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# Review of Colorado Employment Data Through September 2018

Colorado-based Business and Economic Research  
Prepared  
October 20, 2018

# Overview of Analysis

This chartbook provides a series of graphs, charts, discussions, and data that describe the changes in the U.S. and Colorado economies for the first nine months of 2018. It is divided into the two sections listed below. Because 2017 was comparatively weak, Colorado economists had low expectations for job growth in 2018. Fortunately, their forecasts were wrong and the current level of strong job growth has been a pleasant surprise! The release of the Colorado employment data for September shows that YTD average employment is 73,700 jobs greater than the same period last year.

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## U.S. Economy

- ✓ Real Gross Domestic Product and Trade Balance
- ✓ Employment, Unemployment Rate, Job Openings vs. Number of Unemployed, Job Openings by Sector, Weekly Earnings
- ✓ Leading and Coincident Index – U.S. vs. Colorado
- ✓ S&P 500 Performance and Volatility
- ✓ Mortgage Rates, U.S. Single Family Permits, Construction Spending, Housing Prices, Homeowner Equity
- ✓ Inflation, Index for Services and Manufacturing, Retail Sales, and Light Truck and Auto Sales
- ✓ Summary

## The Colorado Economy

- ✓ Colorado Population, Change in Employment, and Summer Change in Employment
- ✓ Unemployment Rate, Unemployment Gap, and Change in the Size of Labor Force
- ✓ Change in Employment by Sector, Change in Employment for Key Sectors and Advanced Technology
- ✓ Housing Prices and Building Permits
- ✓ Oil Production and Prices, and DIA Passengers
- ✓ Summary

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



# The U.S. Economy

Real Gross Domestic Product and Trade Balance

# 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:

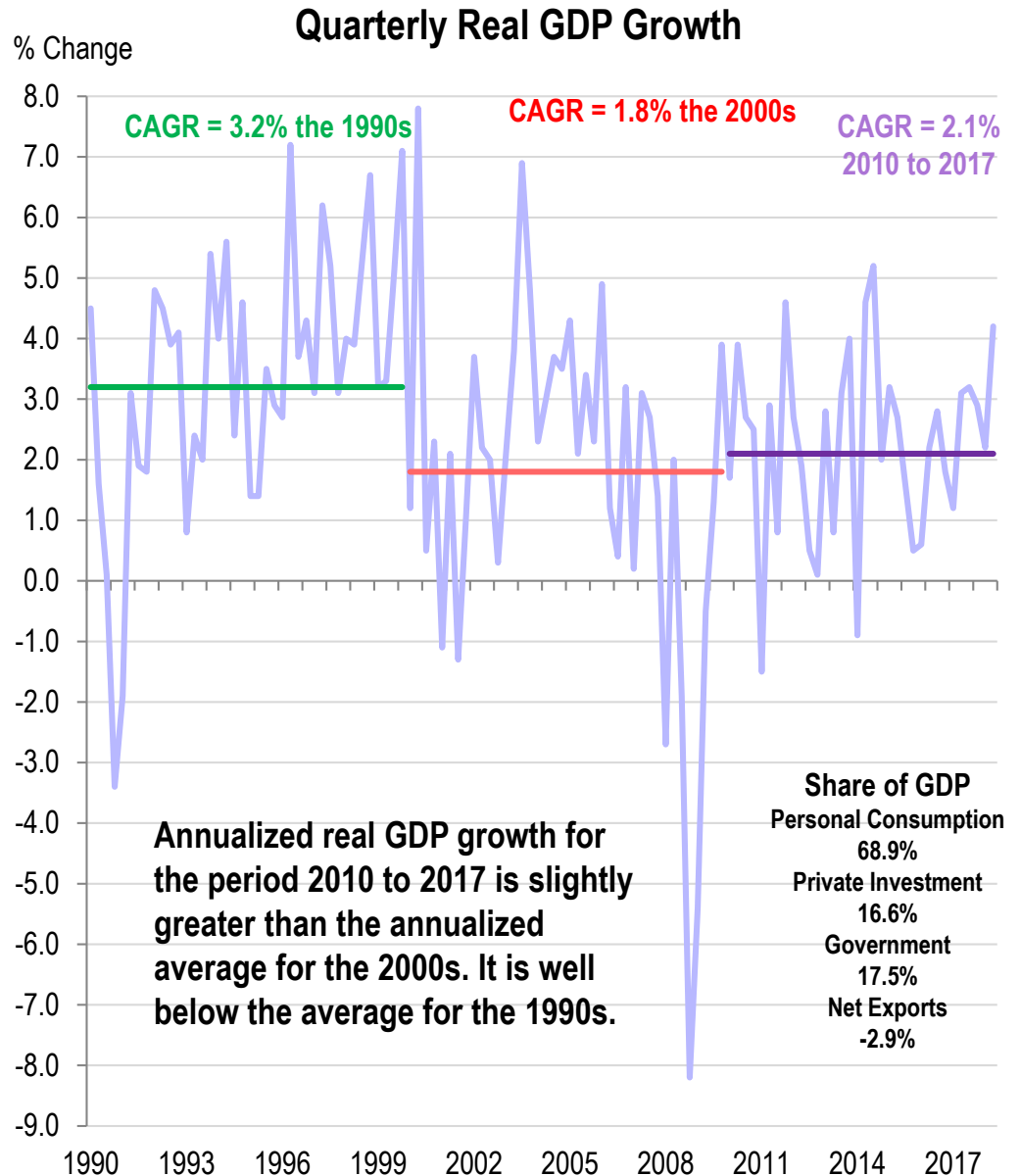
- Q1 1.2%
- Q2 3.1%
- Q3 3.2%
- Q4 2.9%.

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.

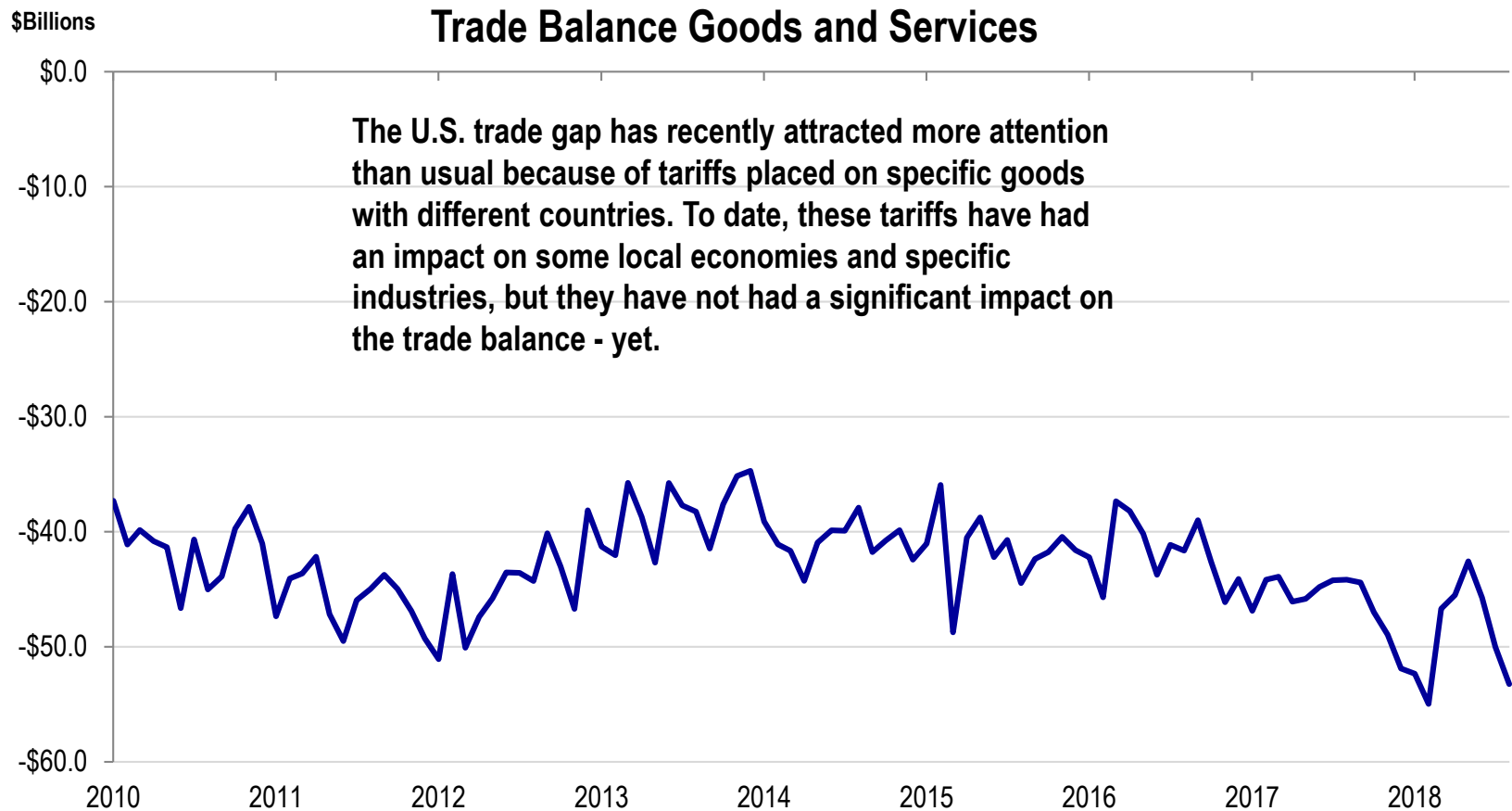
Q1 2018 real GDP growth was 2.2%, followed by 4.2% in Q2. The Conference Board projects there will be 3.8% real GDP growth in Q3, and 3.5% in Q4. Real GDP growth will be 3.0% in 2018 and 3.1% in 2019.

As usual, growth will be driven by consumer spending.



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

# Trade Balance: Goods and Services



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



# IMF Forecast

In its October 2018 economic update, the IMF lowered its forecast for global GDP from 3.9% to 3.7%. Worldwide economic activity has softened because of trade tensions between the U.S. and its trading partners.

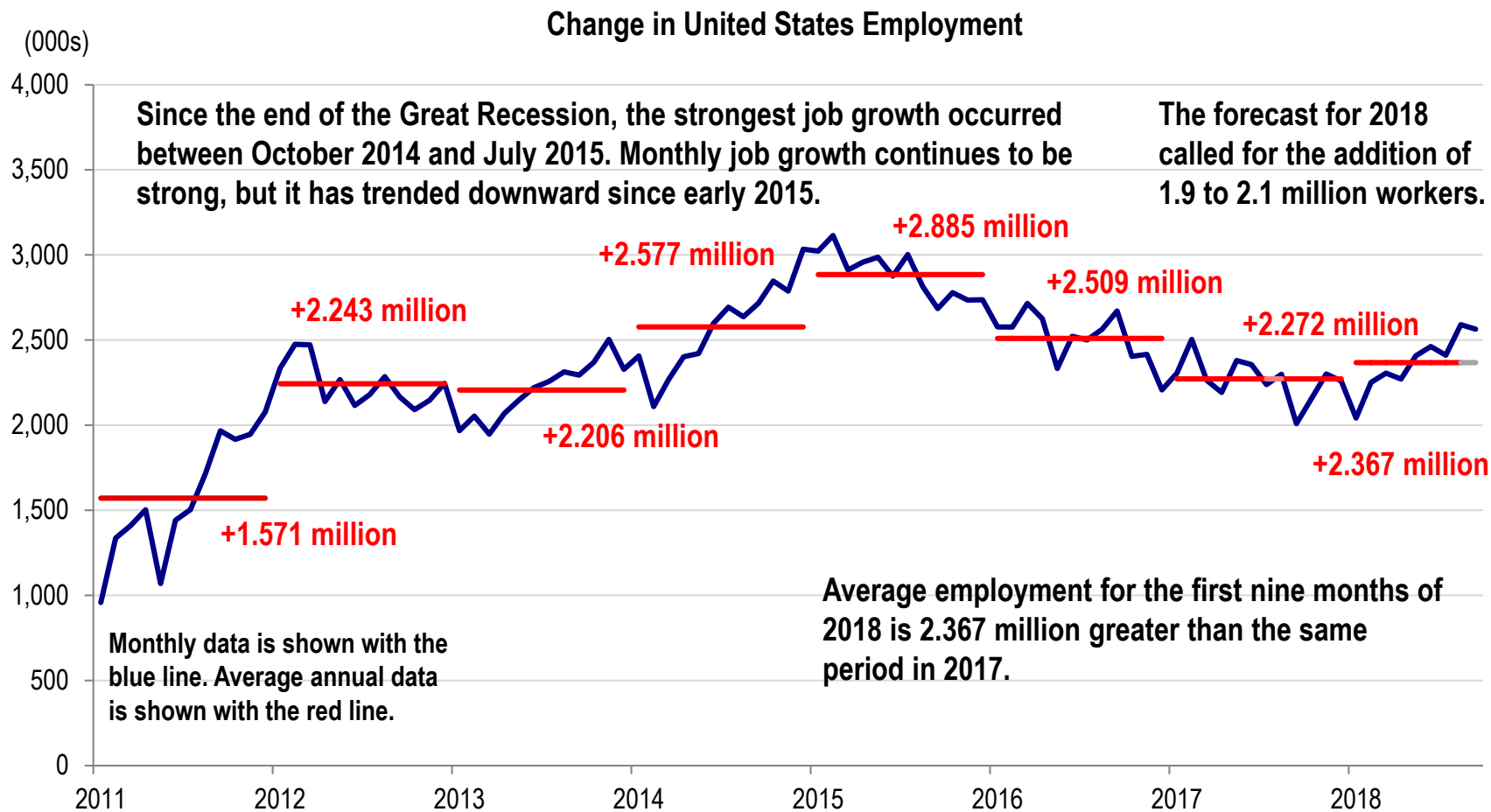


# The U.S. Economy

Employment, Unemployment Rate, Job Openings vs. Number of Unemployed, Job Openings by Sector, Weekly Earnings

# Change in United States Employment

## Year-Over-Year



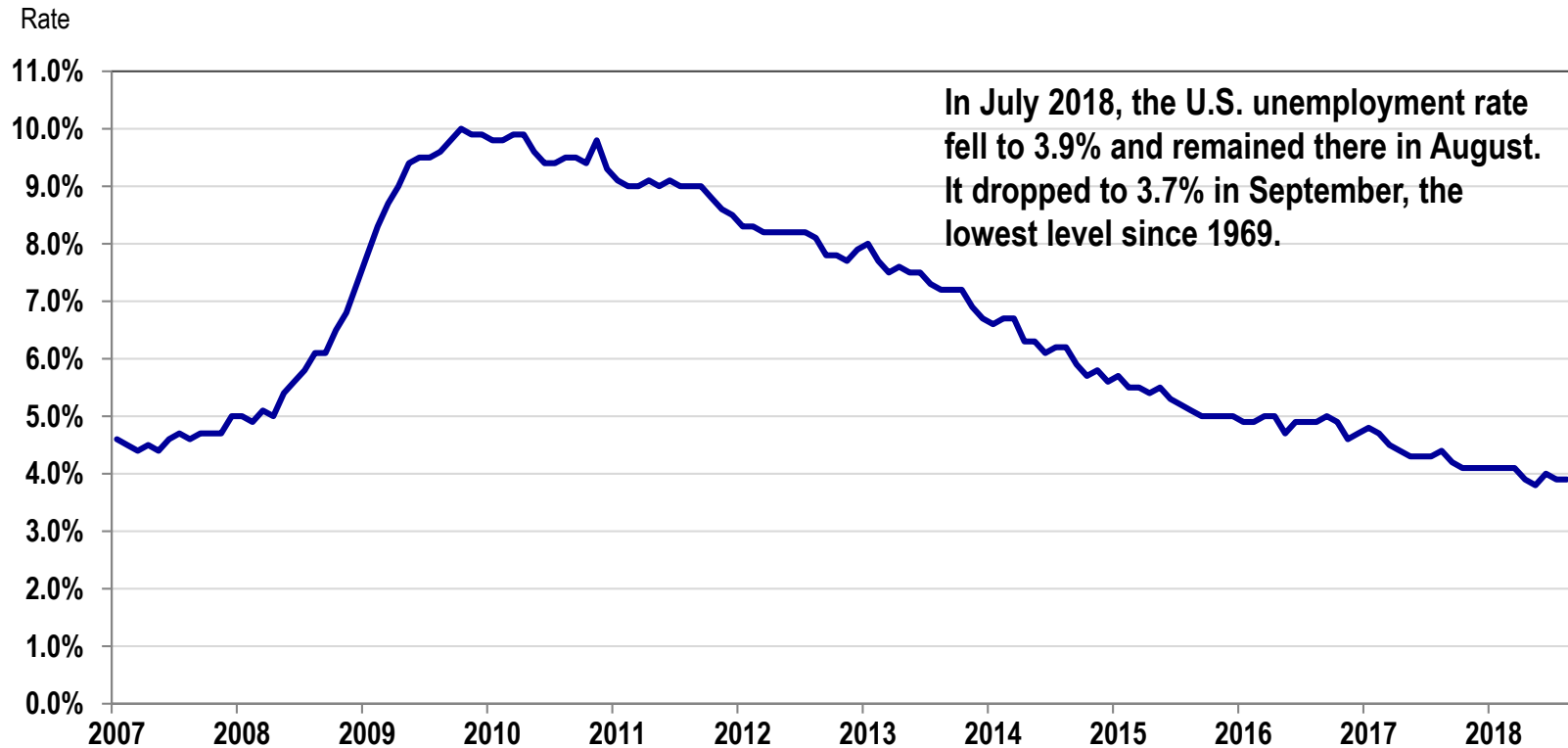
Source: Bureau of Labor Statistics, NSA; cber.co.



# Unemployment Rate

United States

Unemployment Rate – U.S.



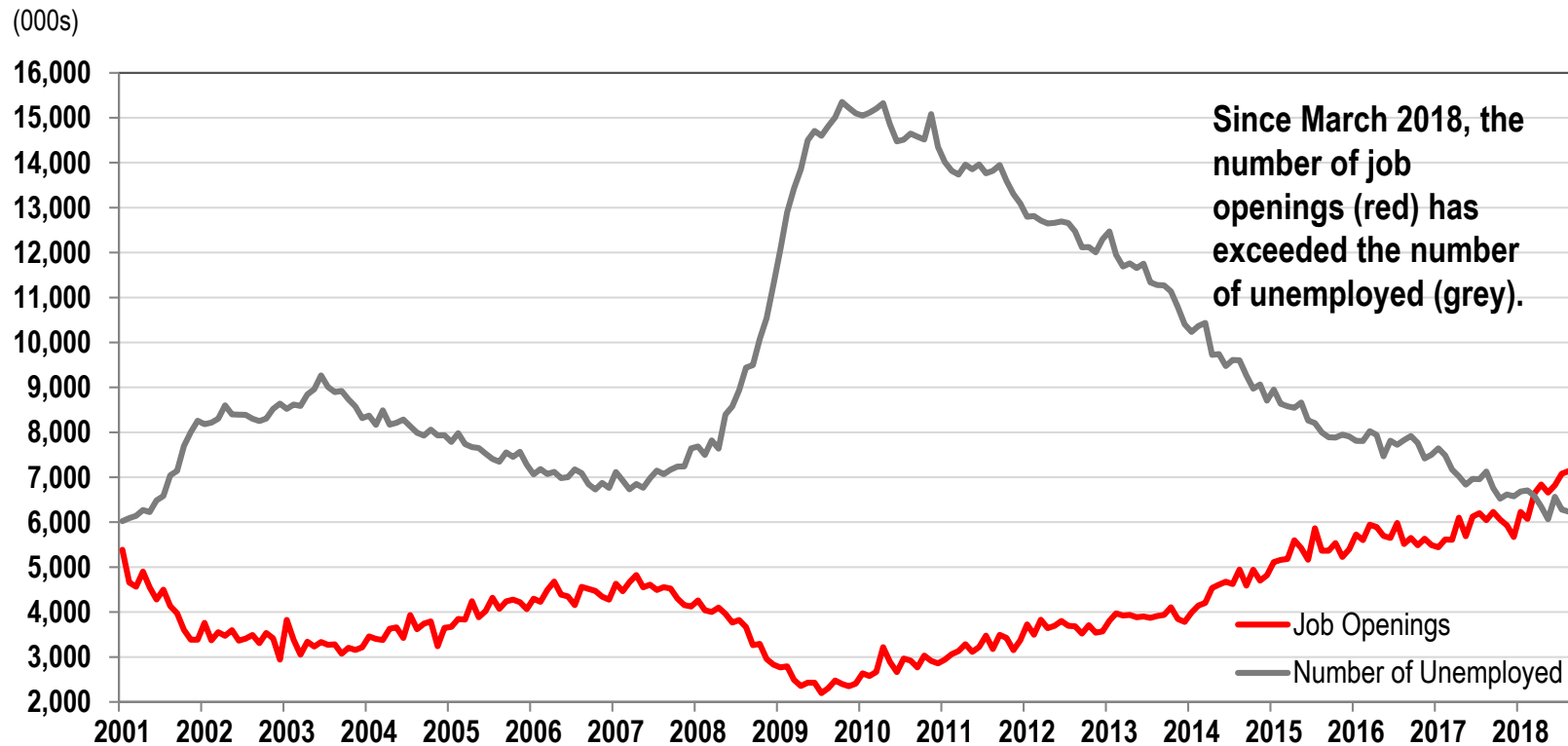
Source: Bureau of Labor Statistics, cber.co.

