

# Review of Colorado Economy Analysis of 2015 Employment Data Through July

Colorado-based Business and Economic Research

August 25, 2015

# Overview

The past week, August 17<sup>th</sup> to 25<sup>th</sup>, was filled with some ugly economic data. On a positive note, the state has added 65,900 jobs during the first seven months of 2015 compared to the same time last year. There are headwinds, but the sky is not falling!

The 2015 cber.co Colorado Employment Forecast - The state will add 73,000 to 79,000 jobs in 2015.

This brief analysis is divided into the following sections.

- Summary of Key Data.
- U.S. Economy – Gross Domestic Product, Employment and Unemployment., and Wages.
- U.S. Economy – Consumer and Business Sentiment and the S&P 500.
- U.S. Economy – Retail Sales, Construction, and Housing.
- U.S. Economy – Reasons to Feel Good and Risks.
- Colorado Employment , Unemployment, and Wages.
- Change in Colorado Employment by Performance Category.
- The Impact of the Decrease in the Price of Oil on Colorado Employment.
- Other Industries.
- Summary and Total Jobs Added.
- Appendix.



The 2015 cber.co forecast can be found at <http://cber.co/economic-forecasts/cber-co-economic-forecast/>

# Summary of Key Data United States and Colorado

## United States

**Real GDP** – Annual growth will be 2.5% to 2.9% in 2015.

**Retail Sales** – Up 1.3% for 7 months, projected to be up 3.0% for 2015. We need a strong holiday season to make it happen.

**U.S. Employment** – The U.S. is on track to add 3.0+ million jobs this year.

**Unemployment Rate** – 5.3%, down from 6.2% a year ago, 8.3 million unemployed, trending down.

**ISM Indices** – Manufacturing is sluggish and expected to remain that way; Non-Manufacturing is steady and well above 50.

**Price of a Barrel of Oil (WTI)** – Since mid-March it has varied from \$43 to \$61. Currently in the low 40s, but trending down.

**Construction** – For 7 months, employment up 4.7%, average weekly earnings up 2.3% (NSA).

**Case Shiller Housing Prices** – U.S. prices up 4.5% from a year ago.

**Standard and Poor's 500** – On May 21st the S&P 500 closed at 2,130.82. On August 24<sup>th</sup> it closed at 1,867.61, a decrease of 12.4% or 263 points.

## Colorado

**QCEW Revisions** – Recent revisions to Q4 2014 could cause 2014 employment to be revised upward in the March 2016 benchmark revisions. There was stronger momentum coming into 2015 than originally anticipated.

**Population** - Colorado's population will increase by 88,800 people this year.

**Unemployment Rate** – 4.3%, down from 4.8% a year ago.

**MSA Unemployment Rate** – Boulder and Ft. Collins have the lowest rates at 3.8% for both.

**2014 Colorado GDP** – The state Real GDP grew by 4.7% in 2014 compared to 2.2% for the U.S.

**2014 Contribution to GDP Growth** – The Mining sector accounted for 6.2% of GDP and 18.2% of GDP growth in 2014.

**Wage and Salary Employment** – Through seven months Colorado has added 65,900 jobs compared to the same time last year.

**Leading Sectors for Growth** – About 73.9% of the jobs have been added in the Health Care; Construction; Accommodations and Food Services; Professional, Scientific, and Technical Services; and Manufacturing.



# U.S. Economy

## Gross Domestic Product, Employment, Unemployment, and Wages

# Real US GDP Growth

## Quarterly

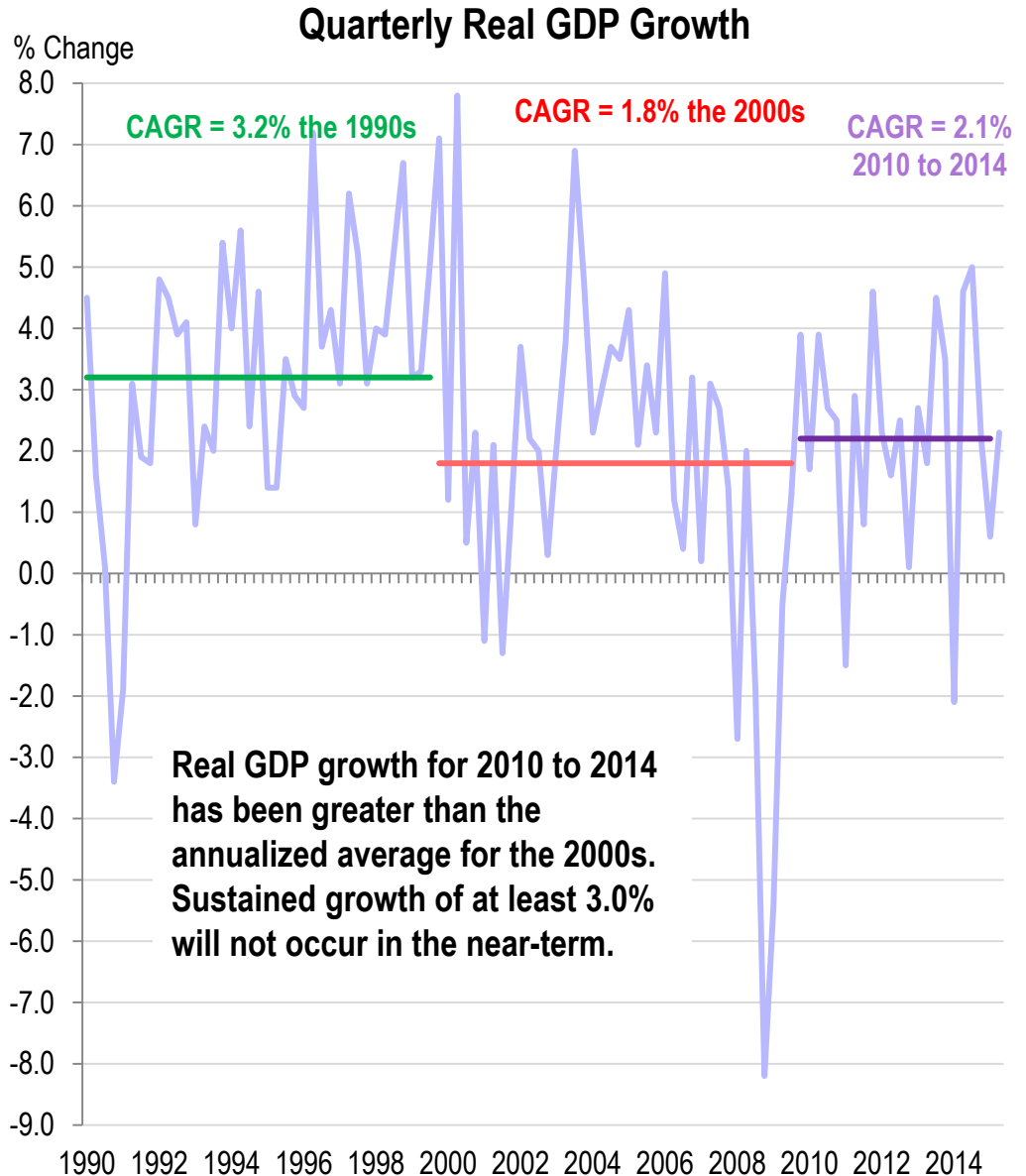
The cber.co 2015 forecast calls for real GDP growth of 2.5% to 2.9%, a slight increase over 2014.

Q1 2015 Real GDP growth was 0.6%. The first estimate of Q2 growth was 2.3%.

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 2014 (purple line).

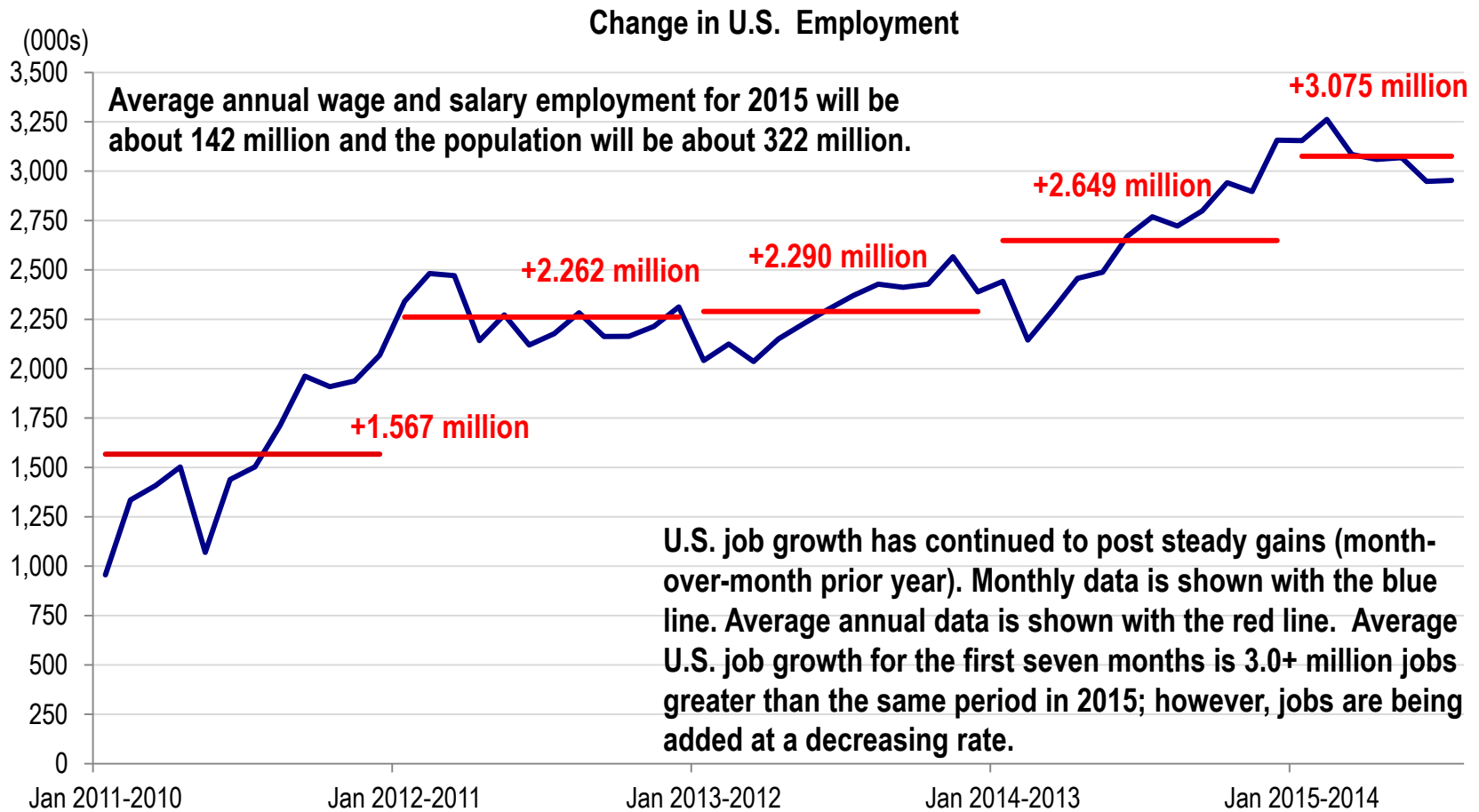
Real GDP growth for the past five years was:

- 2010 2.5%
- 2011 1.6%
- 2012 2.3%
- 2013 2.2%
- 2014 2.4%



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

# Change in U.S. Employment Month-Over-Month Prior Year



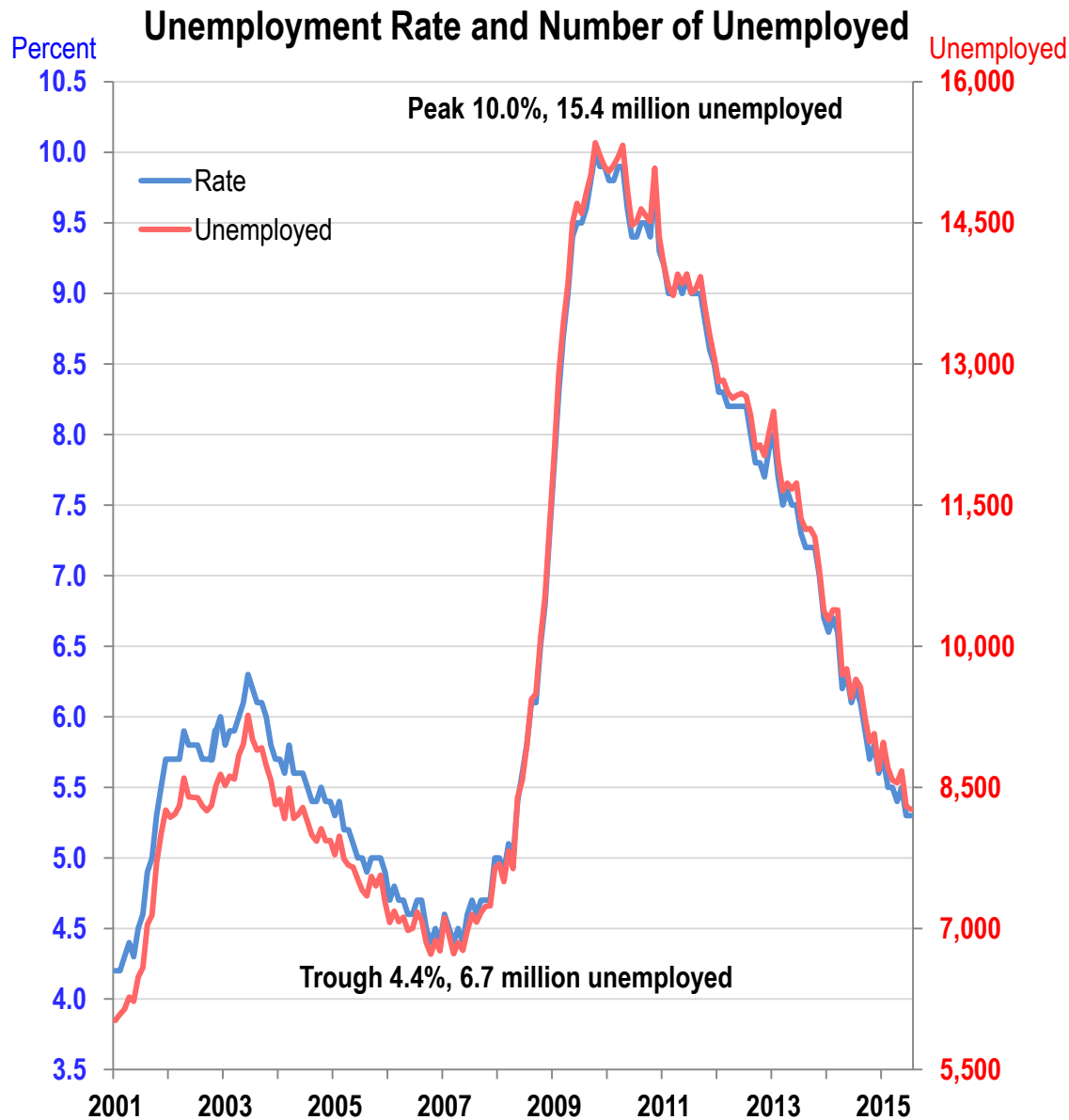
Source: Bureau of Labor Statistics, NSA.

# U.S. Unemployment Rate and Number of Unemployed

Both the unemployment rate and number of unemployed have slowly trended downward since peaking in late 2010. They are similar to levels in 2005.

The total number of unemployed (red) was 8.266 million at the end of July 2015. This is 1.5 million above the low point in 2006 and 7.1 million below the high point in 2009.

The unemployment rate for July 2015 was 5.3%, down from 6.2% at the same time last year. The unemployment rate at the end of 2014 was 5.6%.



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

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<http://cber.co>

# U.S. Average Weekly Earnings of All Employees

U.S. Average Weekly Earnings for all employees were:

- 2012 \$810.46
- 2013 \$825.11
- 2014 \$845.06

The rate of increase for these wages was:

- 2012 2.4%
- 2013 1.8%
- 2014 2.4%

Wages are about 2.0% higher for the seven months of 2015.

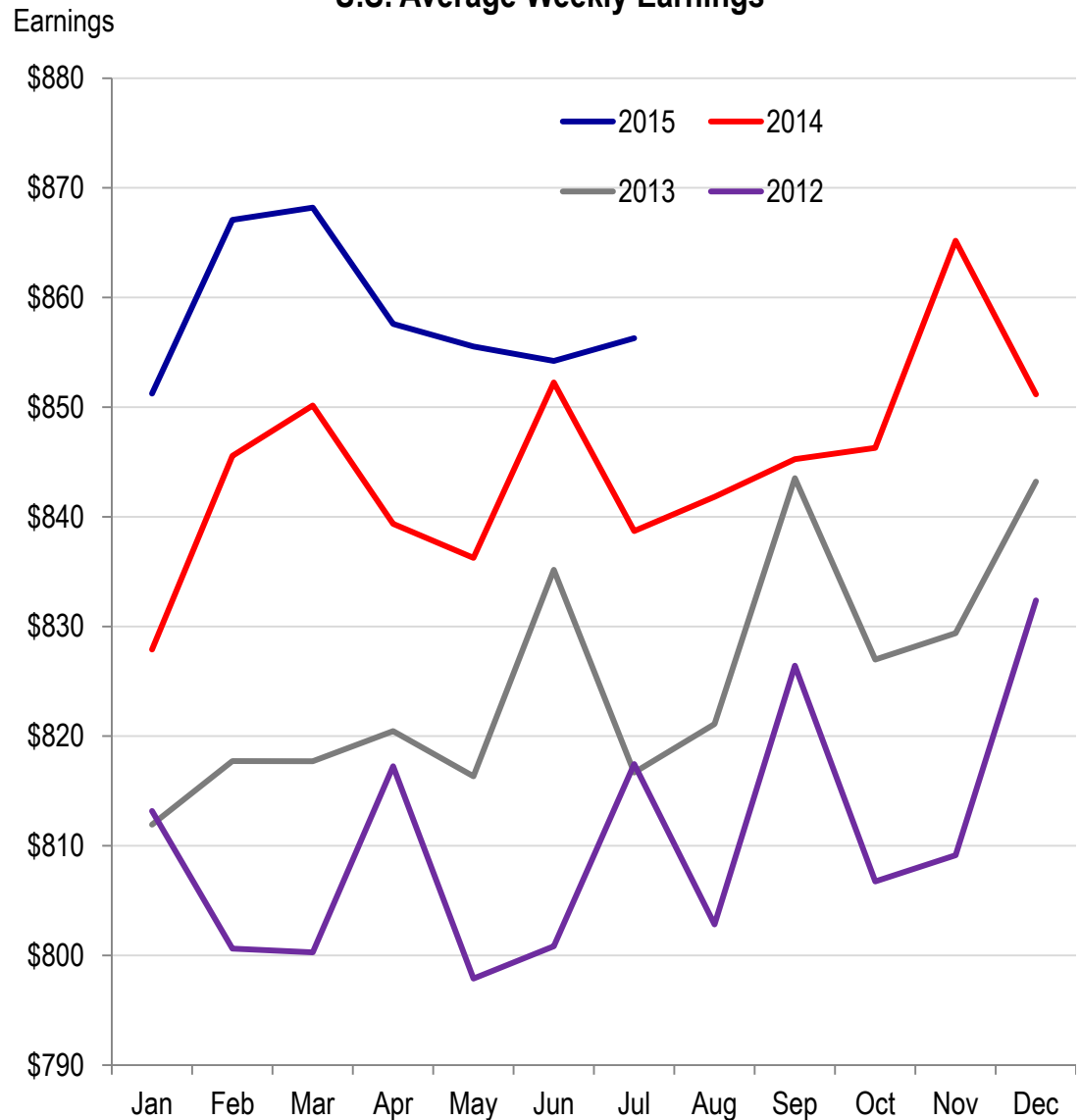
The increase in the CPI for these years was:

- 2012 2.1%
- 2013 1.5%
- 2014 1.6%

Wage increases have barely kept up with the rate of inflation.

Source: Bureau of Labor Statistics, NSA.

## U.S. Average Weekly Earnings

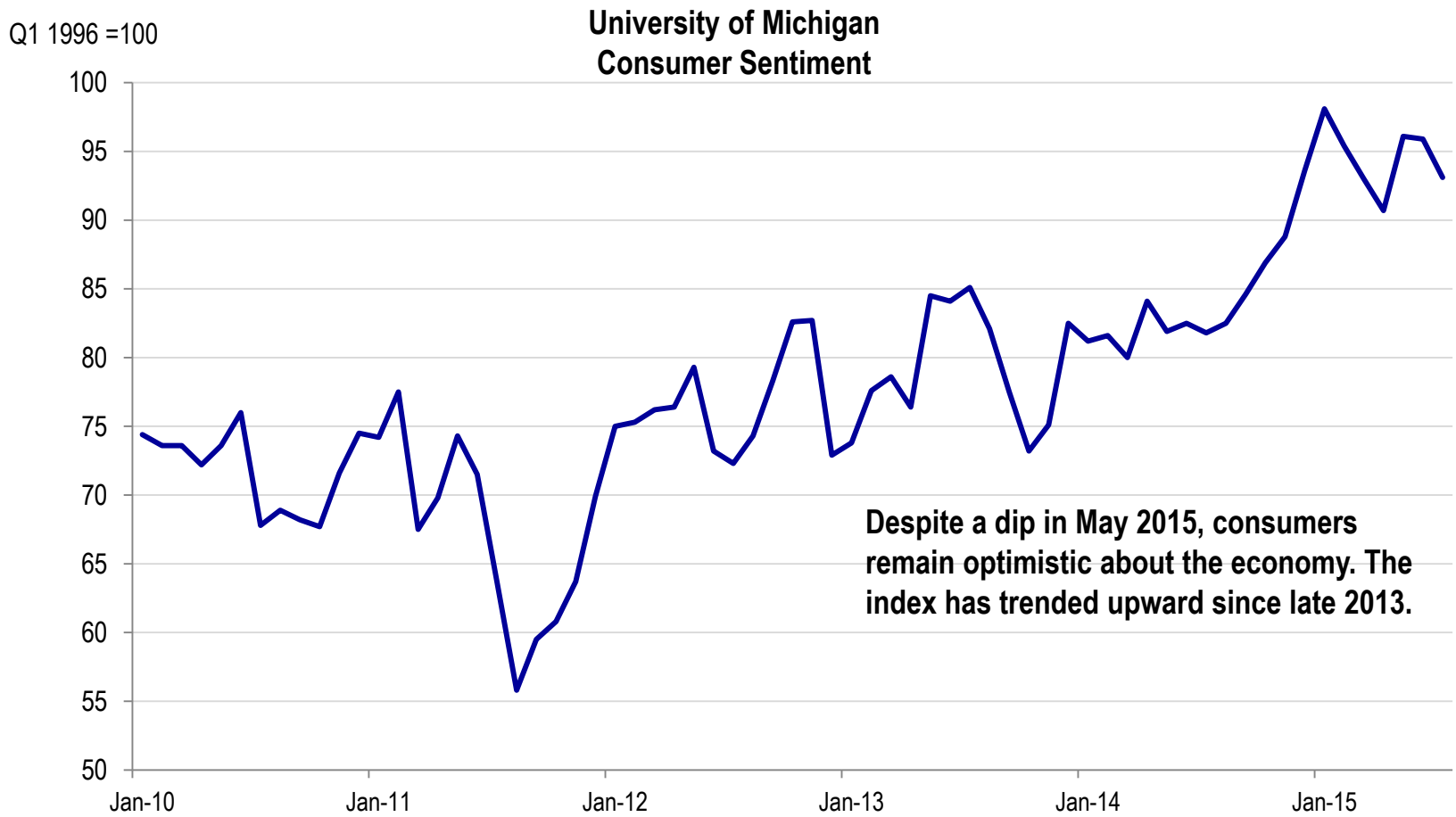






# U.S. Economy Consumer and Business Sentiment, and the S&P 500

# University of Michigan Consumer Sentiment

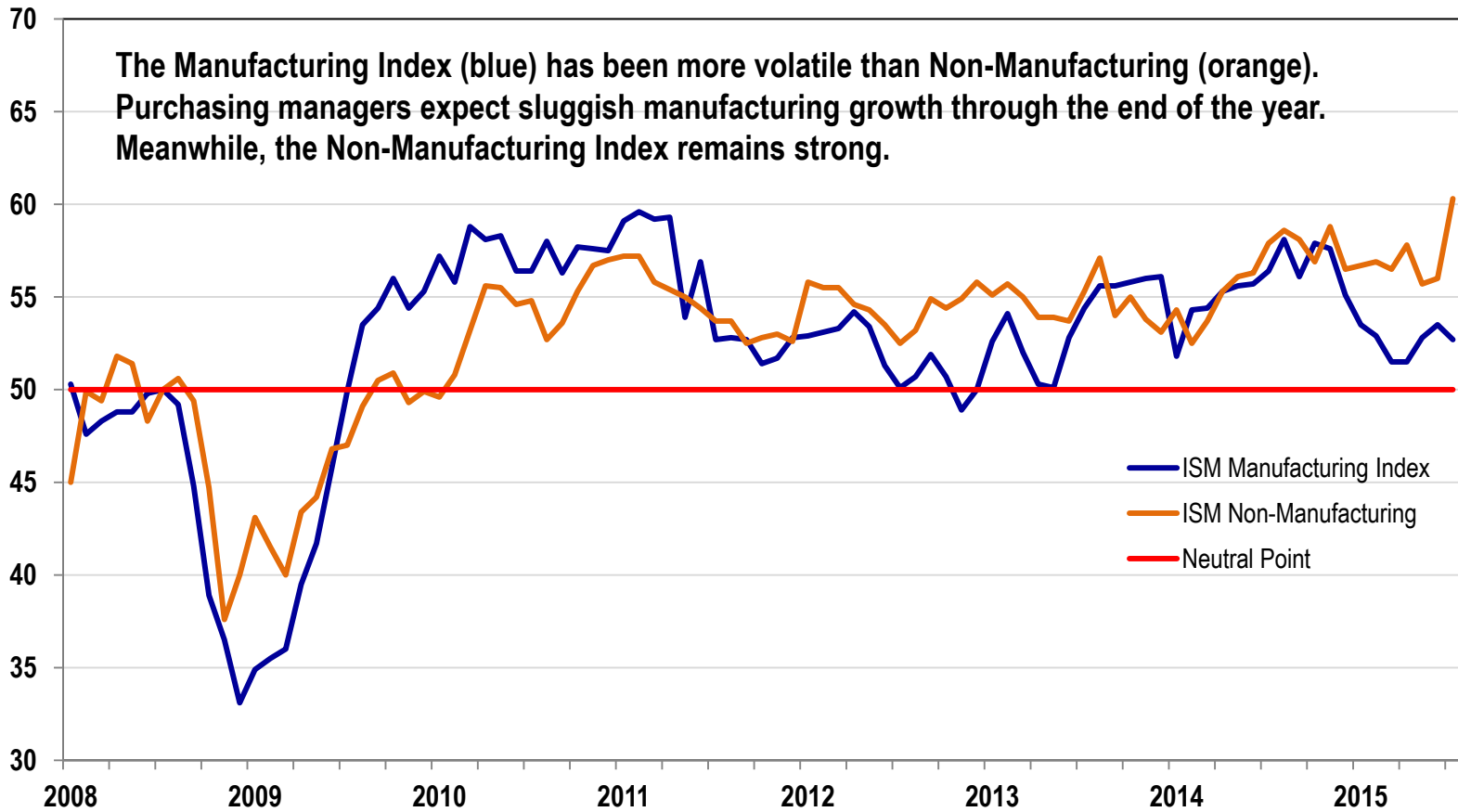


Source: Reuters, FRED.

