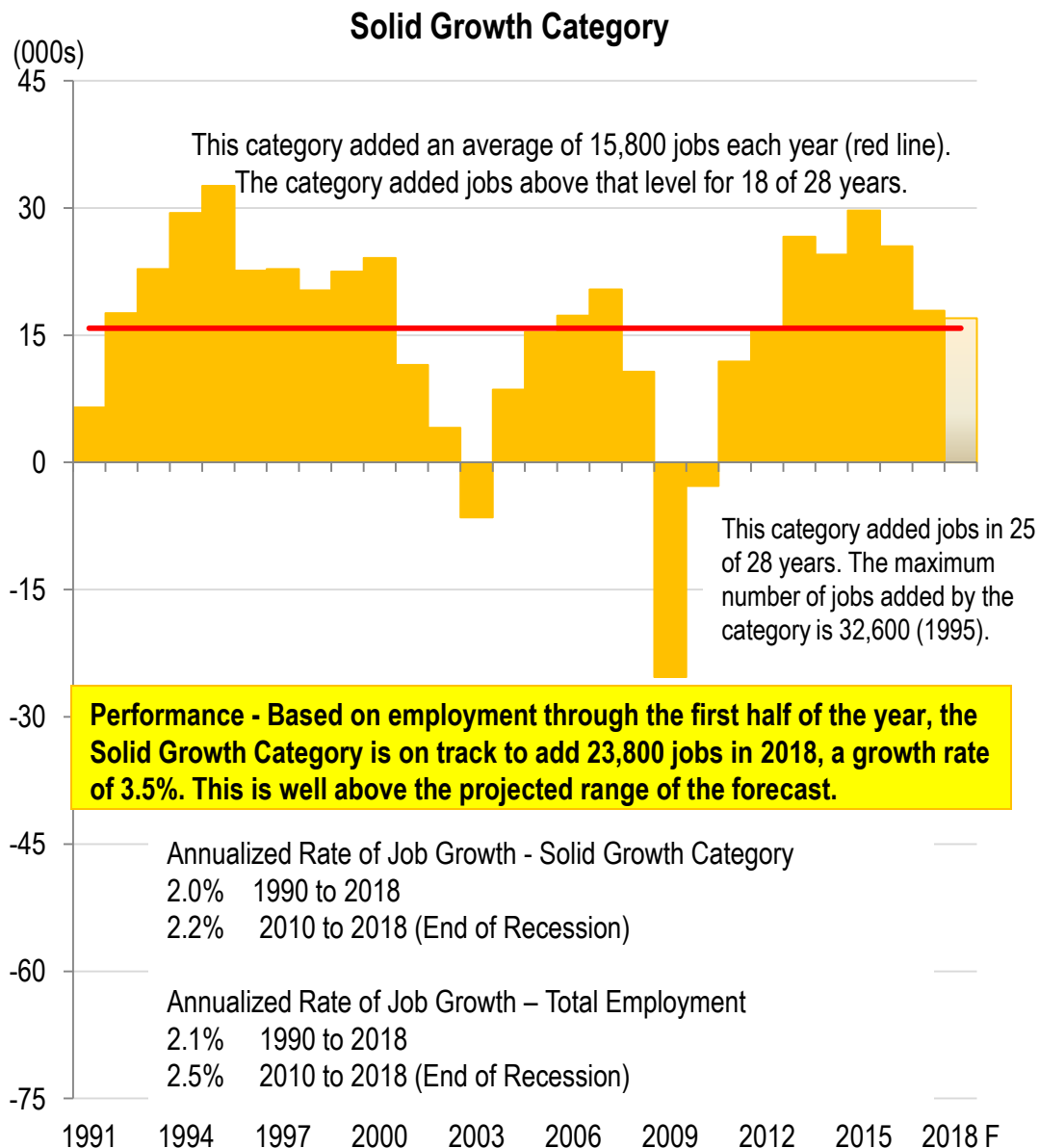
2007 901,100 workers, 38.6% of total employment

2017 1,034,900 workers, 39.0% of total employment

**Forecast - In 2018, between 16,000 and 18,000 jobs will be added, at a rate of 1.5% to 1.7%. The number of jobs added is slightly less than 2017.**

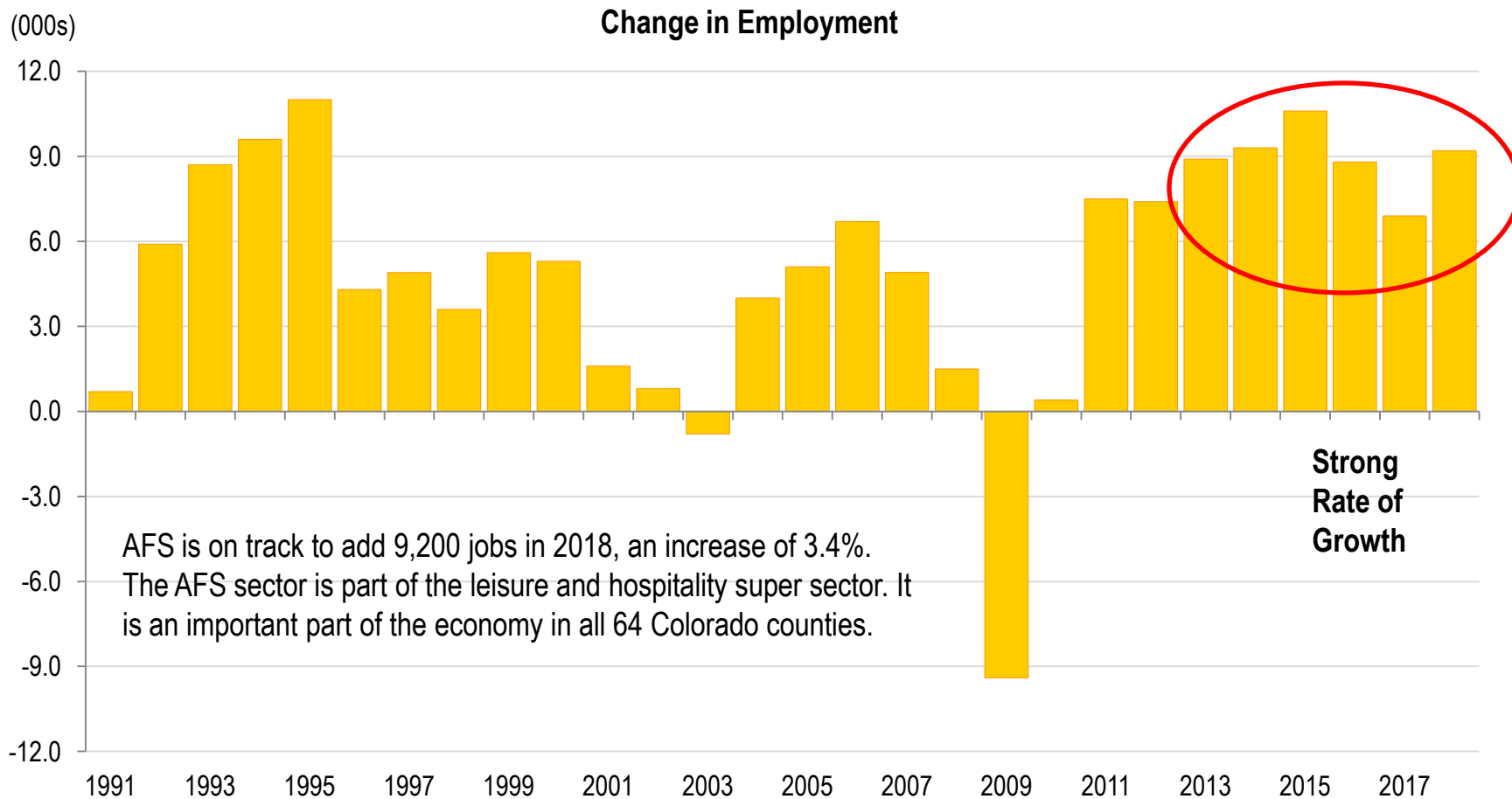
Source: Bureau of Labor Statistics, cber.co.