# ● Job Openings vs. Number of Unemployed

● United States



### Job Openings vs. Number of Unemployed



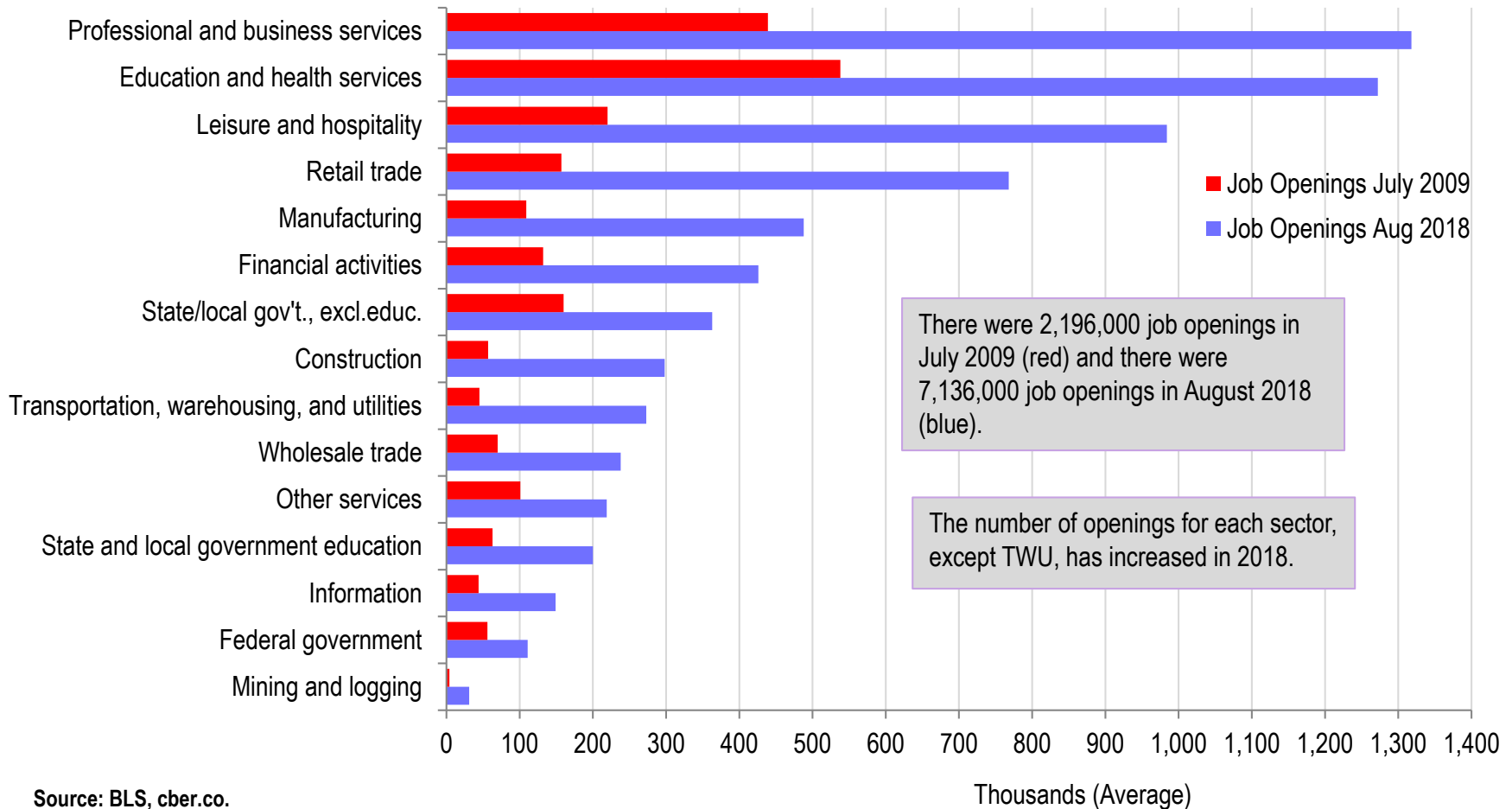
Source: Bureau of Labor Statistics, cber.co.

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# Job Openings by Sector

## July 2009 vs. August 2018

Number of Job Openings by Sector (Thousands)



Source: BLS, cber.co.

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

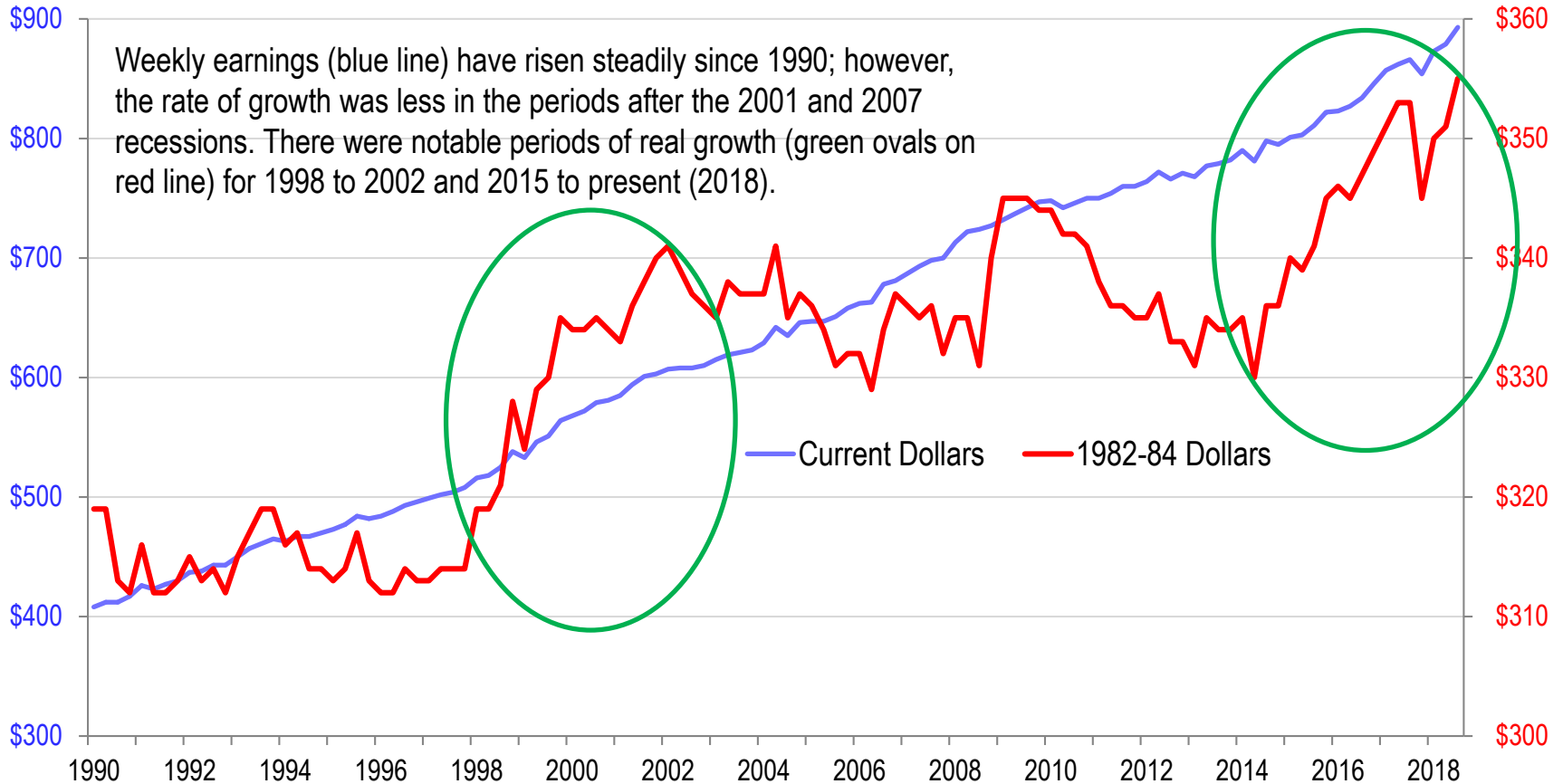
# U.S. Median Usual Weekly Earnings

## In Current and 1982-84 Dollars

Current

Median Usual Weekly Earnings

1982-84



Source: Bureau of Labor Statistics, cber.co.

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



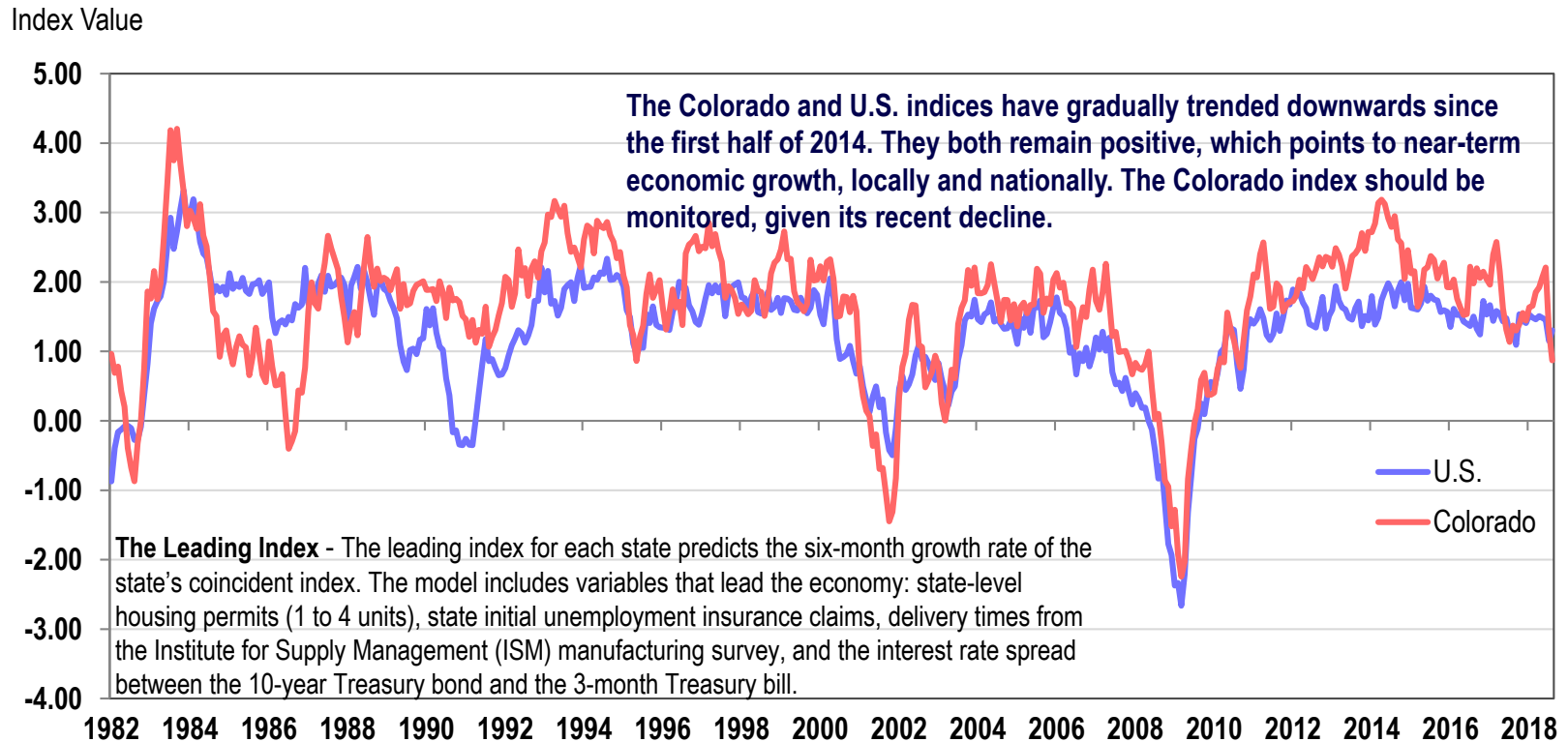
# The U.S. Economy

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.



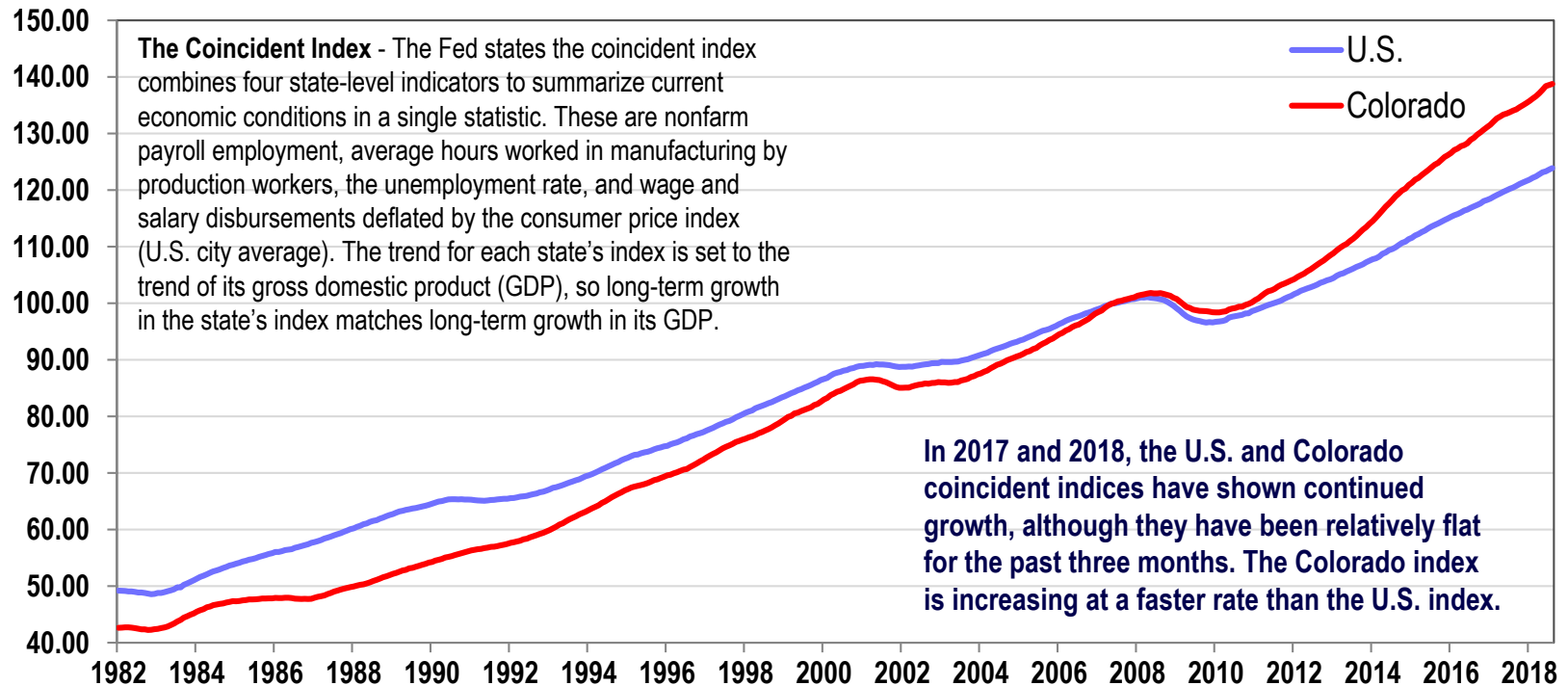
Source: Philadelphia Federal Reserve, [cber.co](http://cber.co). Note: The leading index predicts the six-month growth rate of the U.S. and state's coincident index.

# 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.

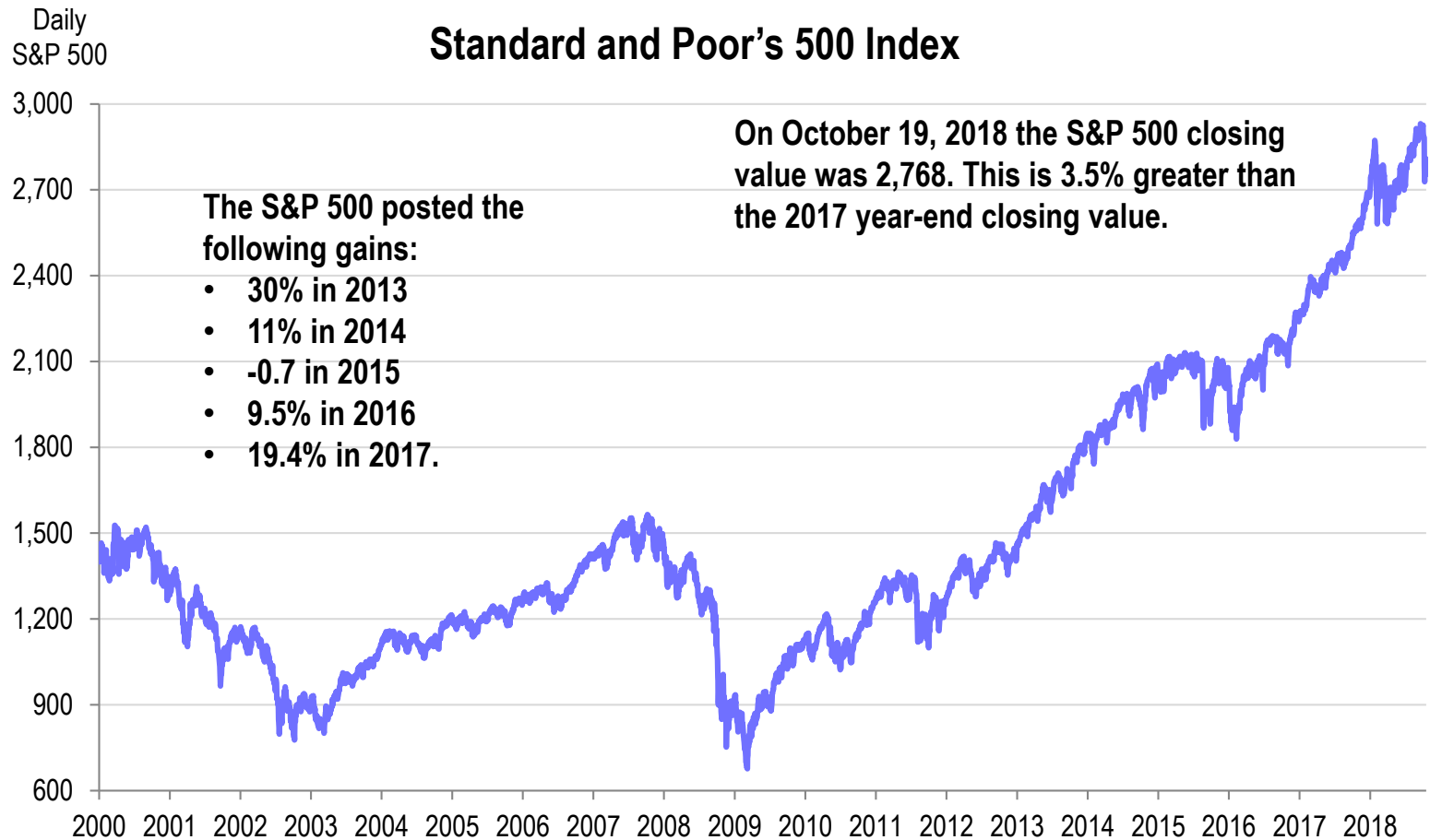


# United States Economy

## S&P Performance and Volatility



# ● Standard and Poor's 500 Index



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

# The Sell-Off

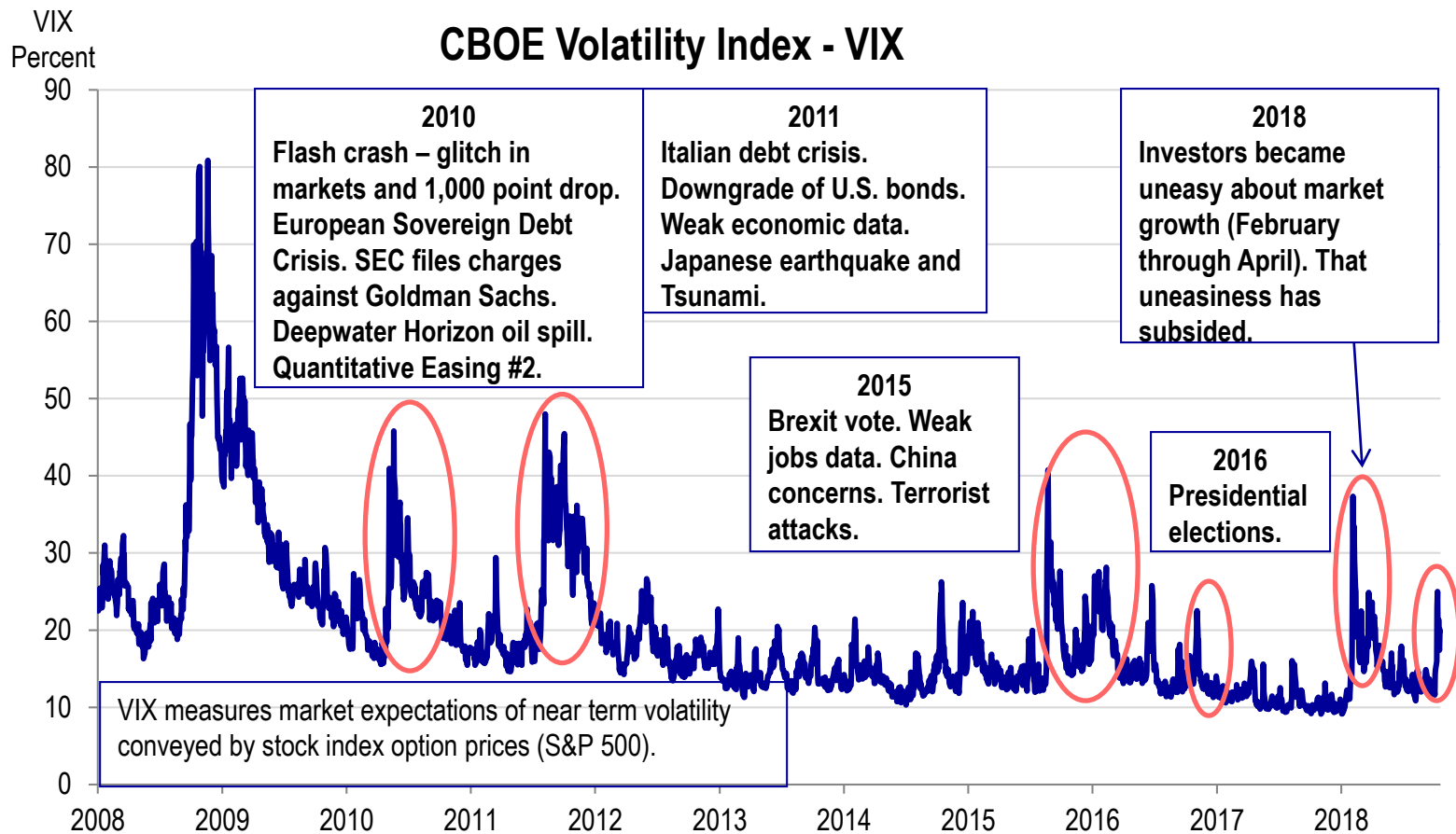
The recent sell-off has been attributed to rising interest rates, the trade war with China and other trading partners, uncertainty caused by the mid-term elections, and a slowdown in the global economy.

