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Colorado Economic Forecast 2016

Colorado-based Business and Economic Research
Prepared
January 11, 2016

Overview of Forecast

This chartbook provides a series of charts, graphs, discussions, and data that make the case the Colorado economy will continue to experience steady job growth in 2016. This information is divided into the sections listed below.

Global and U.S. Economy

- Summary of Key Data – Global and U.S.
- The Global Economy
- The United States Economy
  - Real GDP, Productivity, Inflation, and the R-Word
  - Employment, Unemployment, and Income
  - Services, Manufacturing, and Retail
  - Construction
  - Housing, Mortgage Rates, Equities, and Oil Prices
  - Debt
  - Summary

The Colorado Economy

Summary of Key Data – U.S. and Colorado

- GDP, Inflation, Income, and Wages
- Population and Unemployment
- State Government
- Establishments, Housing, Construction, and Consumers
- Extractive Industries
- Industries that Provide Colorado with a Competitive Advantage
- The Colorado Employment Forecast
- Summary

Appendix

- The cber.co Forecast – A Review of the 2015 Forecast and Related Issues
- Colorado Employment Forecast - Putting the Forecast in Perspective
- BLS/LMI Data Revision Process and Analysis for Determining Forecast Categories

The Global and U.S. Economy

Summary of Key Data
United States and Global Economy

United States

Real GDP – Annual Real GDP growth will be in the 2.3% to 2.7% range for 2016, similar to 2015.

Real PCE – Annual consumption growth will be in the 2.6% to 3.0% range for 2016.

U.S. Employment – The U.S. will to add 2.7 million jobs in 2016.

Unemployment Rate – Average unemployment of 5.3% for 2015; expect 4.6% to 4.8% in 2016.

Consumer Price Index – The CPI is estimated to be 0.2% in 2015 with an increase to 1.7% in 2016.

PCPI – Annual per capita personal income will increase by 2.6% to 3.0% in 2016.

Price of a Barrel of Oil (WTI) – Oil closed the year at $36 per barrel. Look for higher prices in 2016.

Case Shiller Housing Prices – Y-O-Y U.S. prices for October up 5.2%. Appreciation will continue at a slower rate.

Standard and Poor's 500 – The S&P 500 posted a loss of 0.7% in 2015. Expect continued volatility in 2016.

The U.S. economy will post solid growth in 2016.

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Global GDP

Global and Category Real GDP Growth

↑ Global 2.8%
↑ Mature 2.1%
↑ Emerging 3.5%

Countries With Forecast for Increased Real GDP Growth

Japan (mature) 1.2%
Eurozone (mature) 1.6%
India (emerging) 6.2%
Other developing Asia (emerging) 4.8%
Latin America (emerging) 1.1%
Brazil (emerging) -0.2%
Mexico (emerging) 2.8%
Russia, Central Asia and Southern Europe (emerging) 1.8%

Countries With Forecast for flat Real GDP Growth

United States (mature) 2.3% to 2.7%
China (emerging) 3.7%

Countries With Forecast for Increased Real GDP Growth

Saharan Africa (emerging) 4.4%
Middle East and North Africa (emerging) 2.6%

A stronger global economy is expected in 2016.

The Global Economy

Overview – The Global Economy 2016
A Tale of Two Forecasts

The overview of the global economy focuses on gross domestic product as presented in the forecasts prepared by the Conference Board and the IMF (next two charts).

The two forecasts paint different pictures, but they are in agreement that the slowdown in the rate of growth in China has caused problems elsewhere. In addition, the U.S. must be a major driver in the growth of the global economy if it is to grow at a faster rate in 2016.

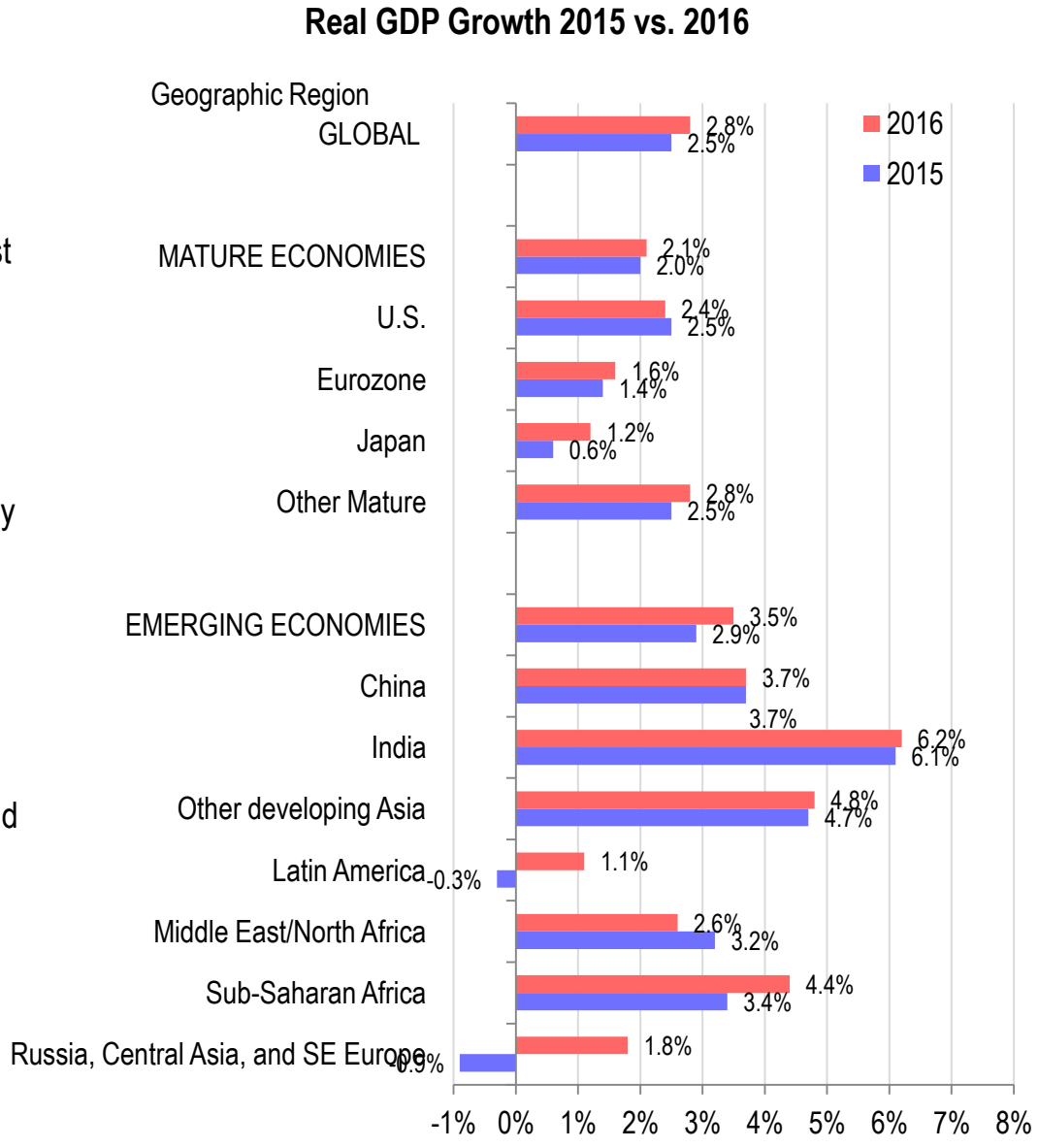
Global Real GDP Growth

This chart shows the Global Real GDP forecast from The Conference Board.

The 2016 forecast projects GDP growth to be 2.1% for the mature economies. The U.S. will continue to expand at a rate of about 2.5%. Japan and the Eurozone will experience slightly stronger growth. While improved, their growth will only be in the range of 1.2% to 1.6%.

The Chinese economy is expected to grow at 3.7% in both 2015 and 2016. India will lead region in 2016 with 6.2% growth. With the exception of the Middle East/North America and China, the emerging economies are projected to show slightly faster growth in 2016.

Overall, global GDP growth will be 2.8% in 2016. This is a slight improvement over 2015.



Source: The Conference Board (November, 2015), cber.co.