# ISM PMI Composite Indices

## Manufacturing vs. Non-manufacturing

ISM Manufacturing vs. Non-Manufacturing Indices



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

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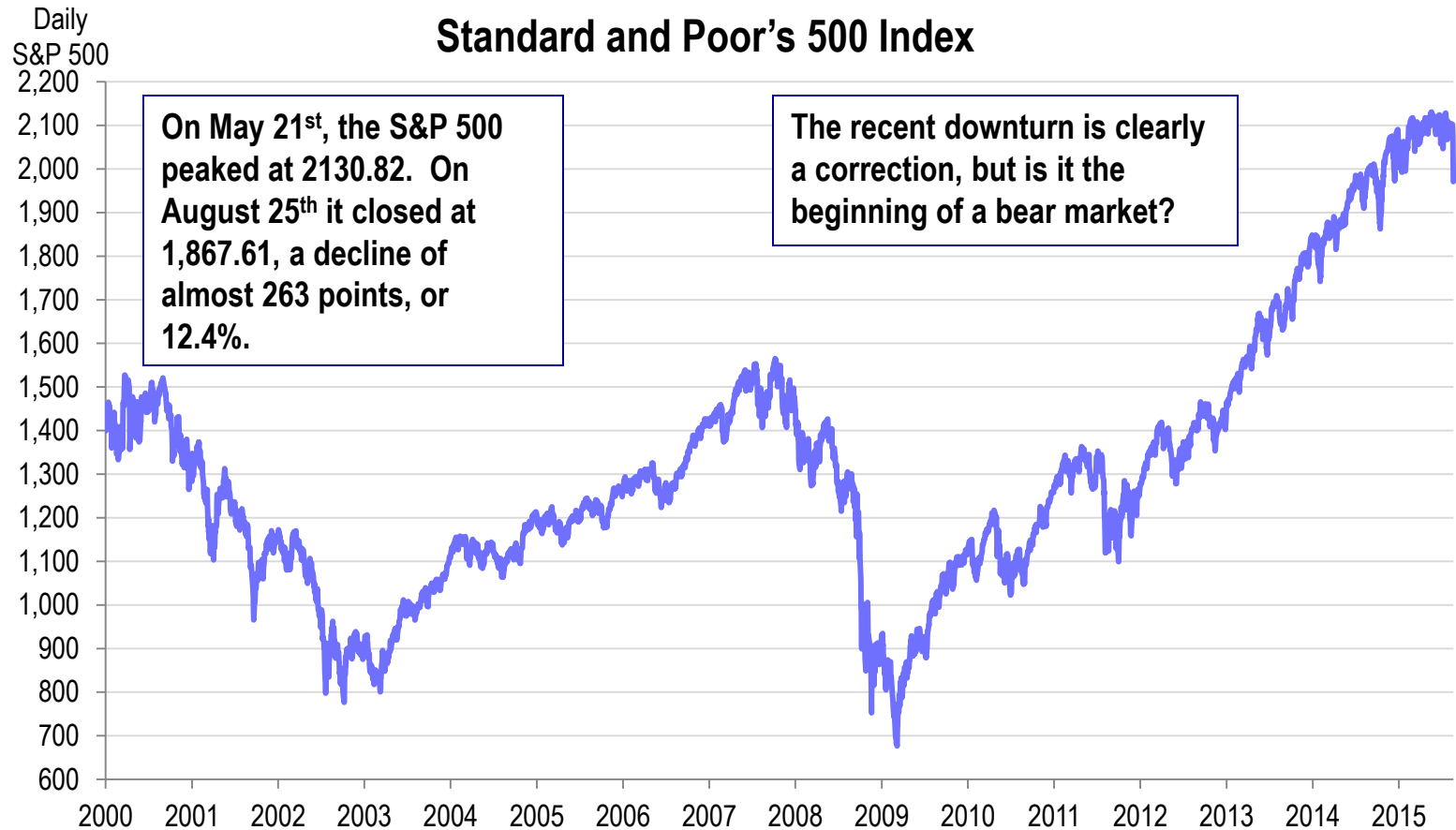
<http://cber.co>

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That noise you heard on Monday was your 401K falling off the charts. The correction was long overdue. The Volatility Index jumped to 40.74.



# Standard and Poor's 500 Index

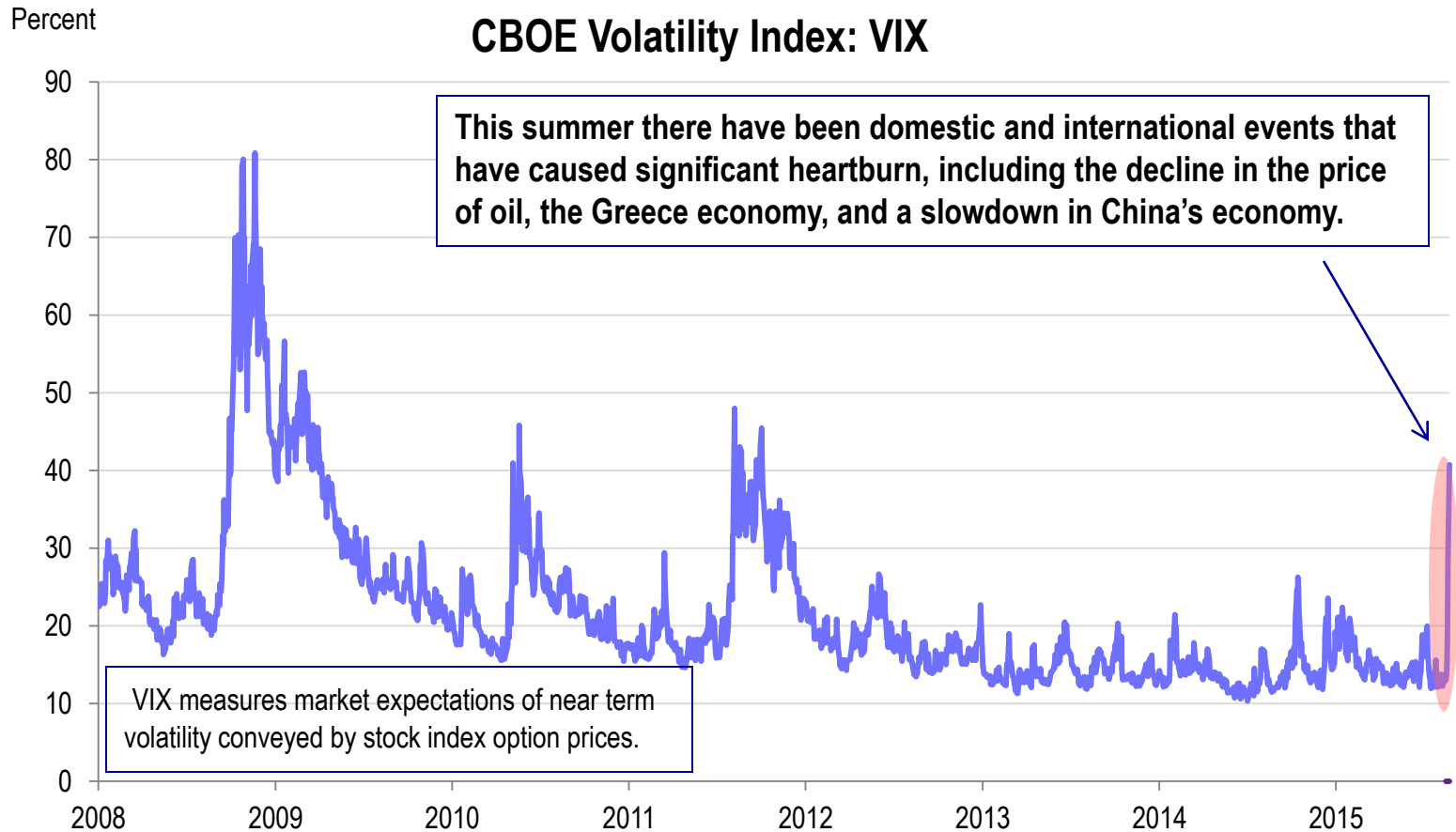


Source: FRED, S&P 500.

# ● CBOE Volatility Index

## ● VIX (VIXCLS)

### ●



Source: FRED, CBOE.

# ● Performance of S&P and Presidential Elections

## ● What is in Store for 2015, 2016, and 2017?

The performance of the Standard & Poor's 500 Index (S&P 500) for the presidential terms from 1952 to 2012. Fifteen stock market cycles were evaluated. The average time from peak to peak was 1,534 days or 4.2 years and the average time from trough to trough was 1,509 days or 4.1 years.

### Peaks

Sixty percent of the peaks occurred during the second half of the presidential term.

Year 1 - 3 peaks.

Year 2 - 3 peaks.

Year 3 - 2 peaks.

Year 4 - 7 peaks.

If the past trends hold true in the future, the stock market is more likely to increase in 2016 than it is to decrease.

### Troughs

About 87% of the troughs occurred during the first half of the presidential term. This suggests that fiscal policy in the third or fourth year of a presidential term may have prevented or postponed economic weakness for that year, but it mostly likely have kicked the can forward to the first half of the subsequent presidential term. In some cases pushing the weakness forward had a detrimental impact on the economy.

Year 1 - 3 troughs.

Year 2 - 10 troughs.

Year 3 - 2 troughs.

Year 4 - 0 troughs.

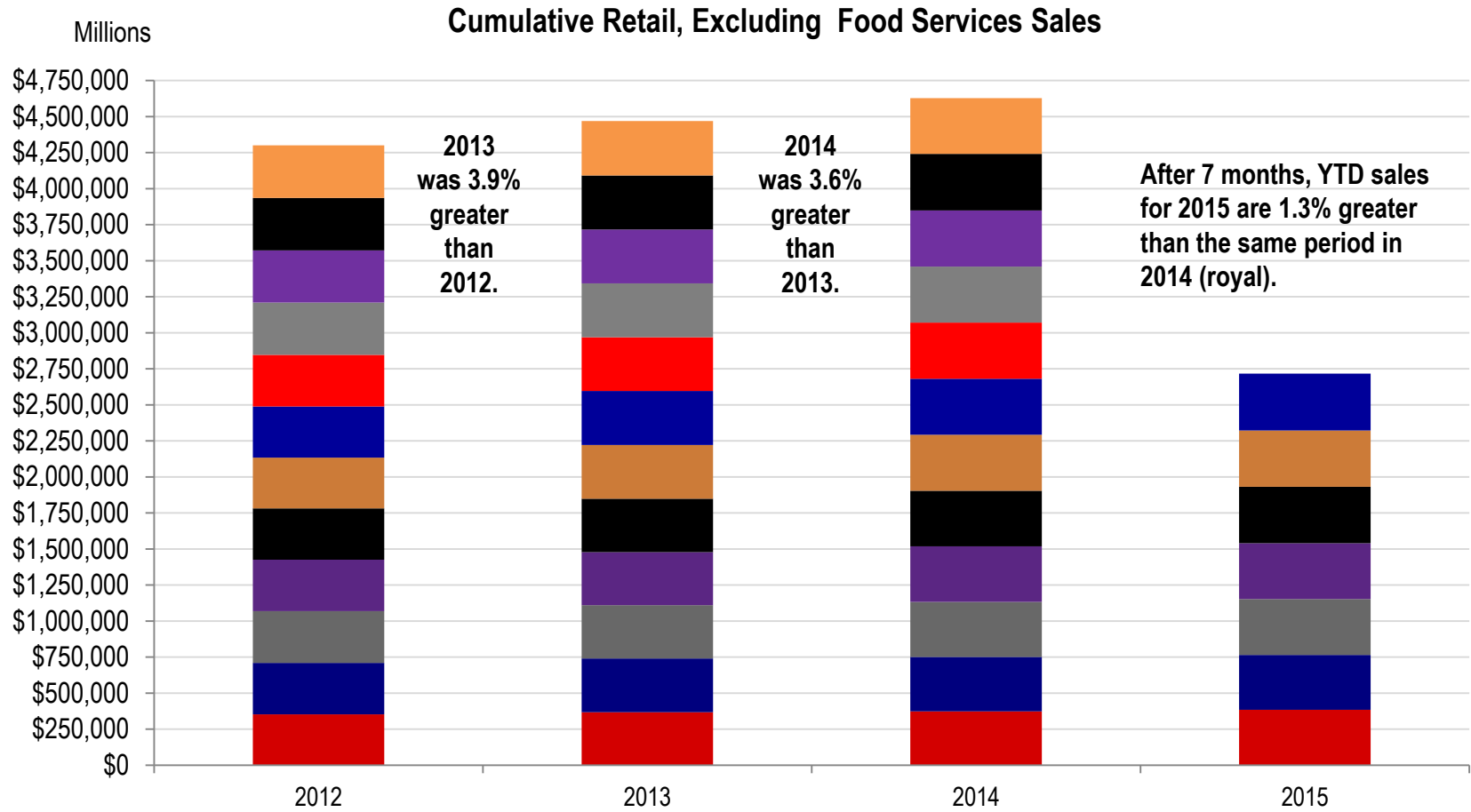


# U.S. Economy

## Retail Sales, Auto Sales, Construction, and Housing

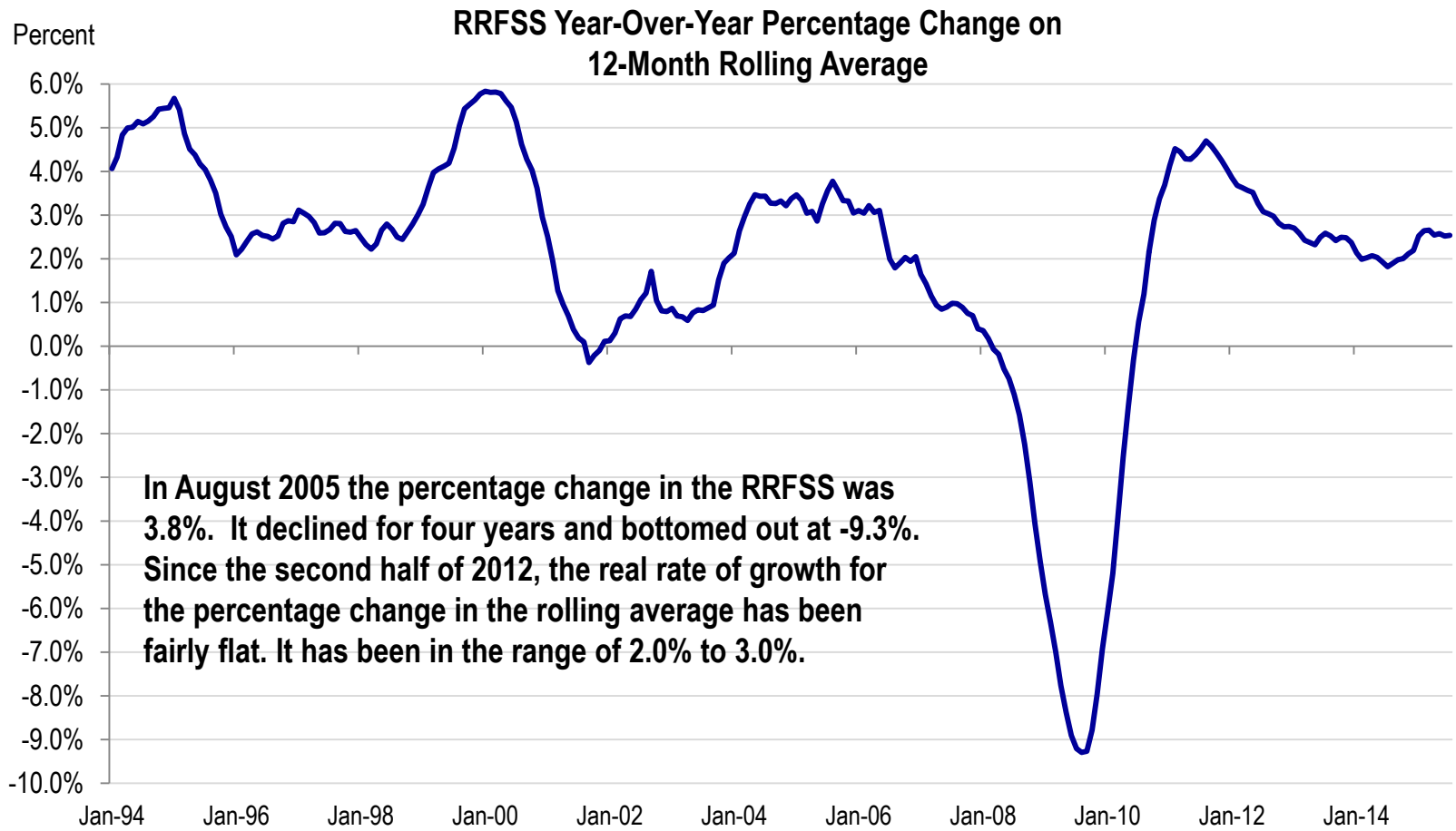


# Cumulative Retail, Excluding Food Services Sales



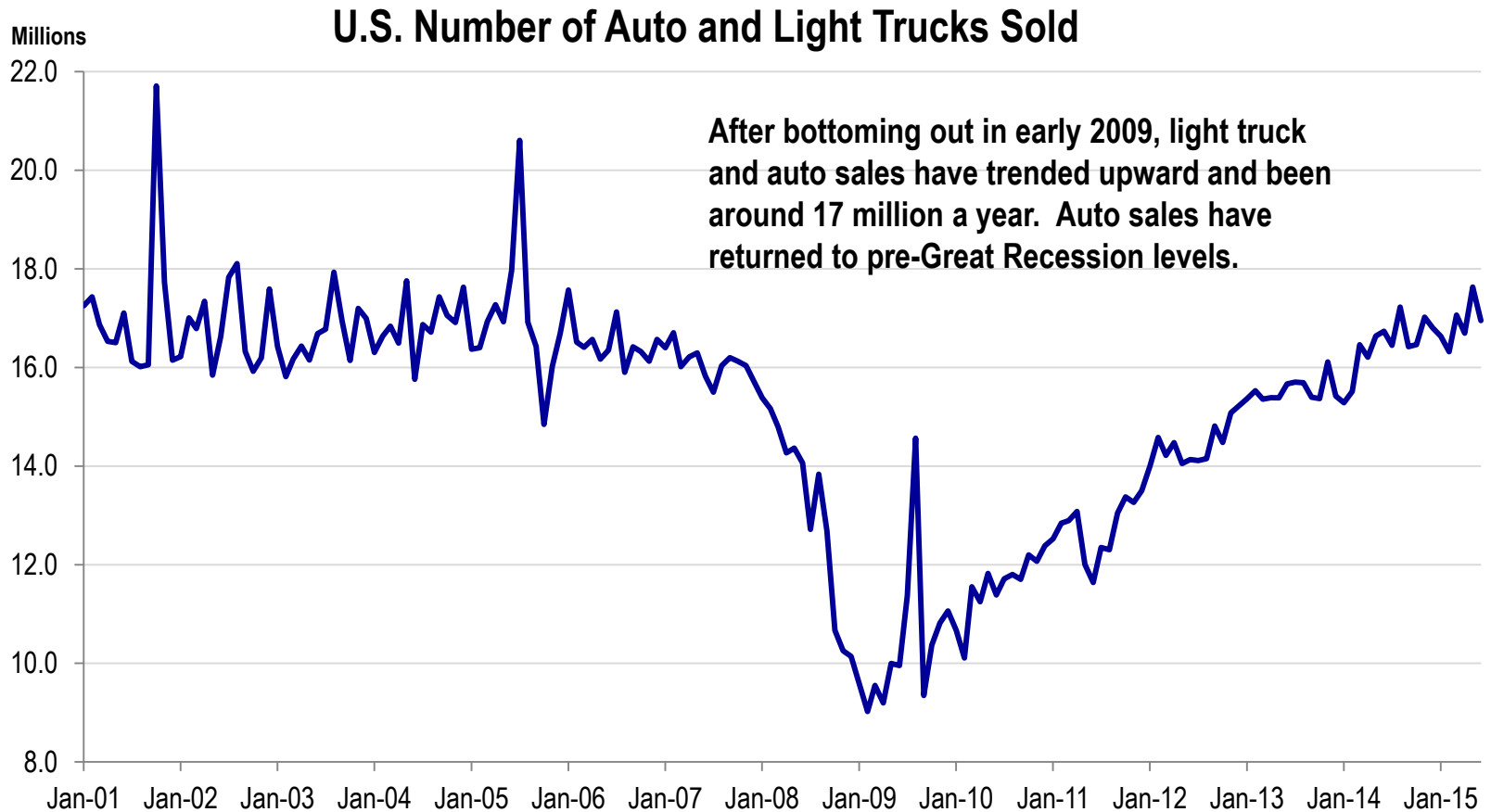
Source: U.S. Census Bureau, FRED. Note: Data is in descending order with December at the top and January at the bottom.

- Real Retail and Food Service Sales
- Y-O-Y Percent Change on 12-Month Rolling Average
- 



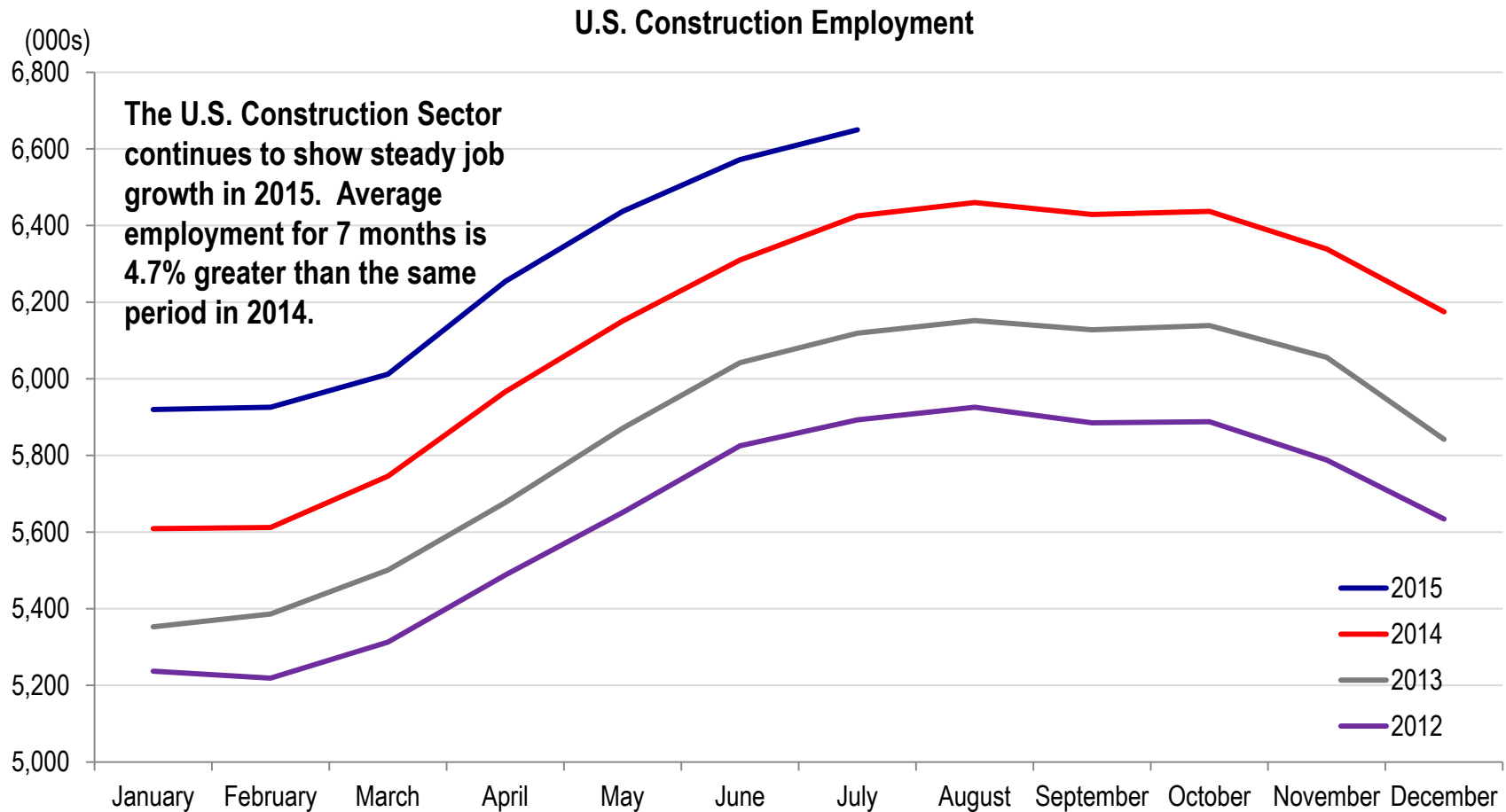
Source: Federal Reserve Bank of St. Louis, FRED.

