



cber.co Colorado Economic Review Through First Half of 2016

Colorado-based Business and Economic Research
Prepared
July 27, 2016

Overview of Economic Review

This chartbook provides a series of graphs, tables, and discussions that review changes in the global, U.S. and Colorado economies. The global economy continues to be fragile, while the U.S. and Colorado economies are on more solid footing. Based on data through the first 6 months, the state is on track to add 68,200 jobs in 2016. This review is divided into the sections listed below.

Global and United States Economy

- Global and United States GDP
 - Gross Domestic Product
- United States Economy
 - Labor
 - Inflation, Financial Markets, Corporate Profits and Price of Oil
 - Non-Manufacturing, Manufacturing, Retail, and Savings
 - Construction and Housing
 - Summary

The Colorado Economy

- Gross Domestic Product and Inflation
- Labor
- 2016 Colorado Employment by Performance Category
- Focus on Key Industries in the Volatile Category
- DIA and Auto Sales
- Construction and Housing
- Summary



The Global and United States Economy

Global and United States Economy Over the Past Month...

Over the past two months, there has been an abundance of chaos in the United States. From an economic perspective very little has actually changed.

International

The major story was Brexit, the referendum where the U.K. voted on June 23rd to leave the E.U.

Some economists expected the sky to fall. So far it hasn't.

At this point, the only thing that is certain is the issue won't be fully resolved for years.

In late July, the International Monetary Fund (IMF) lowered its global forecast, in part due to the outcome of the Brexit vote.

United States

In June, the BLS reported the U.S. added only 38,000 jobs in May. In July, that dismal number was revised downward to 11,000 jobs. Time will tell if that downward adjustment was appropriate. On a brighter note, it was reported that 287,000 jobs were added in June. Go figure?!?!

Janet Yellen announced the Federal Reserve would push back interest rate increases because of uncertainty caused by Brexit and the recent jobs report.

As a result of the Brexit vote, the depressing May jobs report, and Yellen's vote of no-confidence, the equities markets went bonkers for a couple of weeks.

Summary - As July rolls to a close, we see that the IMF is less optimistic about the future, Brexit has been put on the back burner - temporarily, the equities markets have regained their loses and reached a new peak, the Fed is now talking about secular stagnation, and the country survived the RNC and DNC. How ugly will the campaign be?



Global and United States Economy Gross Domestic Product

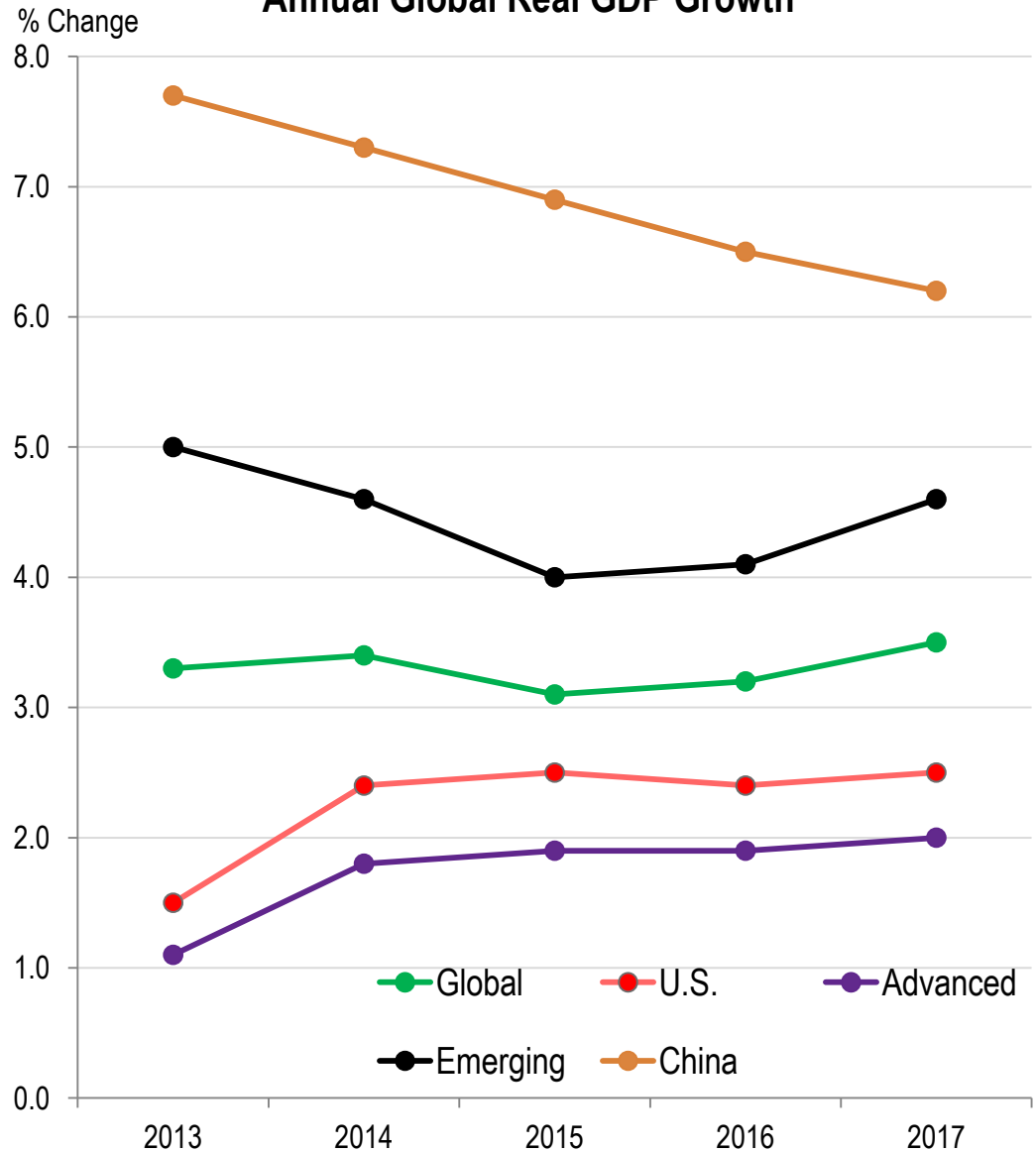
Global Real GDP Growth



In April the International Monetary Fund updated its global forecasts. The IMF forecasts for global, advanced economies, emerging countries, and U.S. GDP growth rates were lowered. Global GDP growth in 2017 will be slightly higher.

The IMF projected that global GDP growth (green) in 2016 would increase at a lower than anticipated rate because of slower GDP growth in China (gold), market volatility, and political developments throughout the world. The IMF expressed concerns about secular stagnation and deflation.

Annual Global Real GDP Growth



Source: IMF, April 2016. Note: these tables include the April IMF data. The July revisions are expected to be downward and minimal.

Real United States GDP Growth Quarterly

Annualized real GDP growth for the 1990s was 3.2% (green line). It was 1.8% for the 2000s (red line) and 2.1% from 2010 to 2015 (purple line).

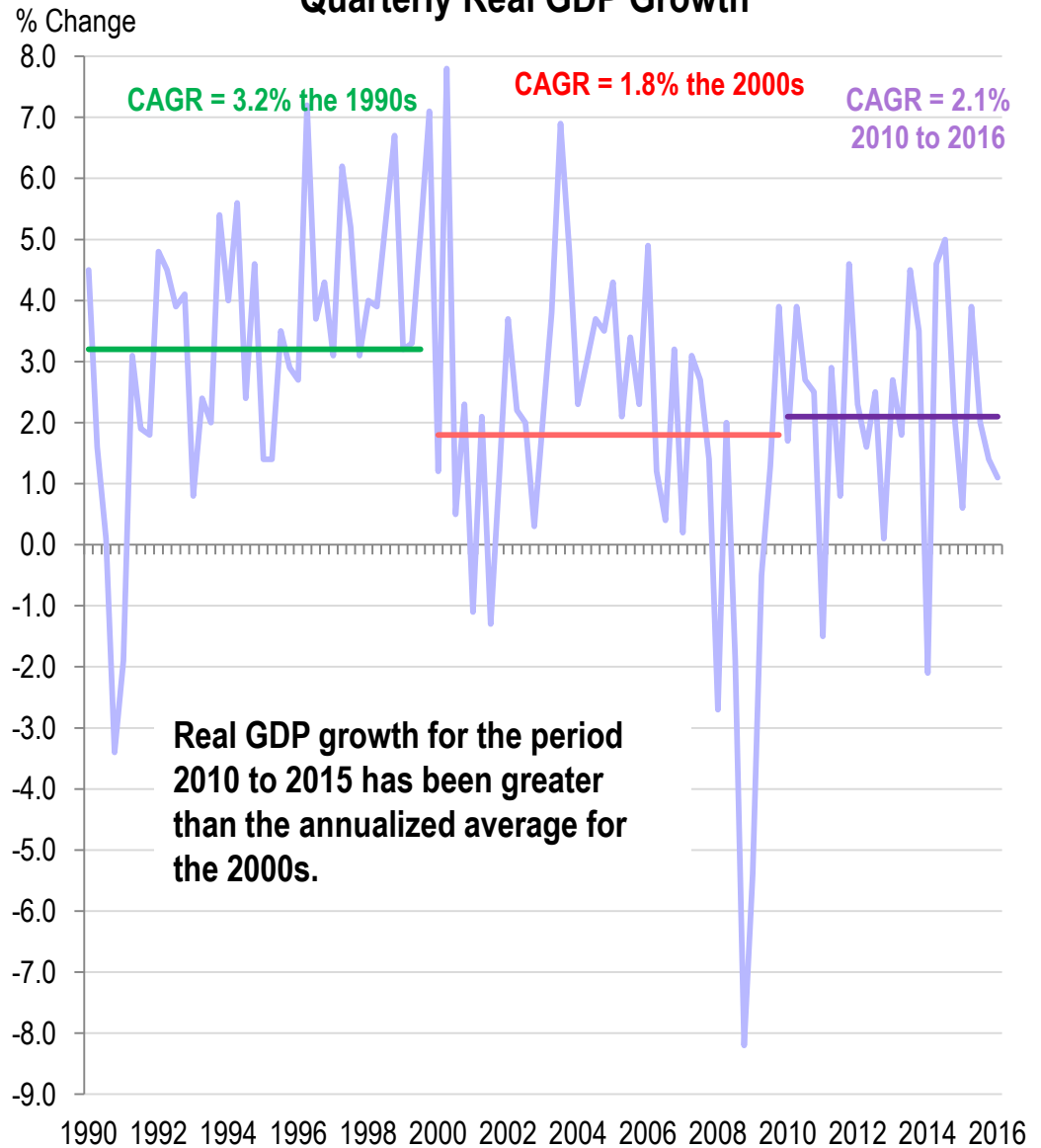
Real GDP growth for Q1 2016 was revised upward to 1.1%.

A survey conducted by the Philadelphia Fed projects 2016 Real GDP growth will be 1.7%. This is below the cber.co forecast (2.3 to 2.7% range).

Real GDP growth for recent years was:

- 2010 2.5%
- 2011 1.6%
- 2012 2.2%
- 2013 1.5%
- 2014 2.4%
- 2015 2.4%

Quarterly Real GDP Growth



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

● Secular Stagnation



Some economists have described the United States and global economies as being in a state of secular stagnation.

The Financial Times defines secular stagnation as a condition of negligible or no economic growth in a market-based economy.

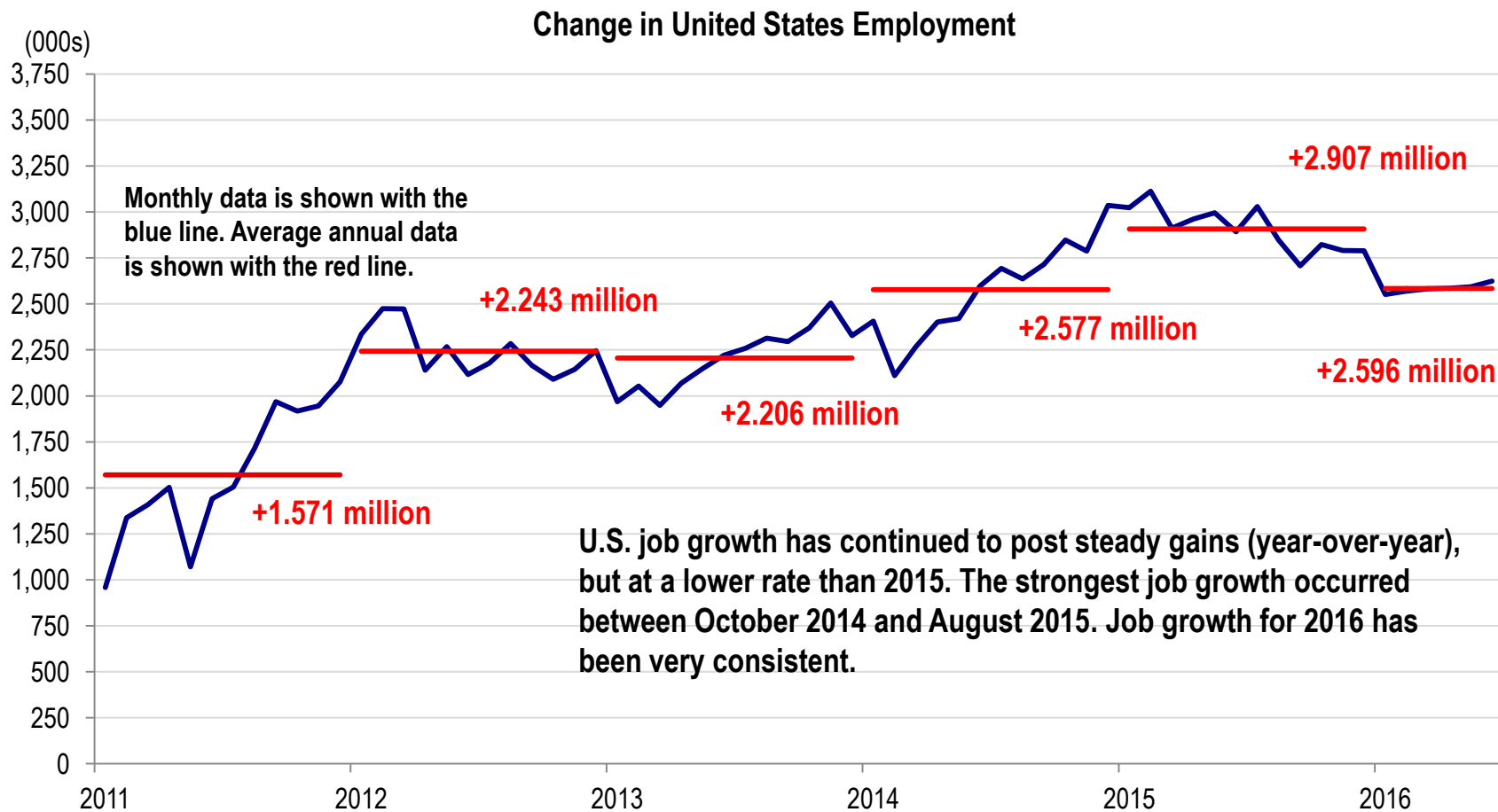
Unfortunately, this description succinctly describes the performance of the United States economy as it has slowly recovered from the Great Recession.



The United States Economy

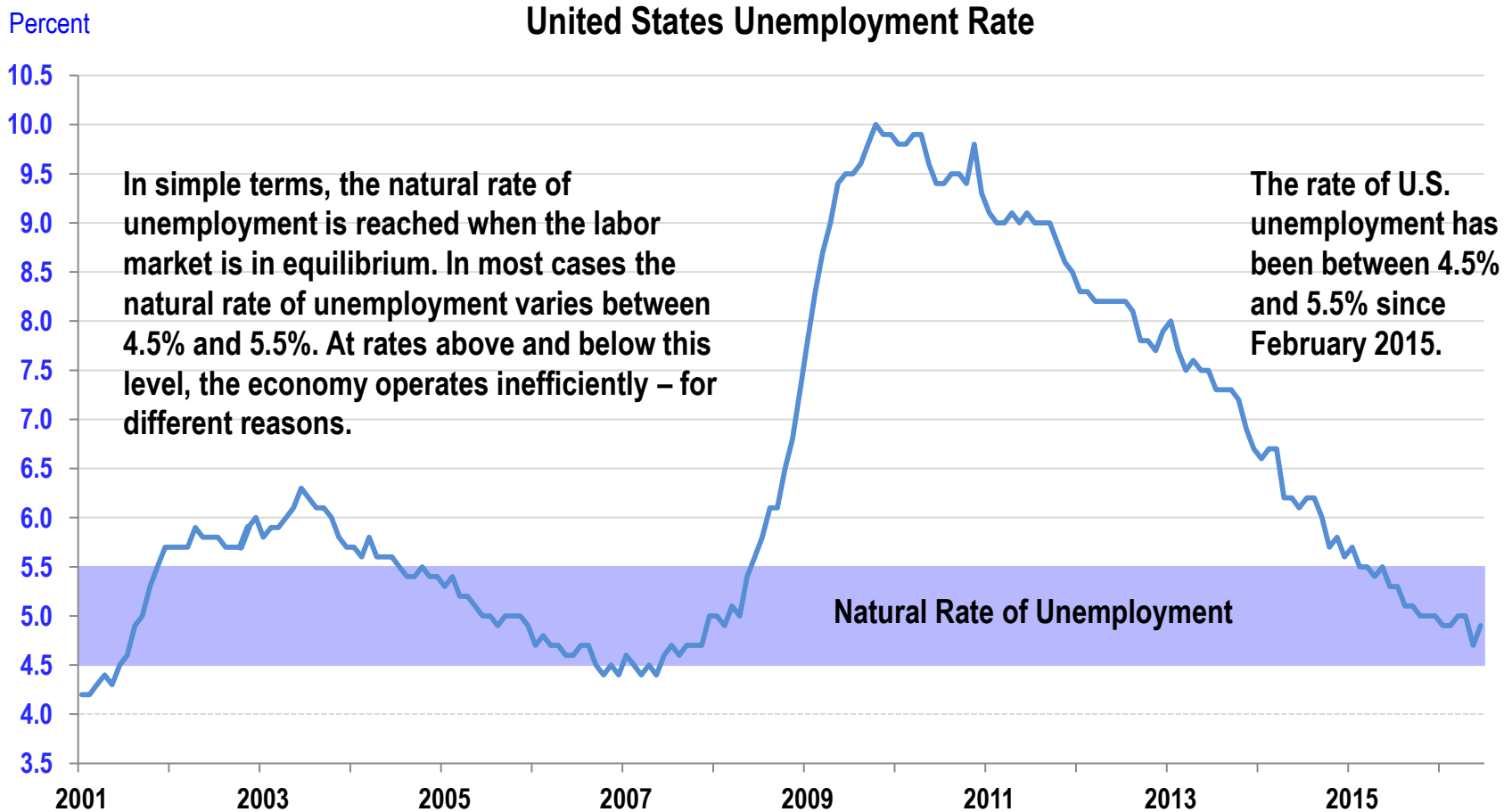
Labor

Change in United States Employment Year-Over-Year



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

United States Unemployment Rate



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

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● Labor Force Participation Rate

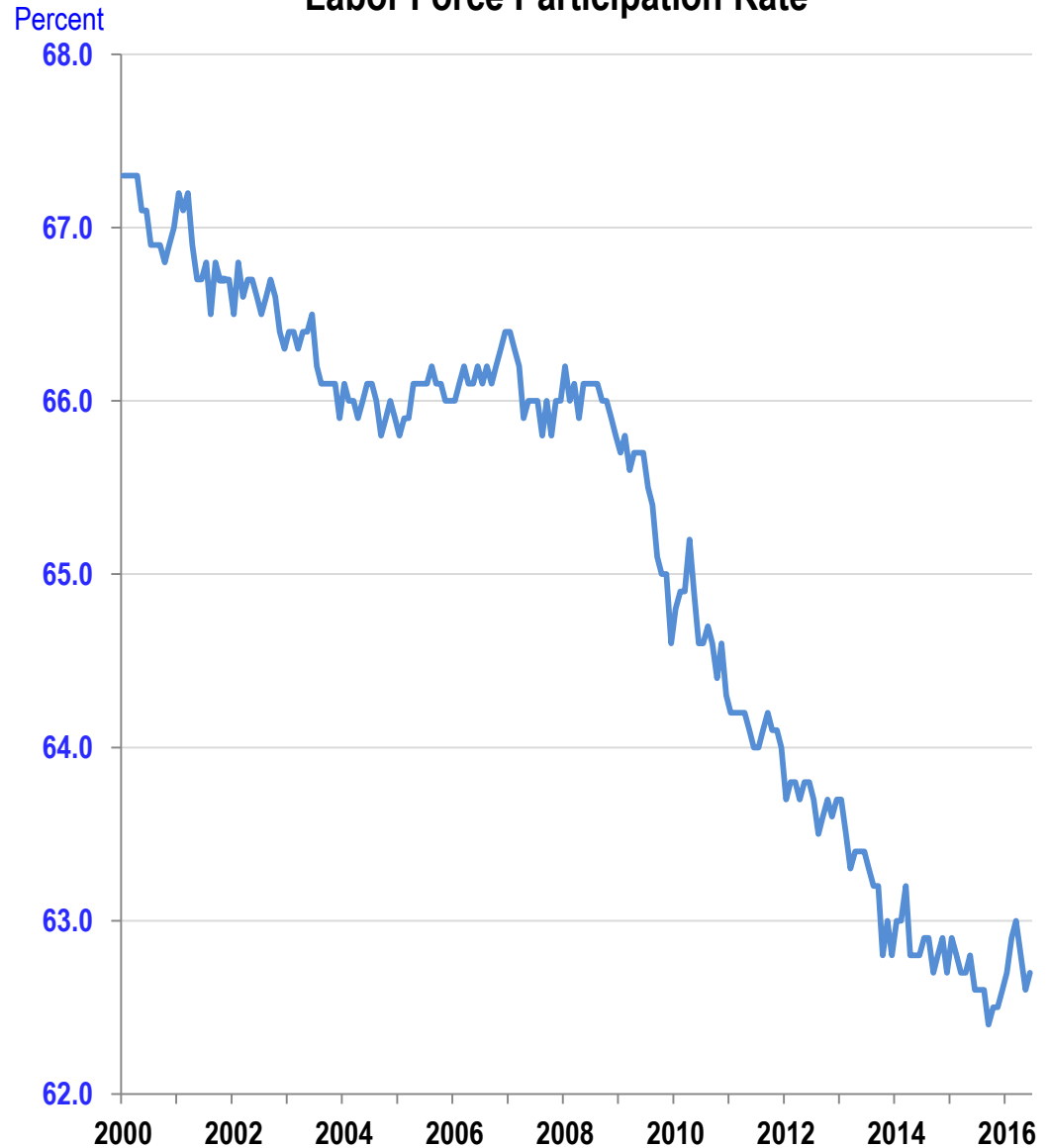


After peaking in 2000, the labor force participation rate declined until late-2013. During this decline the rate fell from 67.3% to 62.8%. It has since remained around that value (62.8%).

The decline in the labor force participation rate is the result of a structural change in the labor market, i.e. it is a change in demographics.

The Labor Force Participation Rate is the percentage of people eligible to participate in the labor force (either employed or actively looking for work) as a percentage of the labor force.

Labor Force Participation Rate



Source: Bureau of Labor Statistics, SA.

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● The Effect of Low Unemployment Rates and Reduced ● Participation Rates on Employment Growth



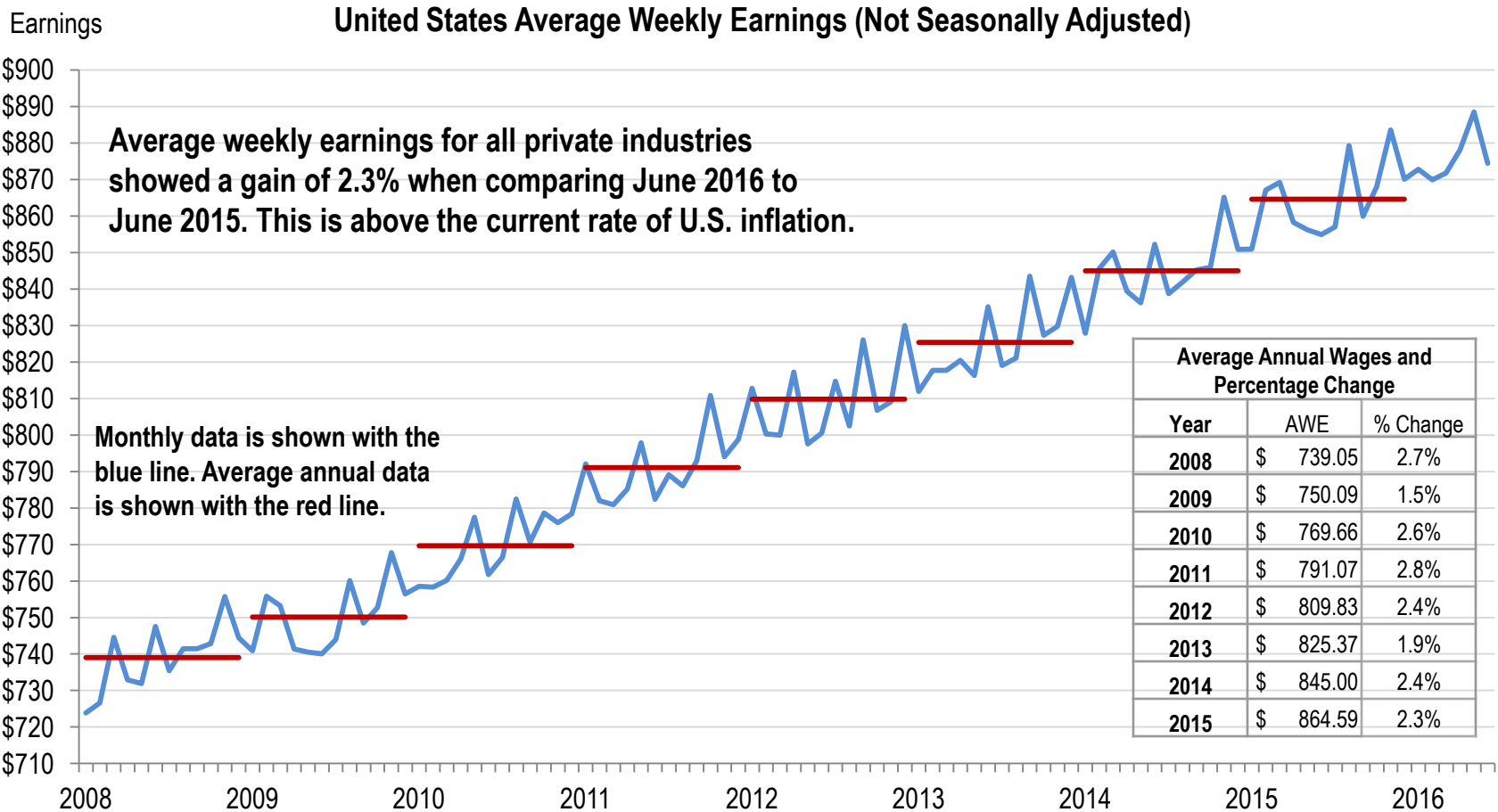
The previous charts show that:

- When unemployment rates are low, there are fewer available people to work.
- When participation rates are low, there are fewer people willing to work.

In turn, a company's sales may not increase if they cannot find quality workers to fill vacant positions. To meet demand, companies may be forced to:

- Invest in processes or capital expenditures to meet demand for their goods and services.
- Raise wages or increase other benefits.
- Outsource or offshore work.
- Allow employees to work overtime.
- Leave money on the table by not meeting the demand for goods and services or by selling inferior products or services.

