



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

Colorado-based Business and Economic Research

November 22, 2015



# Overview

The current employment data shows the state has added 63,400 jobs through the first ten months of 2015 compared to the same period last year. Projected revisions, which will be made in March 2016, will bring Colorado job growth in line with the 2015 cber.co forecast, a projected increase of 73,000 to 79,000 jobs.

This brief analysis is divided into the following sections.

- Summary of Key Data.
- Global and U.S. Economy – Gross Domestic Product, Employment and Unemployment, and Wages.
- U.S. Economy – Sentiment, Equities, Retail, and Construction.
- Colorado Employment and Unemployment.
- Change in Colorado Employment by Performance Category.
- In the News.
- Snapshots –Construction and Natural Resources.
- 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 at the lower end of the 2.5% to 2.9% range for 2015.

**Retail Sales** – Up 1.4% for 10 months, projected to be up 3.0% for 2015. Low gasoline prices have taken a toll.

**U.S. Employment** – The U.S. is on track to add almost 3.0 million jobs this year, up from 2.6 million last year.

**Unemployment Rate** – 5.0% at the end of October, down from 5.7% a year ago; 7.9 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.

**Construction** – Through 10 months, employment is up 4.5%.

**Case Shiller Housing Prices** – U.S. prices up 4.7% from a year ago (October release).

**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 decline of 263 points. On November 19<sup>th</sup> it had risen to 2,081.24.

## Colorado

**Employment Revisions** – Projected revisions to Q4 2014 and Q1 2015 employment will show there was stronger momentum coming into 2015 than originally anticipated and that momentum was sustained through Q1.

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

**Unemployment Rate** – 3.8%. Down from 4.4% a year ago. The economy will operate inefficiently at this level.

**MSA Unemployment Rate** – Boulder and Ft. Collins have the lowest rates at 3.3% and 3.4%, respectively.

**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 10 months Colorado is on track to add 59,700 jobs in 2015.

**Leading Sectors for Growth** – About 77.1% of the jobs have been added in the Health Care; Construction; Accommodations and Food Services; Professional, Scientific, and Technical Services; and Financial Activities.



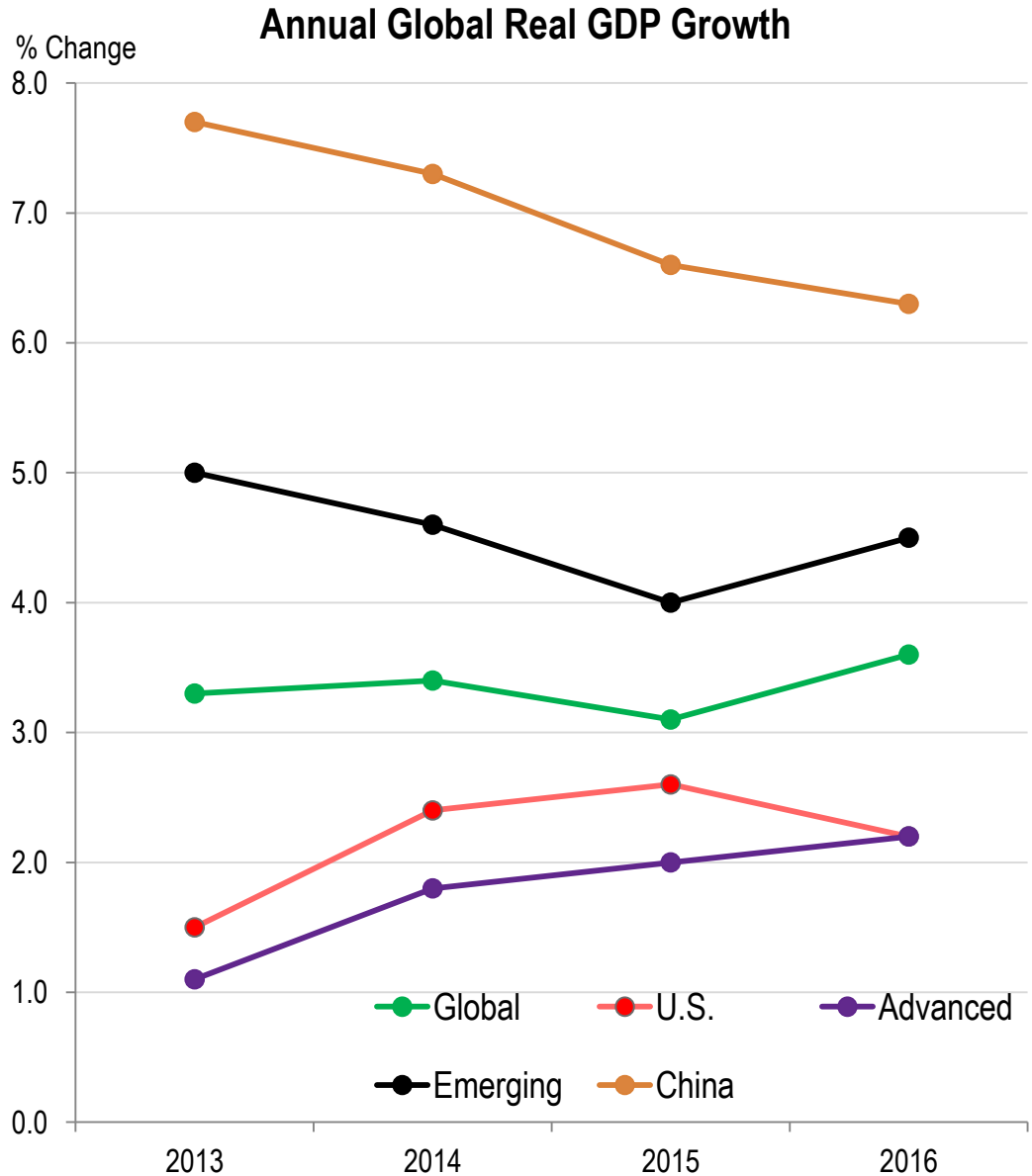
# Global and U.S. Economy Gross Domestic Product, Employment, Unemployment, and Wages

# Annual Global Real GDP Growth

The IMF projects that global GDP growth (green) will decline in 2015 as a result of the slowdown in the rate of GDP growth in China (gold). Growth in 2016 will slightly outpace growth in 2015.

The current IMF forecast is less optimistic about the rate of growth in the U.S. (red) since last July. Growth in the advanced countries (purple) parallels growth in the U.S., (red), with the exception of 2016.

Economic growth in emerging economies (black) will be stronger in 2016.



Source: IMF, October 2015.

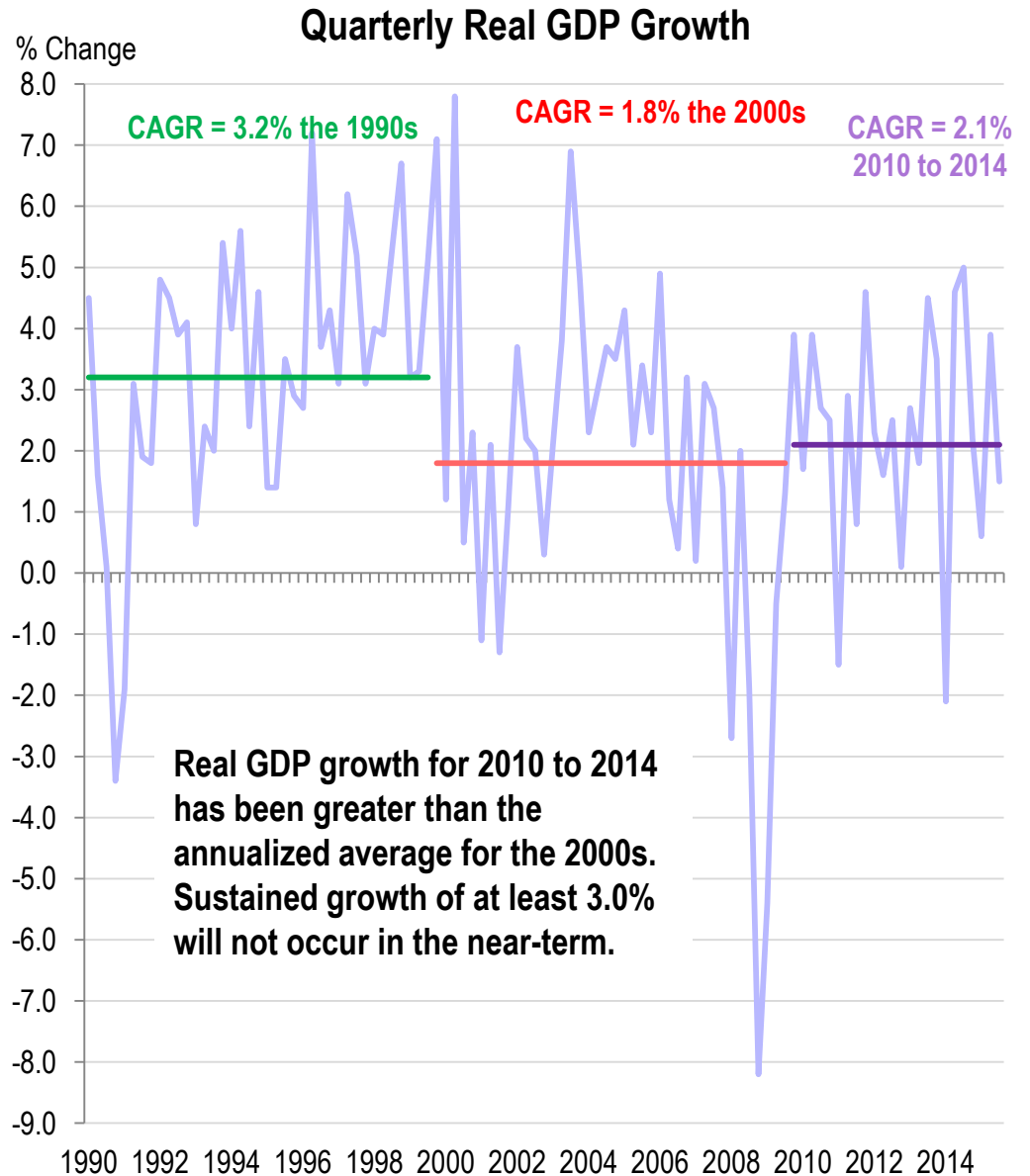
# Real US GDP Growth Quarterly

The cber.co 2015 forecast calls for Real GDP growth of 2.5% to 2.9%, a slight increase over 2014. That forecast will likely be met.

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).

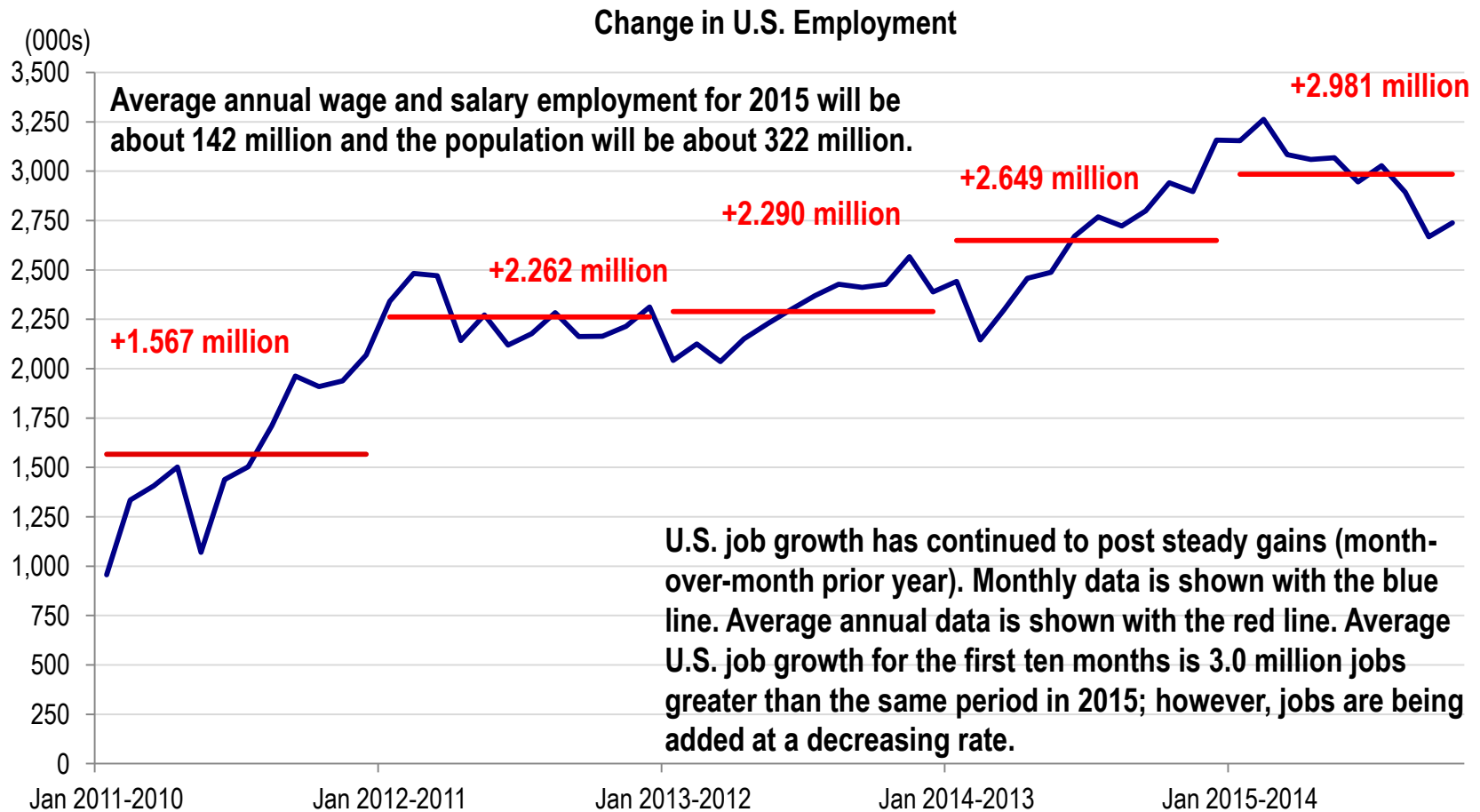
Real GDP growth for the past five years was:

- 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

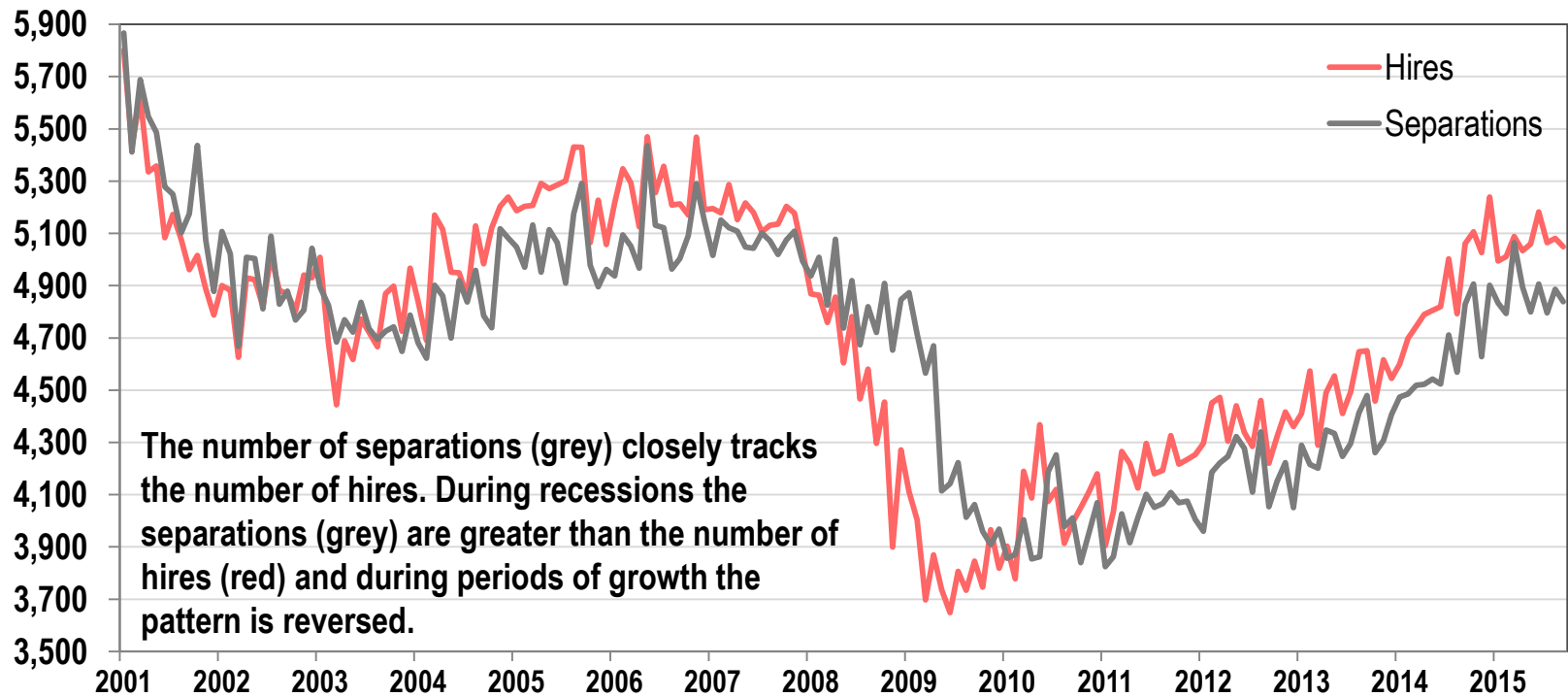


Source: Bureau of Labor Statistics, NSA.

# U.S. Hires and Separations

## Hires and Separations

Thousands



Source: Bureau of Labor Statistics, NSA.