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



# Change in Employment

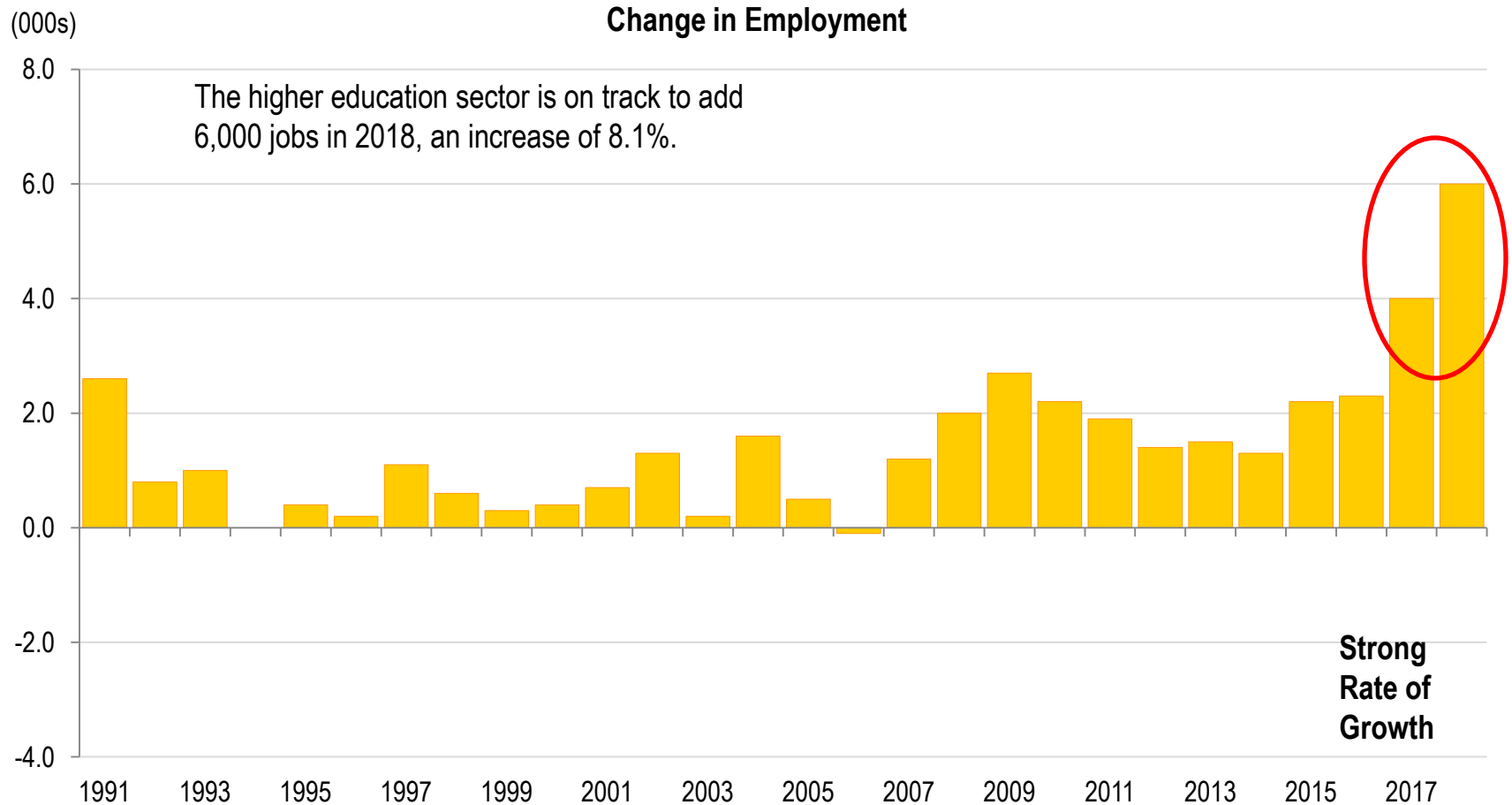
## Accommodations and Food Services



Source: Bureau of Labor Statistics, cber.co.

# Change in Employment

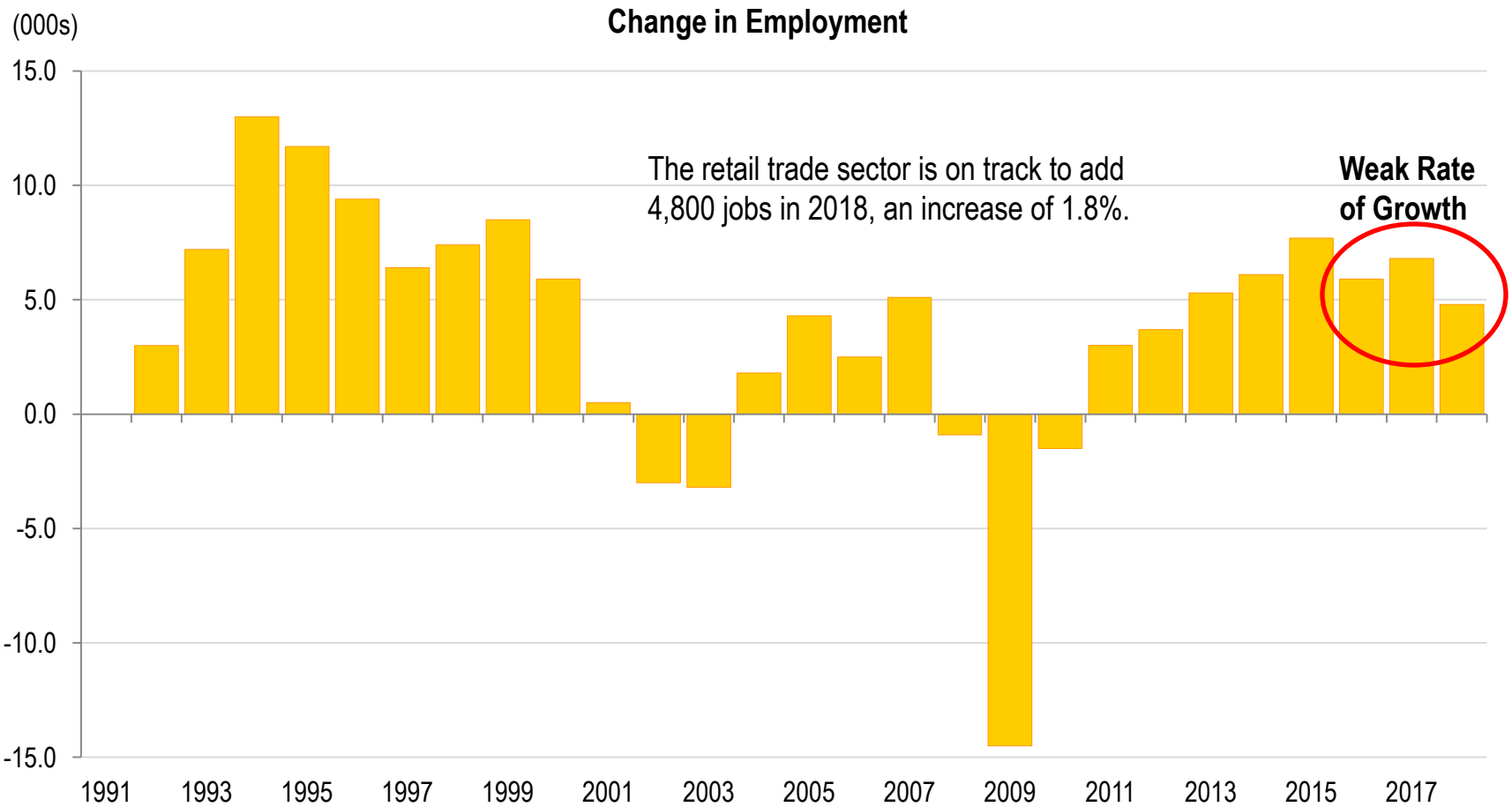
## Higher Education



Source: Bureau of Labor Statistics, cber.co.