# Weekly Auto and Light Truck Sales



Source: FRED, BEA. Note: Seasonally Adjusted Annual Rate.

# U.S. Construction Employment 2012 to 2015



Source: Bureau of Labor Statistics, NSA.

## U.S. Average Weekly Earnings of Construction Employees

U.S. Average Weekly Earnings for all employees were:

- 2012 \$997.01
- 2013 \$1,018.01
- 2014 \$1,040.75

The rate of increase for these wages was:

- 2012 2.4%
- 2013 2.1%
- 2014 2.2%

Wages have been about 2.4% higher in July 2015 than the prior year.

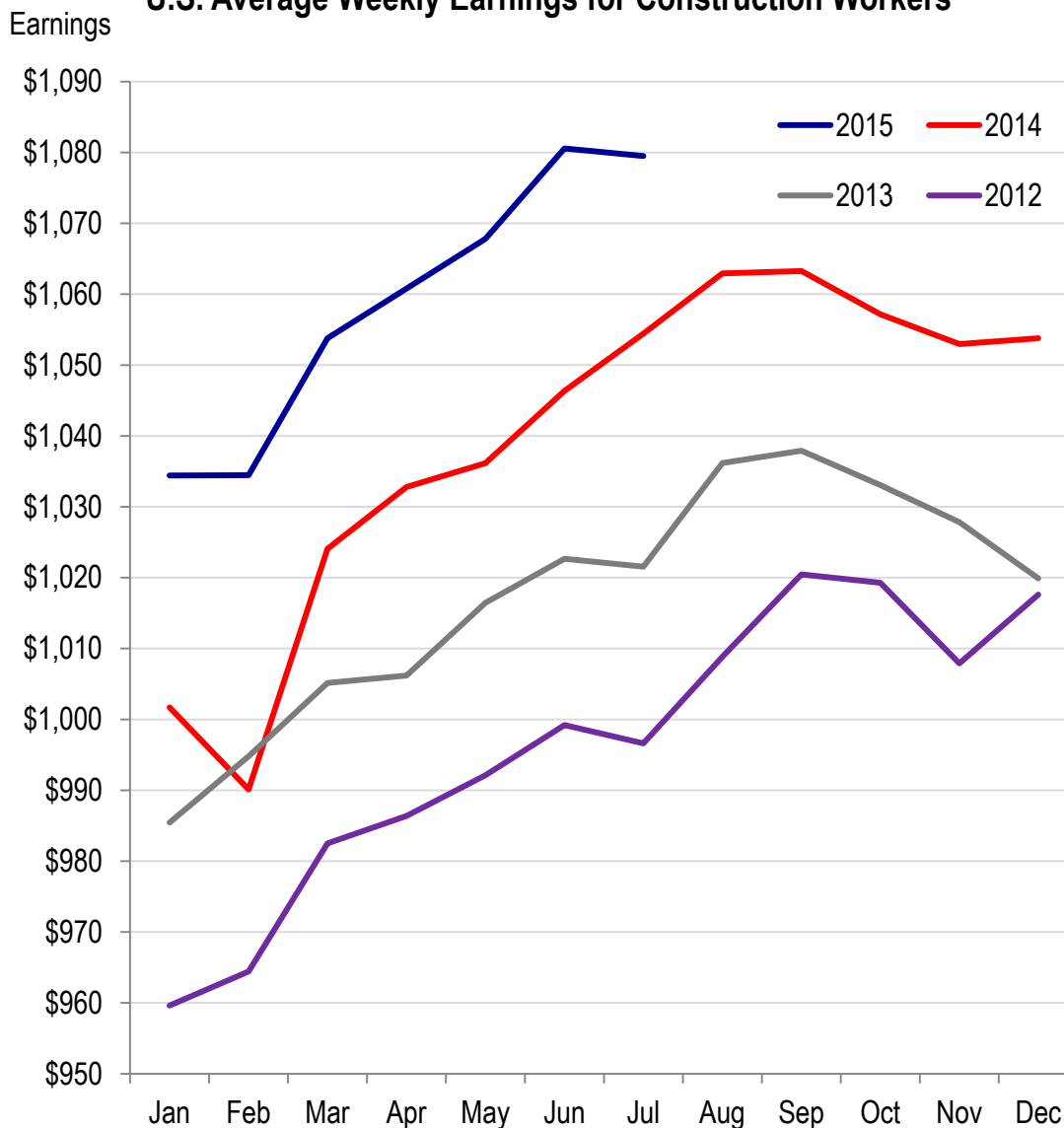
The increase in the CPI for these years was:

- 2012 2.1%
- 2013 1.5%
- 2014 1.6%

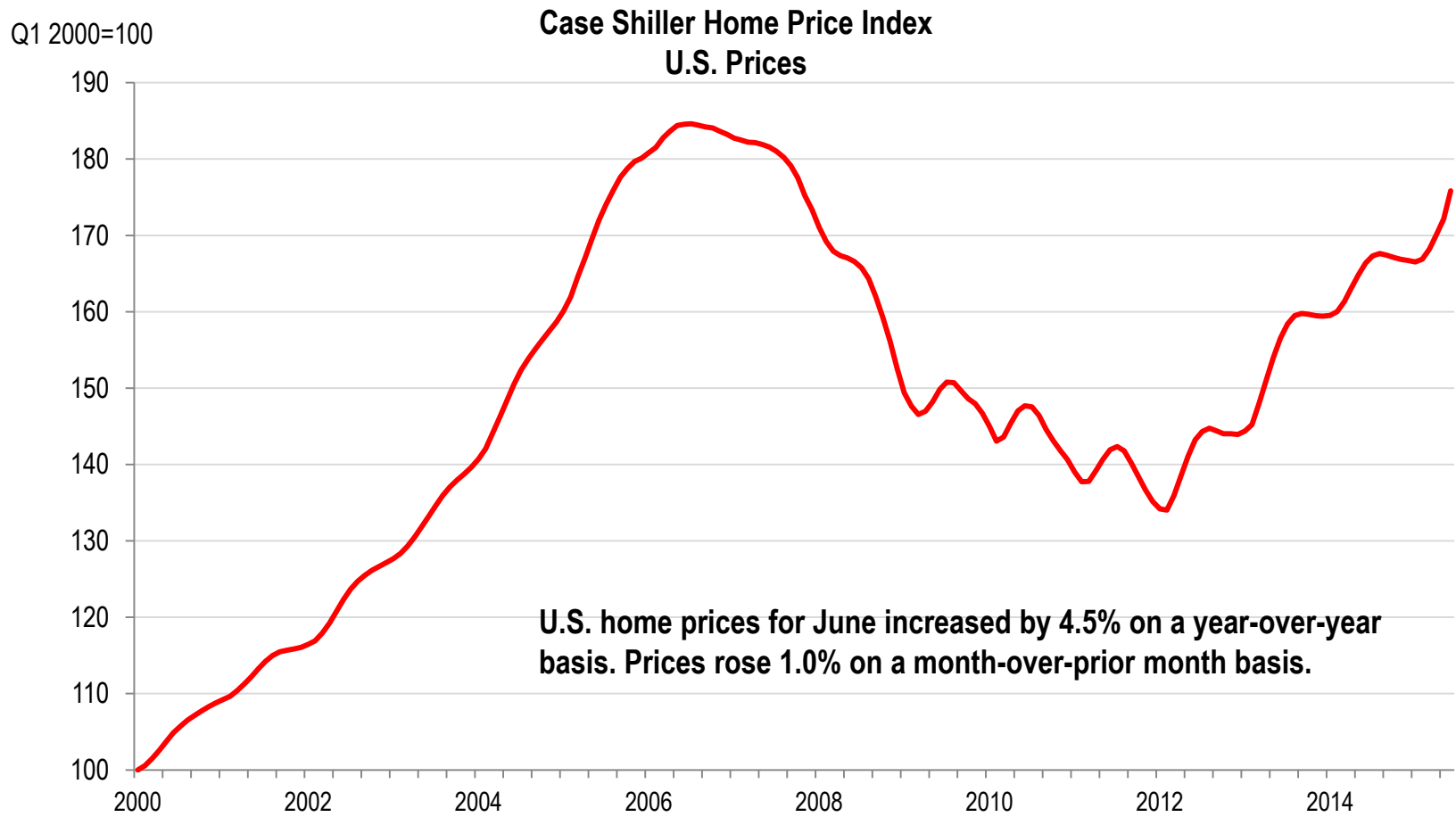
Wage increases have barely kept up with the rate of inflation.

Source: Bureau of Labor Statistics, NSA.

### U.S. Average Weekly Earnings for Construction Workers



# U.S. Housing Prices – Case Shiller



Source: S&P Case-Shiller, FRED.



# U.S. Economy

## Reasons to Feel Good and Risks

# Reasons to Feel Good about the U.S. Economy

The U.S. economy is stronger than it was in 2014. There are a number of reasons to feel good about the U.S. economy. Fortunately, the reasons to be optimistic, listed below, outweigh the risks.

<p><b>The Fed</b> - Janet Yellen has indicated the Federal Reserve is confident the U.S. economy is performing well enough that interest rates can be raised. The performance of the stock market may cause rates to be raised after the projected September date.</p>	<p><b>Industry Sentiment</b> - Purchasing managers have a positive outlook for both goods and services, although manufacturing is sluggish and may remain that way through the end of the year.</p>
<p><b>Real GDP</b> - Real GDP growth for the year is projected to be in the 2.5% to 2.9% range – slightly stronger than last year.</p>	<p><b>Inflation</b> - Inflation is well below the Fed’s target rate of 2.0%. As interest rates increase, inflation will approach the target rate.</p>
<p><b>Retail</b> - Consumer spending is expected to be stronger in the second half of the year, although back-to-school sales have been sluggish.</p>	<p><b>Construction</b> - There is strong activity in both the residential and non-residential markets. Construction job growth will be constrained by the lack of trained workers.</p>
<p><b>Jobs</b> - The U.S. is on track to add 3.0+ million jobs this year. The unemployment rate and the long-term unemployment rate have continued to decline.</p>	<p><b>Housing Prices</b> - The U.S. housing market remains strong - too strong in some areas such as Colorado.</p>
<p><b>Consumer Sentiment</b> – The most recent Consumer Sentiment Survey indicates consumers are upbeat.</p>	



# Economic Risks and Concerns

The U.S. economy is than it was in 2014. Fortunately, the reasons to feel good about the economy outweigh the following risks.

<p><b>The Fed</b> - Janet Yellen indicated there are still issues with the labor market. These concerns include such challenges as finding trained workers and weak wage growth.</p>	<p><b>Price of Oil</b> - Low prices for a barrel of oil have benefitted consumers (lower prices at the pump) and some industries, but they have hurt the extractive industries and their supply chain.</p>
<p><b>Real GDP</b> - The rate of growth in business investments is lackluster. Increased demand for goods and services are needed to drive companies to invest in new equipment, software and buildings.</p>	<p><b>International Situations</b>- The current global situational and foreign policy challenges to the U.S. economy currently include Iran, Syria, Russia, Greece, Israel, Cuba, the EU, and Ukraine – all for different reasons.</p>
<p><b>Industry Sentiment</b> – The Manufacturing Sector may remain sluggish through the end of the year.</p>	<p><b>China</b> –The devaluation of China’s Yuan and the slowdown in their economy will impact the global economy.</p>
<p><b>Housing</b> - In some parts of the country the rate of housing price appreciation may be problematic.</p>	<p><b>S&amp;P 500</b> – Need we say more?</p>



# Colorado Employment and Unemployment



# Preface to Employment Analysis

## Release of Q4 2014 QCEW Data

During the first seven months of 2015 the state added 65,900 jobs compared to the same period last year. The current CES data for 2015 shows year-over-year job growth decelerating.

In late-May BLS released the state's Q4 2014 QCEW employment data. It indicates there was much stronger growth during that period than anticipated.

Colorado's Labor Market Information group published the level of the possible revisions on its website. These projections show that Q4 and the first four months of 2015 may be revised upwards by 16,300. If this is the case, then this analysis understates the level of growth in 2015.

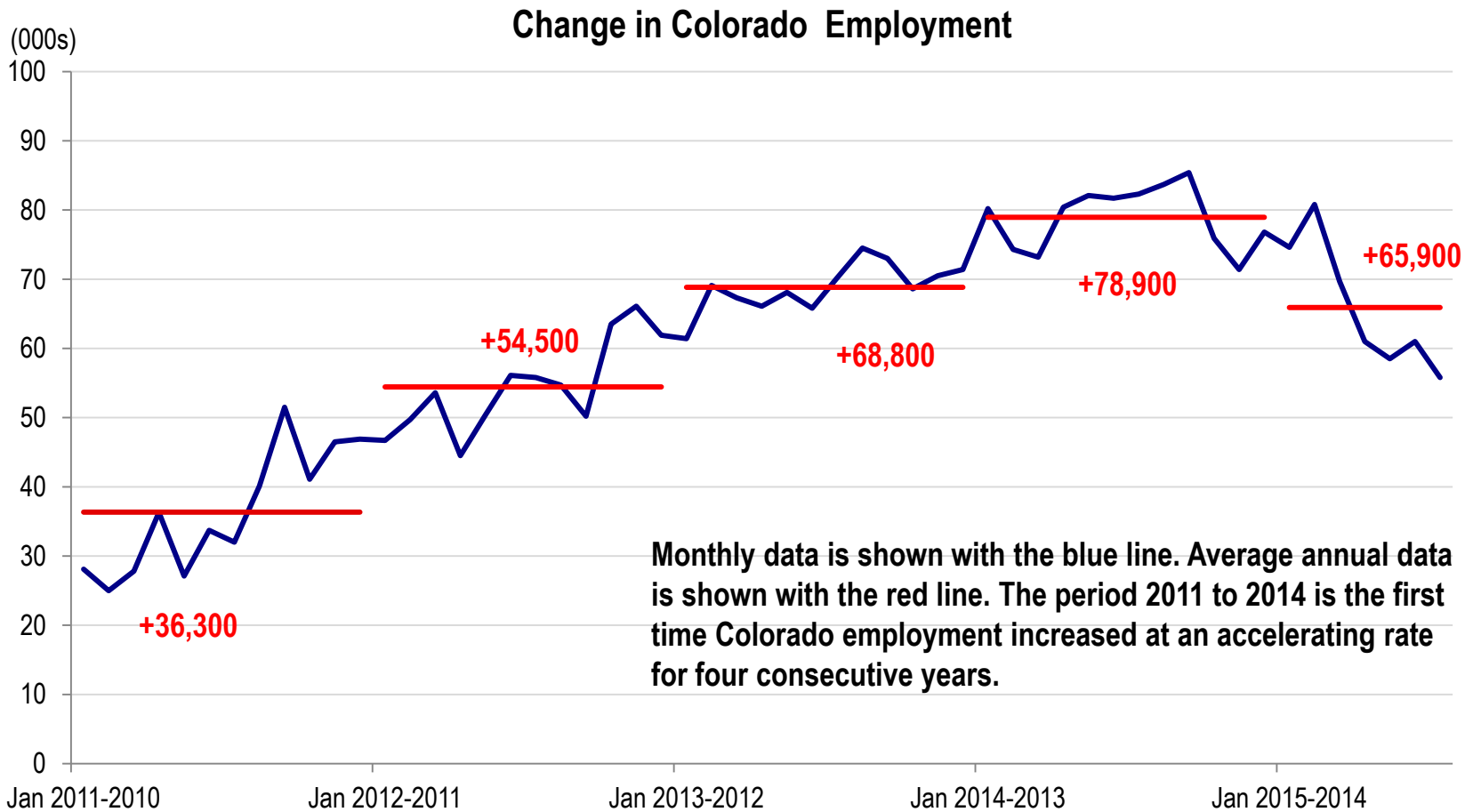
## Implications

The QCEW data is used to benchmark the CES data. Assuming the recently released QCEW data is correct there are several implications:

- The March 2016 benchmark revisions for 2014 may show a significant increase for Q4 and an increase of as much as 3,600 jobs for the year.
- The revision to Q4 2014 suggests the state had much greater momentum coming into 2015 than originally anticipated.
- As a result, it is likely the first part of 2015 will be revised upwards.

For more information about the benchmarking process, see the Appendix.

# Change in Colorado Employment Year-Over-Year



Source: Bureau of Labor Statistics, NSA.

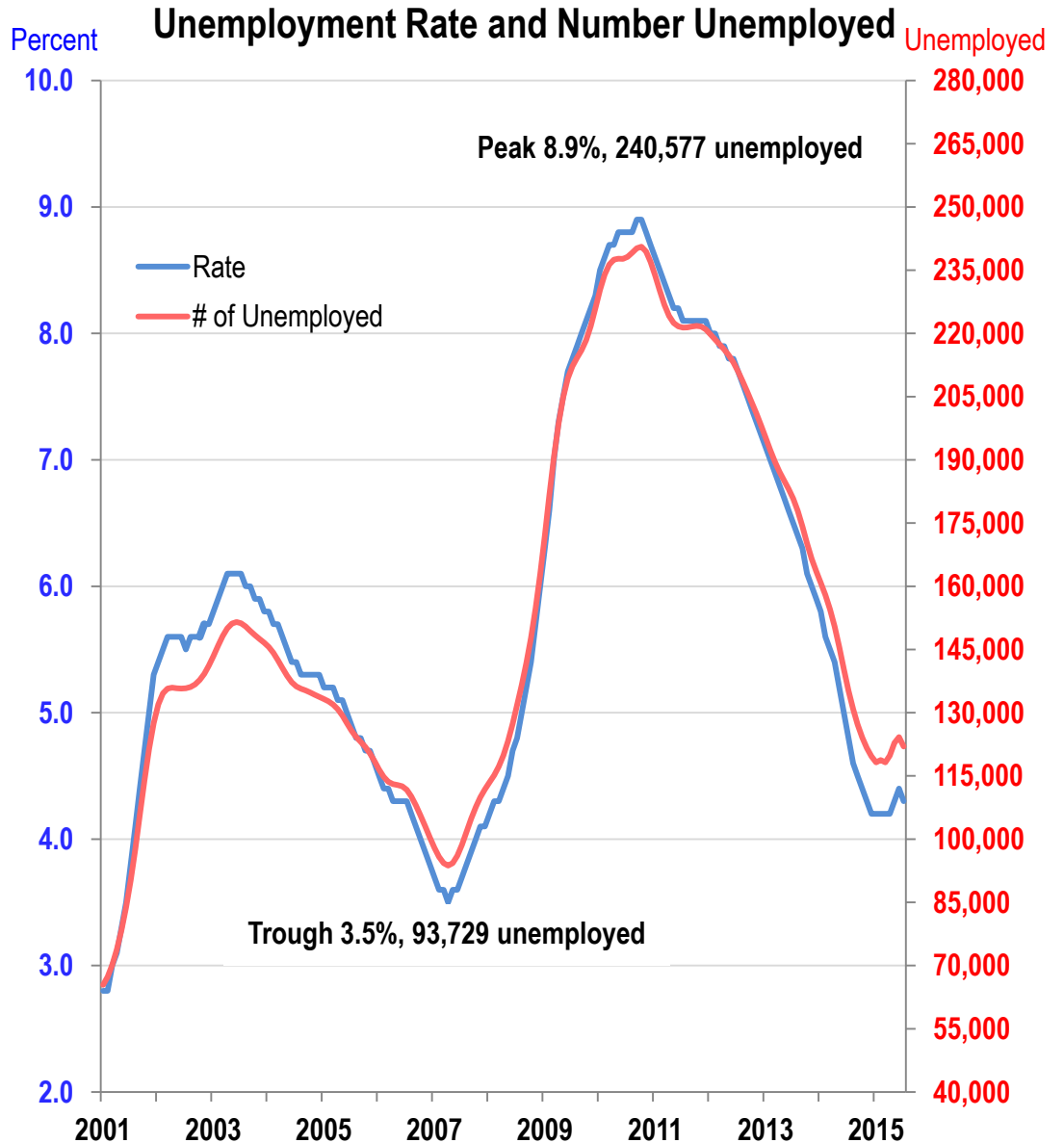
# Colorado Unemployment Rate and Number of Unemployed

The number of unemployed has slowly trended downward since peaking in late 2010; however, in July it dropped by 2,249.

The total number of unemployed workers (red) at the end of July 2015 was 121,981.

The total number of unemployed is 28,252 greater than the trough in May 2007 and 118,596 less than the peak in October 2010.

There is a shortage of trained workers in key sectors and occupations. The 2015 unemployment rate (blue) of 4.3% is down from 4.8% in July 2014.



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



# Change in Colorado Employment by Performance Category



# The Sky is Not Falling



On Friday August 21, the Colorado Department of Labor and Employment reported that Colorado recorded a net loss of 2,200 jobs from June to July.

A follow-up comment mentioned “the number of negative influences out there now that are kind of just accumulating.” Another economist focused on the number of months where job growth was under 2.0%.

**HOWEVER**...the monthly employment number for July is preliminary.  
It will be revised at least three more times.

The monthly data for the first seven months are preliminary. They will be revised in March of 2016 and 2017.  
These preliminary estimates do not reflect the economic activity on the streets!

There are always negative influences, headwinds, constraints, and pushbacks. Despite the negative tone of the report for July employment, **the fundamentals of the U.S. and Colorado economies are solid.**

After seven months average Colorado employment is 65,900 greater than the same period last year and **that number is likely to be revised upwards.**



# cber.co Forecast and Analysis

cber.co developed an efficient way to forecast and analyze job employment for Colorado. Twenty-two NAICS industries were divided into three categories based on the consistency, volatility, and the magnitude of their job growth. The categories are:

- Strong Growth – These industries consistently show stronger than average job growth. The focus of these industries is business and personal services.
- Solid Growth – These industries consistently show solid job growth, at levels below the Strong Growth category. Their focus is trade and government.
- Volatile – These industries have consistently been volatile. In many cases that volatility occurs for a variety of reasons such as changes in technology or industry structure.

The process for creating these categories is discussed in greater depth in the Appendix.



## Summary of Strong, Solid, and Volatile Growth Categories

In 2015, the growth of the Strong, Solid, and Volatile Growth Categories will be similar to 2014.

The Strong Growth Category of sectors (green) has consistently shown strong job growth over time. The category added jobs as expected in 2014.

Over time, the Solid Growth Category of sectors (yellow) has been more volatile than the Strong Growth Category.

Finally, the Volatile Category of sectors (red) was a significant source of growth in 2013 and 2014 and is projected to do the same in 2015. Prior to that the category was a source of weak job growth or job losses.



Source: Bureau of Labor Statistics, cber.co.