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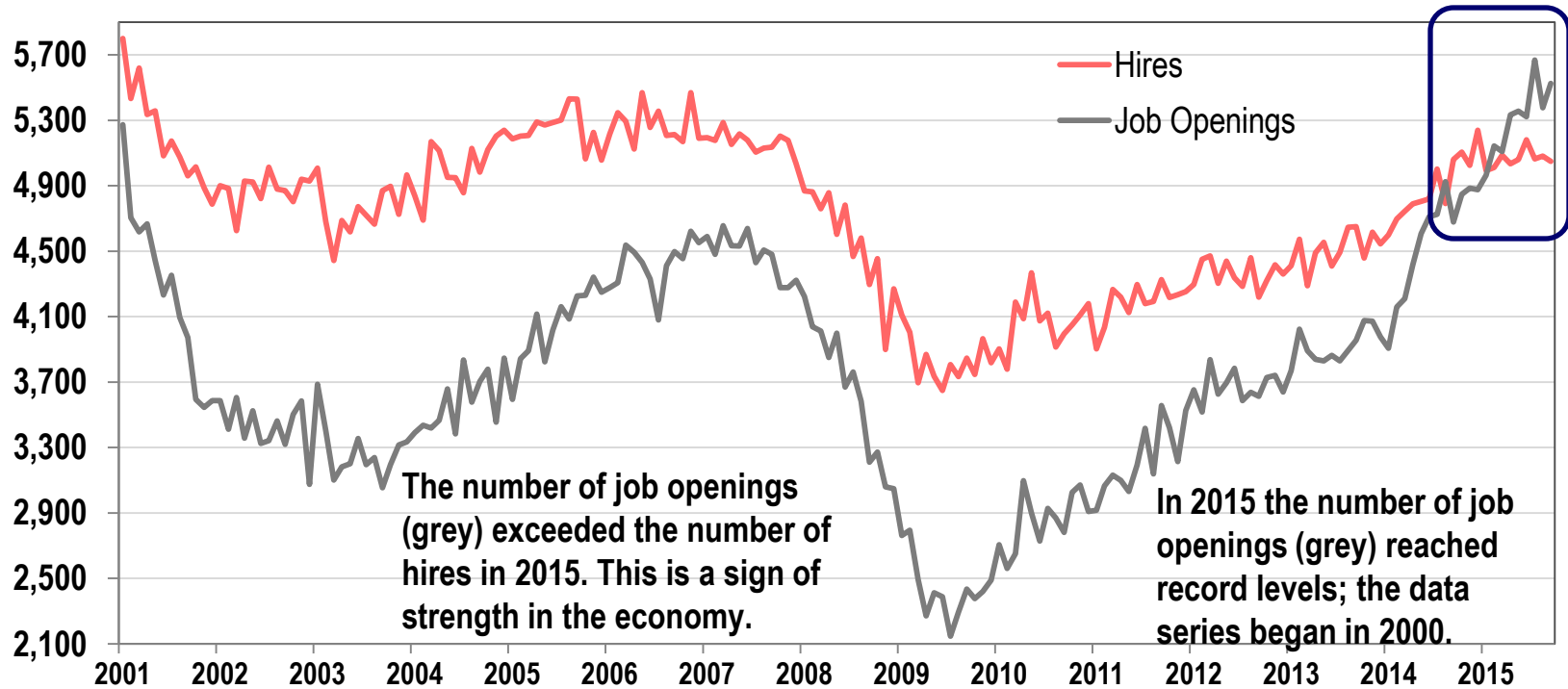
<http://cber.co>



# U.S. Job Openings and Hires

Job Openings and Hires

Thousands



Source: Bureau of Labor Statistics.MSA.

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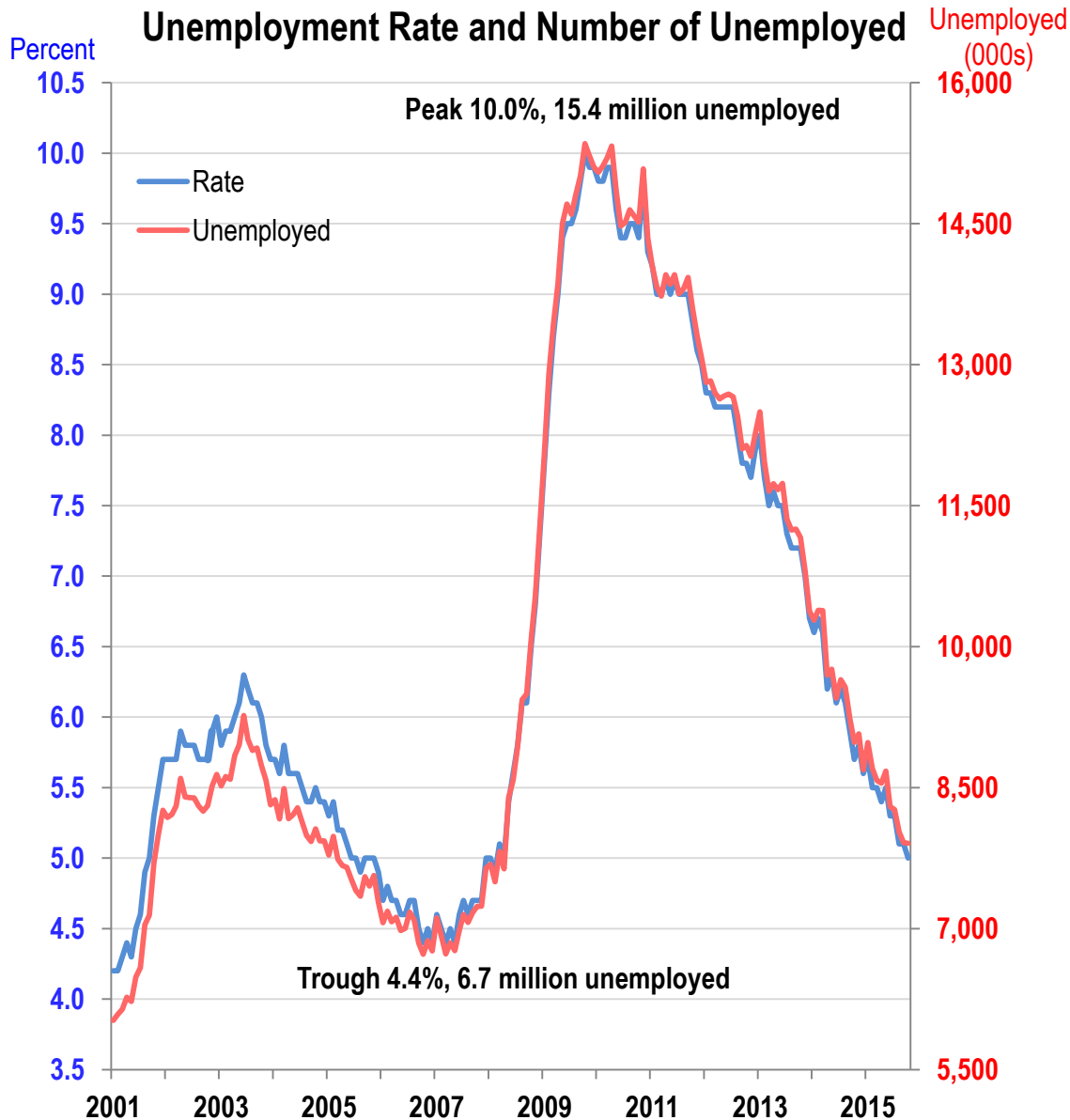
<http://cber.co>

# 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 7.907 million at the end of October. This is 1.2 million above the low point in 2006 and 7.5 million below the high point in 2009.

The unemployment rate for October 2015 was 5.0%, down from 5.7% 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

The most recent value for weekly earnings was \$869.40 (Oct. 2015). Wages for the year are about 2.4% greater than last year.

U.S. Average Weekly Earnings (NSA) 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%

The increase in the CPI for these years was:

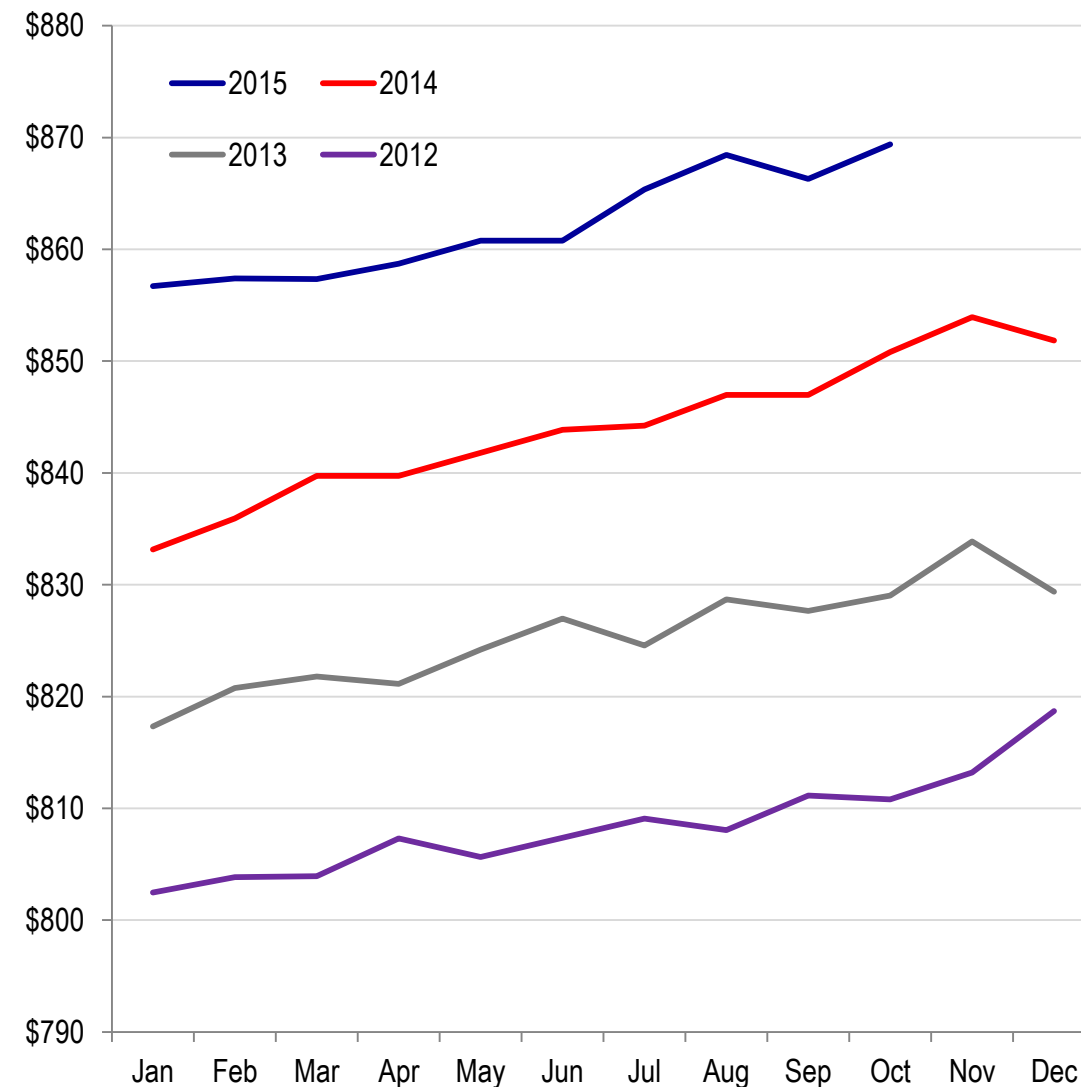
- 2012 2.1%
- 2013 1.5%
- 2014 1.6%

Wage increases have been slightly greater than the rate of inflation.

Source: Bureau of Labor Statistics.

## U.S. Average Weekly Earnings (Seasonally Adjusted)

Earnings

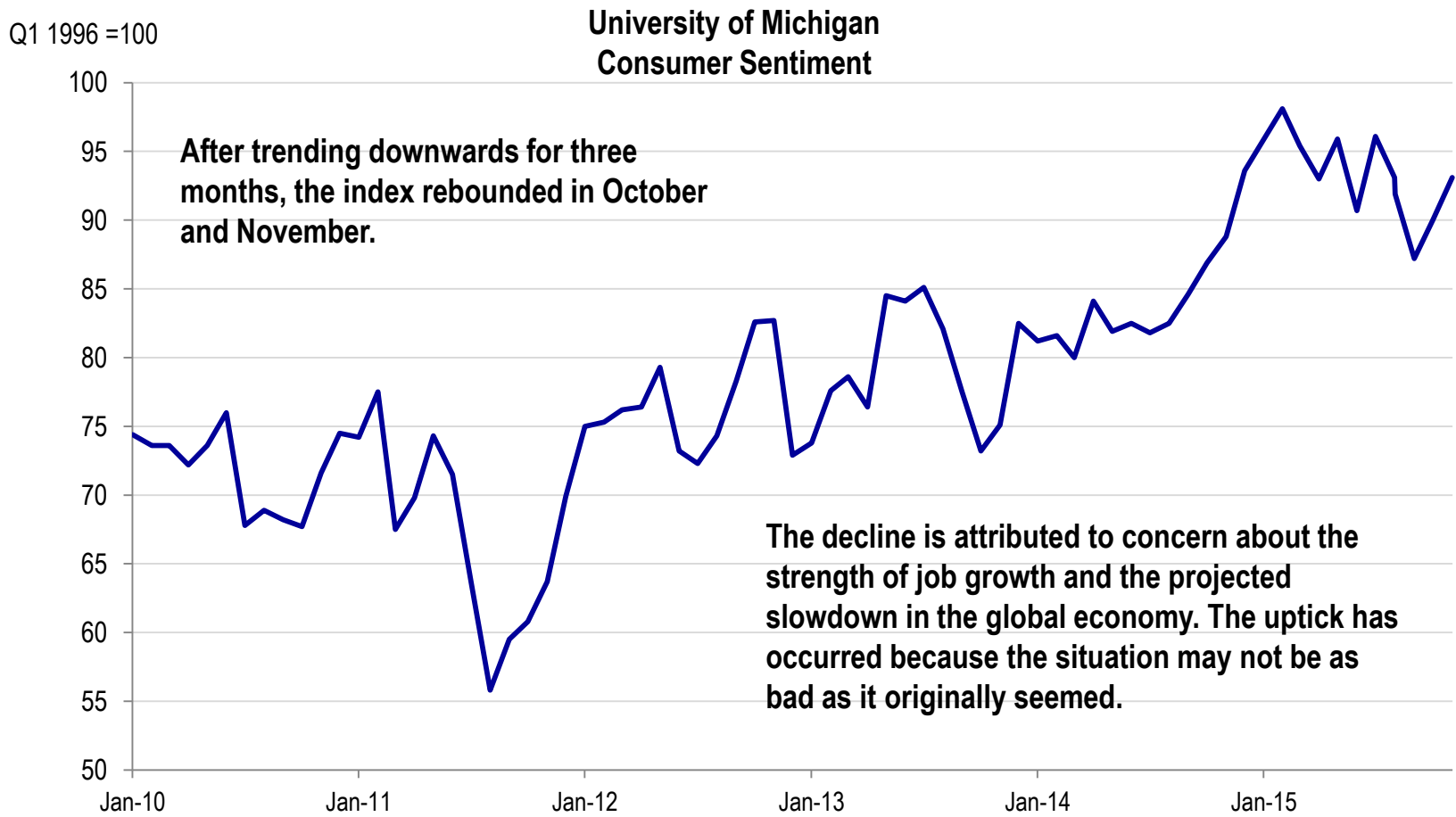




# U.S. Economy

## Sentiment, Productivity, Equities, Retail, and Construction

# University of Michigan Consumer Sentiment

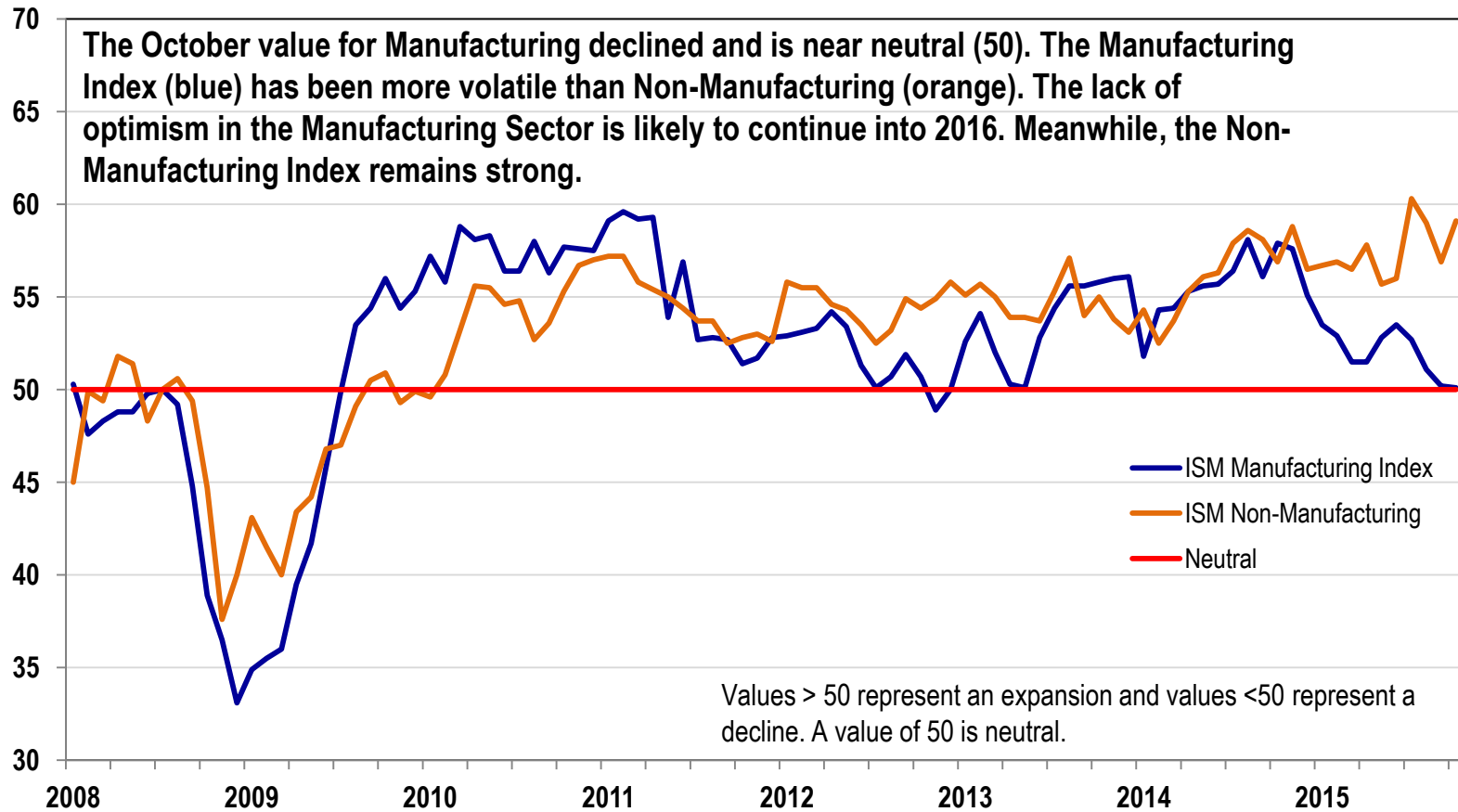


Source: Reuters, FRED.