# Change in Employment

## Retail Trade

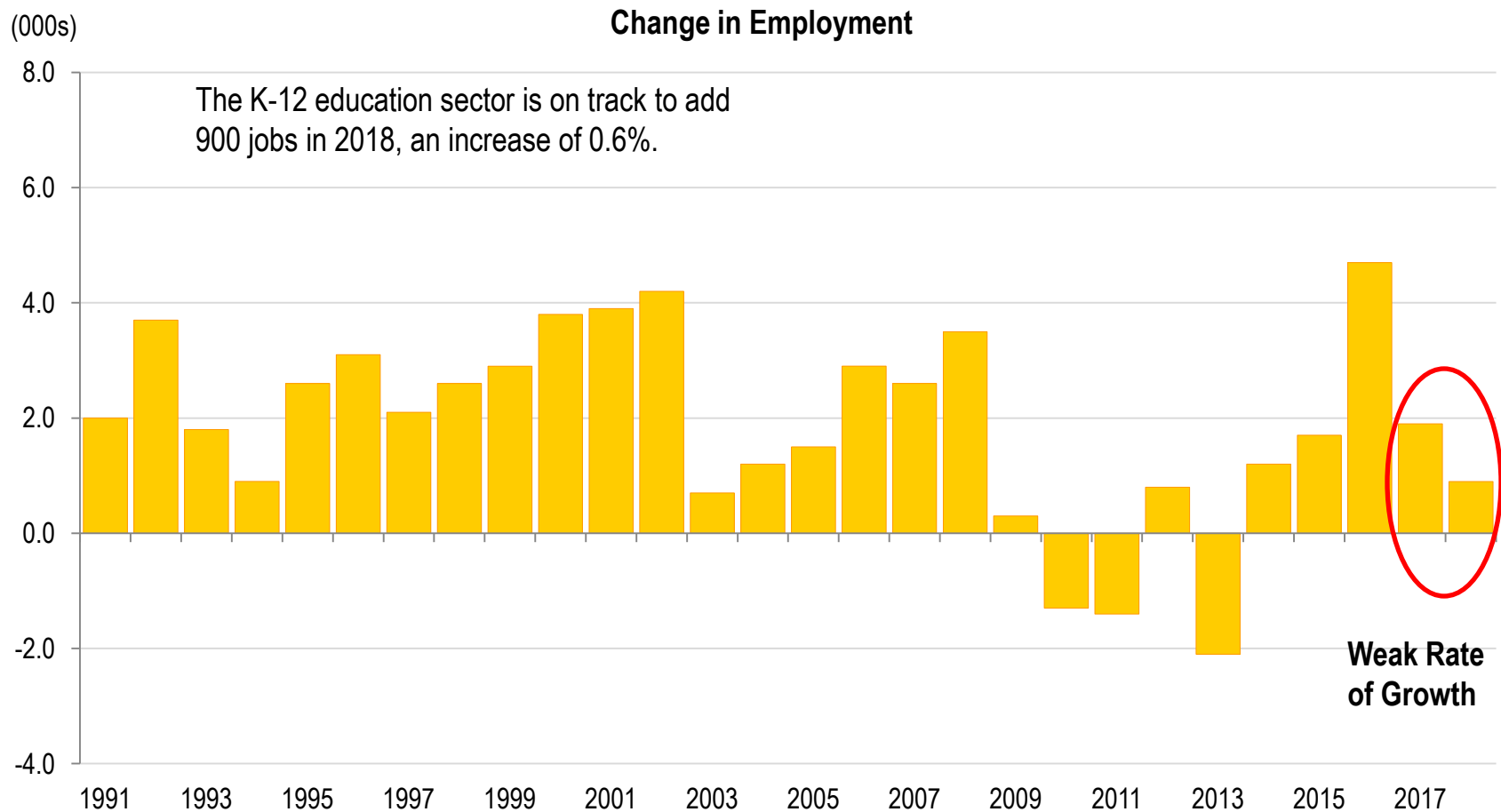


Source: Bureau of Labor Statistics, cber.co.



# Change in Employment

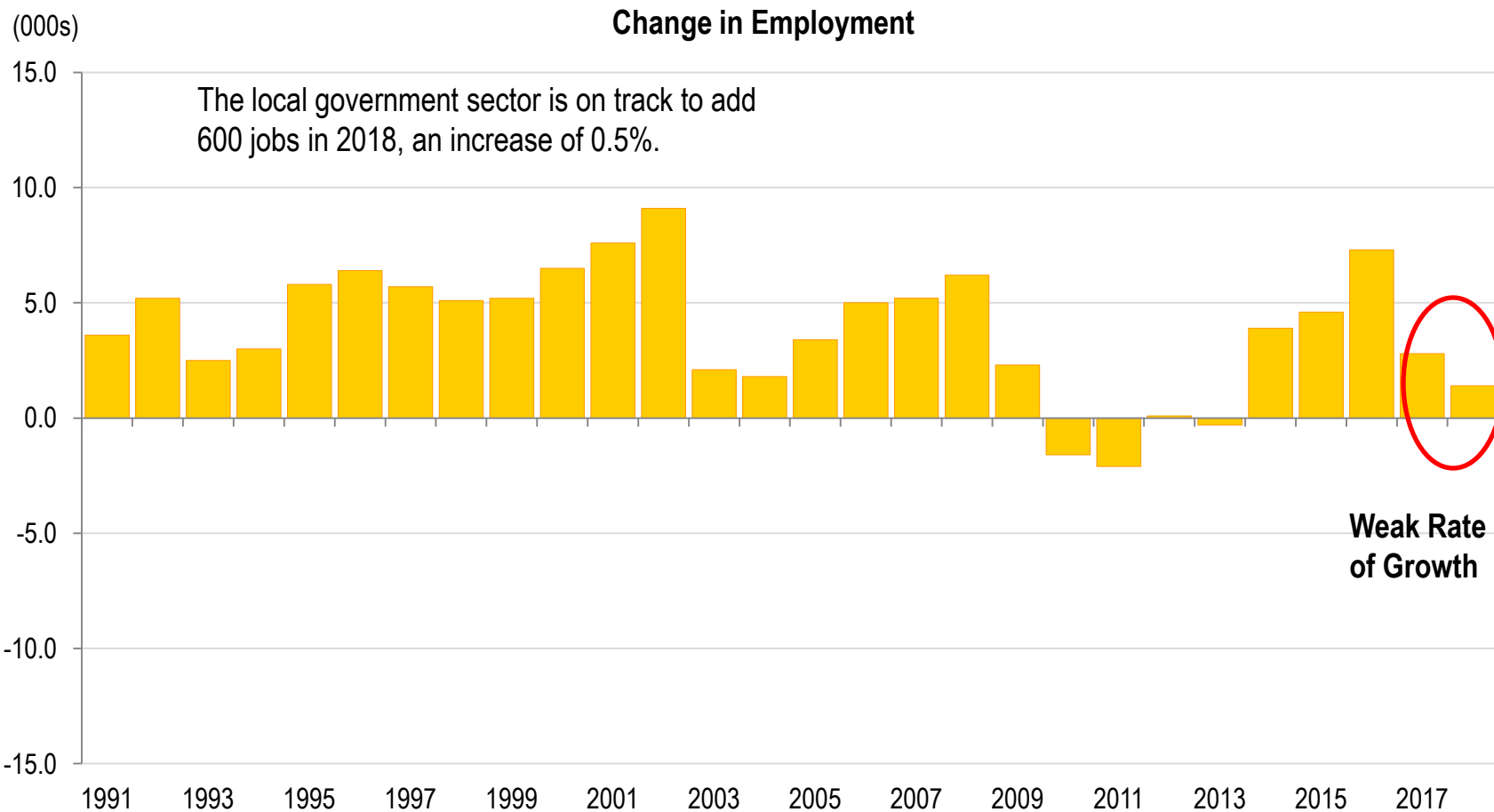
## K-12 Education



Source: Bureau of Labor Statistics, cber.co.

# Change in Employment

## Local Government



Source: Bureau of Labor Statistics, cber.co.

# Solid Growth Category

**Why is the Solid Growth Category growing at a rate of 2.3%, a rate that is much greater than the category forecast?**

- At this point, the 2018 cber.co forecast “partially” understated the growth rate of the Solid Growth Category. Some of the sectors are showing strong growth and others are showing weak growth.
- Most of the growth in the Solid Growth Category is a result of strong growth in the AFS and higher education sectors.
- The charts in this section showed weak job growth for three major sectors: retail, local government, and K-12 education.
- There was also weak job growth in the wholesale trade and state government (excluding higher education) sectors. Charts for these two sectors were not shown.
- Job growth of about 2.3% is slightly greater than the annualized rate of growth for the category (2.2%) during the recovery from the Great Recession.
- The forecast for a slower economy was based on a general sentiment among most economists that strong job and economic growth was not possible in 2018. Through the first six months of 2018, that sentiment has been proven wrong.
- In addition, part of the rationale for weaker growth was based on the slow start to the 2017-2018 ski season . It was felt the lack of snow might have a negative effect on job growth in the AFS and retail sectors in Q1 2018.



# Colorado Economy

## Employment in the Volatile Growth Category

# Annual Employment Situation for the Volatile Category

Over the past two decades the sectors listed below were the primary source of volatility in total employment.

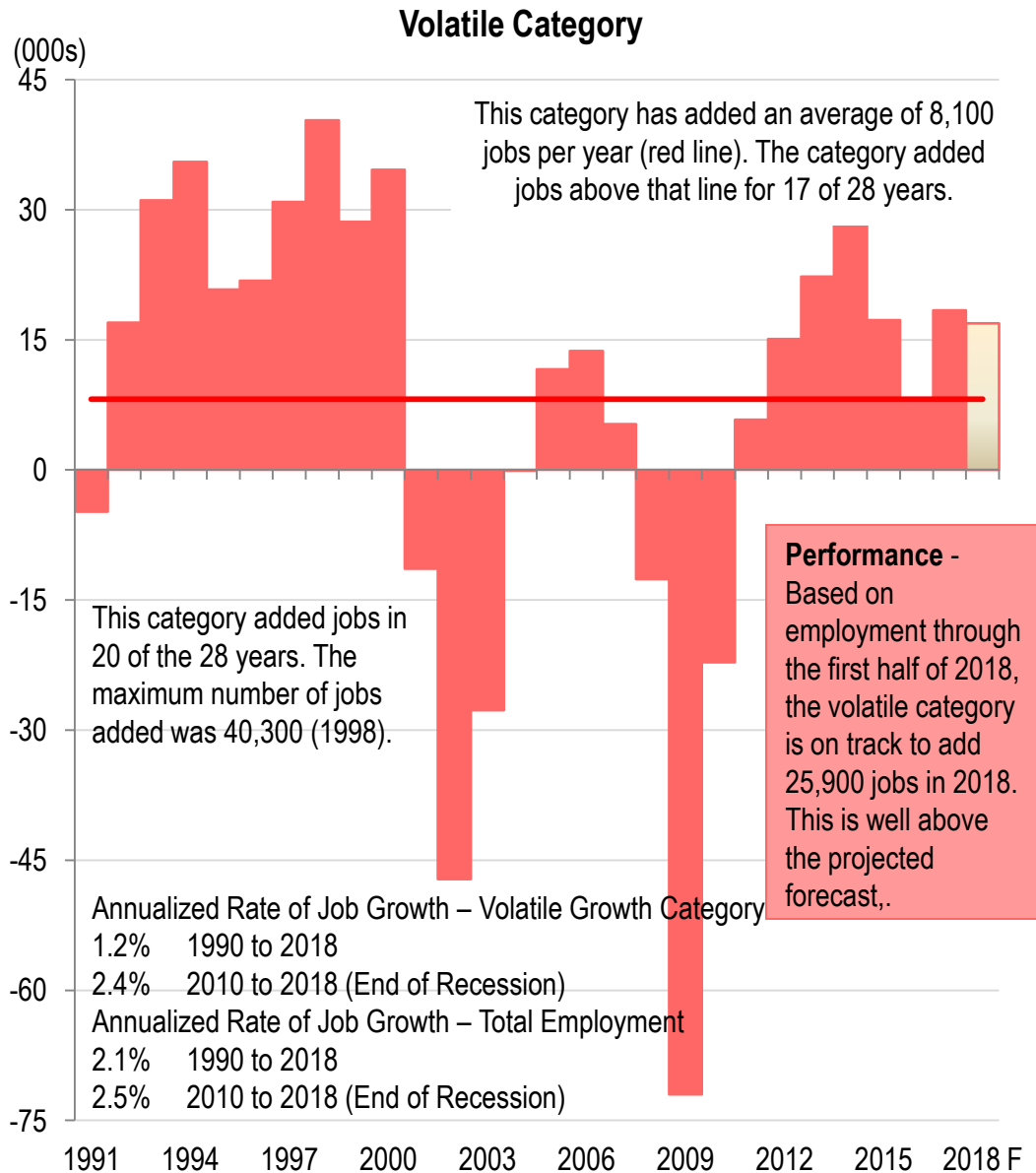
The sectors are:

- Natural Resources and Mining
- Construction
- Manufacturing
- Transportation and Warehousing
- Utilities
- Employment Services
- Financial Activities
- Information
- Federal Government

Total employment for this category was:

1997 698,900 workers, 35.3% of total employment  
 2007 746,600 workers, 32.0% of total employment  
 2017 757,600 workers, 28.5% of total employment

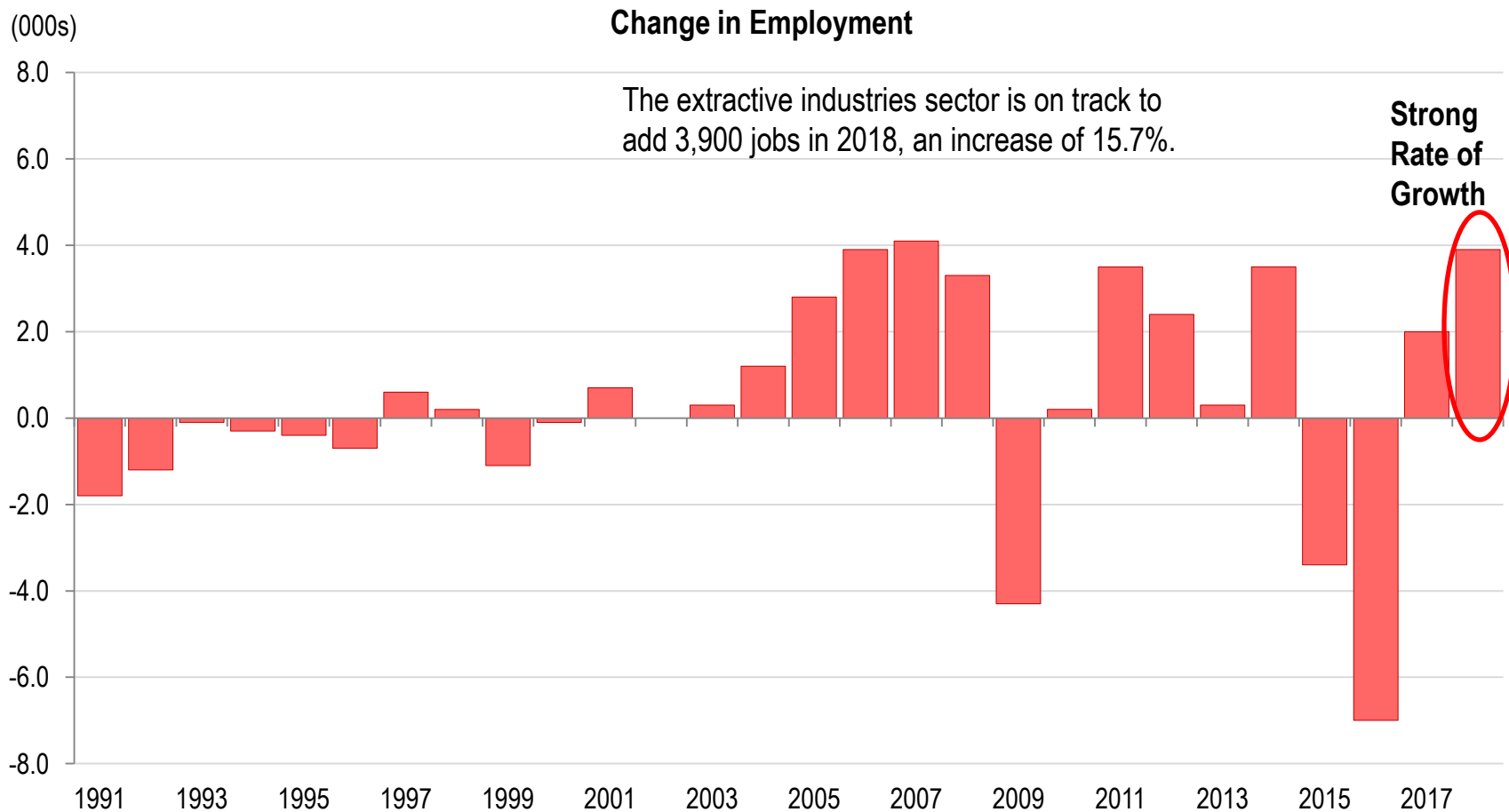
**Forecast - In 2018 between 15,900 and 17,900 jobs will be added, at a rate of 2.1% to 2.3%. The number of jobs added is slightly less than 2017.**



Source: Bureau of Labor Statistics, cber.co.

# Change in Employment

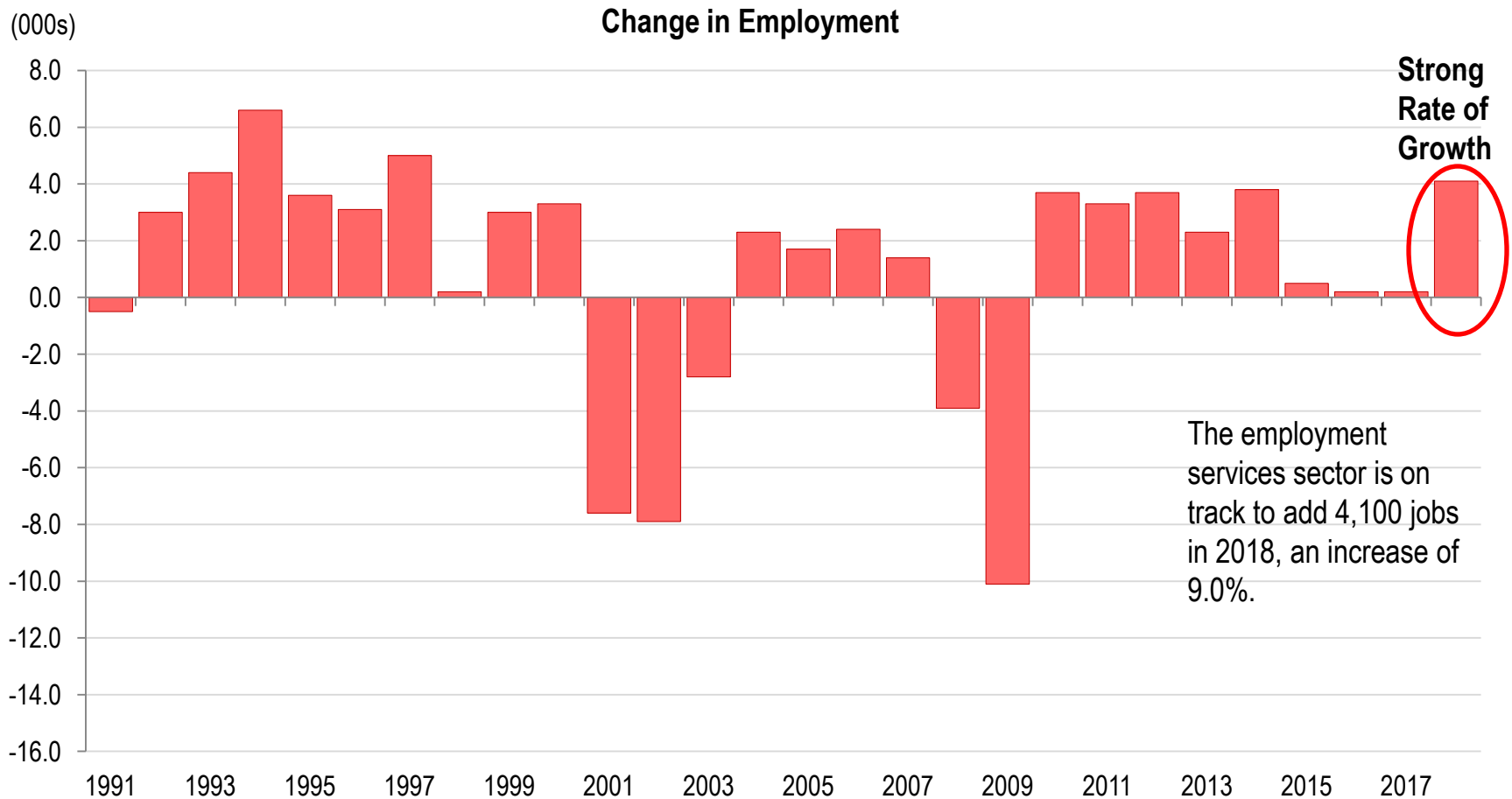
## Extractive Industries



Source: Bureau of Labor Statistics, cber.co.