United States Average Weekly Earnings of All Employees (Private Sector)

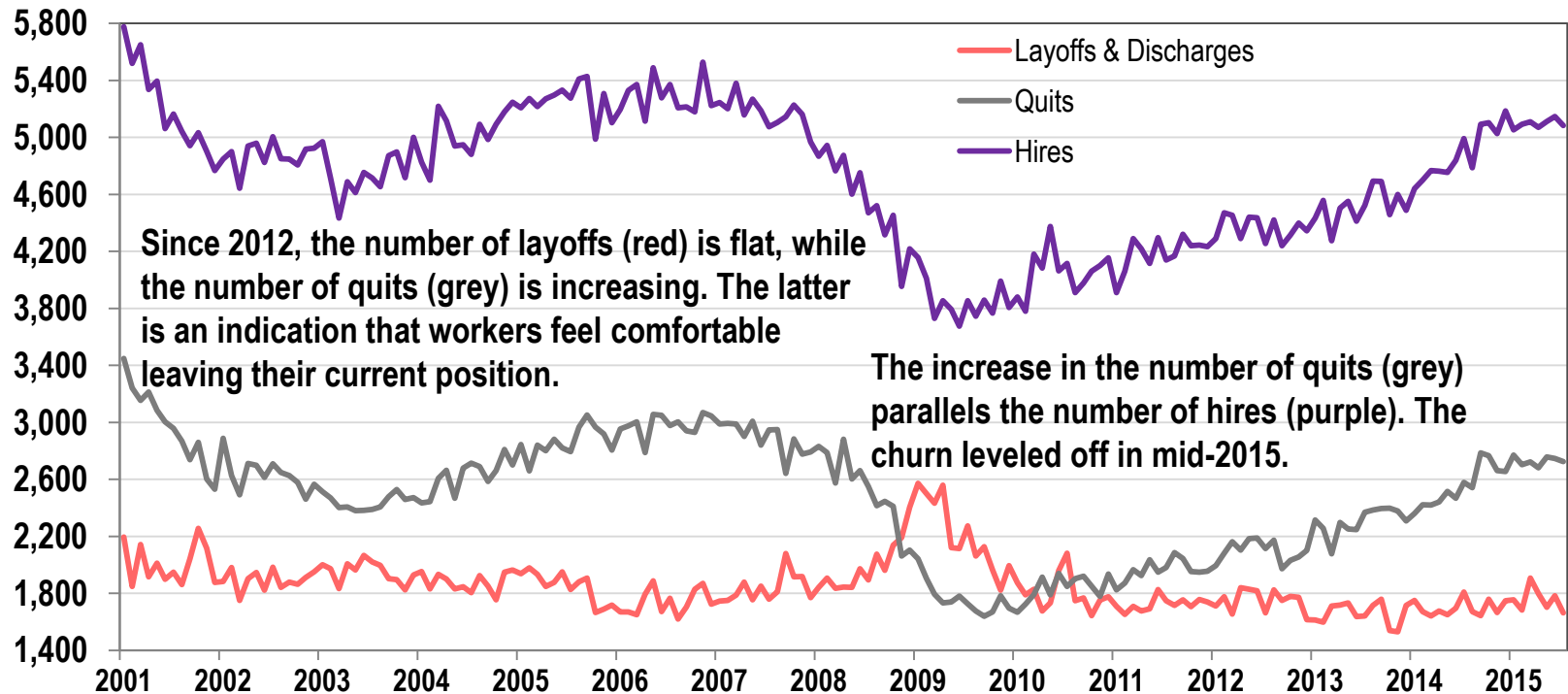


Source: Bureau of Labor Statistics, NSA, cber.co.

U.S. Hires, Layoffs/Discharges, and Quits

Hires, Layoffs/Discharges, and Quits

Thousands



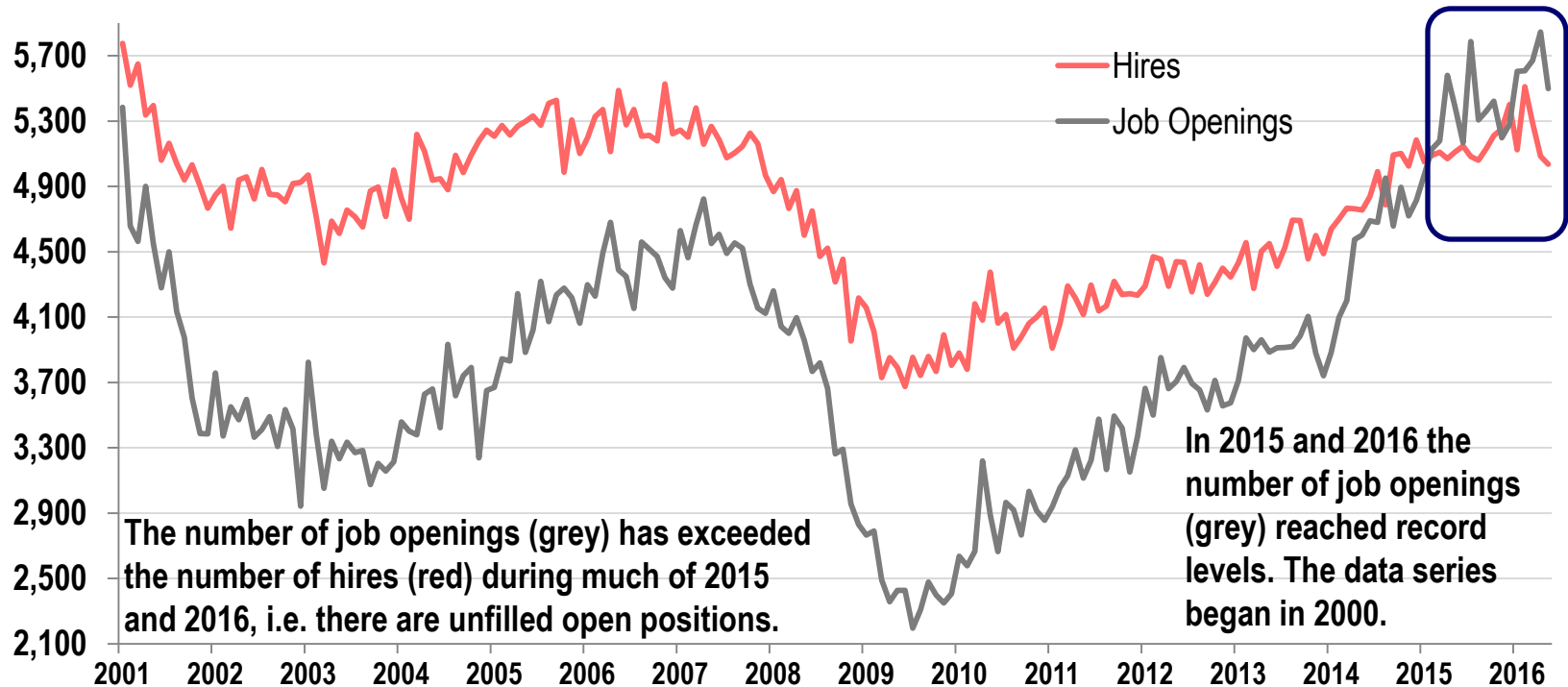
Source: Bureau of Labor Statistics, SA, cber.co.

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United States Job Openings and Hires

Job Openings and Hires

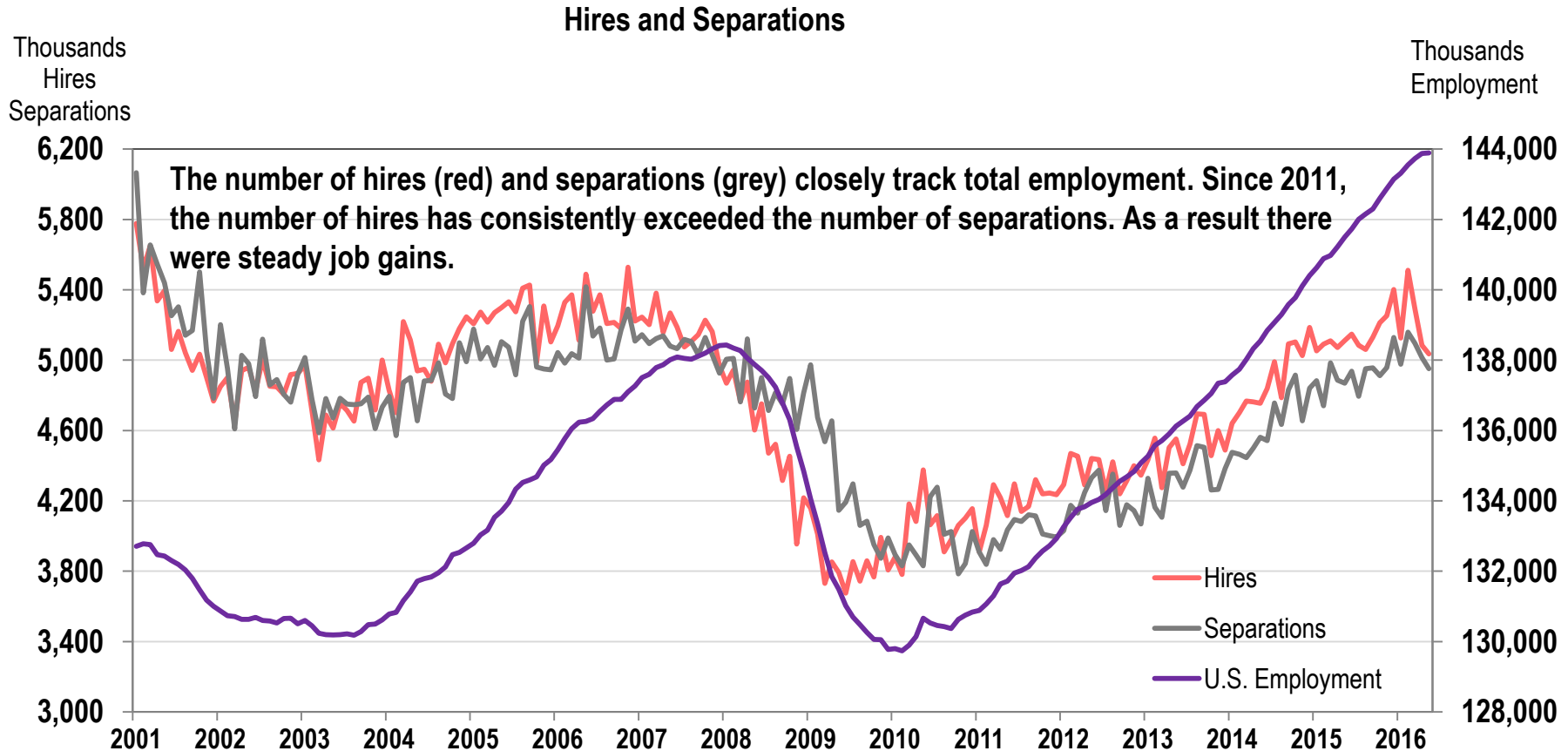
Thousands



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

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United States Hires and Separations



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



The United States Economy

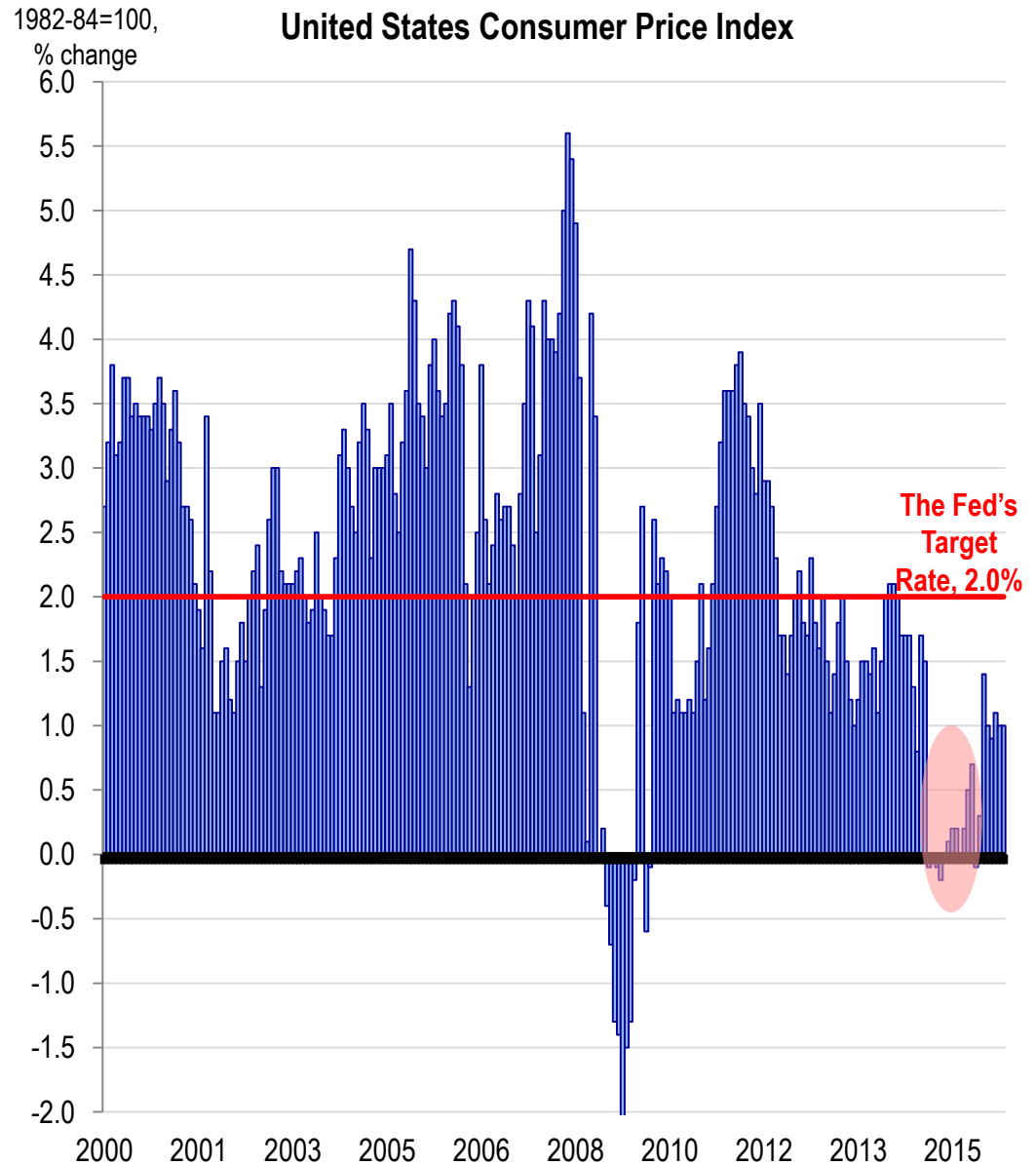
Inflation, Financial Markets, Corporate Profits, and Price of Oil

Consumer Price Index (CPI)

Lower fuel costs caused U.S. inflation, as measured by the CPI, to drop precipitously in 2015 (red oval).

Inflation will increase as the Fed raises interest rates (gradually), housing prices increase, gasoline prices rise, and wages increase.

It is the Fed's intent to manage inflation so that it approaches their target rate of 2.0%.

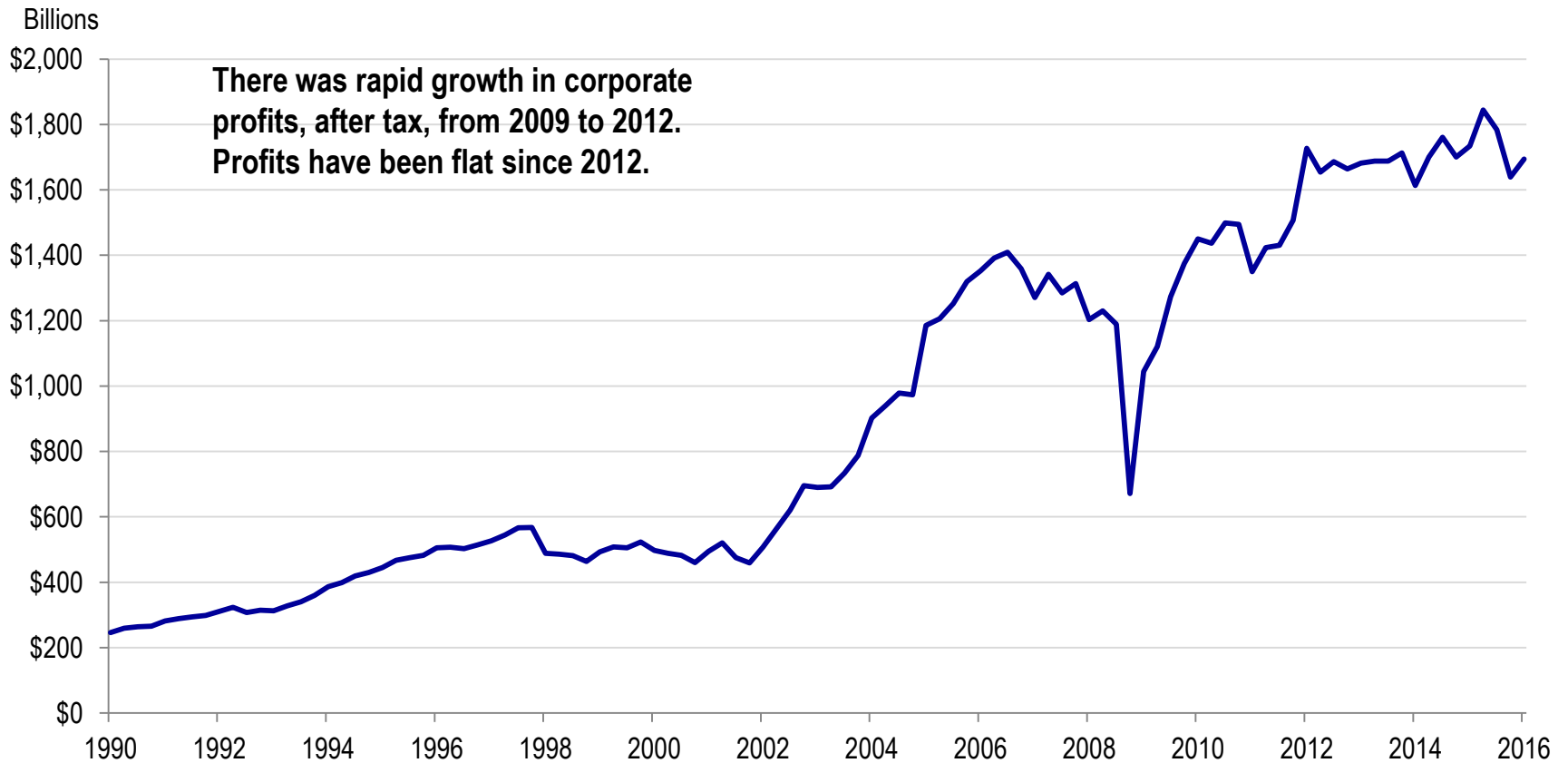


Source: Bureau of Labor Statistics, cber.co.

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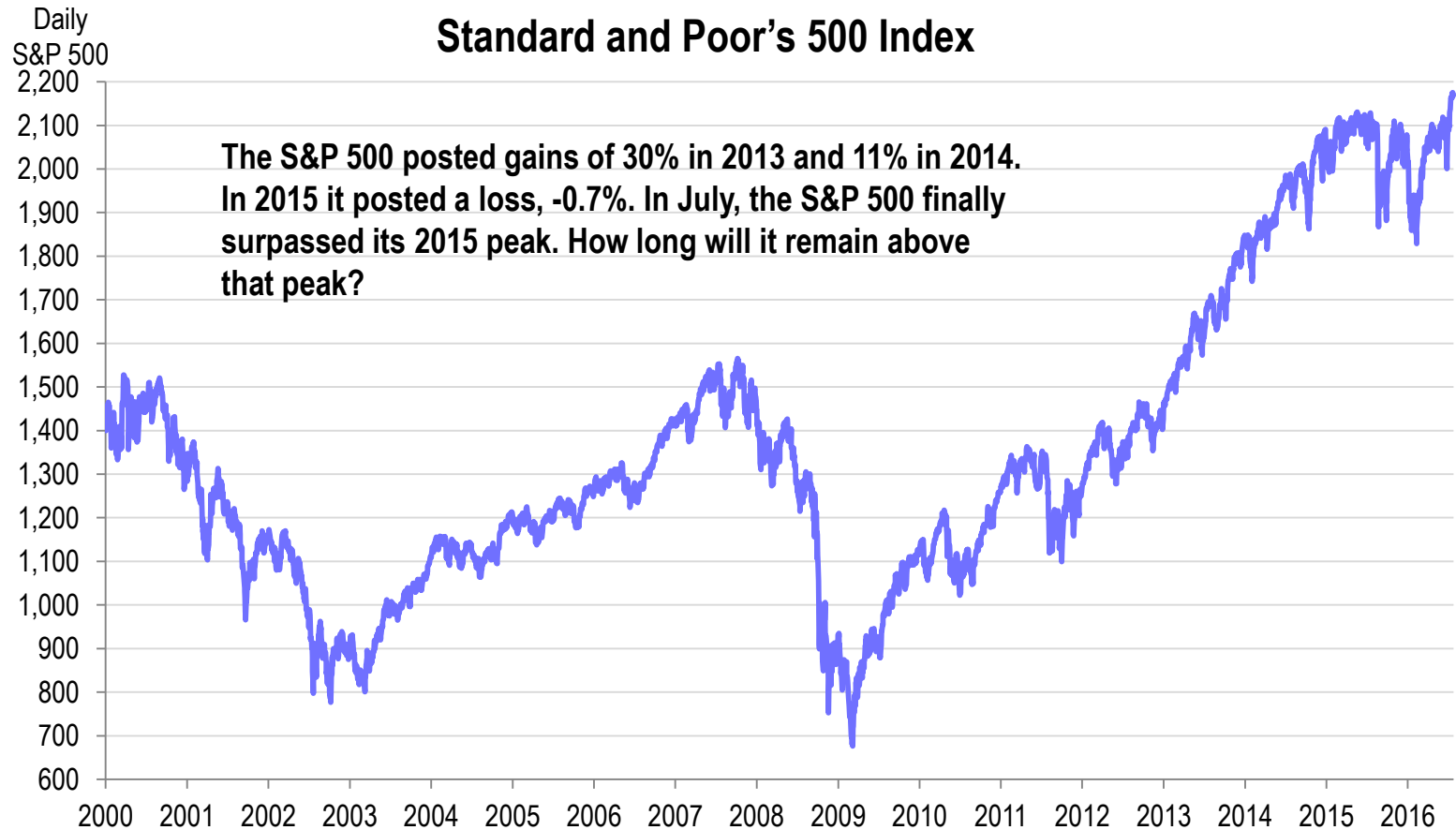
Corporate Profits After Tax (without IVA and CCAdj)

Corporate Profits After Tax



Source: FRED, BEA.

Standard and Poor's 500 Index



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

● CBOE Volatility Index

● VIX (VIXCLS)

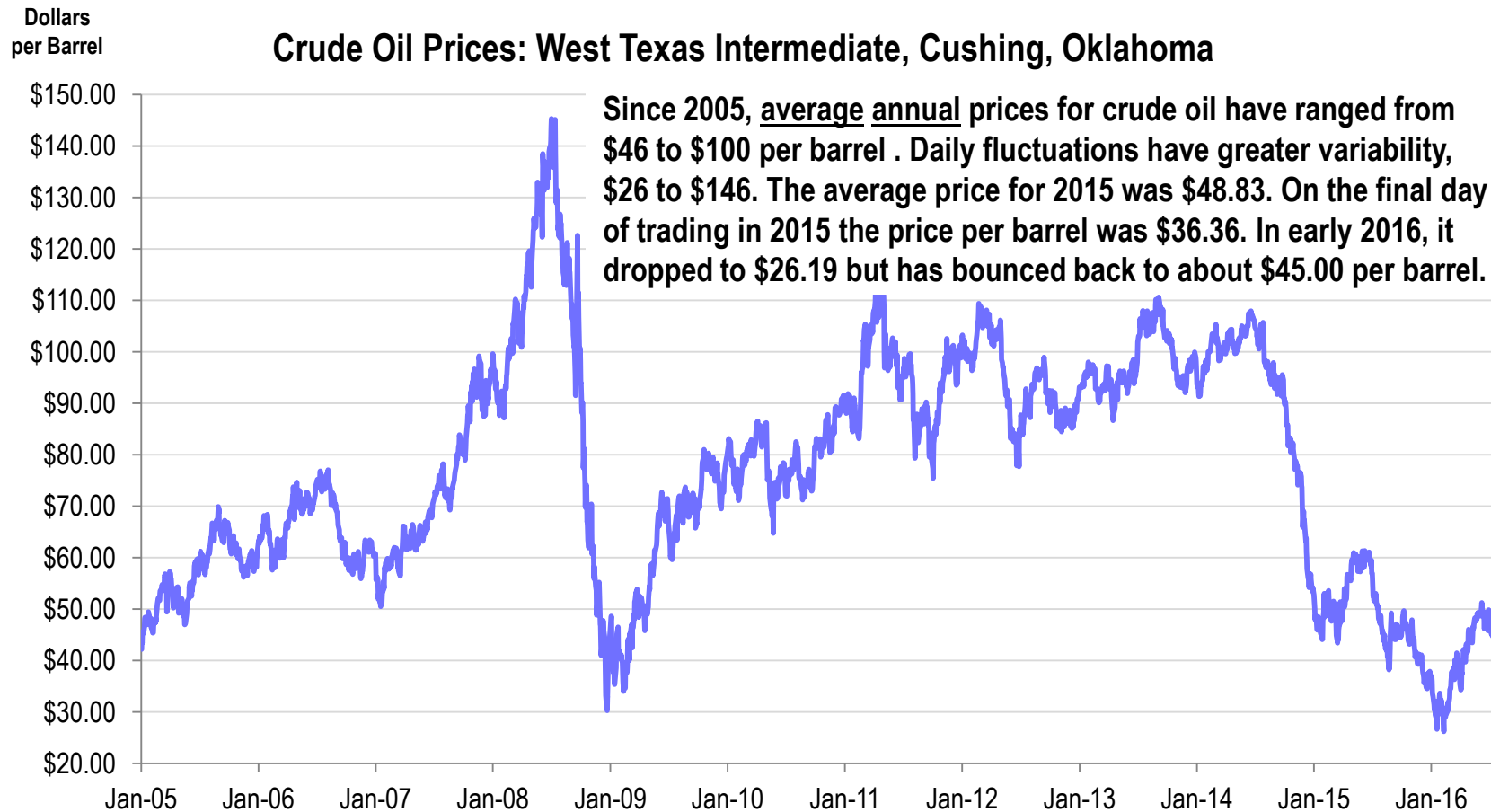
●



Source: FRED, CBOE, cber.co.

Crude Oil Prices

West Texas Intermediate



Source: FRED, EIA, cber.co.