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<http://cber.co>

# 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:

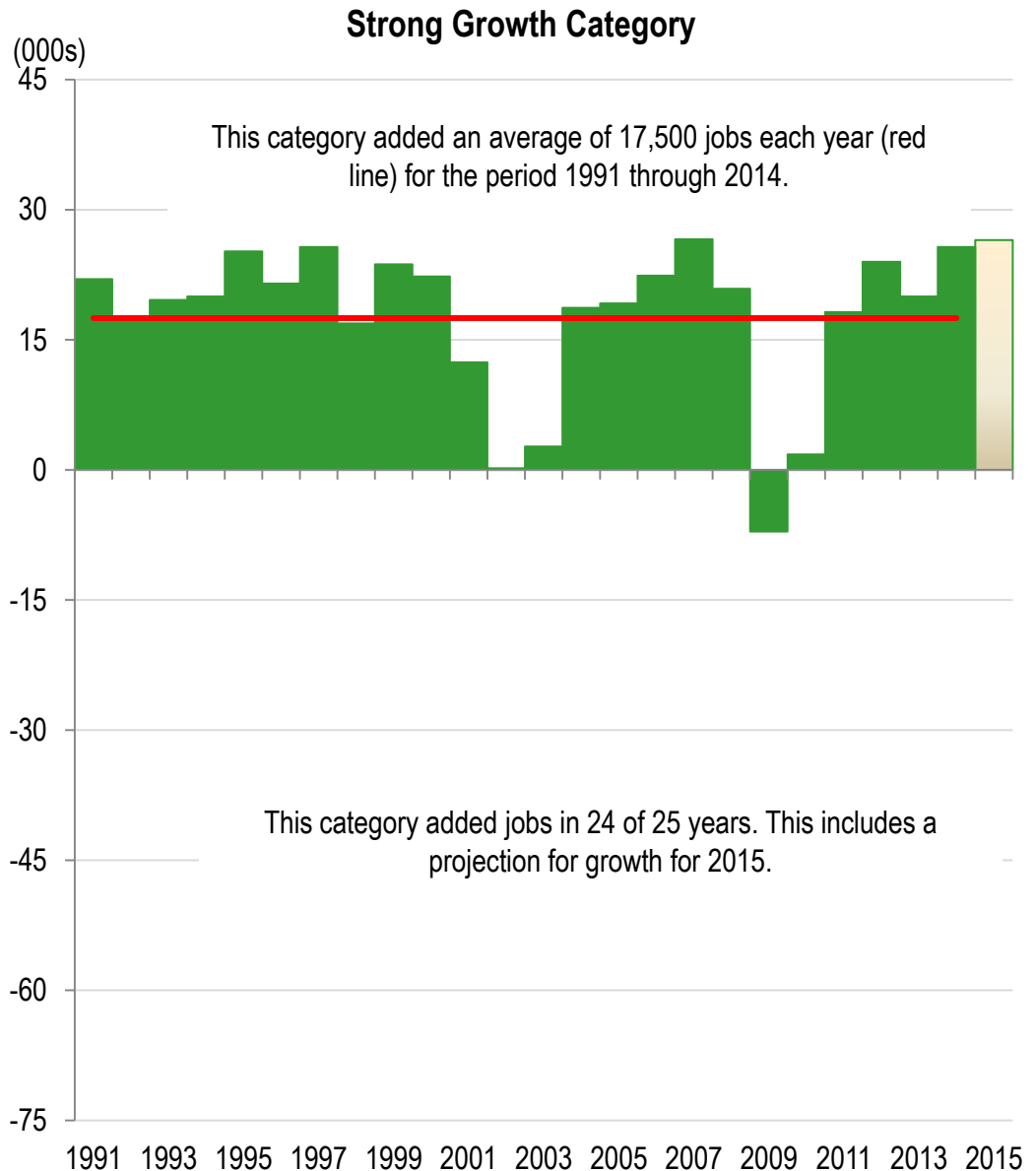
1994 445,200 workers, 25.4% of total employment  
 2004 615,900 workers, 28.3% of total employment  
 2014 786,700 workers, 32.0% of total employment

In 2015, absolute job growth of this category will be similar to job growth in 2007 and 2014.

In 2015, between 24,500 and 28,500 workers will be added at a rate of 3.1% to 3.6%. This rate of growth is slightly greater than 2014

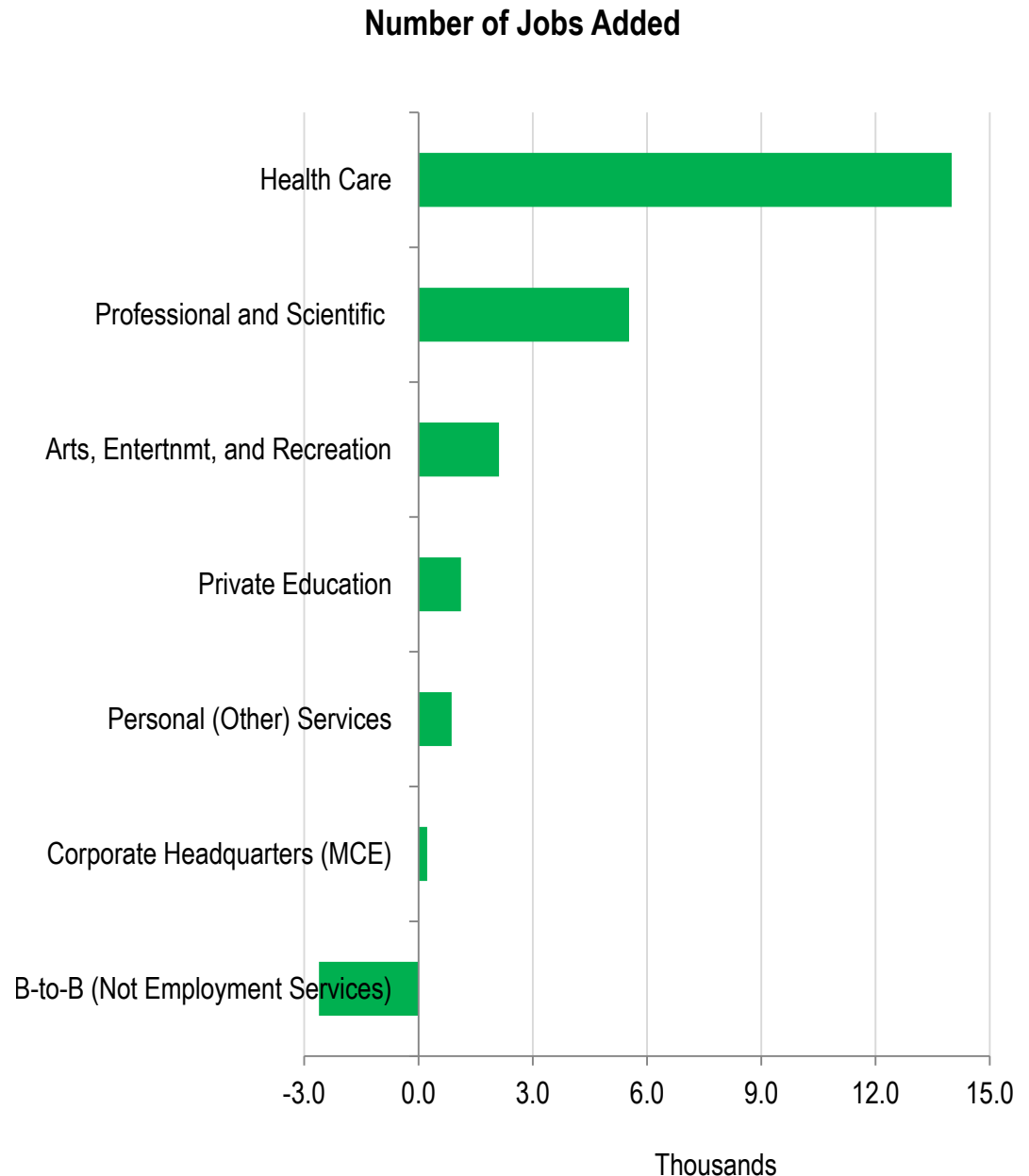
Source: Bureau of Labor Statistics, [cber.co](http://cber.co).

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<http://cber.co>



## ● Strong Growth Sectors

- Through the first seven months of 2015 this group of industries added 21,200 jobs compared to the same period in 2014.
- This category is projected to add 24,500 to 28,500 for the year. To date, its performance is slightly below the projected range.
- In 2014, these sectors accounted for 32.6% of the growth and 32.0% of total employees in 2014.
- Health Care and Professional, Scientific, and Technical Services were the sectors with the strongest growth for the first seven months of 2015. Most likely the data for Administrative/B-to-B (Not Employment Services) is understated.



Source: Bureau of Labor Statistics.

# Strong Growth Sectors Performance YTD

## Underperforming Sectors

The following sectors are underperforming

- Professional, Scientific, and Technical
- Management of Corporations and Enterprises (Corporate Headquarters)
- Administrative (B-to-B), Excluding Business Services
- Private Education
- Other (Personal) Services.

The growth of the PST sector is solid. The slower rate of growth might be tied to the drop in the price of oil. The B-to-B sector will likely be adjusted upwards in the March 2016 revisions.

## On Target Sectors

The following sectors are performing on target

None

## Over-performing Sectors

The following sectors are over-performing

- Health Care
- Arts, Entertainment, and Recreation.

The growth in Health Care seems abnormally strong. It may be revised downward in the March 2016 revisions.

# 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:

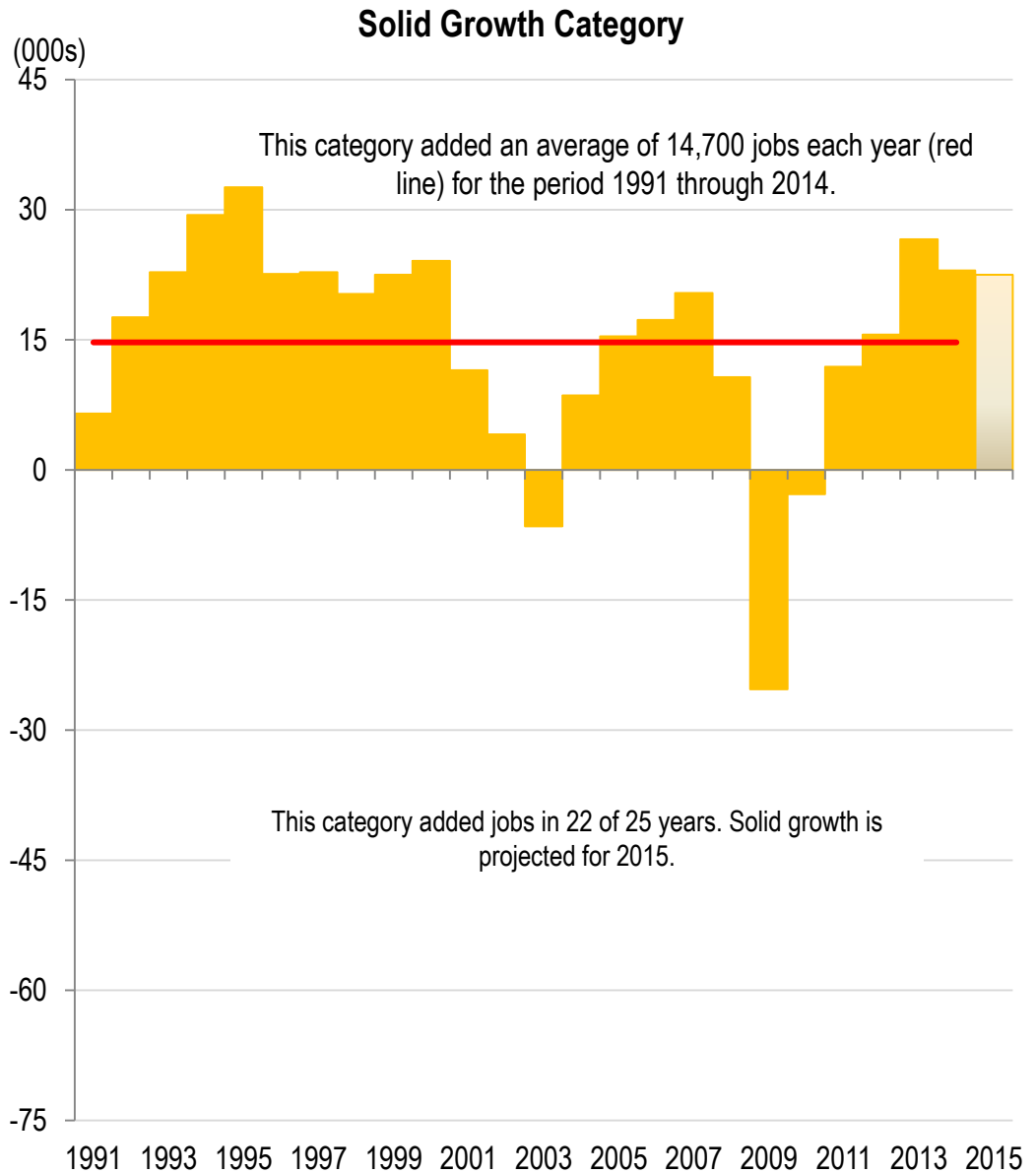
1994 685,400 workers, 39.0% of total employment

2004 848,000 workers, 38.9% of total employment

2014 961,100 workers, 39.0% of total employment

In 2015 absolute job growth in this category will be comparable to most years during the 1990s.

In 2015, between 22,500 and 26,500 workers will be added at a rate of 2.3% to 2.8%. This rate of growth is slightly less than 2014.



Source: Bureau of Labor Statistics, cber.co.

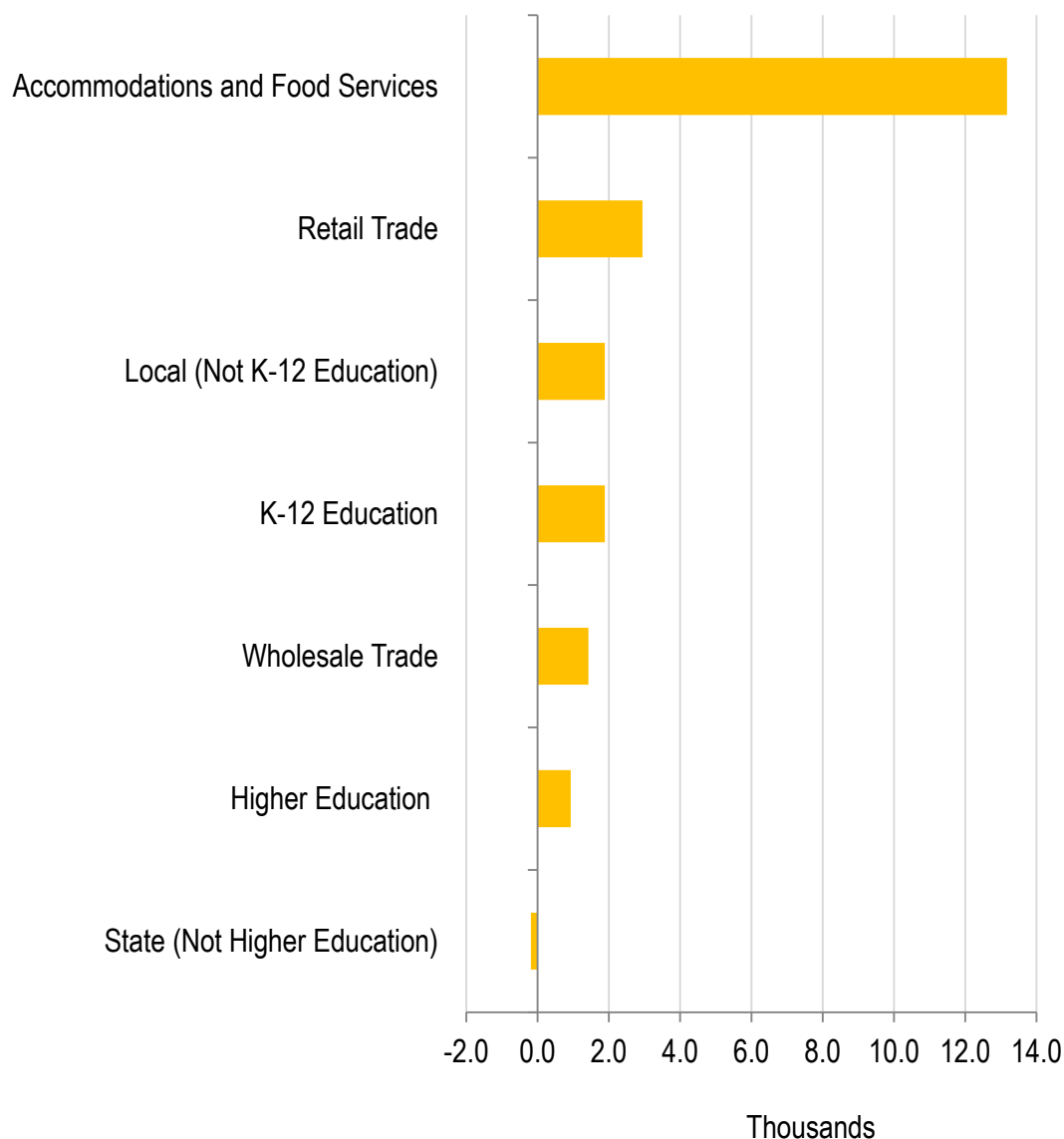
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## Solid Growth Sectors

- Through the first seven months of 2015 this group of industries added 22,300 jobs compared to the same period in 2014.
- This category is projected to add 22,500 to 26,500 for the year. To date, its performance is slightly below the projected forecast range.
- These sectors accounted for 29.1% of total job gains and 39.0% of total employees in 2014.
- A majority of the growth for the first seven months of 2015 has occurred in the Accommodations and Food Services, Retail Trade, and Local Government sectors. Most likely the job growth for AFS is overstated.

Number of Jobs Added



Source: Bureau of Labor Statistics.

# Solid Growth Sectors Performance YTD

## Underperforming Sectors

The following sectors are underperforming

- Wholesale Trade
- Retail Trade
- Higher Education
- State Government, Not Higher Education
- Local Education

Given the strength of retail sales, the trade categories are likely to be revised upwards in the March 2016 revisions.

## On Target Sectors

The following sectors are performing on target

- Local Government, excluding K-12 Education

## Over-performing Sectors

The following sectors are over-performing

- Accommodations and Food Services

There are two reasons this sector may be over-performing: cber.co expectations for AFS may have been slightly low. Employment in this sector will likely be revised downward in the March 2016 revisions.

# 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.

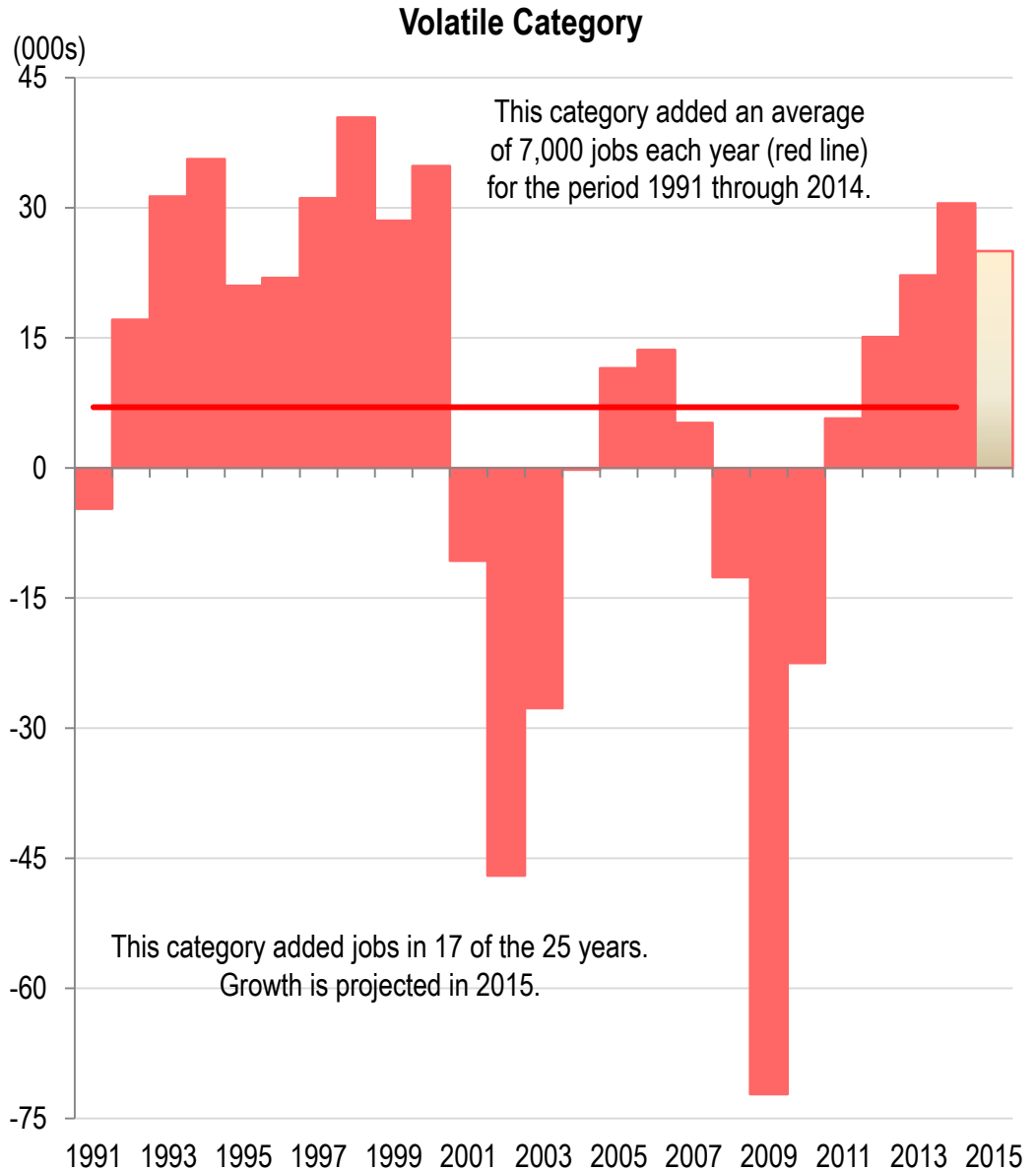
The sectors are:

- 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 713,000 workers, 29.0% of total employment

In 2015 between 23,000 and 27,000 jobs will be added, at a rate of 3.2% to 3.8%. This rate of growth is slower than 2014.



Source: Bureau of Labor Statistics, cber.co.

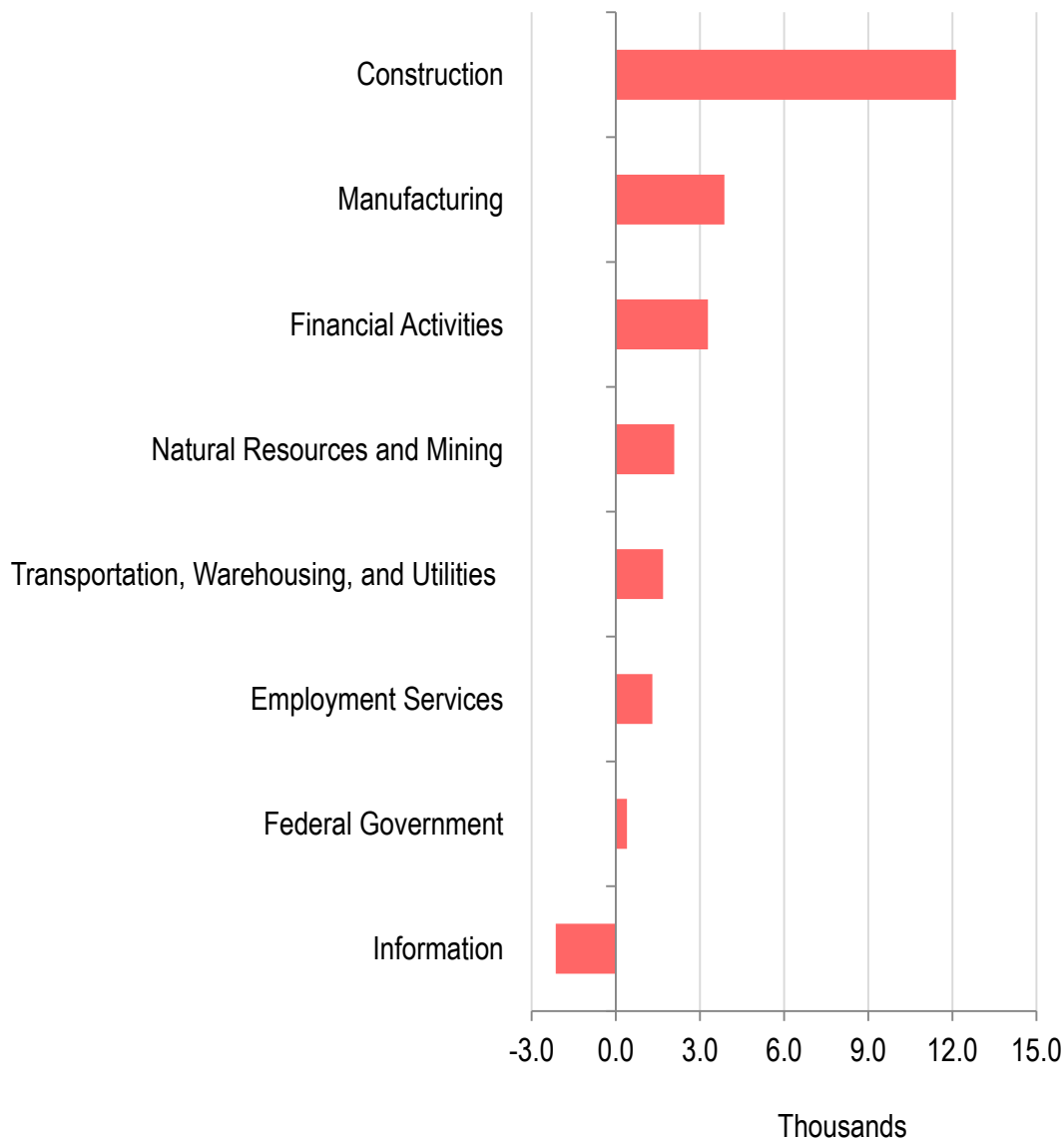
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<http://cber.co>



## ● Volatile Sectors

- Through the first seven months of 2015 this group of industries added 22,600 jobs compared to the same period in 2014.
- This category is projected to add 23,000 to 27,000 for the year. To date, its performance is slightly below the projected forecast range.
- In 2014 these sectors accounted for 32.3% of total job gains and 29.0% of total employees.
- The Construction, Manufacturing, and Financial Activities Sectors added the greatest number of jobs and the Information Sector lost jobs during the first seven months.

Number of Jobs Added



Source: Bureau of Labor Statistics.

# ● Volatile Sectors

## ● Performance YTD

### Underperforming Sectors

The following sectors are underperforming

- Extractive Industries
- Information
- Employment Services

At the time the 2015 cber.co forecast was prepared, the expectations for the Extractive Industries and the Information Sectors were too optimistic. The weakness of Employment Sector is difficult to explain. Most likely they are understated.

### On Target Sectors

The following sectors are performing on target

- Utilities
- Transportation and Warehousing
- Federal Government

### Over-performing Sectors

The following sectors are over-performing

- Construction
- Manufacturing
- Financial Activities

The number of permits issued was slower than anticipated during the first half of the year, particularly in multi-family housing. The second half of 2015 is expected to be stronger. .

Vestas has continued to add workers, boosting Manufacturing employment.

Financial Activities are strong, in part, because of the strength of the housing market.