# Change in Employment

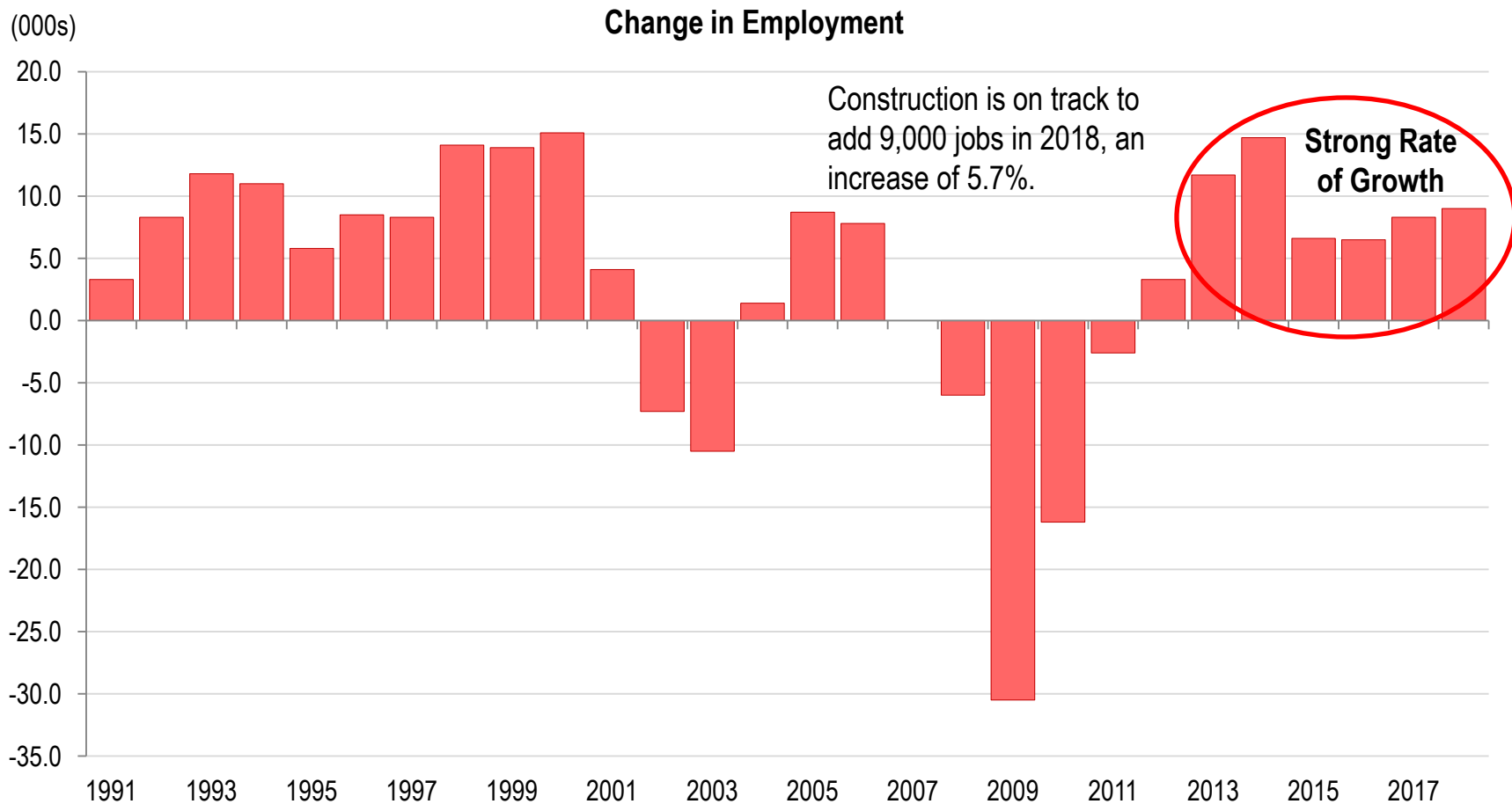
## Employment Services



Source: Bureau of Labor Statistics, cber.co.

# Change in Employment

## Construction

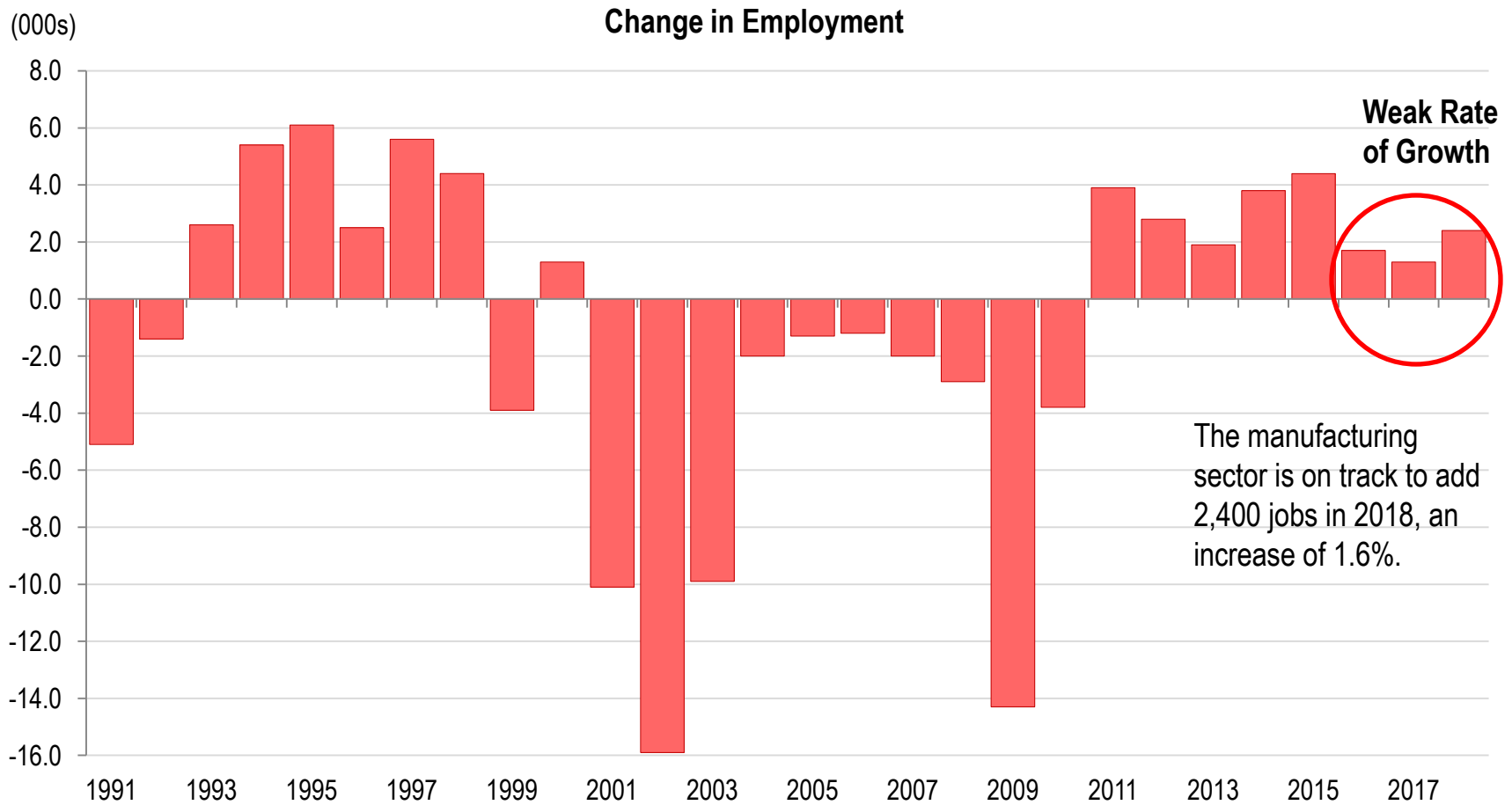


Source: Bureau of Labor Statistics, cber.co.