Is this just another “hiccup”, or is a correction lurking around the corner?  
Bull or bear?



# CBOE Volatility Index

## VIX (VIXCLS)



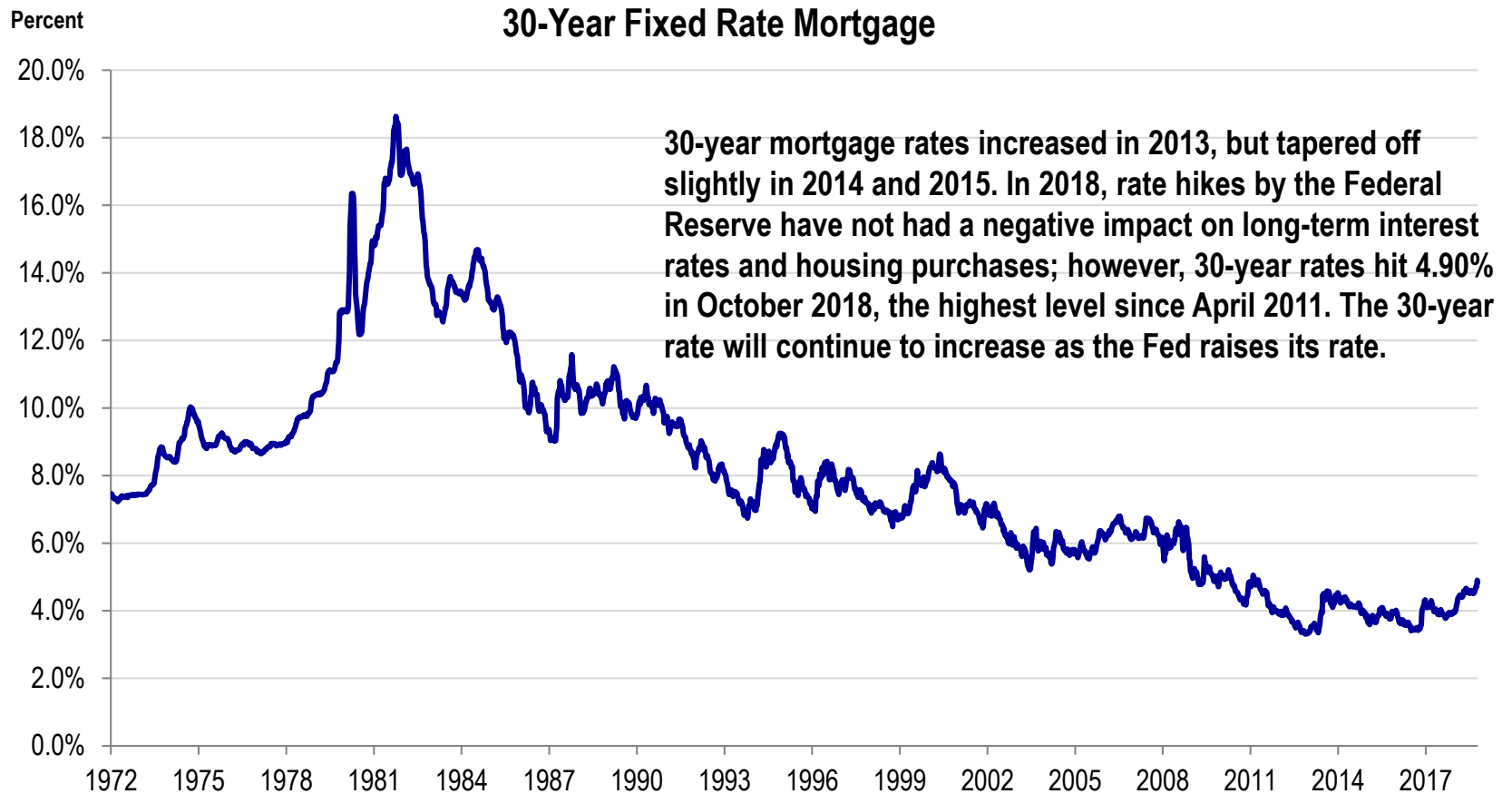
Source: FRED, Chicago Board Options Exchange, cber.co.



# The U.S. Economy

Mortgage Rates, U.S. Single Family Permits, Construction Spending,  
Housing Prices, Homeowner Equity

# 30-Year Fixed Rate Mortgage



Source: FRED, Freddie MAC, cber.co.

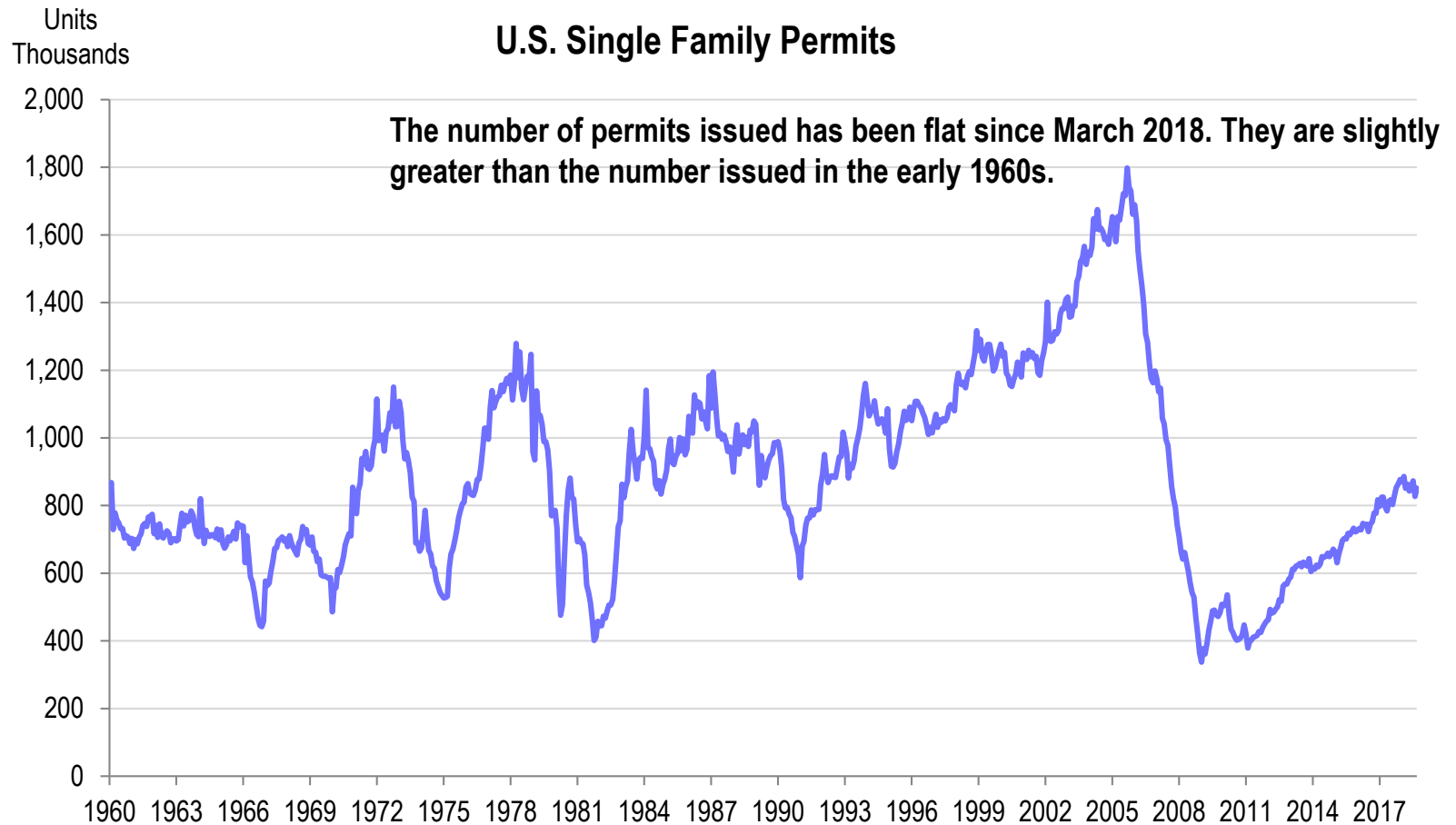


# Rate Hikes

The Federal Reserve plans to continue to raise interest rates, despite objections from President Trump. These rate increases will affect all industries and their supply chains. The real estate and construction sectors will be impacted as 30-year mortgage rates rise.

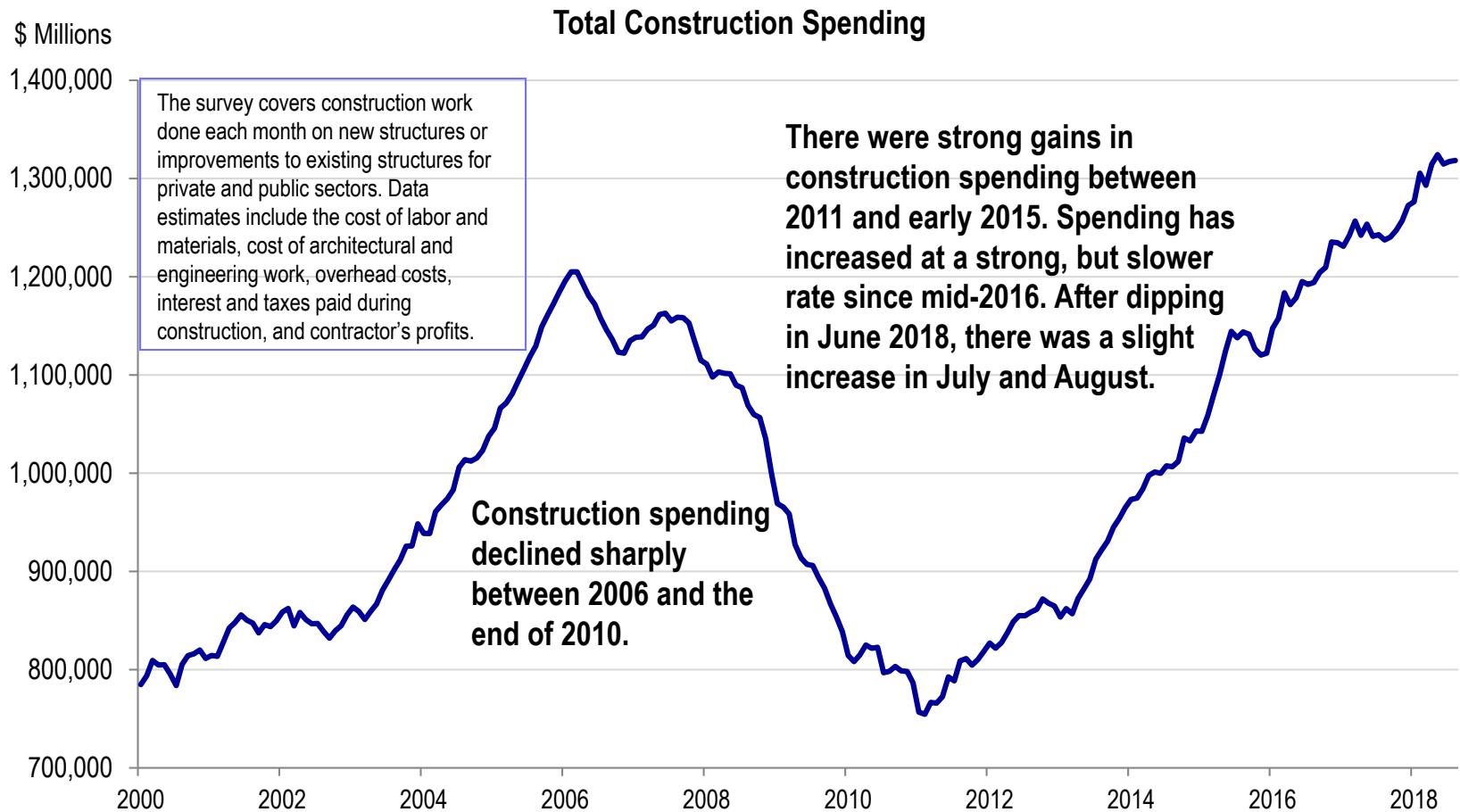
The Fed feels the rate hikes will prevent inflation and the possibility of financial excesses.

# ● U.S. Single Family Permits



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

# Total U.S. Construction Spending

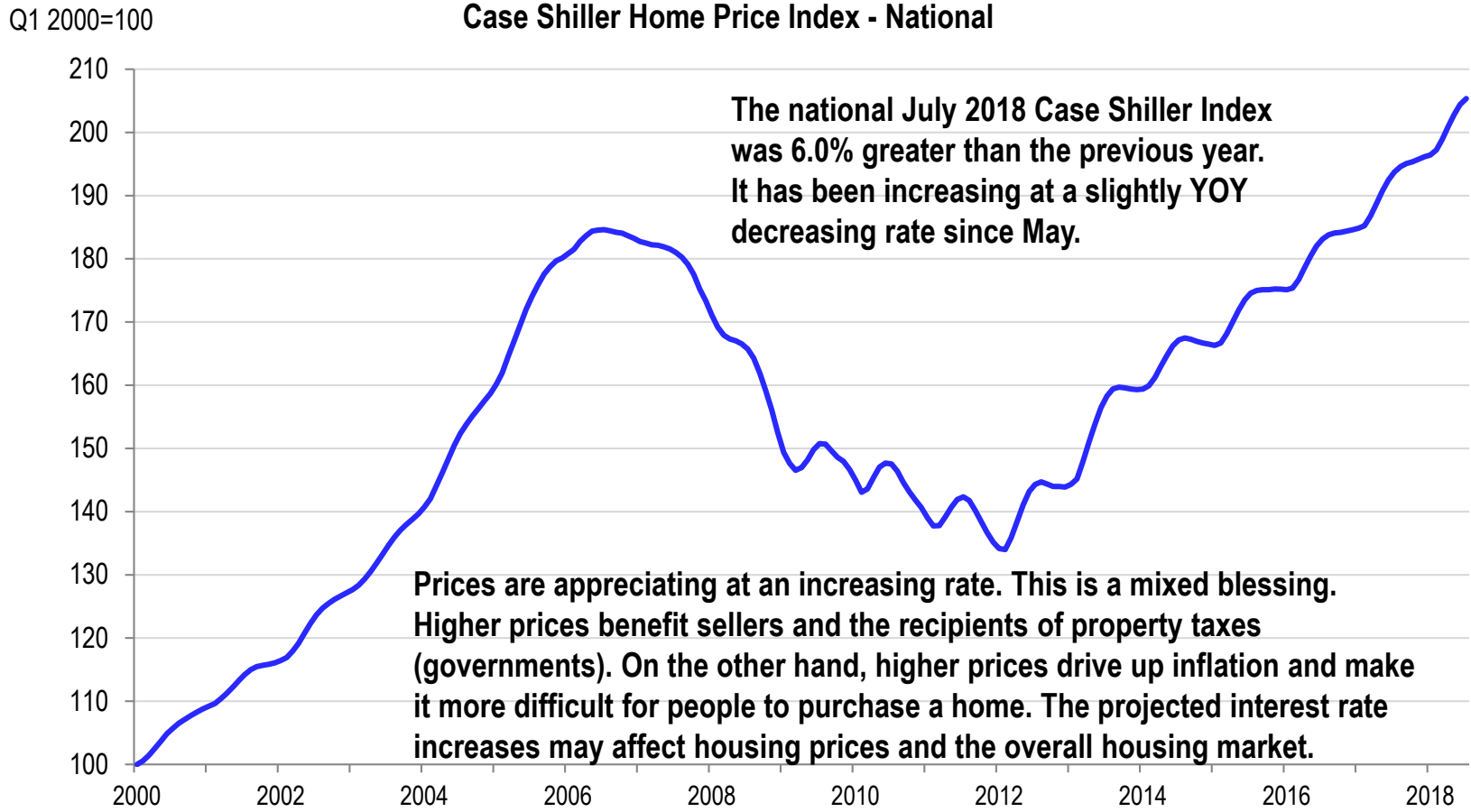


Source: FRED, Census Bureau, not adjusted for inflation, SAAR, cber.co.



# Case Shiller Home Price Index

## National Index



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

# CoreLogic Homeowner Equity Insights

## Key Findings Q2 2018

### National Homeowner Equity

- Approximately 64% of homeowners have mortgages.
- In Q2 2018, their cumulative equity increased by 12.3%, or a total of \$980.9 billion vs. Q2 2017.
- Overall, the average YOY increase in equity is \$16,200.
- The average Q2 2018 YOY increase in homeowner equity in Colorado was \$21,847.
- A sample of increases in homeowner equity in other states follows:
  - \$48,832 in California
  - \$41,138 in Washington (state)
  - \$32,193 in Nevada
  - \$25,354 in Utah
  - \$13,009 in Florida
  - \$7,817 in Illinois
  - -\$1,078 in Louisiana.

### Negative Equity

- The negative equity share is declining, especially in states with strong appreciation.
- Compared to Q2 2017, negative equity in Q2 2018 decreased 20.1% from 2.8 million homes.
- The decrease was 562,800 homes.
- The Q2 2018 national aggregate of negative equity was \$285.3 billion.
- The negative equity share in Colorado was 1.6% in Q2 2018. It was 1.3% in Denver.
- A sample of negative equity share in other states is:
  - 10.4% in Louisiana
  - 7.8% in Florida
  - 7.2% in Illinois
  - 5.7% in Nevada
  - 2.4% in California
  - 1.5% in Texas and Oregon.

Source: Corelogic, cber.co.

# Construction and Housing

There is anecdotal evidence the construction and housing markets have plateaued in some areas. It remains to be seen whether the markets will bounce back after “taking a breather” or if they will continue on a downward path in the near-term.



# The U.S. Economy

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

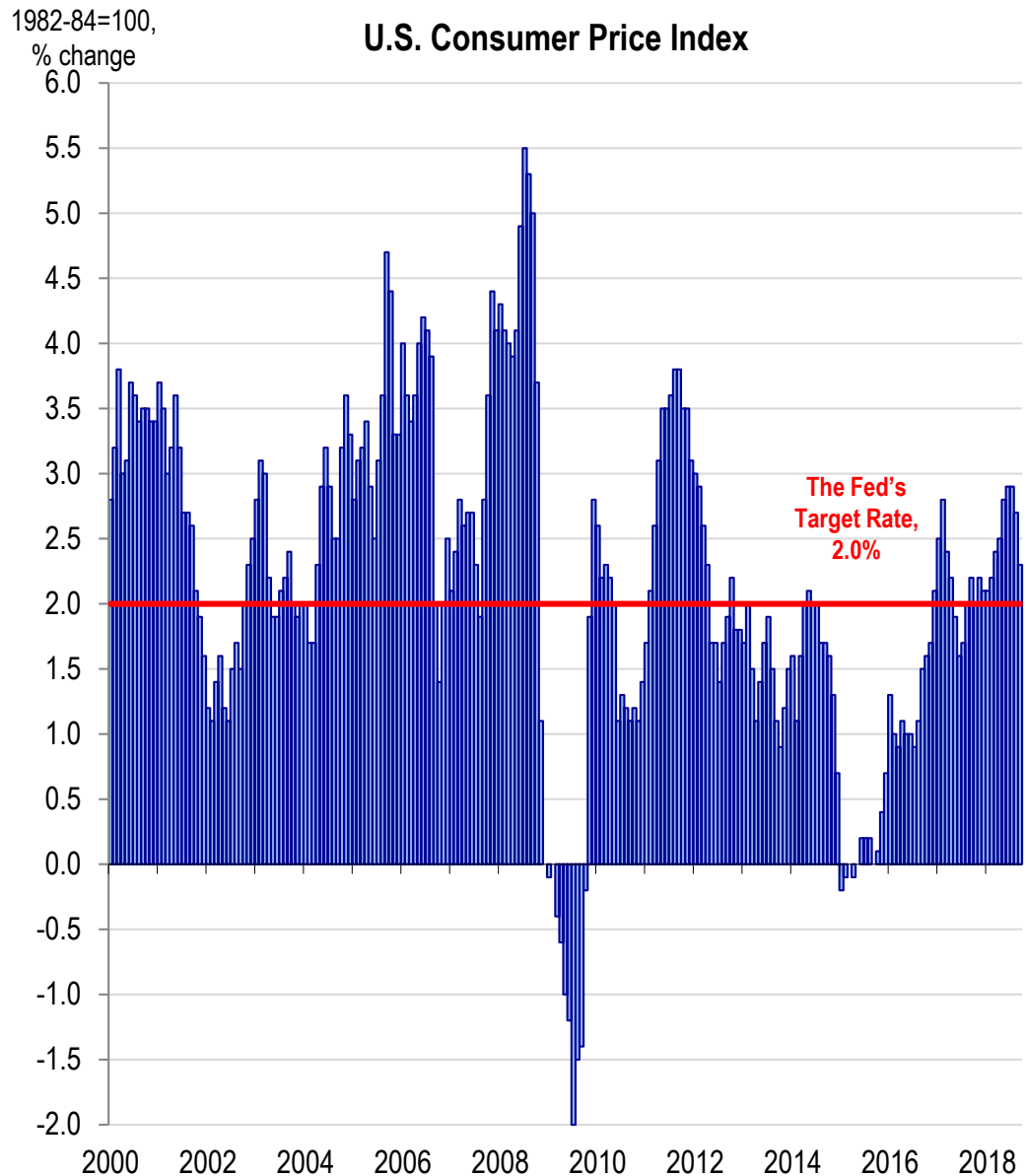
# Consumer Price Index (CPI)

U.S. inflation, as measured by the seasonally adjusted CPI, will increase by 2.3% in 2018 (forecast). This is greater than 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 September 2018 CPI rate was 2.3%, down from 2.7% in August and 2.9% in July. The rate of increase for the first half of the year was 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 % (forecast).