# ISM PMI Composite Indices

## Manufacturing vs. Non-manufacturing

ISM Manufacturing vs. Non-Manufacturing Indices

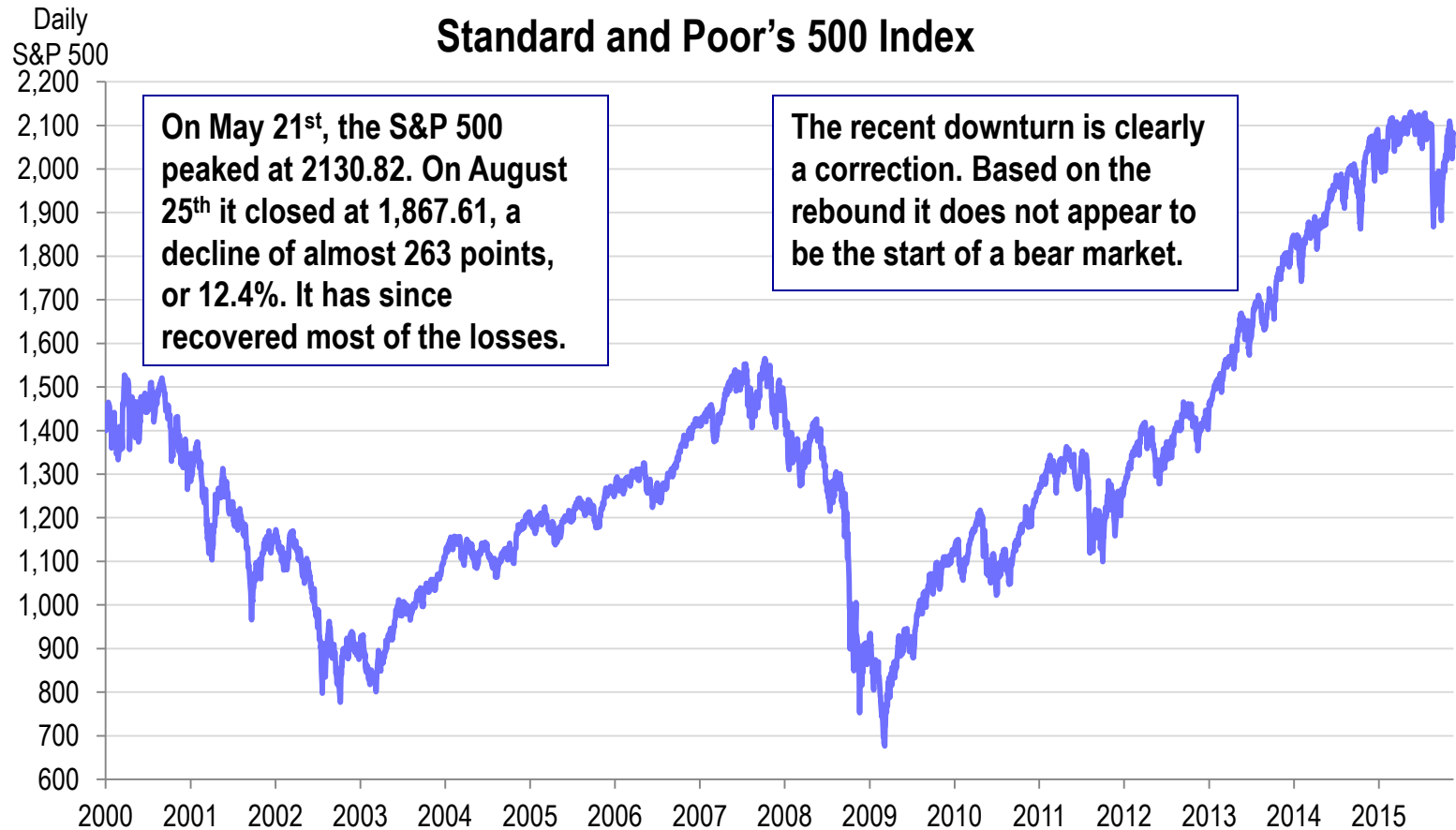


Sources: Institute for Supply Management (ISM), FRED.

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# Standard and Poor's 500 Index



Source: FRED, S&P 500.

# CBOE Volatility Index

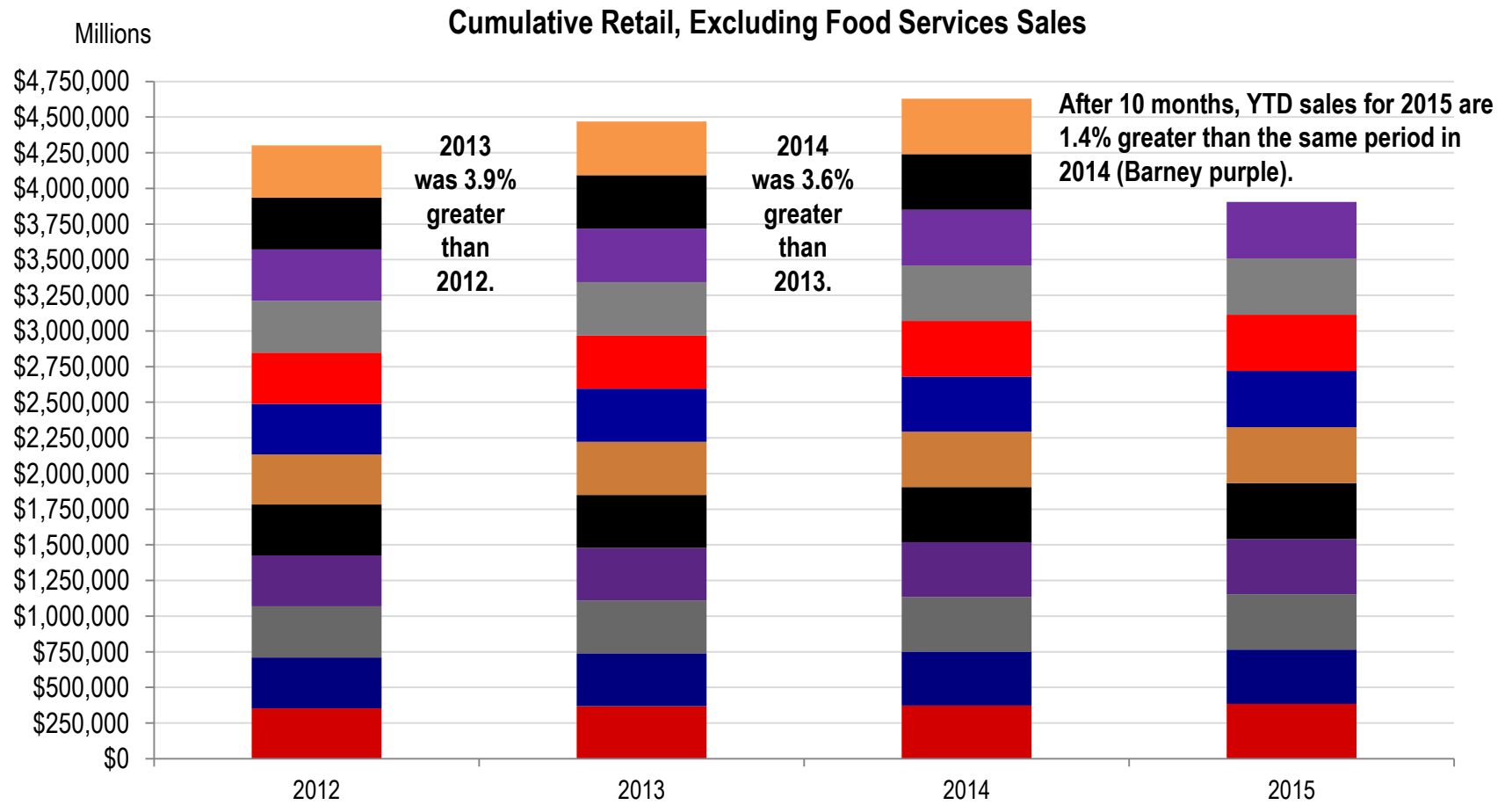
## VIX (VIXCLS)



Source: FRED, CBOE.

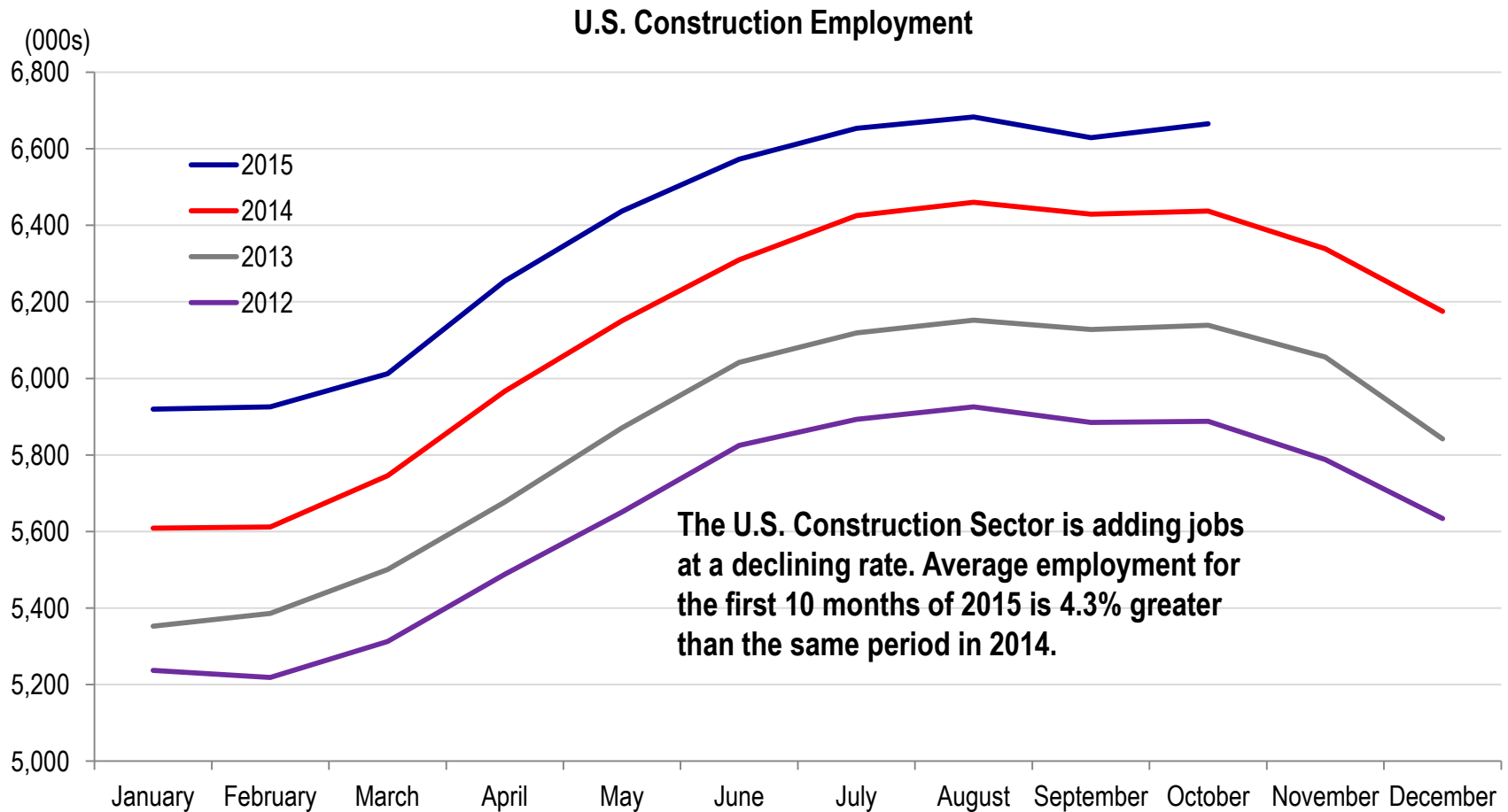


# Cumulative Retail, Excluding Food Services Sales



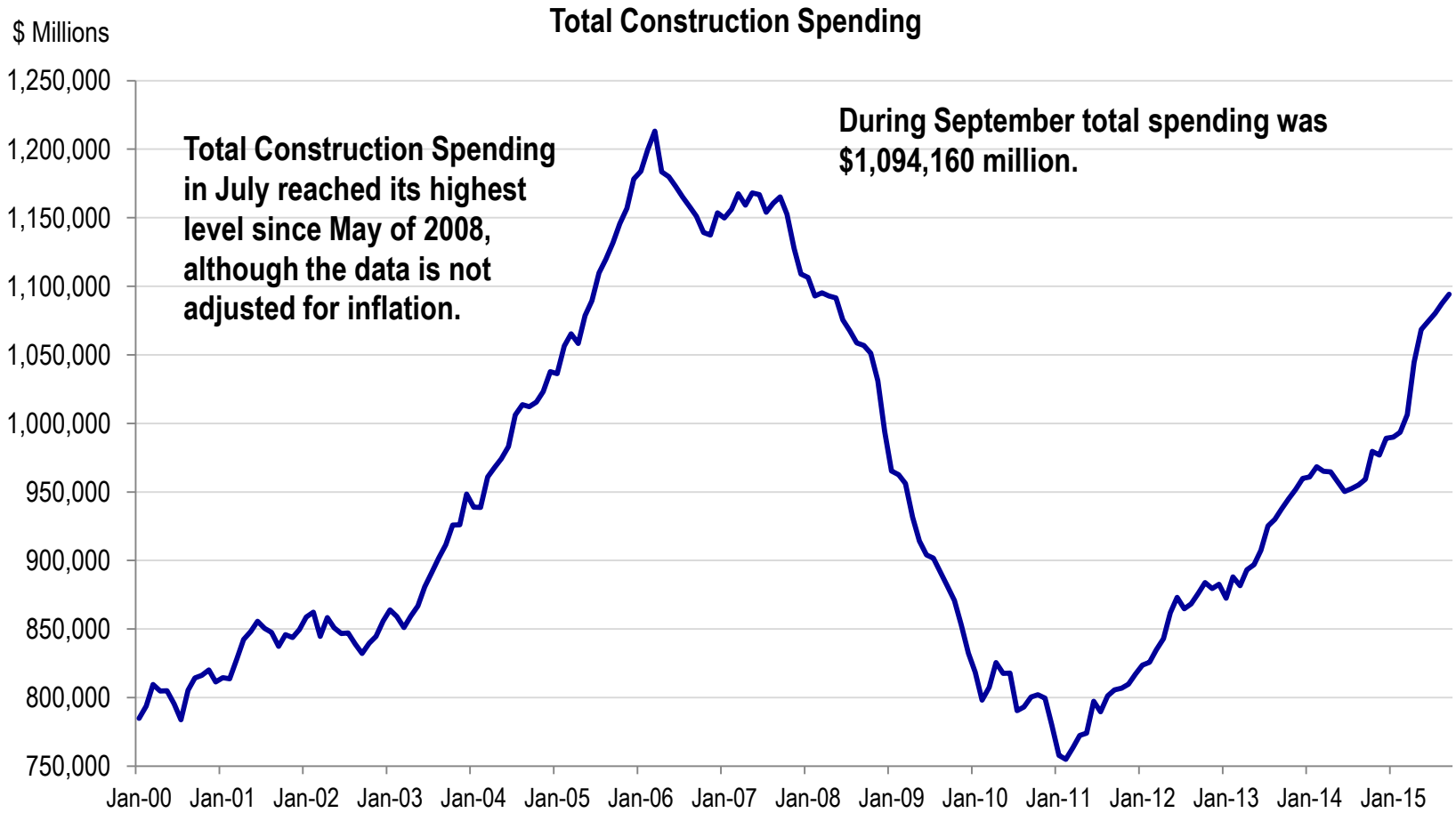
Source: U.S. Census Bureau, FRED. Note: Monthly data is in descending order with December at the top and January at the bottom.

# U.S. Construction Employment 2012 to 2015



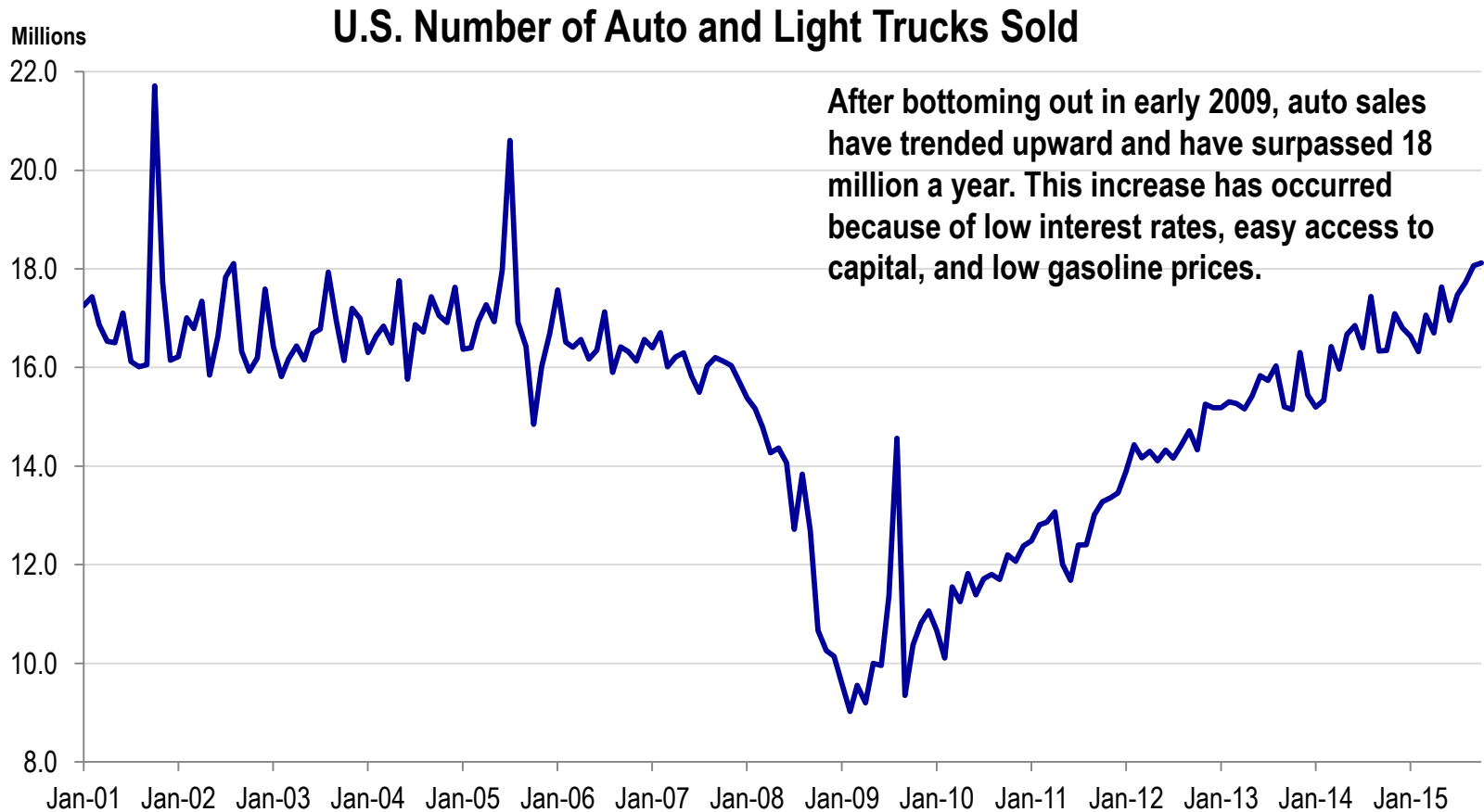
Source: Bureau of Labor Statistics, NSA.