# Summary of Performance to cber.co 2015

## Employment Forecast



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

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

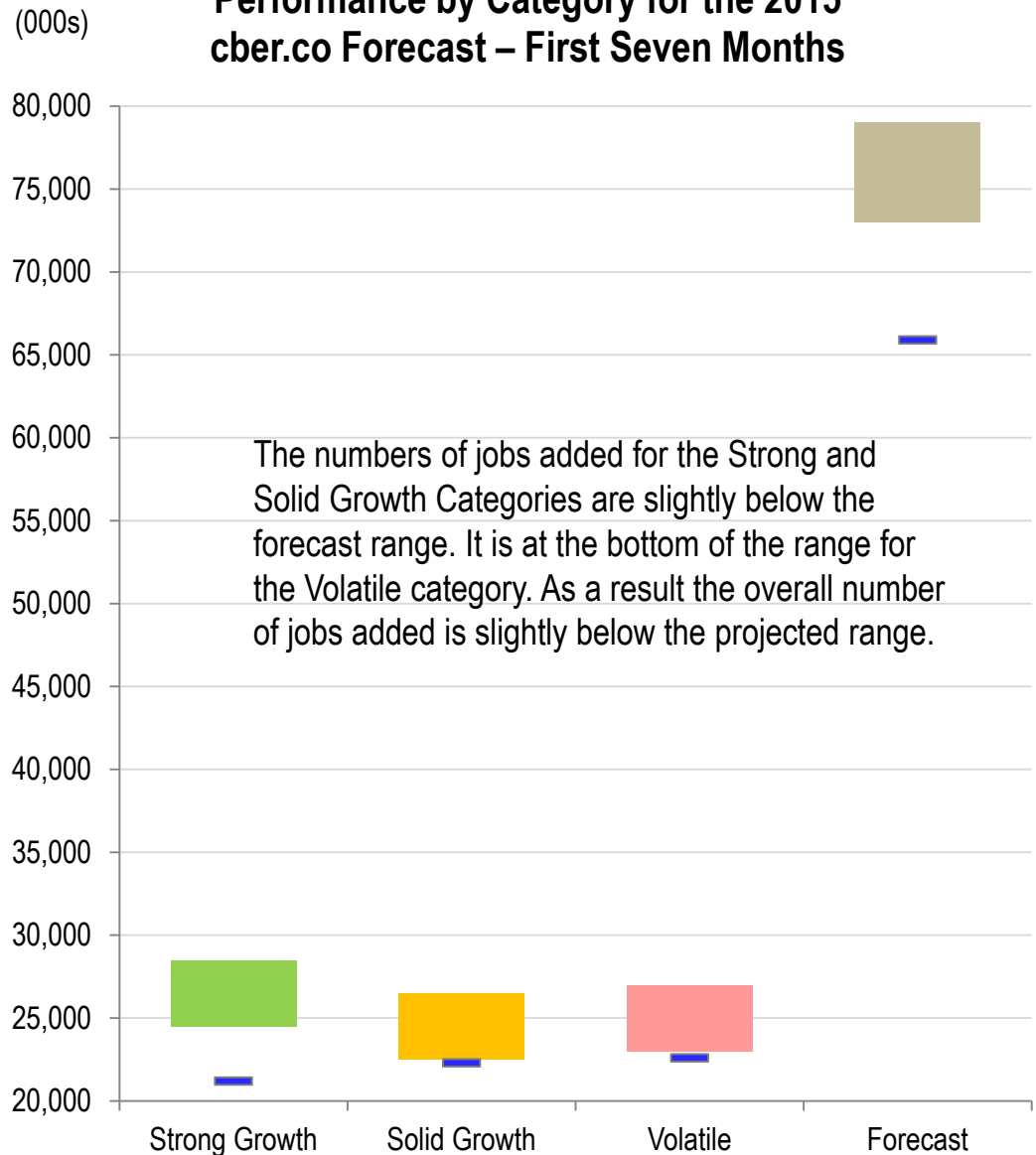
The blue lines indicate the level of employment for BLS data.

Through the first seven all three categories were slightly below their respective forecast ranges.

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

This does not account for projected upward revisions to employment that will take place in March 2016.

### Performance by Category for the 2015 cber.co Forecast – First Seven Months



Source: Bureau of Labor Statistics, cber.co.

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# The Impact of the Decrease in the Price of Oil on Colorado Employment

# Oil and Gas Industry

Over the past two years there have been numerous debates and studies conducted on the Colorado Oil and Gas Industry. At times, the message was “The Sky is Falling” and it will bring down the state economy with it. To that point, the industry is facing some major challenges, but “The Sky is Not Falling.”

## The Studies and Debates

The following list includes some of the recent discussions and research that has focused on the oil and gas industry:

- When will the reduction in the number of rigs cause a significant decline in production and employment?
- If fracking good or evil? If it is banned, will it cause job growth in Colorado to be cut in half? Will fracking cause wells to be depleted sooner, thus causing a reduction in severance taxes?
- Will oil and gas companies become more efficient because of this crisis? What role will technology or new processes play in increased efficiency?
- How long will the price for a barrel of oil remain at its current levels? Will the price reach \$60 or \$100 per barrel again?
- Is there too much inventory?
- What has happened to employment and profitability of the industry’s supply chain?

## The Sky is Not Falling

There are not simple answers to the questions in the adjacent column.

This section looks at some of the basic data from the oil and gas industry.

Historically, the extractive industries have had a significant impact on the economy and the environment. Historically, employment and output have been more volatile than other sectors. The industry will continue to face a number of challenges over the next year. For the time being, “The Sky is Not Falling.”



# The Impact of the Decrease in the Price of Oil on Colorado Employment

This section will discuss how the decline in the price of oil is affecting employment in the Oil and Gas Industry in Colorado.

## Price of a barrel of oil (WTI)

- In August 2014 the price of oil began a free-fall.
- It bottomed out in March, 2015 at \$43.39 per barrel.
- Lower prices caused oil and gas companies to operate in a more efficient manner. After rising to the low 60s, prices have fallen into the upper 30s.

## Rig Count

- The Colorado rotary rig count dropped from 77 in September 2014 to 36 in April 2015.
- The rig count has stabilized around 37.
- Less efficient wells were capped as a way of improving production in an efficient manner.

## Colorado Oil Production

- Colorado oil production reached record levels in 2014.
- That level of production has continued in 2015.
- Production is necessary because the U.S. is importing less oil.

## Colorado Real Gross Domestic Product

- The rate of growth for the Colorado GDP was greater than the rate of growth for the U.S. GDP.
- Colorado's Mining Sector has a small number of employees, but it contributed 18.2% to the growth of Colorado's GDP in 2014.

## U.S. Oil and Gas Employment

- The number of U.S. Oil and Gas Extraction workers declined for the first four months of 2015, but added jobs from May through July.

## U.S. Oil and Gas Support Employment

- The number of U.S. Oil and Gas Support workers has declined for the first seven months of 2015.

## Colorado Oil and Gas Employment

- Oil and Gas Extraction and Support employment is not available for Colorado. It is included in the Mining Sector.
- Presumably, employment in the support companies and supply chain will decline further than the extraction companies, as is the case at the national level.

# Headlines About the Industry that Matter

Over the past month the most important headlines about the oil and gas industry dealt with the price of a barrel of oil. Two other relevant local headlines are provided below.

## **BizWest - August 21, 2015**

Baker-Hughes Laying off 124 from Weld County Facility

## **Mark Snead, RegionTrack Job Growth Comes to Halt in Key Energy States**

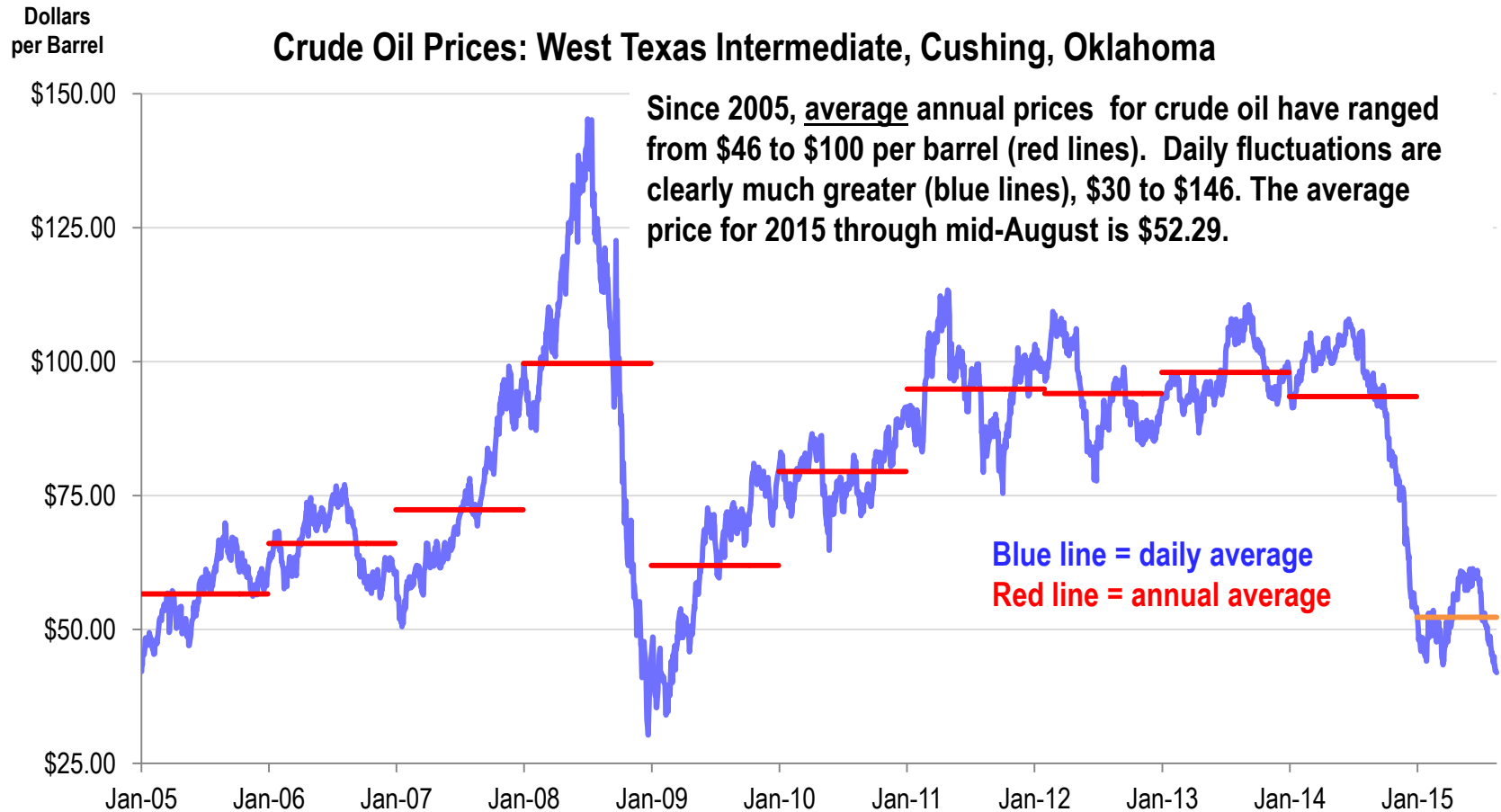
The following is an excerpt for RegionTrack's Pic of the Week August 12, 2015, <https://www.regiontrack.com/>

*So far, the weakness is largely confined to the top tier of energy states (AK, LA, ND, OK, TX, and WY). Since December 2014, total statewide wage and salary employment has actually declined in Alaska, Louisiana, North Dakota, Oklahoma, and Wyoming. Texas managed to add jobs in the period, but growth has slowed to a crawl relative to the 3%+ annual pace it enjoyed in late 2014.*

*No clear signs of spillover from the collapse in oil prices are visible in the second tier of energy-producing states, which includes Colorado, Kansas, Mississippi, Montana, New Mexico, Utah, and West Virginia. This group of states continues to add jobs in near lockstep with the nation.*

# Crude Oil Prices

## West Texas Intermediate

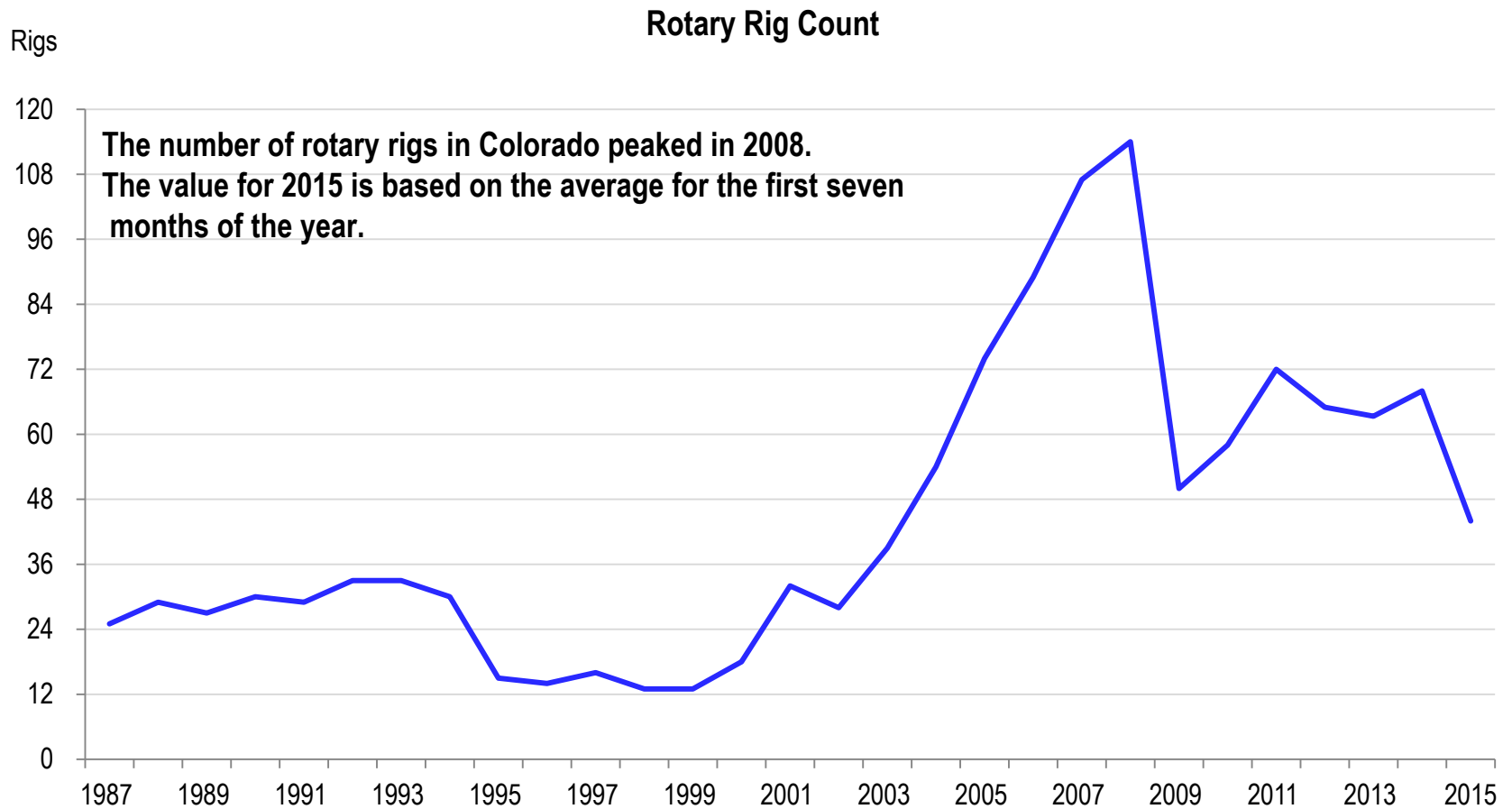


Source: FRED, EIA.



# Colorado Annual Rotary Rig Count

## 1987 to 2015

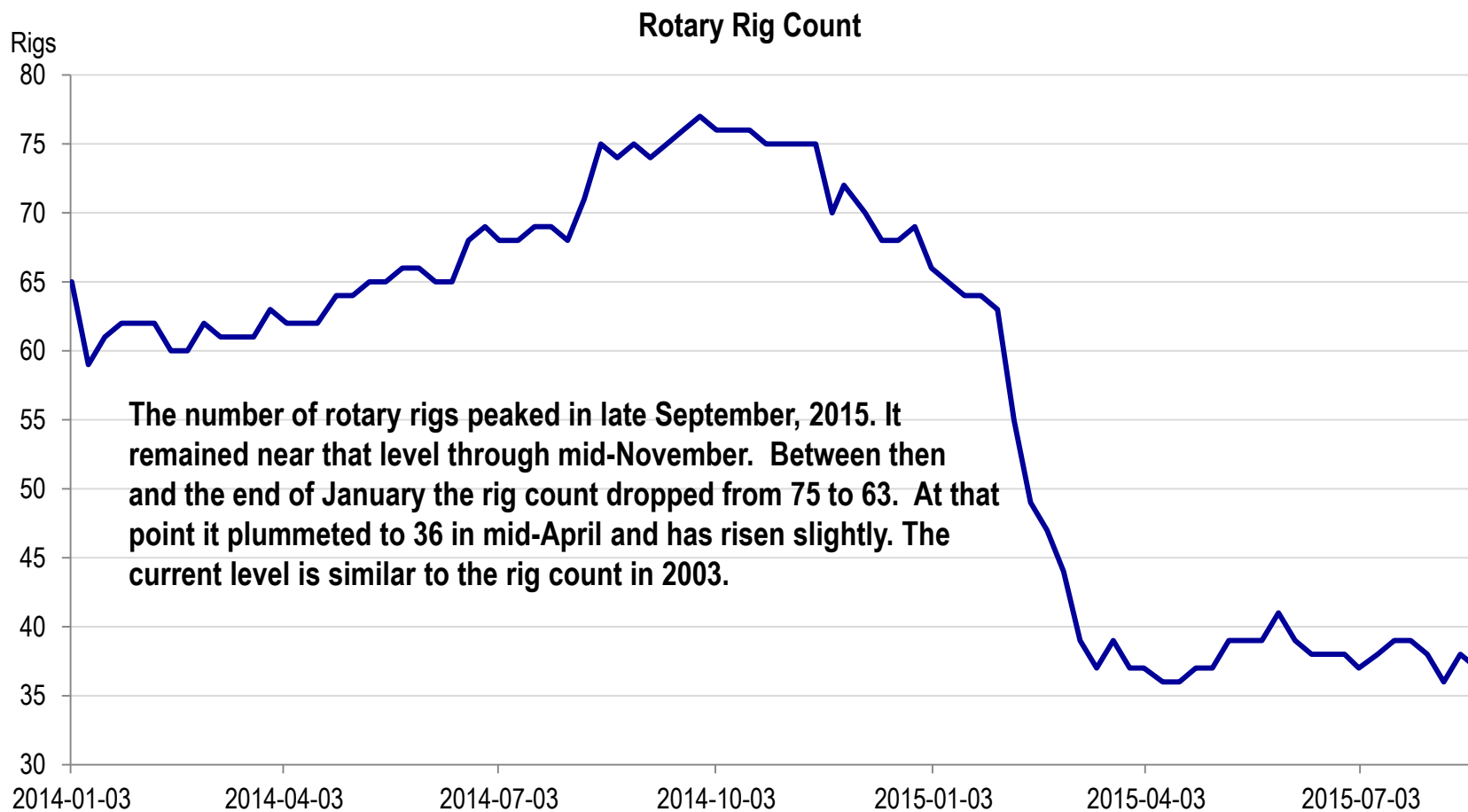


Source: Baker-Hughes.

Colorado-based Business and Economic Research

<http://cber.co>

# Monthly Number of Rotary Rigs in Colorado 2014 to present

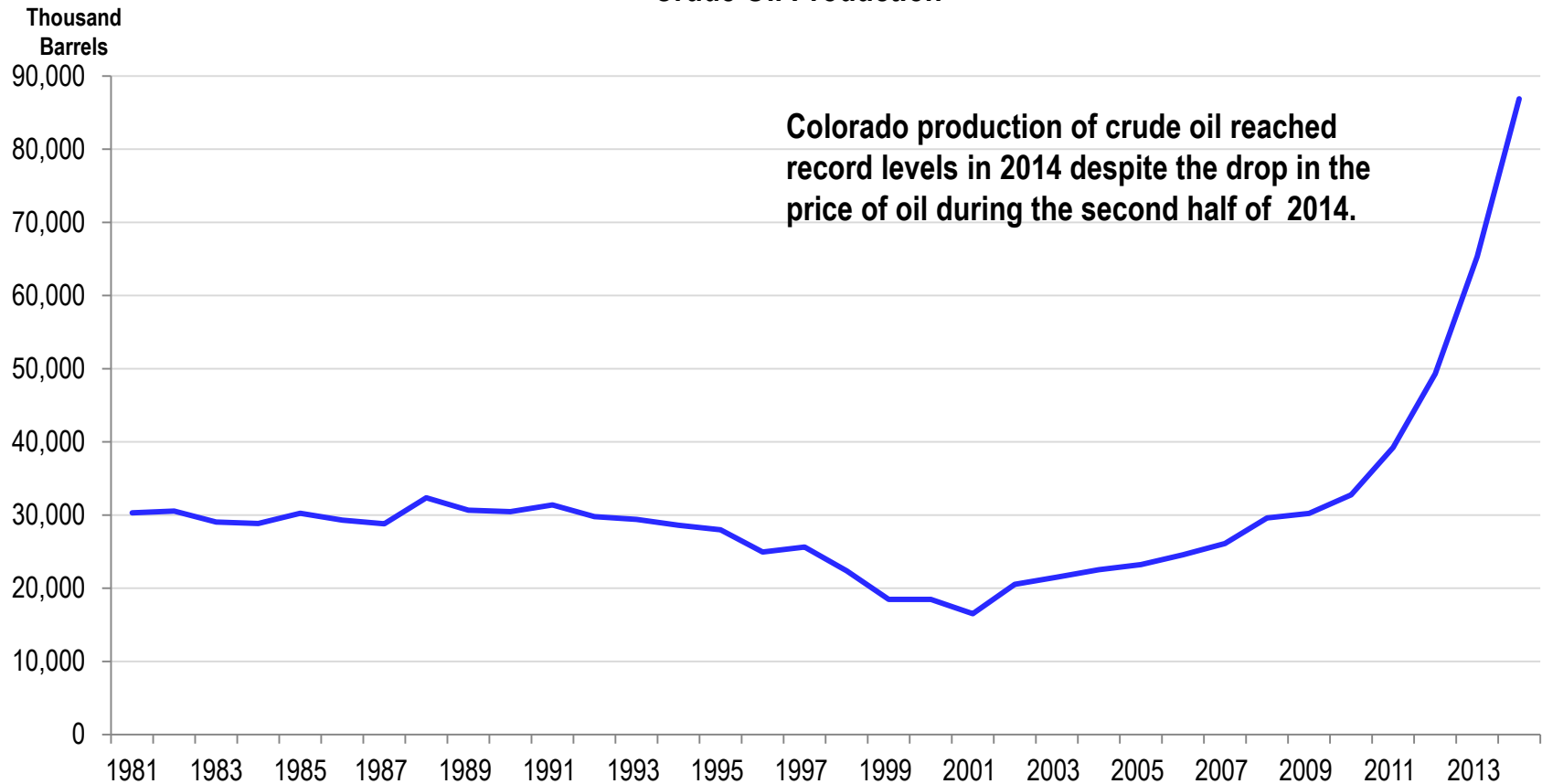


Source: Baker Hughes Rig Count.

# Colorado Crude Oil Production

## 1981 to 2014 (Thousand Barrels)

Crude Oil Production



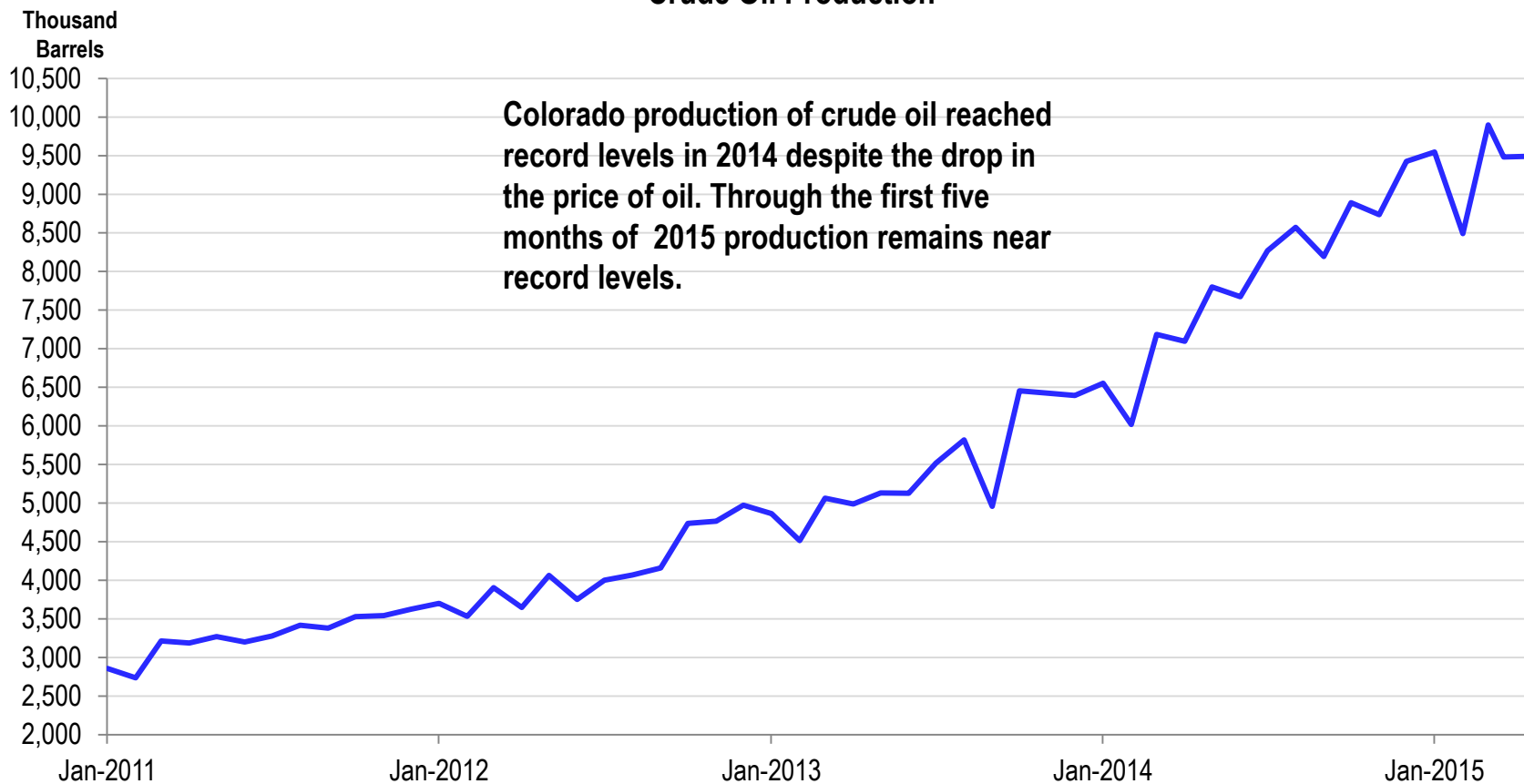
Source: EIA.