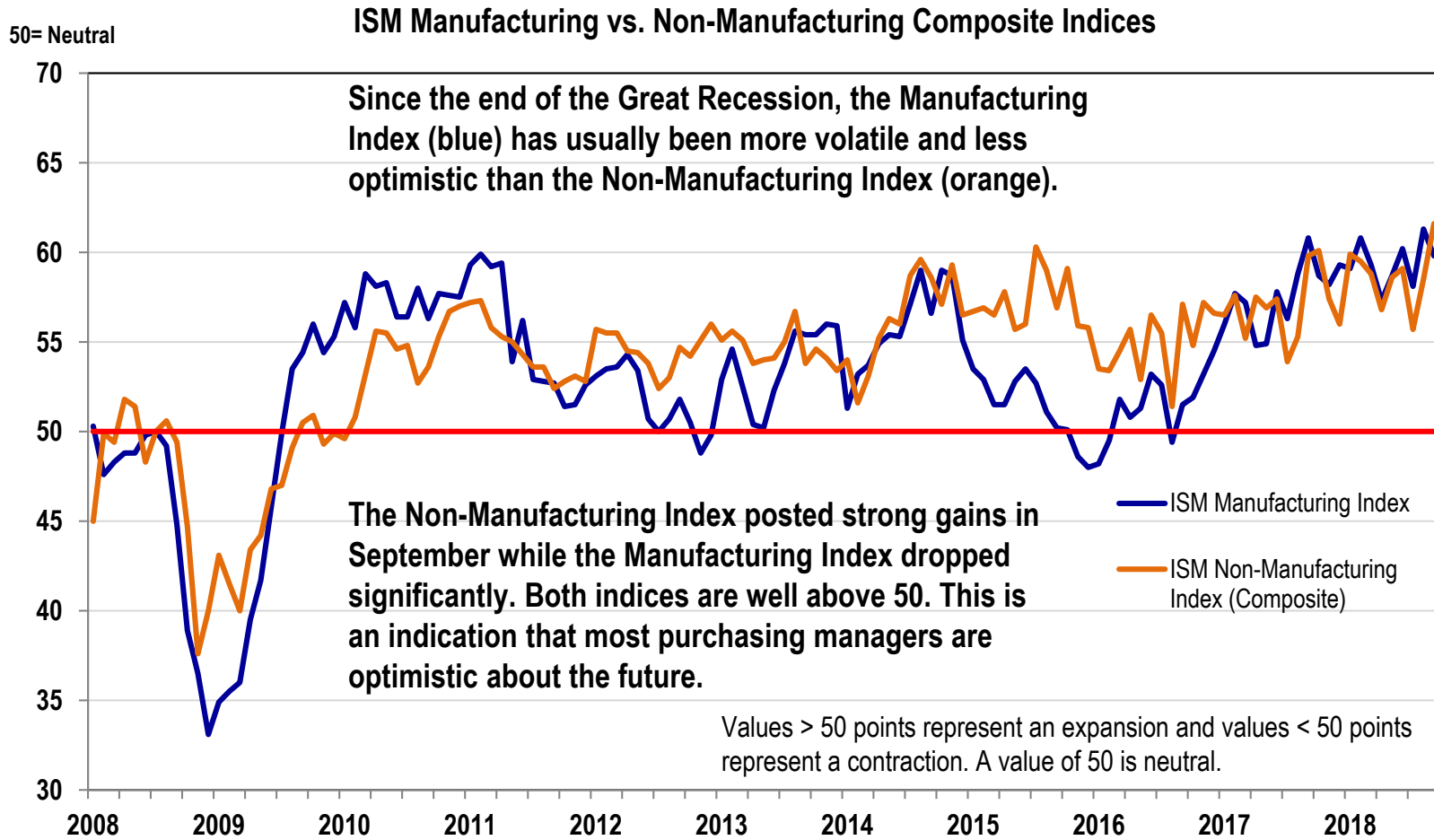
Source: Bureau of Labor Statistics, SA, cber.co.

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

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# ISM PMI Composite Indices

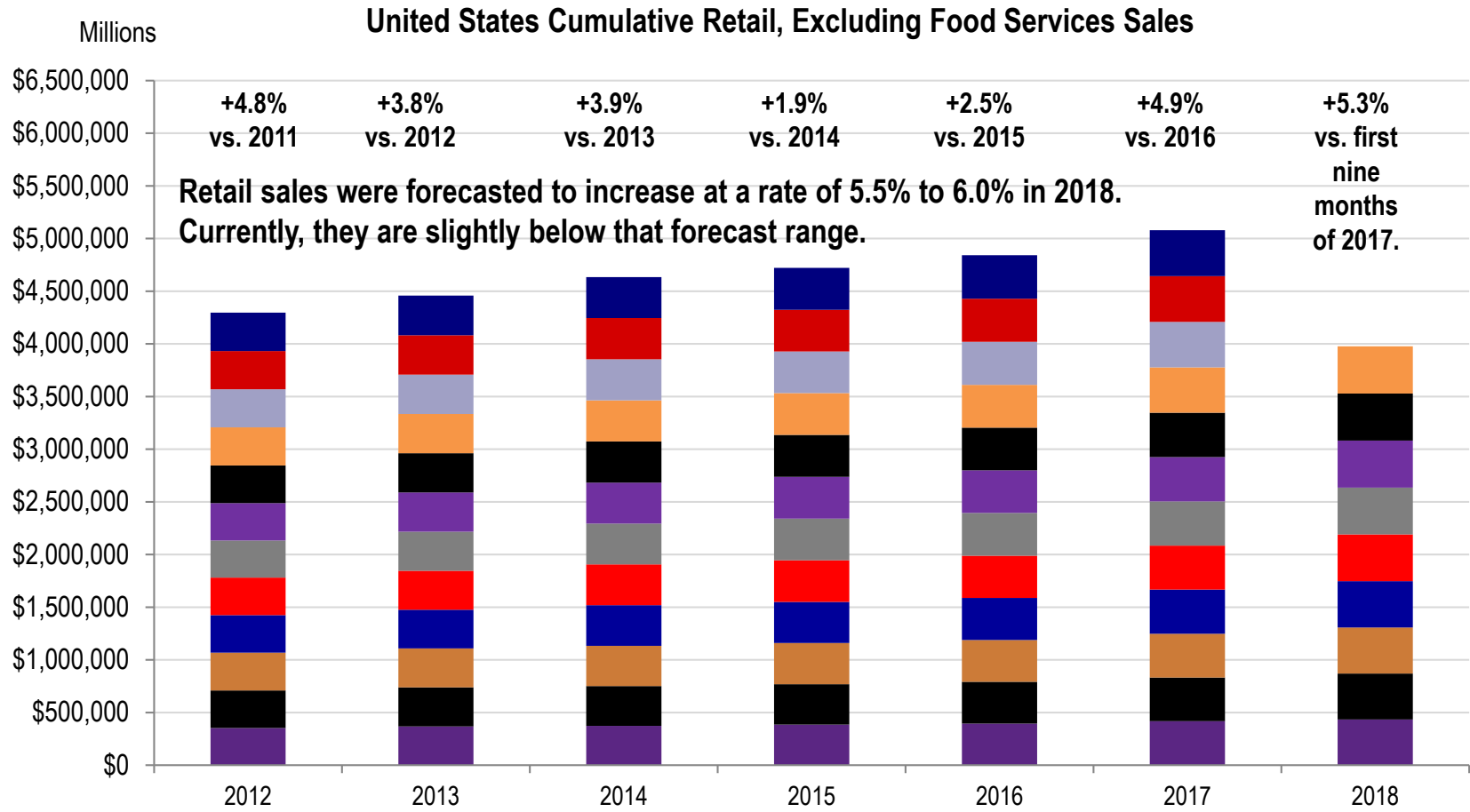
## Manufacturing vs. Non-manufacturing



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.

# Retail Sales

## Holiday Season 2018

Montgomery Wards, Robert May, Johnny Marks, and Gene Autry were at the forefront of commercializing Christmas with the release of the book and classic song *Rudolph the Red-Nosed Reindeer*.

Rudolph will be shining his nose brightly on the 2018 holiday season. The National Retail Federation projects that holiday sales will be 4.8% greater than in 2017. The sales for 2017 topped \$690 billion, which was 5.3% greater than the prior year.

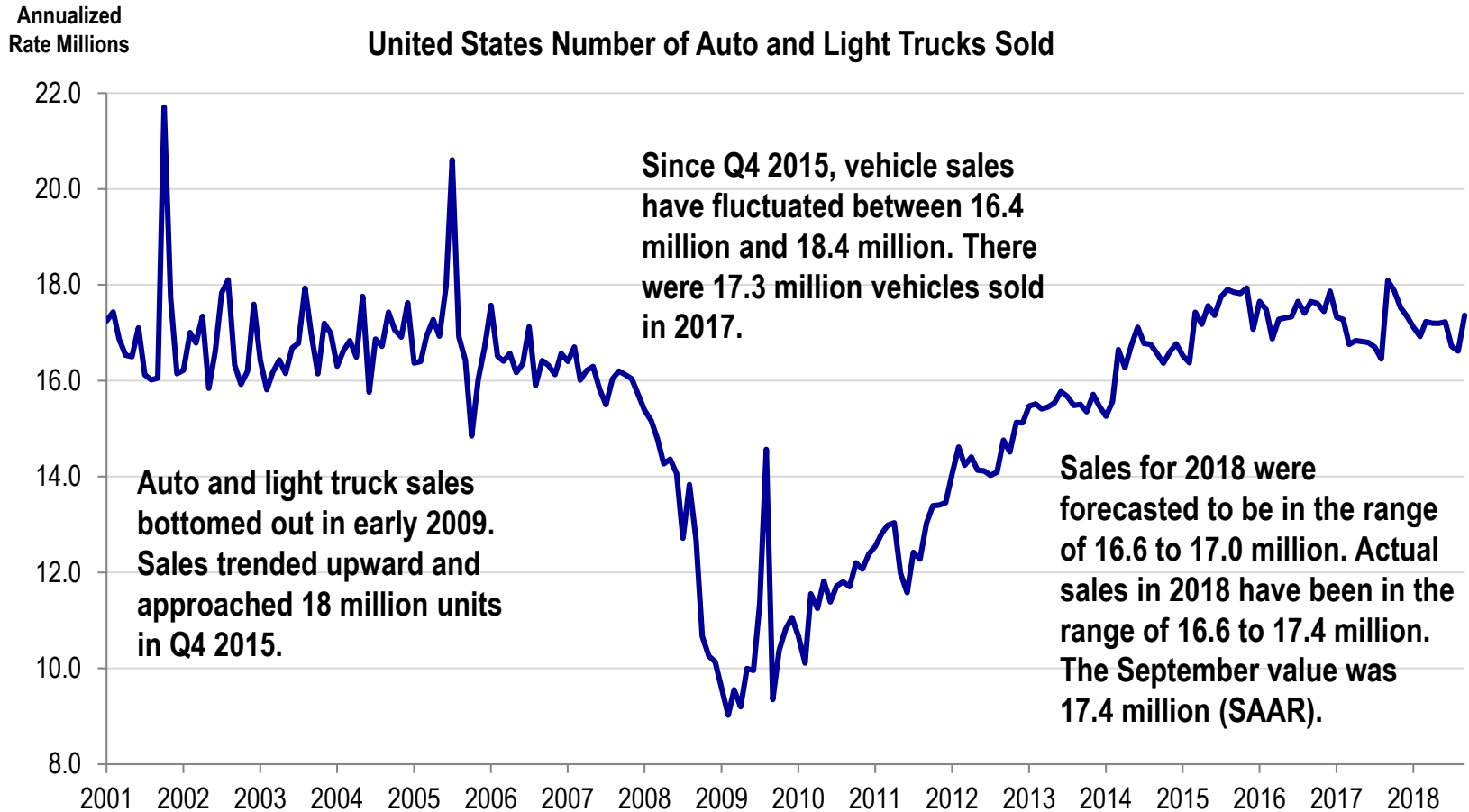
Another holiday tradition, Black Friday, is right around the corner. Break out your credit cards!





# 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 U.S. Economy

## Summary

# The United States Economy

## Summary

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

### Positives

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

- The number of job openings are strong.
- Job growth is solid.
- Job growth is diversified across industries and geographic regions.
- Real GDP growth is robust and expected to remain that way in the near-term.
- 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 3.0% real GDP growth in 2018 and 3.1% growth in 2019. Over time, TCB forecasts have been conservative and reasonably accurate.

### Headwinds

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

- Worker shortages in many parts of the country.
- Rate hikes by the Federal Reserve – to date the impact has been minimal.
- Level of public and private debt – long-term issue.
- Boomers moving into retirement years without savings.
- Trade conflicts (tariffs) – to date the impact has been limited, but concerns about the tariffs have increased.
- Rapid appreciation in housing prices in some parts of the U.S. – The rate of housing appreciation is slowing. Similarly, construction markets are growing at a slower rate.
- Moderation in the growth of the European economy and slower growth in emerging countries.



# The Colorado Economy

Colorado Population, Change in Employment, and Summer Change in Employment

# Colorado Population

## Components of Change

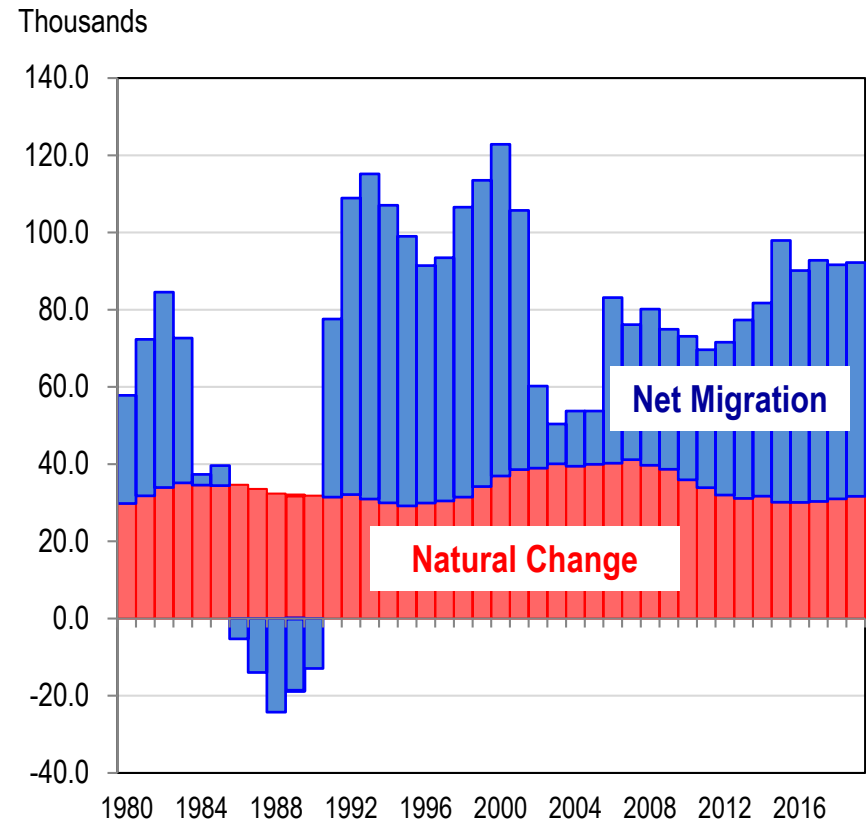
Population increases and decreases are a result of the natural rate of change (births minus deaths) and the change in net migration (people moving into the state minus people moving out of the state).

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. Fertility rates have declined. As a result, the natural rate for 2018 will be 29,400.

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. More people moved out of state than moved into the state to escape the regional recession. 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.

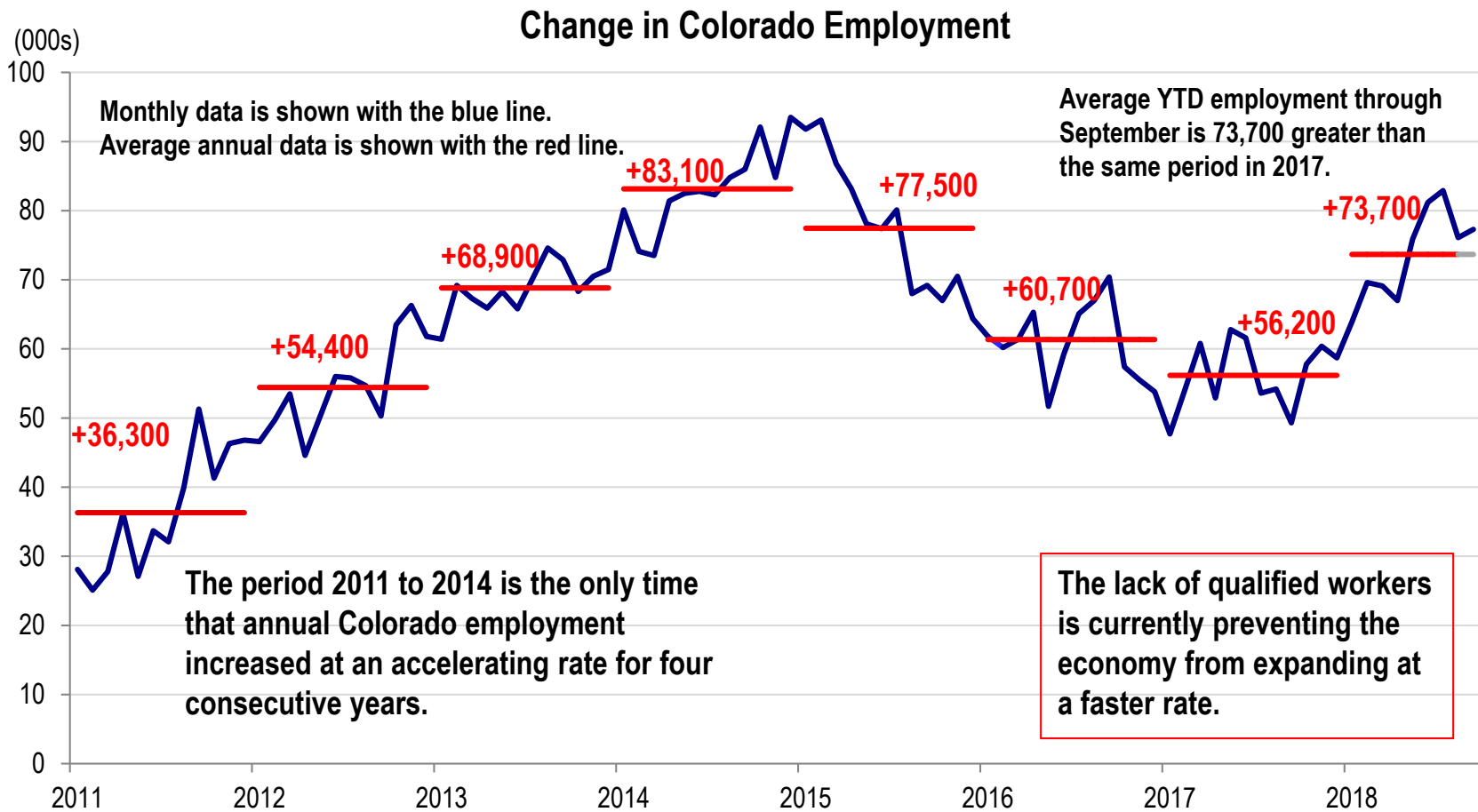
The Colorado population will increase by about 90,000 for the years 2016 to 2019. In 2018 the state's population will increase by 1.6% to 5,720,280.

Change in Colorado Population 1980 - 2019



# Change in Colorado Employment

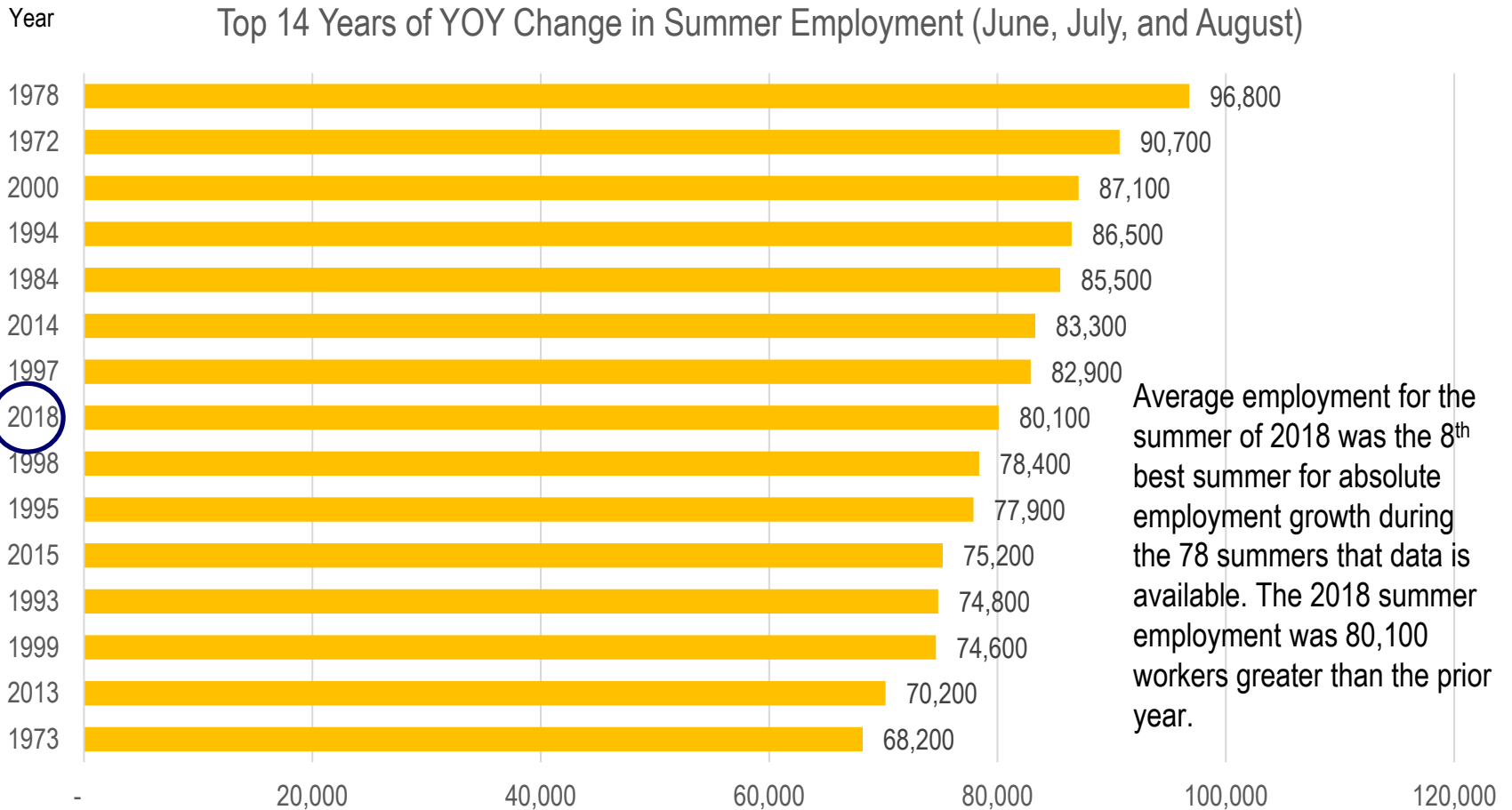
## Year Over Year



Source: Bureau of Labor Statistics, NSA, cber.co. Note: Monthly and annual data is YOY.