# Total Construction Spending



Source: FRED, Census Bureau, not inflation adjusted.

# Weekly Auto and Light Truck Sales



Source: FRED, BEA.

Note: Seasonally Adjusted Annual Rate.

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

The U.S. economy is on solid footing. Fortunately, the reasons to be optimistic, listed below, outweigh the risks.

<b>The Fed</b> – It appears the Fed will finally announce at its upcoming meeting in December that it will begin to raise interest rates.	<b>Inflation</b> - Inflation is well below the Fed's target rate of 2.0%. Inflation is unlikely to rise until full-employment is reached – maybe in 2016.
<b>Real GDP</b> - Real GDP growth for 2015 is projected to be 2.5ish – slightly stronger than last year.	<b>Industry Sentiment</b> – The non-Manufacturing PMI continues to show a strong positive outlook .
<b>Auto Sales</b> – Auto and light truck sales were strong as a result of low interest rates, easy access to capital, and low gas prices.	<b>Construction</b> - There is solid activity in both the residential and non-residential markets. Construction job growth will be constrained by the lack of trained workers.
<b>Jobs</b> - The U.S. is on track to add almost 3.0 million jobs this year. The strength of the labor market can be seen by the growth in the number of job openings.	<b>Housing Prices</b> - The U.S. housing market remains strong - too strong in some areas such as Colorado.
<b>Consumer Sentiment</b> – After moving downward for three months, the recent Michigan Consumer Sentiment Survey responses indicate consumers are again more upbeat.	<b>Global Growth</b> – Economists project 3.0% growth in the global GDP next year, based on the strength of the U.S. economy and 6.3% GDP growth in China.
<b>Cash Rich Companies</b> – Companies have they are willing to spend to acquire, merge, or expand.	<b>Equity Markets</b> – The equity markets have regained much of what they lost earlier in the year.

# Economic Risks and Concerns

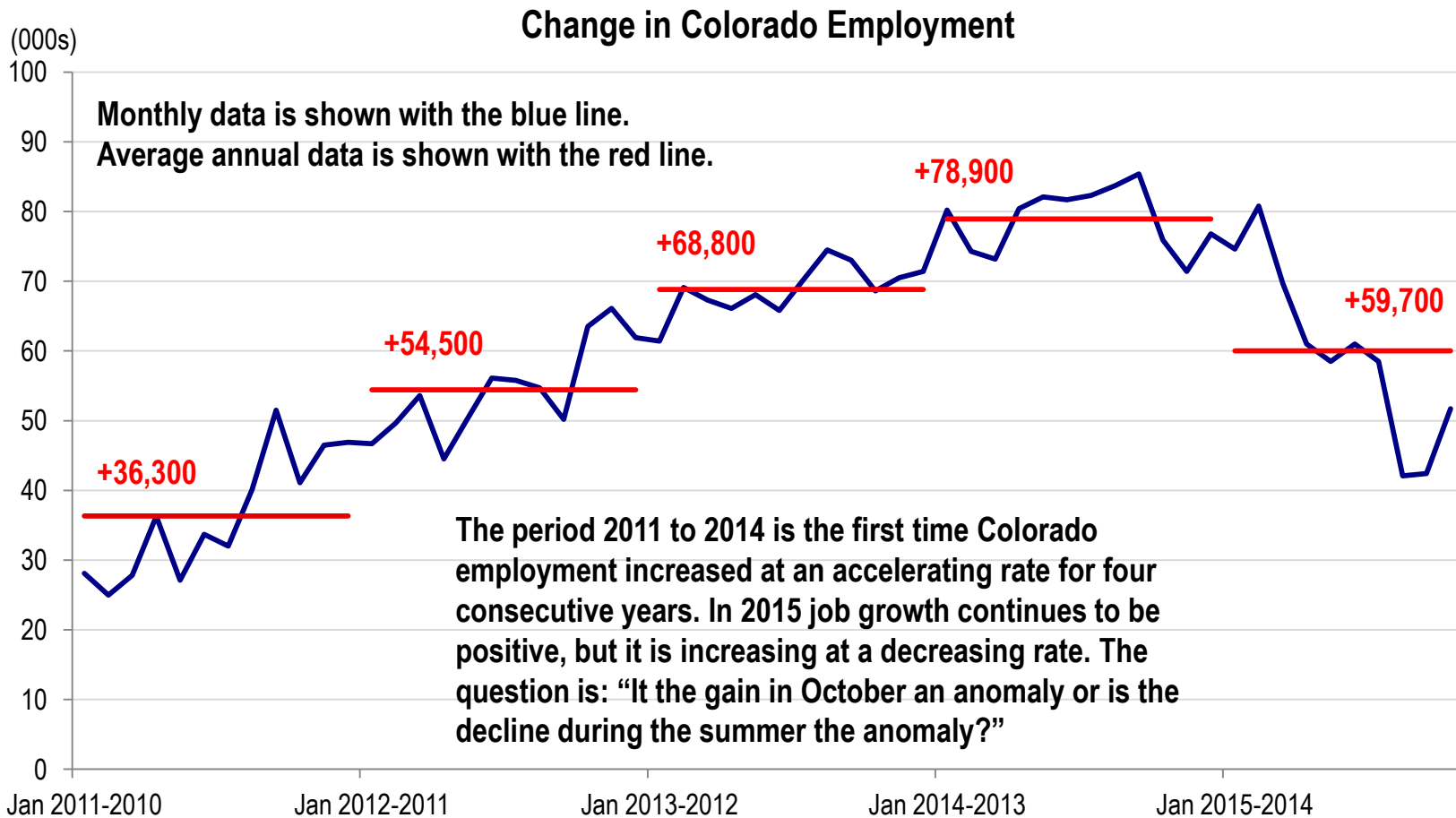
Even during the best of times there are headwinds. The following are some of the risks and concerns challenging the economy as we close out 2015.

<p><b>China</b> –The devaluation of China’s Yuan and the slowdown in their economy has caused economists to be concerned about the performance of the global economy.</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. At the moment, there is weak demand for new equipment, software and buildings.</p>	<p><b>International Situations</b> – The most recent concern is the situation in Syria and terrorist activities.</p>
<p><b>Productivity</b> - Labor productivity has trended downward since 2000. This has been caused by weak business investment, catering to special interest groups, and the impact of technology.</p>	<p><b>Housing</b> - In some parts of the country the rate of housing price appreciation is becoming problematic.</p>
<p><b>Industry Sentiment</b> – The Manufacturing Sector will remain sluggish through the end of the year. An uptick is not expected until business investment increases.</p>	<p><b>Election 2016</b> – The presidential election season has started early and it has been entertaining. It is going to be a long and ugly campaign. At some point businesses may take a “wait and see” attitude before making business decisions, which could put the economy on hold.</p>



# Colorado Employment and Unemployment

# Change in Colorado Employment Year-Over-Year



Source: Bureau of Labor Statistics, NSA.



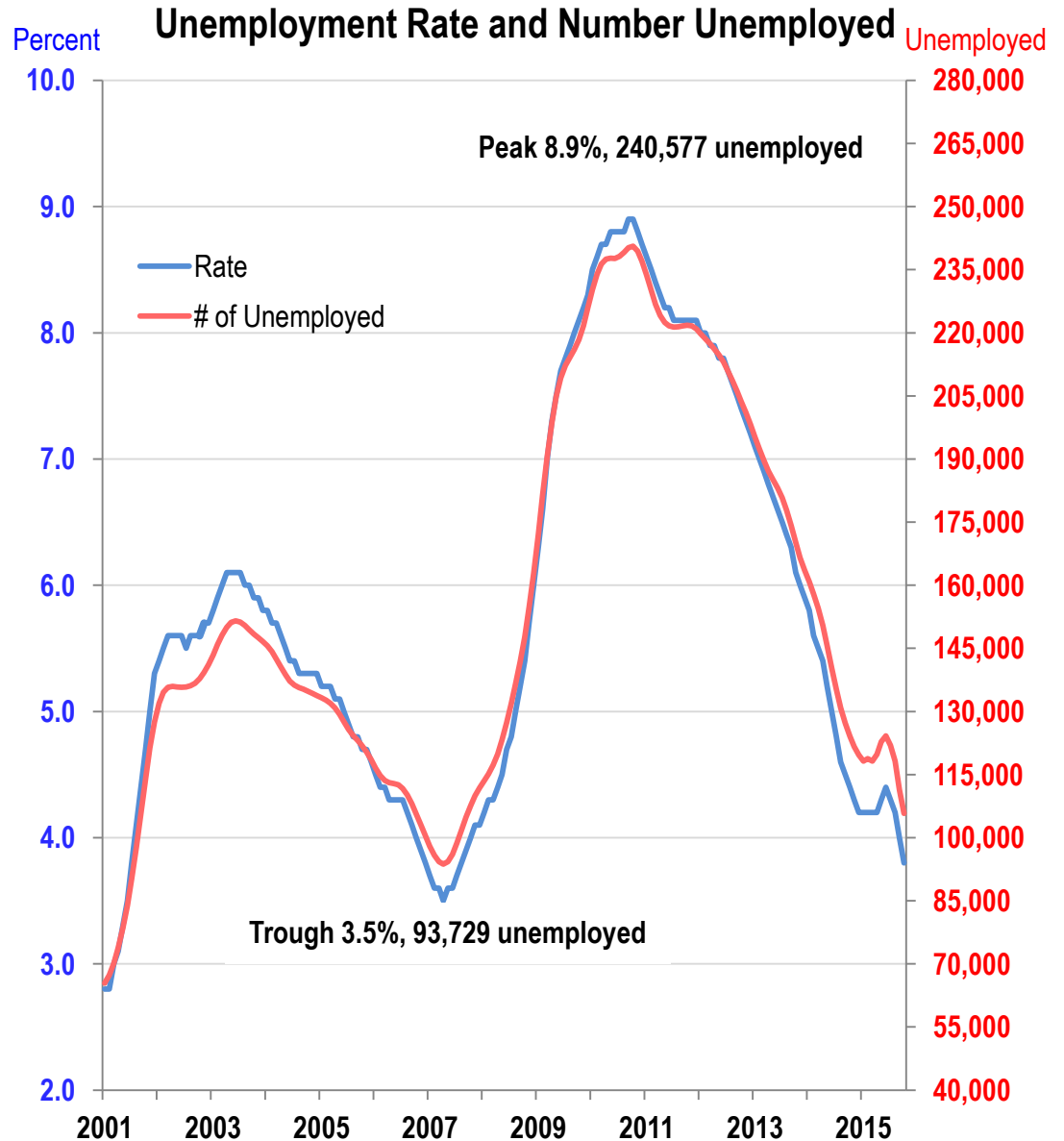
## Colorado Unemployment Rate and Number of Unemployed

The number of unemployed has slowly trended downward since peaking in late 2010.

The total number of unemployed workers (red) at the end of October 2015 was 105,776.

The total number of unemployed is 12,047 greater than the trough in May 2007 and 134,801 less than the peak in October 2010.

There is a shortage of trained workers in key sectors and occupations. The current 2015 unemployment rate (blue) of 3.8% is down from 4.4% in October 2014.



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

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# Change in Colorado Employment by Performance Category



# cber.co Forecast and Analysis

cber.co developed an effective 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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# 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:

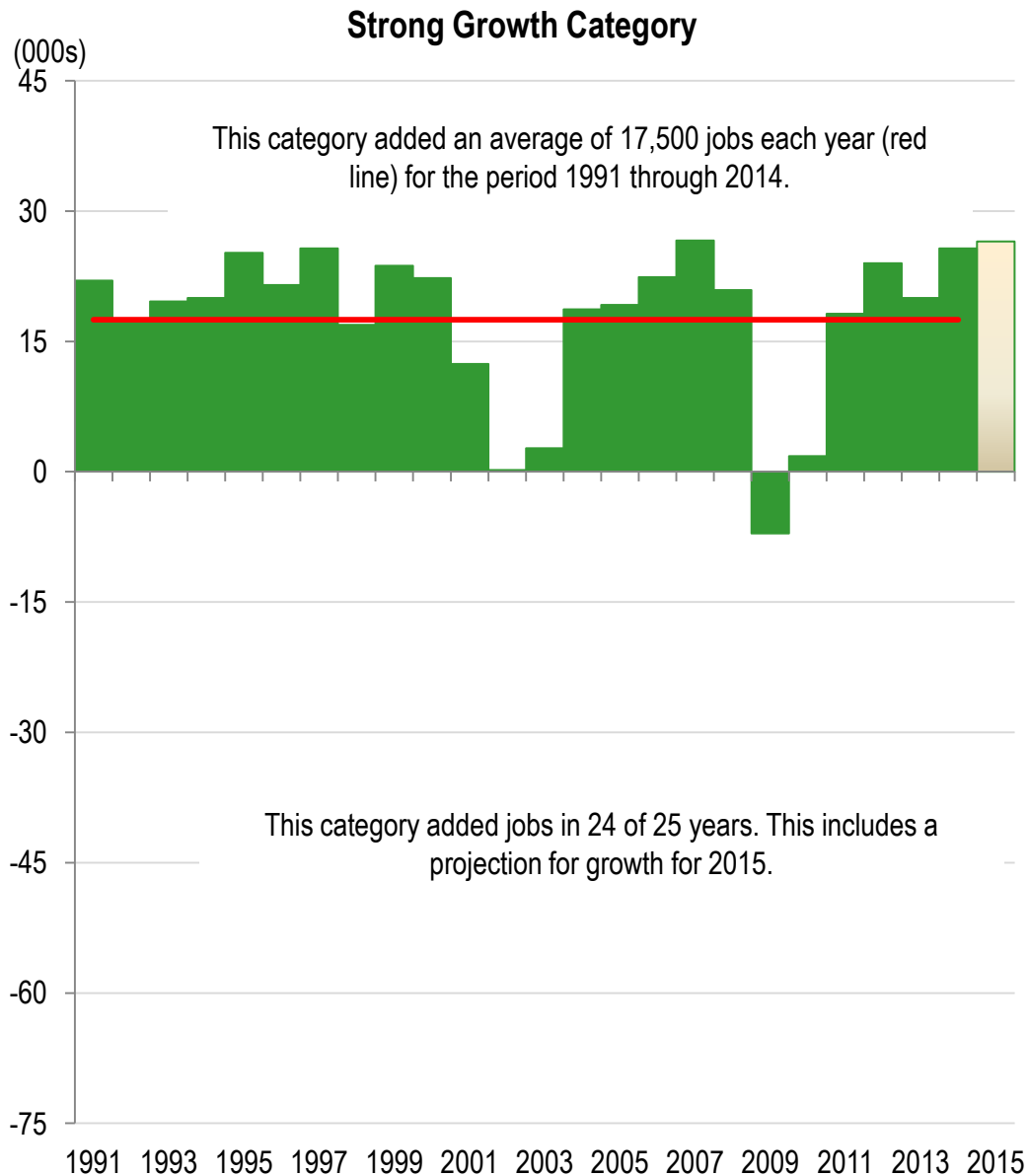
1994 445,200 workers, 25.4% of total employment  
 2004 615,900 workers, 28.3% of total employment  
 2014 786,700 workers, 32.0% of total employment

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

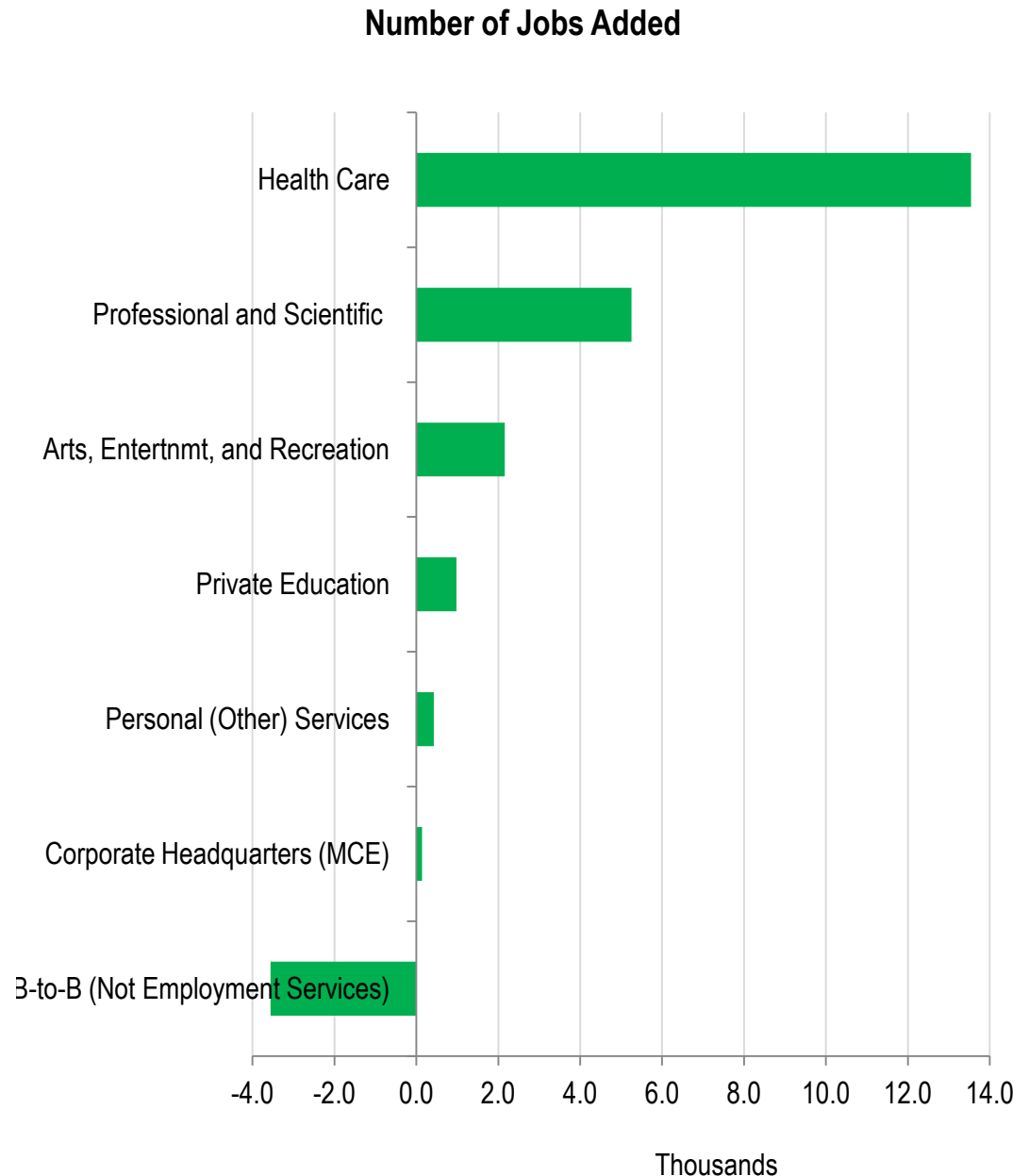
Source: Bureau of Labor Statistics, [cber.co](http://cber.co).