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# Monthly Colorado Crude Oil Production 2011 to 2015 (Thousand Barrels)

Crude Oil Production



Source: EIA.

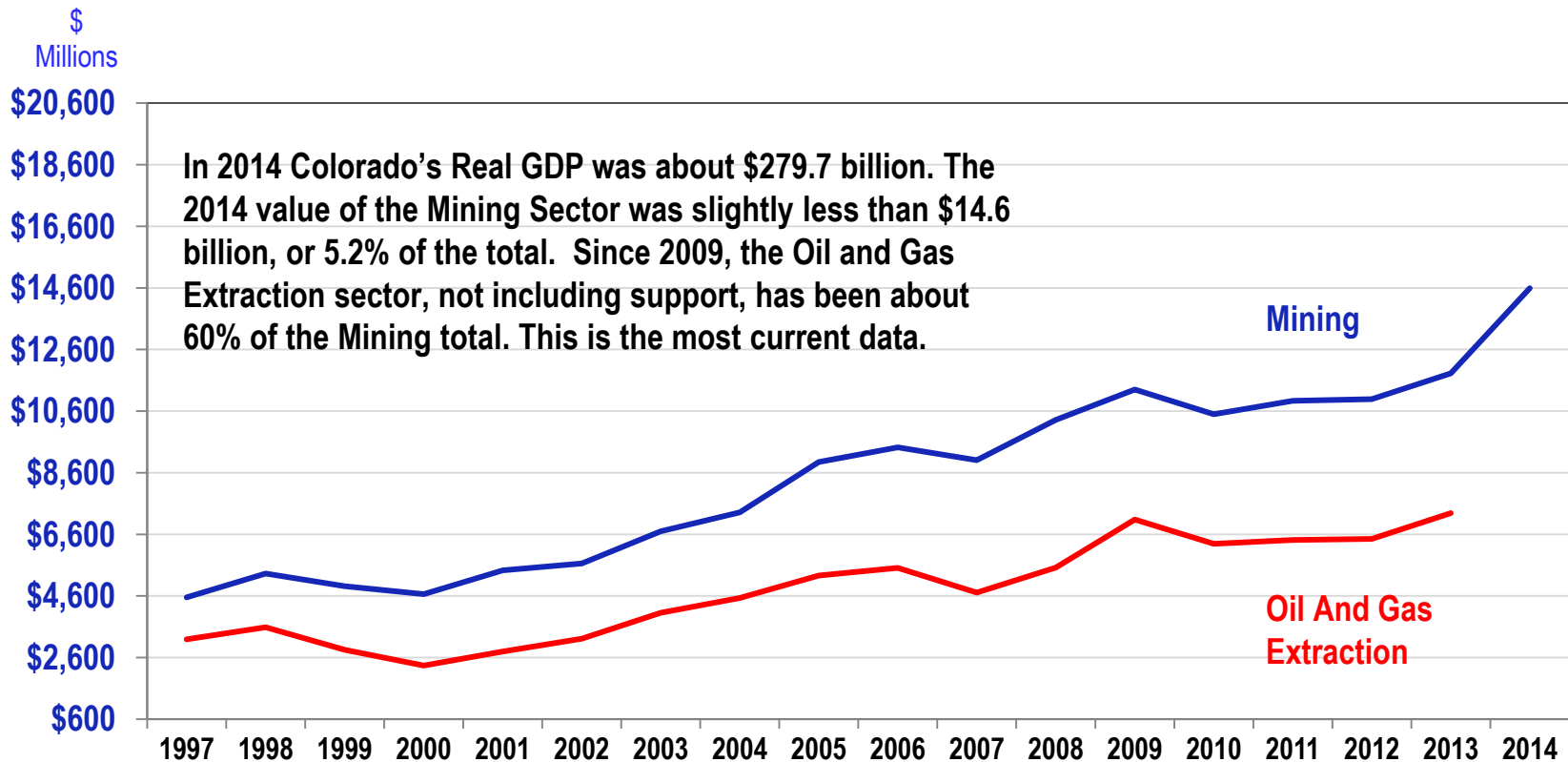
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# Colorado Real Gross Domestic Product

## Mining vs. Oil and Gas Extraction

Colorado Mining and Oil and Gas Extraction

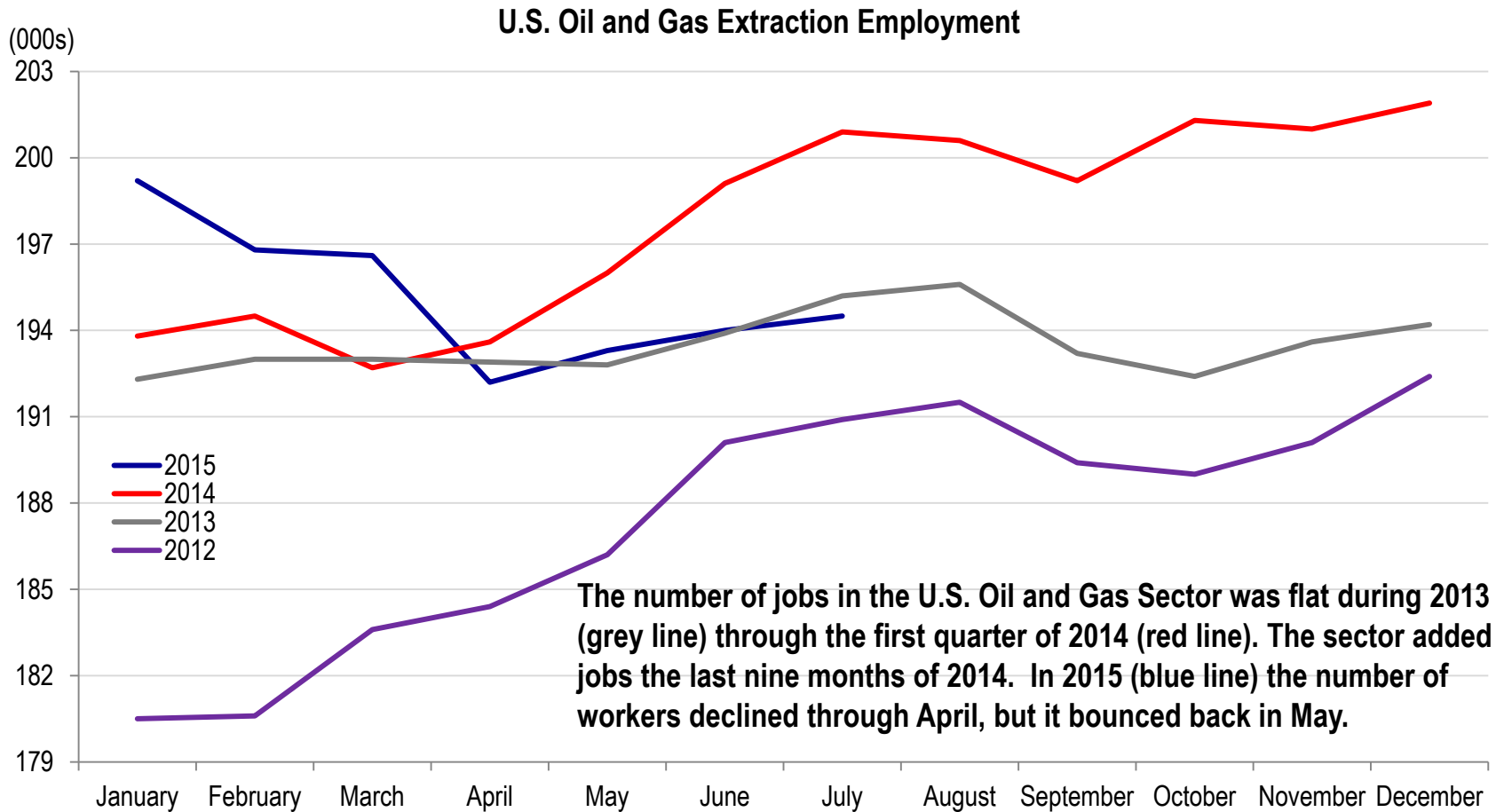


Source: Bureau of Economic Analysis. Note: Chained on 2009 dollars.

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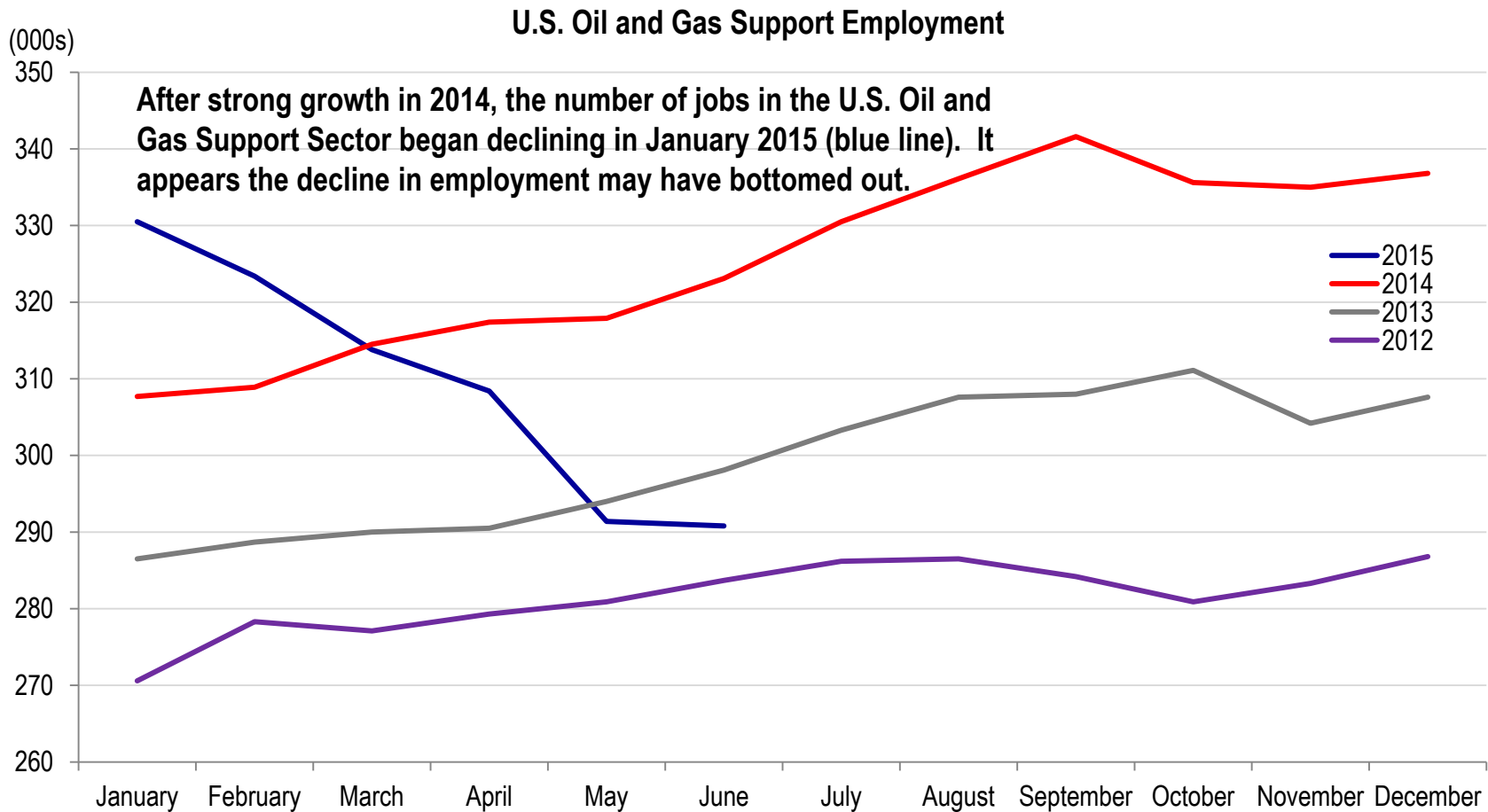
<http://cber.co>

# U.S. Oil and Gas Extraction Employment



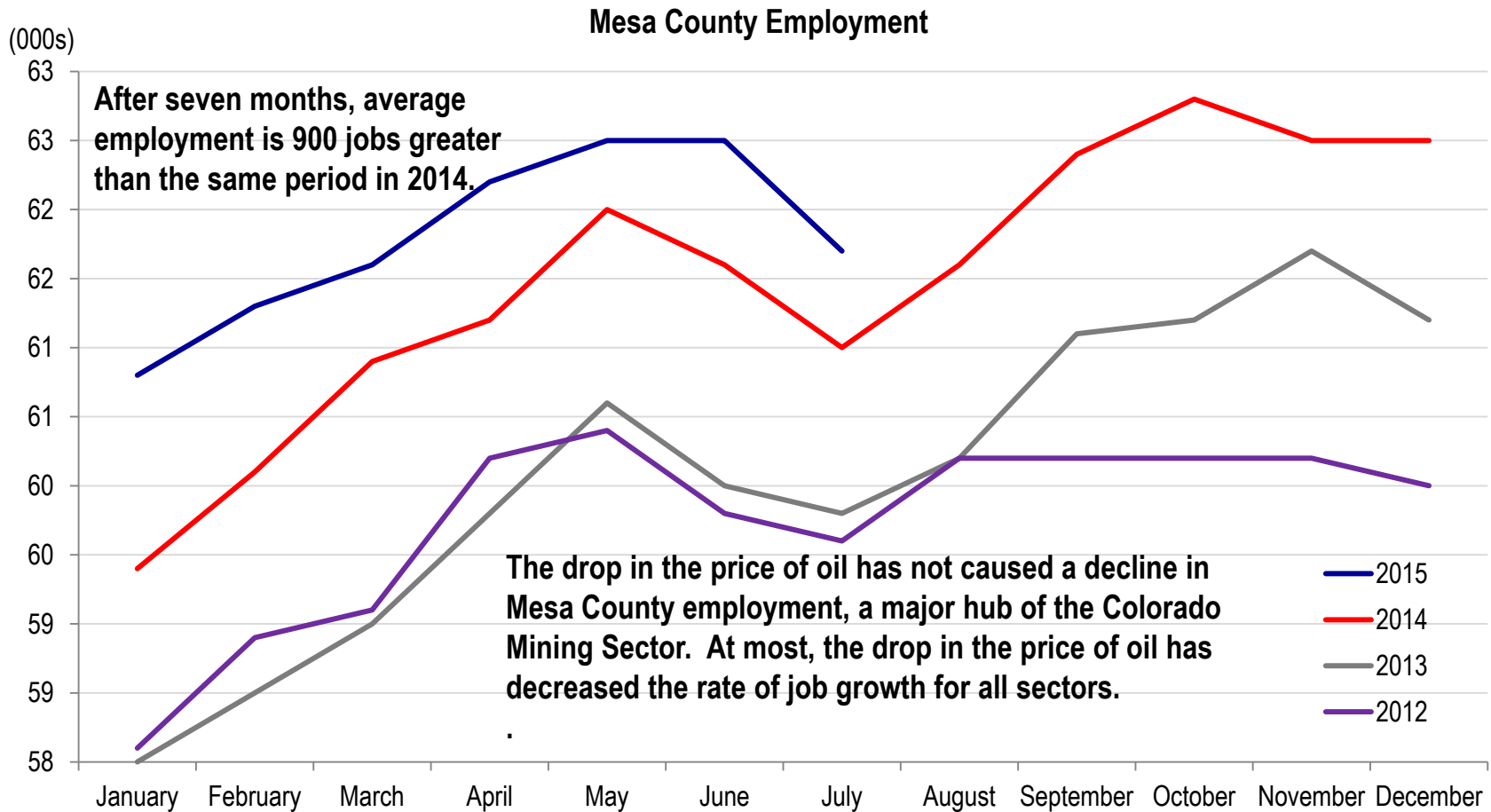
Source: Bureau of Labor Statistics, NSA.

# U.S. Oil and Gas Support Employment



Source: Bureau of Labor Statistics, NSA.

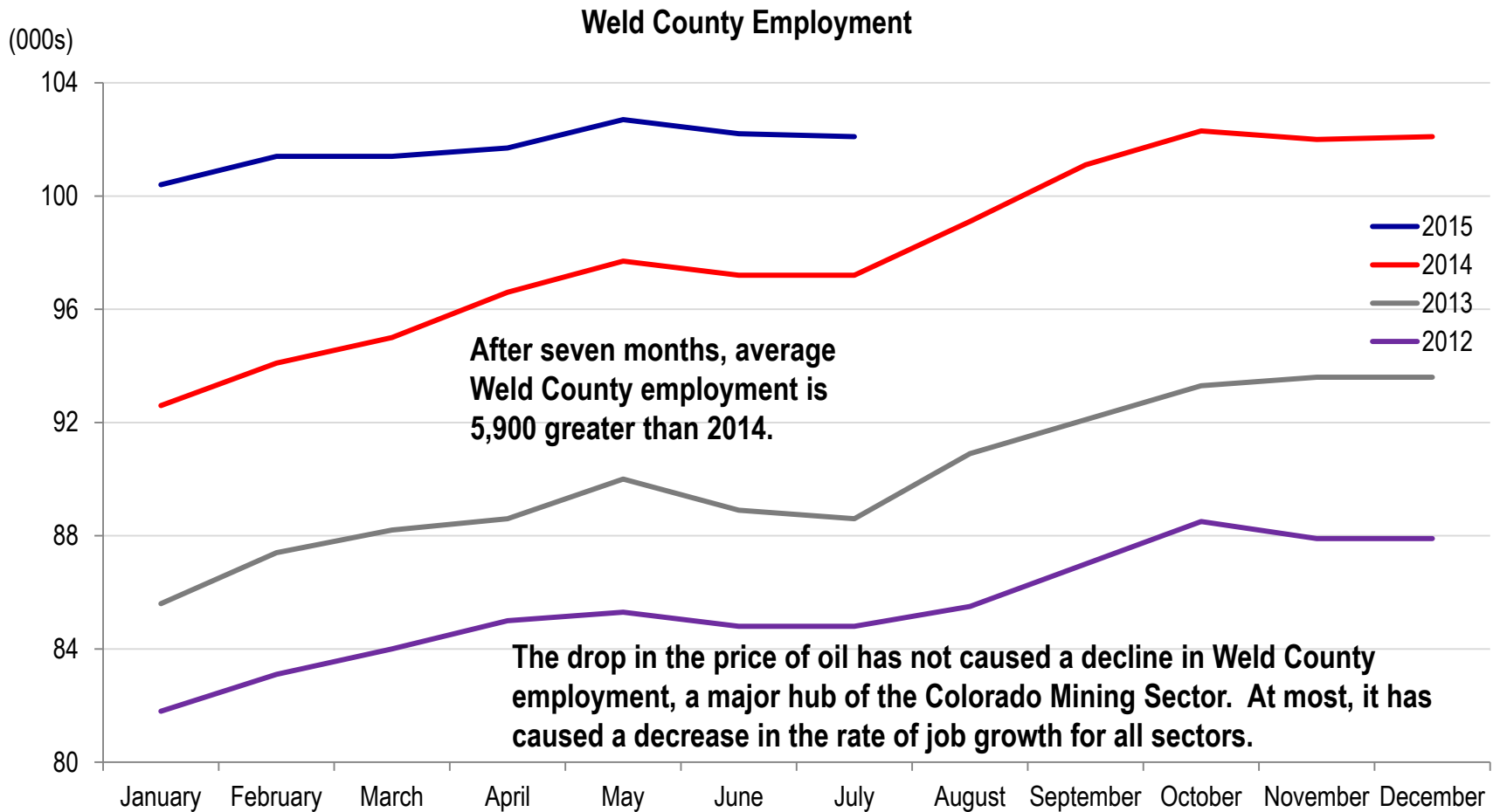
# Mesa County Total Employment 2012 to 2015



Source: Bureau of Labor Statistics, NSA.

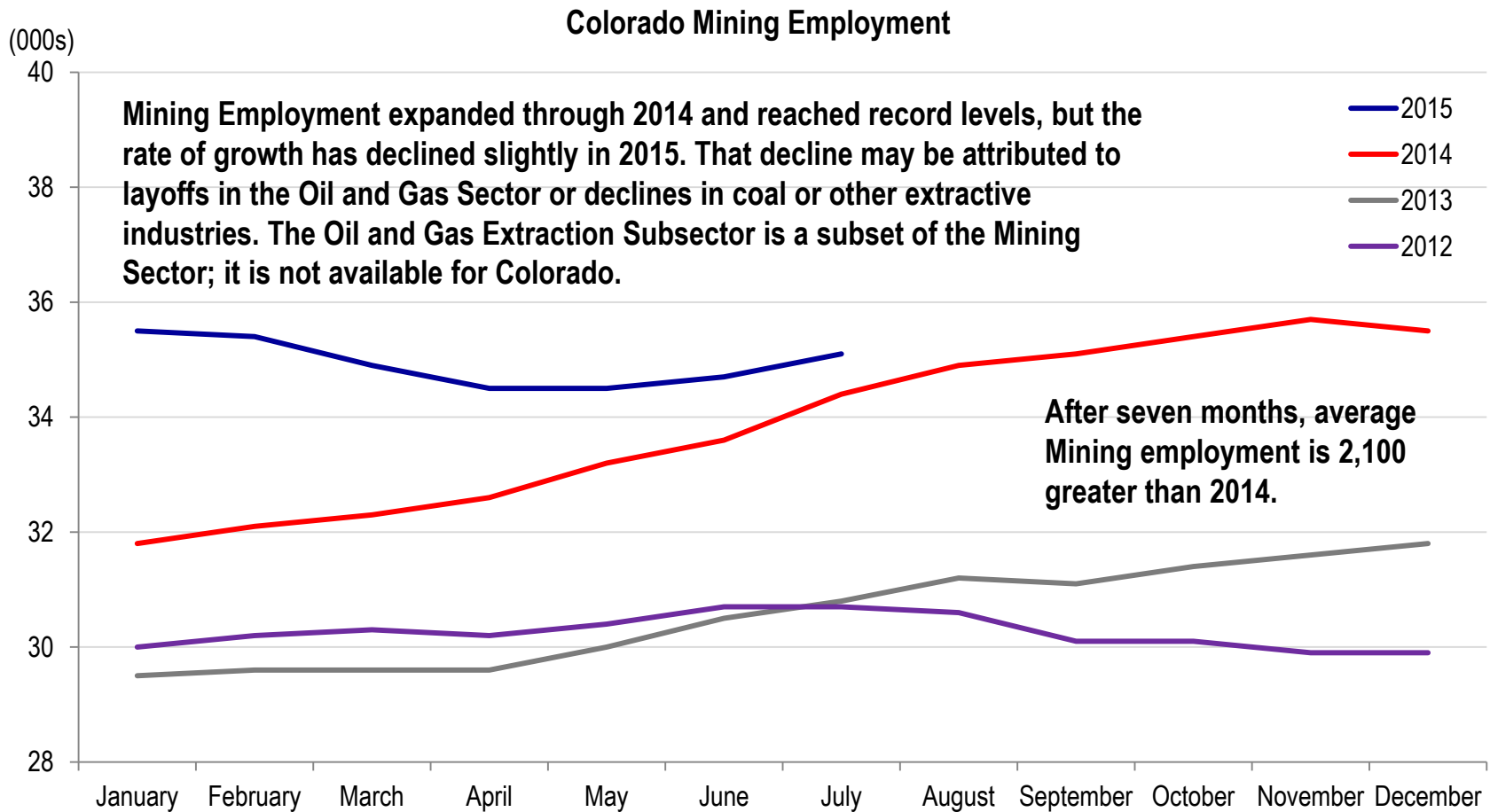


# Weld County Total Employment 2012 to 2015



Source: Bureau of Labor Statistics, NSA.