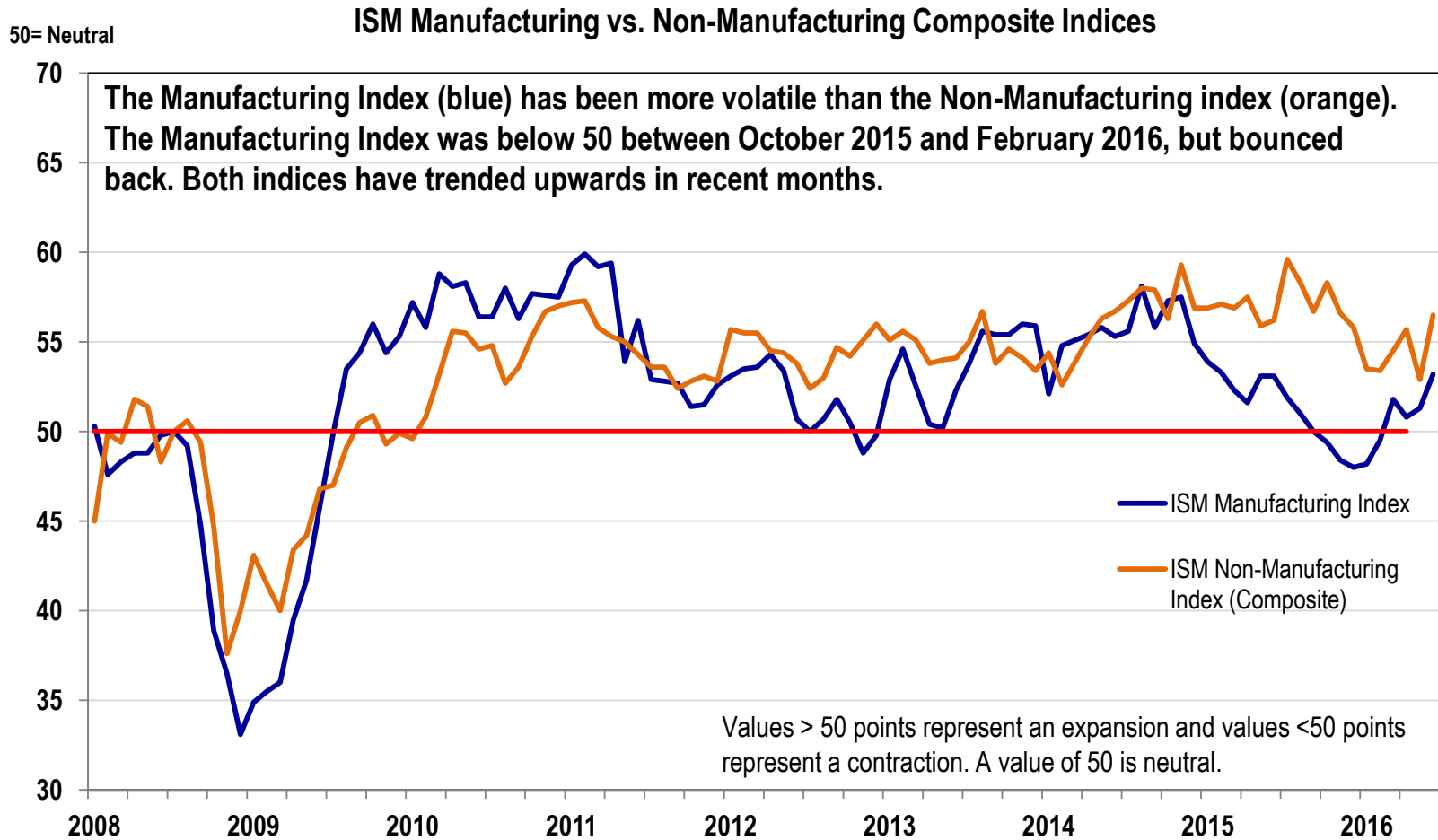


The United States Economy

Non-Manufacturing, Manufacturing, Retail, and Savings

ISM PMI Composite Indices

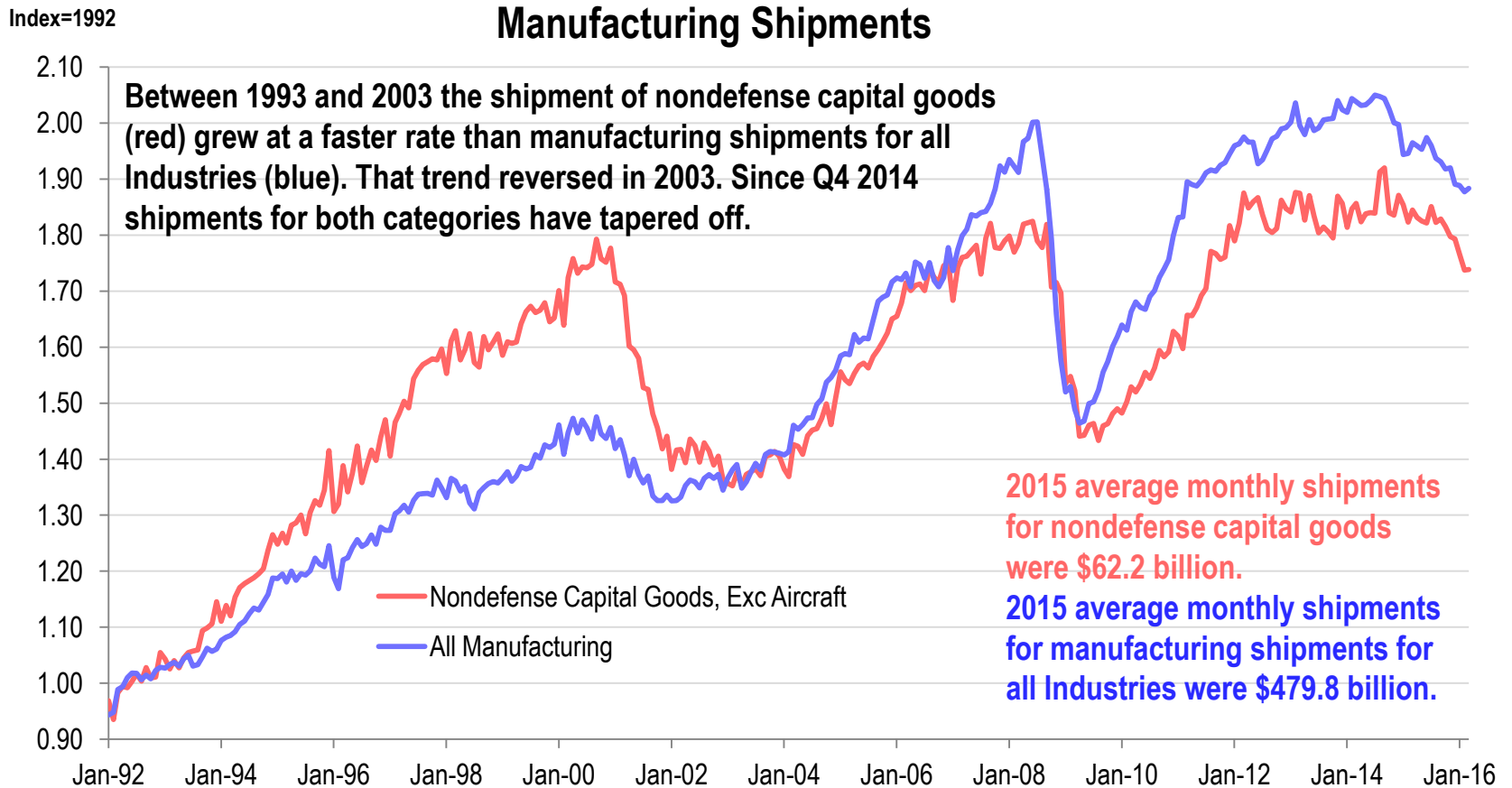
Manufacturing vs. Non-manufacturing



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

United States Manufacturing Shipments

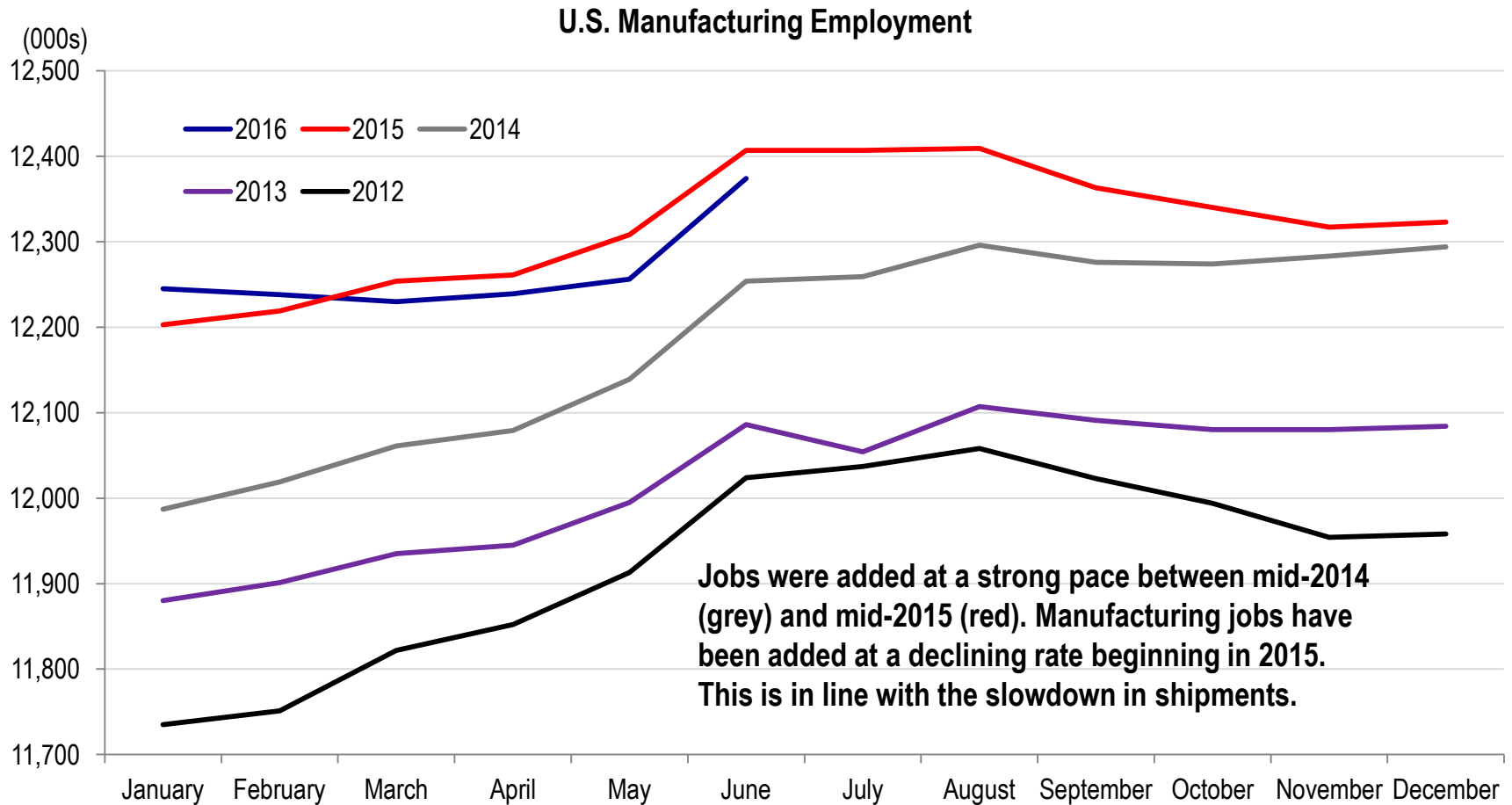
All Industries vs. Nondefense Capital, Excluding Aircraft



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

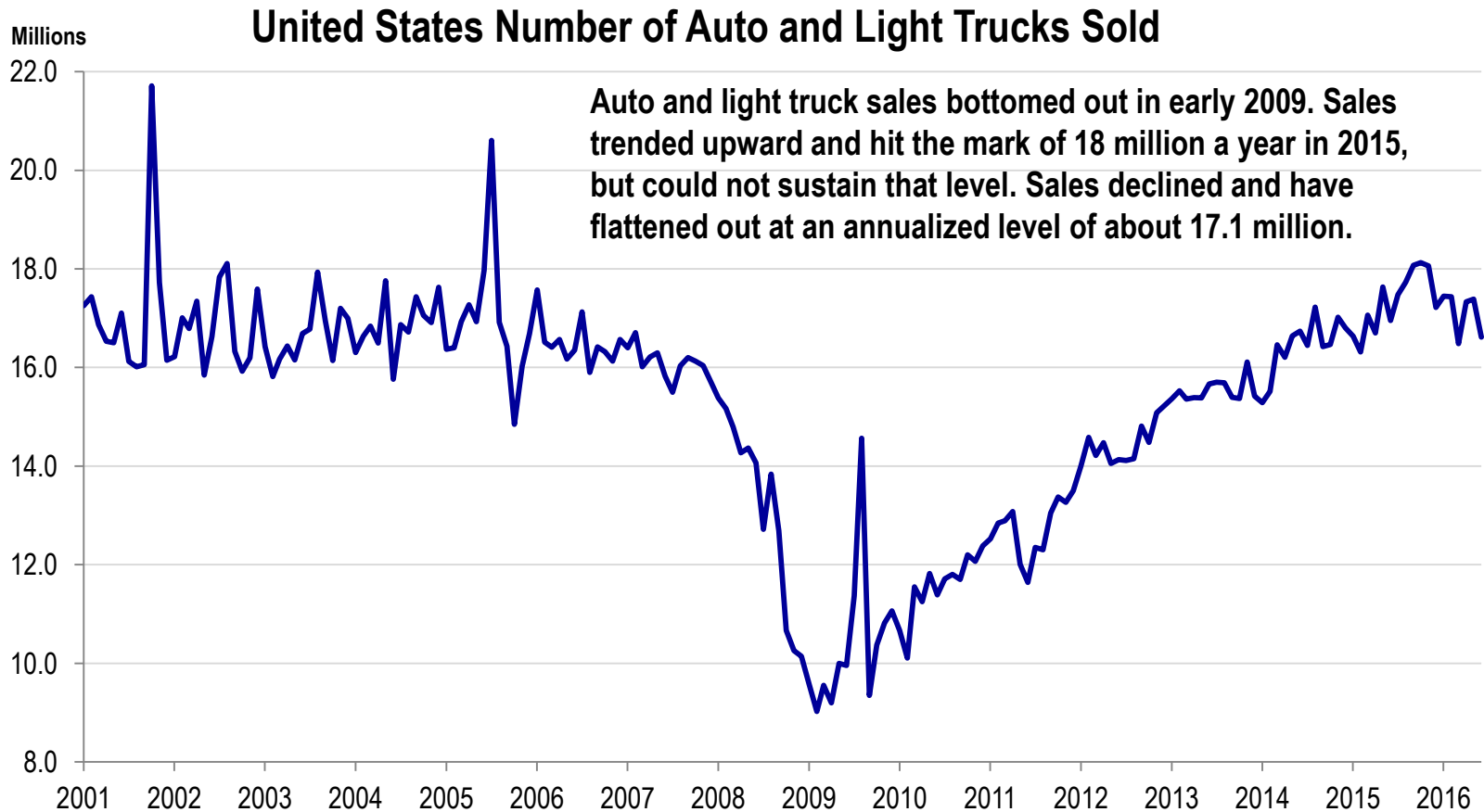
United States Manufacturing Employment

2012 to Current



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

U.S. Weekly Auto and Light Truck Sales

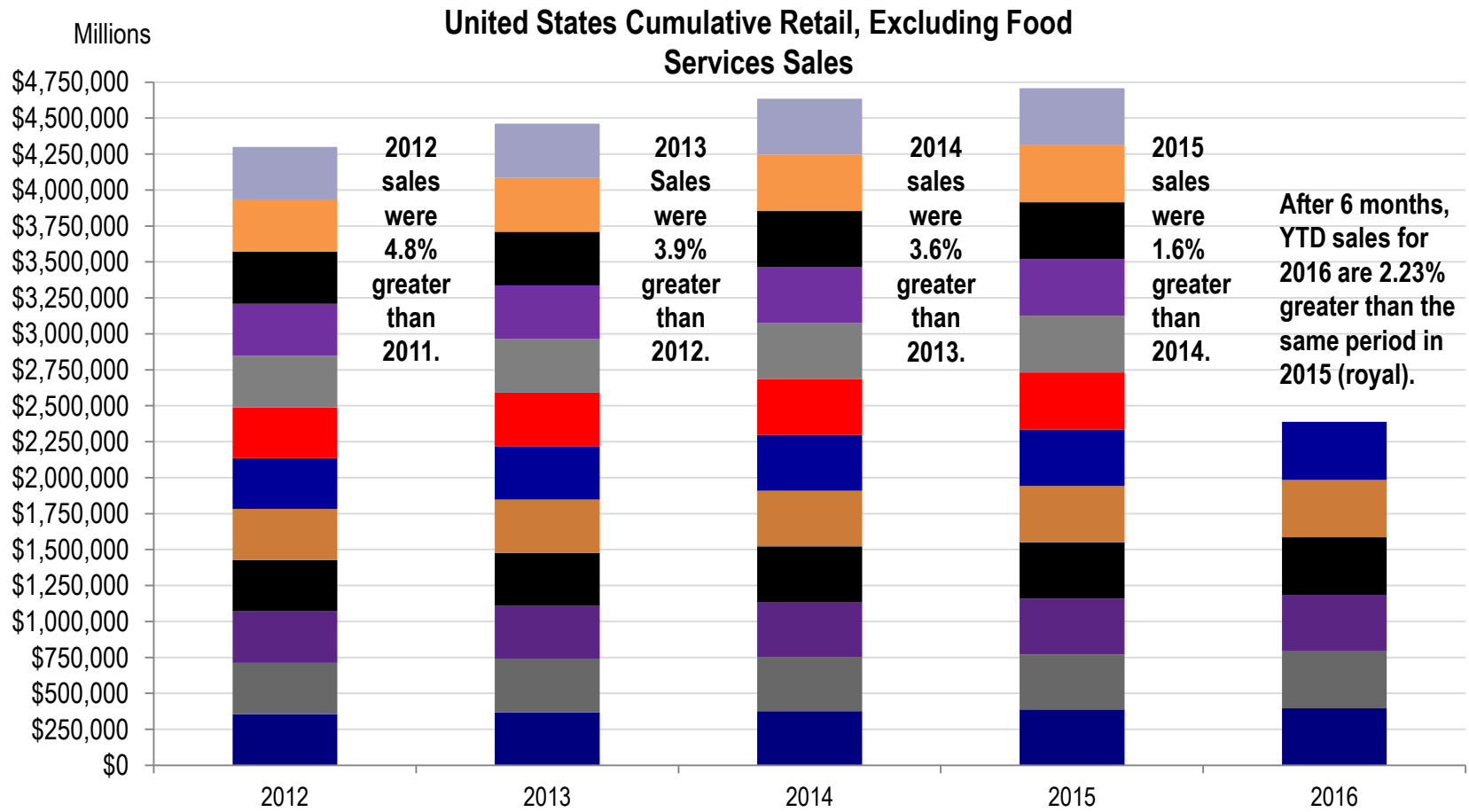


Source: FRED, BEA, cber.co.

Note: Seasonally Adjusted Annualized Rate.

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Cumulative Retail, Excluding Food Services Sales

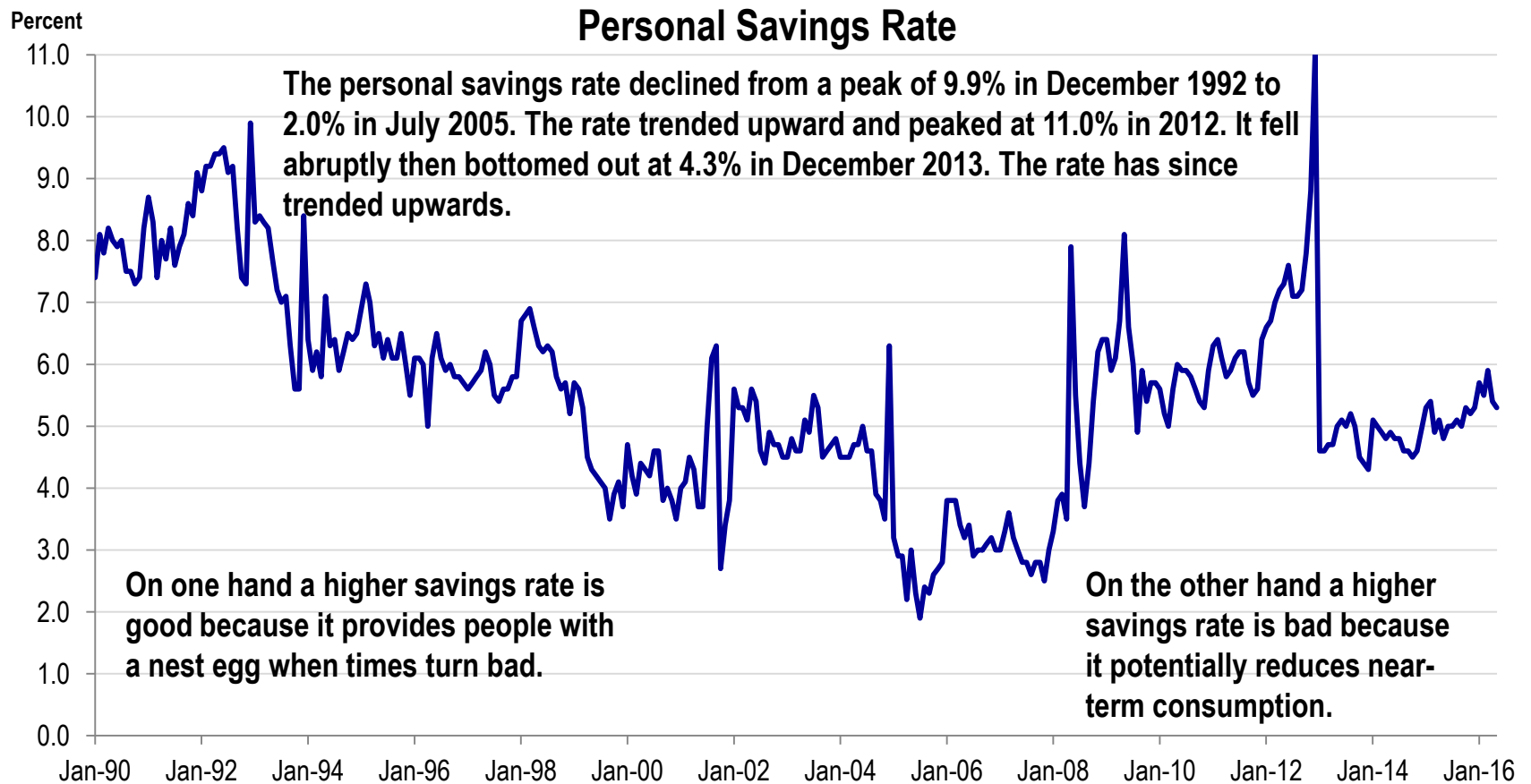


Source: U.S. Census Bureau, FRED, cber.co .

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

United States Personal Savings Rate

Percentage of Disposable Personal Income



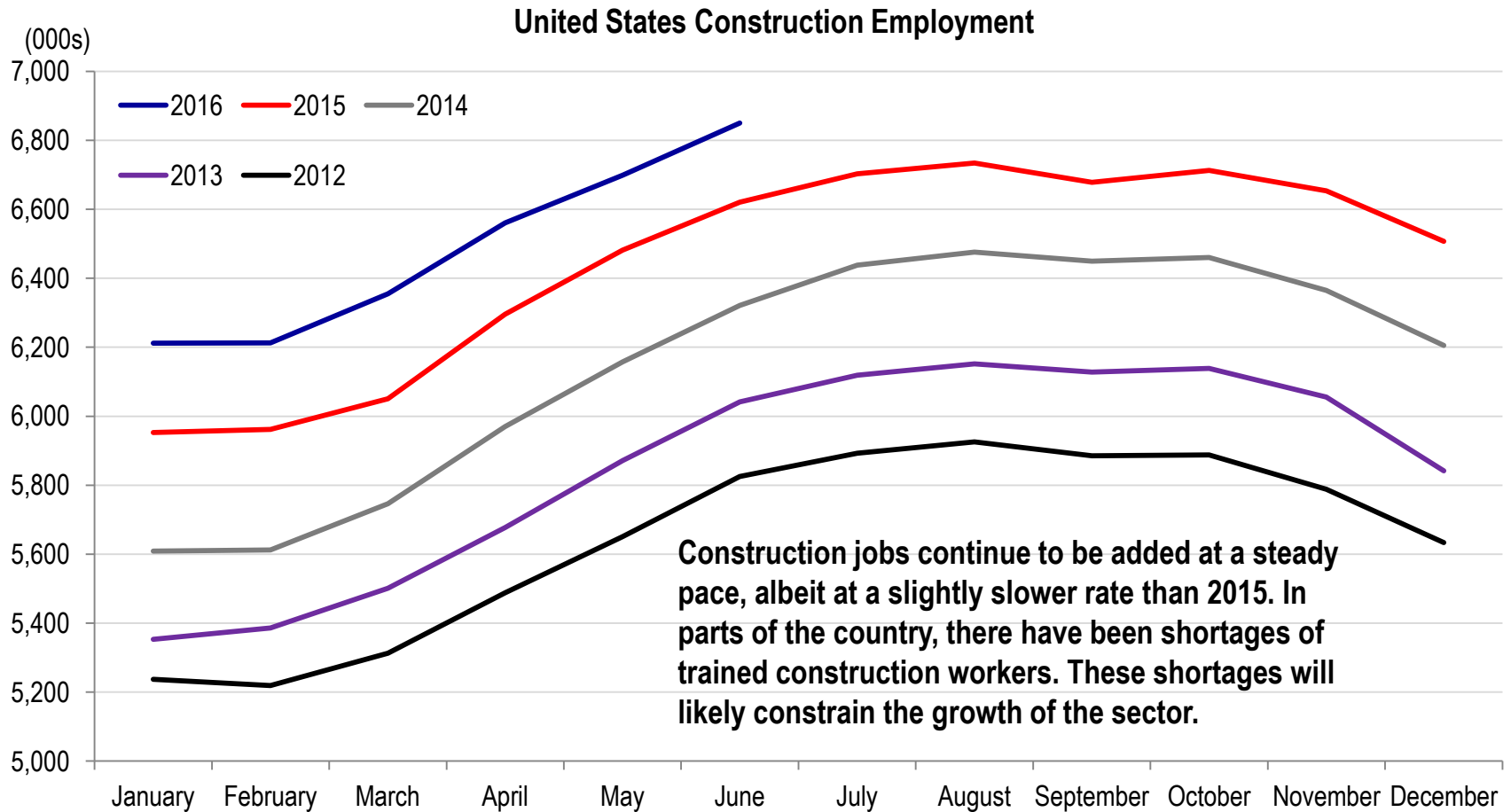
Source: FRED, SA, cber.co.