# Change in Employment

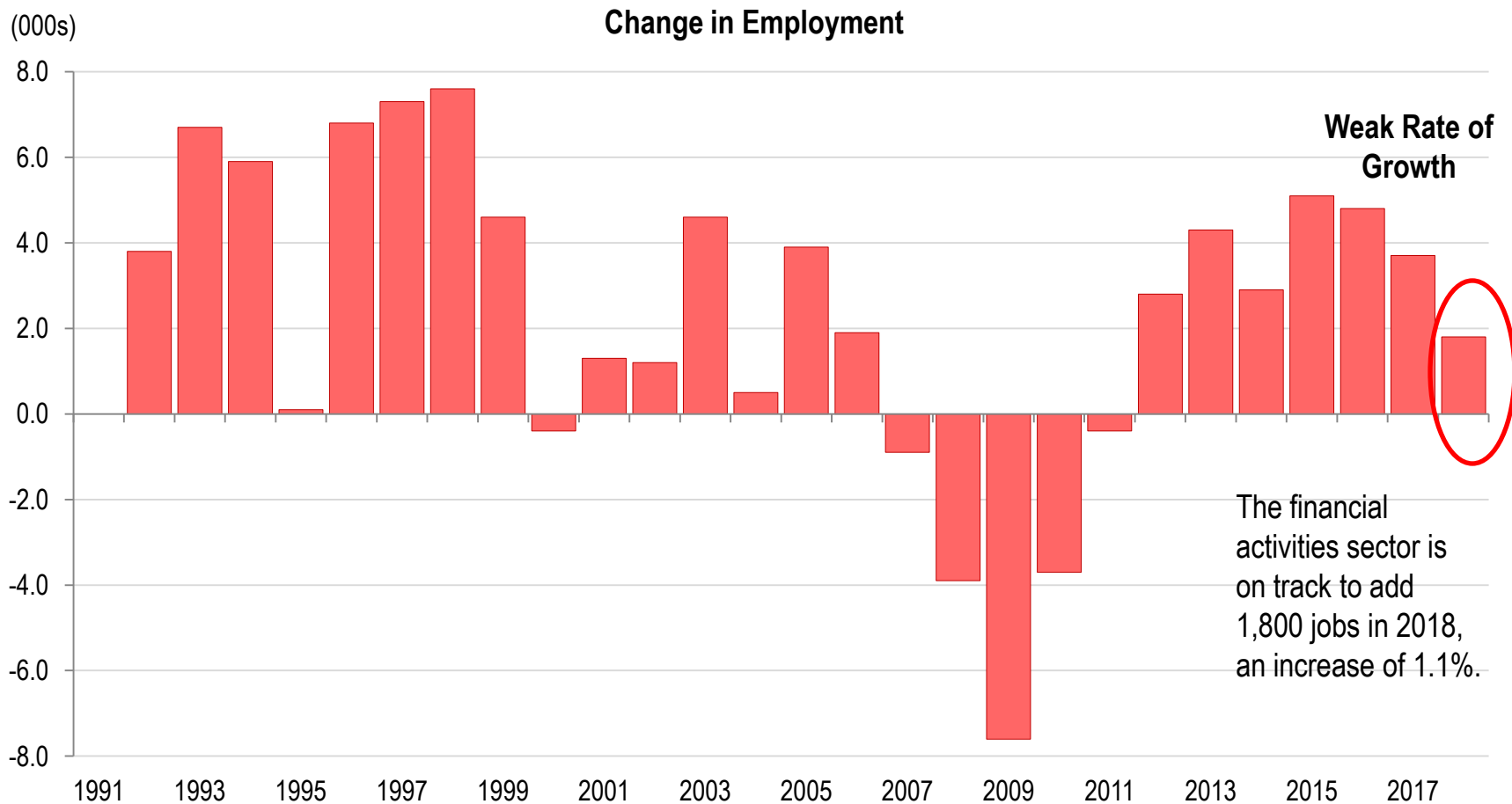
## Manufacturing



Source: Bureau of Labor Statistics, cber.co.

# Change in Employment

## Financial Activities



Source: Bureau of Labor Statistics, cber.co.

# ● Volatile Growth Category

**Why is the Volatile Growth Category growing at a rate of 3.5%, which is much greater than the 2018 forecast and much stronger than growth in the other two categories?**

- Job growth within the Volatile Growth Category does not always follow the business cycle. It is often feast or famine.
- The volatility can be seen in the wide range of rates for job growth. For example, construction, the extractive industries, employment services, transportation and warehousing, and information have posted strong growth, while manufacturing and financial activities have posted weaker growth. The utilities and the federal government sectors are losing jobs.
- Growth in the Volatile Growth Category is on track to be the 8<sup>th</sup> strongest year out of the past 28 years.



# The Colorado Economy

## Summary



# Summary

## Colorado

**As was seen earlier, the U.S. Economy is on solid footing. This provides a foundation for a solid Colorado economy (column on the left). As is always the case, there are headwinds (column on the right).**

### Positives

- Solid and broad-based job growth, particularly from sectors in the Volatile Growth Category.
- Solid and diversified GDP growth. Colorado real GDP growth for 2017 was 3.0% compared to 2.3% for the U.S.
- Wage growth improved in 2017, which led to stronger than expected job growth.
- Indirect and induced job growth resulting from the creation of primary jobs.
- Strong consumption.
- Strong reputation as a place to live and do business.

### Headwinds

- Companies have struggled to find qualified and clean workers because of the low unemployment rate.
- Colorado's rate of inflation is greater than the U.S.
- On average, there has been no real wage growth in Colorado since 2010.
- Housing has become more unaffordable and unattainable for newcomers and first time buyers.
- The state relies on migrants to fill new jobs; On the downside they put a strain on the infrastructure.
- There are many aspects of the state's infrastructure that are not adequately funded, such as transportation and broadband.

The last two sessions of the state legislature were productive because the governor and leaders of the legislature worked across the aisle to address critical issues. There will be new leadership in the executive and legislative branches of the state government in January 2019. This will have an impact on the manner in which the legislature addresses challenges facing the state.

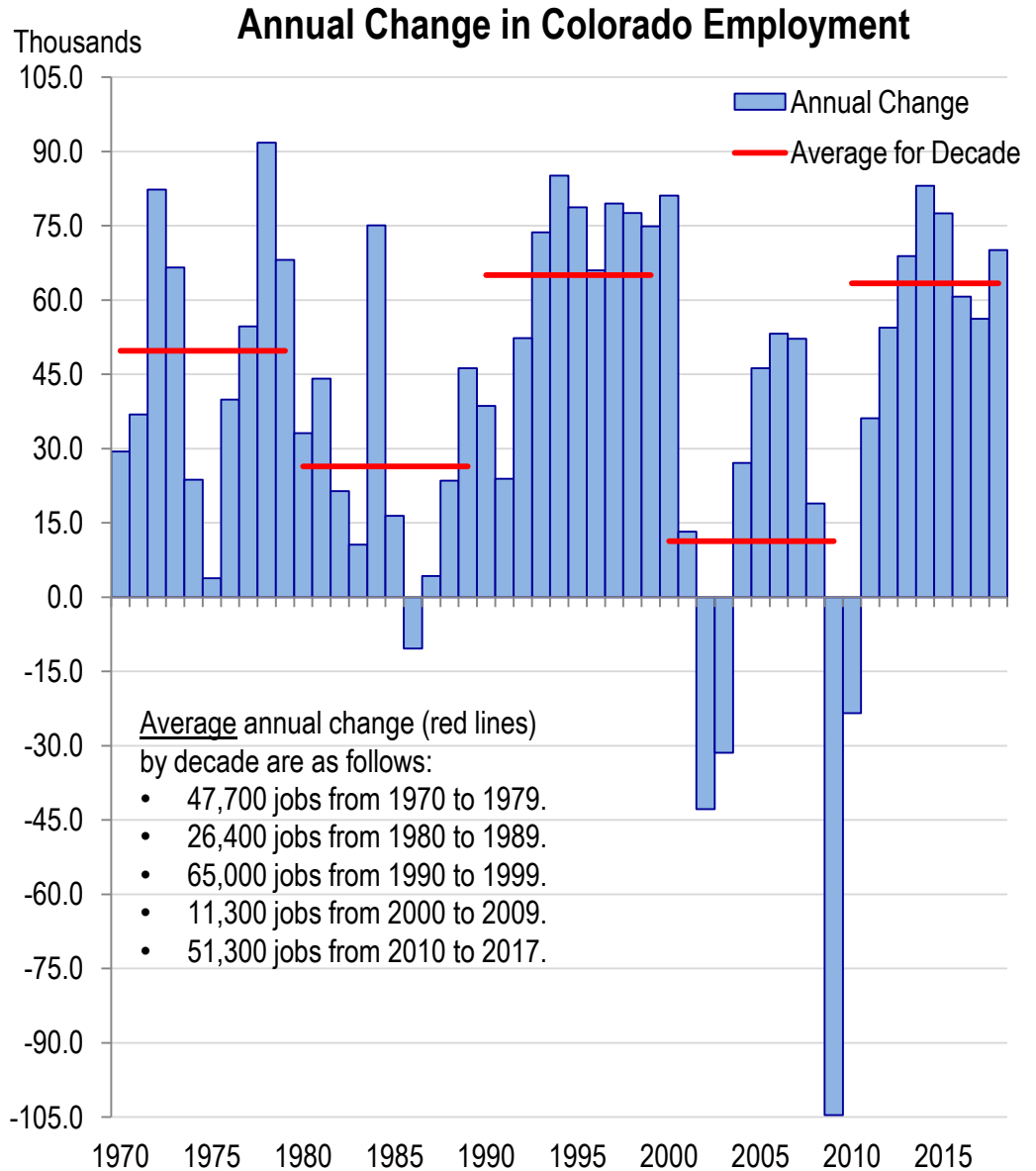
● Annual Employment  
● Change in Colorado  
● Employment

Employment for the first six months of 2018 is 70,100 jobs greater than the same period in 2017. The number of jobs increased at a rate of 2.7%.