# Colorado Mining Employment 2012 to 2015



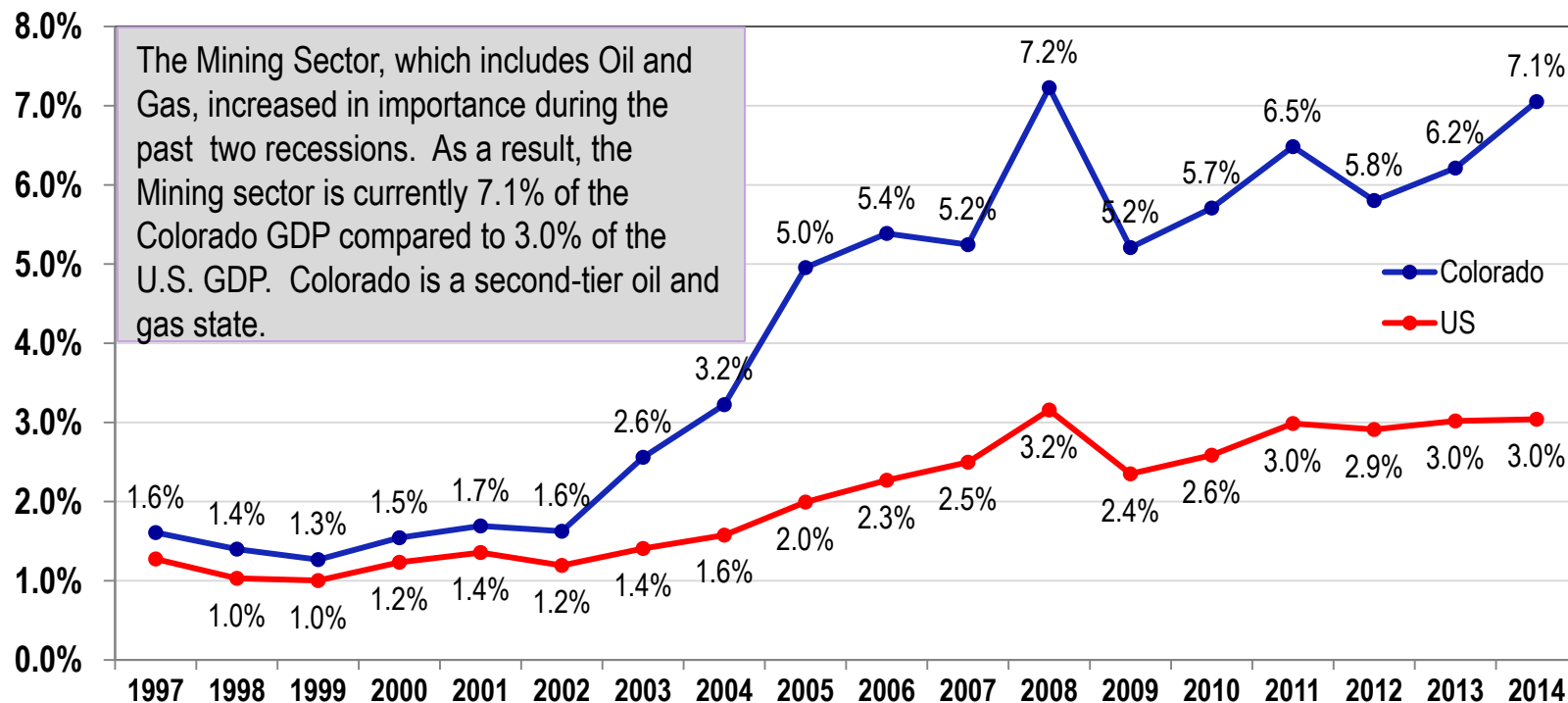
Source: Bureau of Labor Statistics, NSA.

# ● Mining Sector as a Percent of Private Sector GDP

## ● Colorado vs. U.S. (Sum of States)

Colorado vs. U.S.

Percent of GDP



Source: Bureau of Economic Analysis, Chained on 2009.



# Other Industries



# Other Industries

**This section reviews Housing Prices, Building Permits, and Construction Employment. In addition, it evaluates the GDP and employment for the Manufacturing and PST sectors. This section serves as a broad-based gauge of the health of the state economy.**

## **Housing Prices**

The sharp increase in Denver housing prices is a mixed blessing. Higher prices may improve consumer confidence and increase the “paper wealth” of the owners.

Government entities generate greater revenue from property that has a higher value. On the other hand, higher prices increase the difficulty of entering the housing market.

## **Building Permits**

The YTD number of single family permits is slightly ahead of last year while the multi-family permits are similar.

## **Construction Employment**

Through the first seven months of 2015, Construction employment accounted for 18% of total jobs added, compared to the same period last year. Colorado Construction employment is growing faster than the U.S. Construction employment.

## **Manufacturing GDP and Employment**

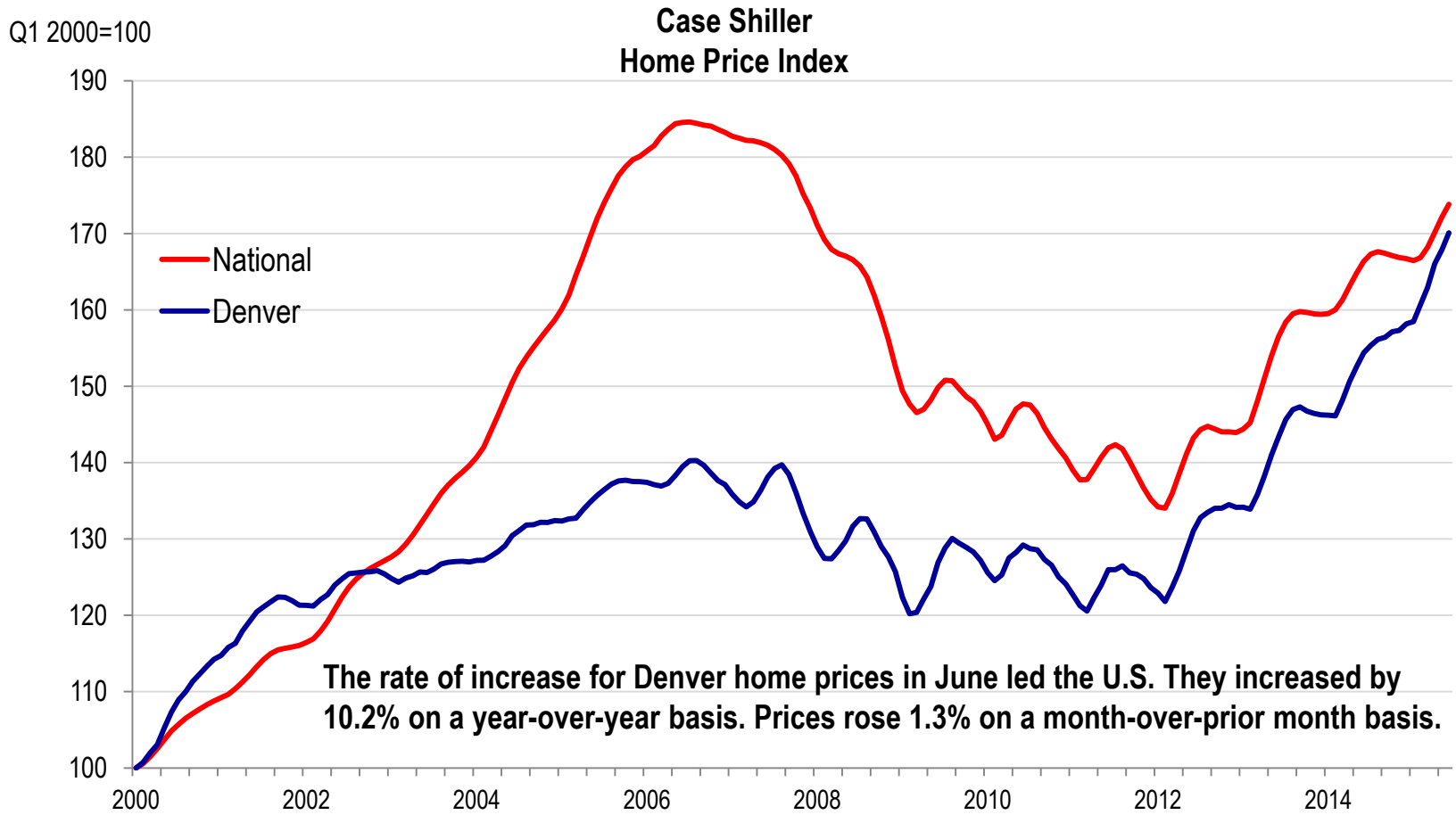
Manufacturing GDP and employment for Colorado is growing at a slower rate than the U.S. Both are trending downward. On a positive note, the Colorado Manufacturing Sector has posted solid job growth in 2015.

## **Professional Scientific and Technical Services GDP and Employment**

For a number of years, the PST Sector has been a source of steady high-paying job growth in Colorado. So far this year, the sector has added jobs at a lower rate than anticipated. That may be a result of slower than anticipated growth in the oil and gas industry. It is also likely the BLS data is understating growth in the sector.

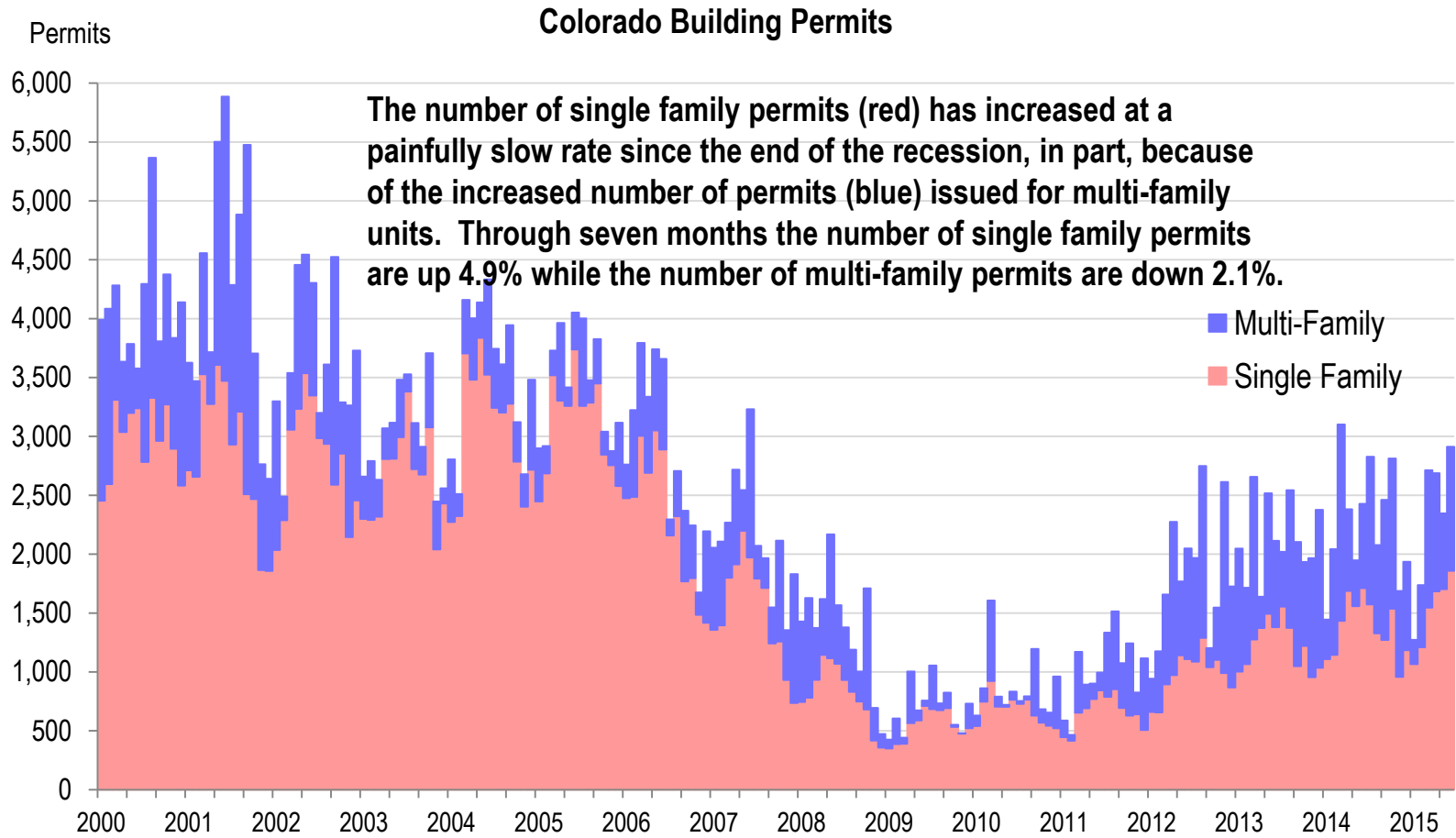
# Housing Prices – Case Shiller

## U.S. vs. Denver



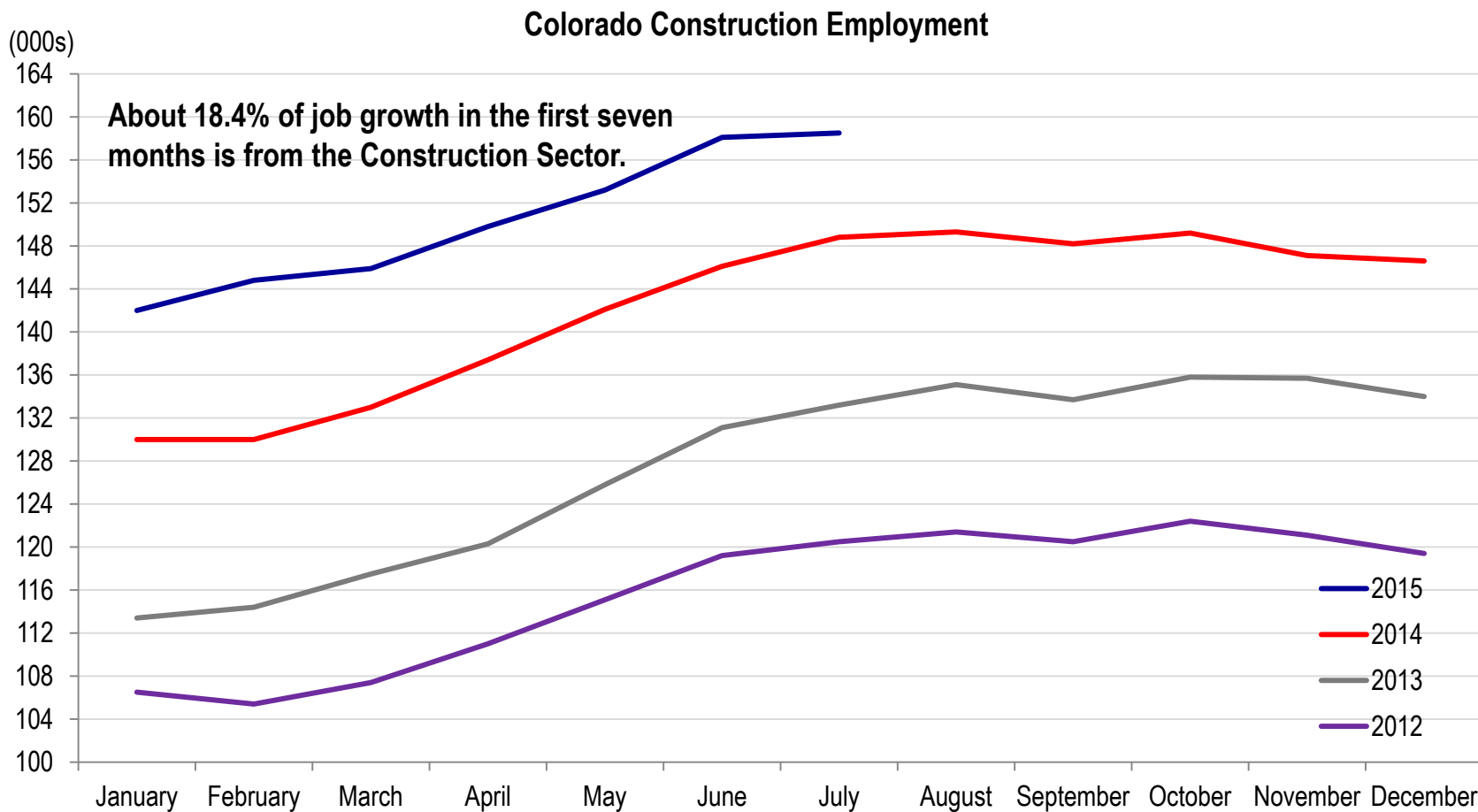
Source: S&P Case-Shiller, FRED.

# Colorado Building Permits



Source: TAMU Real Estate Center.

# Colorado Construction Employment 2012 to 2015



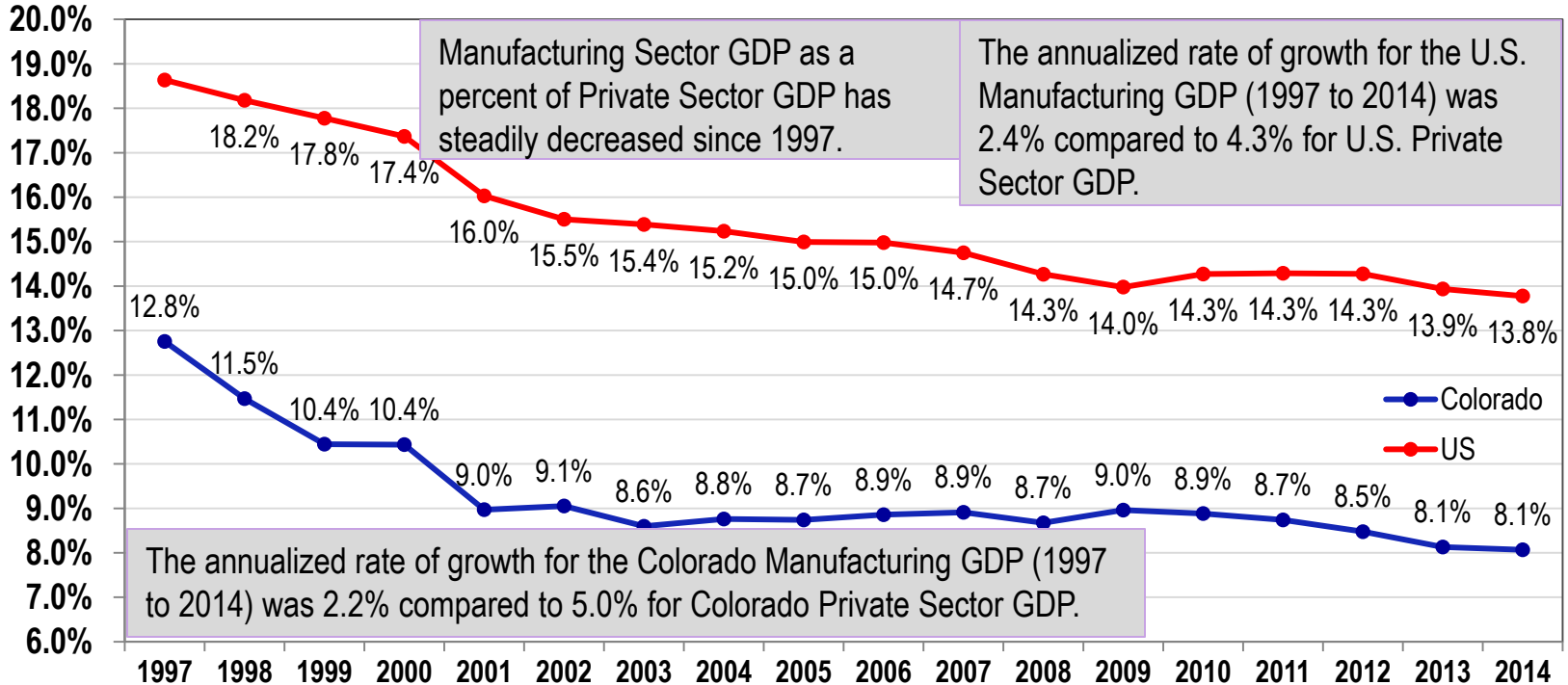
Source: Bureau of Labor Statistics, NSA.



- Manufacturing Sector GDP as a
- Percent of Private Sector GDP
- Colorado vs. U.S. (Sum of States)

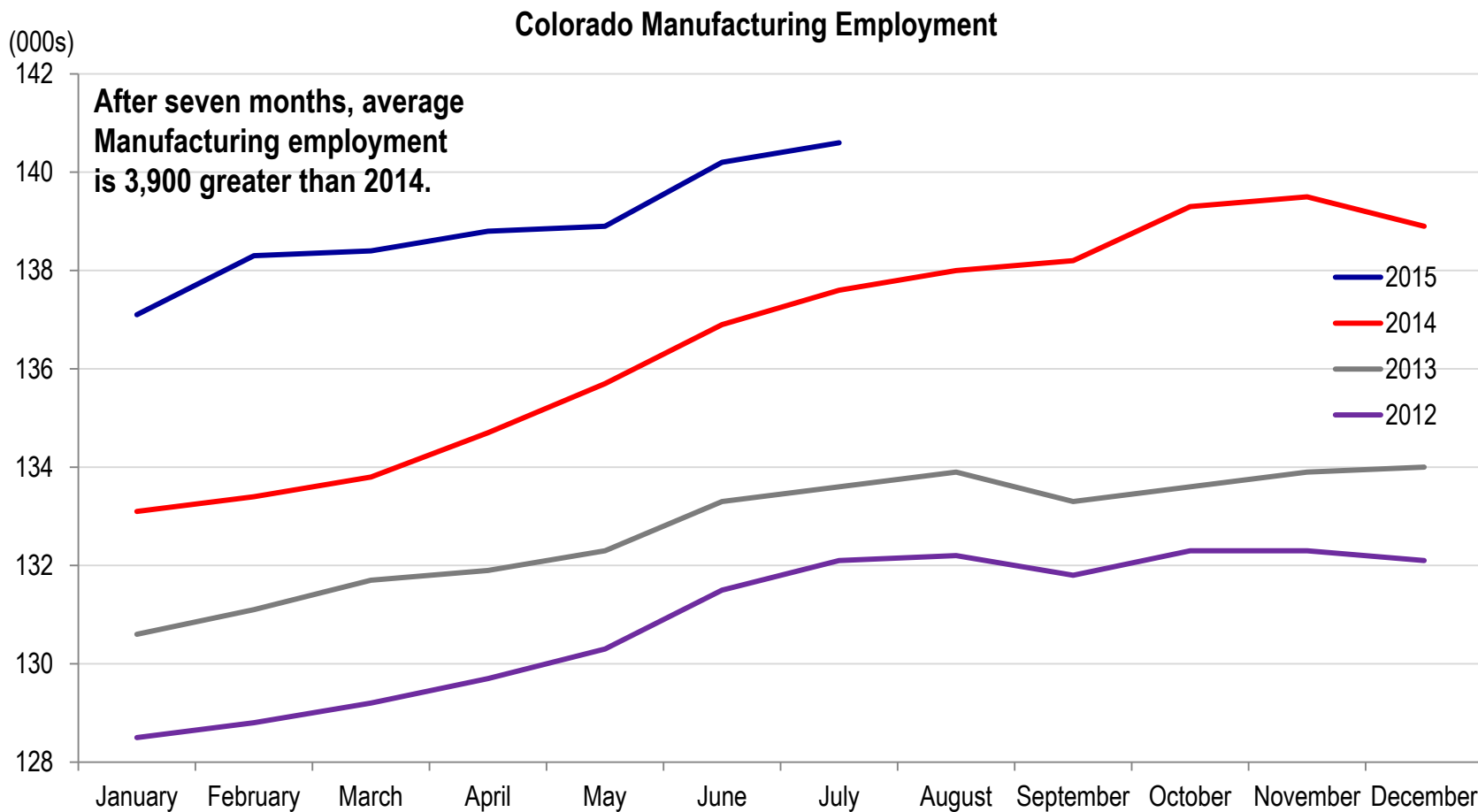
Colorado vs. U.S.