The United States Economy Construction and Housing

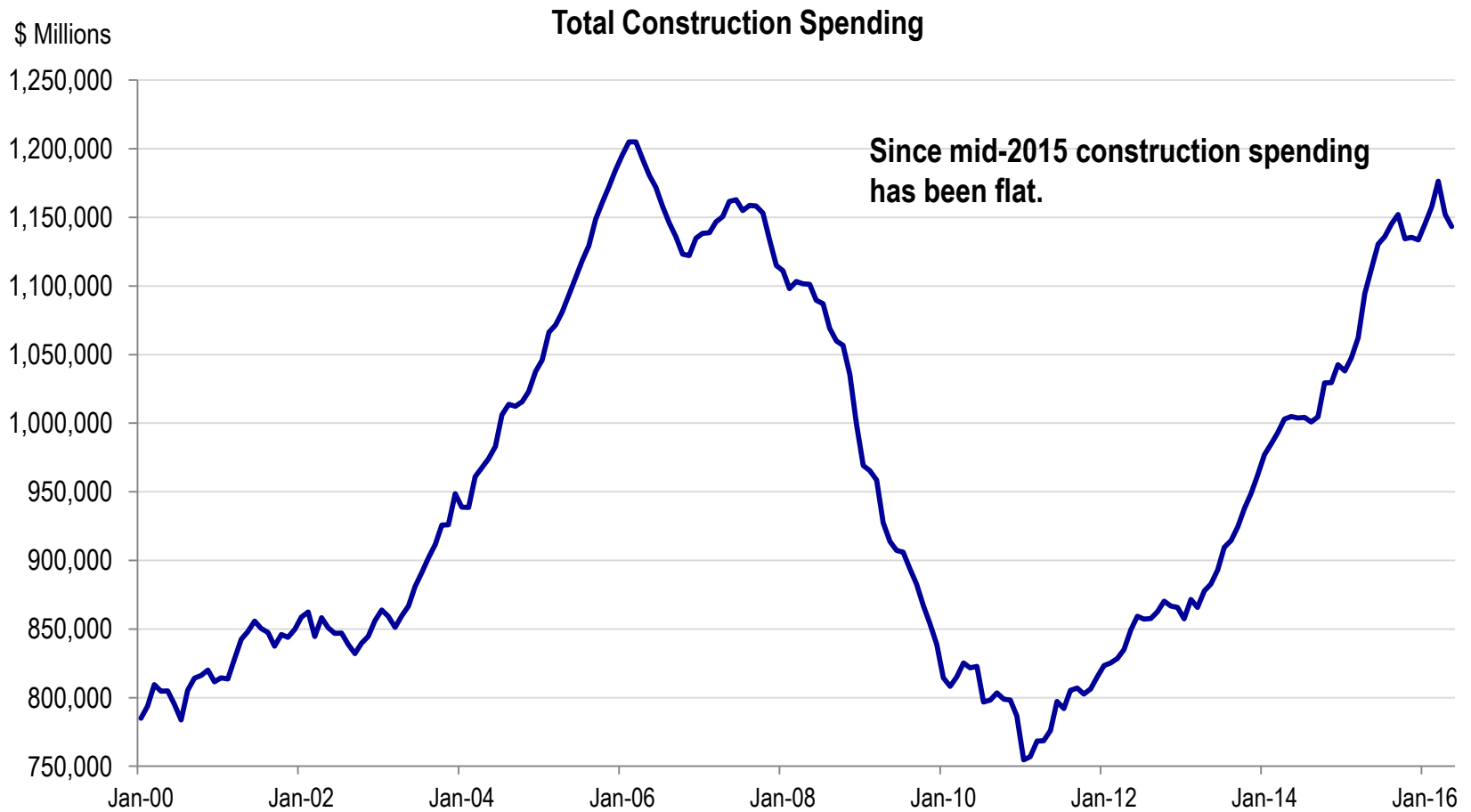
United States Construction Employment

2012 to 2015



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

Total United States Construction Spending

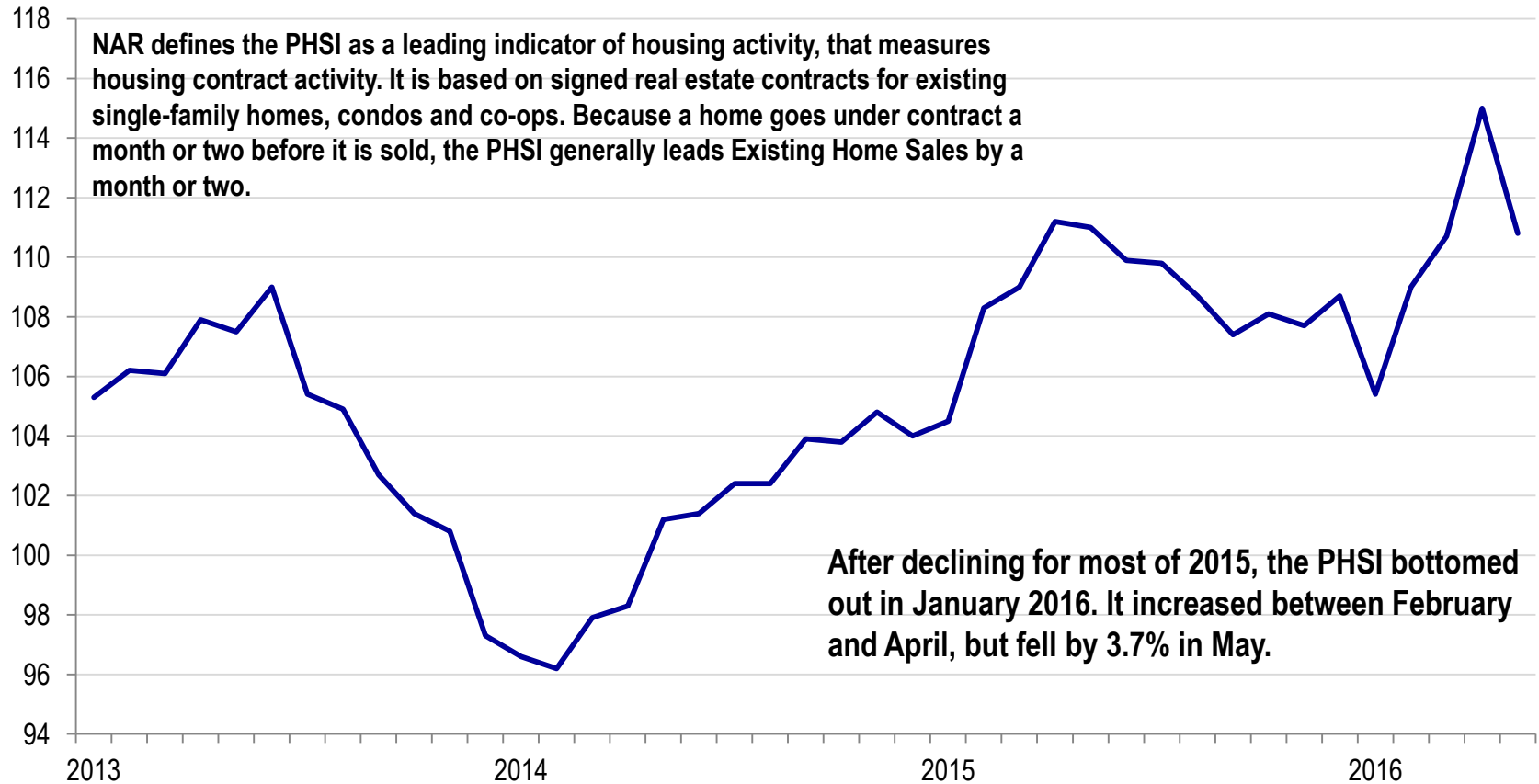


Source: FRED, Census Bureau, cber.co.

Pending Home Sales Index

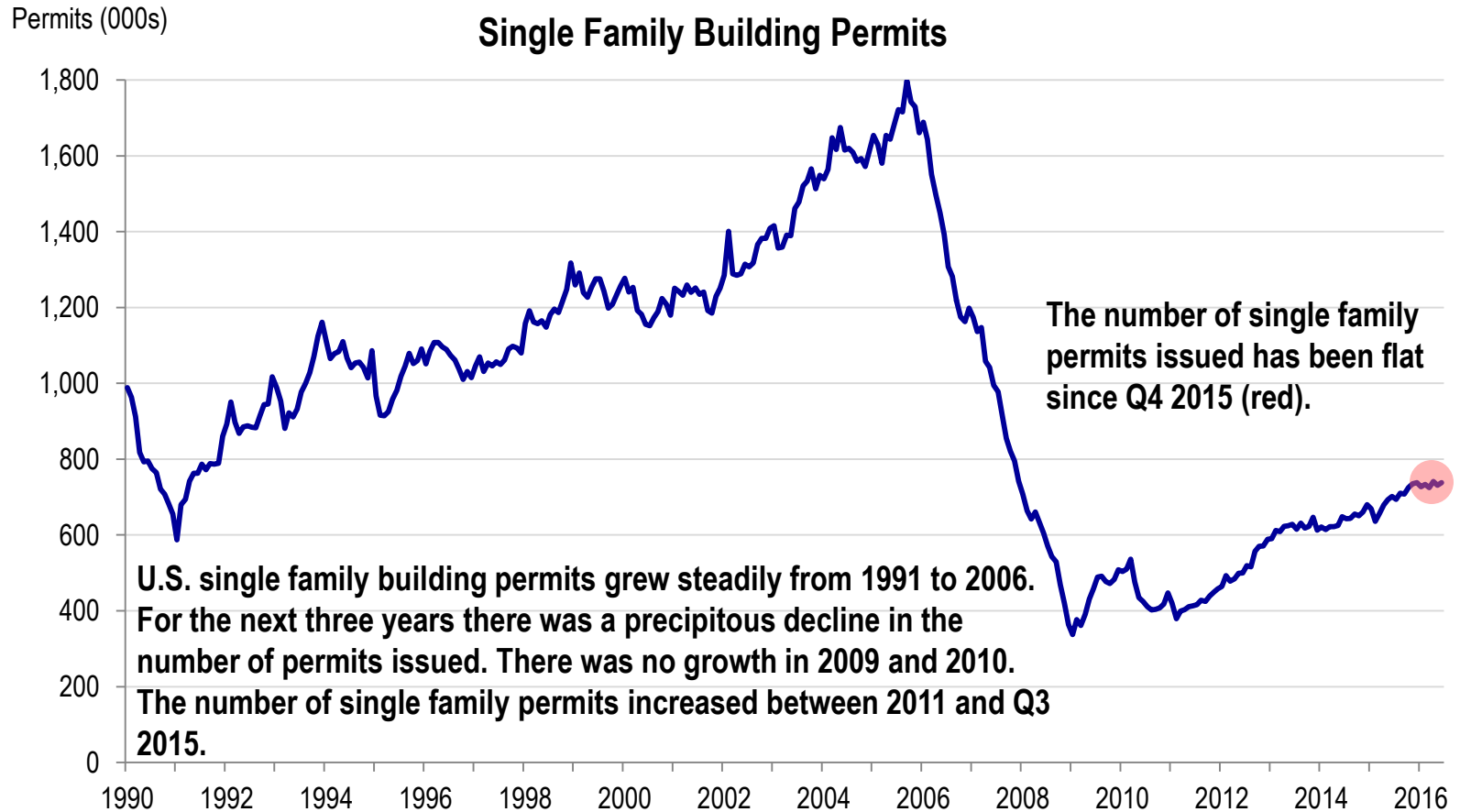
1973=100

Pending Home Sales Index



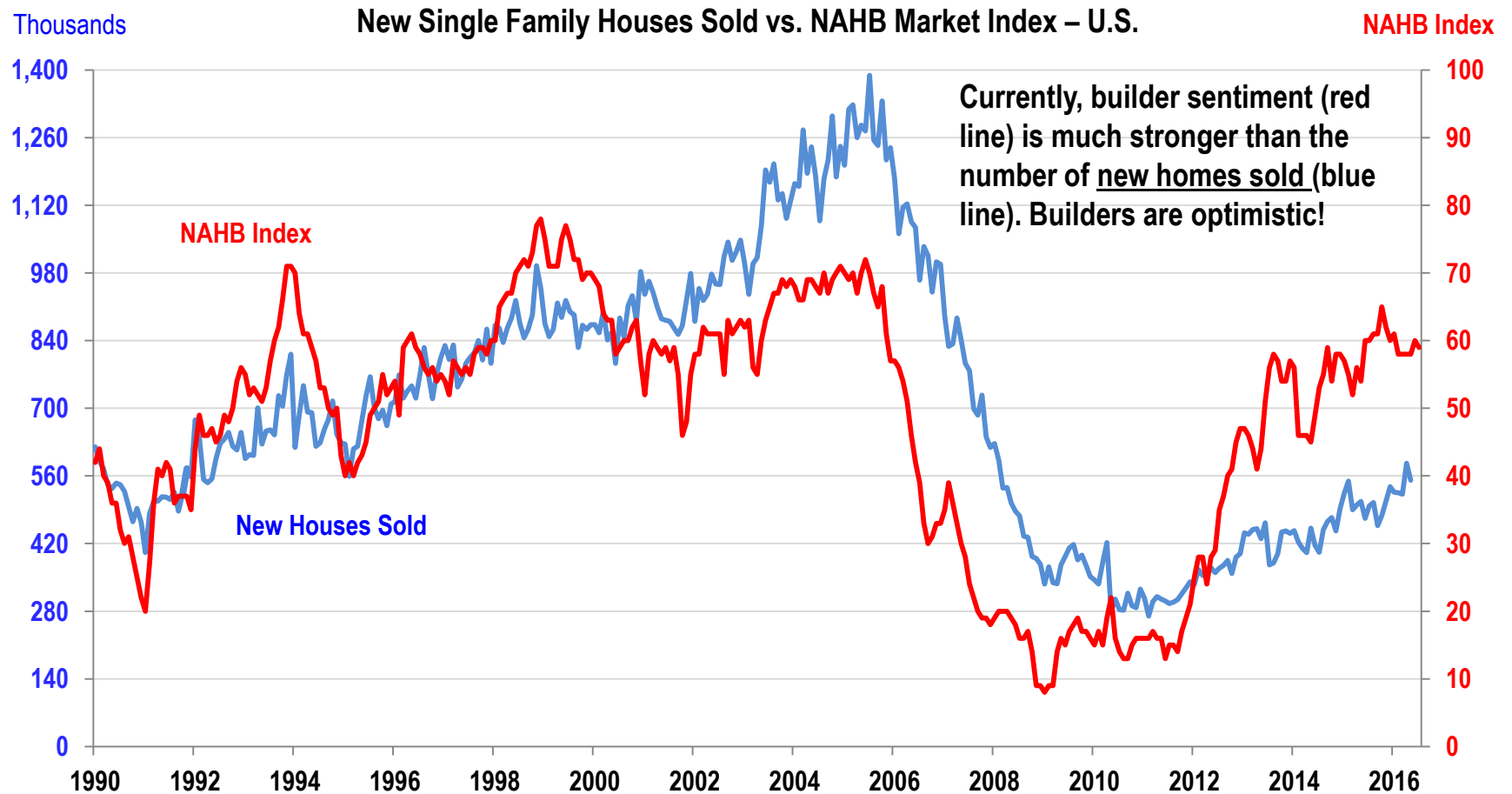
Source: National Association of Realtors, SA; cber.co.

New Single Family Building Permits – U.S.



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

New Single-Family Houses Sold vs. NAHB Market Index



Source: FRED, Census Bureau SA., NAHB; cber.co.

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United States Economy Summary

Summary of United States Economy

The United States economy should continue to post solid, but somewhat lackluster job growth for the remainder of the year.

- **GDP** – The Fed came out with a statement suggesting the economy may be in a period of secular stagnation. In other words, don't expect U.S. annual real GDP growth to surpass 3.0% in the near-term.
- **Employment** - U.S. job growth is geographically solid, with strength in the western half of the country and weakness in states that have strong ties to energy and agriculture. Jobs are being added across most industries. The number of people quitting their jobs is high. This is an indication they have options. In addition, the number of openings is high. The U.S. is approaching full employment, i.e. it is likely there will be slower levels of job growth in the future because there is a lack of qualified workers.
- **Unemployment** – In some parts of the country the rate of unemployment is too low.
- **Earnings** - Wages across the country are rising for people in all industries, company size, age groups, and job tenure. The rate of these increases has generally exceeded the rate of inflation.
- **Housing** - Overall, the U.S. housing market is solid.
- **CPI** - Inflation has risen slightly; this is important to the Fed.
- **Consumer spending** - Consumers are spending and as a result retail sales are solid. At the same time consumers are also saving.
- **Oil** – The price for a barrel of oil is in the \$45 to \$50 range. Some speculators think it will reach \$60 in 2017.
- **Ag** - Agriculture prices may be nearing the bottom, i.e. the future may be brighter for agriculture.
- **Outlook** – There is reason to be optimistic in the short term. There is less certainty in the mid to long term.



The Colorado Economy

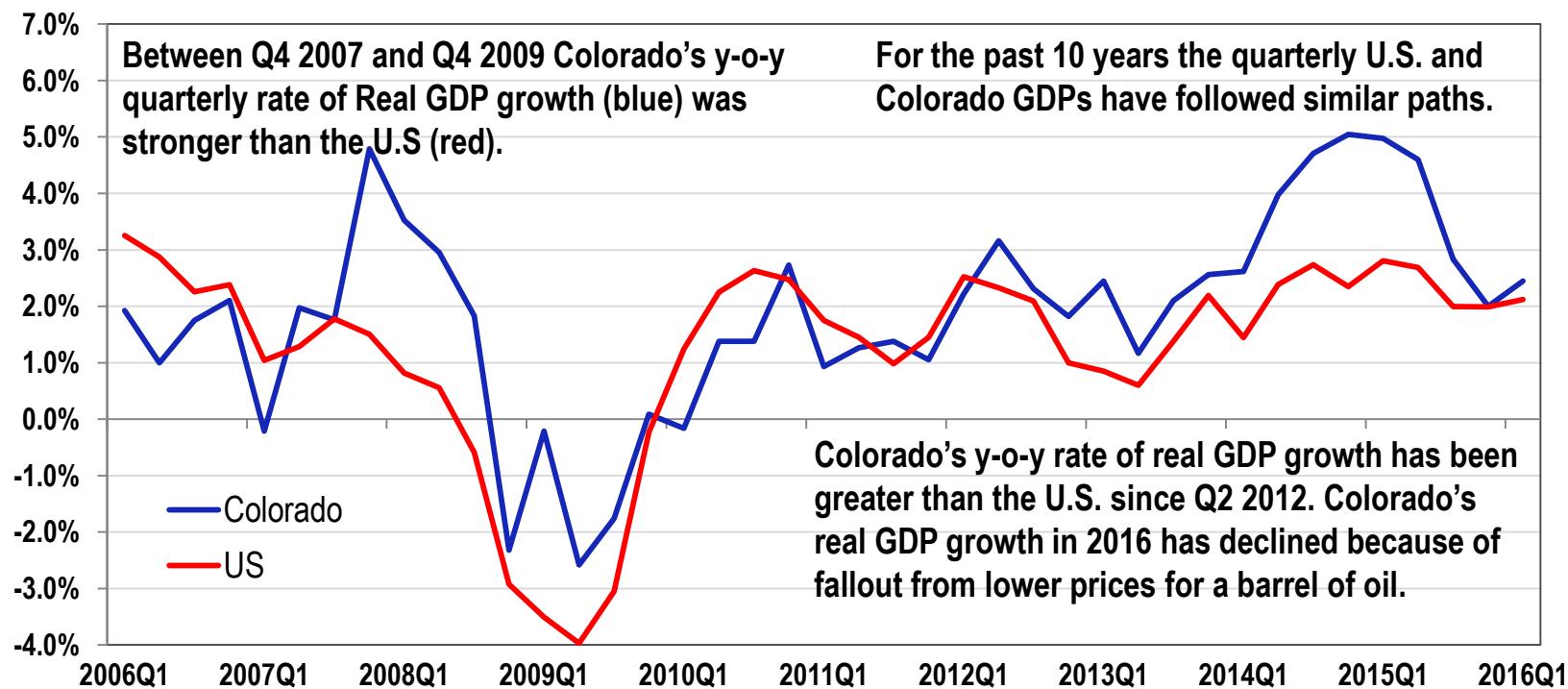
Gross Domestic Product and Inflation

● Change in Quarterly Real GDP (Year-Over-Year)

● Colorado vs. United States

Percentage Change in Real GDP Colorado vs. United States

YOY Change

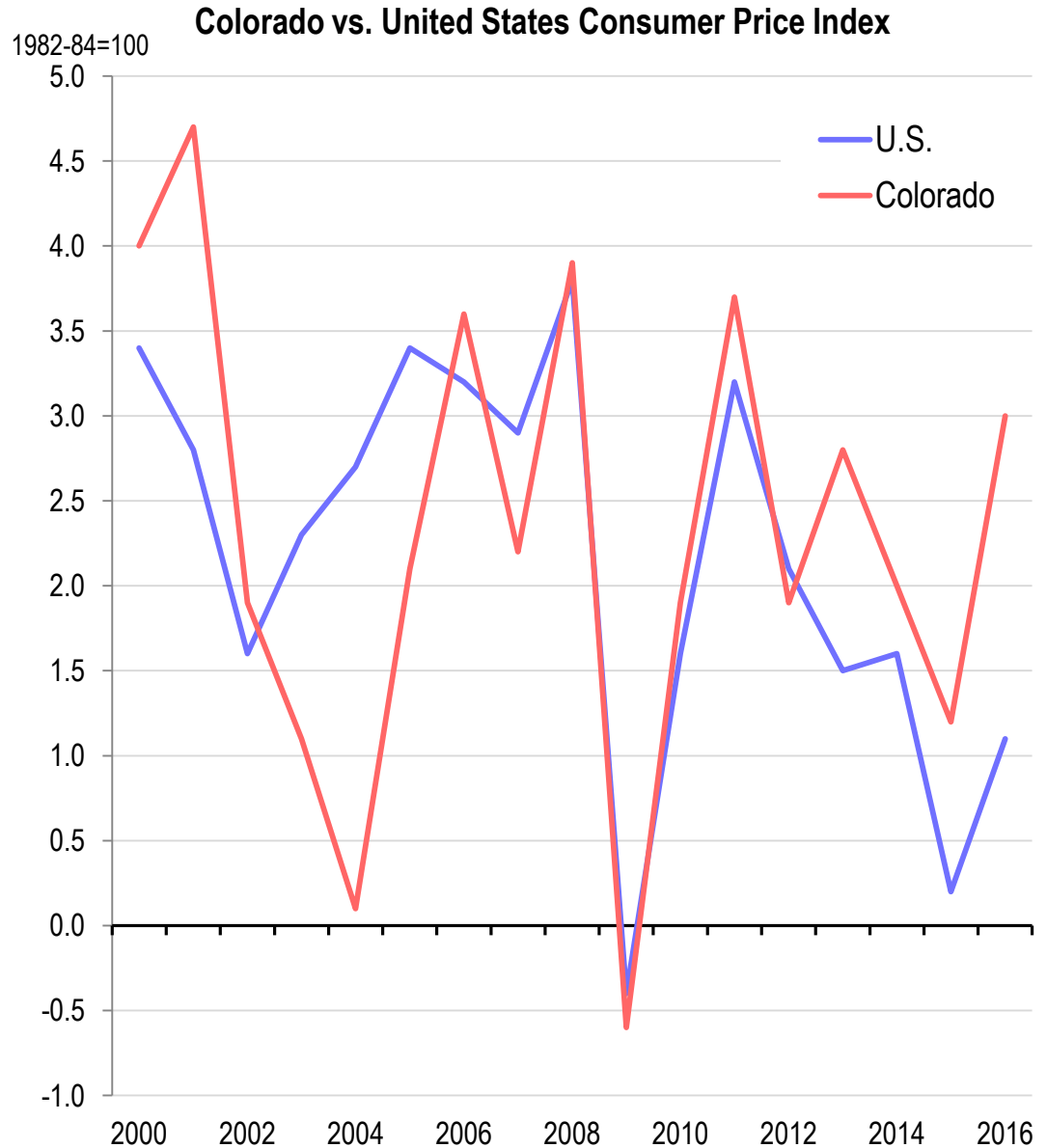


Source: Bureau of Economic Analysis. Note: U.S. GDP is summary of states GDP.

Consumer Price Index (CPI)

The Denver-Boulder-Greeley CPI (red bars) is used as a proxy for Colorado inflation.

After the first 6 months of 2016, the U.S. CPI is 1.1% greater than the same period in 2015 and the Colorado CPI is 3.0% greater than the same period last year.



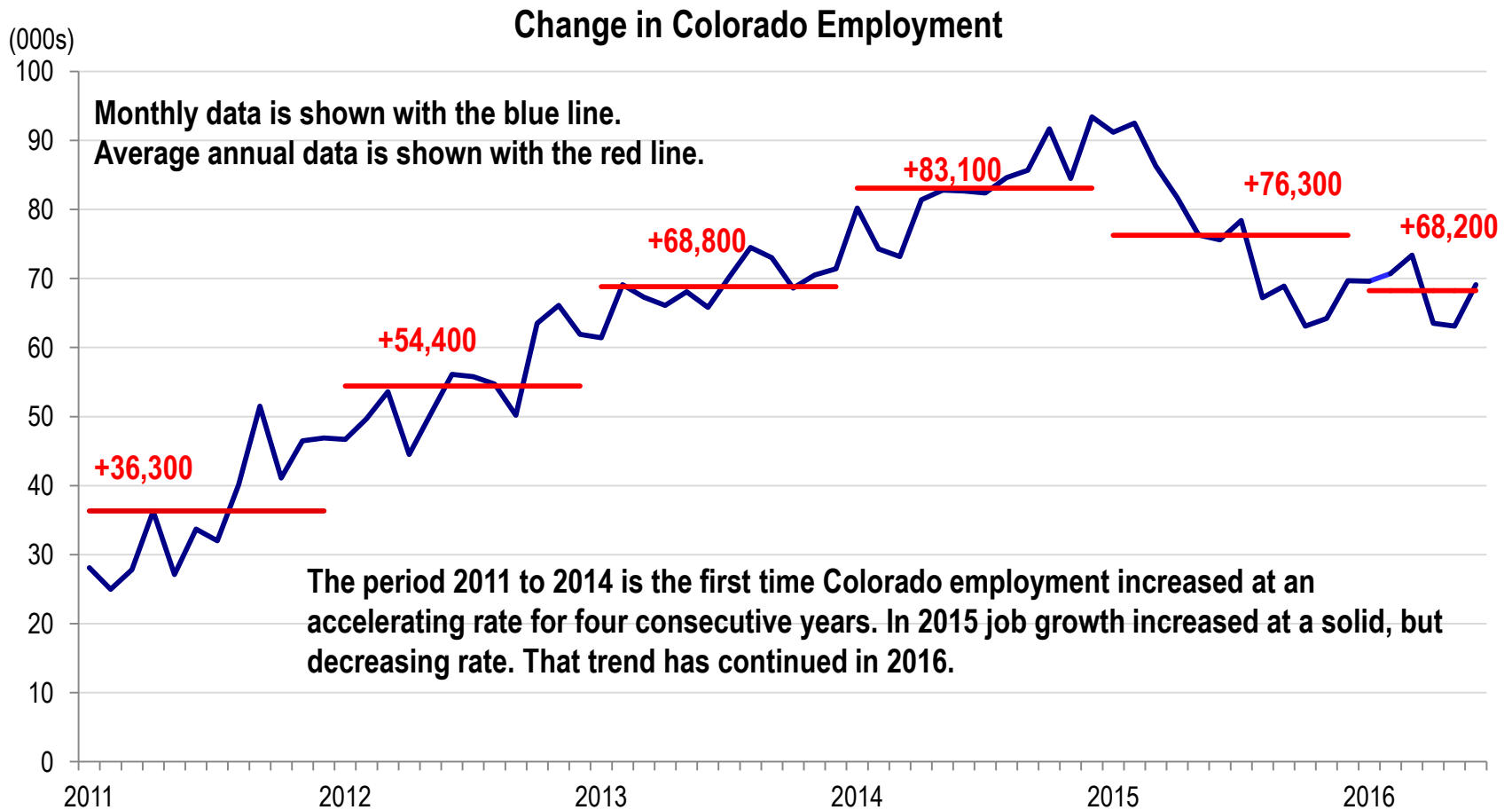
Source: Bureau of Labor Statistics, cber.co.