The state added 56,200 jobs in 2017 and employment increased by 2.2%.

The cber.co forecast for 2018 calls for slightly slower job growth than 2017, in the range of 1.9% to 2.1%. cber.co and all other state economists underestimated the strength of the economy.

On average, employment for the first 9 years of this decade has increased at an average of 63,200 jobs.



Source: Bureau of Labor Statistics, cber.co.



## cber.co Review of Colorado Employment Data through June 2018

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).  
©Copyright 2018 by cber.co.

Data contained in the tables, charts, and text of this presentation is from sources in the public domain. With appropriate credit, it may be reproduced and shared without permission. Please reference, “Colorado-based Business and Economic Research” (cber.co). Additional presentations are available at <http://cber.co>.

For additional information contact cber.co at [cber@cber.co](mailto:cber@cber.co).

### ABOUT THE AUTHOR

Gary Horvath has produced 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.

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, Broomfield Economic Development Corporation, and Colorado Photonics Industry Association. Horvath has also been the lead for the photonics/electronics cluster in OEDIT’s early stage and proof of concept grant programs.



# Appendix

## The Forecast Process





# Colorado Economic Forecast

## Sector Portfolio Analysis

### Background of the cber.co Forecast

In 2012-2013, cber.co evaluated the accuracy of other state employment forecasts to find a way to more accurately forecast total employment.

Then, it analyzed BLS data from 1990 to 2012 based on a number of factors that measured change. From that analysis, 23 sectors and subsectors were grouped into three categories (strong growth, solid growth, and volatile growth).

This portfolio approach has made it easy to see that some sectors consistently have a higher rate of growth and some sectors have a consistent, but lower rate of growth. Others are more volatile.

### Overview of the cber.co Forecast Methodology

Each year, 3 total employment forecasts are prepared.

1. The first forecast projects total employment and job growth for the past two years and the next year.
2. The second forecast includes projections for the strong, solid, and volatile growth categories. The projections for these categories are summed for the state total. The category totals are tracked throughout the year.
3. The difference between the two forecasts is reconciled to produce the final forecast.

# Scenarios for the 2018 Colorado Economic Outlook

Colorado job growth for 2016 and 2017 was steady. It will continue to be that way in 2018. There is more downside risk to the forecast than upside potential. This means the job growth for 2018 may be slightly slower than 2017.

## **Strong Growth Category (About 32% of total employment)**

In 2018, the rate of job growth for this category will be **2.3% to 2.5%**.

## **Solid Growth Category (about 39% of total employment)**

In 2018, the rate of job growth will be **1.5% to 1.7%**.

## **Volatile Growth Category (29% of total employment)**

In 2018, the rate of job growth will be **2.1% to 2.3%**.

## **2018 Economic Outlook**

### **Optimistic Scenario**

- U.S. real GDP will be greater than 2.7%.
- The U.S. will add more than 2.1 million workers.
- Colorado will add more than 57,400 workers, job growth will be greater than 2.1%.

### **Most Likely Scenario**

- U.S. real GDP will be 2.3% to 2.7%.
- The U.S. will add 1.9 to 2.1 million workers.
- Colorado will add 51,400 to 57,400 workers, job growth will be 1.9% to 2.1%.

### **Pessimistic Scenario**

- U.S. real GDP less than 2.3%.
- The U.S. will add less than 1.9 million workers
- Colorado will add less than 51,400 workers, job growth will be less than 1.9%.

The probability of these scenarios follows:

- Most Likely 60%
- Optimistic 18%
- Pessimistic 22%.

There is more downside risk than upside potential.

# 2018 Employment Forecast

## Most Likely Scenario

### Strong Growth Category +19,500 to 21,500 Employees

- Professional and Scientific
- Management of Companies and Enterprises
- Administrative Services (Not Employment Services)
- Private Education
- Health Care
- Arts, Entertainment, and Recreation
- Other Services.

### Solid Growth Category +16,000 to 18,000 Employees

- Wholesale Trade
- Retail Trade
- State (Not Higher Education)
- Higher Education
- Local (Not K-12 Education)
- K-12 Education
- Accommodations and Food Services

*In 2018 Colorado will add 51,400 to 57,400 jobs, or job growth of 1.9% to 2.1%.*

*Twenty-three sectors and subsectors have been placed into three categories based on their growth patterns over the past two decades. Projections for these categories are used in the development of the 2018 employment forecast.*

### Volatile Growth Category +15,900 to +17,900 Employees

- Natural Resources and Mining
- Construction
- Manufacturing
- Transportation and Warehousing
- Utilities
- Employment Services
- Financial Activities
- Information
- Federal Government

Source: cber.co.

# Putting the Forecast in Perspective

## This Is Not Fake News!

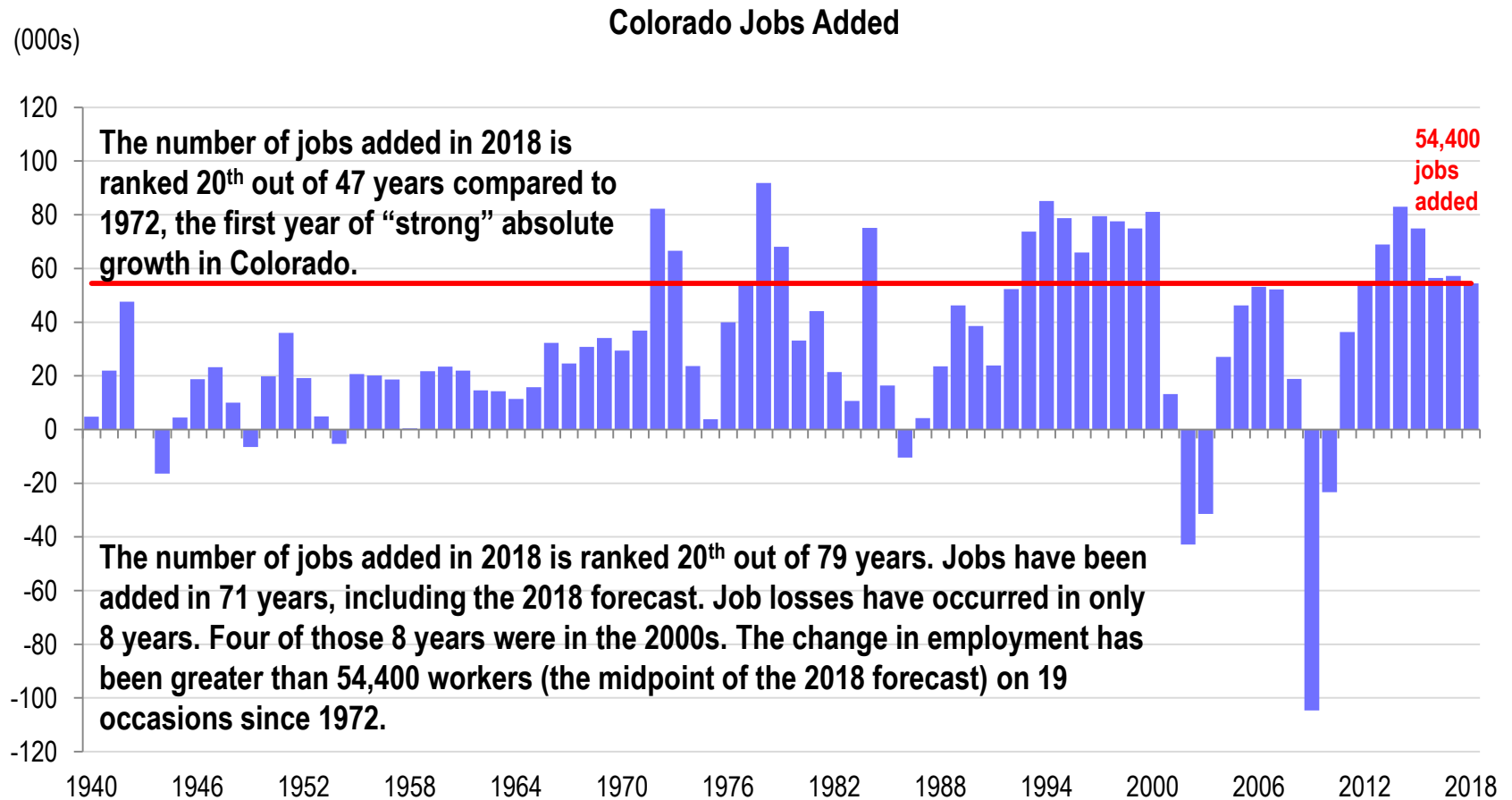
In 1954, Darrell Huff wrote the classic book, *How to Lie with Statistics*.