# Average YOY Summer Employment Increases

## June, July, and August



Source: BLS, cber.co.



# The Colorado Economy

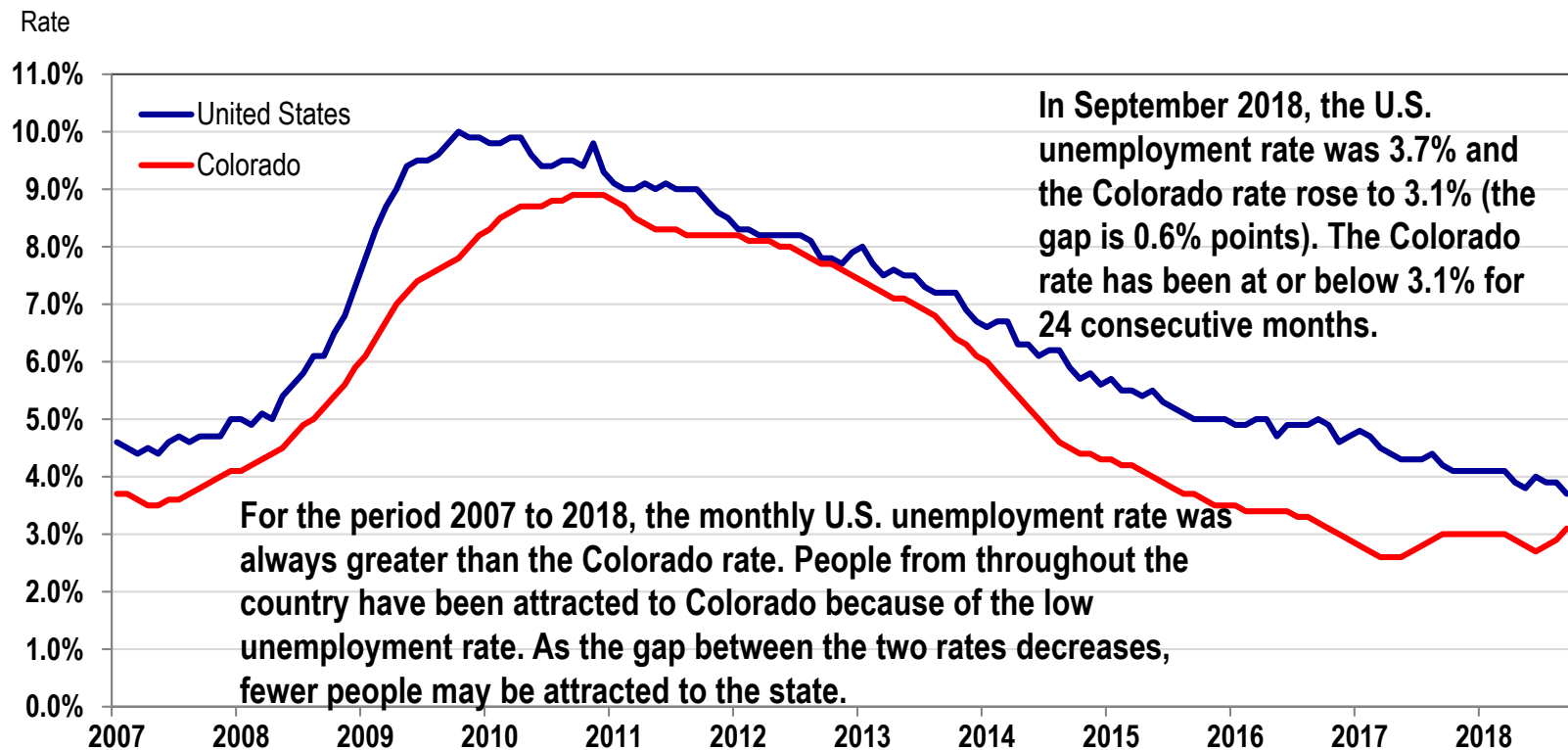
Unemployment Rate, the Unemployment Gap, and the Change in the Size of Labor Force



# Unemployment Rate

## Colorado vs. U.S.

Unemployment Rate – Colorado vs. U.S.



Source: Bureau of Labor Statistics, cber.co.

# Colorado Unemployment Rate

Unemployment will continue to remain low for an extended period. As a result, the state economy will continue to perform in an inefficient manner.

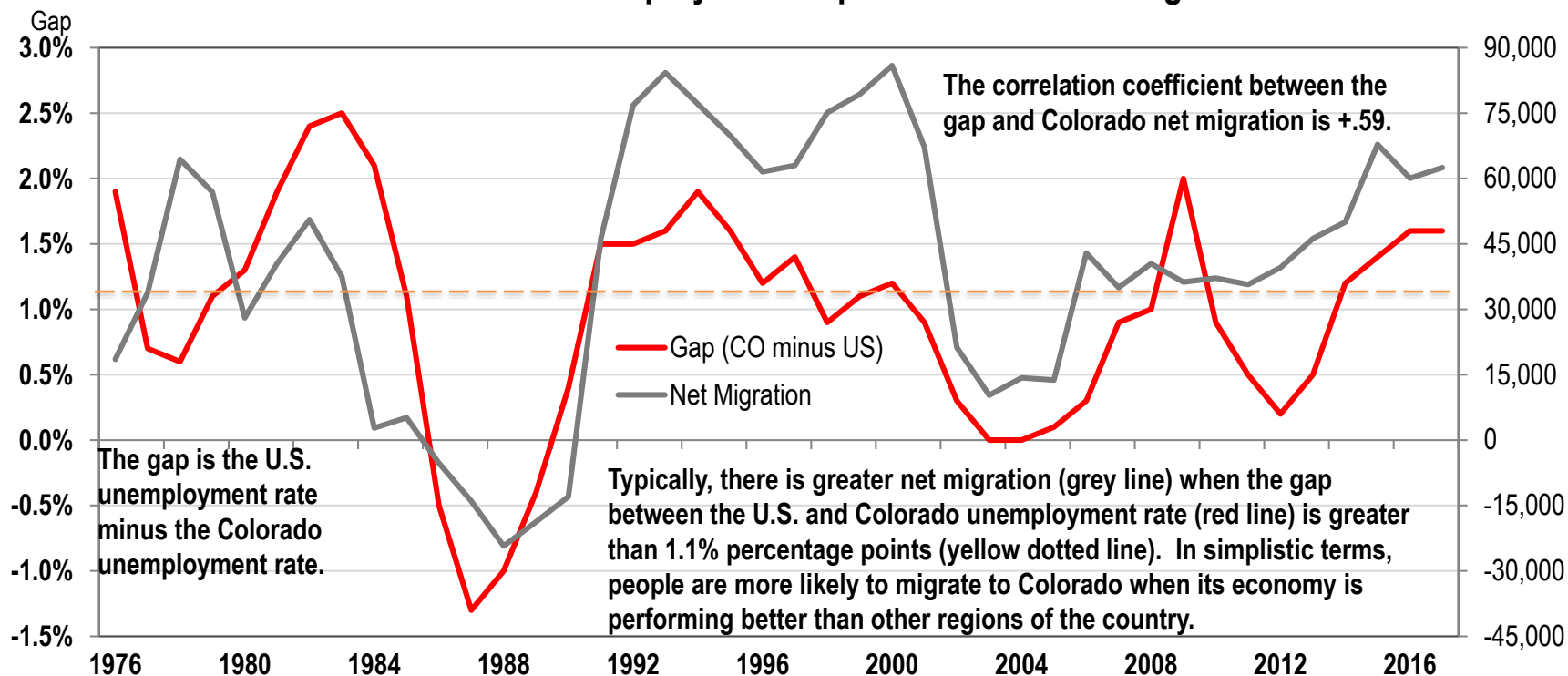
There are companies in all sectors that are not adequately staffed. Unfortunately, their customers often have to deal with poor service and long wait times – in some cases there is even no service.

Given the U.S. unemployment rate of 3.7%, 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.

Just as there was no place to hide from the high unemployment rates of the Great Recession, there is no place to hide from the ill effects of an unemployment rate that is too low. Having said that, it is much better to deal with an unemployment rate that is too low than to deal with one that is too high.

- The Unemployment Gap (U.S. Minus CO Rate)
- The Gap vs. Net Migration
- 

Unemployment Gap vs. Colorado Net Migration.



Source: Bureau of Labor Statistics, State Demographers Office, cber.co.

# The Unemployment Gap (U.S. Minus CO Rate)

Net Migration is Greater When the Gap is Larger

## The Gap is Between 1.2% and 2.5% Percentage Points

Year	Gap	Net Migration
1983	2.50	37,512
1982	2.40	50,577
1984	2.10	2,782
2009	2.00	36,267
1976	1.90	18,533
1981	1.90	40,535
1994	1.90	77,077
1993	1.60	84,261
2016	1.60	60,068
2017	1.60	62,503
1995	1.60	69,825
1991	1.50	46,125
1992	1.50	76,805
1997	1.40	63,020
2015	1.40	67,811
1980	1.30	28,024
1996	1.20	61,527
2000	1.20	85,903
2014	1.20	49,998

During the 19 years when the gap was greater than or equal to 1.2 percentage points, net migration totaled 1,019,153. Average net migration was 53,640.

## The Gap is Less Than 1.2% Percentage Points

Year	Gap	Net Migration
1985	1.10	5,172
1999	1.10	79,319
1979	1.10	56,893
2008	1.00	40,469
2001	0.90	67,137
2010	0.90	37,172
1998	0.90	75,102
2007	0.90	35,000
1977	0.70	33,812
1978	0.60	64,405
2011	0.50	35,697
2013	0.50	46,216
1990	0.40	-12,964
2002	0.30	21,251
2006	0.30	42,896
2012	0.20	39,578
2005	0.10	13,779
2003	0.00	10,313
2004	0.00	14,300
1989	-0.40	-18,752
1986	-0.50	-5,270
1988	-1.00	-24,280
1987	-1.30	-13,997

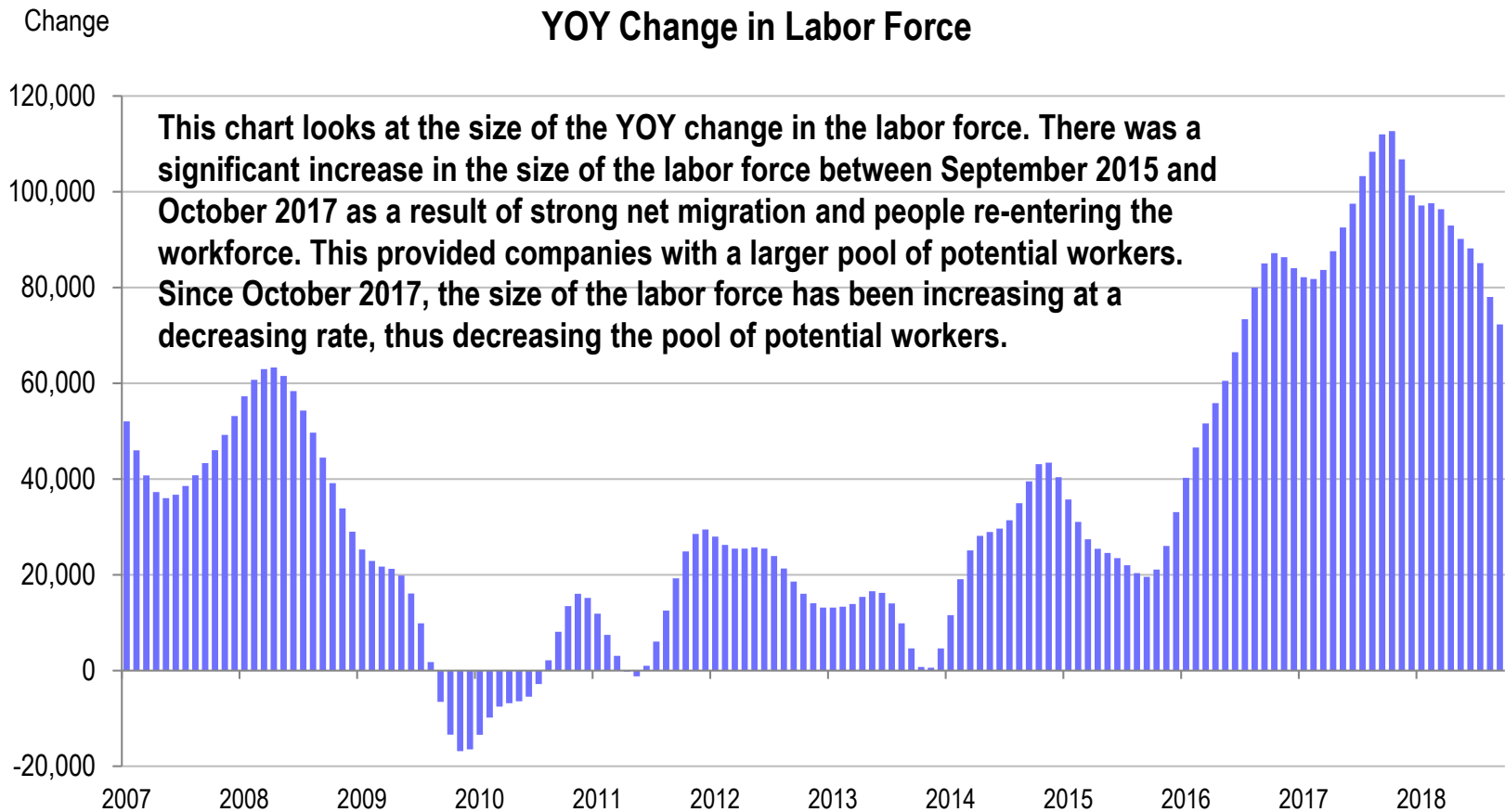
During the 23 years when the gap was less than 1.2 percentage points, net migration totaled 643,248. Average annual net migration was 27,967.

The correlation coefficient between the gap and Colorado net migration is +.59.

Source: Bureau of Labor Statistics, State Demographers Office, cber.co.

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# YOY Change in Colorado Labor Force



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

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



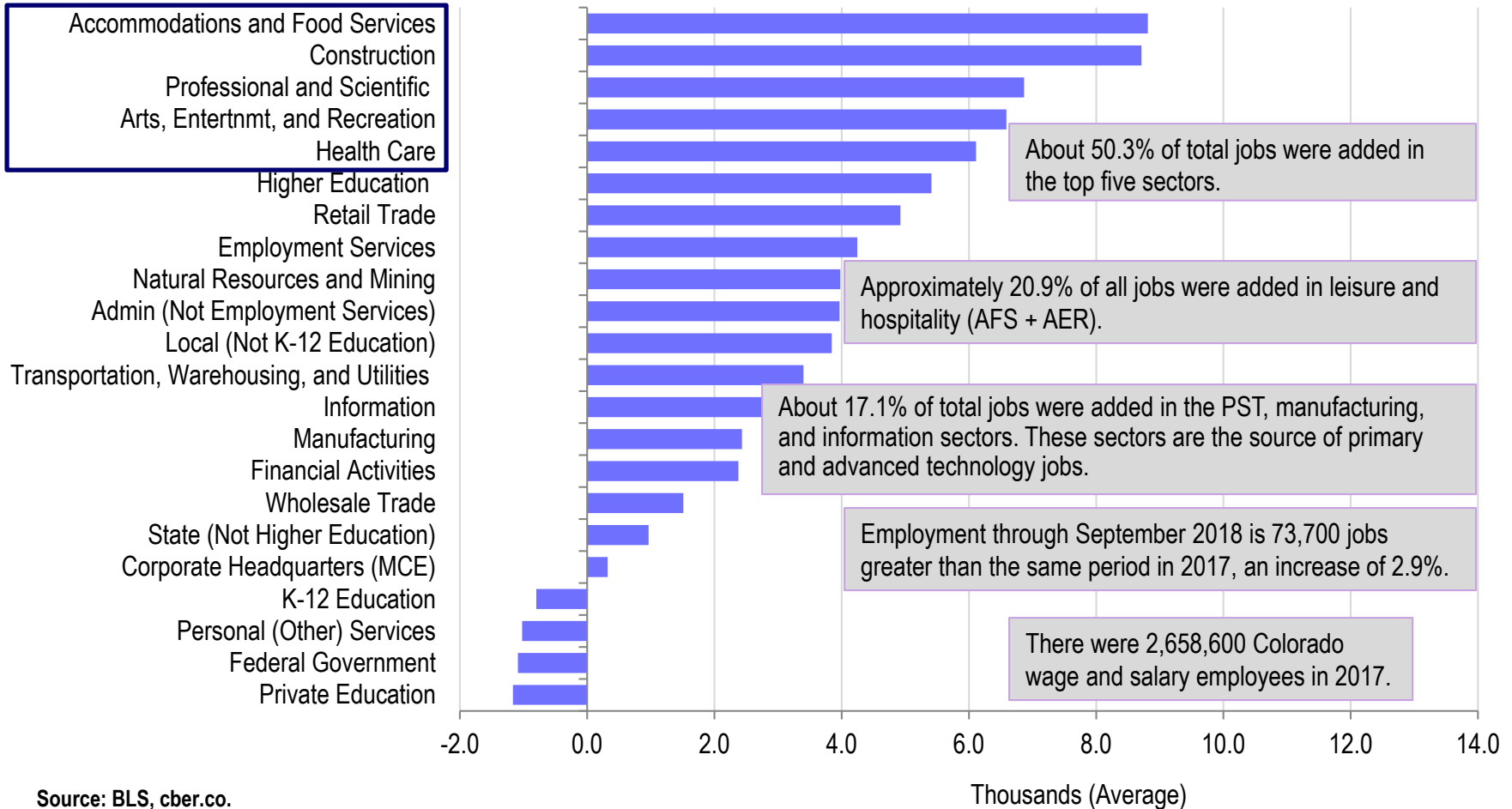
# The Colorado Economy

Change in Employment by Sector, Change in Employment for Key Sectors and Advanced Technology

# Change in Employment by Sector

First 9 Months of 2018 vs. Same Period of 2017

Job Change All Sectors



Source: BLS, cber.co.



# Key Sectors

## Strong Growth, Solid Growth, and Volatile Categories

The following slides show the change in employment for key sectors in the strong growth, solid growth, and volatile categories. The final slide in the section shows the change in employment for the Advanced Technologies cluster.

The sectors with green bars are from the strong growth category, sectors with yellow bars are from the solid growth category, and sectors with red bars are from the volatile category.

The state is on track to add 73,700 jobs in 2018.