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<http://cber.co>



## Strong Growth Sectors

- Through the first ten months of 2015 this group of industries added 18,900 jobs compared to the same period in 2014.
- This category is projected to add 24,500 to 28,500 jobs for the year. To date, its performance is below the projected range.
- In 2014, these sectors accounted for 32.6% of the growth and 32.0% of total employees.
- Health Care and Professional, Scientific, and Technical Services were the sectors with the strongest growth for the first ten months of 2015. Most likely the data for Administrative/B-to-B (Not Employment Services) is understated.



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:

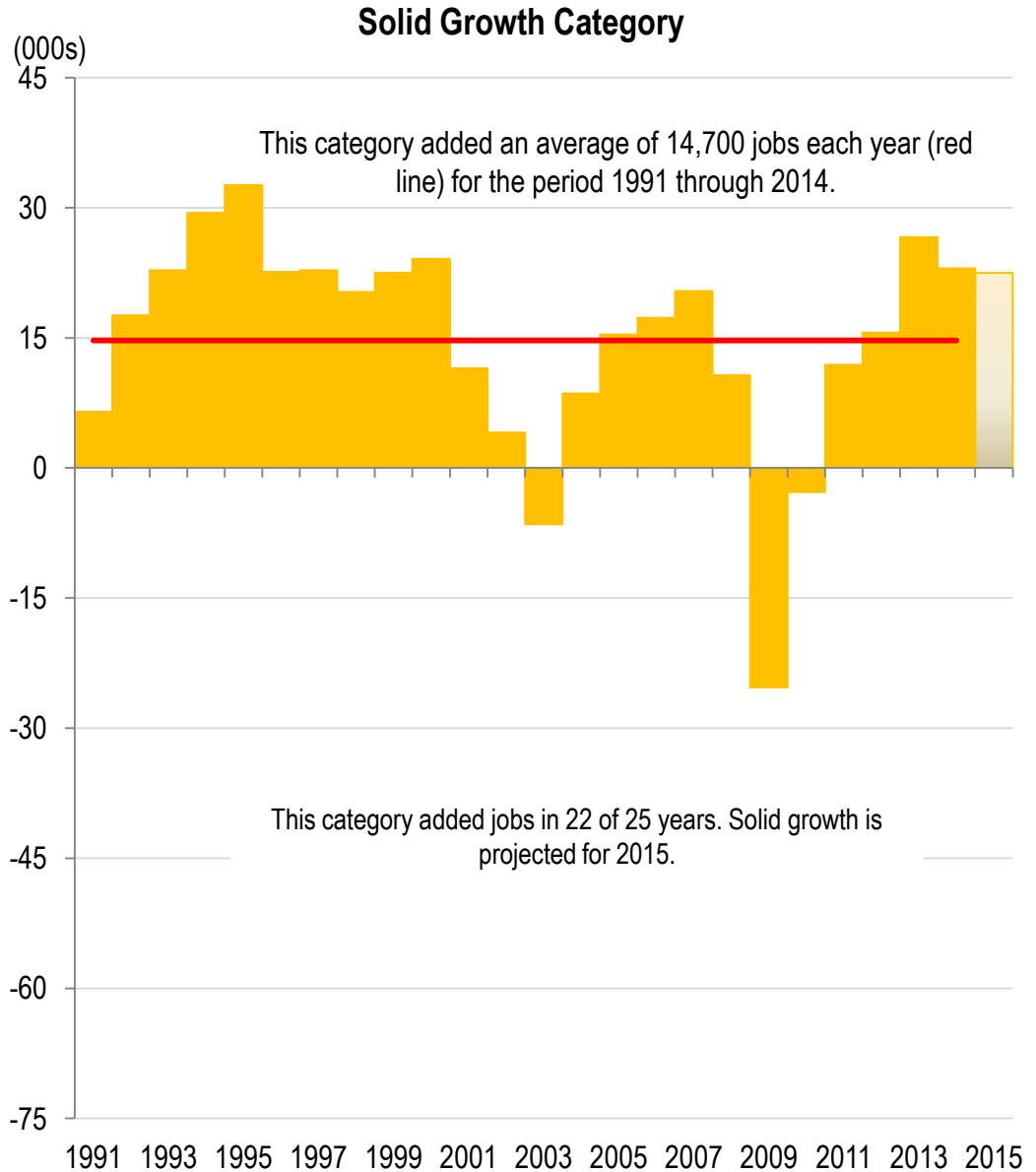
1994 685,400 workers, 39.0% of total employment

2004 848,000 workers, 38.9% of total employment

2014 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.

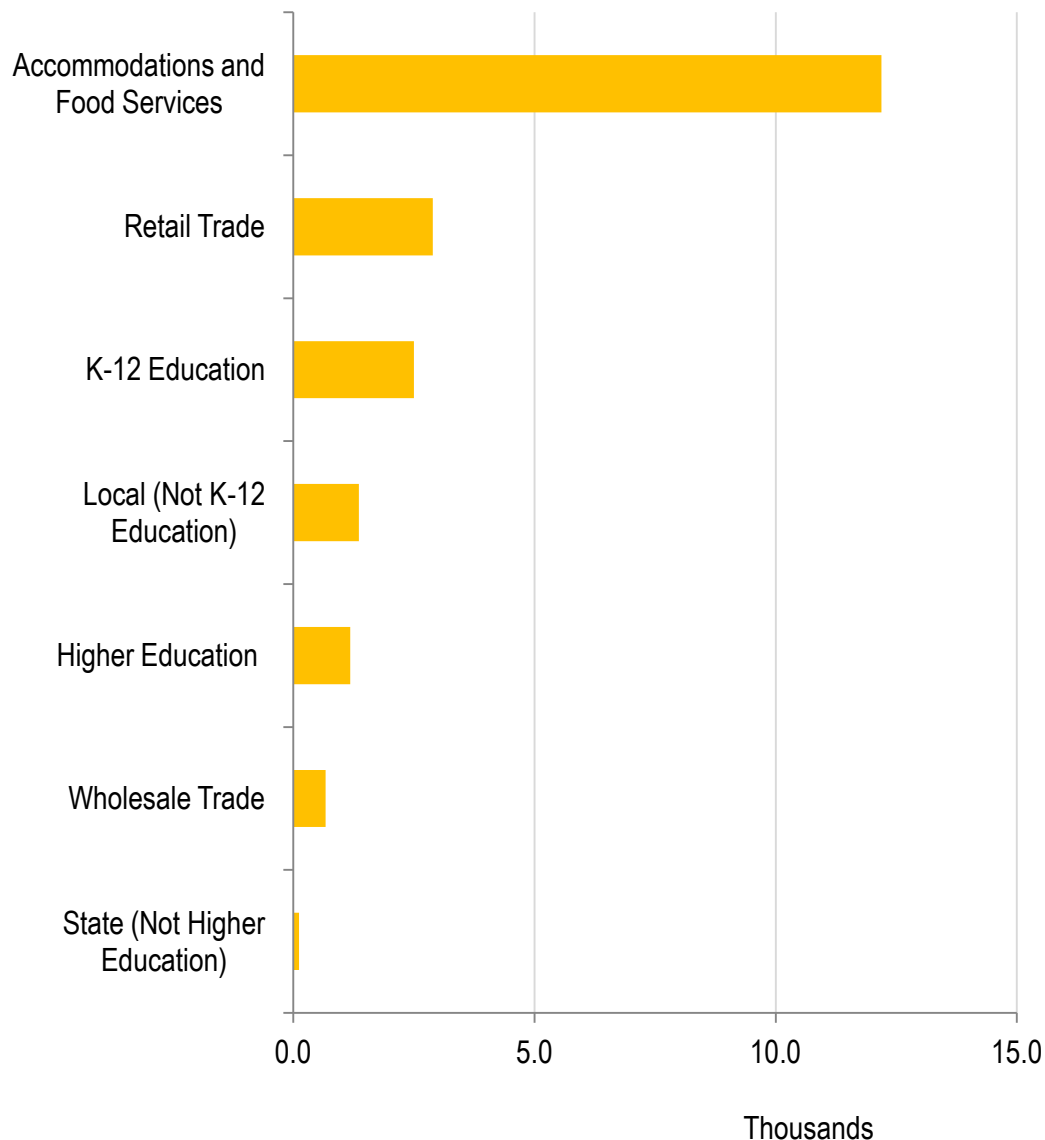
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## Solid Growth Sectors

- Through the first ten months of 2015 this group of industries added 20,900 jobs compared to the same period in 2014.
- This category is projected to add 22,500 to 26,500 jobs for the year. To date, its performance is 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 ten months of 2015 has occurred in the Accommodations and Food Services, Retail Trade, and Local Government Sectors.

Number of Jobs Added



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

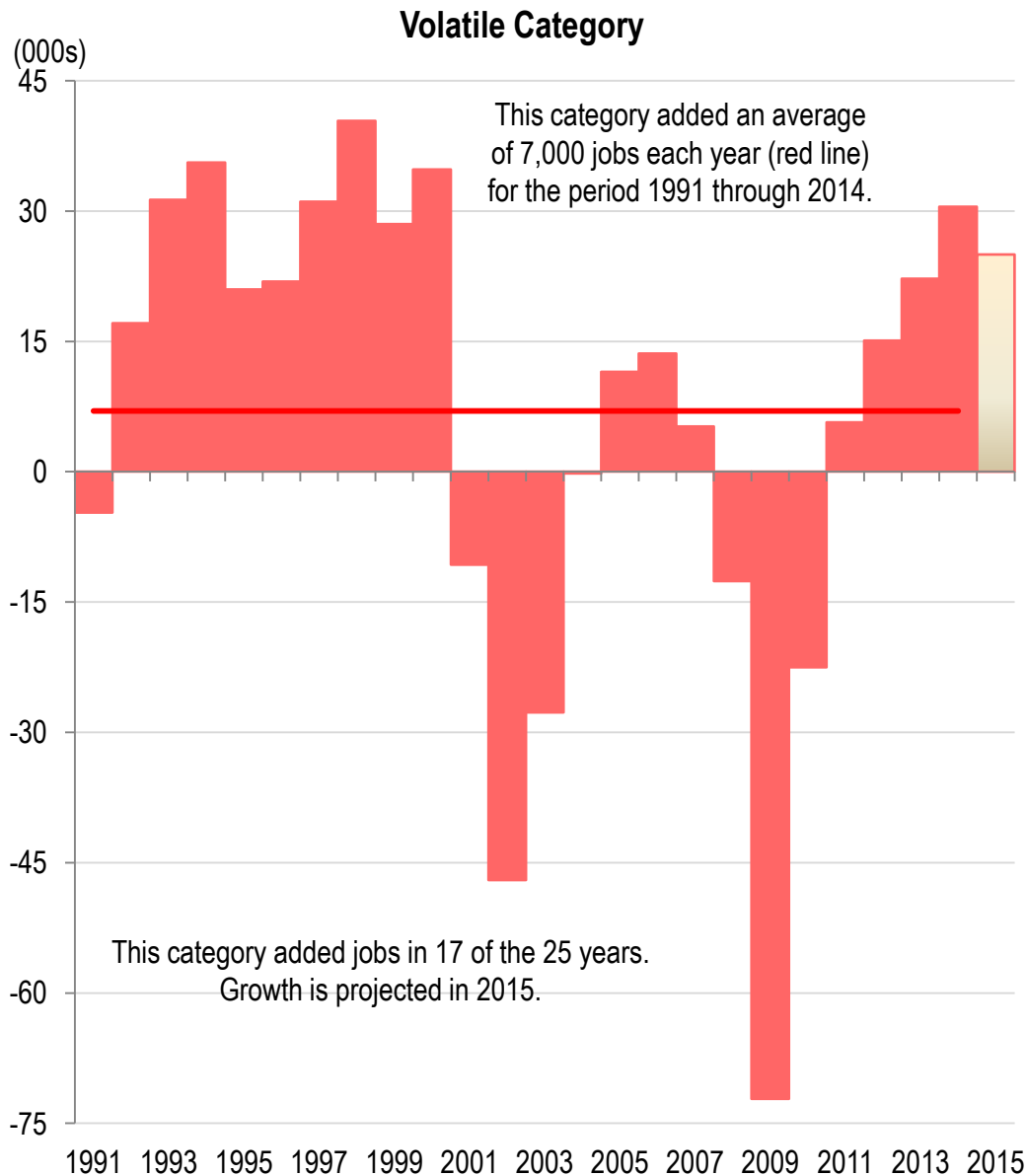
Total employment for this category was:

1994 625,400 workers, 35.6% of total employment

2004 716,000 workers, 32.8% of total employment

2014 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.

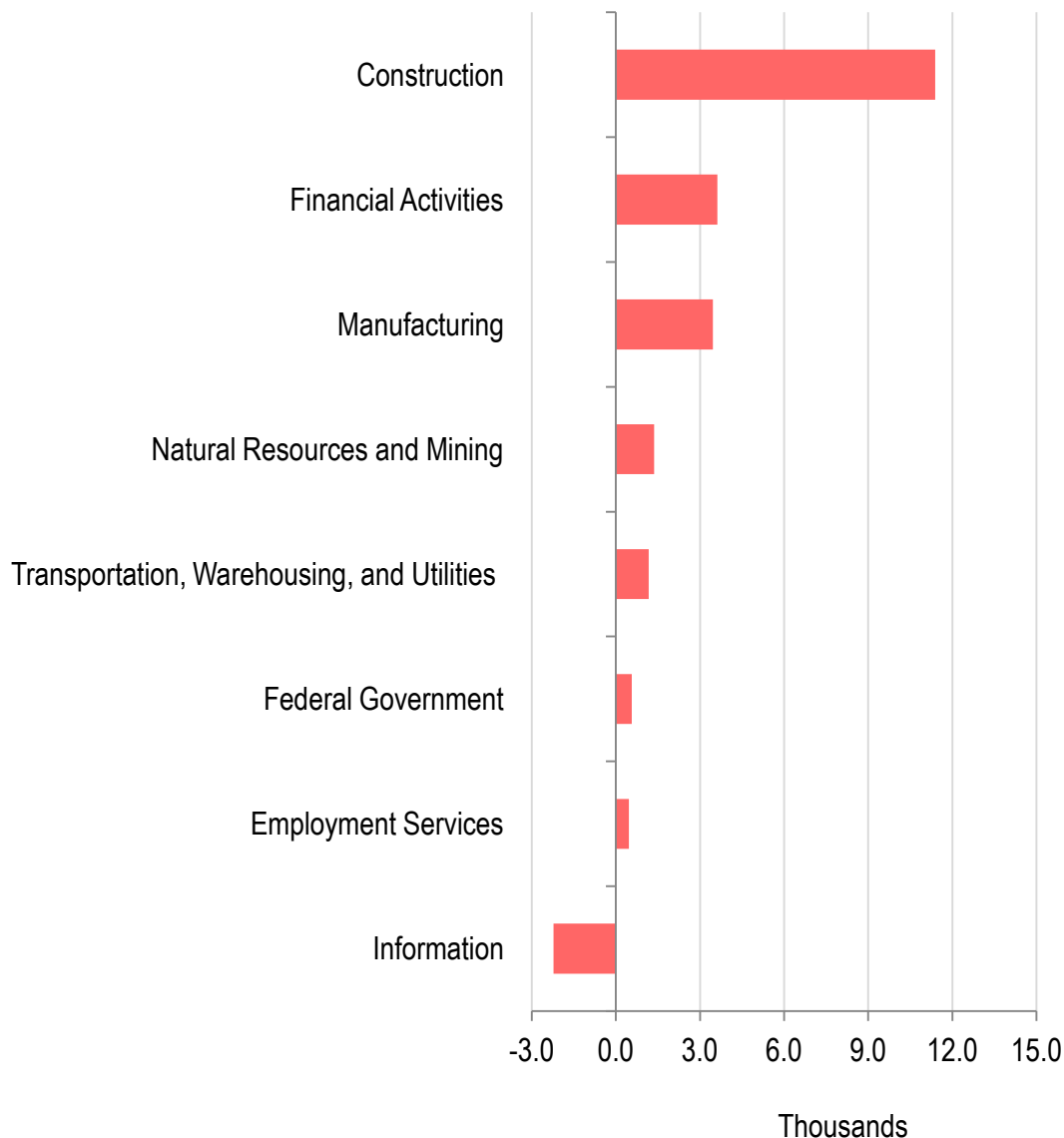
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## ● Volatile Sectors

- Through the first ten months of 2015 this group of industries added 19,900 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 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 ten months.

### Number of Jobs Added



Source: Bureau of Labor Statistics.

# 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 from the current BLS data.

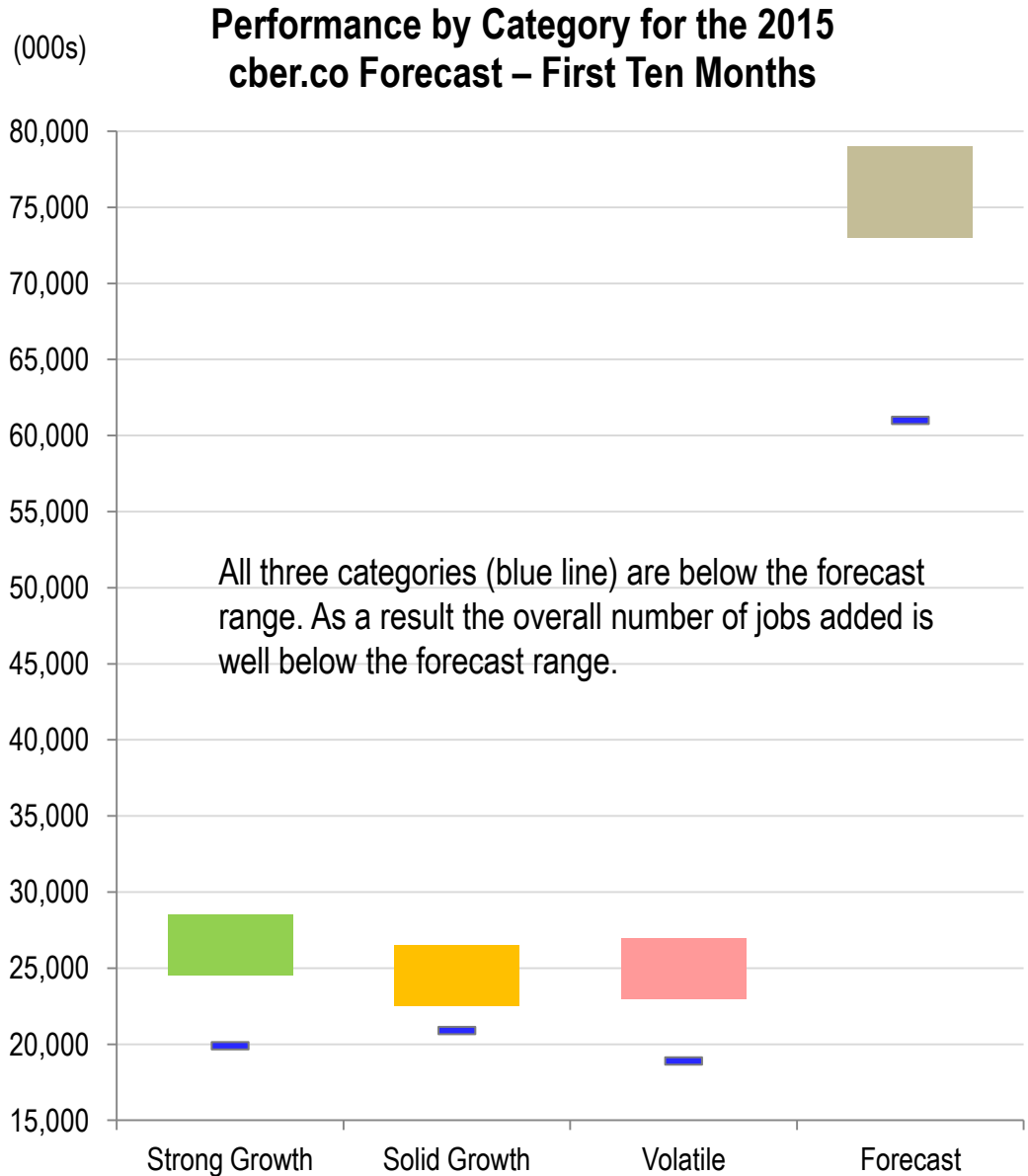
Through the first ten months of 2015, all three categories were below their respective forecast ranges.