The following three charts look at the 2018 forecast using data presentation concepts mentioned Huff's book. All charts accurately represent the facts.

The story to be told – Colorado adds 54,400 jobs in 2018, an increase of 2.0%.

- The chart showing absolute job growth indicates there was solid job growth in 2018.
- On the other hand, the chart showing relative job growth indicates the job growth in 2018 was weak.
- Another way to look at Colorado's job growth is to compare it to the nation. This chart shows that Colorado employment has increased at a faster rate than U.S. employment. That infers the level of job growth is better than the norm.
- Which is correct? They are all correct!

- The Projected Absolute Job Growth for 2018 (Total Jobs Added)
- will be the 20th Strongest Since 1939.
- 

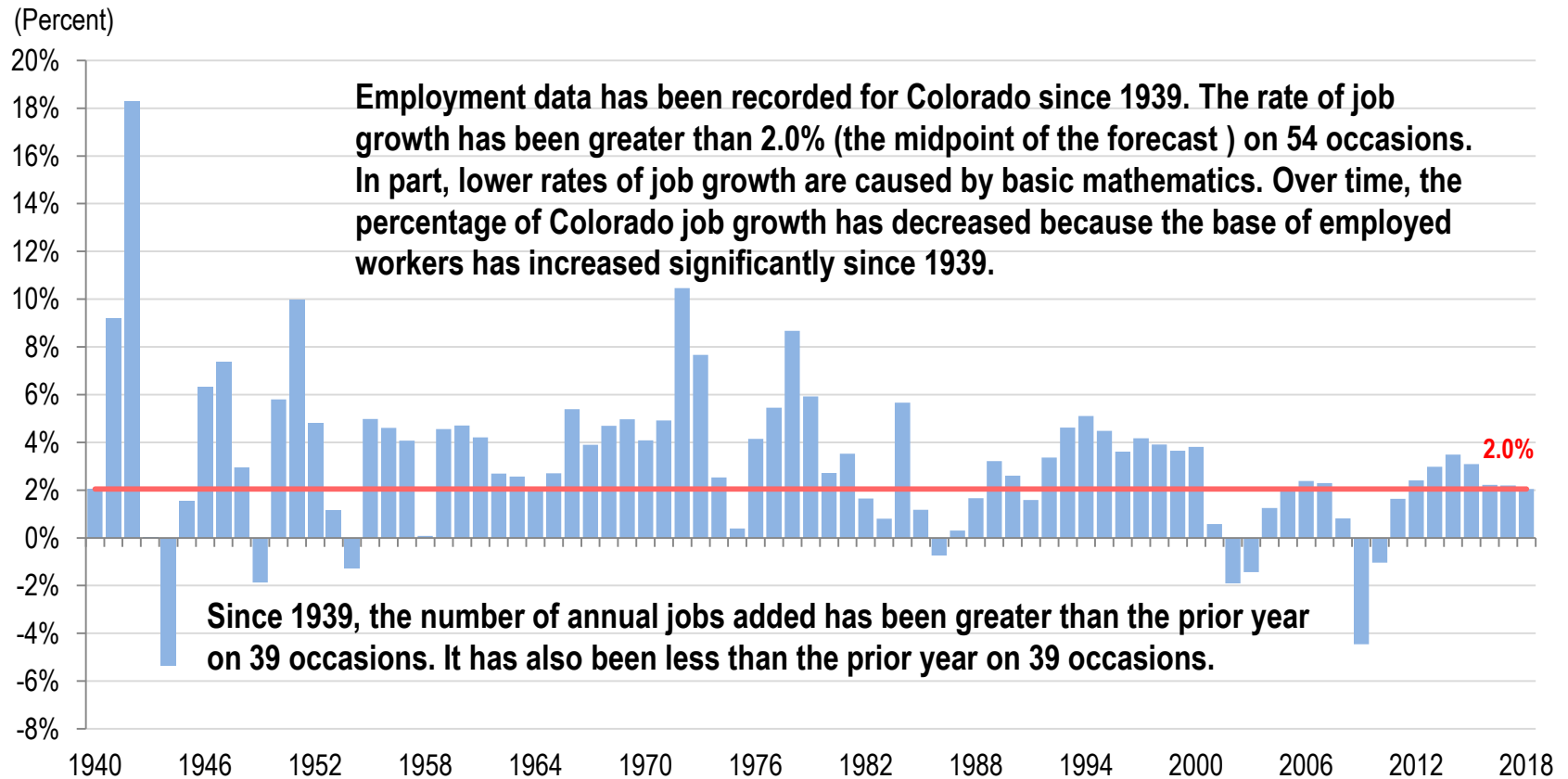


Source: Bureau of Labor Statistics, cber.co.

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

- The Projected Rate of Colorado Job Growth for
- 2018 will be the 55<sup>th</sup> Strongest in 79 Years
- 

Percentage of Jobs Added



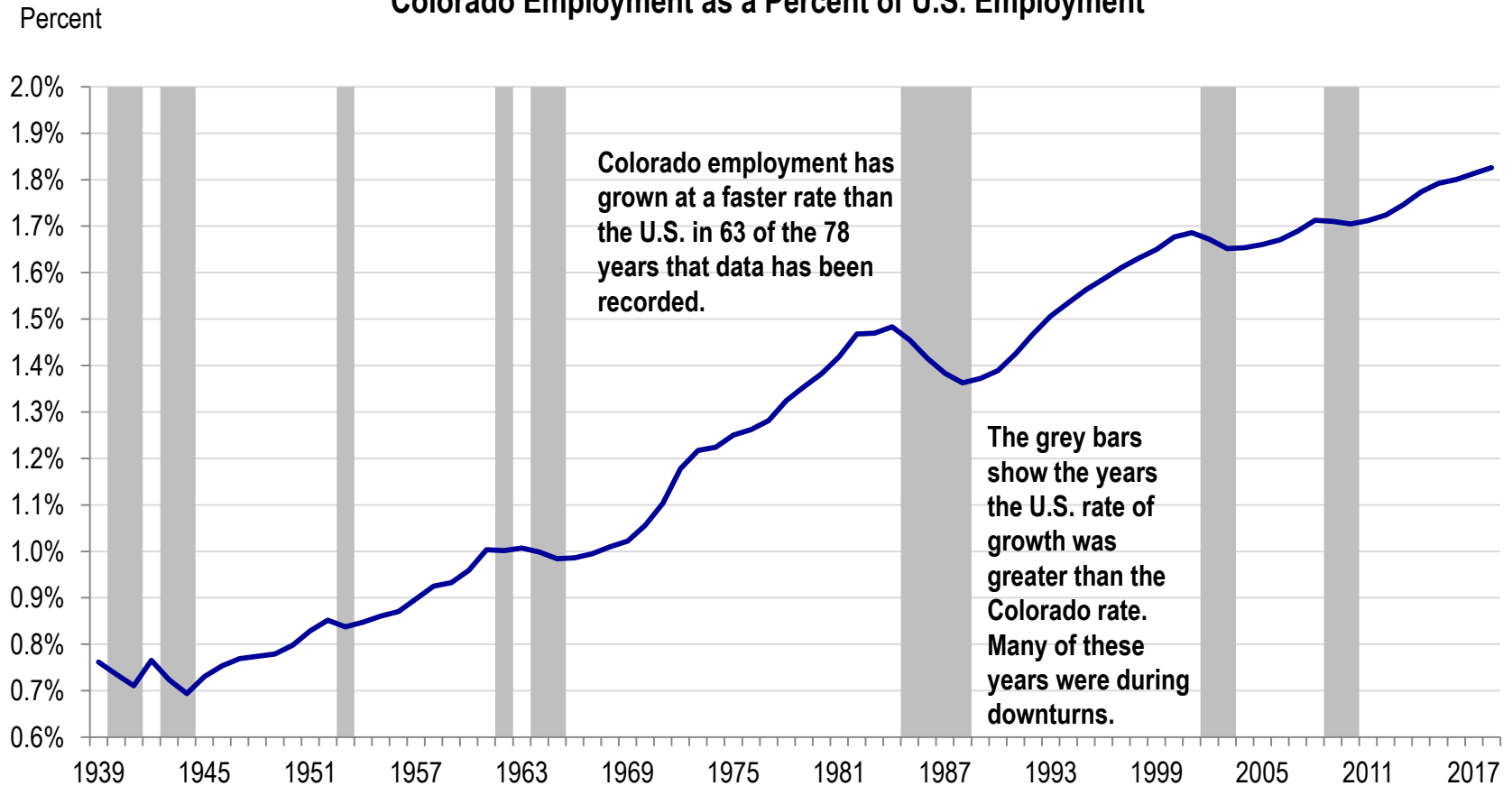
Source: Bureau of Labor Statistics, cber.co.

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

# Colorado Employment as a Percent of U.S. Employment



## Colorado Employment as a Percent of U.S. Employment



Source: Bureau of Labor Statistics, [cber.co](http://cber.co).

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