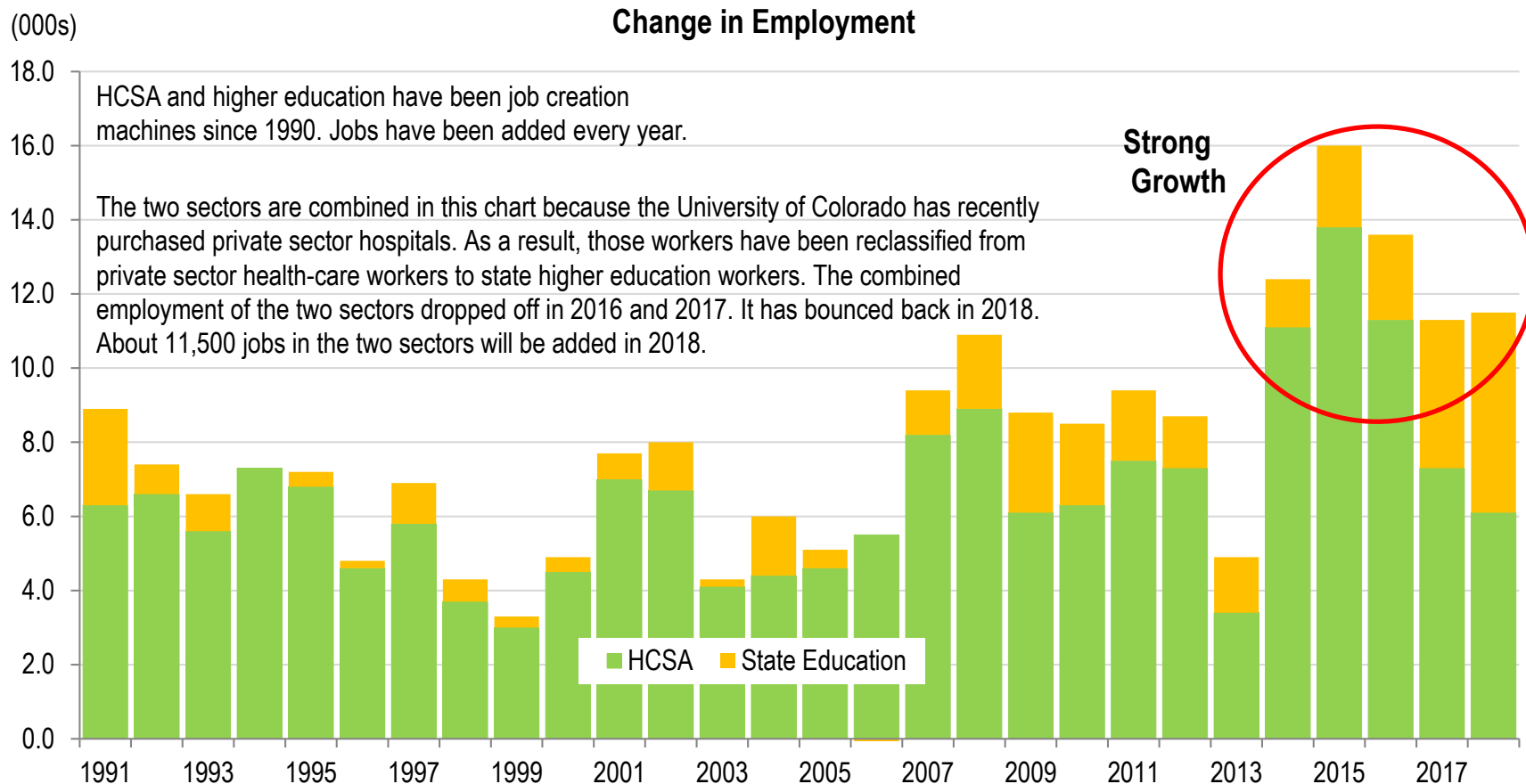
The total jobs added by category follows:

- Strong Growth 21,700 jobs
- Solid Growth 24,700 jobs
- Volatile 27,300 jobs.



# Change in Employment

## Health Care and Social Assistance and Higher Education

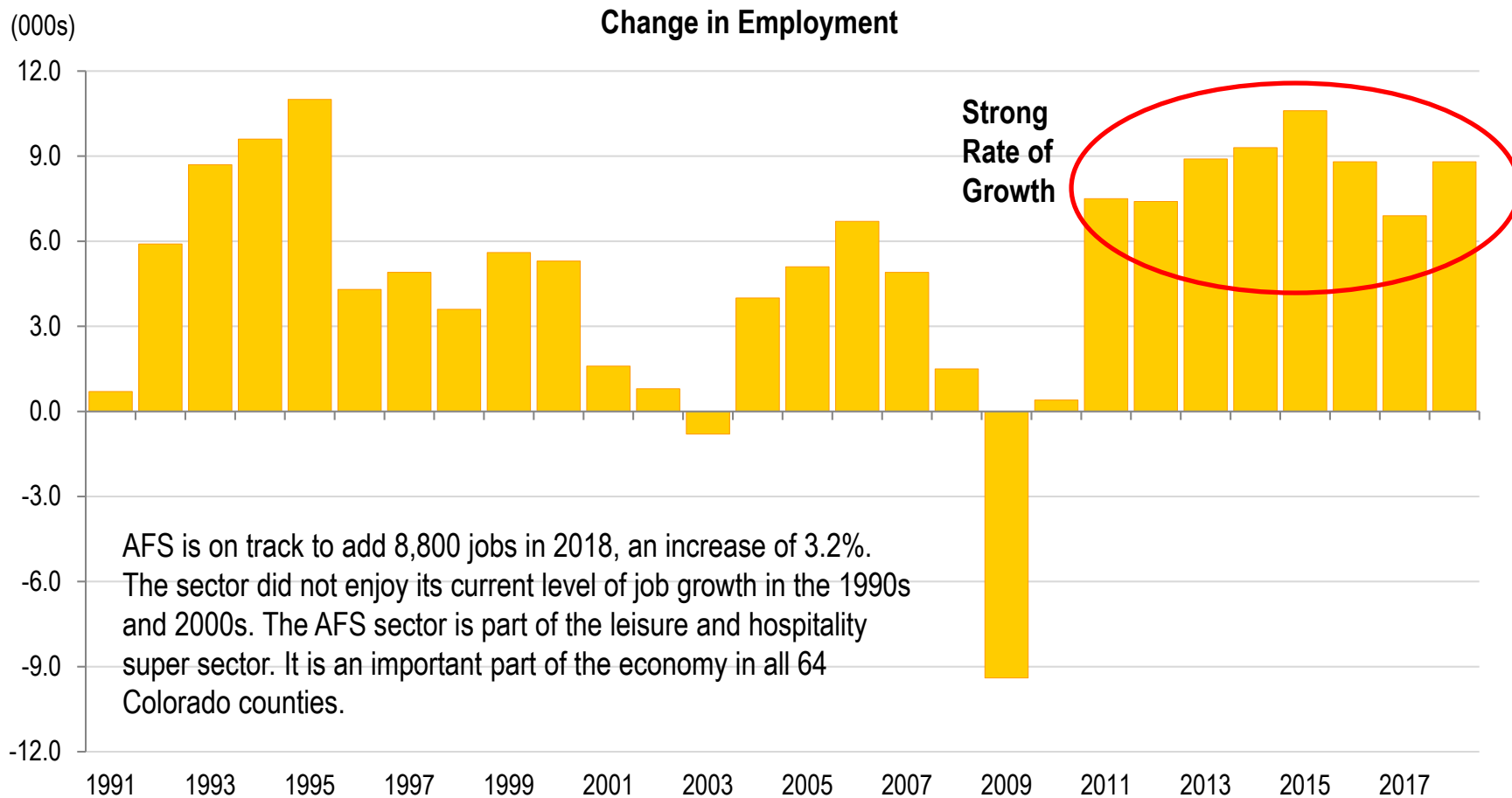


Source: Bureau of Labor Statistics, cber.co.

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

# Change in Employment

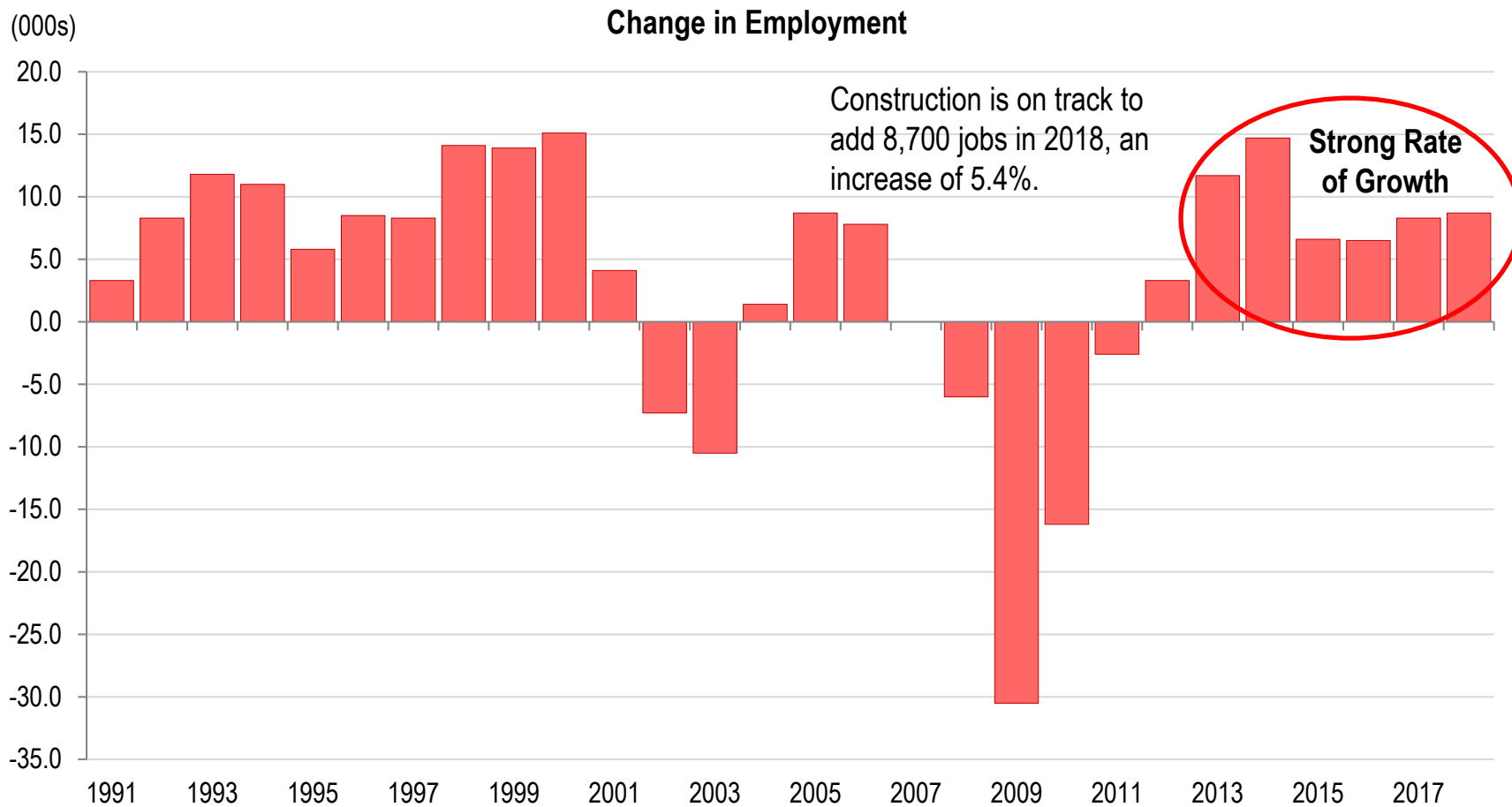
## Accommodations and Food Services



Source: Bureau of Labor Statistics, cber.co.

# Change in Employment

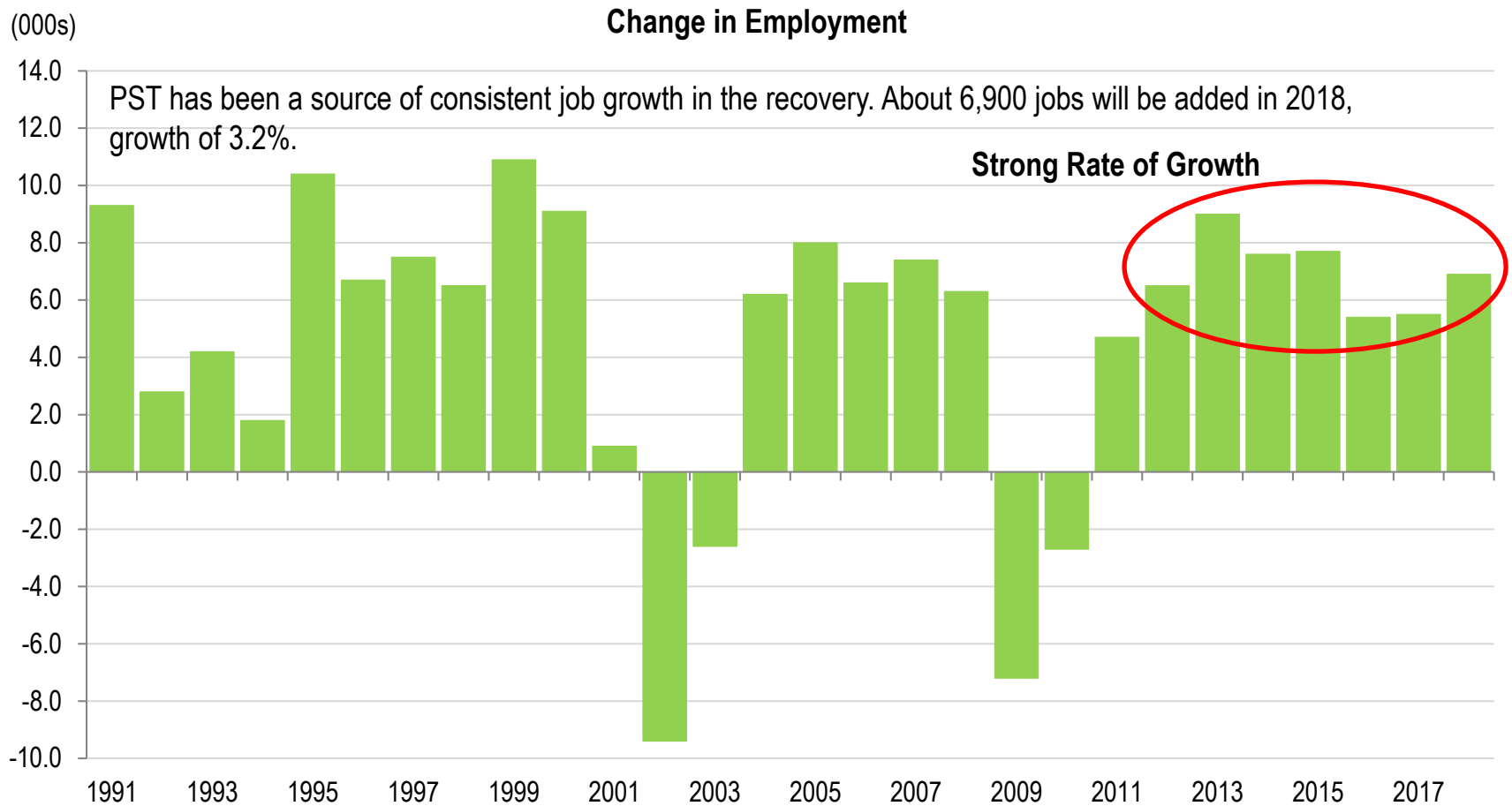
## Construction



Source: Bureau of Labor Statistics, cber.co.

# Change in Employment

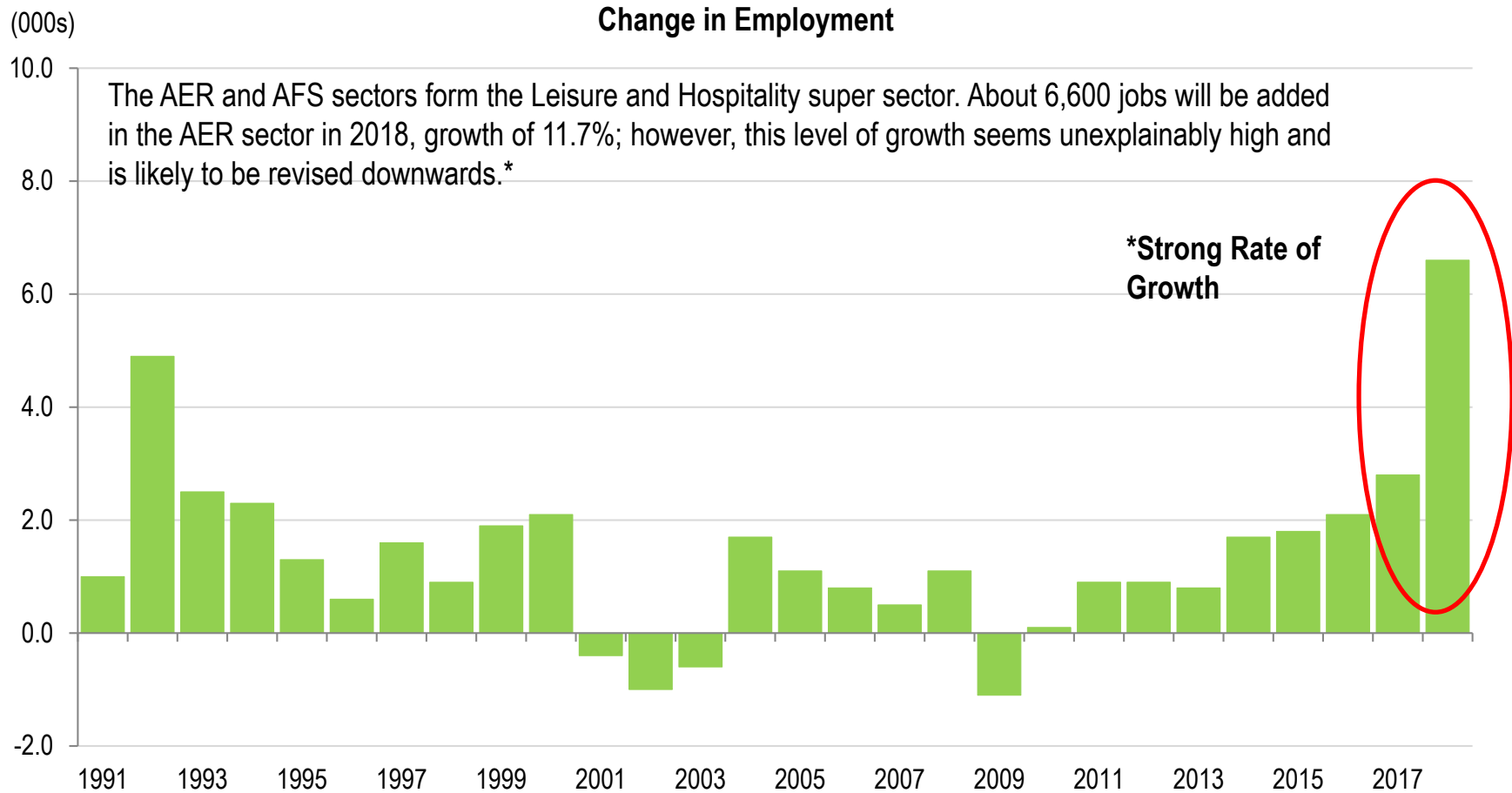
## Professional, Scientific, and Technical Services



Source: Bureau of Labor Statistics, cber.co.

# Change in Employment

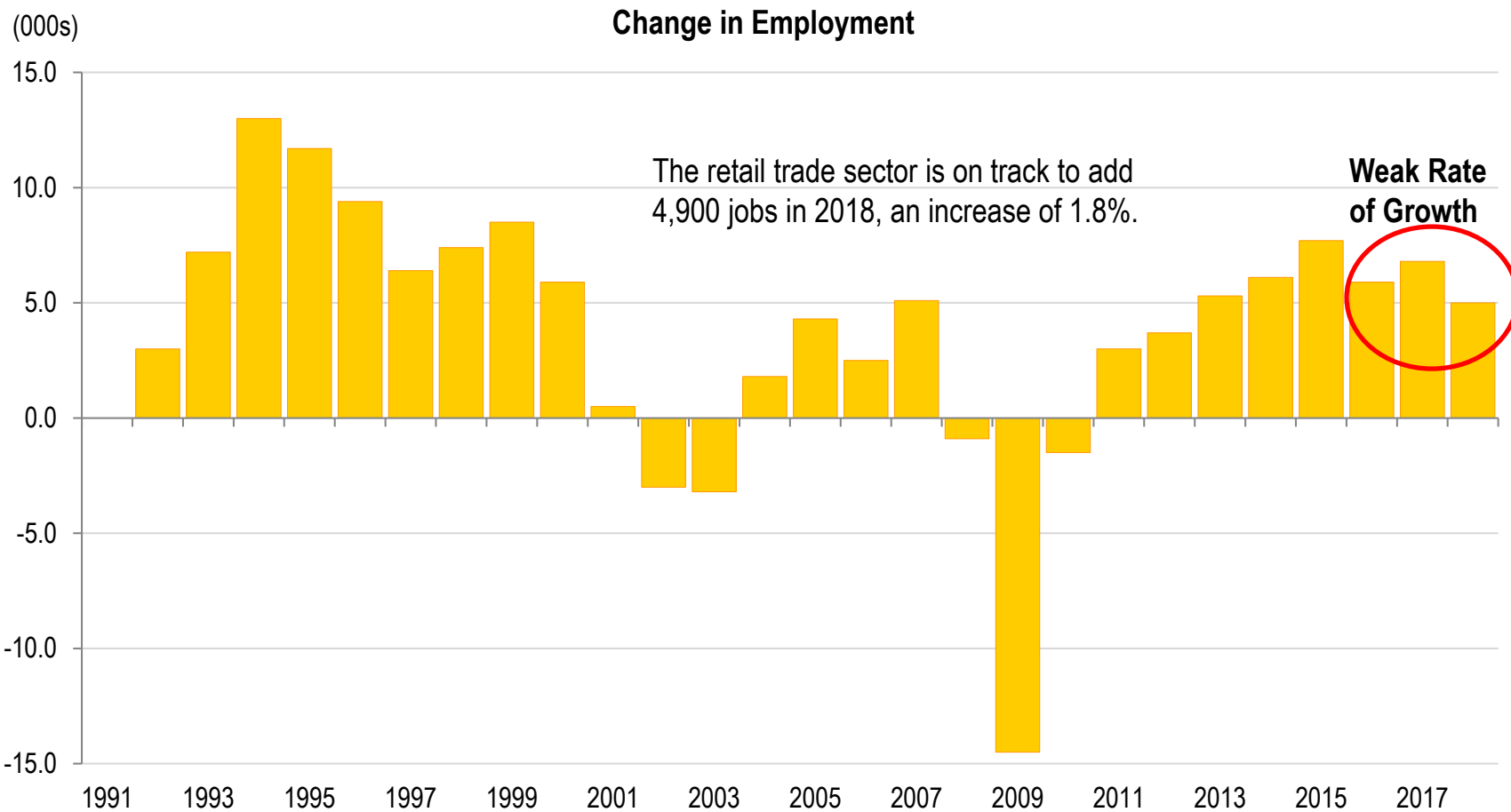
## Arts, Entertainment, and Recreation



Source: Bureau of Labor Statistics, cber.co.