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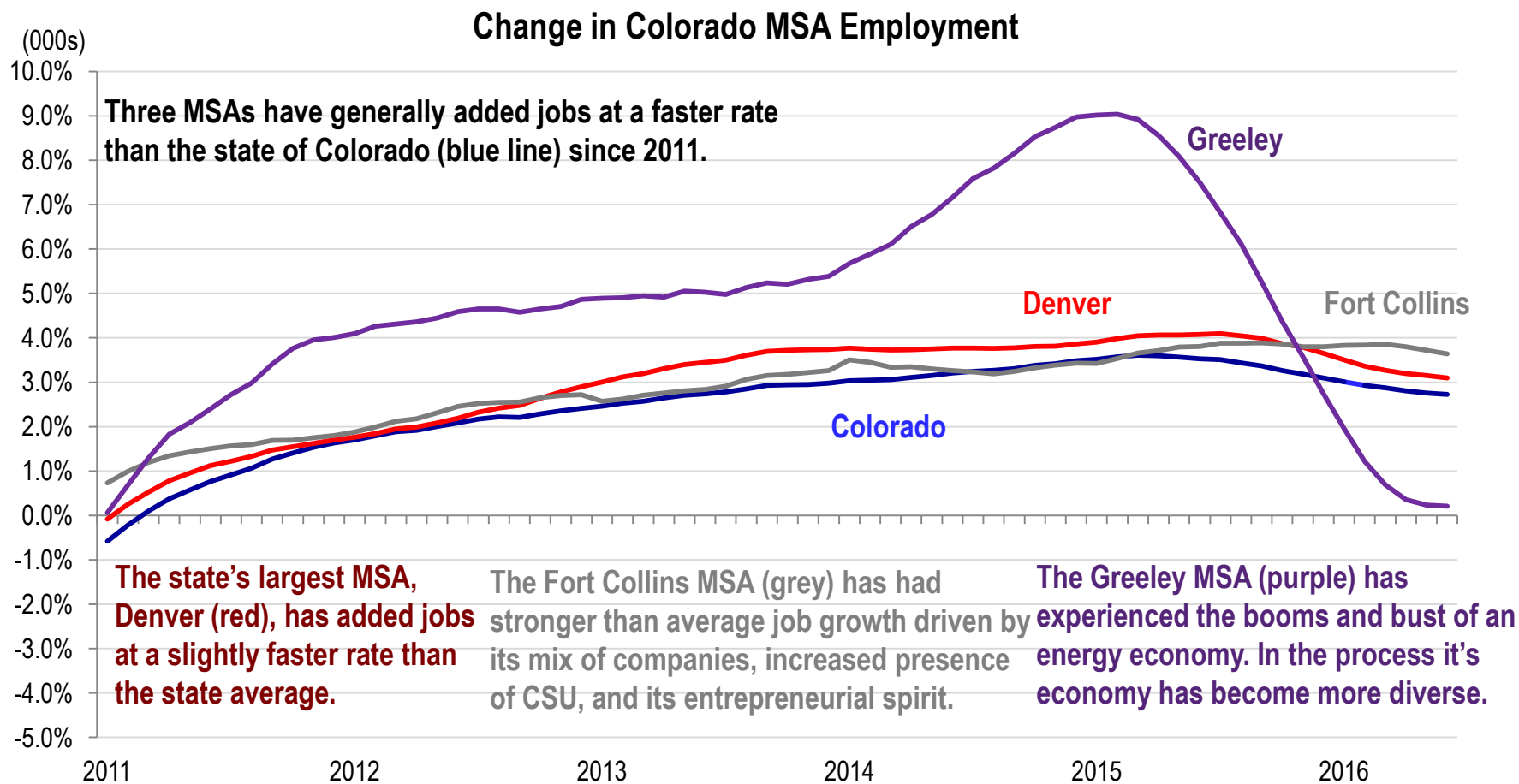
The Colorado Economy Labor

Change in Colorado Employment Year-Over-Year



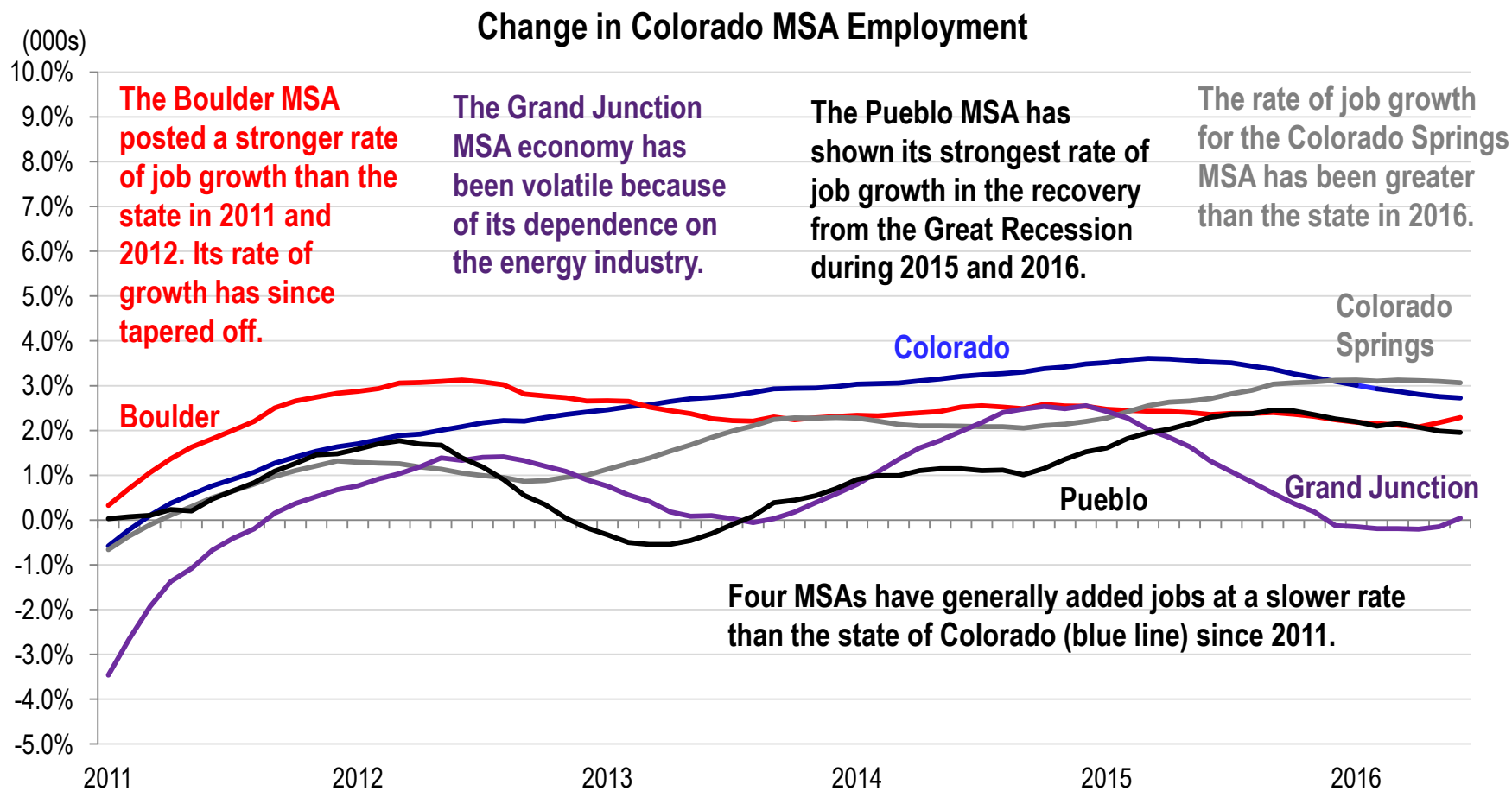
Source: Bureau of Labor Statistics, NSA, cber.co.

Year-Over-Year Change in 12-Month Rolling Average Employment by MSA



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

Year-Over-Year Change in 12-Month Rolling Average Employment by MSA



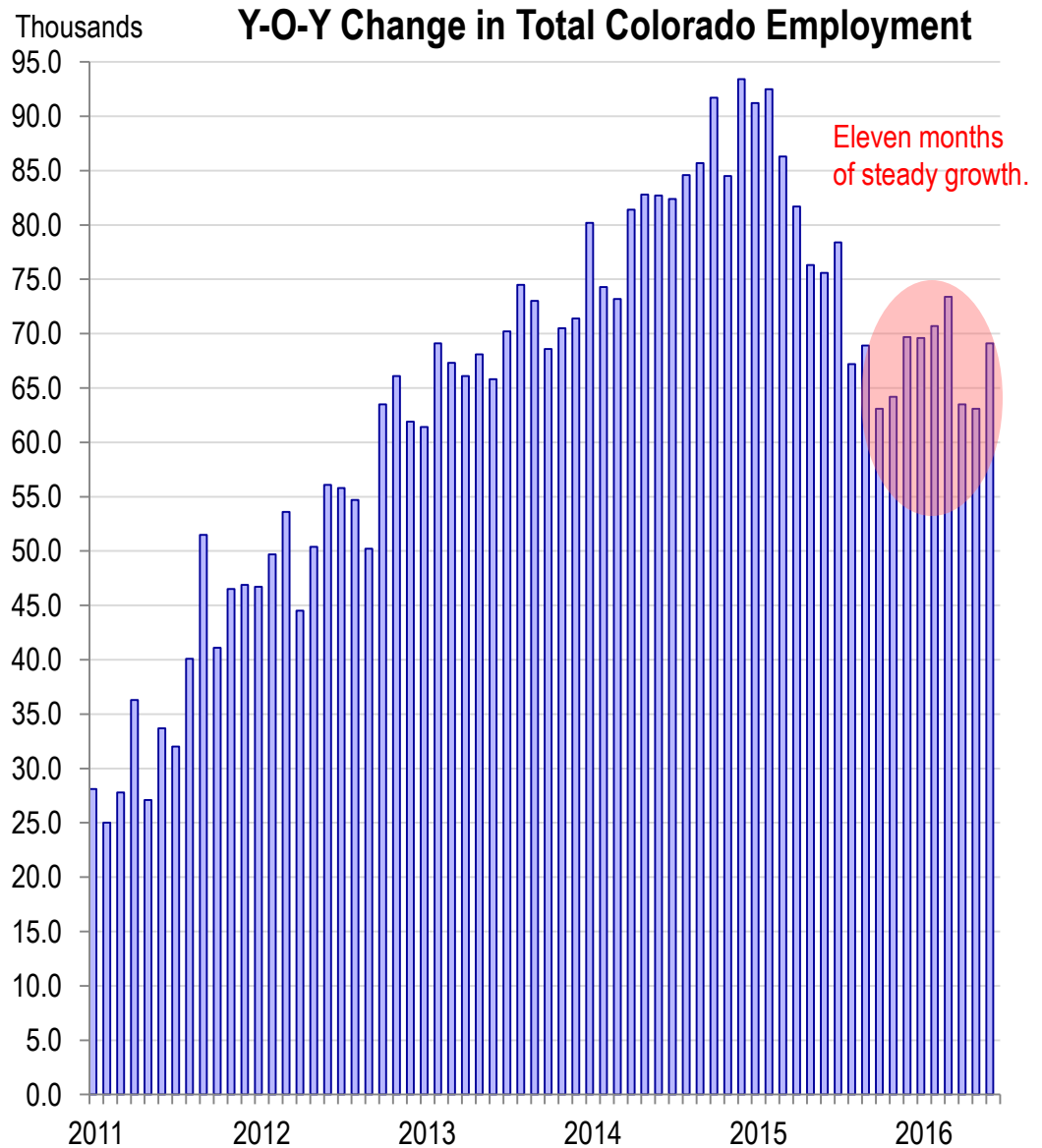
Source: Bureau of Labor Statistics, NSA, cber.co.

Y-O-Y Change in Total Colorado Employment

This chart makes it easy to see that the rate of job growth in 2016 has clearly declined, but it is a solid, manageable rate of growth.

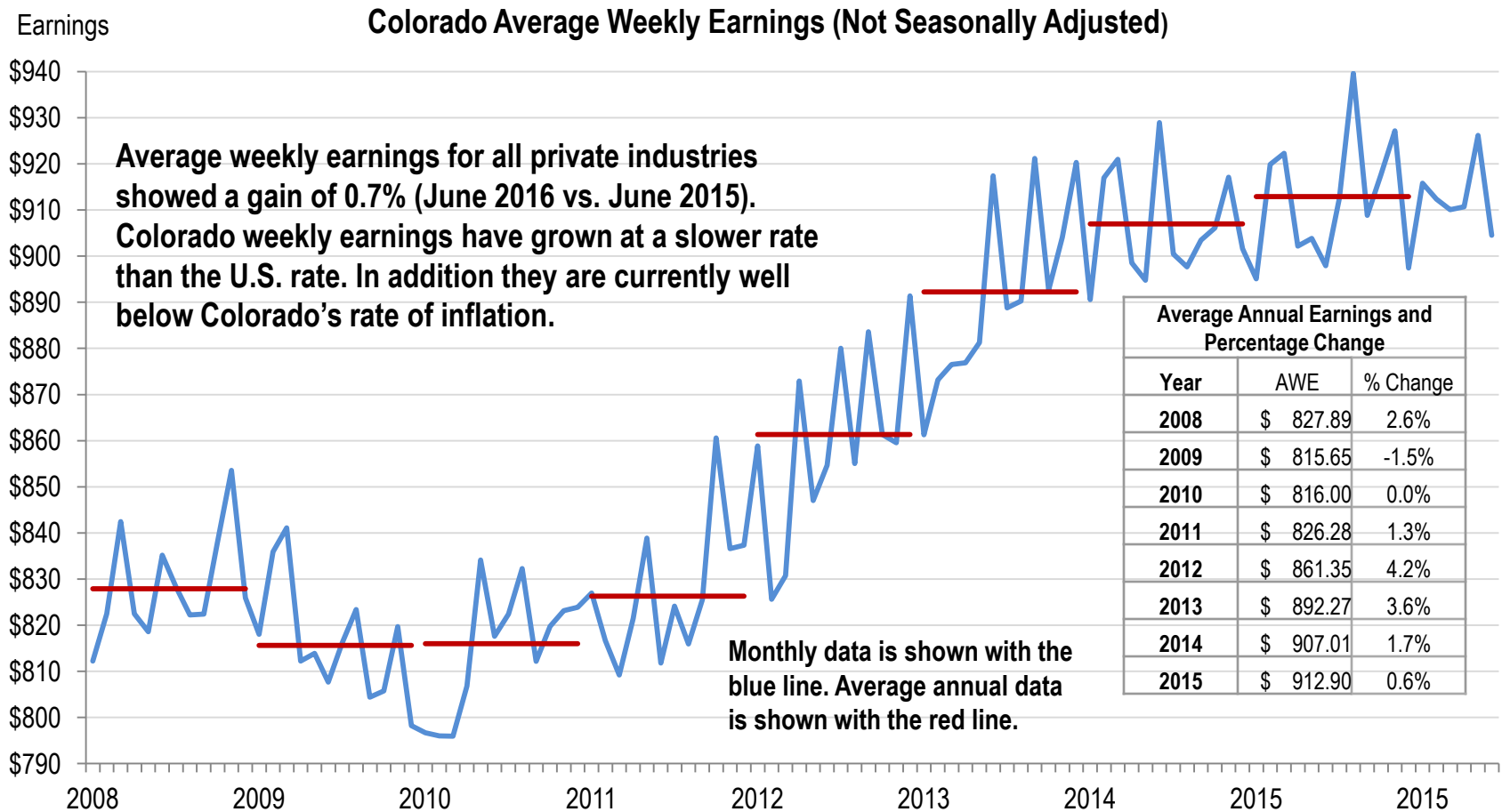
The good news is that recent year-over-year change in Colorado employment has been very steady. The average Y-O-Y job change was 67,500 jobs for the past 11 months (red oval), with a low of 62,500 jobs added and a high of 73,400 jobs added.

This chart also shows the strength of the monthly job growth between January 2014 and April 2015. During this 16-month period average monthly y-o-y job growth was 84,300 and there were greater than 80,000 jobs added in 14 of the 16 months.



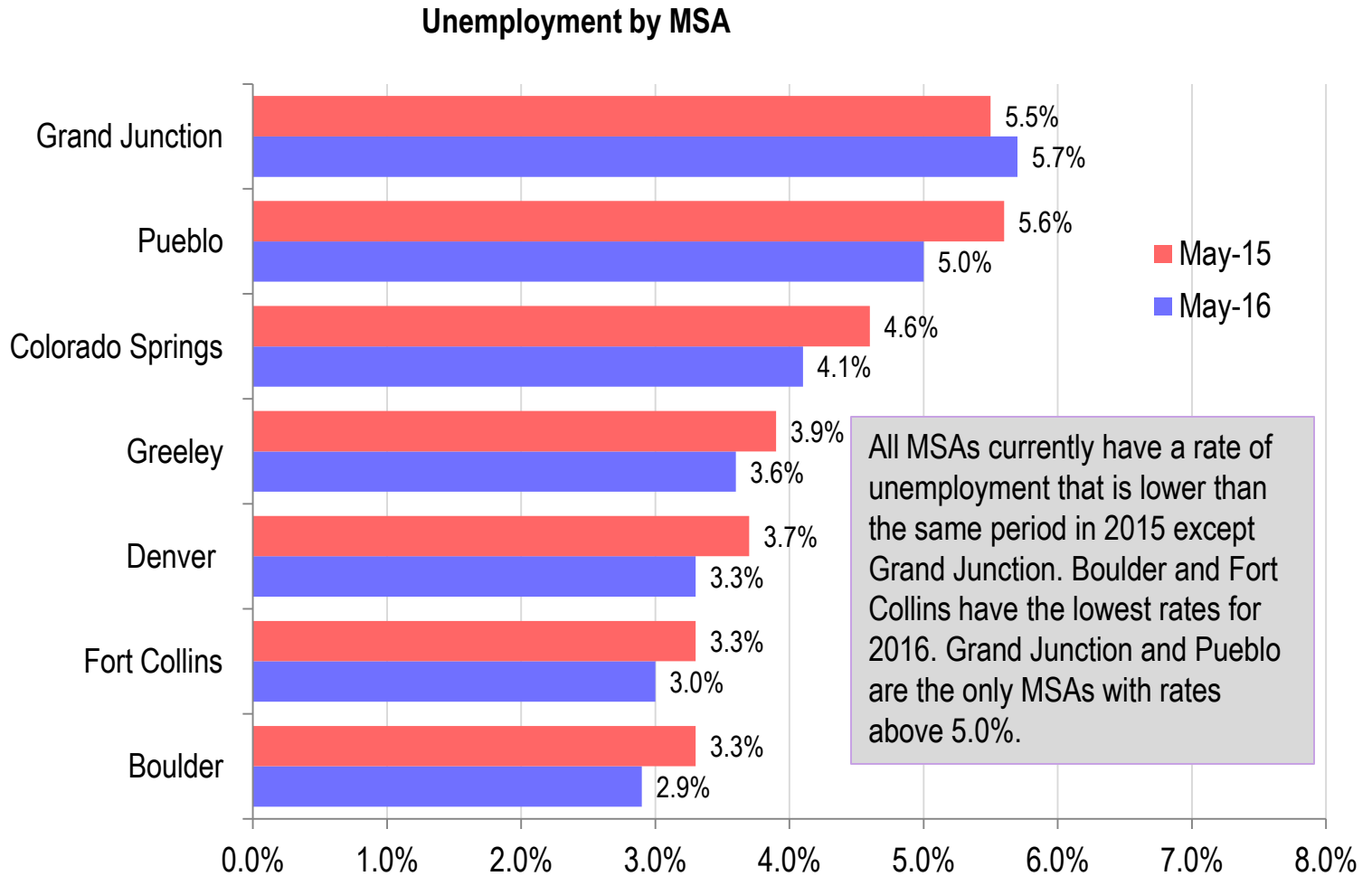
Source: Bureau of Labor Statistics, cber.co.

Colorado Average Weekly Earnings of All Employees (Private Sector)



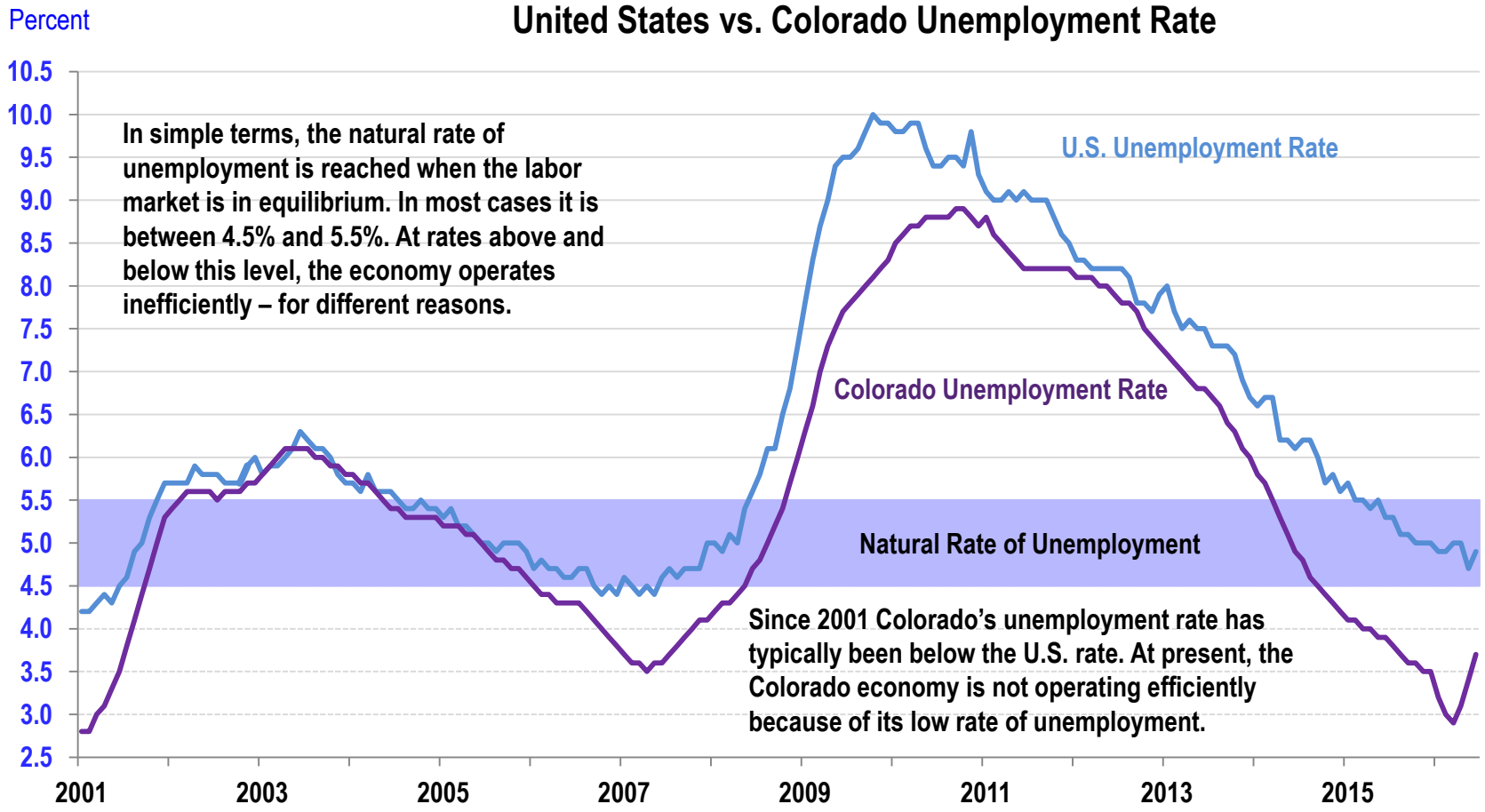
Source: Bureau of Labor Statistics, NSA, cber.co.

Unemployment by MSA 2015 vs. 2016



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

United States vs. Colorado Unemployment Rate



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

How Low Can it Go?

Natural Rate of Unemployment

In simple terms, the natural rate of unemployment is the rate at which an economy operates efficiently. It is typically between 4.5% and 5.5%.

The economy operates inefficiently when:

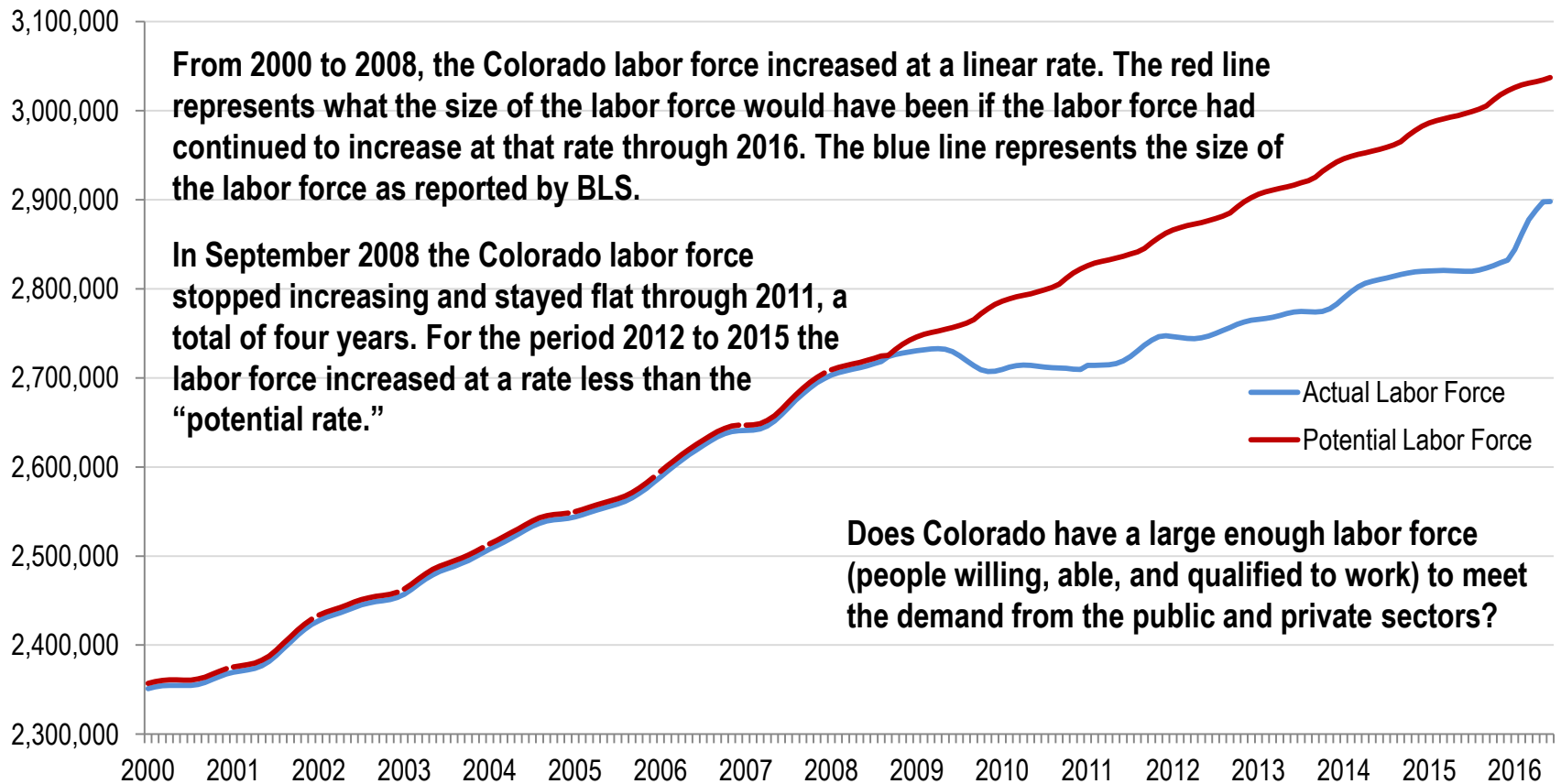
- The rate of unemployment is too high, as it was during the Great Recession.
- The rate of unemployment is too low. The current rate of unemployment in Colorado is too low.

Reasons Low Unemployment May be Bad for the Economy

- Businesses may be forced to pay higher wages. The upside is that workers have more money to spend which theoretically stimulates the economy. On the other hand, businesses may hire fewer workers to keep costs in line or they may need pass the added cost on to the consumer in the form of a price increase.
- Businesses may be forced to hire unqualified people and properly train them. The upside is that workers are better trained and more marketable. On the other hand, the added cost of training may have to be built into the price of the goods or services.
- During expansionary times, businesses increase their sales by adding workers and/or investing in capital goods or processes. If they cannot find workers they may invest in capital goods or processes that will reduce the need for labor in the long-run. For example, the oil and gas companies have gained efficiencies through capital expenditures that will reduce their long-term demand for employees.
- If companies cannot find qualified workers their services/goods may be of lower quality or they may simply lose business. For example, if a restaurant has wait times greater than an hour because they don't have enough kitchen help then customers may go elsewhere or the food may be lousy. Both are bad alternatives.

Colorado Labor Force

Colorado Labor Force



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

● Labor is a Potential Risk to the Colorado Economy

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Labor, or the lack of qualified labor, is a potential near-term risk to the growth of the Colorado economy. The state can address this challenge by strengthening efforts to train the workforce through Colorado's education and government-funded training programs. In addition, it will be necessary for the public and private sector to aggressively attract workers from outside the state for key positions in all industries.



Colorado Employment

2016 Colorado Employment by Performance Category
Average Employment 1st Six Months



Colorado Employment Performance Category Portfolio Analysis

Strong Growth, Solid Growth, and Volatile Categories

This portfolio approach has made it easy to see that some categories of industries consistently create jobs at a higher rate of growth, some show solid growth, and others are more volatile.

Ultimately, the volatile category tends to have a greater influence on the amount of change in total job growth than the sectors with steady growth.

The Process of Establishing the Categories

In 2012, 2013, and 2014 cber.co evaluated the performance of 23 sectors over the past two decades and refined the manner in which the sectors are grouped. The evaluation factors for grouping include the rate of growth, number of years with positive job growth, size of the sector, and volatility in job growth.

In the short period this process has been used, it has produced a high level of accuracy in the forecast.

More importantly, it has produced a better understanding of what is driving the Colorado economy.