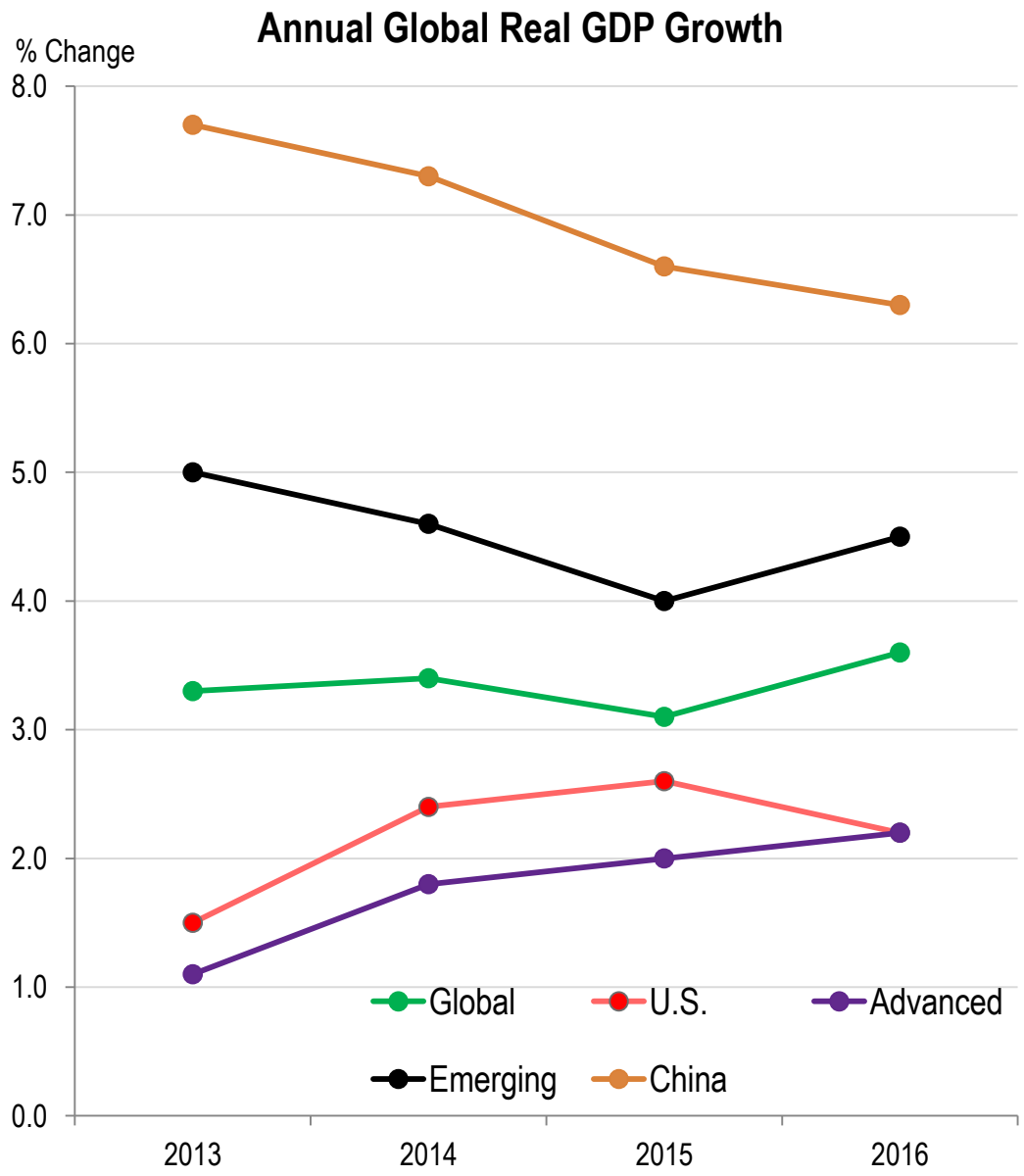
Global Real GDP Growth

The International Monetary Fund projected that global GDP growth (green) would decline in 2015 as a result of the slowdown in the rate of GDP growth in China (gold).Global 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).

Growth in the advanced countries (purple) parallels growth in the U.S. with the exception of 2016.

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



Source: IMF, October 2015.

The United States Economy

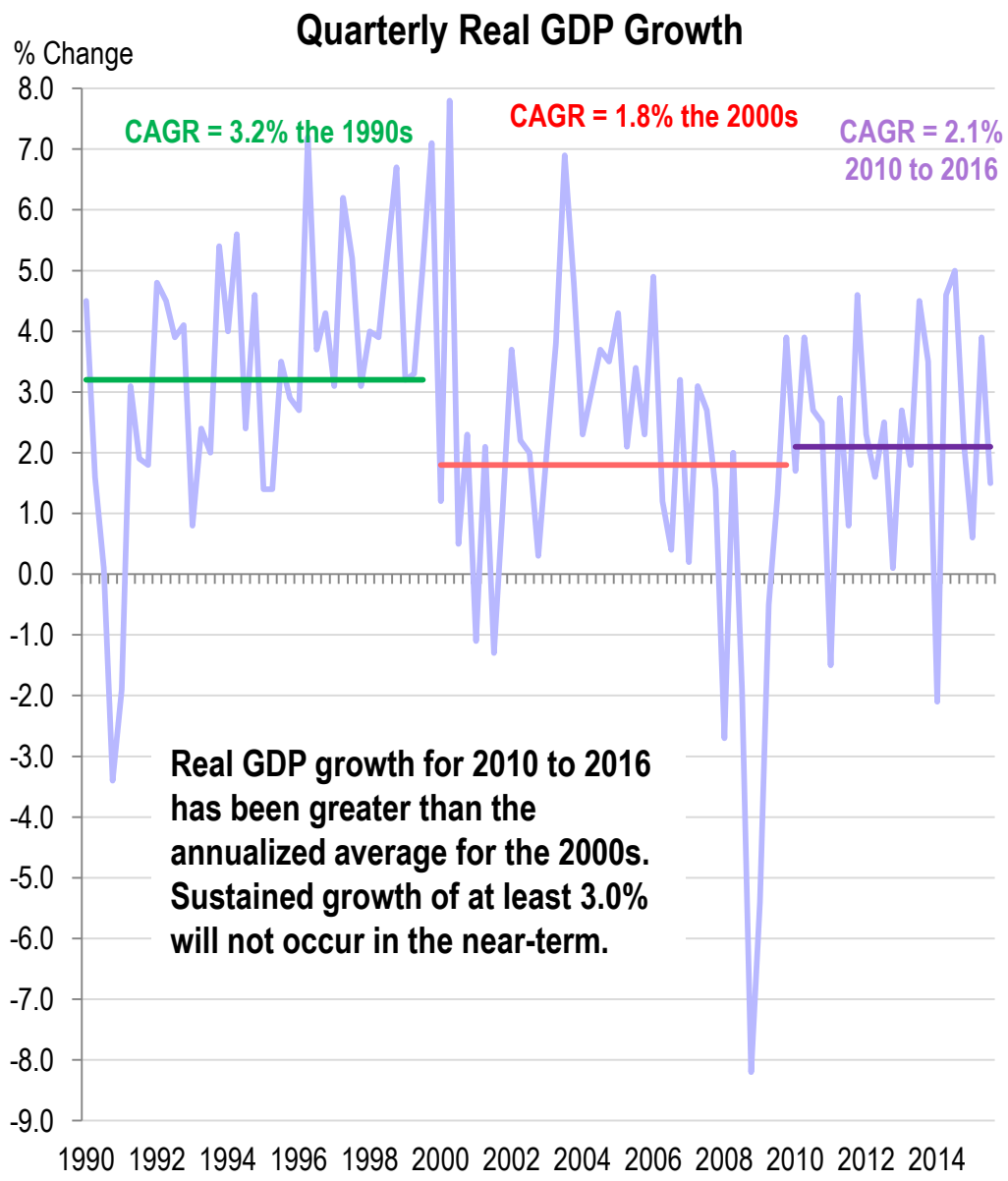
The U.S. Economy

Real GDP, Productivity, Inflation and The R-Word

Real US 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 2016 (purple line).

Real GDP growth for 2015 and 2016 is estimated to be 2.3% to 2.7%. The rate of growth for 2016 will likely be greater than 2015.



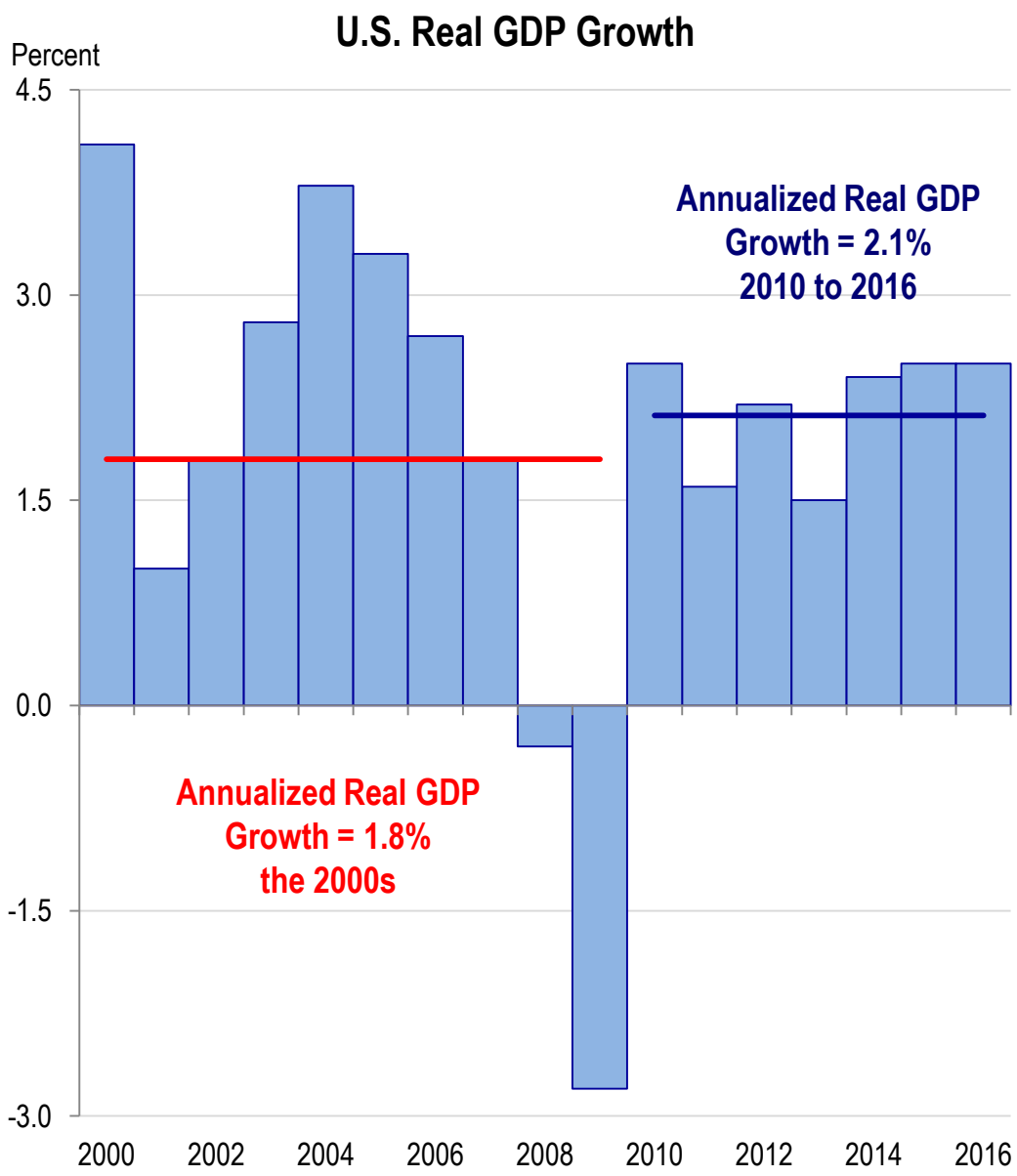
Source: Bureau of Economic Analysis, cber.co, Note GDP chained on 2009.