# Change in Employment

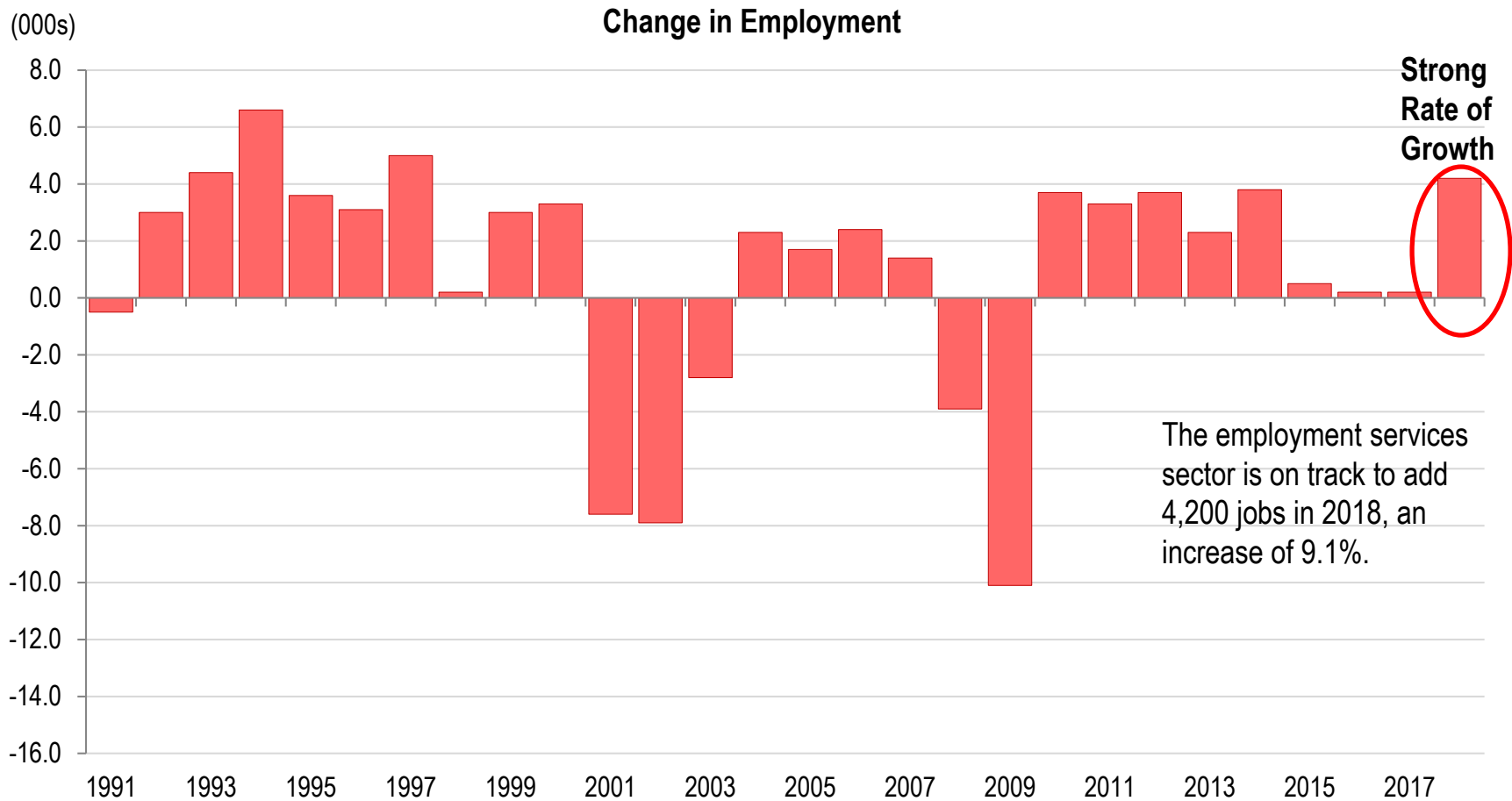
## Retail Trade



Source: Bureau of Labor Statistics, cber.co.

# Change in Employment

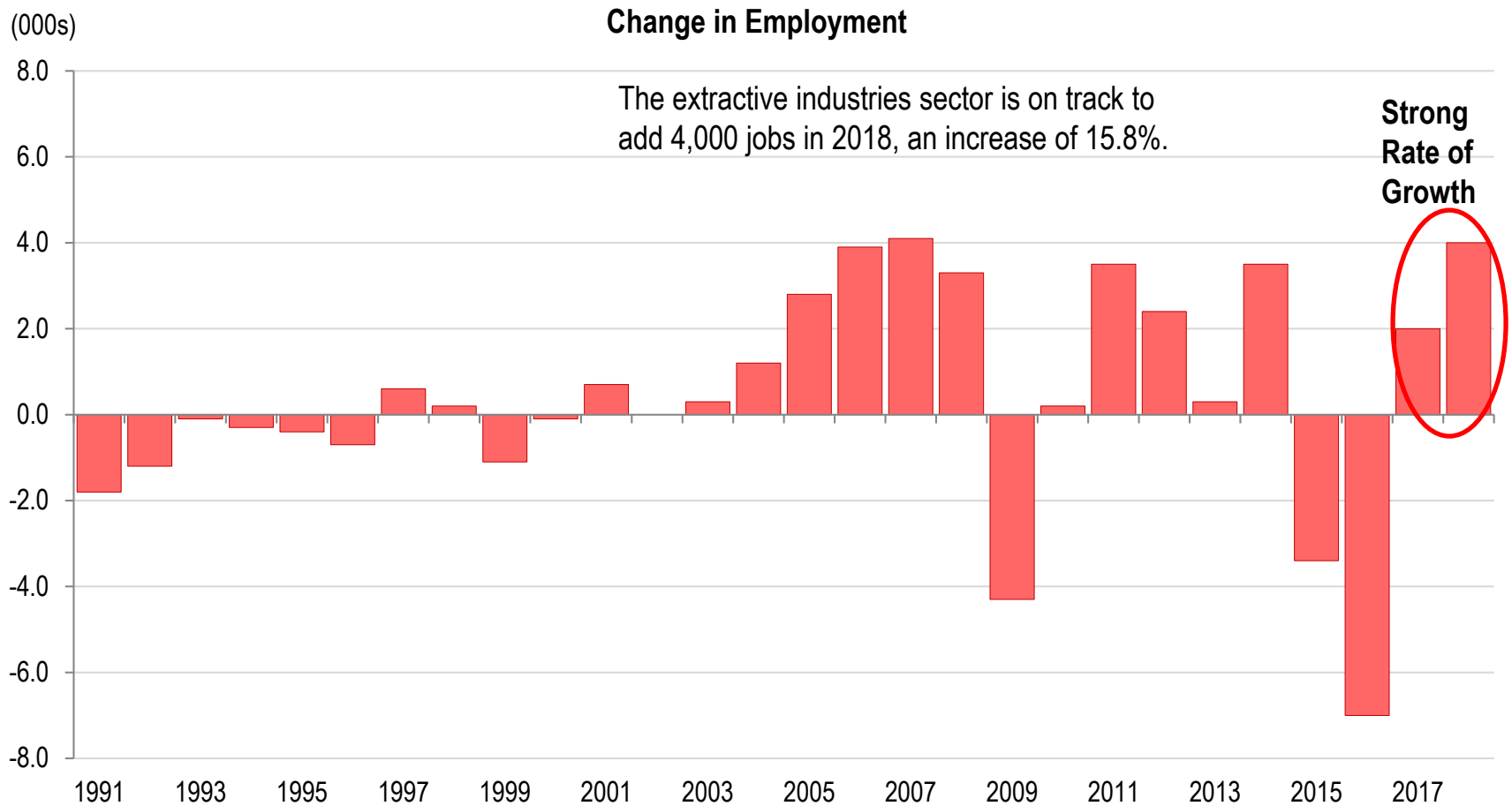
## Employment Services



Source: Bureau of Labor Statistics, cber.co.

# Change in Employment

## Extractive Industries

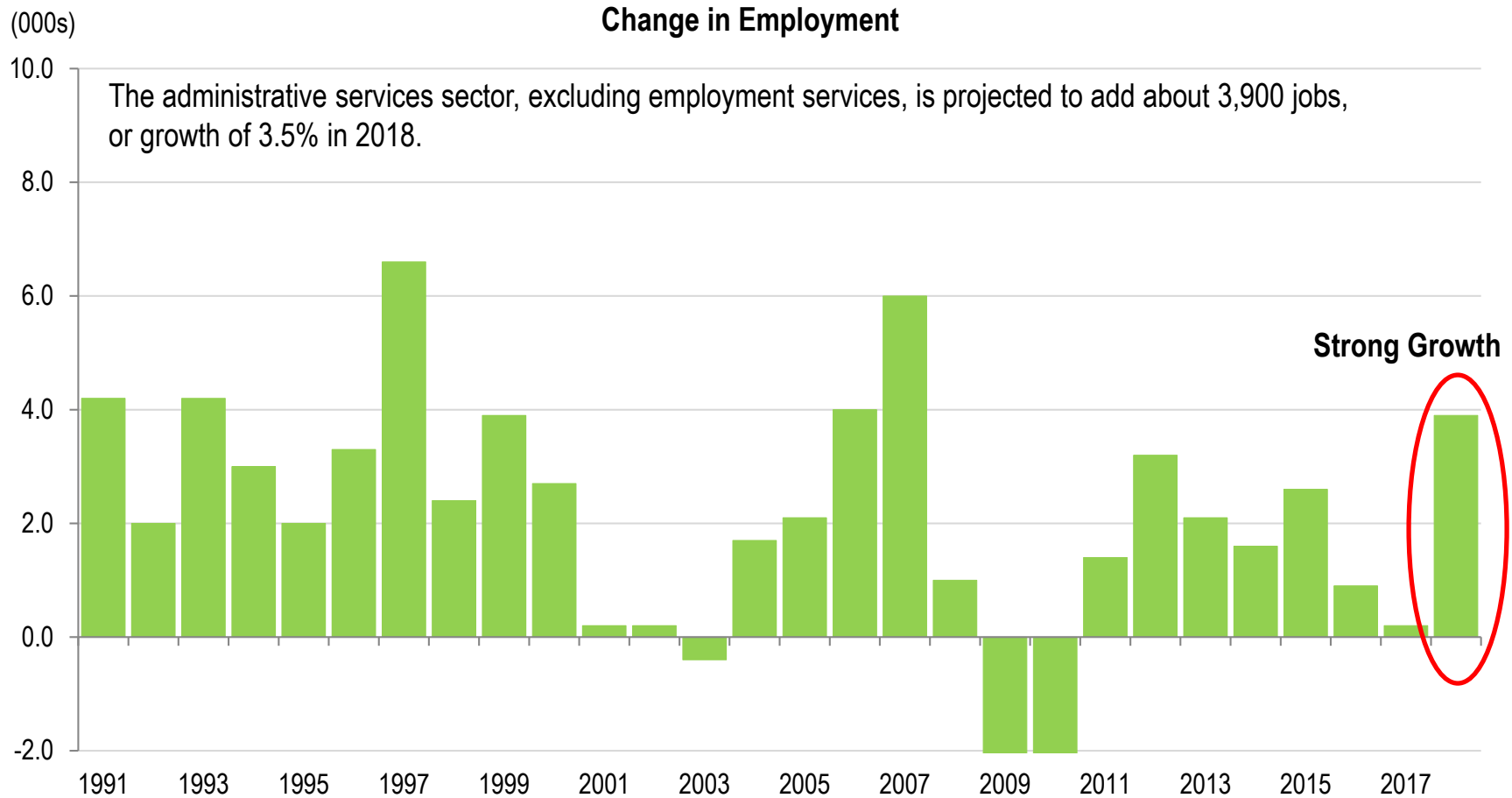


Source: Bureau of Labor Statistics, cber.co.



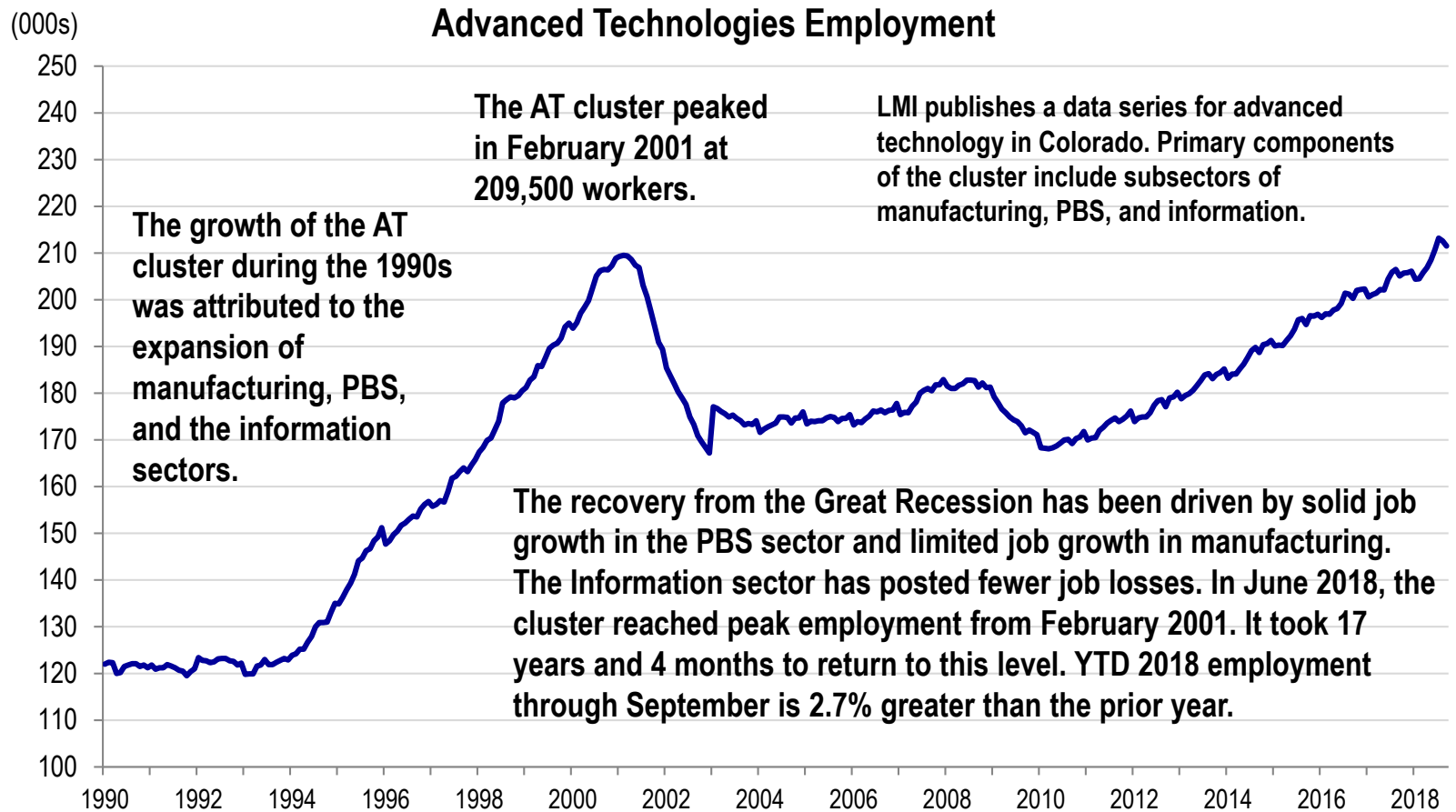
# Change in Employment

## Administrative Services, Excluding Employment Services



Source: Bureau of Labor Statistics, cber.co.

# Advanced Technologies Employment



Source: Labor Market Information, <https://www.colmigateway.com/gsipub/index.asp?docid=368>, cber.co.