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

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

Source: Bureau of Labor Statistics, cber.co.

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# In the News



# In the News

Some of the economic data is delivering mixed messages about the performance of the economy. For that reason it is important to monitor activity on the streets to put the data in perspective.

## **The Good News**

- Colorado's real estate market continues to be strong.
- Colorado construction remains strong.
- The state government continues to give tax incentives for companies wanting to move to Colorado.
- Colorado new light truck and auto registrations are solid.
- Many companies are cash rich and they are strategically expanding through mergers and acquisitions.

## **News That Is Concerning**

- Health care costs will rise at 3-4 times the rate of inflation.
- Natural resource companies continue to take hits.
- The Colorado state government will collect record revenue this fiscal year, yet is expected to encounter a revenue shortfall.

## **News That Is Really Concerning**

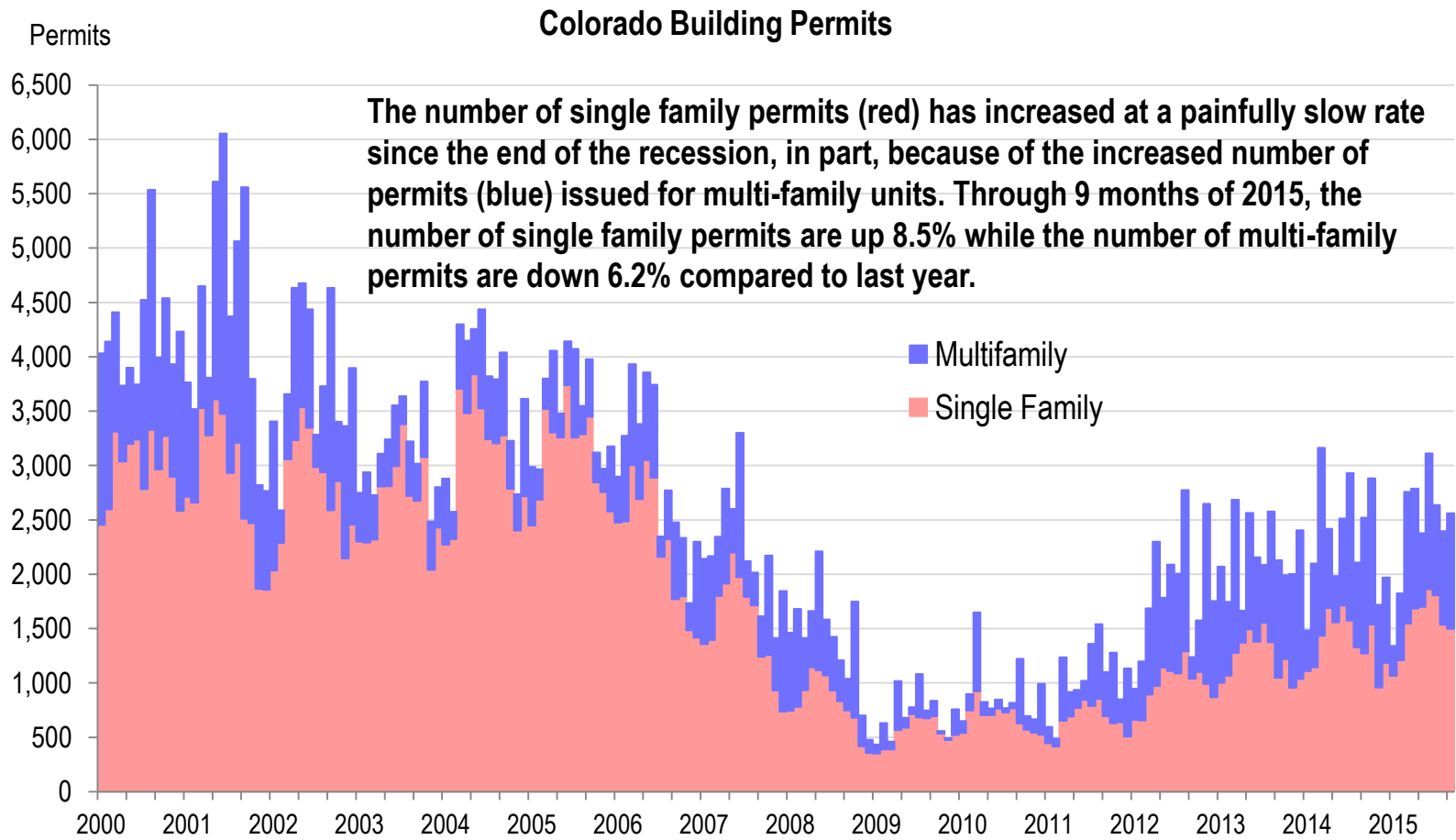
Union Pacific and BNSF are laying off or furloughing workers because they have to comply with industry regulations and they are facing decreased demand for shipments (coal, oil, agriculture products, and industrial products).



# Snapshots

## Construction and Natural Resources

# Colorado Building Permits (Units)

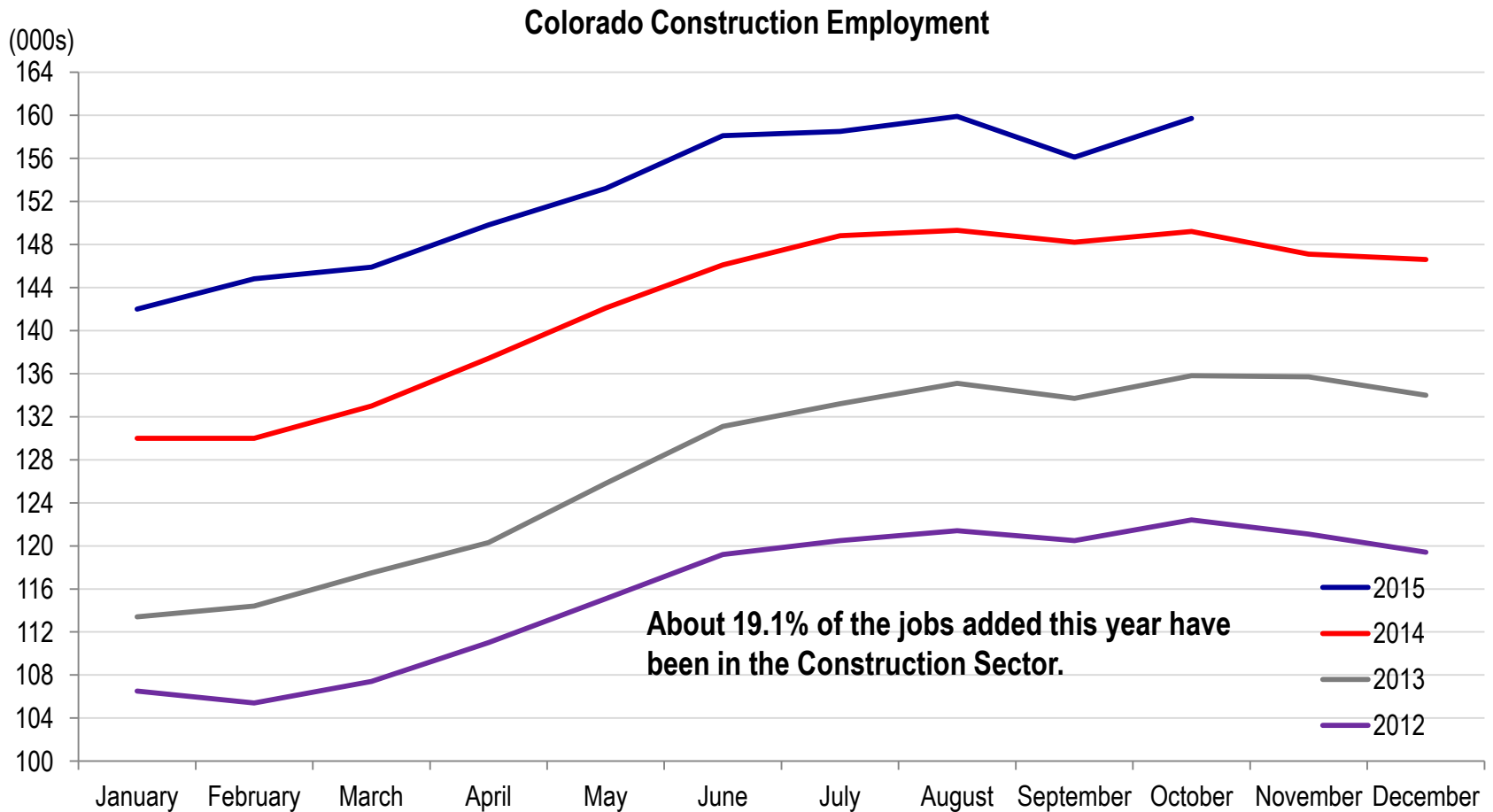


Source: TAMU Real Estate Center, U.S. Census Bureau.

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# Colorado Construction Employment 2012 to 2015



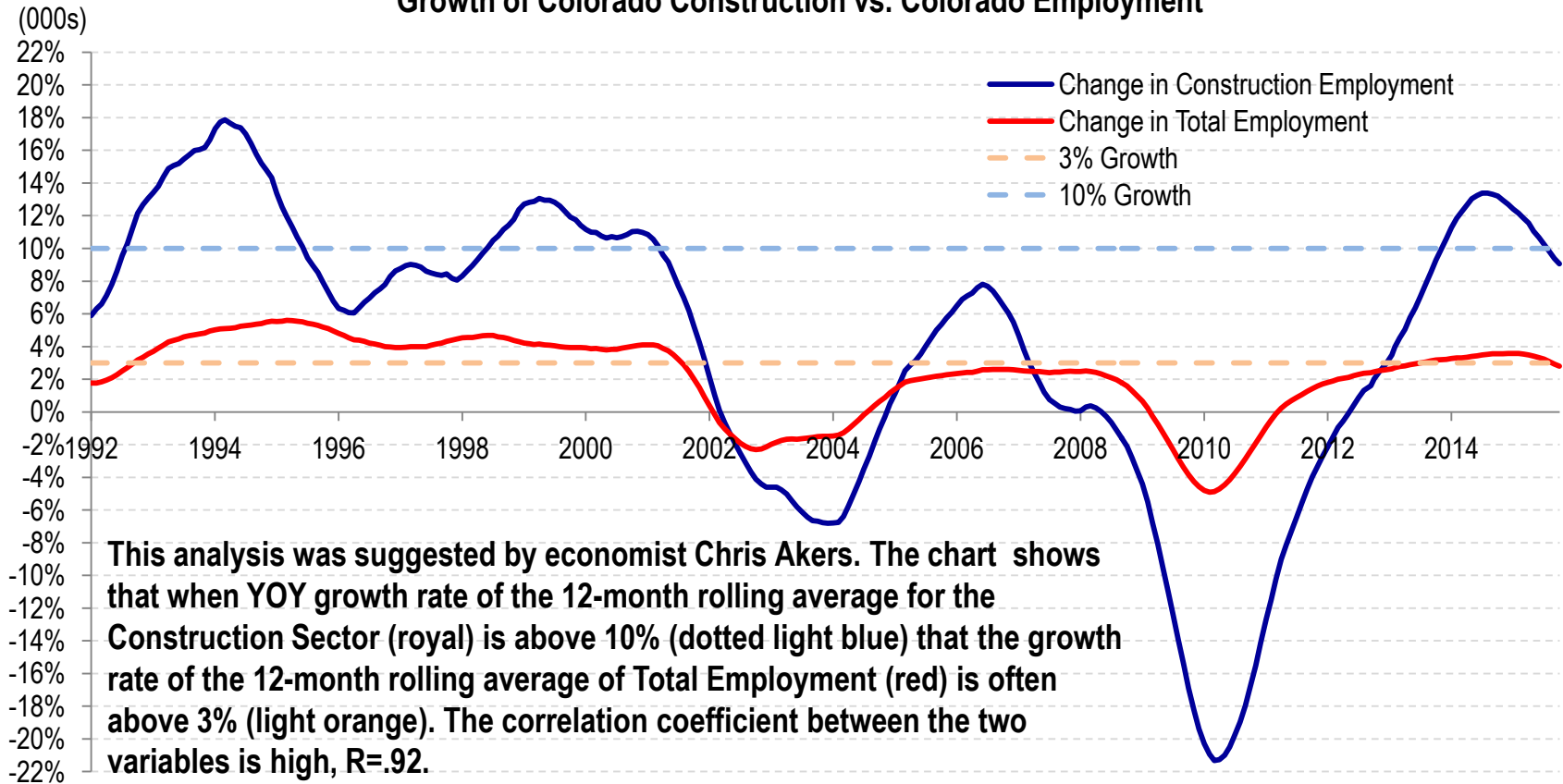
Source: Bureau of Labor Statistics, NSA.



# Colorado Construction Employment vs. Colorado Employment

## Y-O-Y Growth in Moving Average

**Growth of Colorado Construction vs. Colorado Employment**



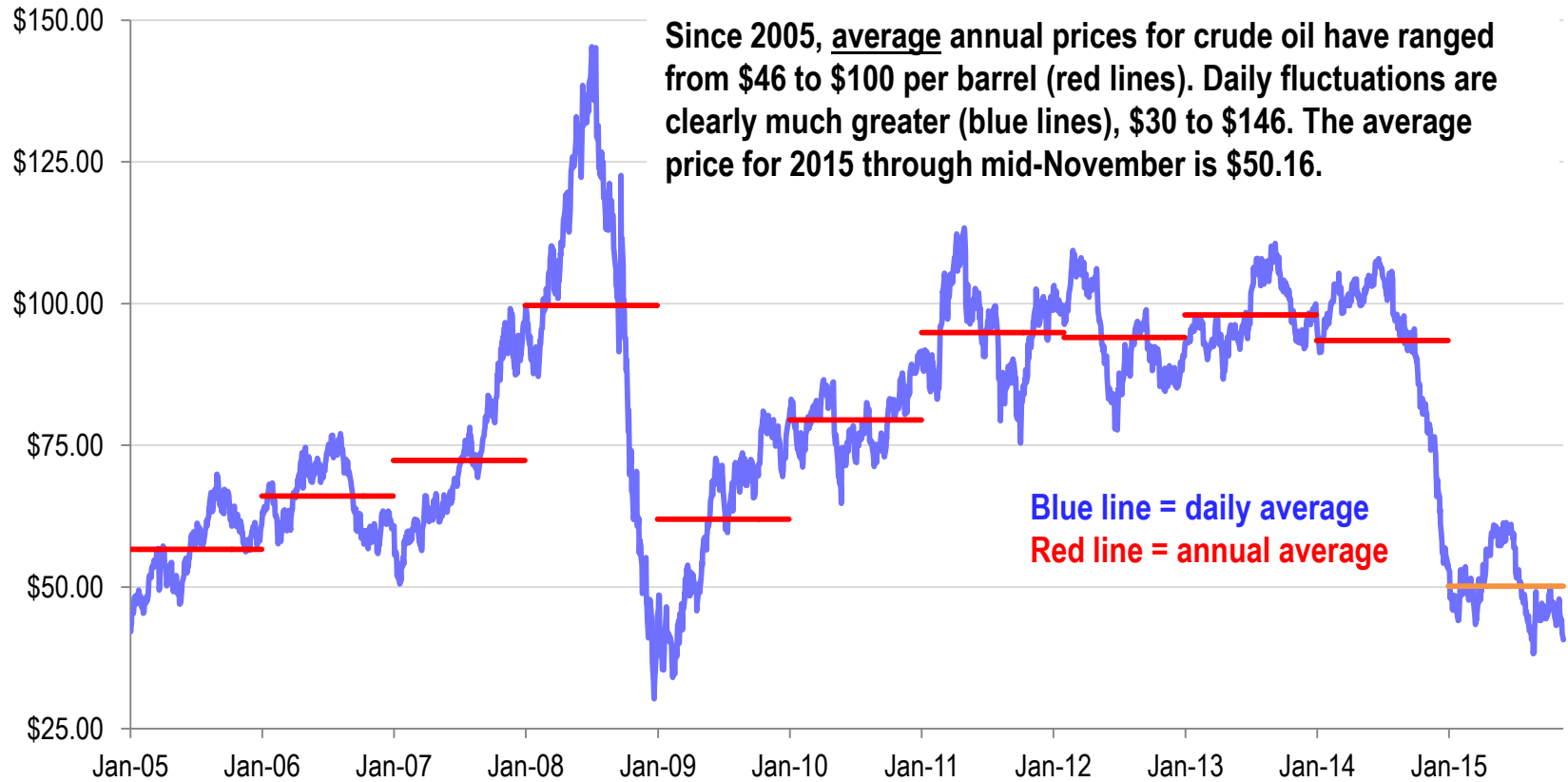
Source: Bureau of Labor Statistics, NSA, cber.co.