U.S. Real GDP Growth

The rates of growth for the period 2014 to 2016 are above that average for the period 2010 to 2016.

Real GDP will grow at a rate between 2.3% to 2.7% in 2016.

- Personal consumption will drive the growth in the Real GDP.
- Housing starts will show solid growth and business investment will improve slightly,
- Government spending will see a slight increase.
- The net exports deficit will increase as a result of the lack of demand caused by China and a strong dollar.



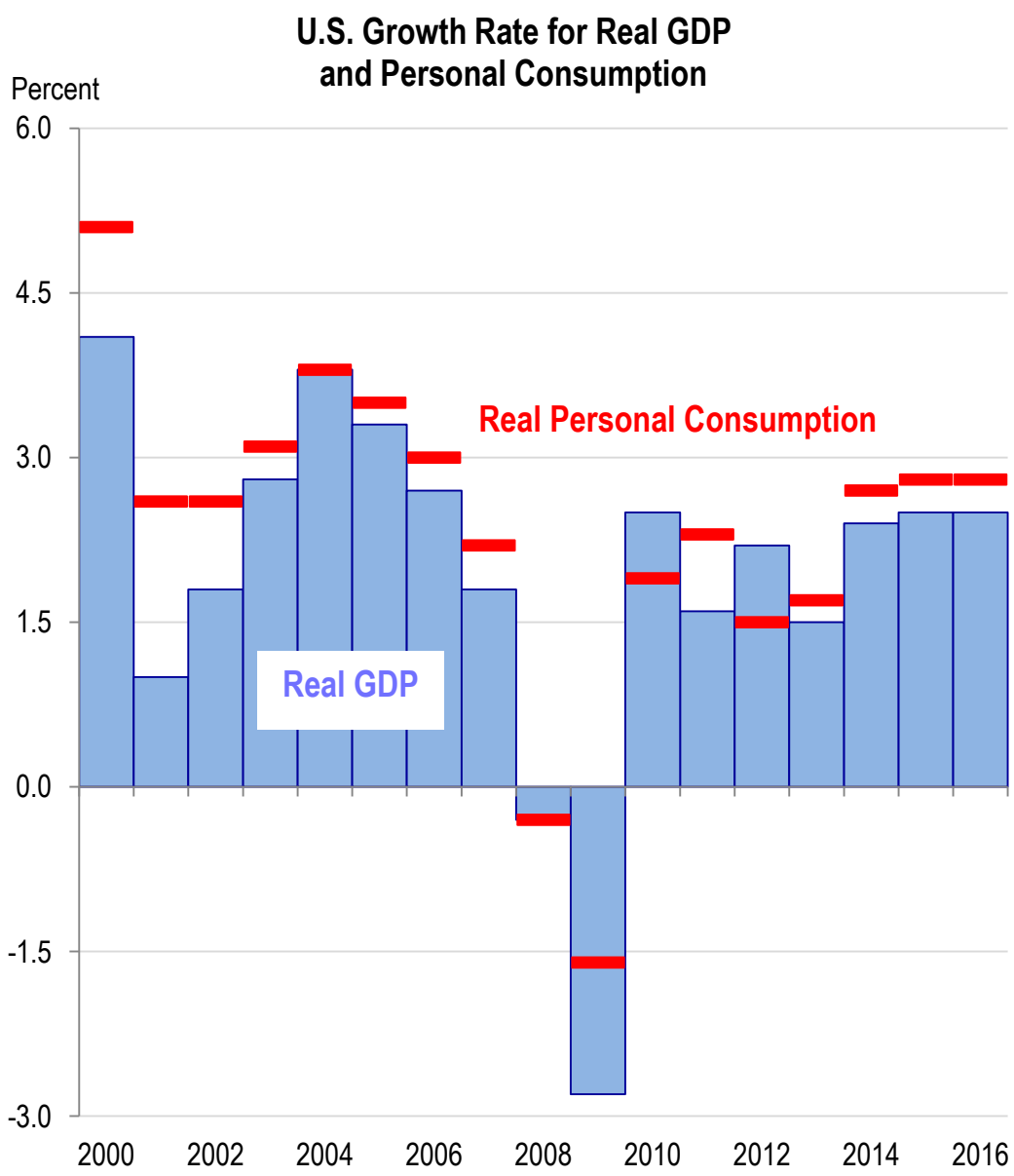
Source: Bureau of Economic Analysis, cber.co, chained in 2009 dollars.

U.S. Real Personal Consumption and GDP Growth

In 1990 Personal Consumption (red bars) accounted for about 64% of GDP (blue). Today it is about 68%.

Because consumption is such a high percentage of Real GDP there is a strong correlation between the growth rates of these two variables.

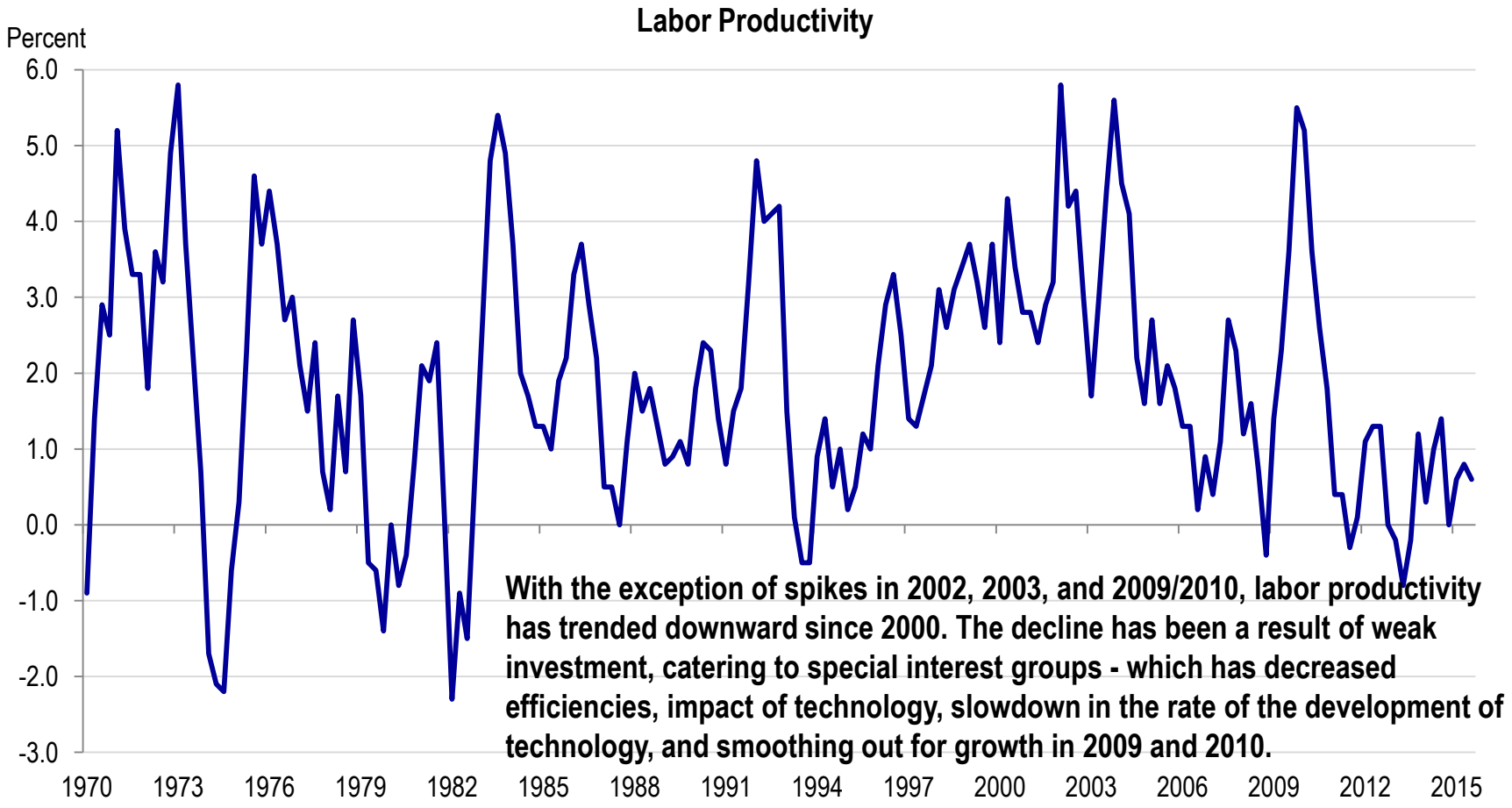
Real personal consumption will grow at a rate of 2.6% to 3.0% in 2016.