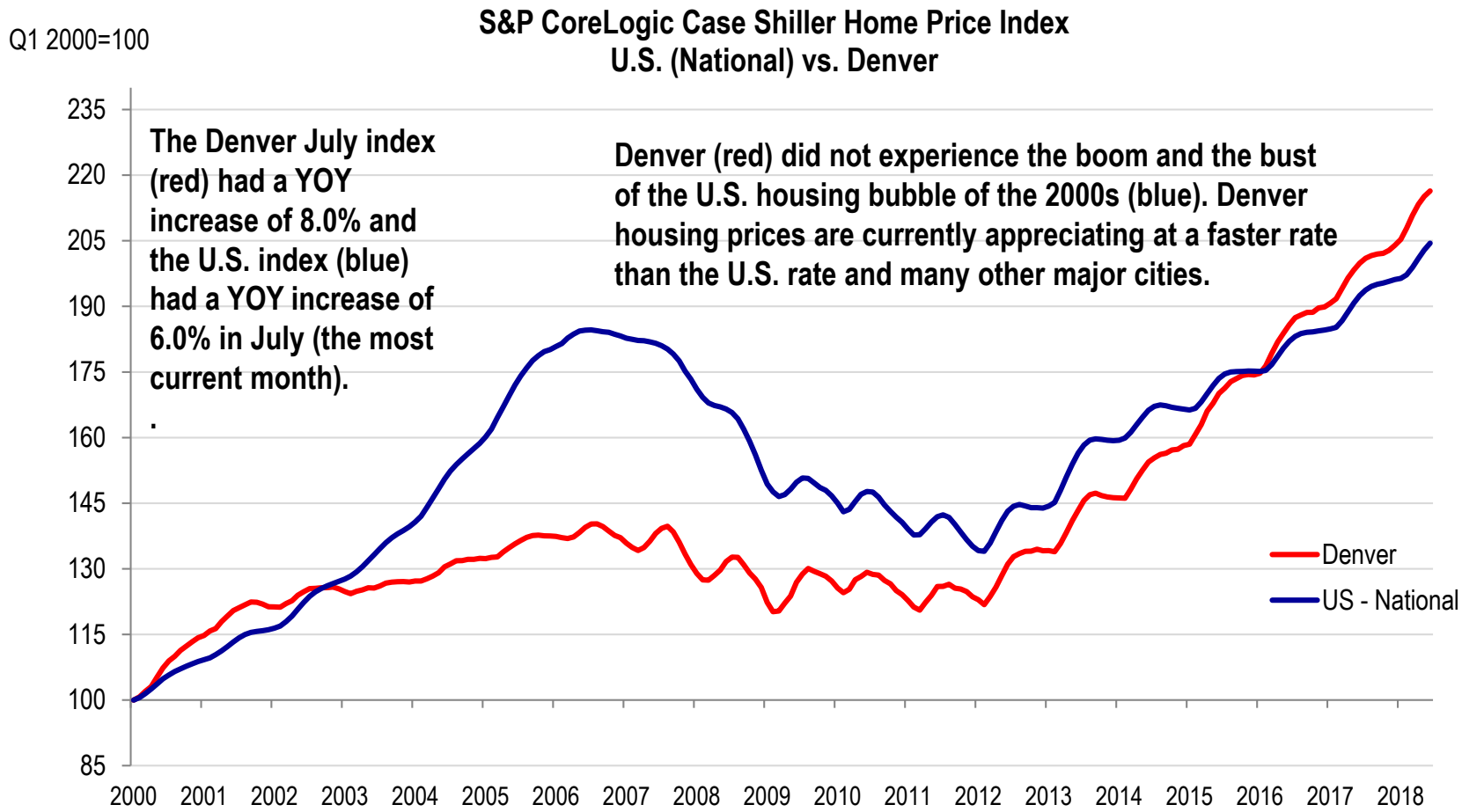


# The Colorado Economy

## Housing Prices and Building Permits

# Case Shiller Home Price Index

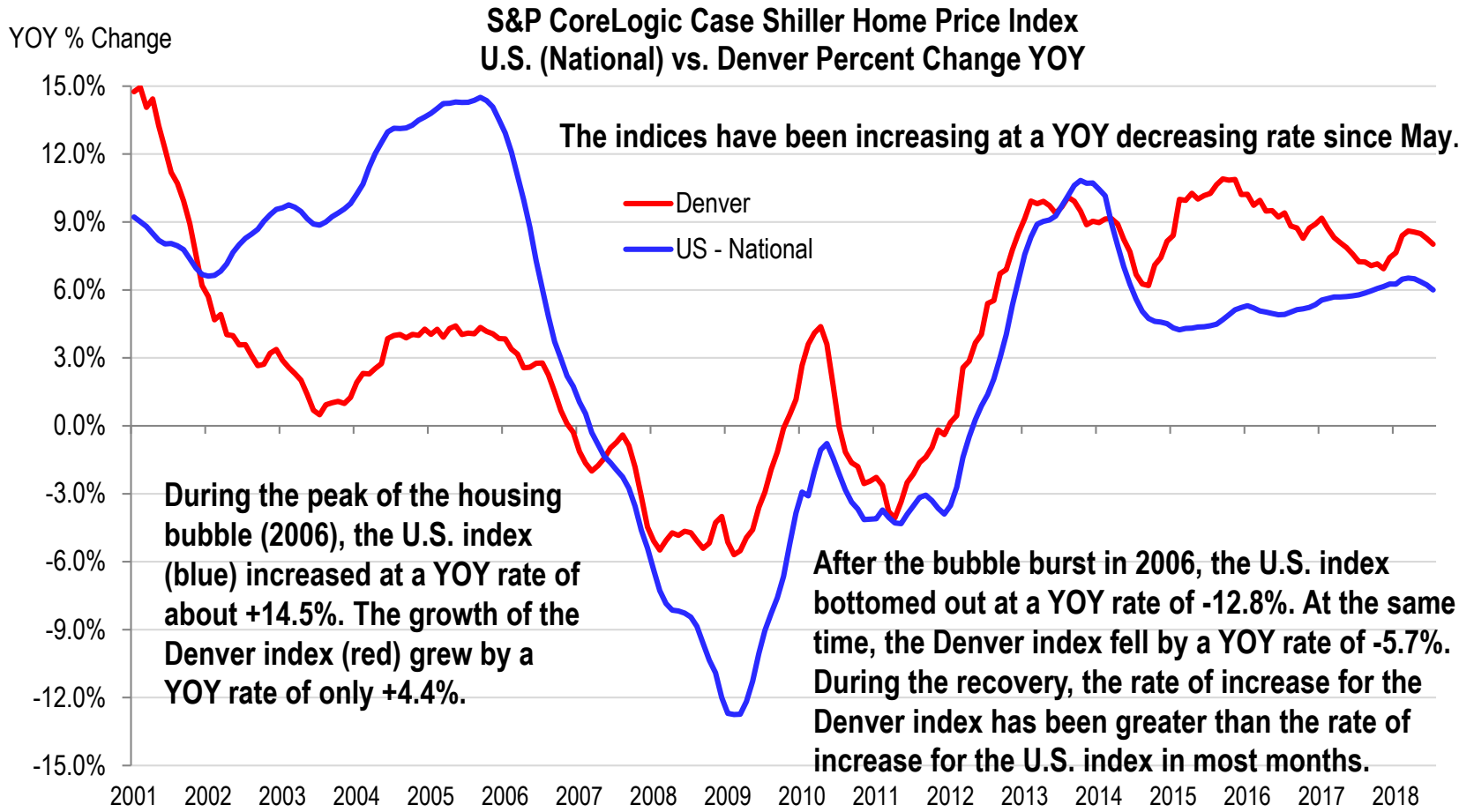
## National vs. Denver Index Value



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

# Case Shiller Home Price Index

## National vs. Denver Rate of Change



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



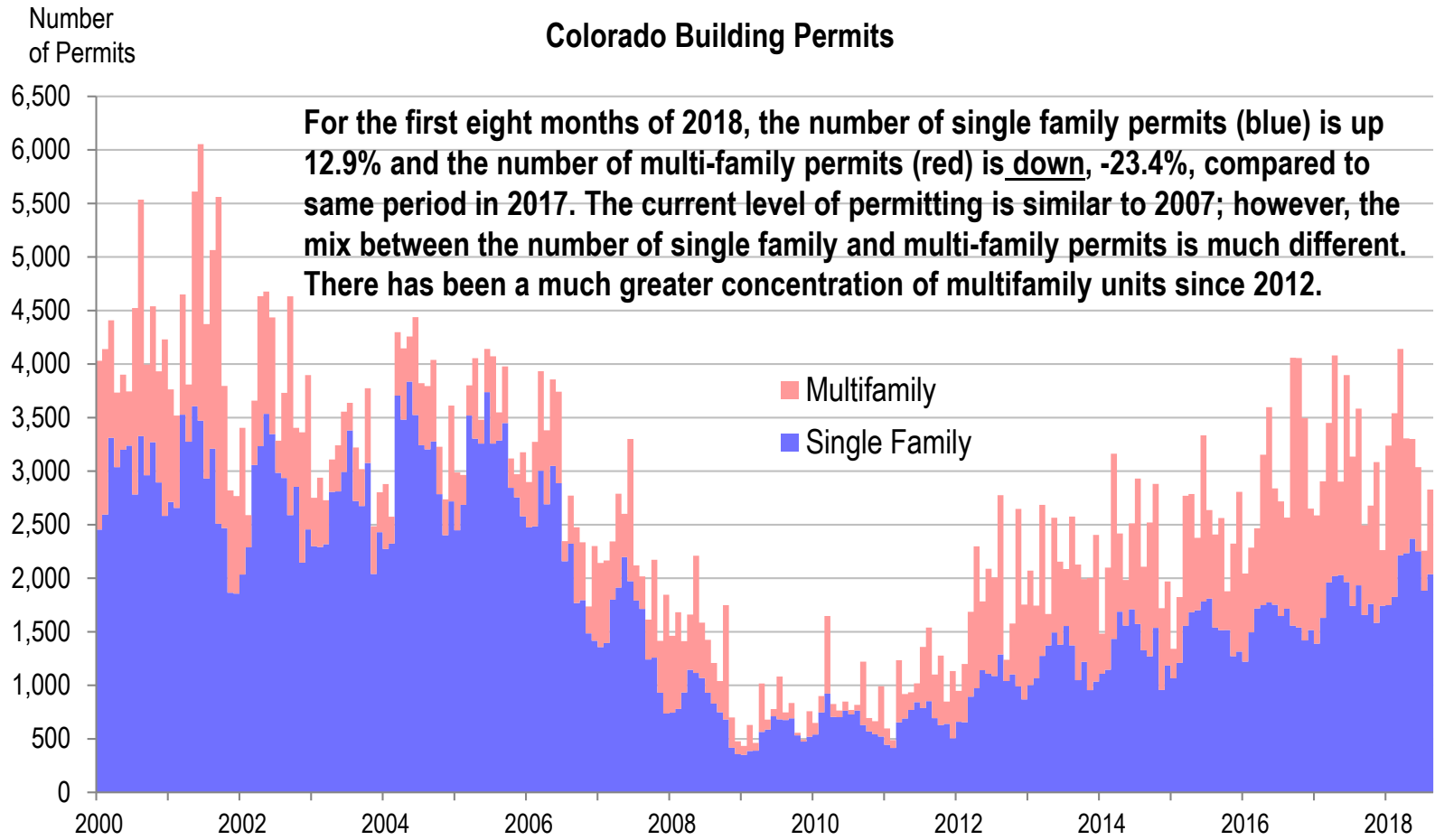
# Housing

The word on the streets is that the Colorado housing market is beginning to slow in some neighborhoods. The Case Shiller indices for Colorado and the U.S. have increased at a decreasing rate for May, June, and July.

Is this an anomaly or the beginning of a trend?

# Colorado Residential Building Permits

## Units



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



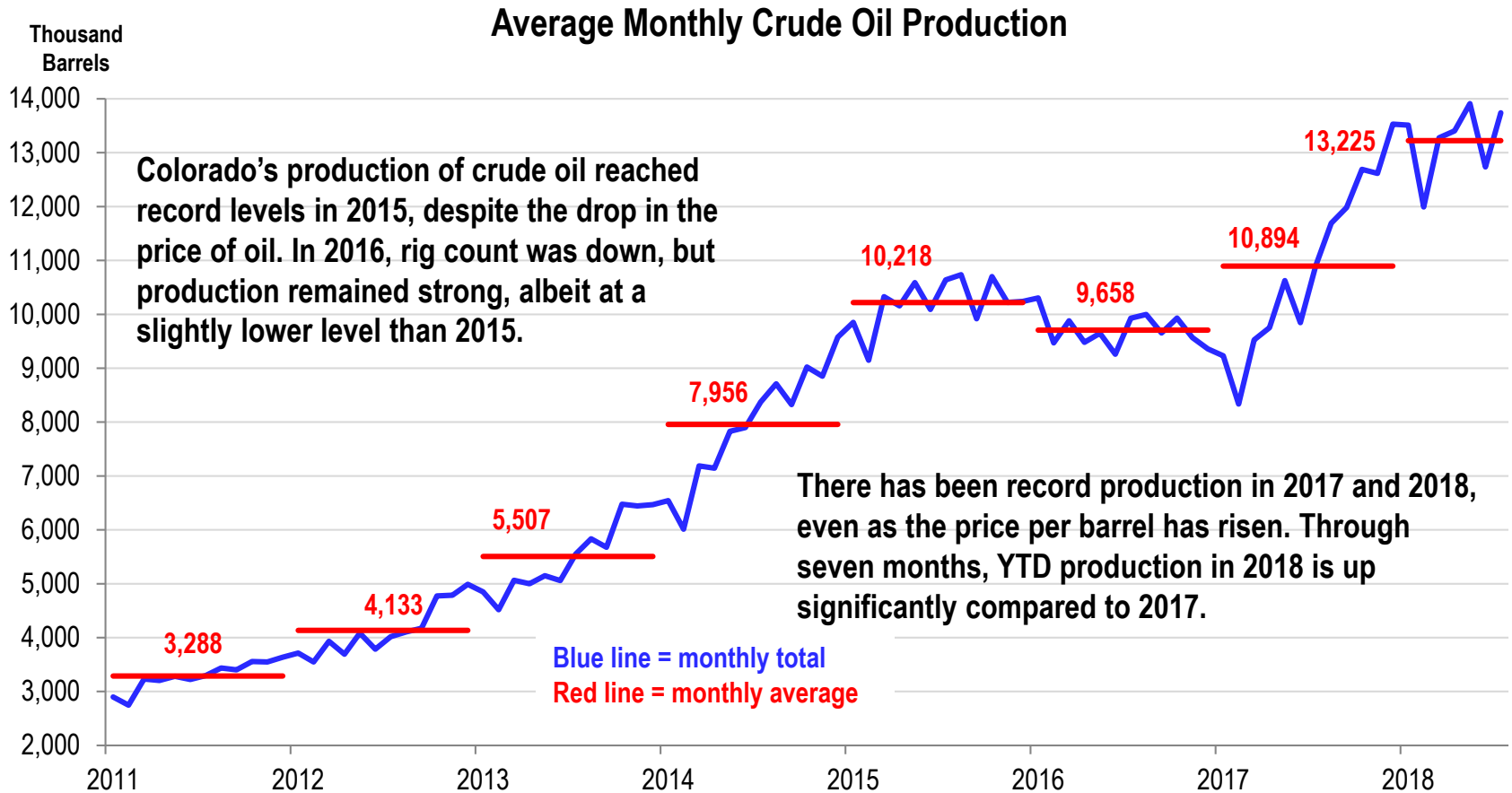
# The Colorado Economy – Current Situation

## Oil Production and Prices and DIA Passengers



# Average Monthly Field Production of Crude Oil

## 2011 to 2018 (Thousand Barrels)

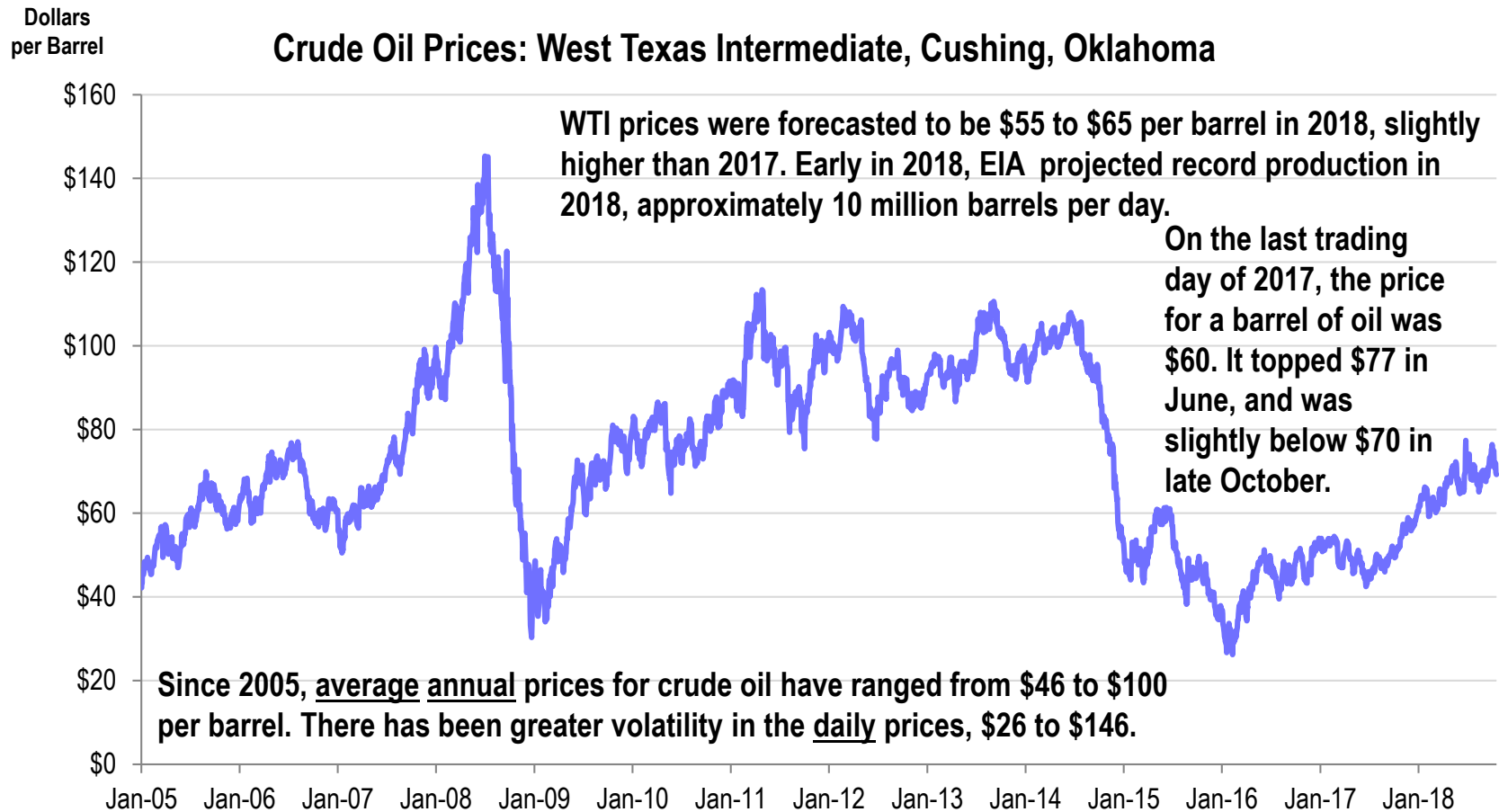


Source: EIA, cber.co.

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

# Crude Oil Prices

## West Texas Intermediate

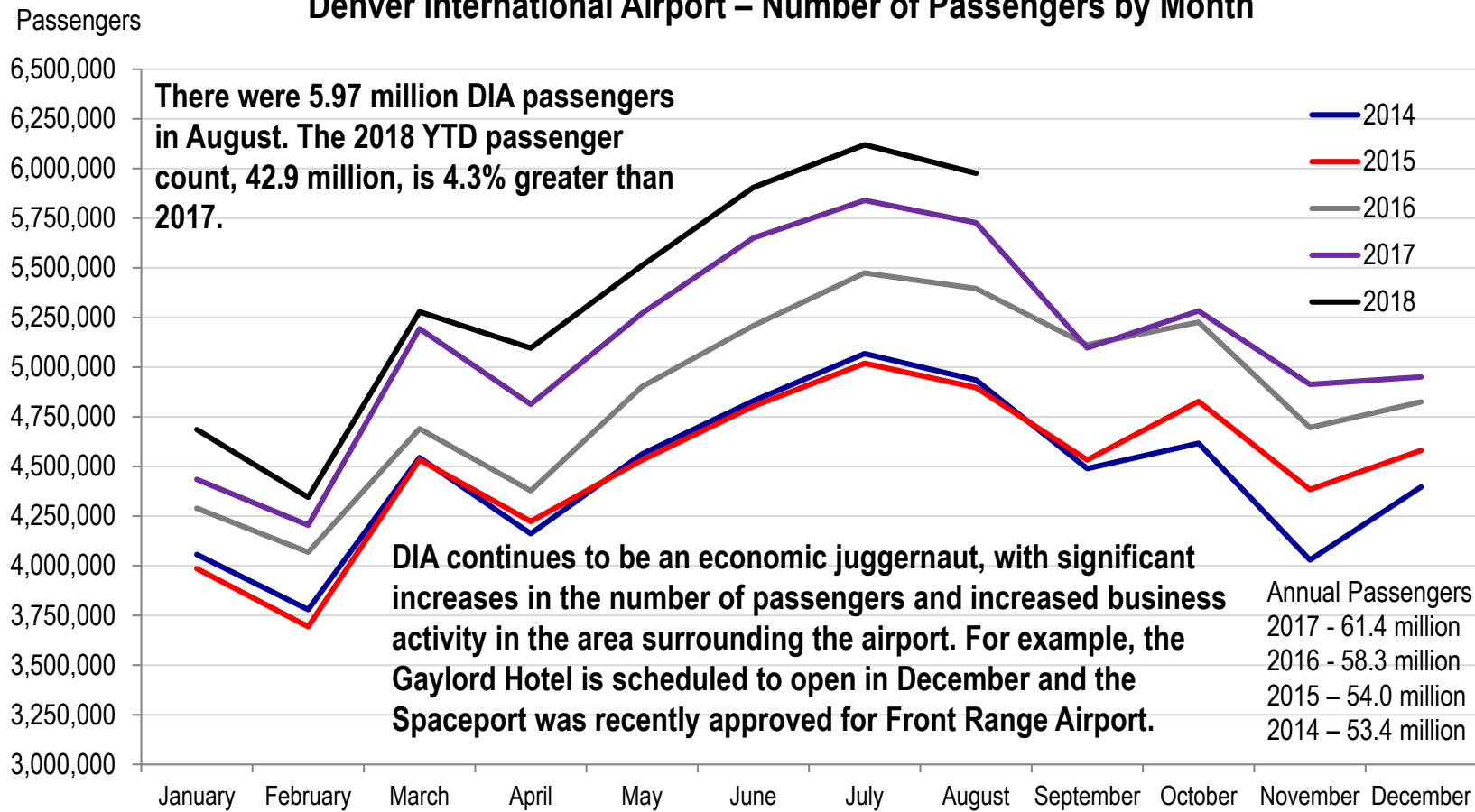


Source: FRED, EIA, cber.co.

# Denver International Airport

## Passengers

Denver International Airport – Number of Passengers by Month



Source: FlyDenver.com, cber.co.



# The Colorado Economy

## Summary

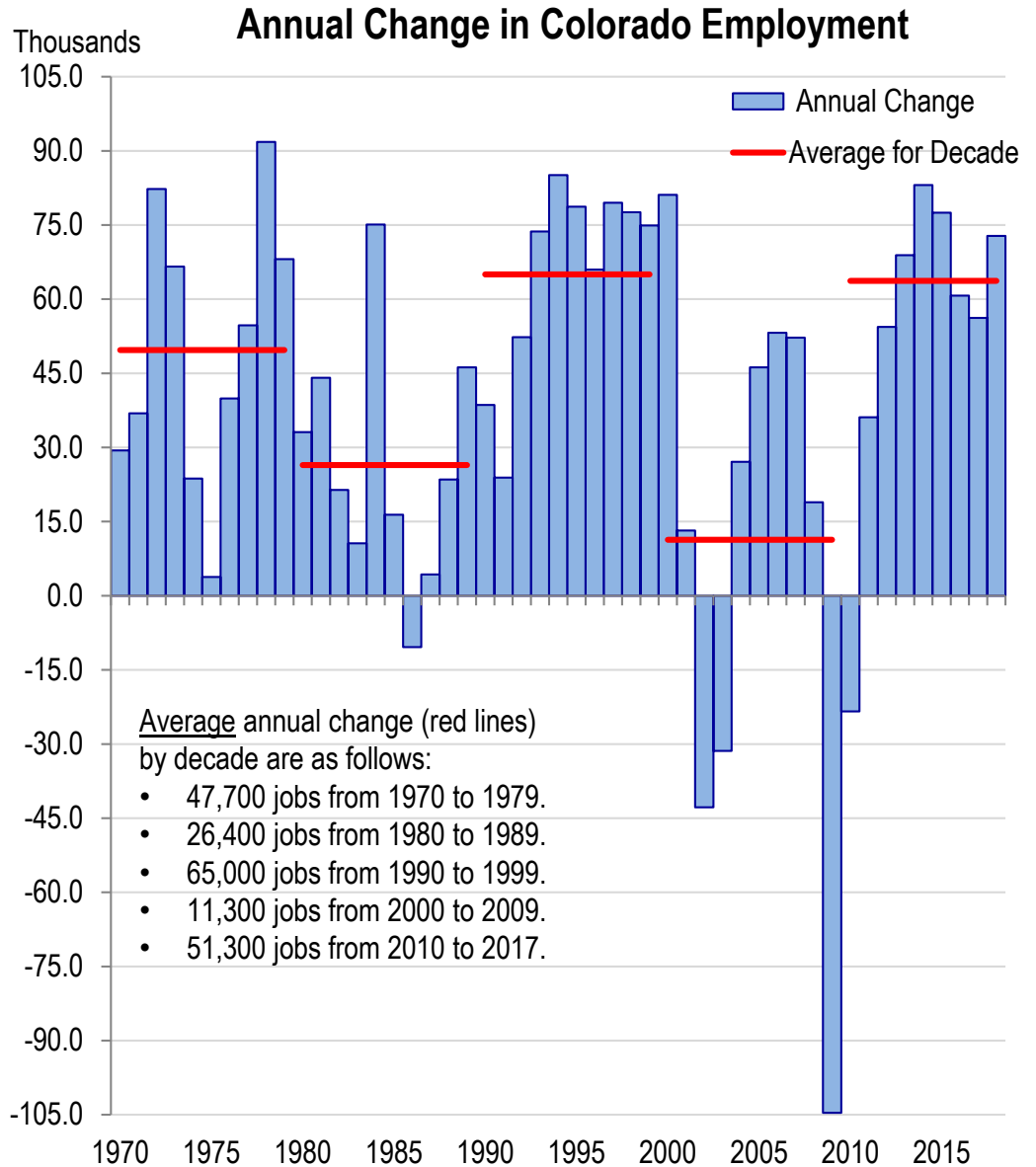
# Annual Employment Change in Colorado

Average employment for the first nine months of 2018 is 73,700 jobs greater than the same period in 2017. The number of jobs increased at a rate of 2.9%.

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

The cber.co forecast for 2018 called 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 when preparing their 2018 forecasts.

On average, employment for the first 9 years of this decade has increased at an average rate of 63,700 jobs per year.



Source: Bureau of Labor Statistics, cber.co.



# Summary

## Colorado

**The U.S. economy is on solid footing. This provides the foundation for continued robust growth in the Colorado economy. As always, there are many positives (left column) as well as headwinds (right column).**

### **Positives**

- Solid and broad-based job growth.
- 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 supported stronger than expected job growth in 2018.
- Indirect and induced job growth resulting from the creation of primary jobs.
- Strong consumption.

### **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.
- Housing has become more unaffordable and unattainable for newcomers and first time buyers.
- The state has allocated insufficient funds to support maintenance for its transportation infrastructure.
- The structure of the economy is evolving. This should be analyzed regularly to understand the changes.
- The downward trend of the Philadelphia Fed Leading Index for Colorado should be monitored.
- The construction market may have reached a plateau.

**There will be new leadership in the executive and legislative branches of the state government in January 2019. In addition, there are a several initiatives that will have an impact on the performance of the state economy.**



## cber.co Review of Colorado Employment Data through September 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).  
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### 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, and Broomfield Economic Development Corporation. Horvath has also been the lead for the photonics/electronics cluster in OEDIT’s early stage and proof of concept grant program.