# Crude Oil Prices

## West Texas Intermediate

Dollars  
per Barrel

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

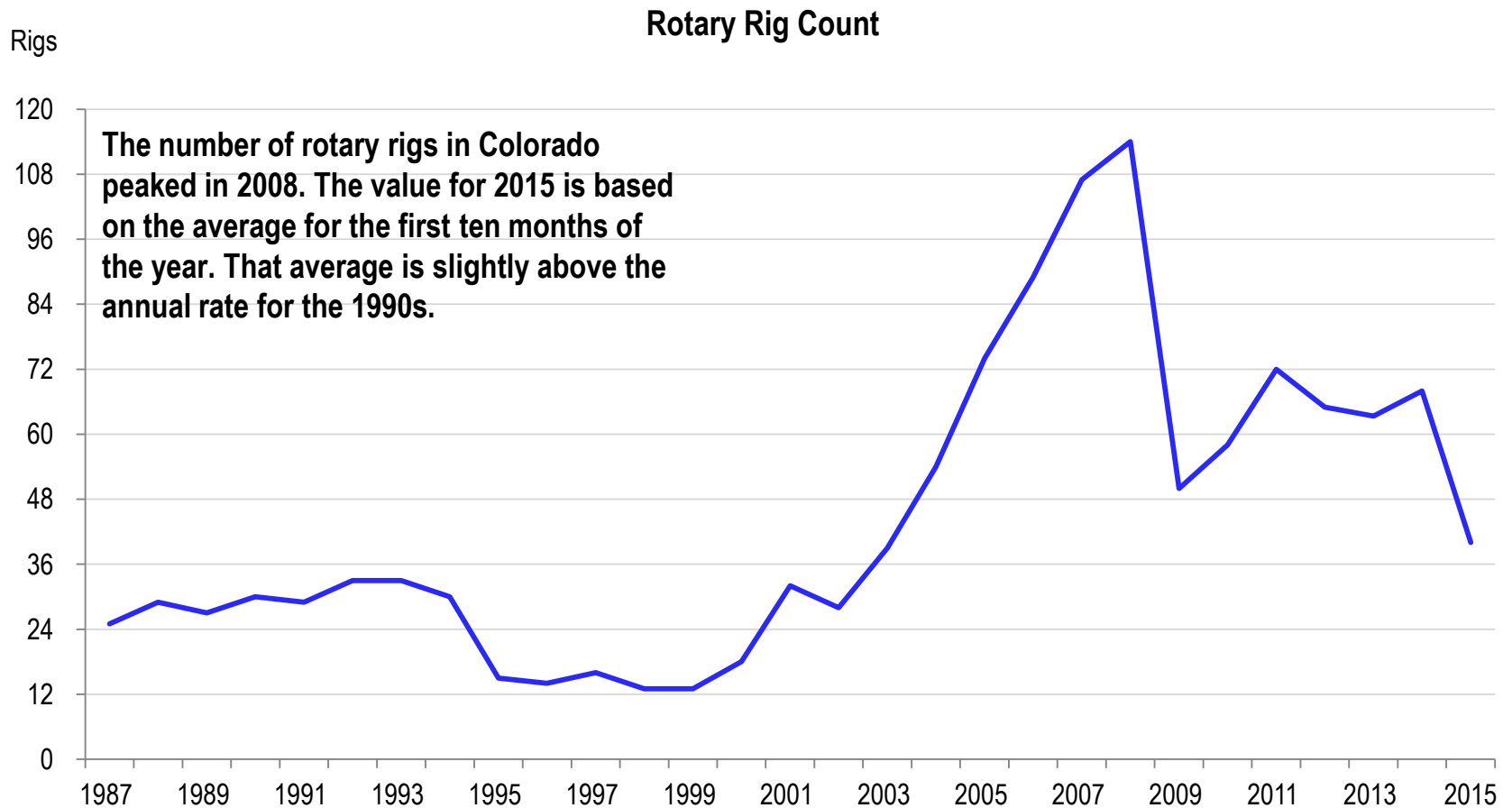


Source: FRED, EIA.

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# Colorado Annual Rotary Rig Count

## 1987 to 2015

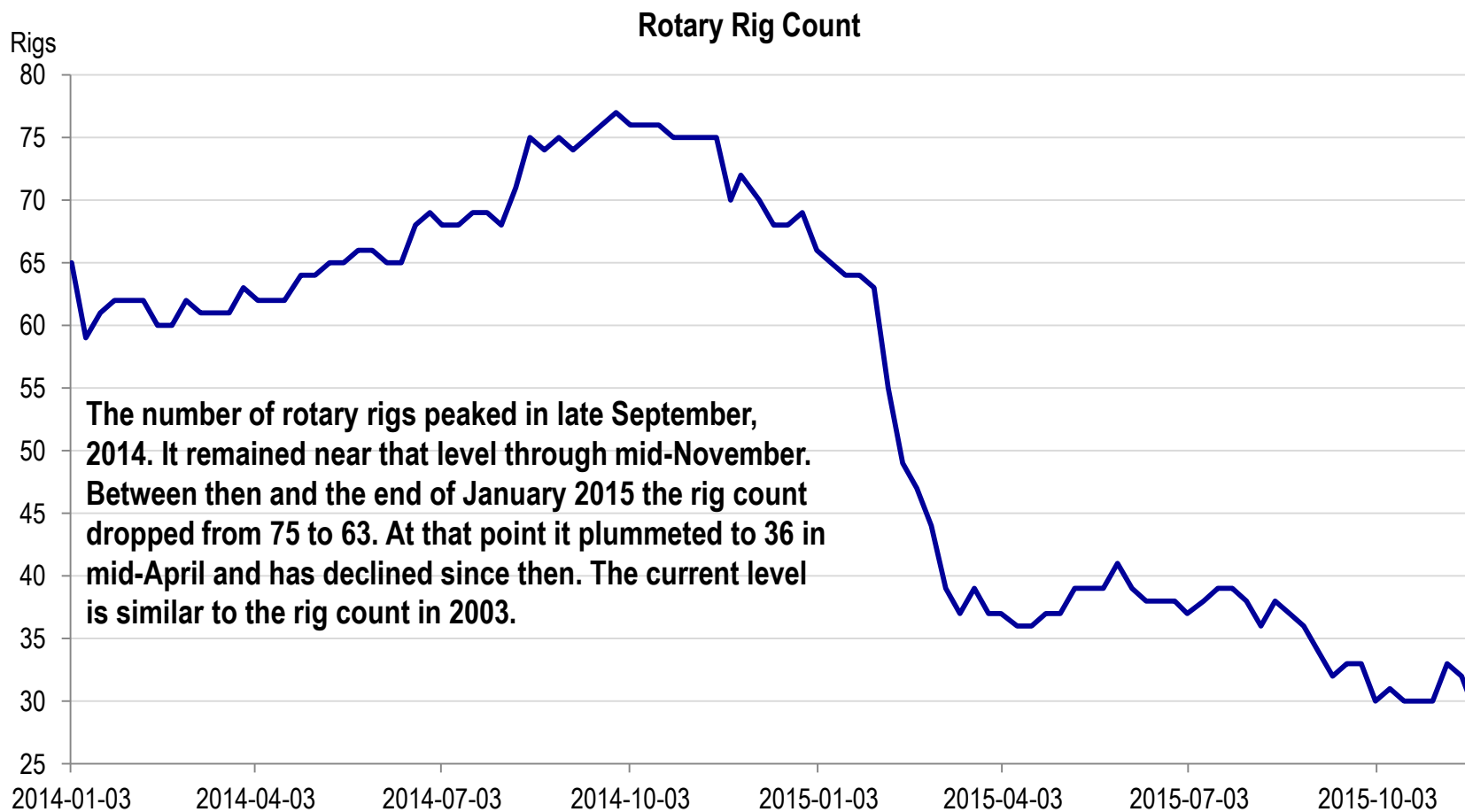


Source: Baker-Hughes.

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# Monthly Number of Rotary Rigs in Colorado 2014 to present

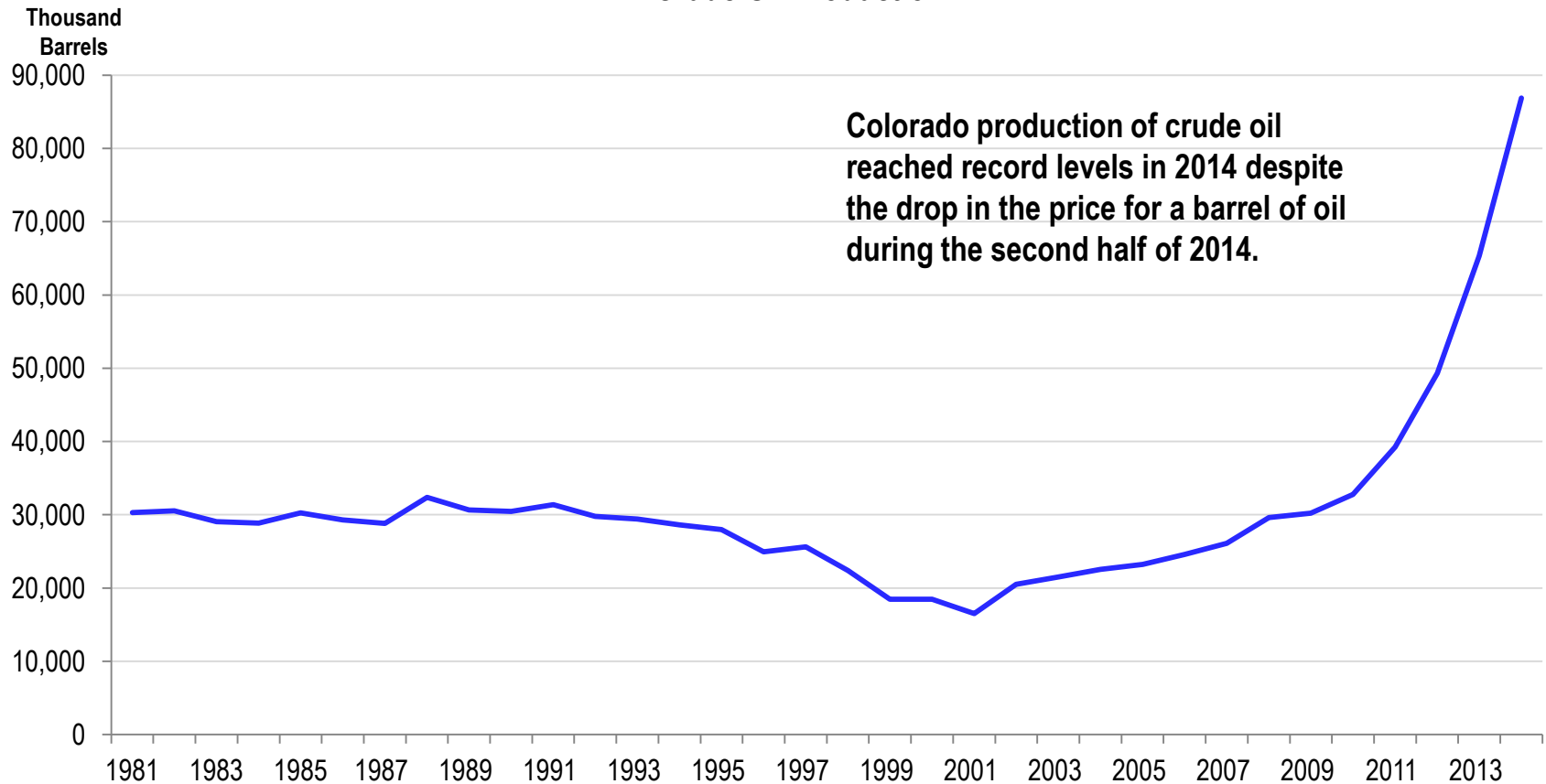


Source: Baker Hughes Rig Count.

# Colorado Crude Oil Production

## 1981 to 2014 (Thousand Barrels)

Crude Oil Production



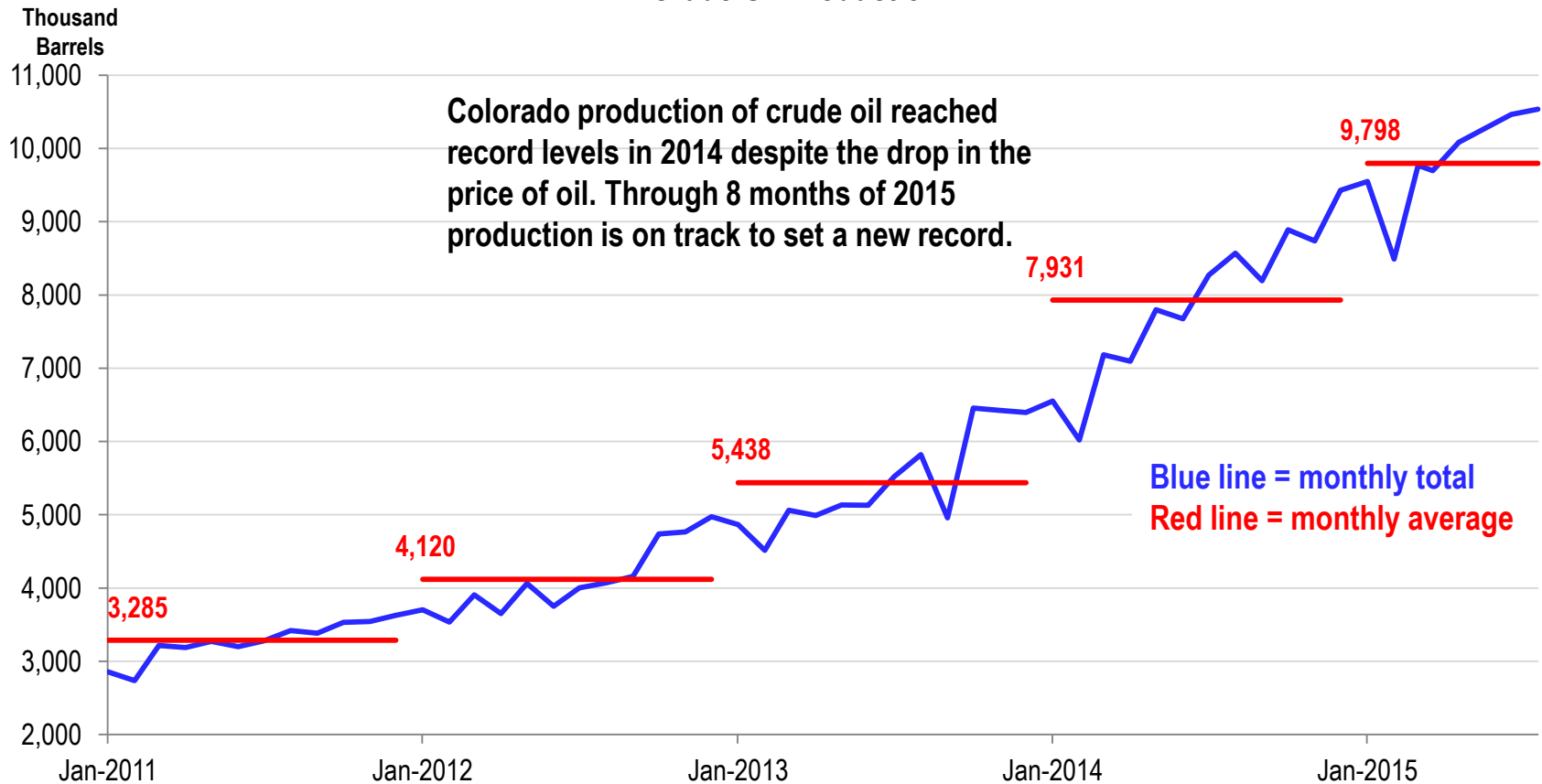
Source: EIA.

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

Crude Oil Production

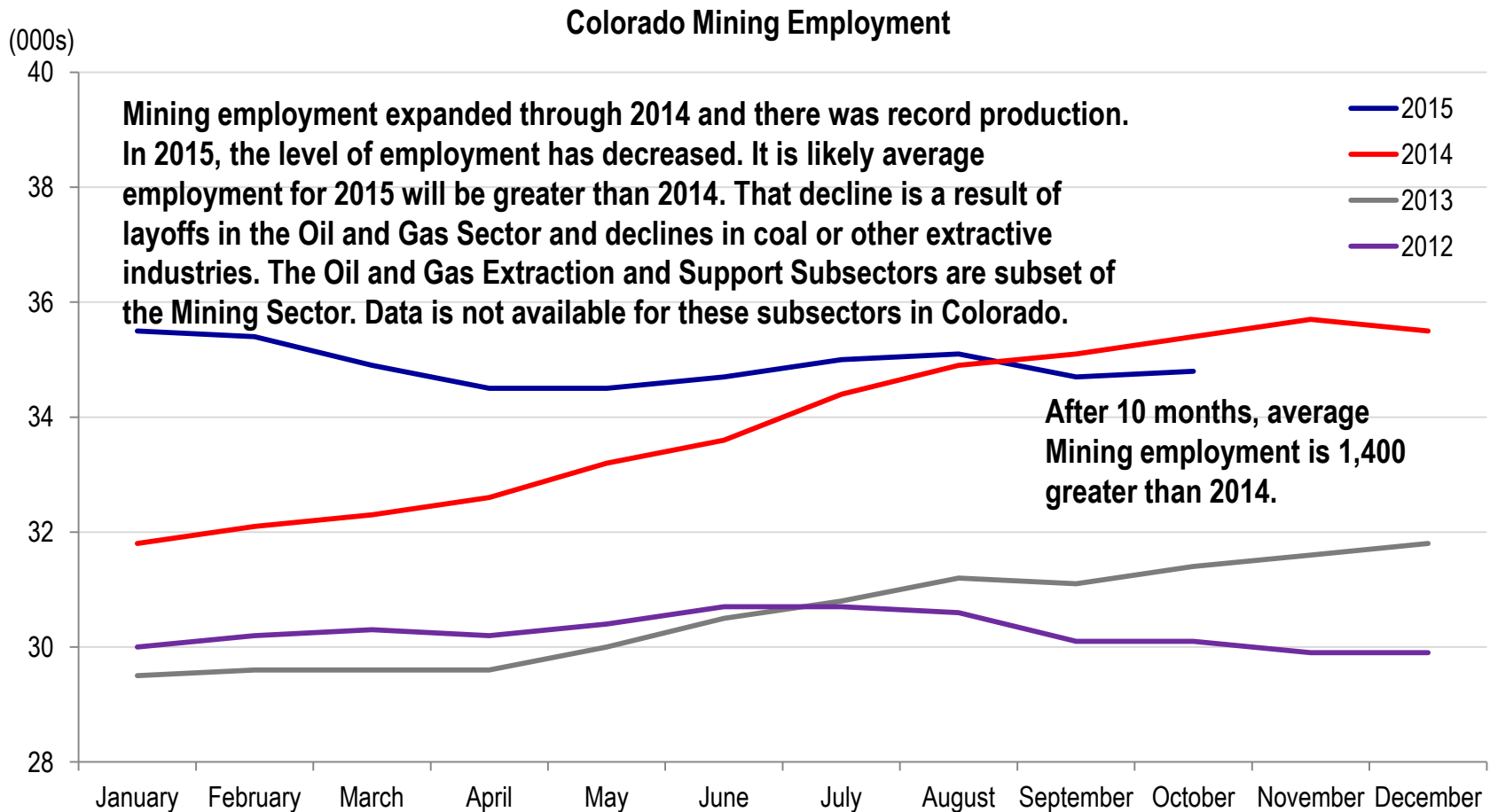


Source: EIA.