Source: Bureau of Economic Analysis, cber.co, chained in 2009 dollars.

U.S. Labor Productivity (Output per Hour) Percent Change

- Percent Change Same Quarter Prior Year
- Nonfarm Business



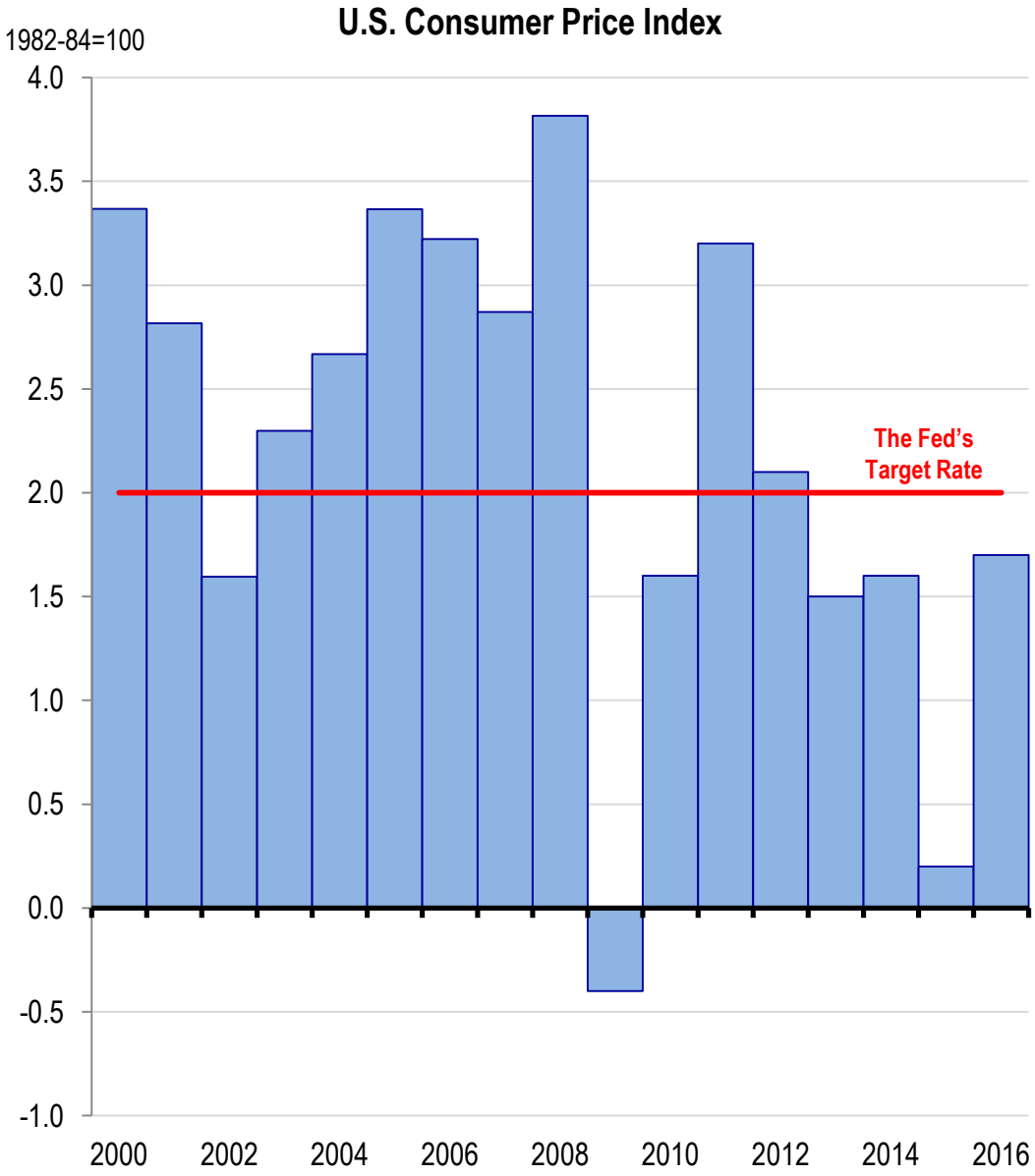
With the exception of spikes in 2002, 2003, and 2009/2010, labor productivity has trended downward since 2000. The decline has been a result of weak investment, catering to special interest groups - which has decreased efficiencies, impact of technology, slowdown in the rate of the development of technology, and smoothing out for growth in 2009 and 2010.

Source: Bureau of Labor Statistics, NSA.

Consumer Price Index (CPI)

U.S. Inflation, as measured by the CPI, dropped precipitously because of lower fuel costs and remained there in 2015.

The U.S. CPI increased by 0.2% in 2015 and will increase by 1.7% in 2016. Inflation will increase as the Fed raises interest rates, housing prices increase, and gasoline prices rise. It is the Fed's goal to manage inflation so that it approaches their target rate of 2.0%.



Source: Bureau of Labor Statistics, cber.co.

The R Word

The R Word is Being Used More Frequently – Don't Panic - Yet!

Why the Talk of a U.S. Recession?

Economists and members of the media have begun to ask the question. "When is the next recession?" The question has arisen because the business cycle is mature. The next election is 11 months away. While political leaders cannot prevent a recession, they have incentive to do everything within their control to avert one during an election year. A recession would be deadly to either party.

The fundamentals of the U.S. economy are solid. There are obstacles, but jobs are being added, GDP is solid, and the unemployment rate is declining. At the moment there is little to suggest a recession will occur within the next year.

While it is possible that terrorist attacks, natural disasters, or extended political unrest could cause a downturn, such events cannot be predicted.

How Does our Current Situation Compare to Other Expansions?

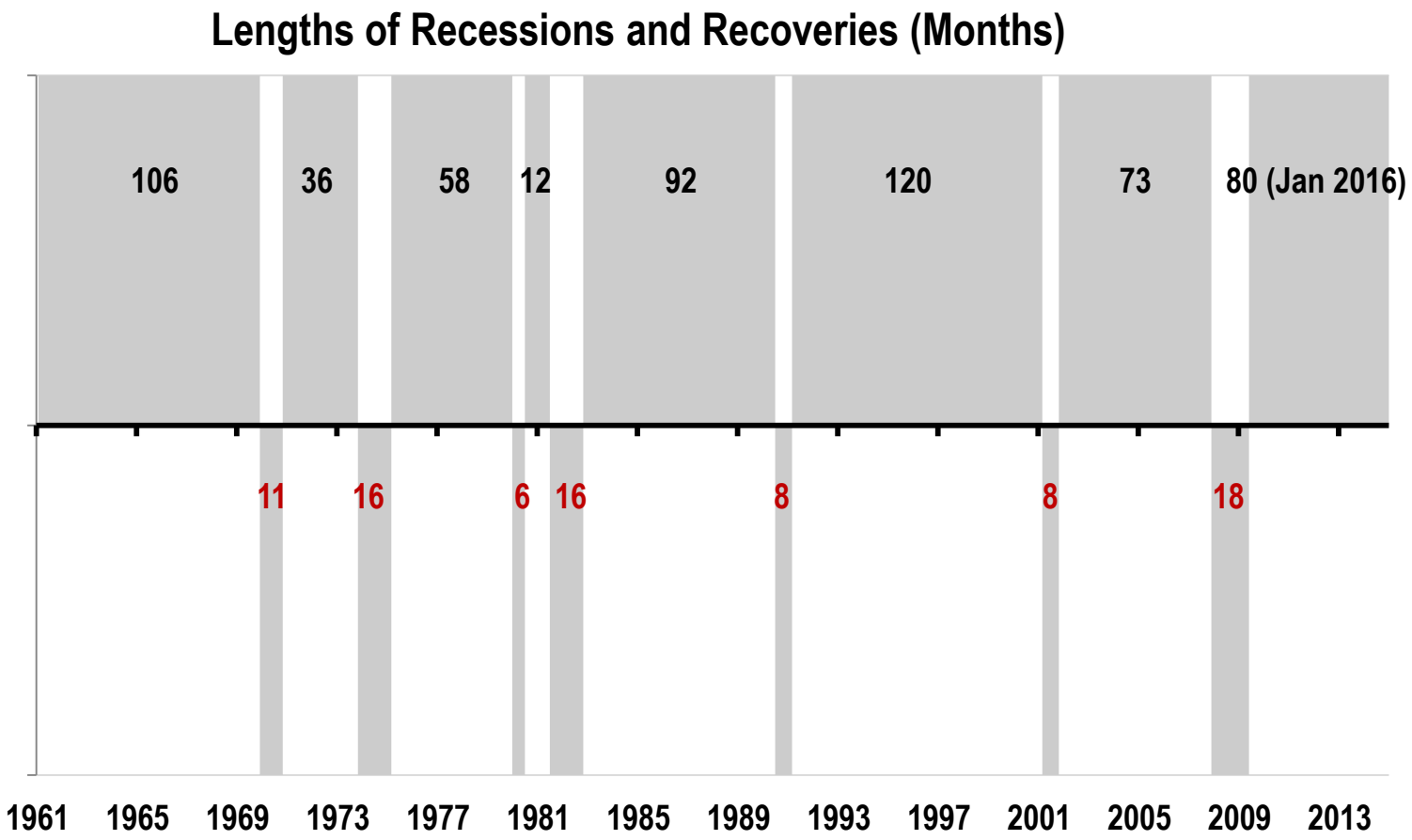
A look at past recessions shows the U.S. economy is currently between the shortest and the longest time frame for an expansion (12 months and 120 months).