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.

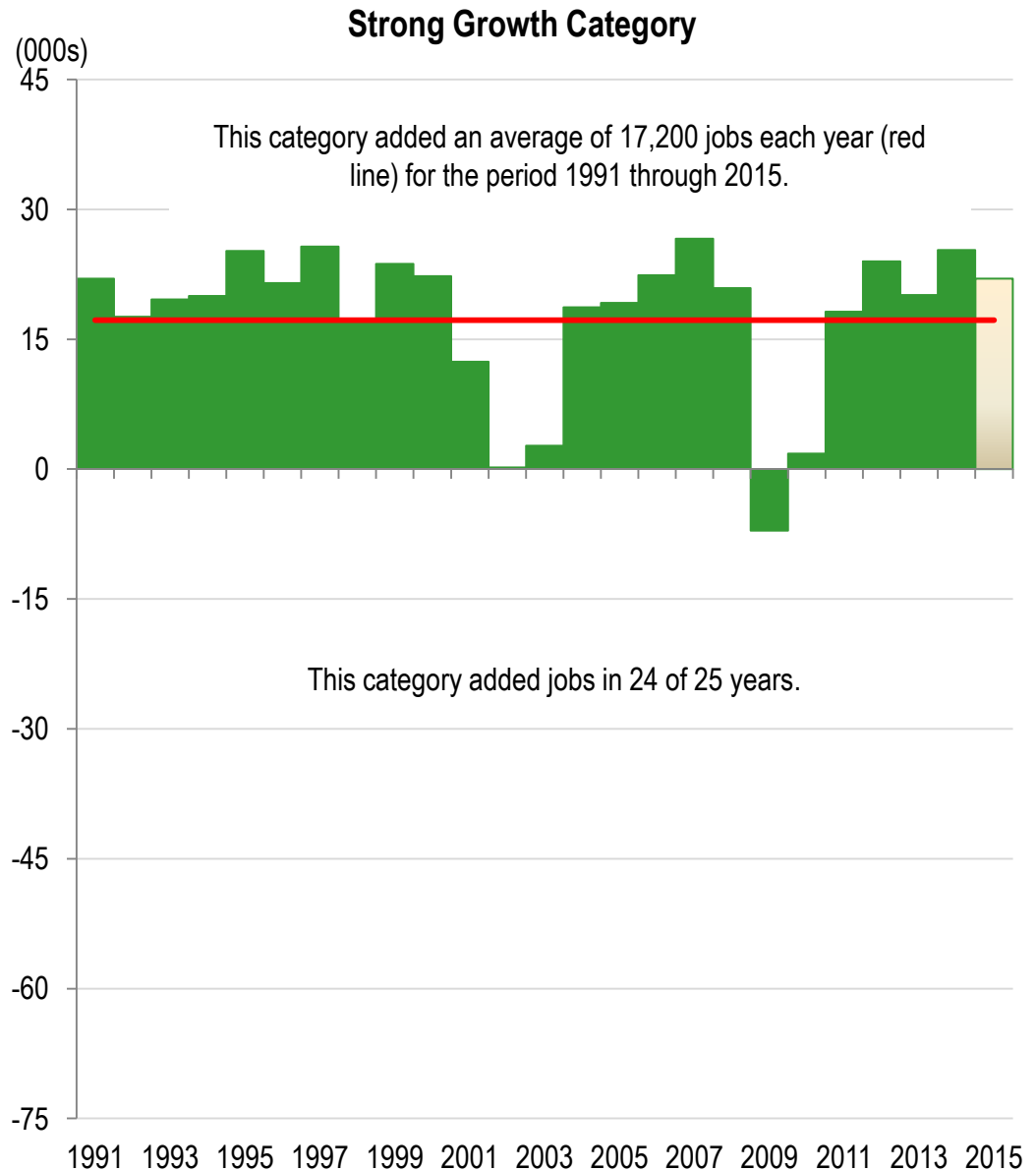
- Professional, Scientific, and Technical Services
- Management of Companies and Enterprises
- Administrative - Business to Business (Not Employment Services)
- Private Education
- Health Care
- Arts, Entertainment, and Recreation
- Other Services.

Total employment for this category was:

1994 445,200 workers, 25.4% of total employment

2004 615,900 workers, 28.3% of total employment

2014 788,300 workers, 32.0% of total employment



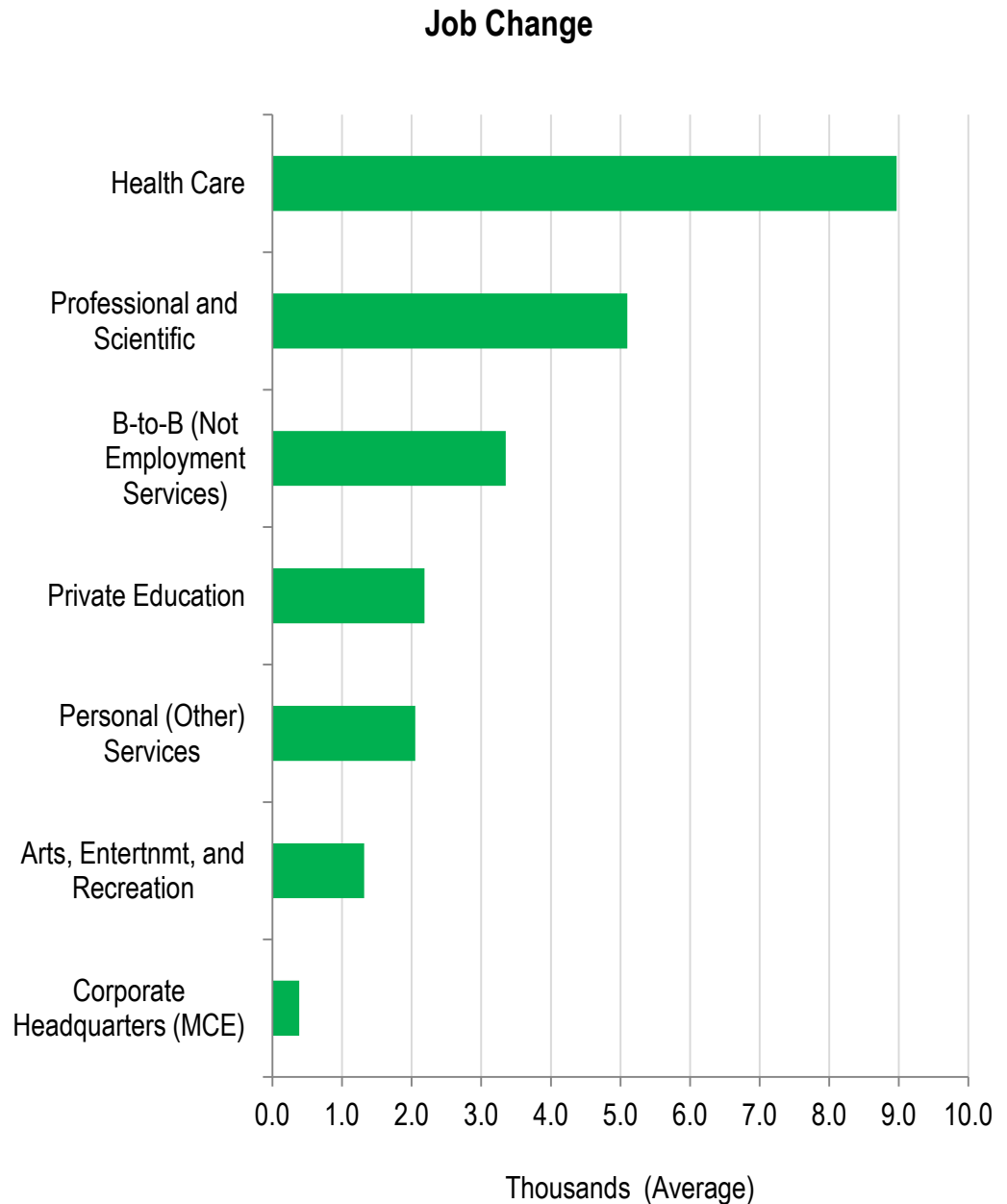
Source: Bureau of Labor Statistics, cber.co.

● Solid Growth Sectors

- Average employment for the first 6 months shows this category of sectors added 23,400 jobs in 2016 compared to the same period last year.

- The Health Care Sector led job growth, followed by the PST sector.

- In 2014, this category accounted for 32.4% of total job gains and 32.0% of total employees.



Source: Bureau of Labor Statistics.

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.

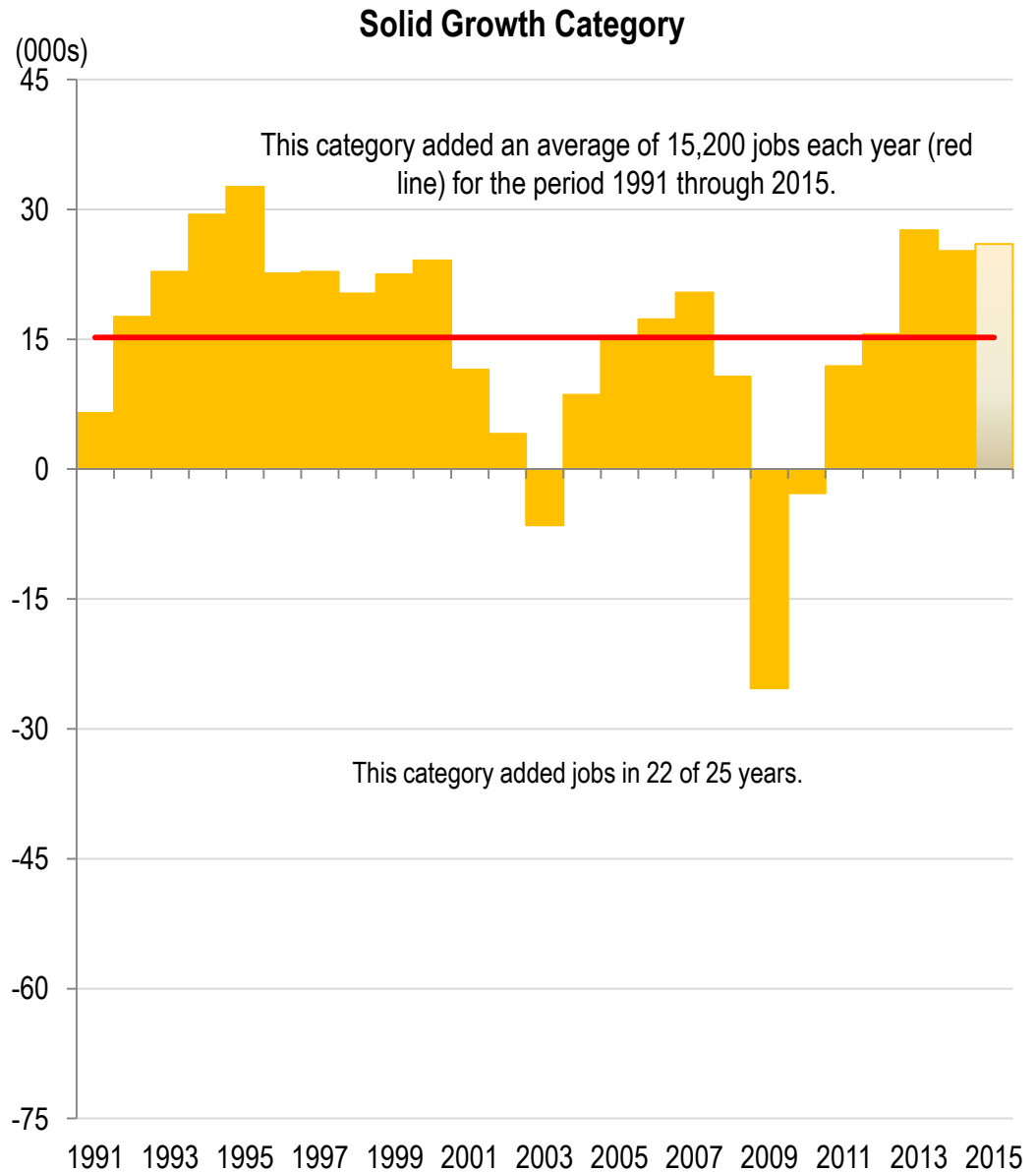
- Wholesale Trade
- Retail Trade
- State (Not Higher Education)
- Higher Education
- Local (Not K-12 Education)
- K-12 Education
- Accommodations and Food Services

Total employment for this category was:

1994 685,400 workers, 39.0% of total employment.

2004 848,000 workers, 38.9% of total employment.

2014 962,500 workers, 39.0% of total employment.



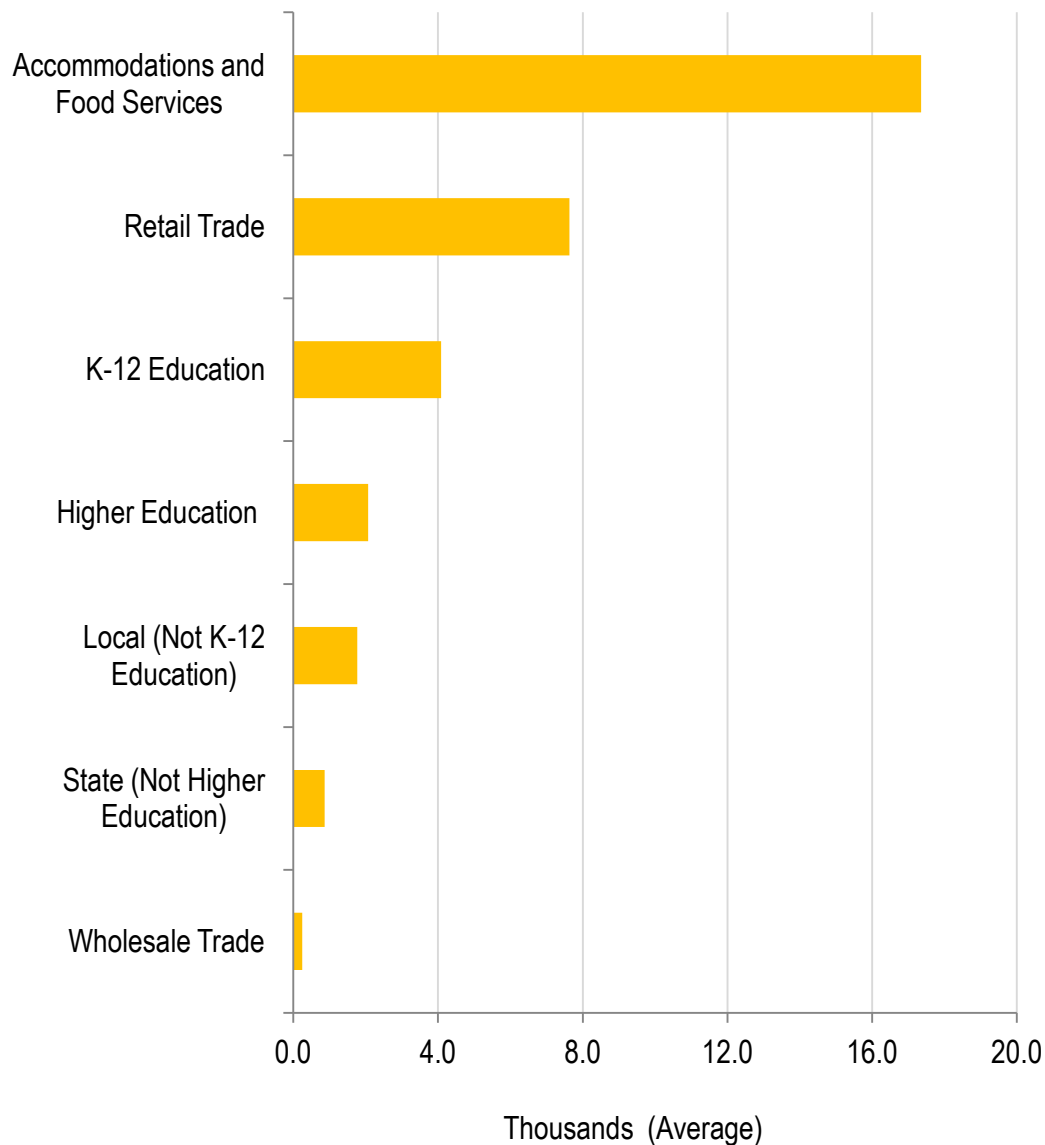
Limited Growth Sectors

- Average employment for the first 6 months shows this category of sectors added 34,000 jobs in 2016 compared to the same period last year.

- The Leisure and Hospitality Sector (AFS + AER) has had a strong year, but most likely the number of jobs added in the AFS sector is grossly overstated.

- In 2014, this category accounted for 29.8% of total job gains and 39.0% of total employees.

Job Change



Source: Bureau of Labor Statistics.

Annual Employment Situation for the Volatile Category

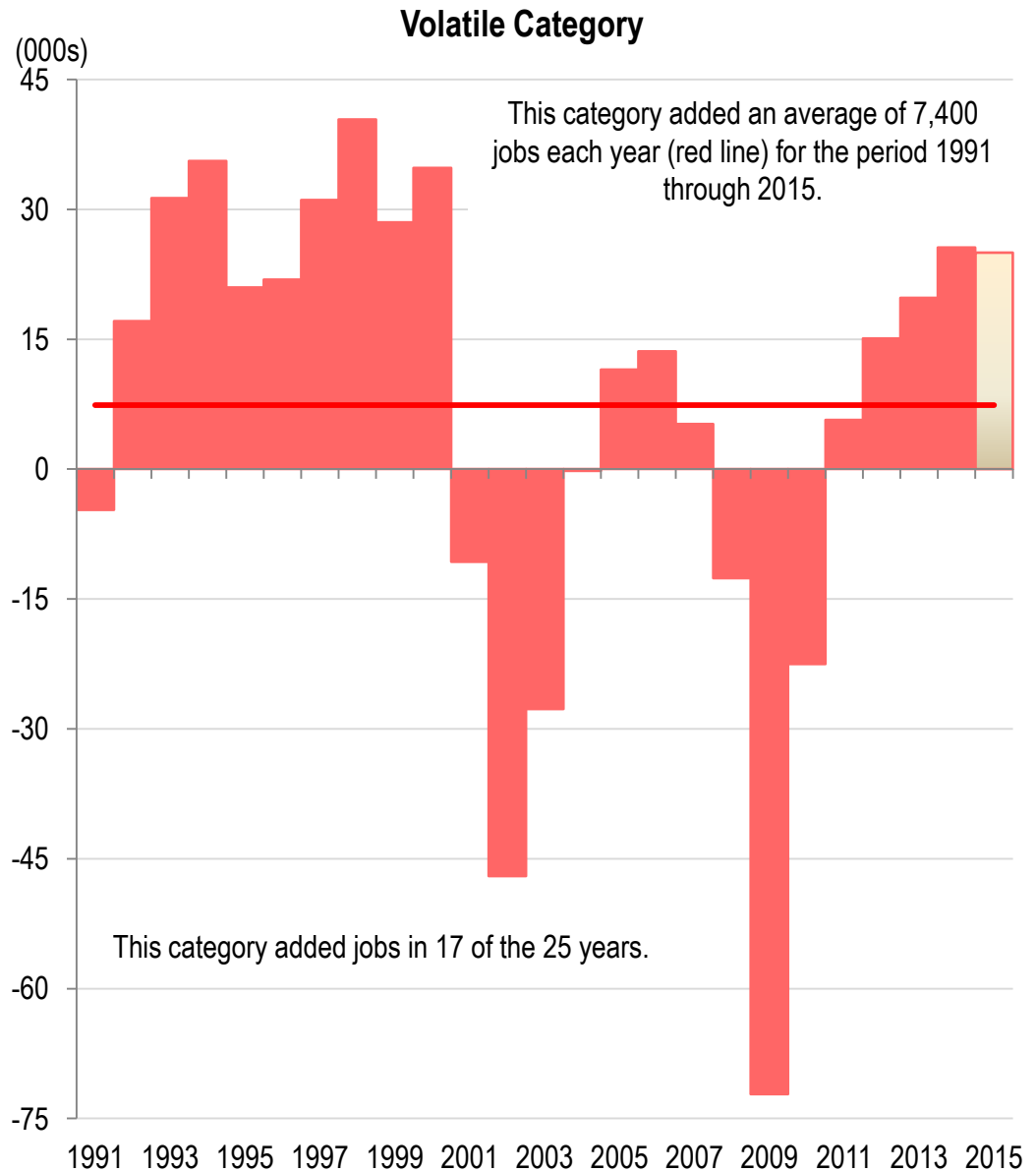
Over the past two decades the sectors listed below were the primary source of volatility in total employment.

The sectors are:

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

Total employment for this category was:

1994 625,400 workers, 35.6% of total employment
 2004 716,000 workers, 32.8% of total employment
 2014 714,300 workers, 29.0% of total employment



● Volatile Sectors



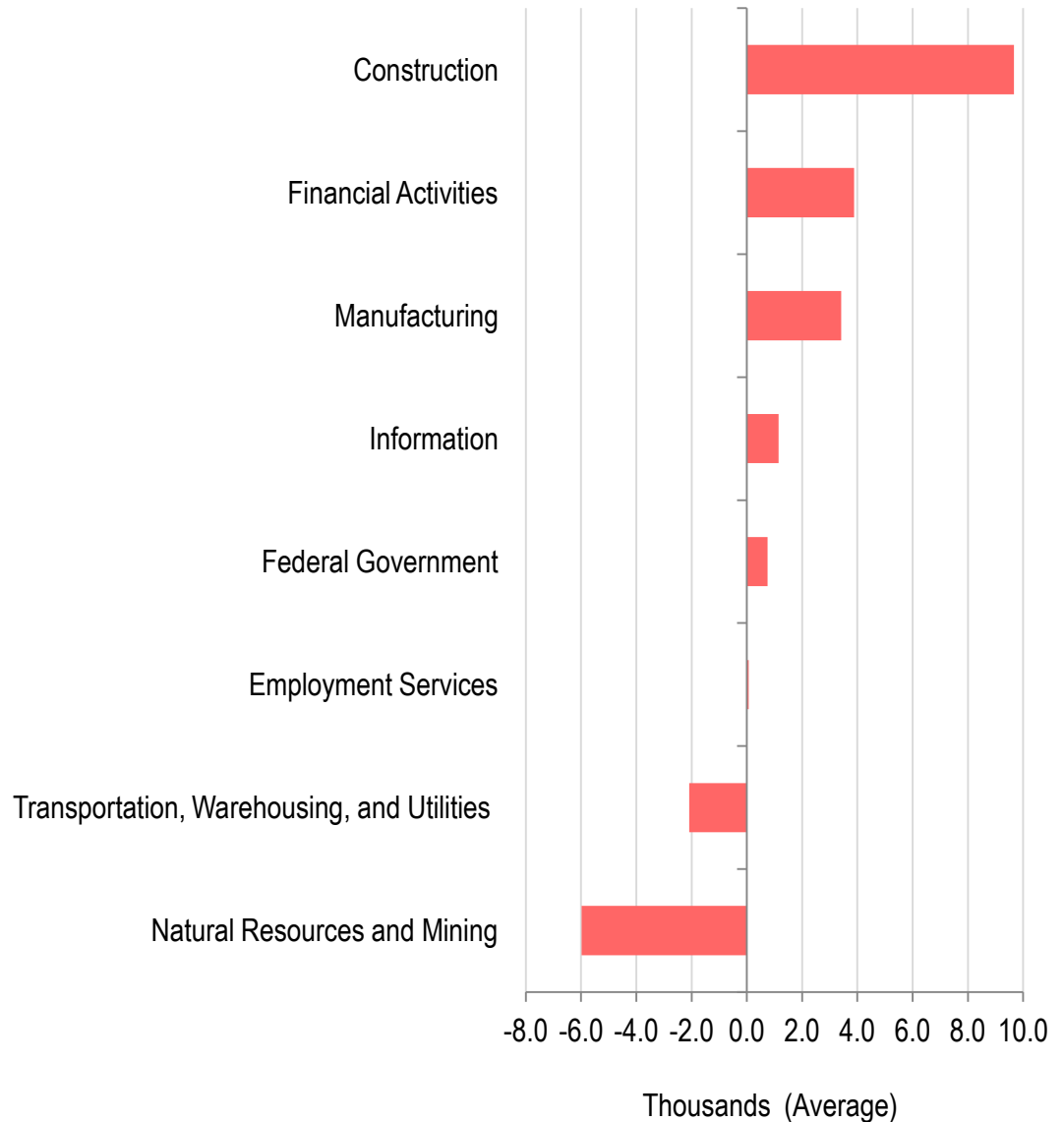
- Average employment for the first 6 months of 2016 shows this category of sectors added 10,900 jobs in 2016 compared to the same period last year.

- For this period, the Construction, Financial Activities, and Manufacturing Sectors led job growth.

- It is likely the job data for the Employment Services and TWU sectors are understated. Unfortunately, the job losses in the extractive industries are not understated.

- In 2014, this category accounted for 38.3% of total job gains and 29.0% of total employees.

Job Change



Source: Bureau of Labor Statistics.

Summary of Performance to cber.co 2016

Employment Forecast

This chart measures the year –to-date accuracy of the 2016 cber.co forecast

On this chart, the forecast ranges for the categories are:

- Strong Growth – green box.
- Solid Growth – yellow box.
- Volatile – red box.
- Total Employment – grey box.

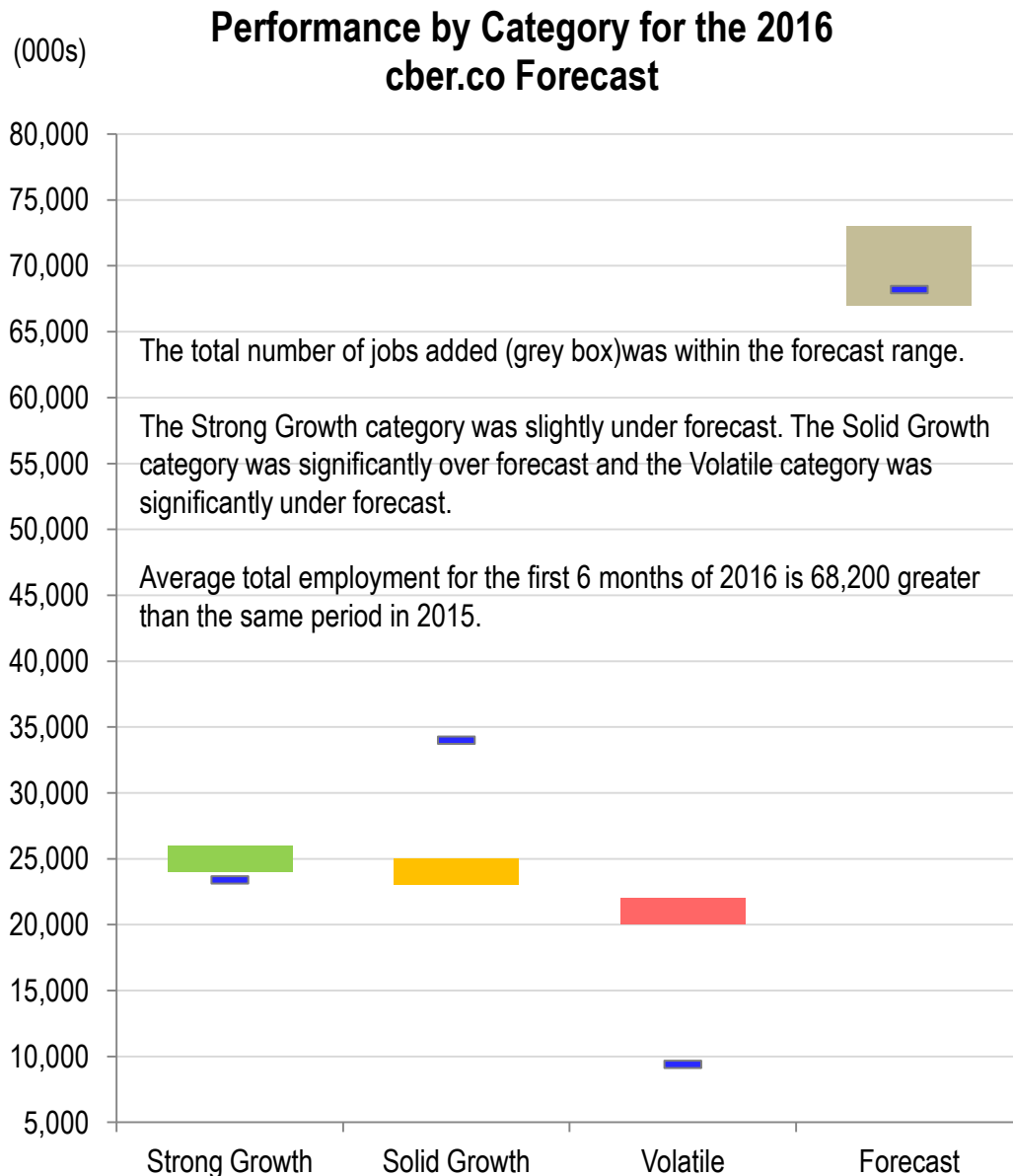
The short blue lines indicate the level of change in the average employment for the first 6 months of 2016.