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# Colorado Mining Employment 2012 to 2015



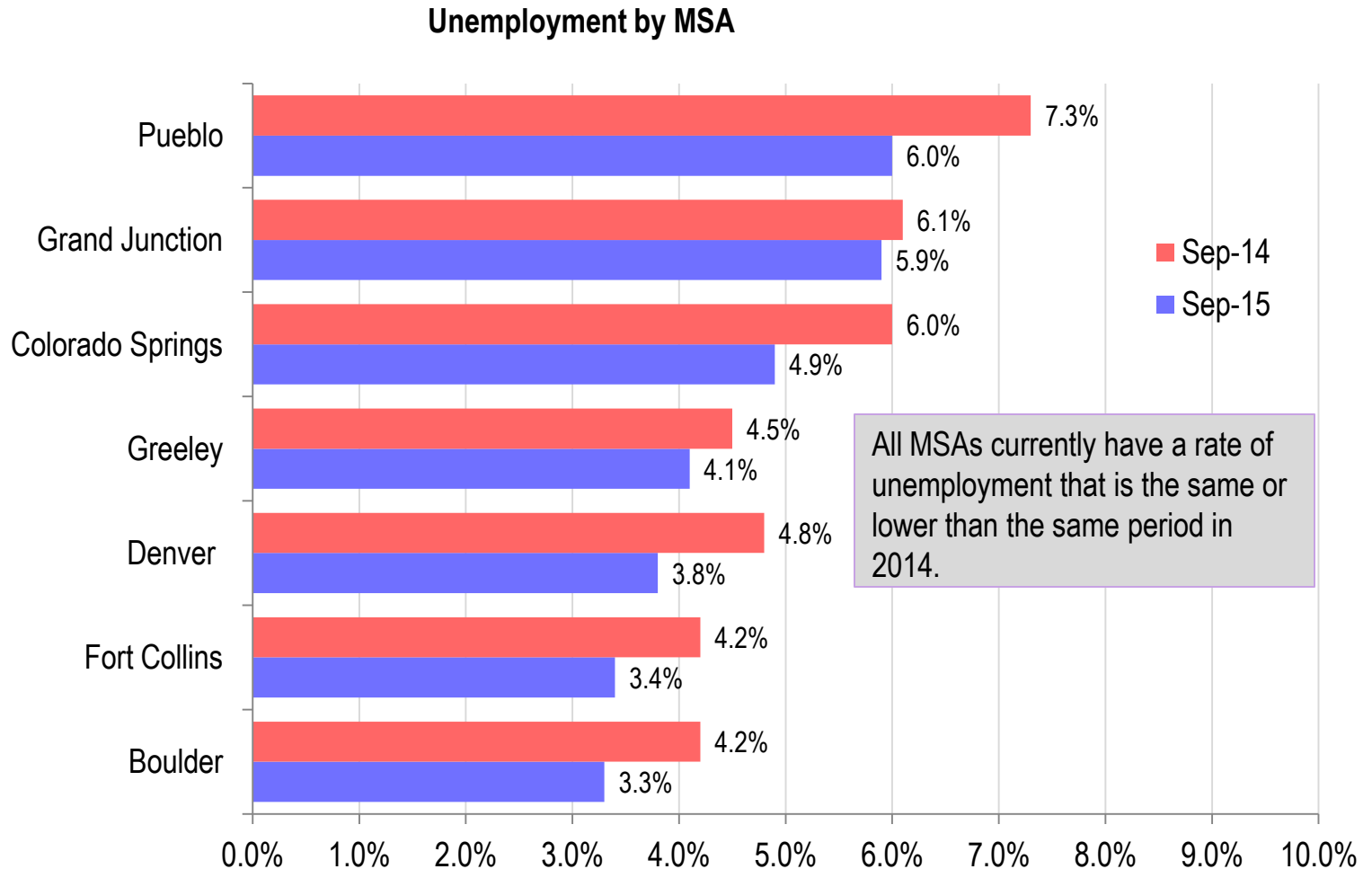
Source: Bureau of Labor Statistics, NSA.



# Summary and Total Jobs Added



# Unemployment by MSA 2014 vs. 2015



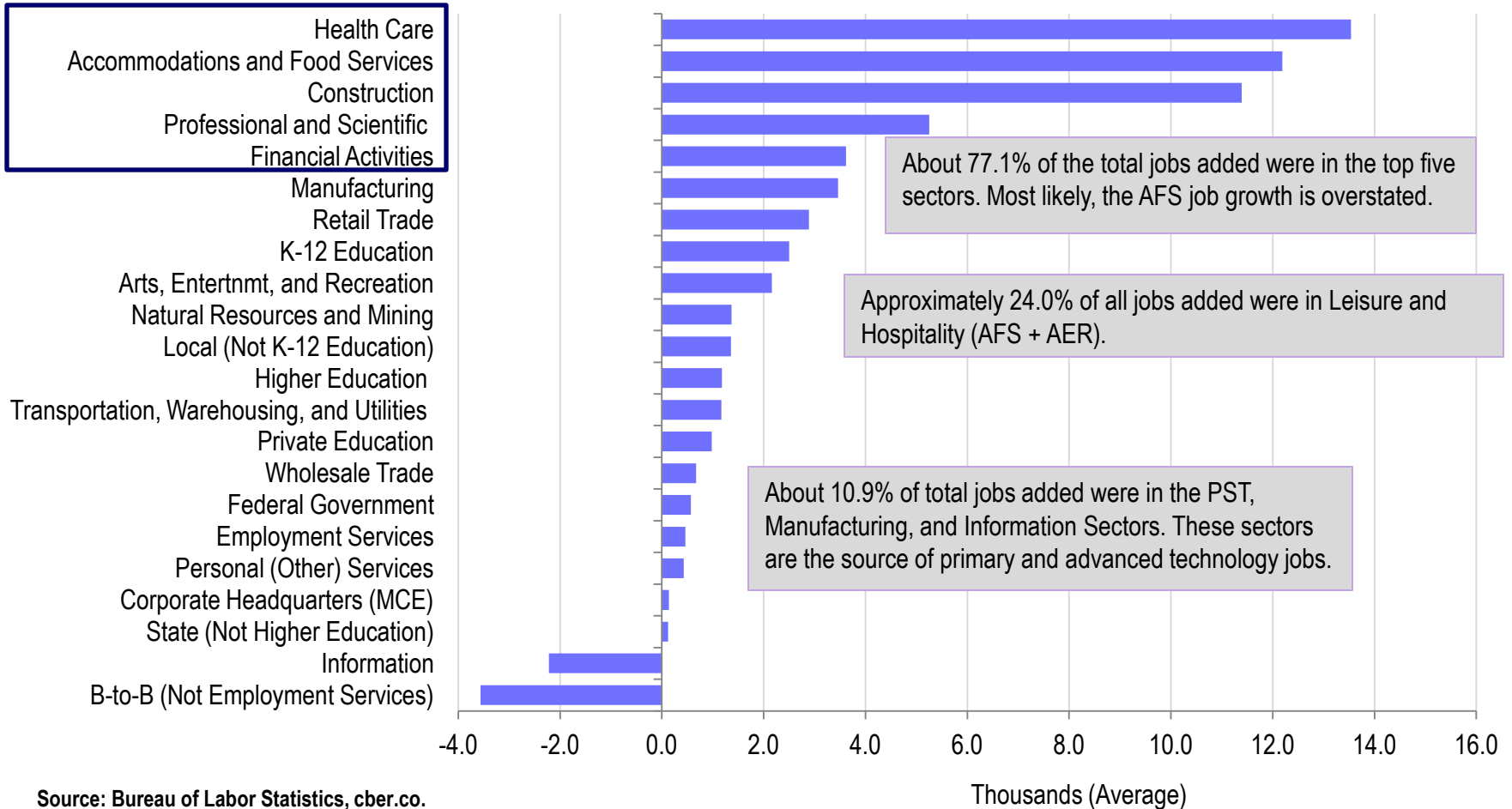
Source: Bureau of Labor Statistics, NSA. Note: MSA unemployment lags by one month and is reported on a non-seasonally adjusted basis.

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# Change in Employment First Ten 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.

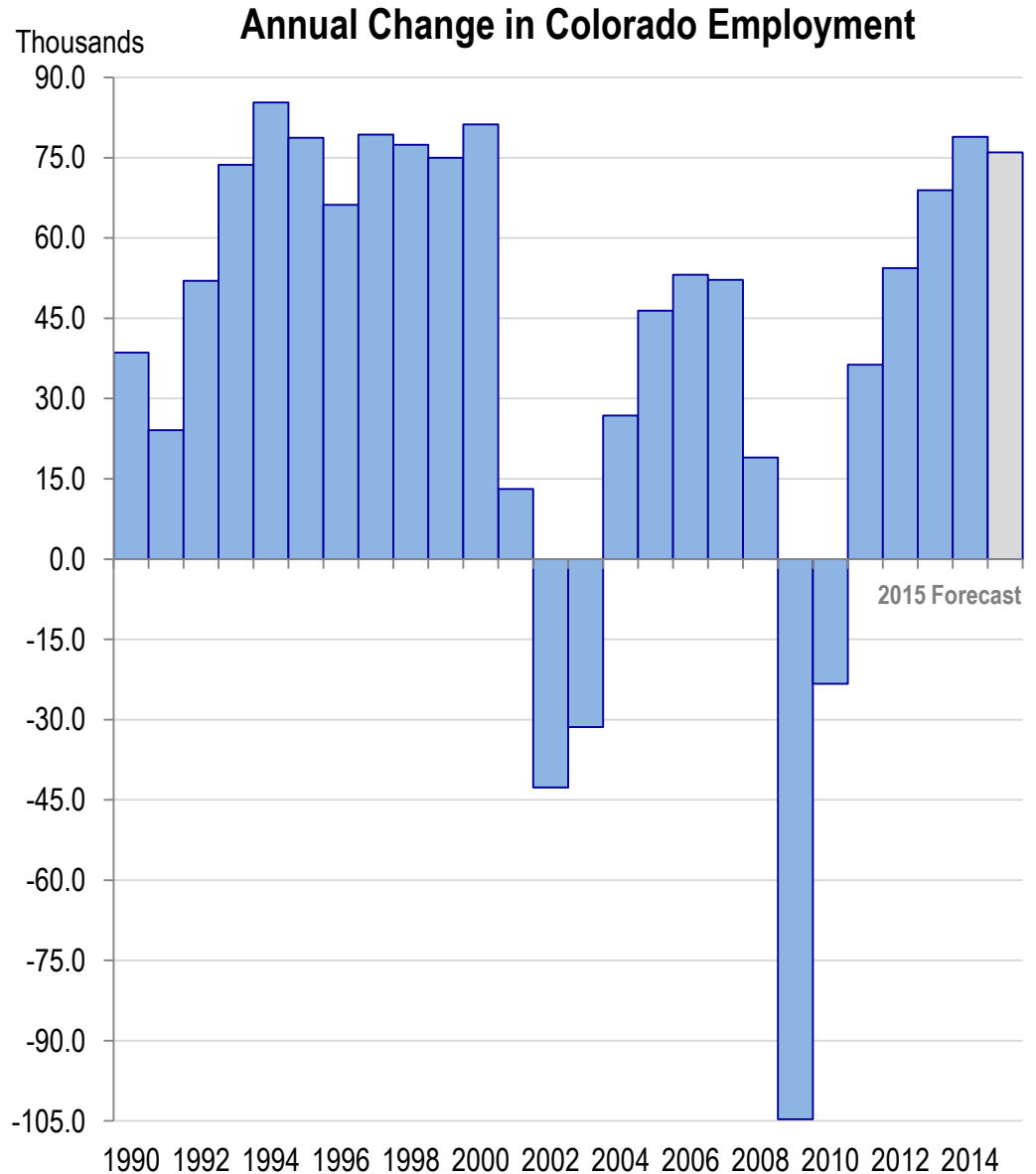
The state is projected to add 73,000 to 79,000 jobs in 2015, an increase of 3.0% to 3.2%.

For the first ten months of 2015 Colorado employment is 59,700 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 projected that a significant upward adjustment will be made to the Q4 2014 data and data for the first four months of 2015. These revisions will be made in March 2016. Total employment for 2015 should be in the range of 73,000 to 79,000. This is the level of job growth forecasted by cber.co for 2015.

Source: Bureau of Labor Statistics, cber.co.

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# 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 Q4 2014 will show the Colorado economy had strong momentum coming into 2015. Q1 was equally as strong. These revisions to the 2015 data will be made in March 2016.</p>	<p><b>Consumer Sentiment</b> – Unofficial measures of consumer sentiment (rising prices and longer lines in restaurants, shoppers carrying bags out of retail stores, lower gas prices) indicate the Colorado economy is healthy.</p>
<p><b>New Car Registrations</b> – Colorado new car registrations remain strong.</p>	<p><b>Construction</b> – Cranes and cone zones are abundant.</p>
<p><b>Job and Establishment Growth</b> – Current job growth is increased at a decreasing rate, but it remains solid.</p>	<p><b>Tourism</b> – The Colorado Tourism Sector is closing out another strong year.</p>
<p><b>Property Taxes</b> - Local governments and school districts will benefit from higher property values and property taxes.</p>	<p><b>Government Spending</b> – Local governments have demonstrated they have money they are willing to spend.</p>

# Economic Risks and Concerns

As always there are risks and headwinds in the Colorado economy. Collectively, they could be problematic.

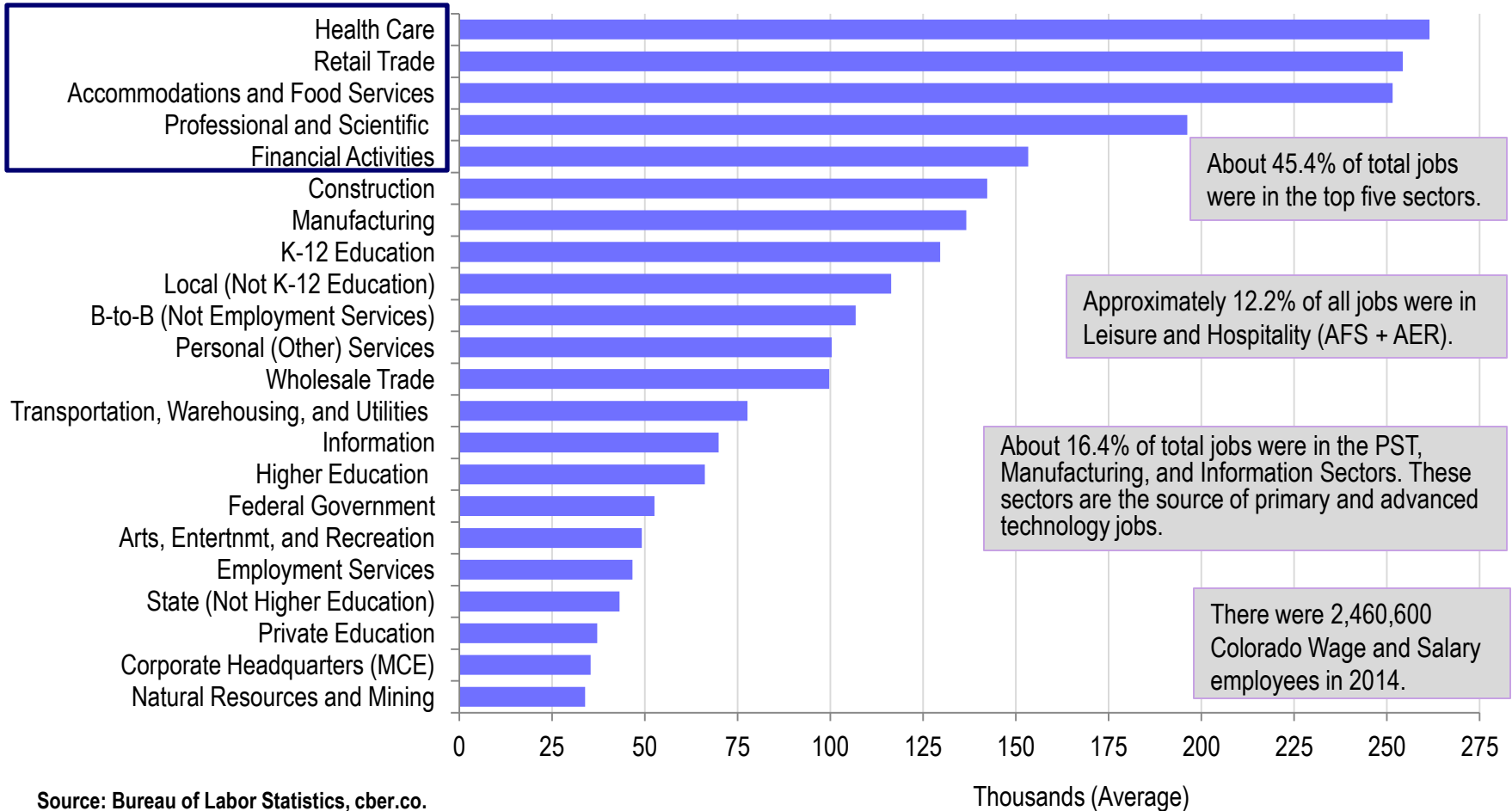
<p><b>Low Unemployment Rate</b> – Industries such as construction, software, and advanced manufacturing have had difficulty finding trained workers because of low unemployment rates in key occupations.</p>	<p><b>State Government</b> - The state government will collect record revenues this fiscal year, but experience significant shortfalls caused in part by Amendment 23, the Gallagher Amendment, and TABOR. The result will be reduced government services.</p>
<p><b>Manufacturing</b> – Between 2010 and 2014 the Manufacturing Sector has added jobs at a CAGR of 2.4%, primarily as a result of demand for renewable energy products. The Manufacturing Sector is important because it provides primary jobs – jobs that bring in wealth from outside Colorado. A higher percentage of jobs need to be created in this sector.</p>	<p><b>Oil and Gas Industry</b> – Researchers at CU surmised the state would tank when the price of oil fell. To date there has been a slight decrease in employment and a sharper drop off in rig count. Some companies have consolidated, others have sold assets, and some have pulled out of Colorado; however, production may reach record levels in 2015.</p>
<p><b>Layoffs</b> - Layoffs at BNSF and Union Pacific have been caused by regulatory issues and a lack of demand for coal, oil, agricultural products, and industrial goods.</p>	<p><b>Information Sector</b> – The sector continues to shed jobs at an alarming rate.</p>
<p><b>Population</b> – Twenty-seven of the state’s 64 counties experienced declines in population between 2010 and 2014. Many are small rural counties. What are they going to do moving forward?</p>	<p><b>Affordable Housing</b> - It will be more difficult to find attainable and affordable housing as a result of the continued 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 Ten 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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### 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 road map 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.