The most recent peak was in December 2007. Eight years, or 96 months have passed since the last peak.

If the length of current and future business cycles are similar to the length of past business cycles, then it is likely the U.S. will see the next recession before the end of Governor Hickenlooper's term in office.

The R Word

Length of U.S. Economic Expansions and Contractions



Source: NBER.

Red Numbers = Peak to Trough (Contraction).
Black Numbers = Previous Trough to this Peak (Expansion).

The R Word
Length of Cycles

Length of Cycles

Peak Date/Quarter	Trough Date/Quarter	Peak from Previous Peak	Trough from Previous Trough
August 1957 (III)	April 1958 (II)		
April 1960 (II)	February 1961 (I)	32	34
December 1969 (IV)	November 1970 (IV)	116	117
November 1973 (IV)	March 1975 (I)	47	52
January 1980 (I)	July 1980 (III)	74	64
July 1981 (III)	November 1982 (IV)	18	28
July 1990 (III)	March 1991(I)	108	100
March 2001(I)	November 2001 (IV)	128	128
December 2007 (IV)	June 2009 (II)	81	91
Current Month Jan 2016		96	

Source: NBER.

The U.S. Economy
Employment, Unemployment, Income

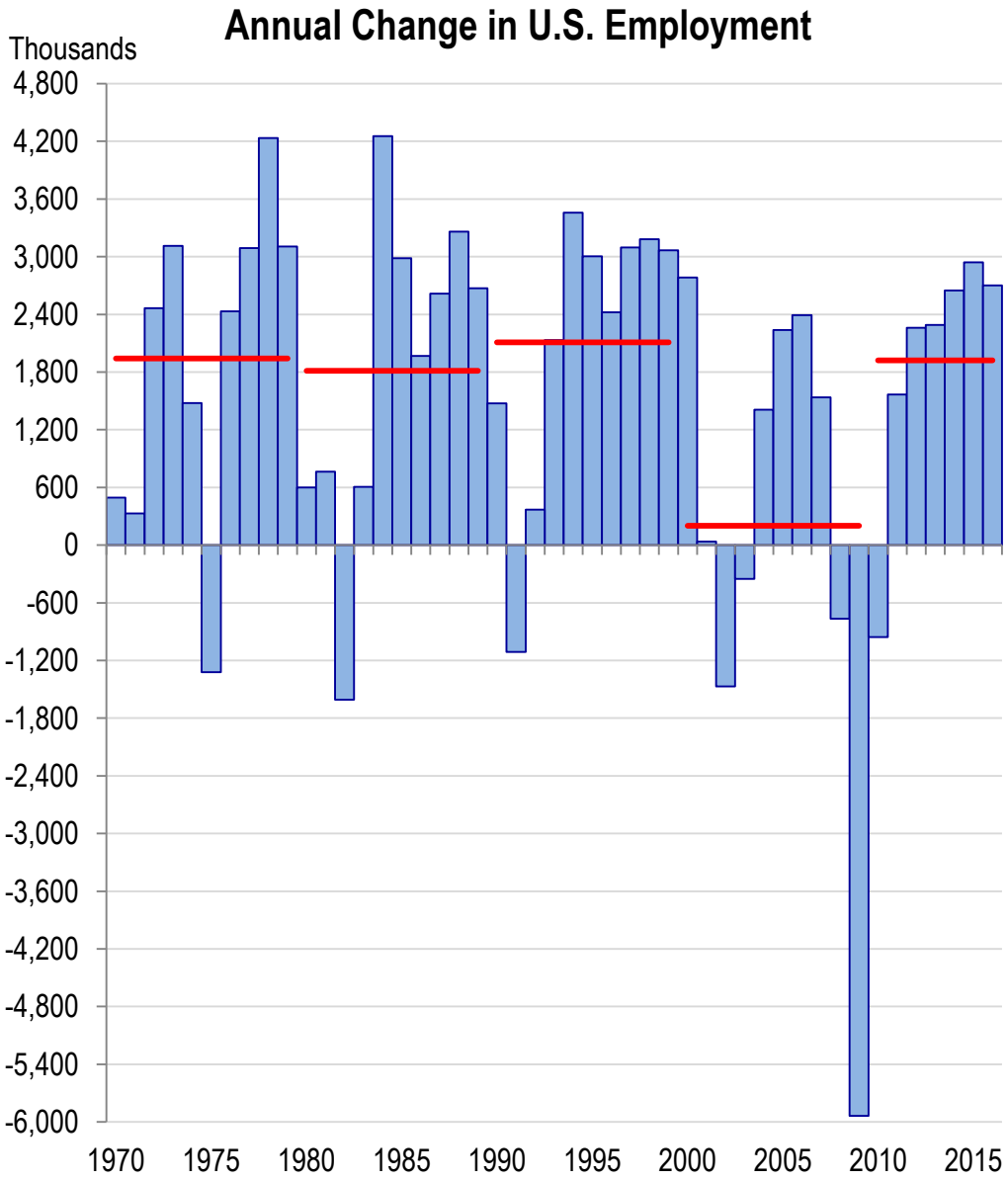
Annual Change in U.S. Employment

The current level of change in employment is less than the 1990s, but much greater than the 2000s. Average annual change (red lines) by decade are as follows:

- 1.9 from 1970 to 1979.
- 1.8 from 1980 to 1989.
- 2.1 million from 1990 to 1999.
- 0.2 million from 2000 to 2009.
- 1.9 million from 2010 to 2016.

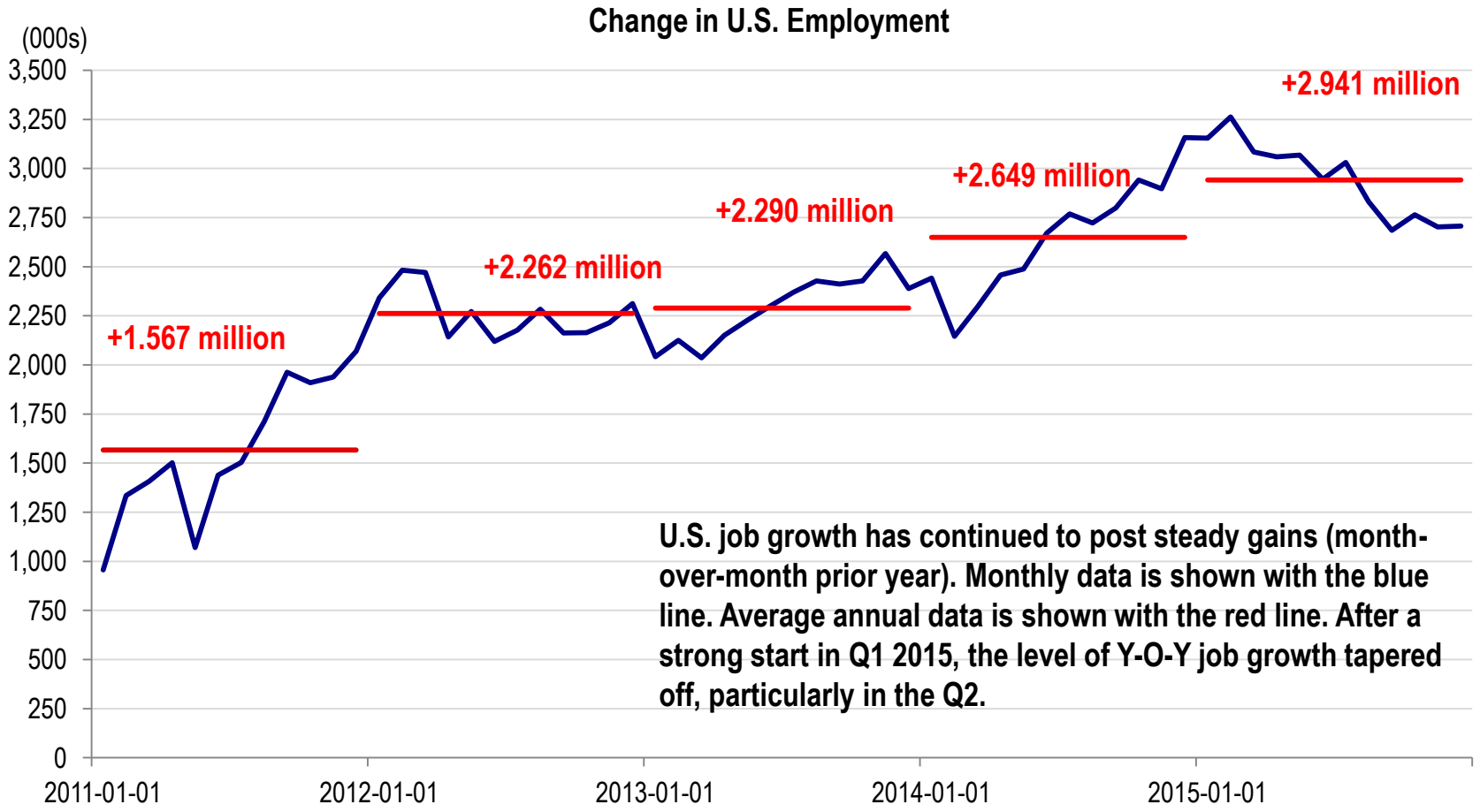
The U.S. will add slightly less than 3.0 million jobs in 2015.