The overall forecast was within the projected forecast range (grey box).

Average employment for the first 6 months of 2016 is 68,200 greater than the same period in 2015.

Source: Bureau of Labor Statistics, cber.co.

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





Colorado Employment by Category

Focus on Key Industries in the Volatile Category

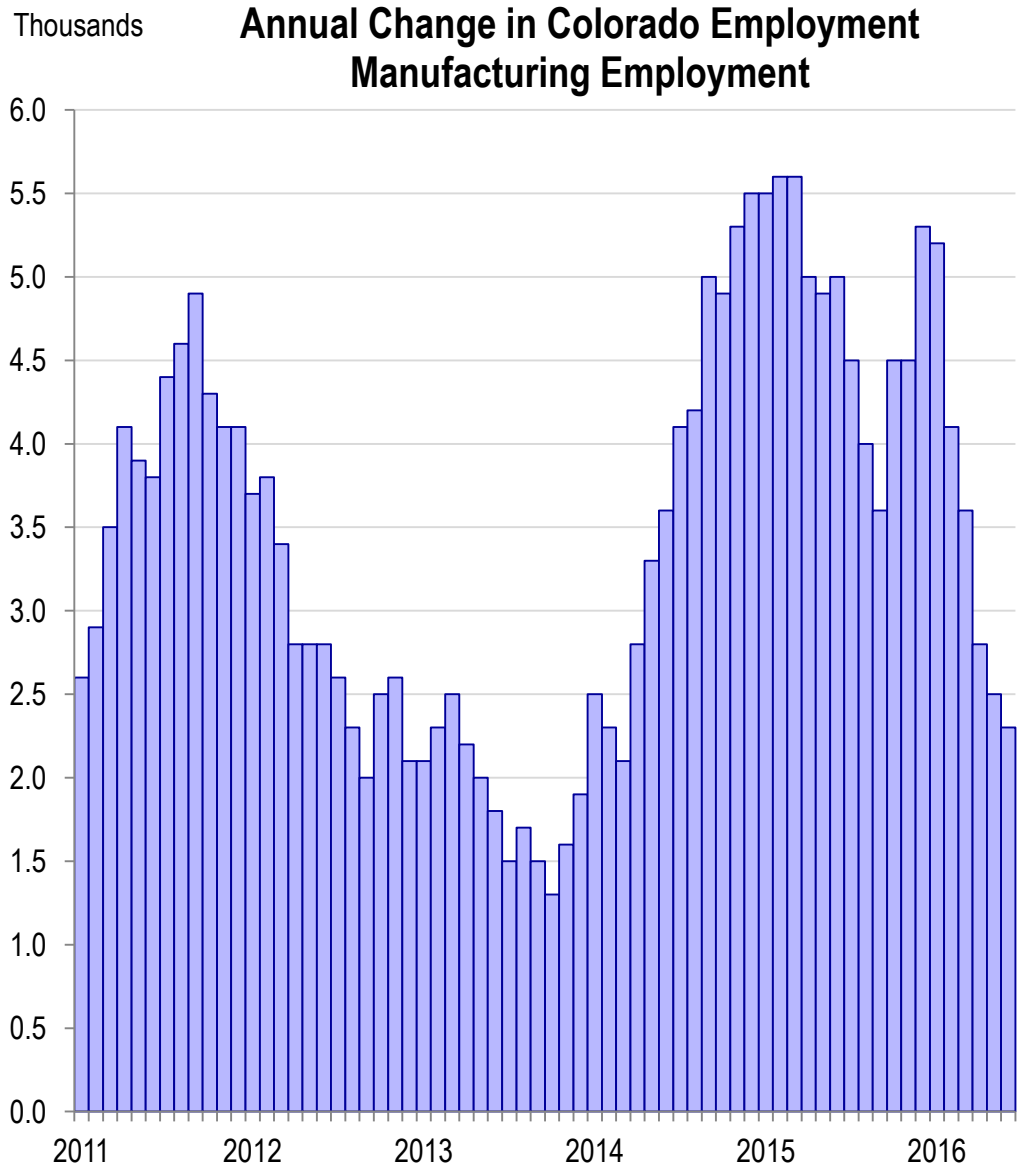
Manufacturing, Construction, Extractive Industries

● Annual Employment
 ● Change in Colorado
 ● Employment -
 ● Manufacturing

Since Q4 2010 the monthly year-over-year change in Colorado manufacturing employment has been positive, but volatile.

Between 2011 and 2016 the monthly y-o-y change in employment has fluctuated between 1,300 and 5,600 jobs.

The monthly y-o-y change in the number of jobs added was 2,300 in June.



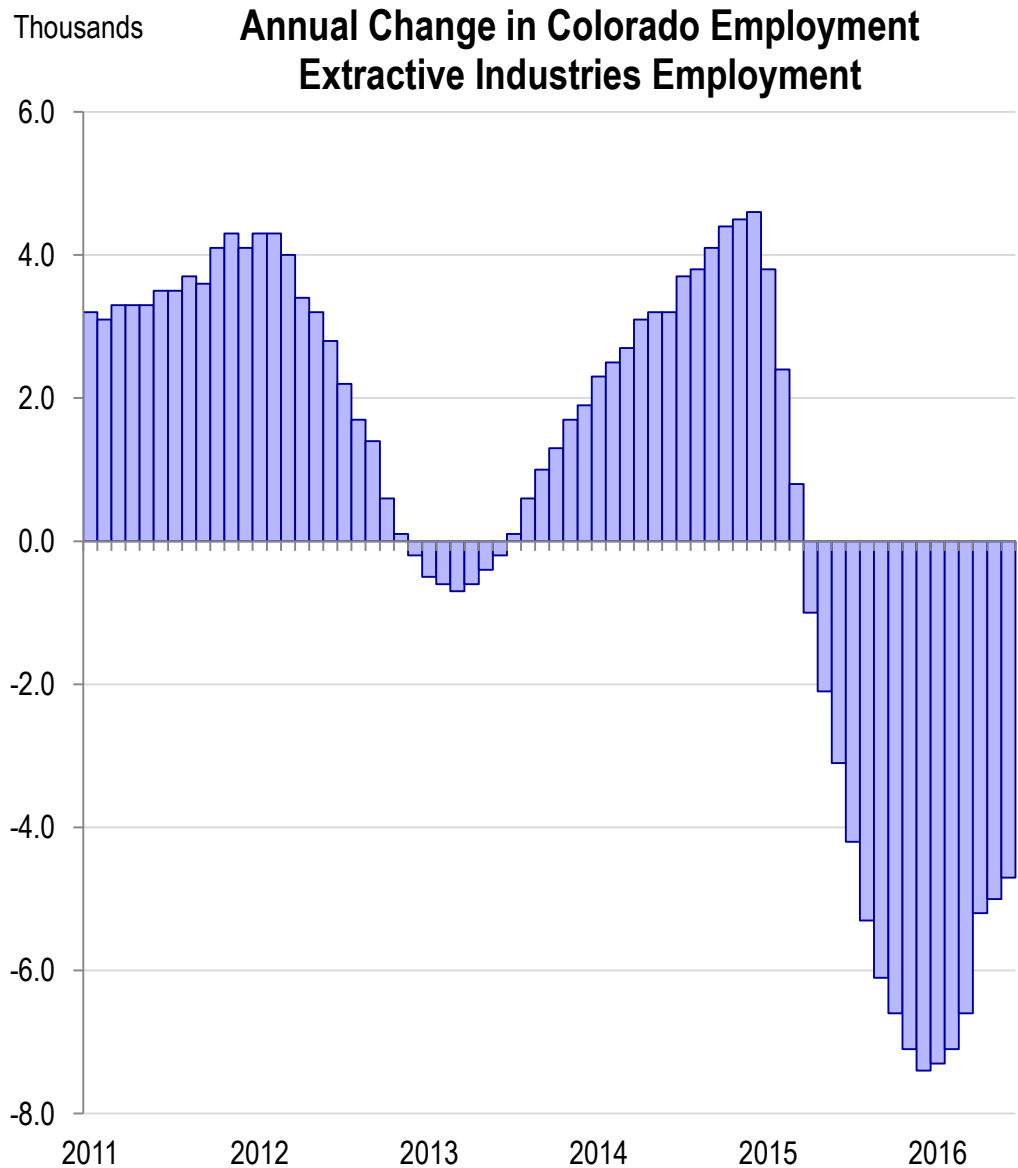
Source: Bureau of Labor Statistics, cber.co.

● Annual Employment
● Change in Colorado
● Employment – Extractive
● Industries

The monthly year-over-year change in Colorado employment in the extractive industries slowed in 2012 and 2013, but accelerated through 2014.

The industry added jobs at a slower rate in Q1 2015, but it has lost jobs since then.

The greatest number of jobs lost was in December 2015. In 2016 the number of jobs lost has decreased each month.

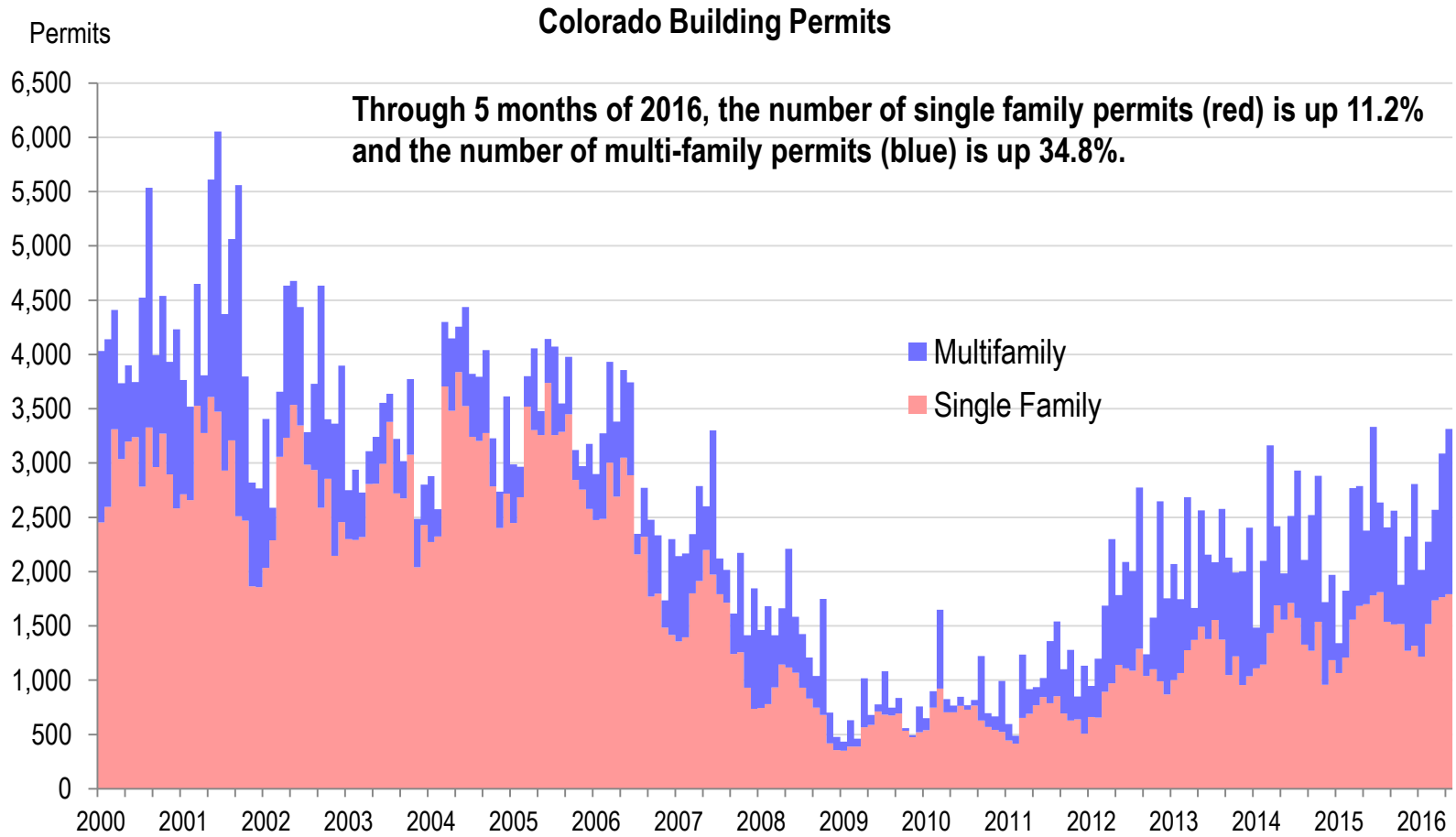


Source: Bureau of Labor Statistics, cber.co.



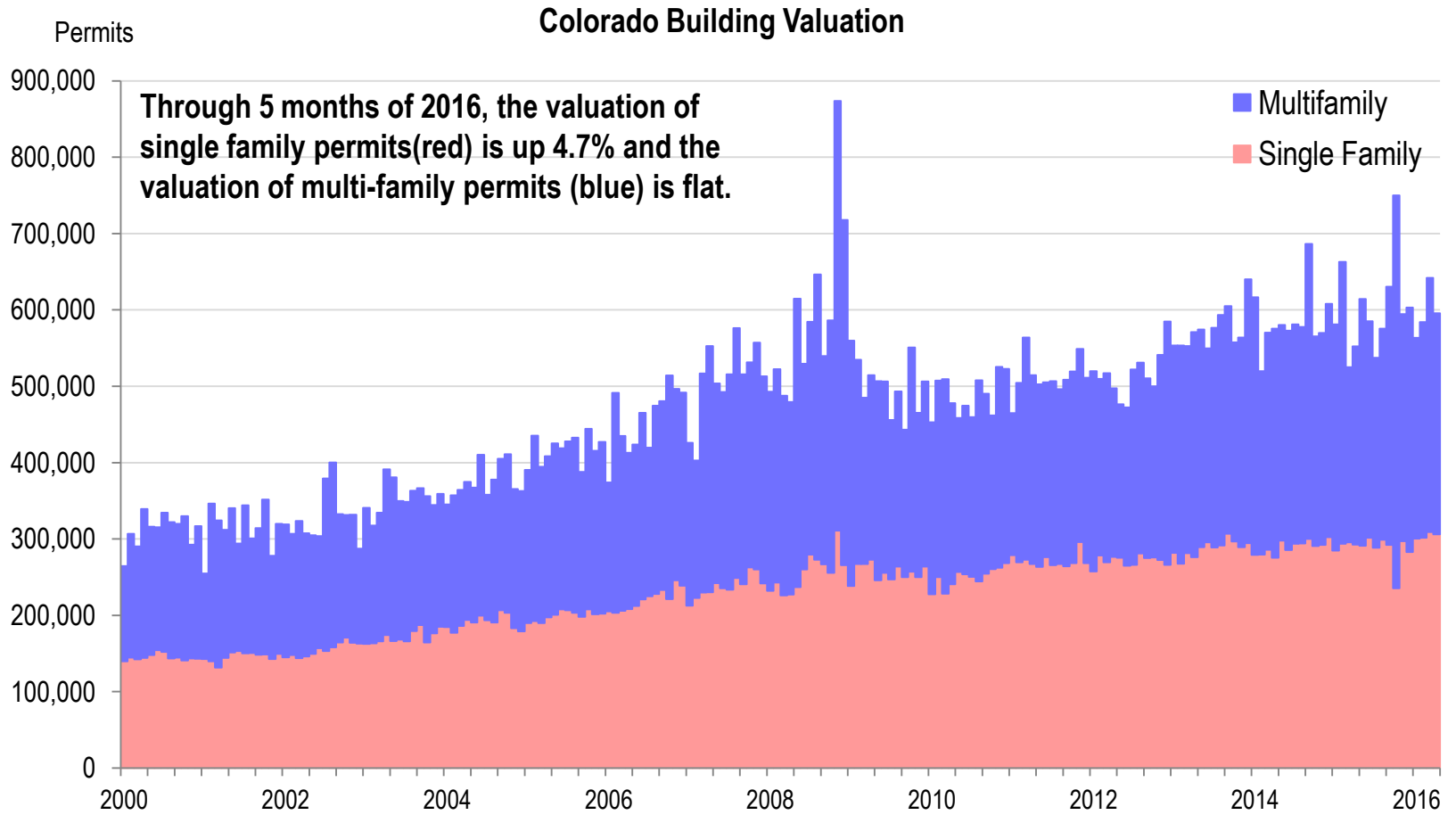
The Colorado Economy Construction and Housing

Colorado Residential Building Permits - Units



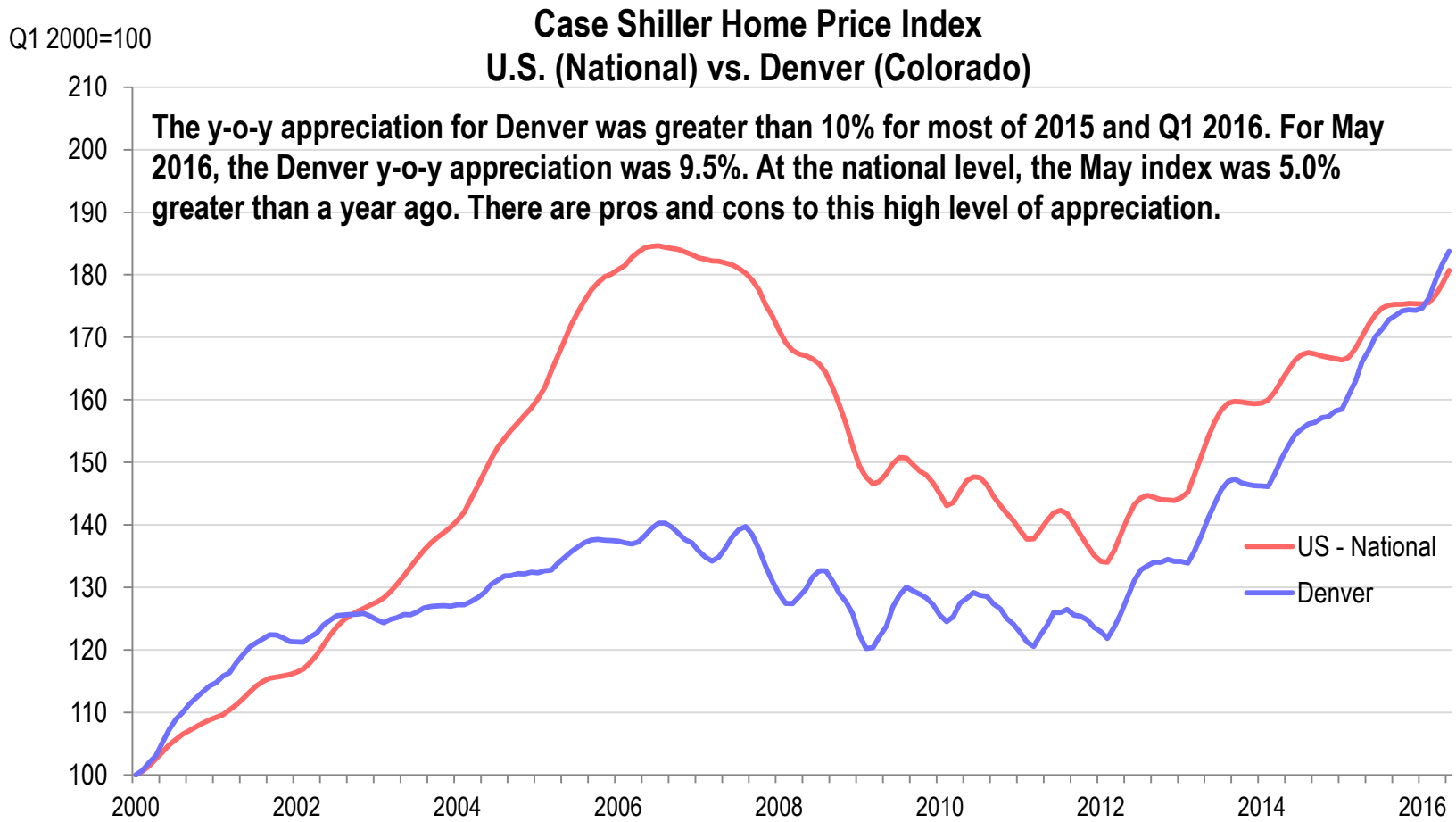
Source: TAMU Real Estate Center, U.S. Census Bureau, cber.co.

Colorado Residential Building - Valuation



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

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



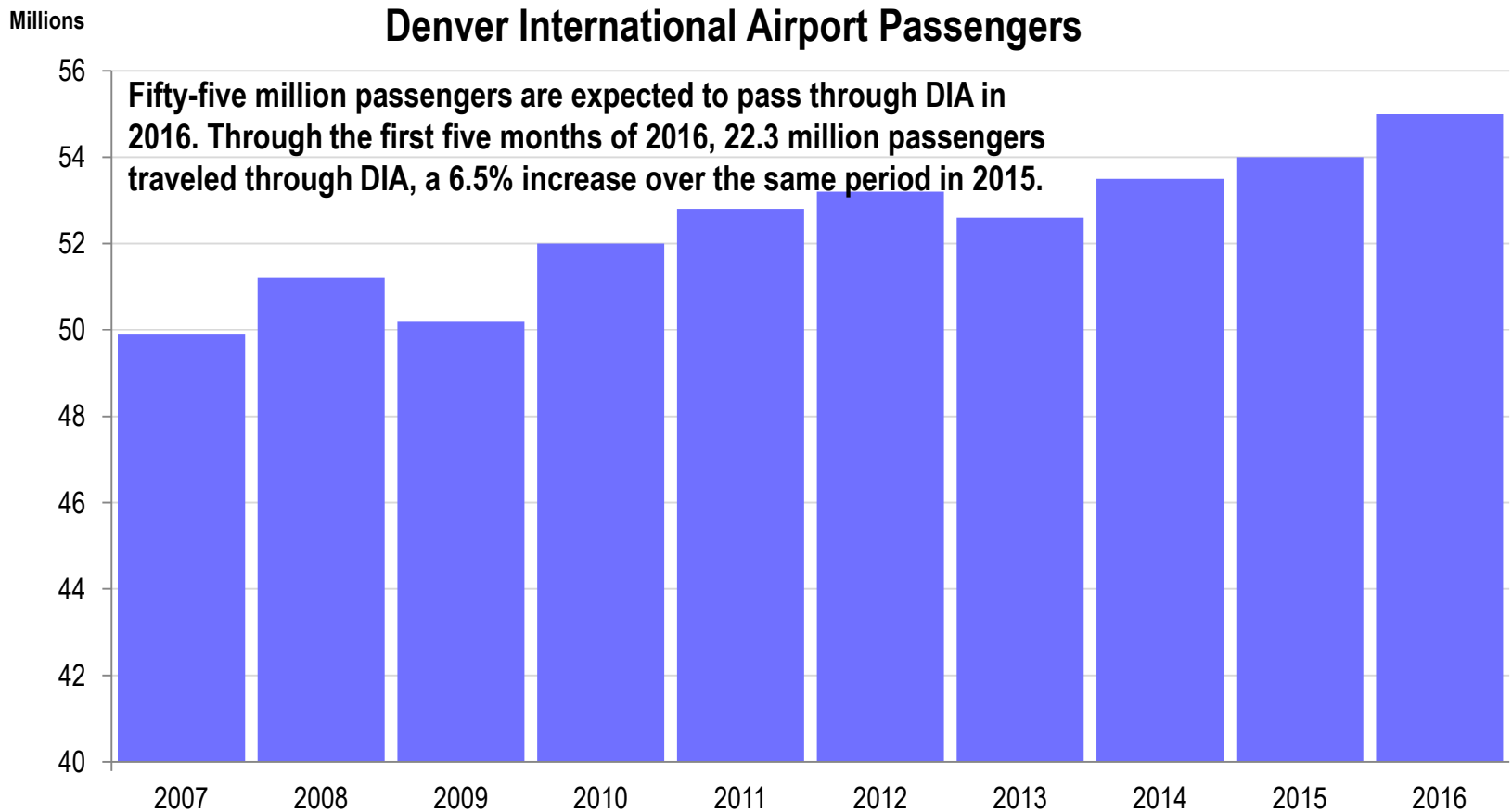
Source: S&P Case-Shiller, cber.co.



The Colorado Economy

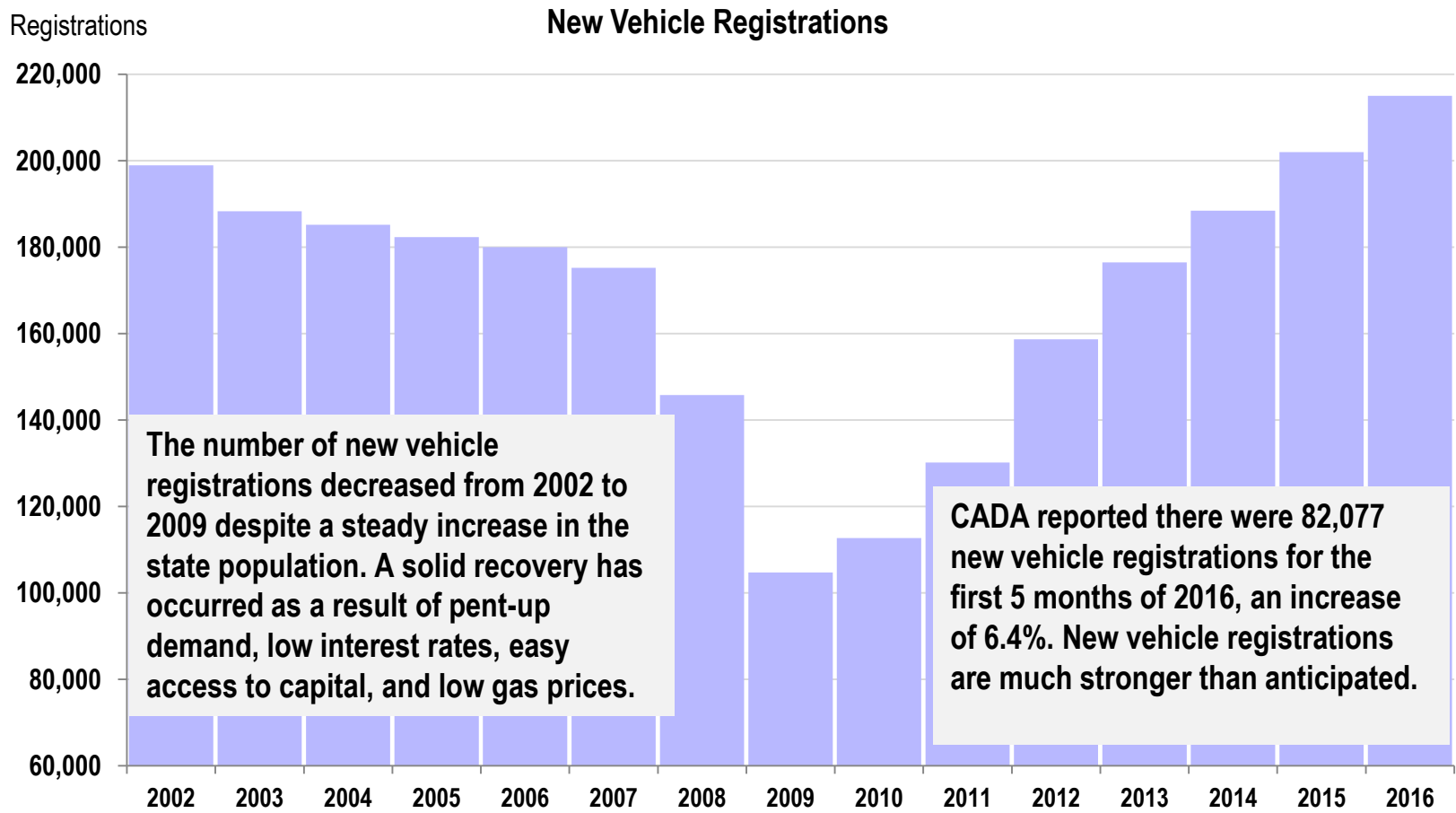
DIA and Auto Sales

DIA Passengers



Source: flydenver.com, cber.co.