Percent of GDP



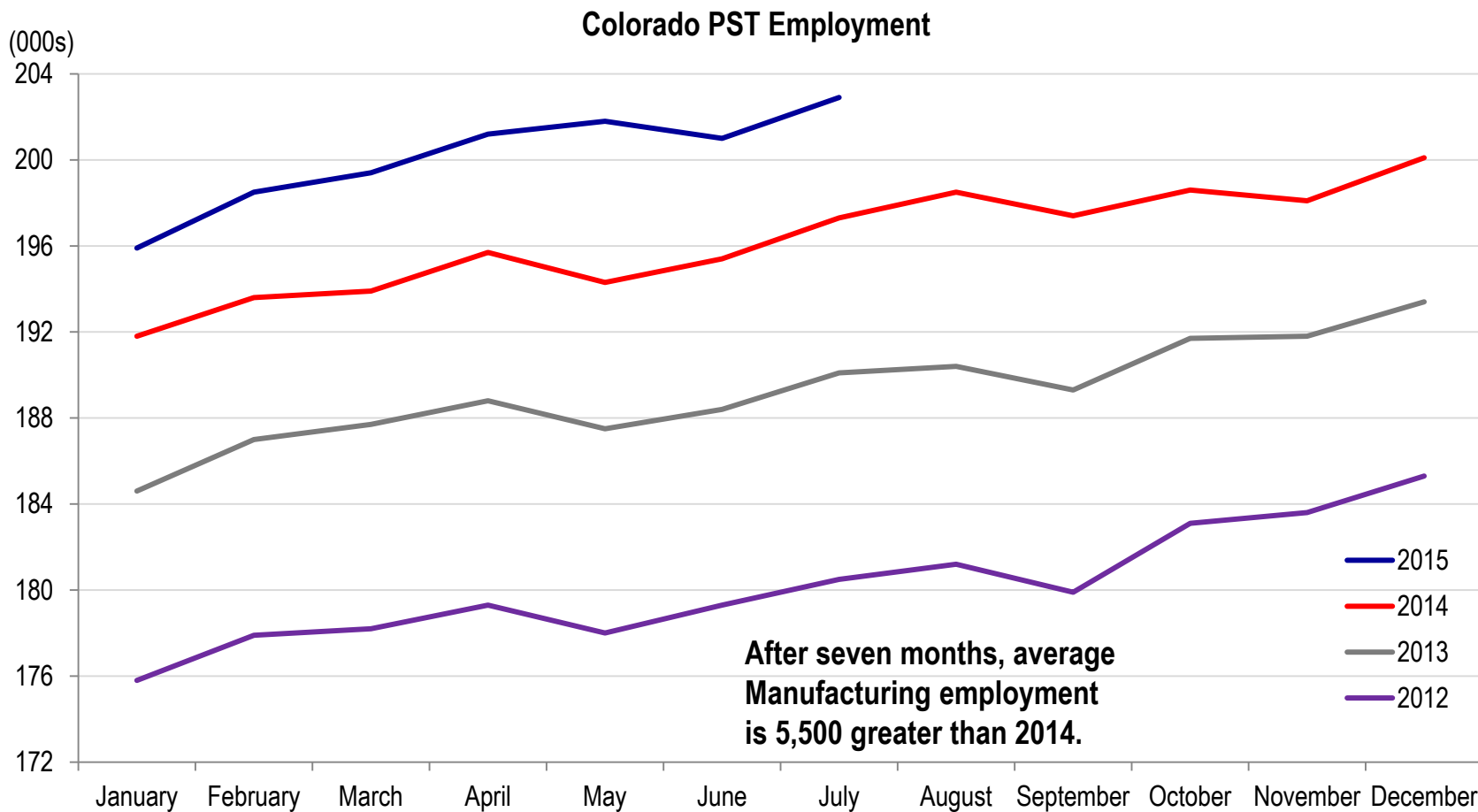
Source: Bureau of Economic Analysis, Chained on 2009.

# Colorado Manufacturing Employment 2012 to 2015



Source: Bureau of Labor Statistics, NSA.

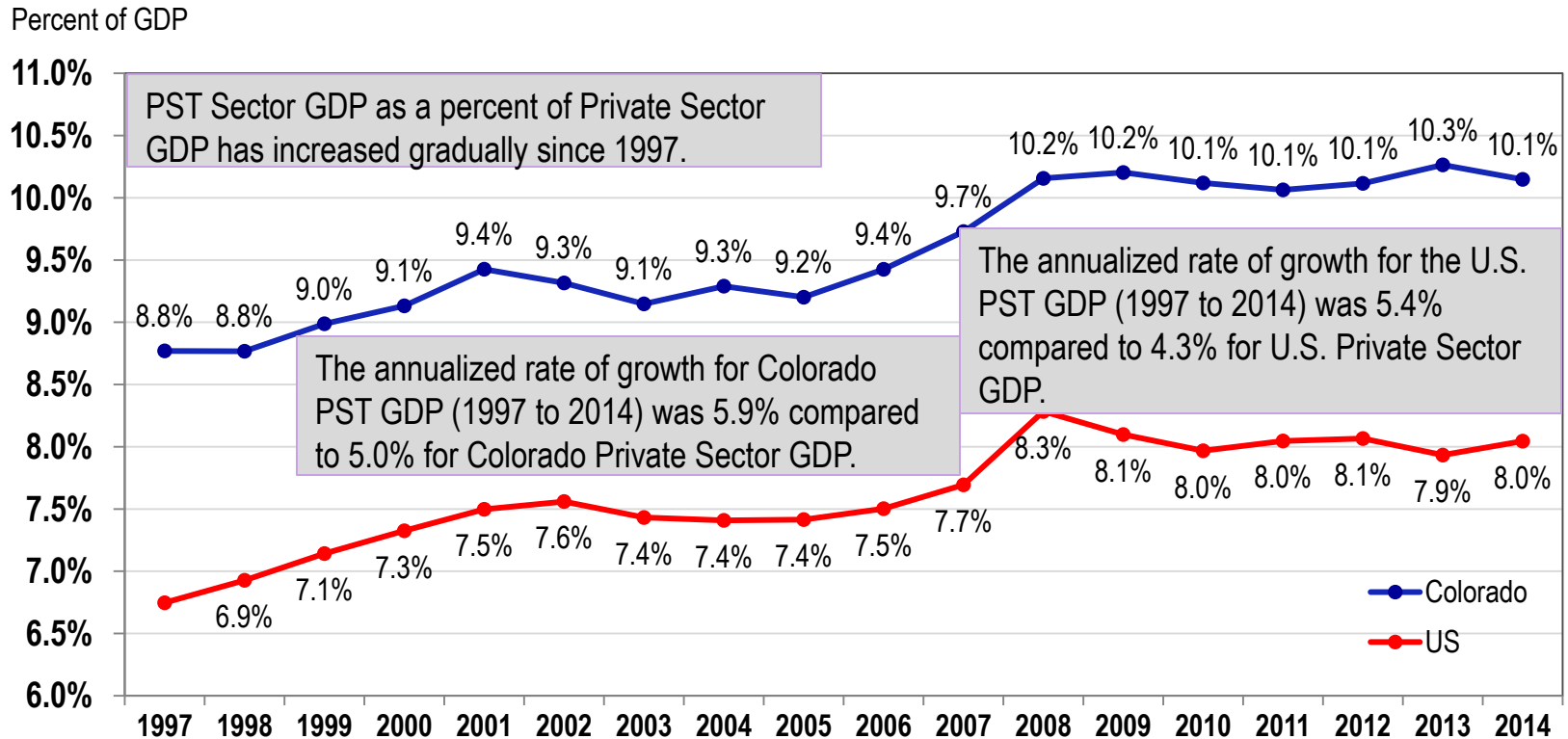
● Colorado Professional, Scientific, and Technical  
● Employment  
● 2012 to 2015



Source: Bureau of Labor Statistics, NSA.

- Professional, Scientific, and Technical GDP as a Percent of Private Sector GDP
- Colorado vs. U.S. (Sum of States)

Colorado vs. U.S.

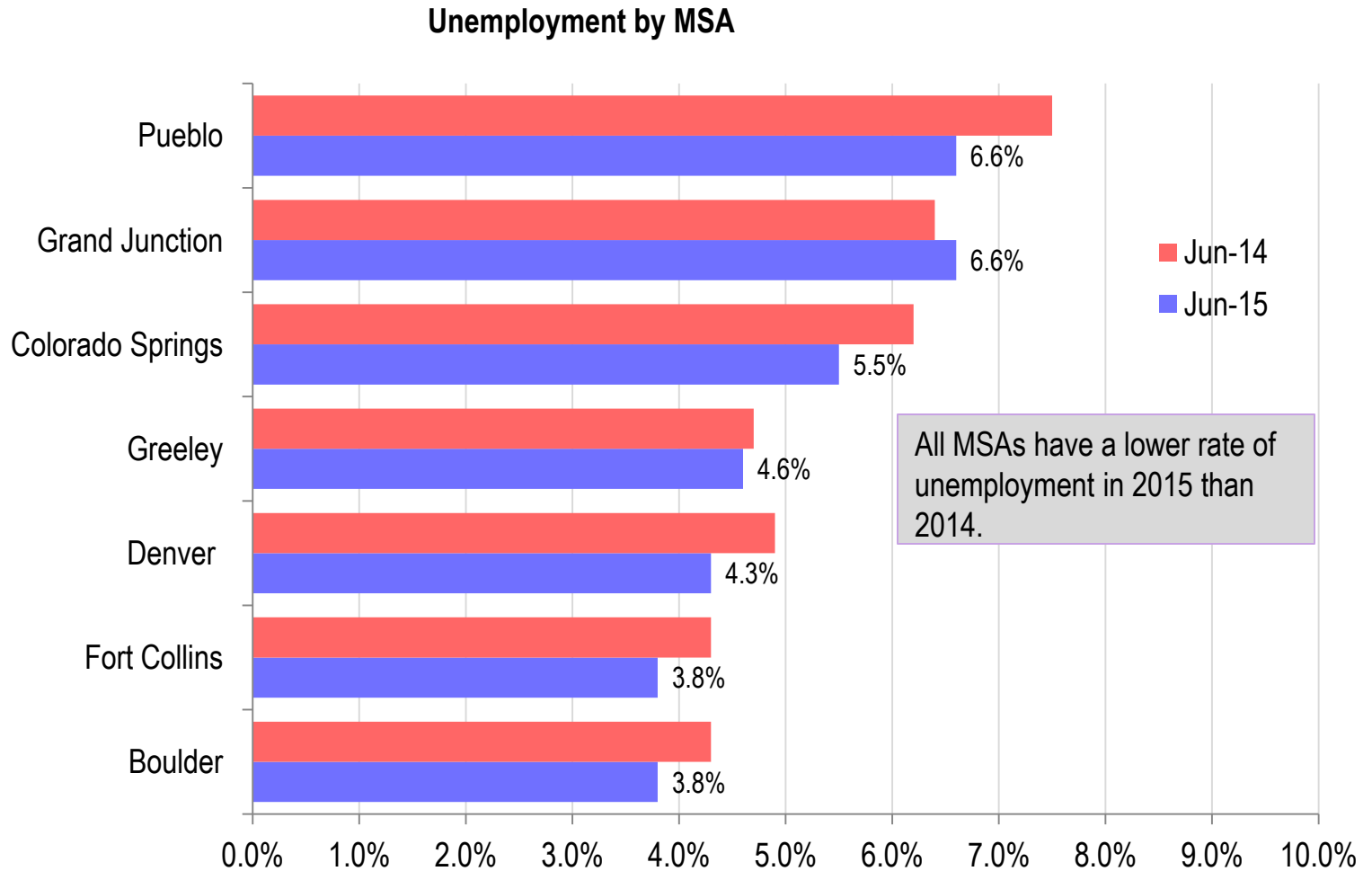


Source: Bureau of Economic Analysis, Chained on 2009.



# Summary and Total Jobs Added

# Unemployment by MSA 2014 vs. 2015



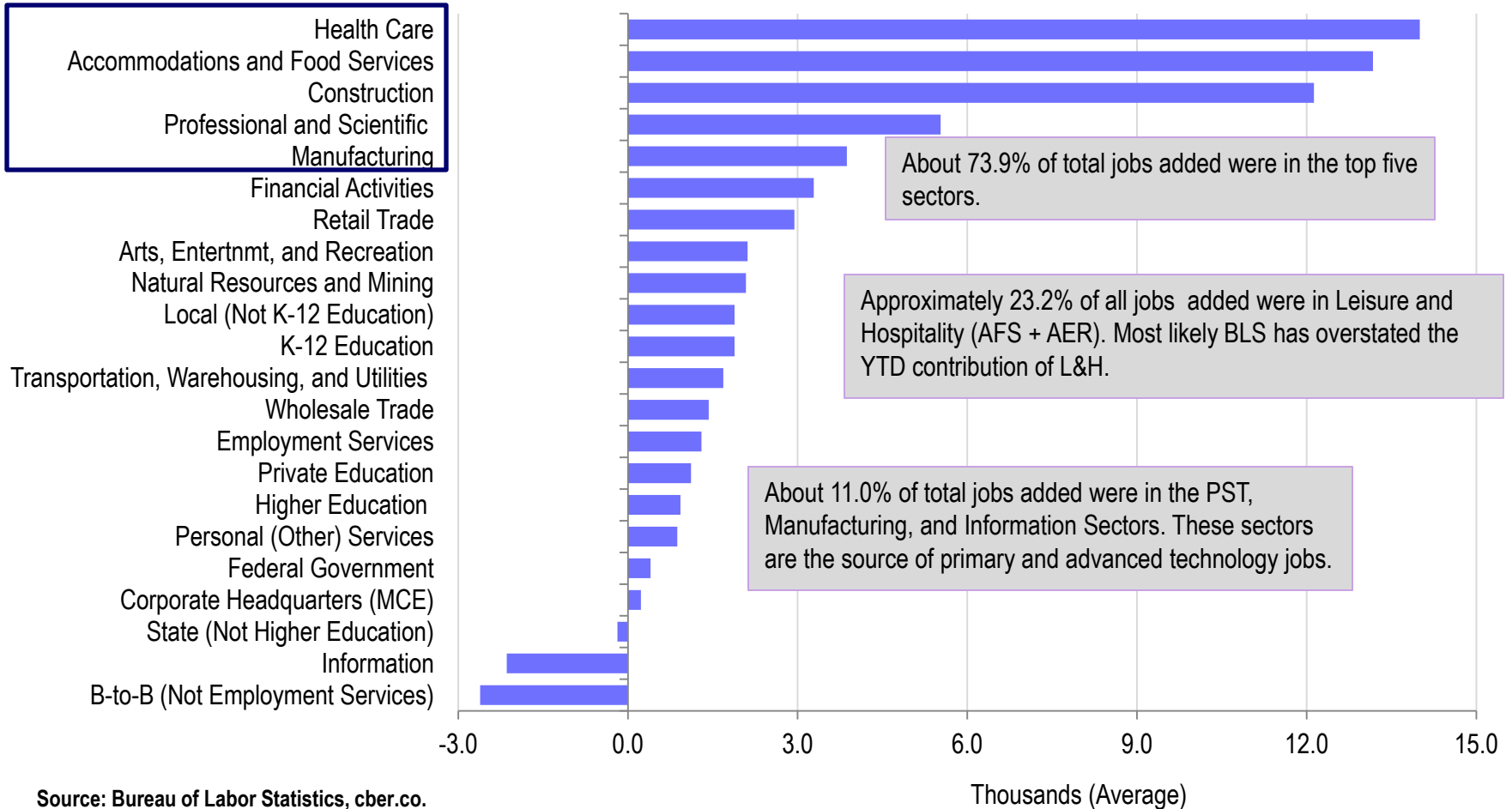
Source: Bureau of Labor Statistics, NSA. Note: MSA unemployment lags by one month and is reported on a non-seasonally adjusted basis.

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# Change in Employment First Seven Months 2015

Number of Jobs Added



Source: Bureau of Labor Statistics, cber.co.

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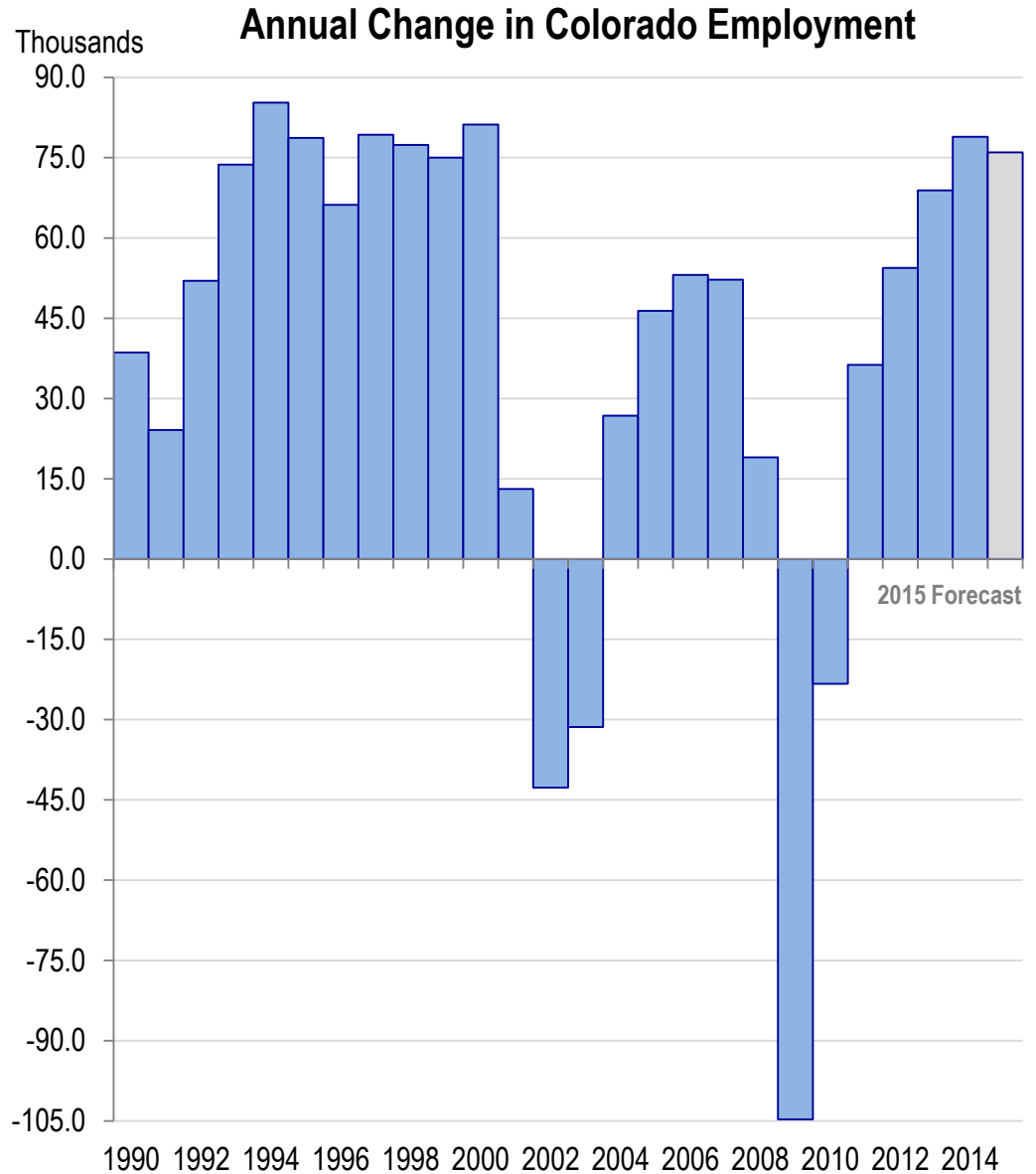
## Annual Employment Change in Colorado

In 2014, Colorado experienced accelerating job growth for the fourth consecutive year. The state added 78,900 workers, an increase of 3.3% on a base of 2,381,900 jobs.

The state is projected to add 73,000 to 79,000 jobs in 2015, an increase of 3.0% to 3.2%.

For the first seven months of 2015 Colorado employment is 65,900 jobs greater than the same period last year. The published data shows the state is growing at a solid, but decreasing rate of growth.

The Colorado Department of Labor and Employment has indicated they will make a significant upward adjustment to Q4 2014 data and data for the first four months of 2015. This is like to occur in the March 2016 revisions.



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

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<http://cber.co>



# Reasons to Feel Good about the Colorado Economy

There are a number of reasons to feel good about the Colorado economy. Fortunately, the reasons to be optimistic, listed below, outweigh the risks.

<p><b>Momentum</b> – Revised employment data for 2014 will show the Colorado economy had strong momentum coming into 2015. The revisions will be made in March 2016.</p>	<p><b>Consumer Sentiment</b> – The best measure for consumer sentiment in Colorado is the rising prices in restaurants, longer waiting lines in restaurants, and shoppers carrying bags out of retail stores. These indicators suggest solid consumer sentiment in Colorado.</p>
<p><b>The Fed</b> - Janet Yellen has indicated the Federal Reserve is confident the U.S. economy is performing well enough to raise interest rates this year. A solid U.S. economy bodes well for Colorado.</p>	<p><b>Construction</b> - There is growth in the Construction sector. If anything, Construction job growth will be constrained by the lack of trained workers.</p>
<p><b>Job and Establishment Growth</b> – Job and establishment growth is solid and diversified across sectors.</p>	<p><b>Manufacturing</b> – The strength of manufacturing is a pleasant surprise; however the industry lags the nation in job and output growth.</p>
<p><b>Housing Prices</b> – Colorado leads the nation in the rate of growth in housing prices – truly a mixed blessing.</p>	<p><b>New Car Registrations</b> – Colorado new car registrations remain strong.</p>
<p><b>Property Taxes</b> - Local governments and school districts benefit from higher property values and property taxes.</p>	<p><b>Tourism</b> – The Colorado tourism sector is having another solid year.</p>

# Economic Risks and Concerns

There are a number of reasons to feel good about the Colorado economy. Admittedly there are risks. Fortunately, the reasons to be optimistic, listed below, outweigh the risks.

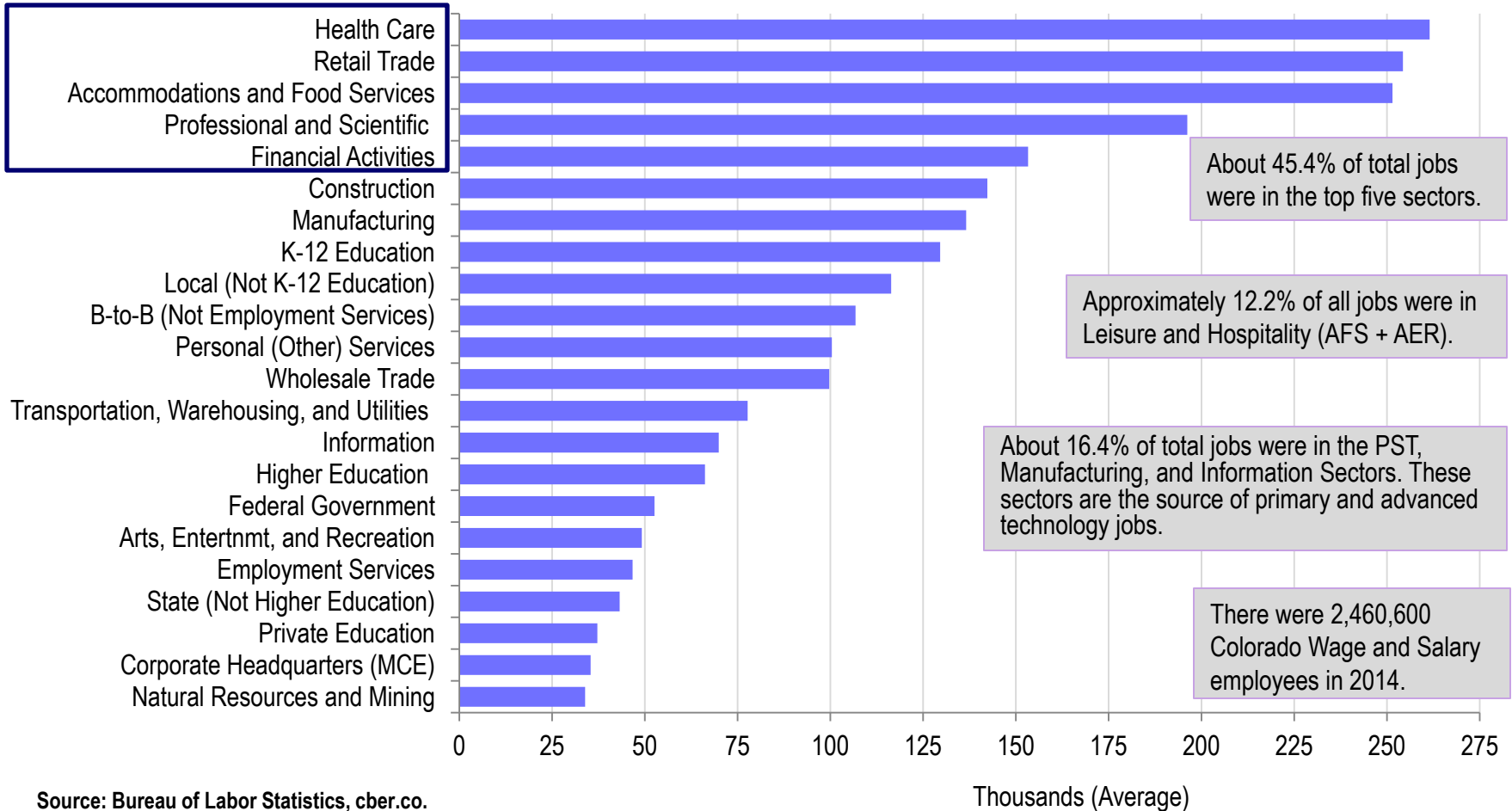
<p><b>Low Unemployment Rate</b>– Some Colorado companies are having difficulty finding trained workers in such industries as construction and the high tech sector because of the state’s low unemployment rate.</p>	<p><b>Weak Wage Growth</b> – Average overall wage growth is weak, although above-average wage growth has occurred in occupations where there is high demand such as construction and high-tech.</p>
<p><b>Job Growth</b> – Data from the Colorado Department of Labor and Employment shows jobs are increasing at a declining rate. Activity on the street suggests the data is not capturing actual growth. Is the CDLE data telling the true story or is it understating the rate of job growth?</p>	<p><b>Oil and Gas Industry</b> – Some economists thought the sky would fall shortly after the reduction in the price of oil; however, there has not been a significant decline in production and employment. How long will prices stay suppressed? When will production drop off? When will other industries be affected?</p>
<p><b>Inflation</b> - The increase in Colorado housing prices will increase the state's rate of inflation.</p>	<p><b>Information Sector</b> – The sector continues to shed jobs at an alarming rate.</p>
<p><b>Professional, Scientific, and Technical Sector</b> - The number of jobs being added in the PST sector is solid, but below expectations.</p>	<p><b>Affordable Housing</b> - It will be more difficult to find attainable and affordable housing as a result of the sharp increases in housing prices.</p>



# Appendix

# 2014 Colorado Wage and Salary Employment

## Employment



Source: Bureau of Labor Statistics, cber.co.

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# 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.

# 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 20<sup>th</sup> 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 20<sup>th</sup> 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.



## Review of Colorado Economy Analysis of First Seven Months of 2015

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

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

### ABOUT THE AUTHOR

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

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

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