The U.S. will add 2.7 million jobs in 2016.



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

Change in U.S. Employment Year-Over-Year Job Growth



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.

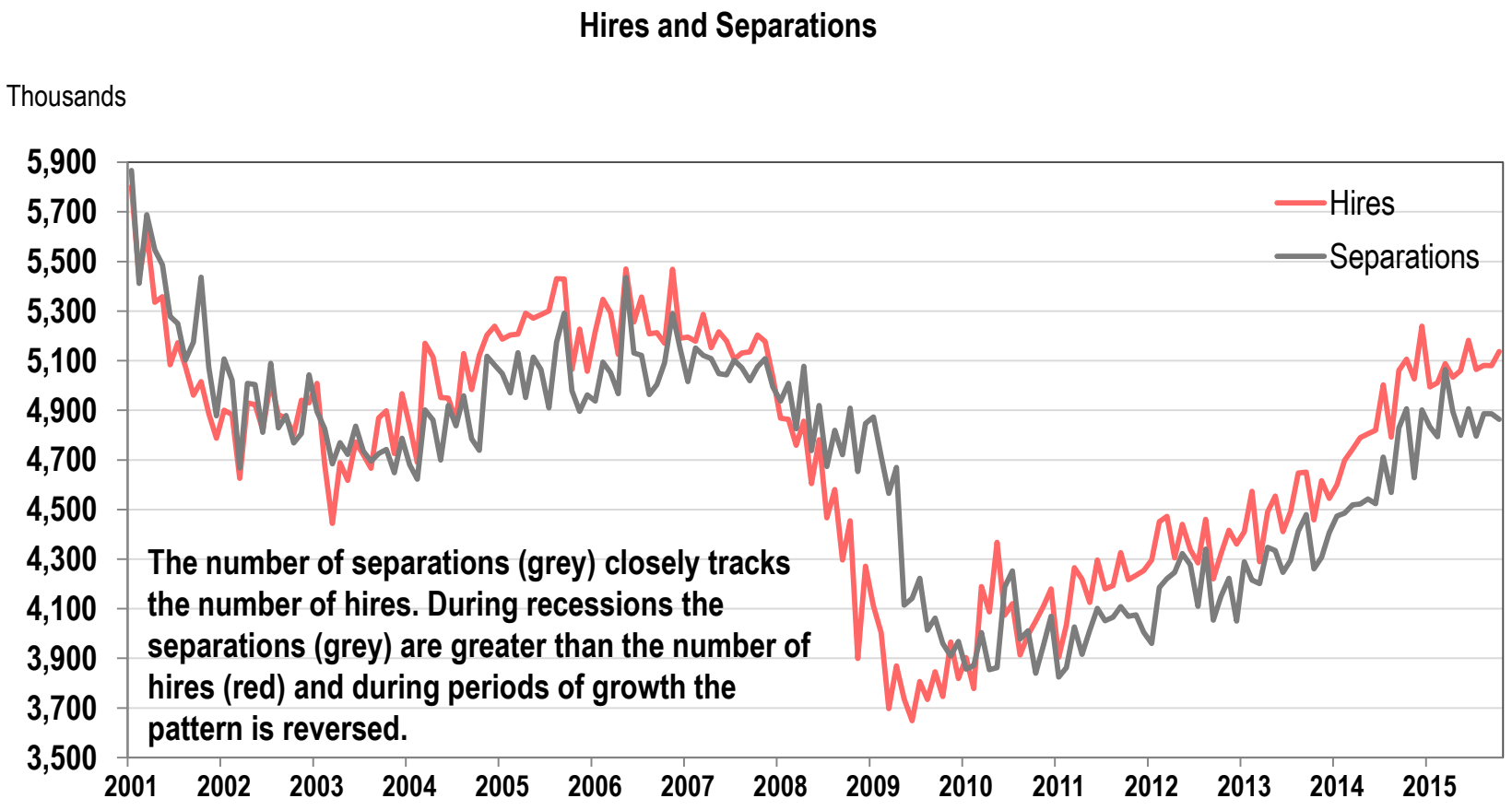
The total number of unemployed (red) was 7.904 million at the end of 2015. This is 1.2 million above the low point in 2006 and 7.5 million below the high point in 2009.

The unemployment rate for December 2015 was 5.0%, down from 5.6% at the end of 2014.

Average unemployment for 2015 was 5.3%, down from 6.2% in 2014 and 7.4% in 2013. Look for 2016 unemployment to be in the range of 4.6% to 4.8%.

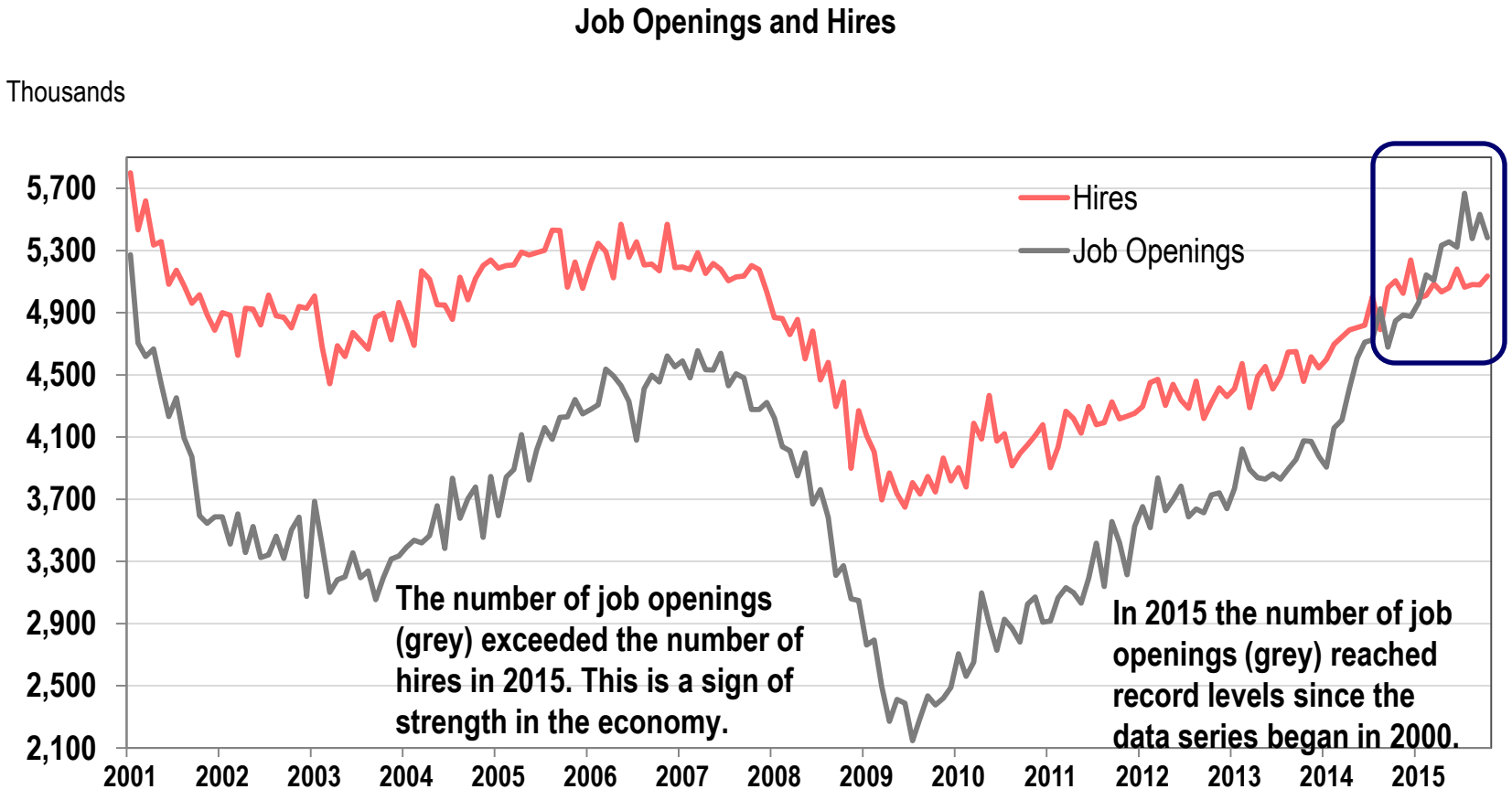
Source: Bureau of Labor Statistics, SA, cber.co.