New Vehicle Registrations Colorado



Source: Colorado Auto Dealers Association, cber.co.



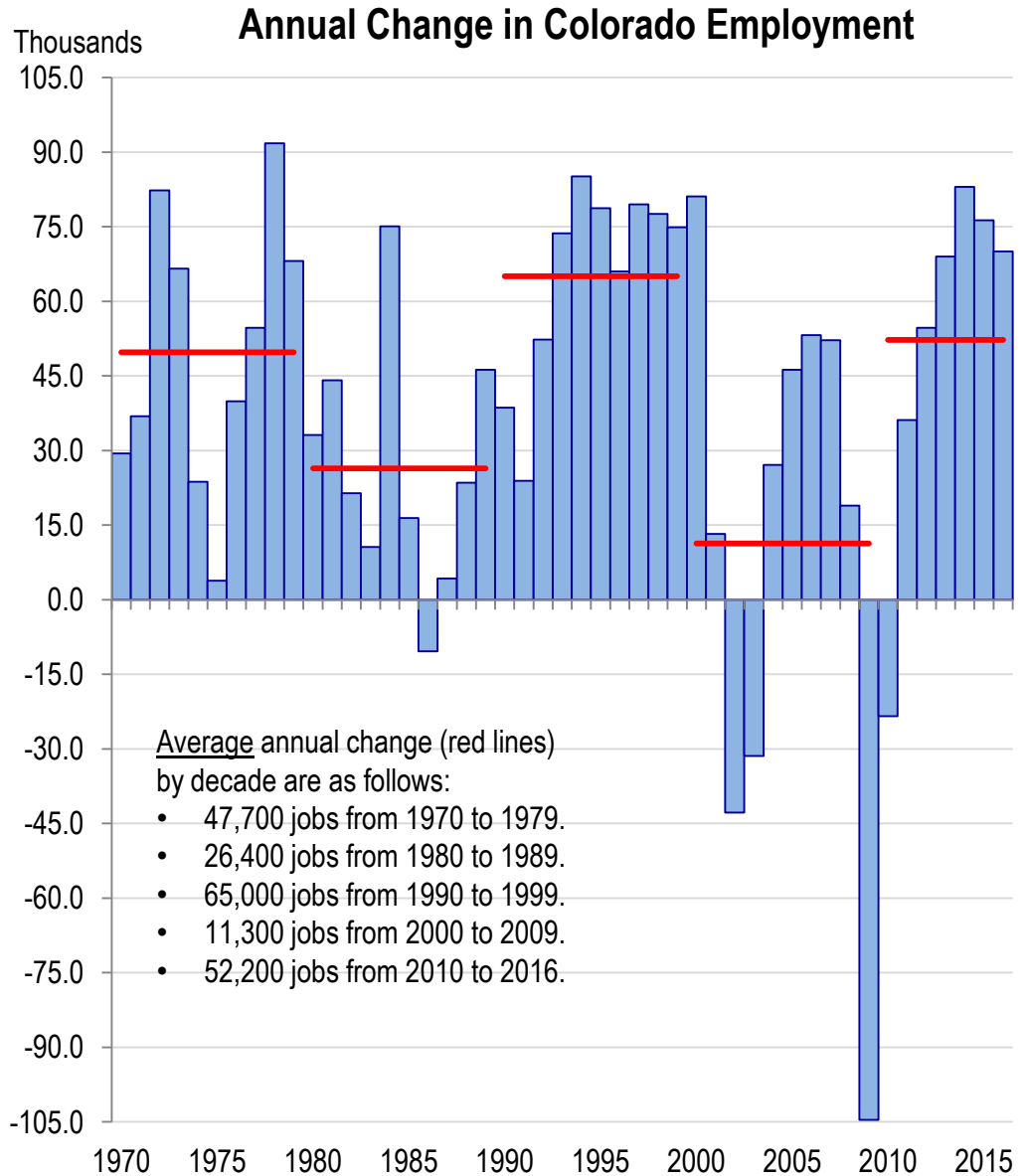
The Colorado Economy Summary

● Annual Employment
 ● Change in Colorado
 ● Employment

The state will add 67,000 to 73,000 jobs in 2016. Colorado employment will increase by 2.7% to 2.9%.

After 6 months, the state is on track to add 68,200 jobs this year.

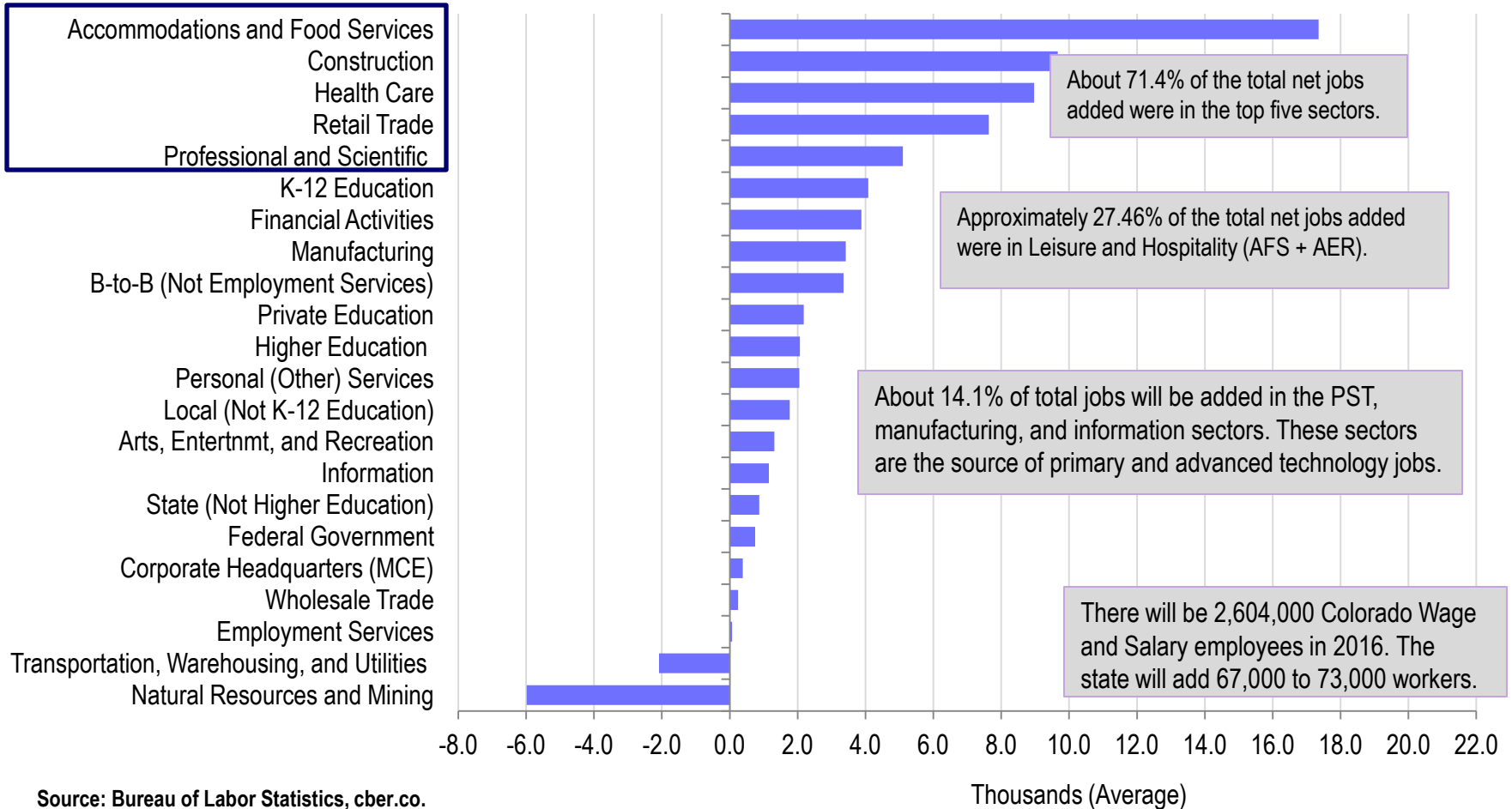
The Colorado Department of Labor and Employment has indicated this total may be slightly overstated.



Source: Bureau of Labor Statistics, cber.co.

Job Changes First 6 Months of 2016 vs. Same Period in 2015

Job Change All Sectors



About 71.4% of the total net jobs added were in the top five sectors.

Approximately 27.46% of the total net jobs added were in Leisure and Hospitality (AFS + AER).

About 14.1% of total jobs will be added in the PST, manufacturing, and information sectors. These sectors are the source of primary and advanced technology jobs.

There will be 2,604,000 Colorado Wage and Salary employees in 2016. The state will add 67,000 to 73,000 workers.



Summary of the Colorado Economy

Reasons to Feel Good About the Colorado Economy

The best things the Colorado economy has going for it are momentum and consistent and diversified growth. Other factors include:

- State real GDP growth continues to outpace U.S. real GDP growth. Colorado real GDP growth is broad-based.
- Strong growth in the number of business establishments in 2015 – although most of the growth is along the Front Range.
- Record passenger traffic at DIA.
- Strong construction is on tap for 2016 and 2017.
- Manufacturing continues to show growth, albeit at a declining rate.
- Tourism is coming off a record year in 2015 and is strong in 2016.
- Colorado job growth is broad-based and includes most sectors.

Potential Local Risks to Strong Economic Growth

The following factors could cause the Colorado economy to grow at a pace that is slower than the current rate:

- Lack of qualified workers to fill key positions. This is becoming more evident in the form of poor service in many industries.
- Lack of affordable housing. This is a problem that is relevant to most parts of the state. To date it has not been proven to be a deterrent to growth.
- Construction is directly and indirectly responsible for the expansion of the local economy. An abrupt slowdown in construction could indirectly cause a slowdown in a number of industries.



Appendix



The Colorado Economy Employment Forecast for 2016

Colorado Economic Forecast

Sector Portfolio Analysis

Attempt to Improve Forecast Accuracy

The primary focus of most state economic forecasts is to project total employment.

Some economists also produce sector forecasts. They usually add projections for the sectors to derive the state total, an approach that introduces more variables for error.

cber.co feels the most accurate forecast is achieved by projecting total employment based on projections for categories of sectors. Sectors are grouped into three categories based on their past performance.

Projections for the categories and overall employment are based on trends, feedback from business leaders, economic developers, and other economists. The sum of these categories are then compared to the projections for overall total employment. Minor adjustments are made and the final forecast is produced for three scenarios. The most likely scenario is used as the final cber.co forecast. This final step helps create a better understanding of upside and downside risk.

Strong Growth, Solid Growth, and Volatile Categories

This portfolio approach has made it easy to see that some sectors consistently create jobs at a higher rate of growth, some show solid growth, and others are more volatile. Ultimately, the volatile category tends to have a greater influence on the amount of change in total job growth than the sectors with steady growth.

In 2012, 2013, and 2014 cber.co evaluated the performance of 23 sectors over the past two decades and refined the manner in which the sectors are grouped. The evaluation factors for grouping include the rate of growth, number of years with positive job growth, size of the sector, and volatility in job growth. The data used for classifying the sectors is available in the Appendix of the original forecast. In the short period this process has been used, it has produced a high level of accuracy in the final forecast. More importantly, it has produced a better understanding of what is driving the economy.

Scenarios for the 2016 Colorado Economic Outlook

The recovery from the Great Recession has been less than robust, but it has been **steady**. While there are many potential risks to future growth, the U.S. and state have shown there is enough momentum to show solid, sustained job growth in 2016.

Overall Job Growth

In 2016 Colorado employment will increase by 2.7% to 2.9%. Average employment for 2016 will be 2,604,000 workers .

Strong Growth Category (About 32% of total employment)

The rate of job growth for this category will be **2.9% to 3.2%**.

Solid Growth Category (about 39% of total employment)

In 2016, the rate of job growth will be **2.3% to 2.5%**.

Volatile Growth Category (29% of total employment)

In 2016, the rate of job growth will be **2.7% to 3.0%**.

The performance of the Volatile Growth Category will most likely determine the accuracy of the cber.co 2016 forecast. There is more downward risk than upside risk to the forecast.

Source: cber.co.

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

2016 Economic Outlook

Optimistic Scenario

- U.S. Real GDP greater than 2.7%.
- Colorado will add more than 73,000 workers, growth greater than 2.9%.

Most Likely Scenario

- U.S. Real GDP 2.3% to 2.7%.
- The U.S. will add at least 2.7 million workers.
- Colorado employment will be 1.8% of U.S employment.
- Colorado will add 67,000 to 73,000 workers, job growth will be 2.7% to 2.9%.

Pessimistic Scenario

- U.S. Real GDP less than 2.3%.
- Less than 67,000 Colorado workers, growth less than 2.7%.

The probability of these scenarios follows:

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

There is slightly more downside risk than upside potential.



2016 cber.co Colorado Employment Forecast

Strong Growth Category + 24,000 to 26,000 Employees

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

Solid Growth Category +23,000 to 25,000 Employees

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

In 2016 Colorado will add 67,000 to 73,000 jobs (2.7% to 2.9%).

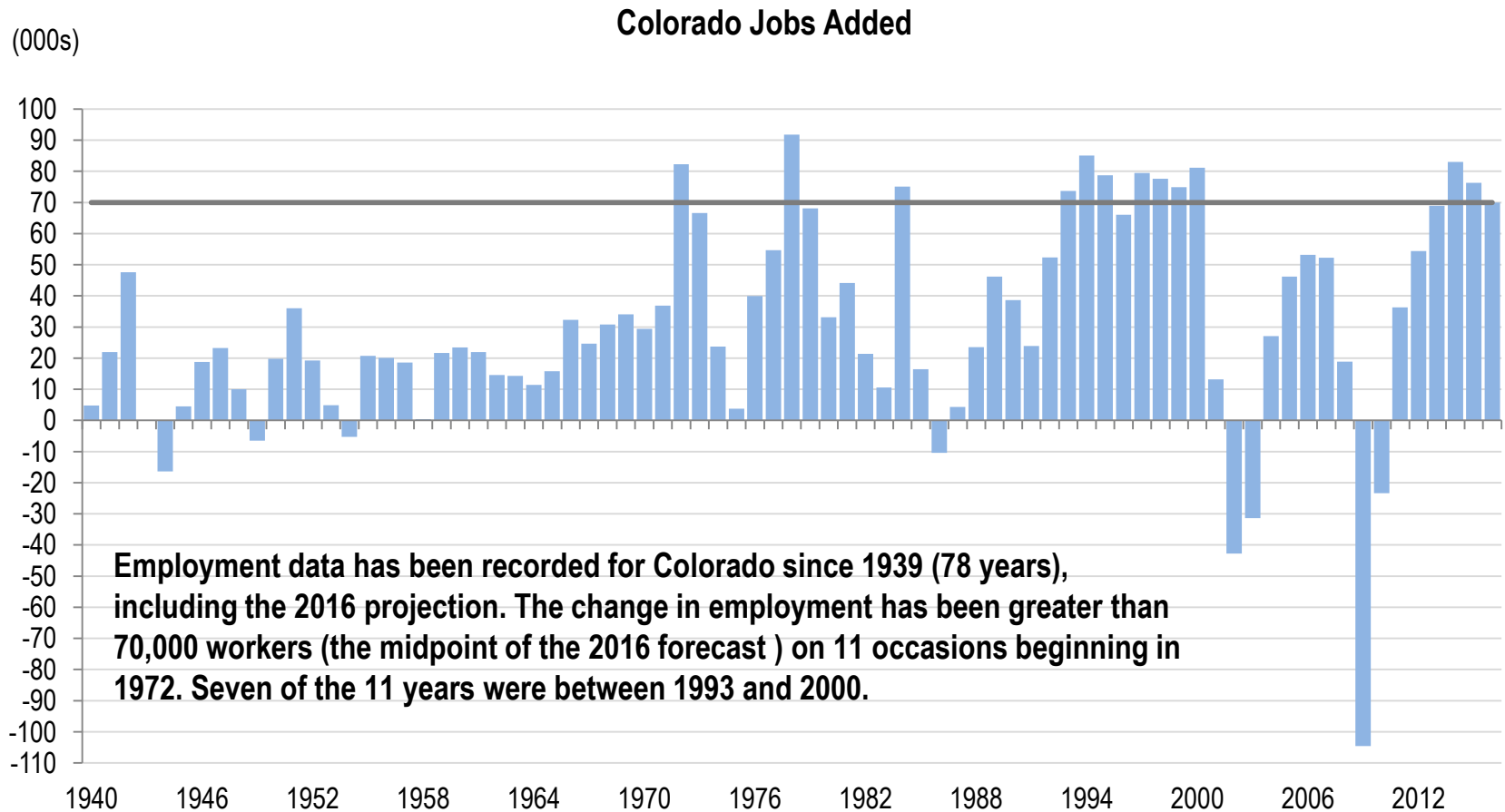
Twenty-two sectors and subsectors have been placed into three categories based on their growth patterns over the past two decades. Projections for these categories are used in the development of the 2016 employment forecast.

Volatile Growth Category +20,000 to +22,000 Employees

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

Source: cber.co.

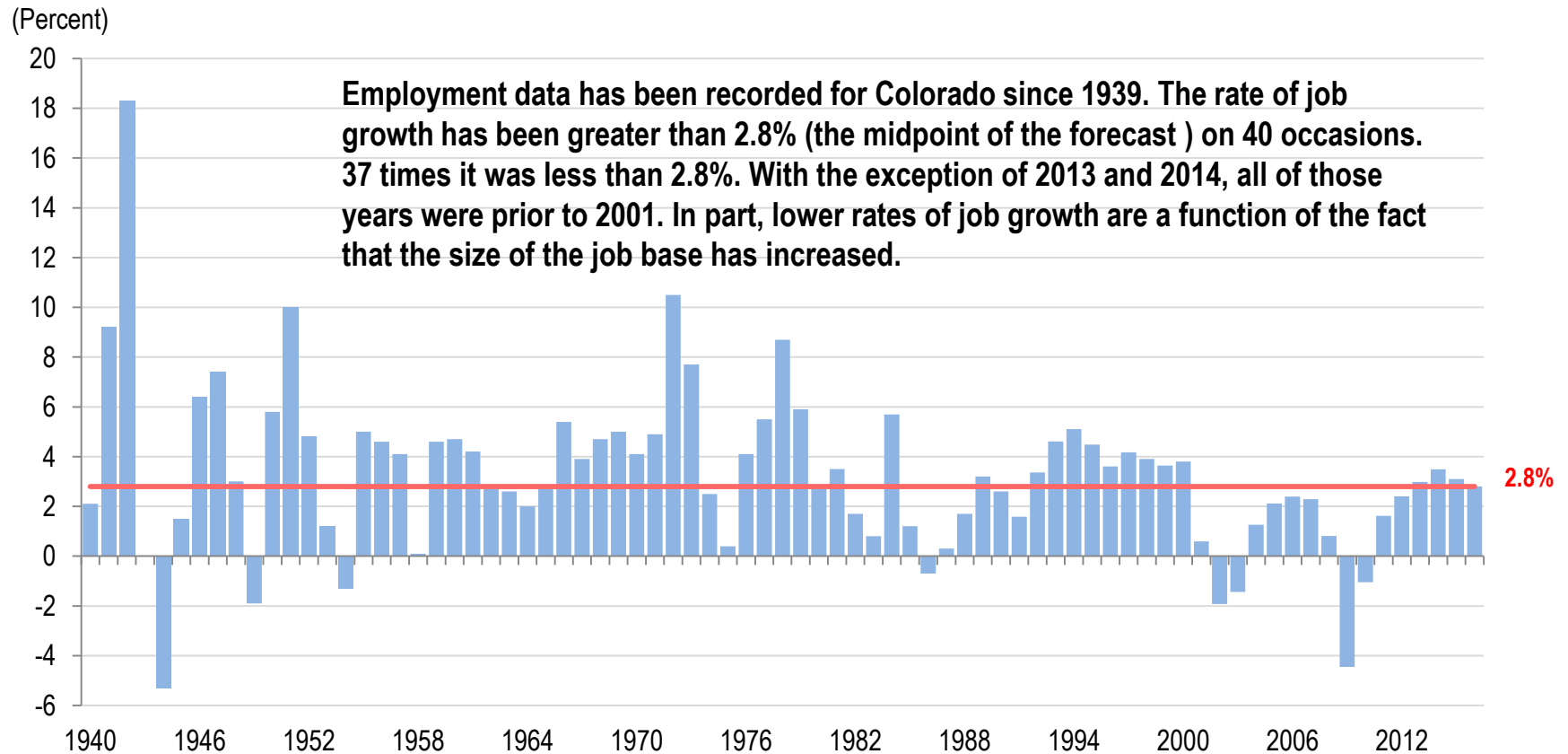
- The Projected Absolute Job Growth for 2016 (Total Jobs Added) will be the 12th Strongest since 1939.
-
-



Source: Bureau of Labor Statistics, cber.co.

- The Projected Rate of Colorado Job Growth for
- 2016 will be the 41th Strongest in 77 Years
-

Percentage of Jobs Added

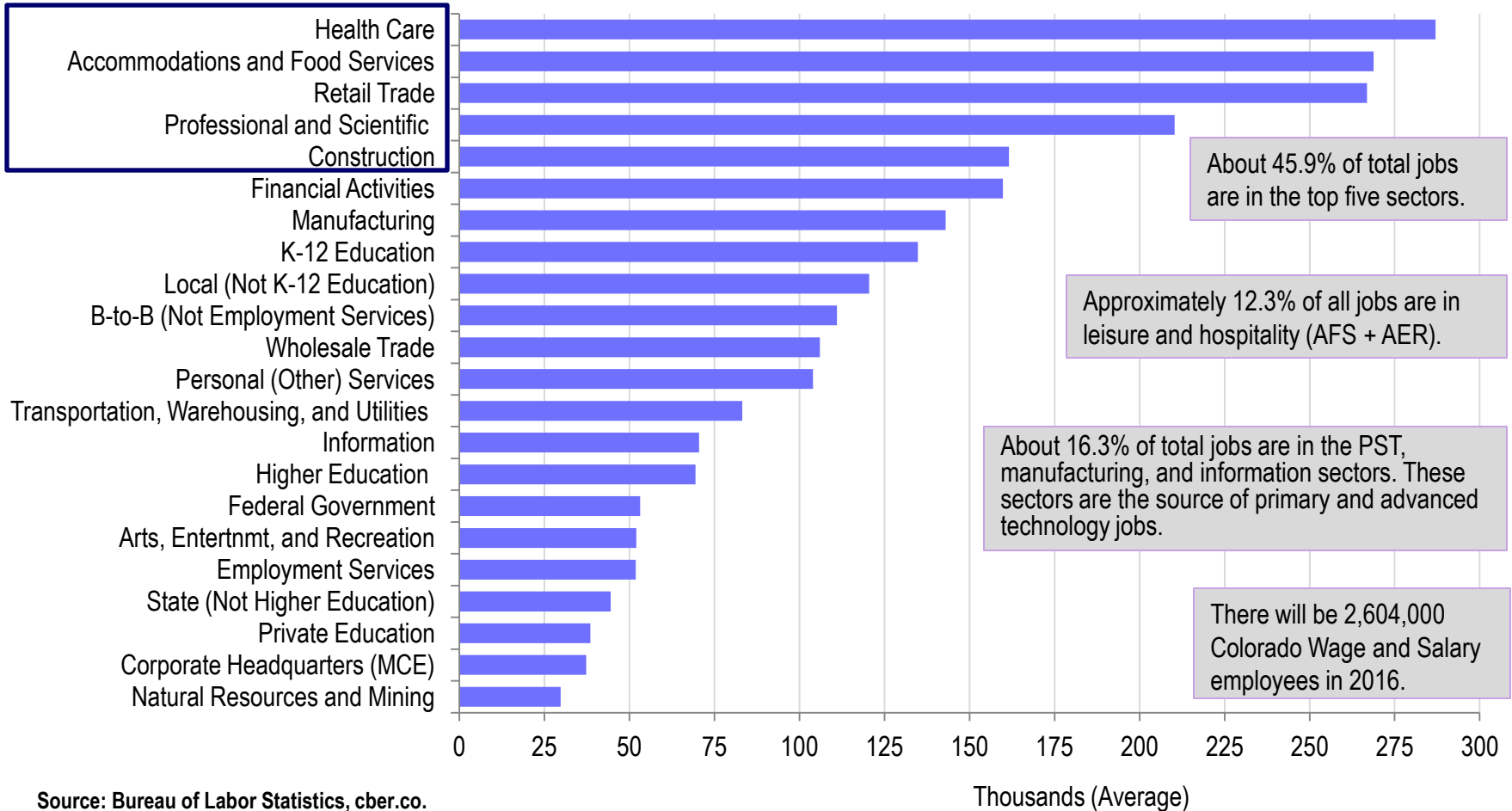


Source: Bureau of Labor Statistics, cber.co.

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Colorado Wage and Salary Employment 2016 Forecast

Employment



About 45.9% of total jobs are in the top five sectors.

Approximately 12.3% of all jobs are in leisure and hospitality (AFS + AER).

About 16.3% of total jobs are in the PST, manufacturing, and information sectors. These sectors are the source of primary and advanced technology jobs.

There will be 2,604,000 Colorado Wage and Salary employees in 2016.



The Colorado Economy

Measuring Change/Revision Process

Measuring Change in Employment

Methods of Measuring Change in Employment

- Month-over-prior-month – This method can be used only with seasonally adjusted data.
- Year-over-prior-year – This method can be used with seasonally adjusted or non-seasonally adjusted data. The results are usually similar.
- Rolling average – Average employment for a period, such as 12-months, compared to average employment to the average for the prior period of “rolled” data.

Measurement Used by cber.co

- cber.co typically uses a derivative of a rolling average. For example, the average of the first quarter of 2015 will be compared to the average for the first quarter of 2014. It is also important to look for trends.
- This methodology is preferred to seasonally adjusted month-over-prior month data, particularly with employment data. Advances in technology and the past two recessions have made it difficult to accurately adjust for seasonality.



BLS/LMI Data Revision Process

BLS and LMI Data Projections

In recent years, data-producing federal agencies have been asked to deliver more accurate data, in a shorter time frame, using fewer staff, with lower research budgets. The data used for most short-term forecasts is the Current Employment Survey, also called Nonfarm or Wage and Salary data. It is possible for the CES data to be revised up to four times.

BLS and LMI Data Revision Process

The CES projection process is outlined below:

1. Around the 20th of a month, preliminary data for the prior month will be published and the month prior to that will be updated (For example, around June 20th preliminary data for May will be produced and April will be updated.) These revisions are usually minor. Most short-term forecasts use this data.
2. In March of the following year, the previous two years will be revised. (For example, the 2014 employment data will be revised in March 2015 and finalized in March 2016).
3. The initial March update is usually the most significant revision, and the two-year update is often minor (In the case of 2014, some of the monthly totals will see significant upward revisions when revised in March 2015.)
4. Periodically, BLS updates the entire data series back to 1990. This usually occurs when they recalibrate their projection models or redefine NAICS codes.



cber.co Colorado Economic Review Through First Half of 2016

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For additional information contact cber.co at cber@cber.co.

ABOUT THE AUTHOR

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

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

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