U.S. Hires and Separations



Source: Bureau of Labor Statistics, NSA.

U.S. Job Openings and Hires



Source: Bureau of Labor Statistics.MSA.

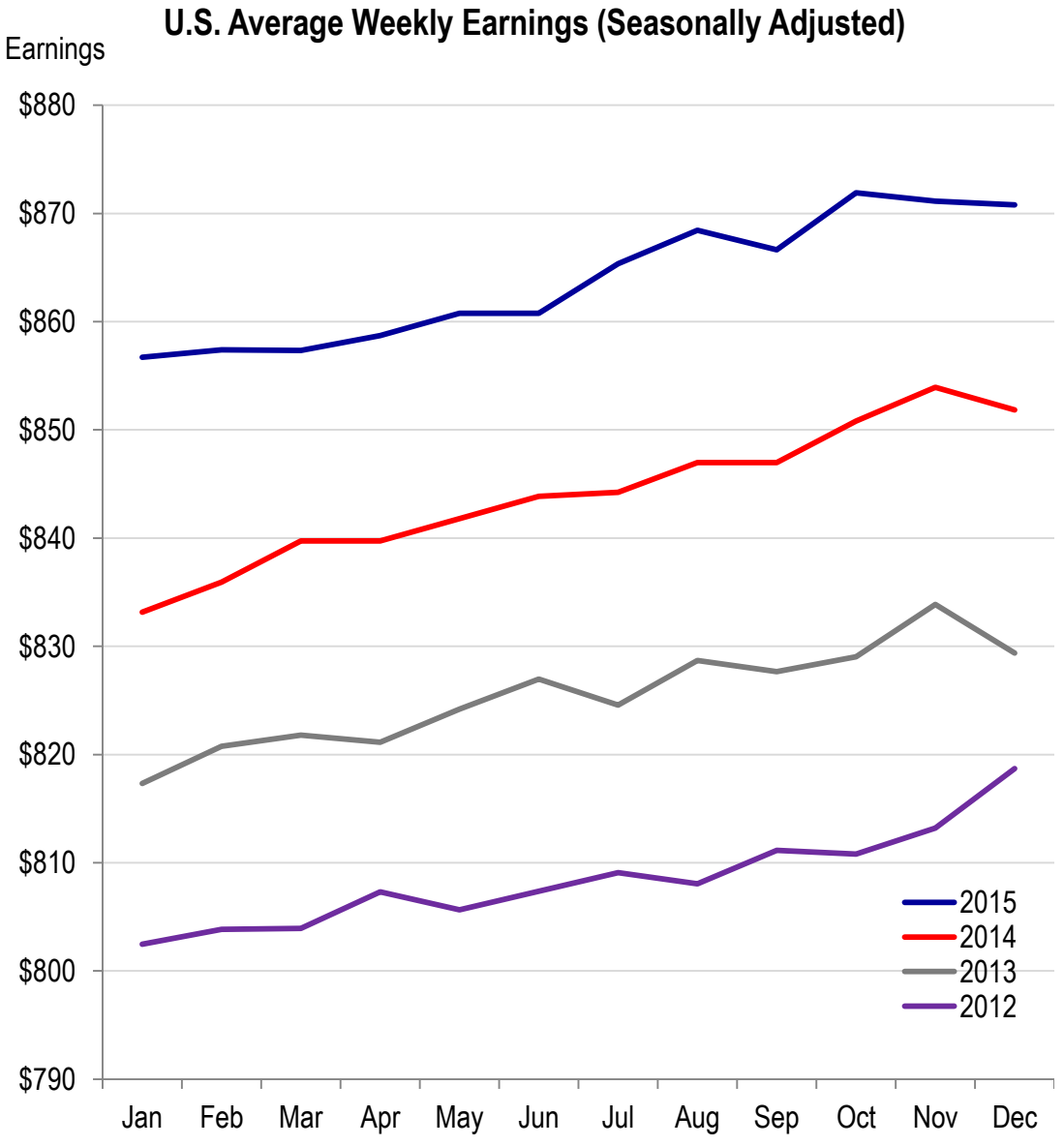
U.S. Average Weekly Earnings of All Employees (Private Sector)

U.S. Average Weekly Earnings (NSA) for all employees were:
- 2012 $810.46
- 2013 $825.11
- 2014 $845.06
- 2015 $864.10

The rate of increase for these wages was:
- 2012 2.4%
- 2013 1.8%
- 2014 2.4%
- 2015 2.3%

The increase in the CPI for these years was:
- 2012 2.1%
- 2013 1.5%
- 2014 1.6%
- 2015 0.2%

Wage increases were slightly greater than the rate of inflation through 2014. That changed in 2015. Stronger growth is expected in 2016.



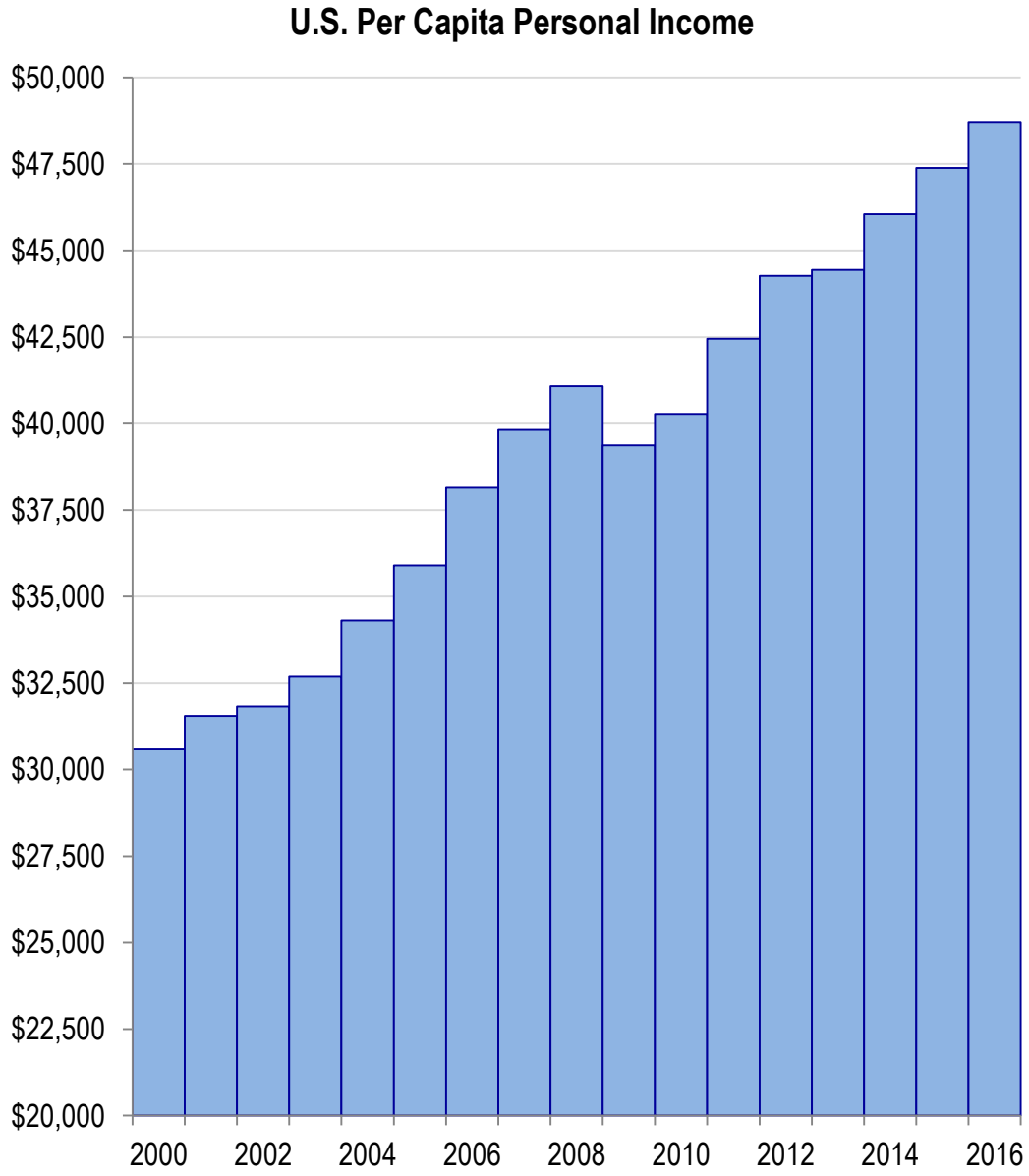
Source: Bureau of Labor Statistics, SA.

Per Capita Personal Income (PCPI)

The U.S. PCPI showed negligible growth in 2002 and it declined in 2009. It posted gains in all other years.

The U.S. PCPI is expected to increase by 2.9% in 2015.

The U.S. PCPI is expected to increase by 2.6% to 3.0% in 2016.



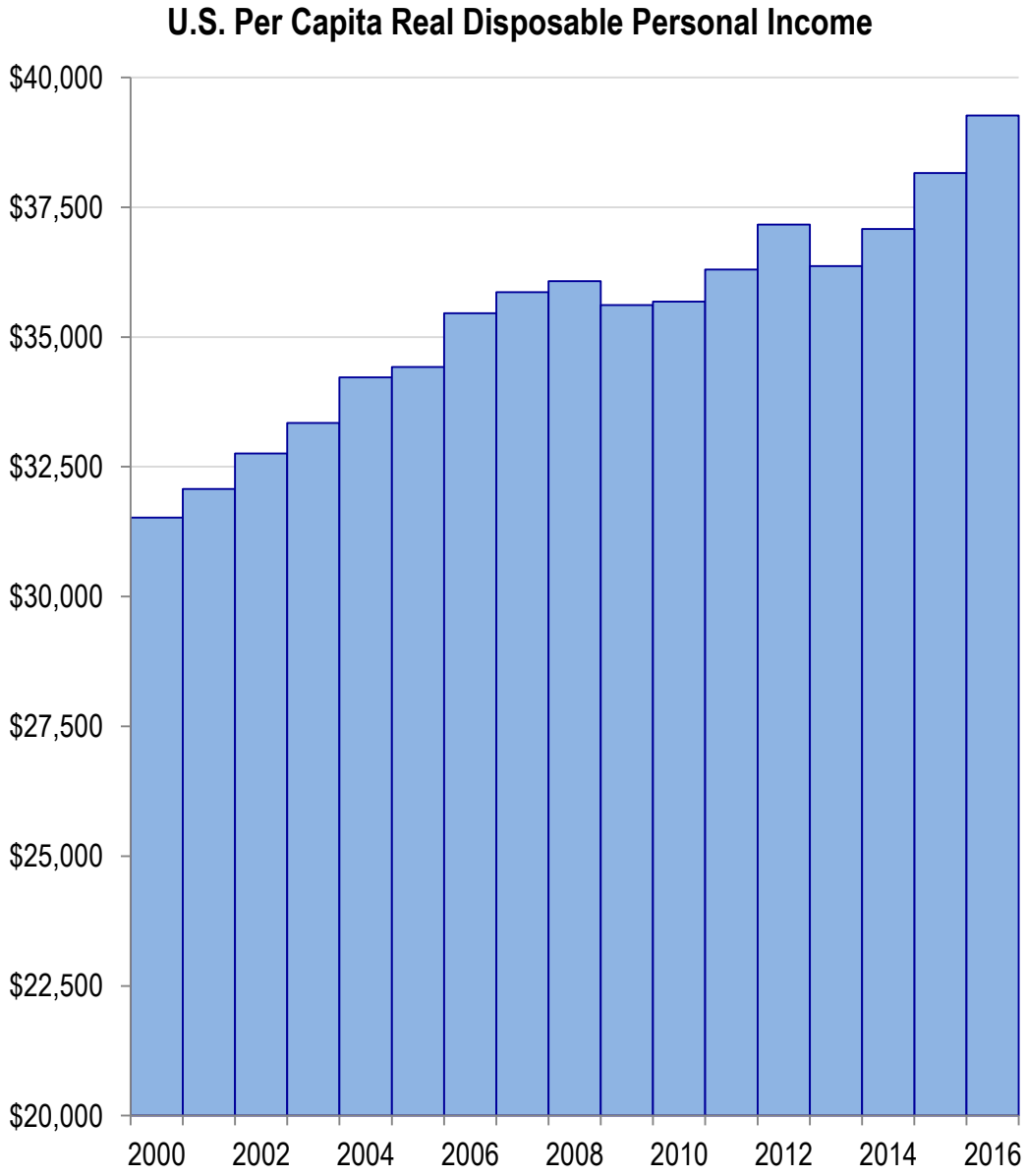
Source: Bureau of Economic Analysis, SA-1 Personal Income – State, cber.co. Note: Not adjusted for inflation

Per Capita Real Disposable Personal Income (PCDPI)

The U.S. PCDPI showed negligible growth in 2002 and it declined in 2009. It posted gains in all other years.

The U.S. PCDPI is expected to increase by 2.9% in 2015.

The U.S. PCDPI is expected to increase by 2.7% to 3.1% in 2016.



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

The U.S. Economy
Services, Manufacturing, and Retail

Services and Manufacturing Mixed Messages

Purchasing managers in service and manufacturing companies are telling different stories.

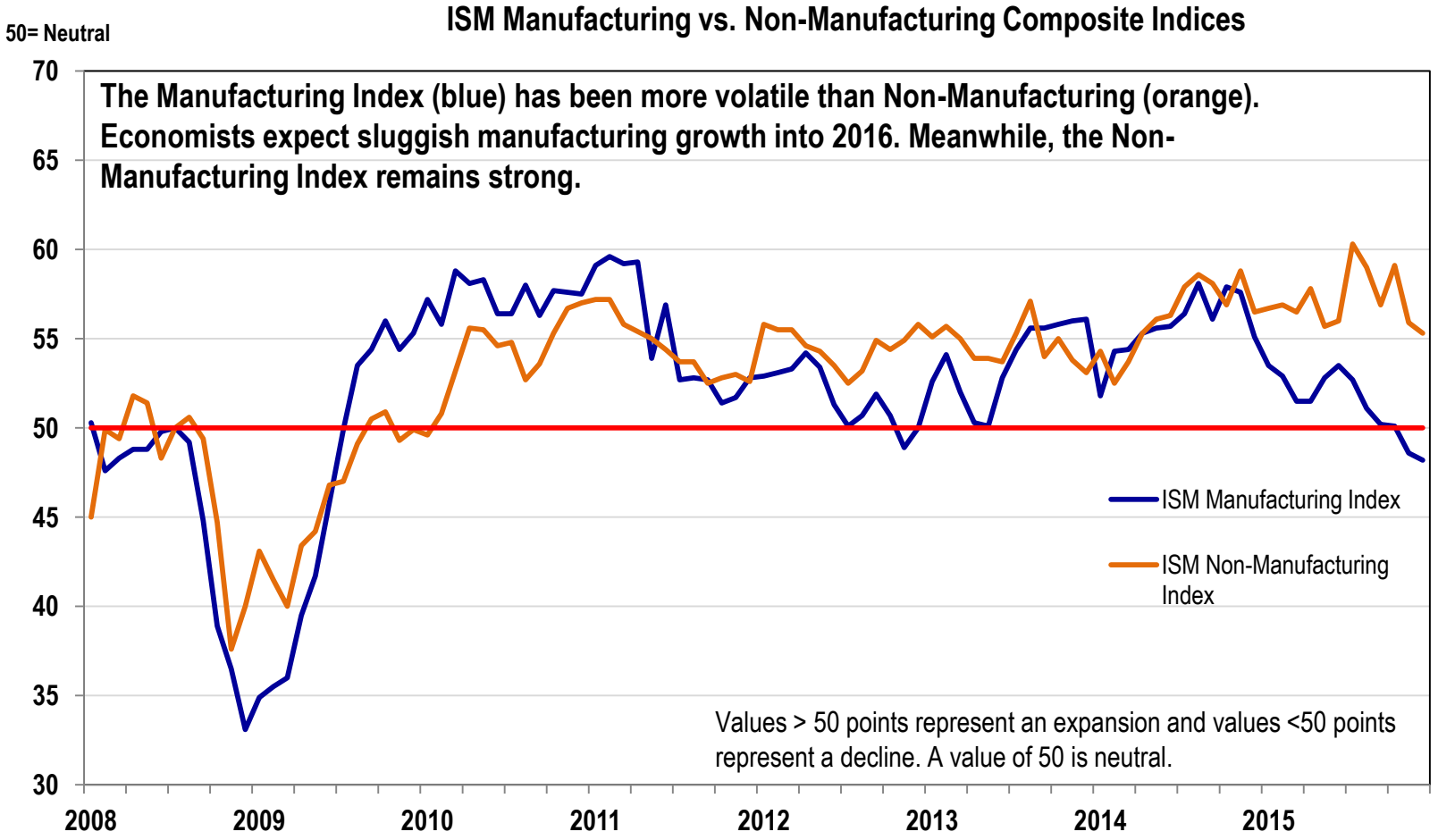
- The index for purchasing managers in the services sectors has been above 50 every month since August 2009. Since January 2010 the range of the index has been 50.8 to 60.3. The index trended downwards at the end of 2015, but remained well above 50.
- Manufacturing purchasing managers became optimistic about the economy in mid-2009; however, their level of confidence has been more volatile. It was generally positive (49.5 to 59.0), but dropped back to 50 in both 2012 and 2013 and fell below 50 in late 2015.

Manufacturing shipments increased at a strong rate between 2010 and 2012 and a solid rate between 2012 and 2014. Since mid-2014 shipments have decreased.

Manufacturing employment was flat in 2015.

Auto and light truck sales have returned to pre-recession levels and posted record sales in 2015. The industry should continue to benefit from low fuel prices and interest rates in 2016.

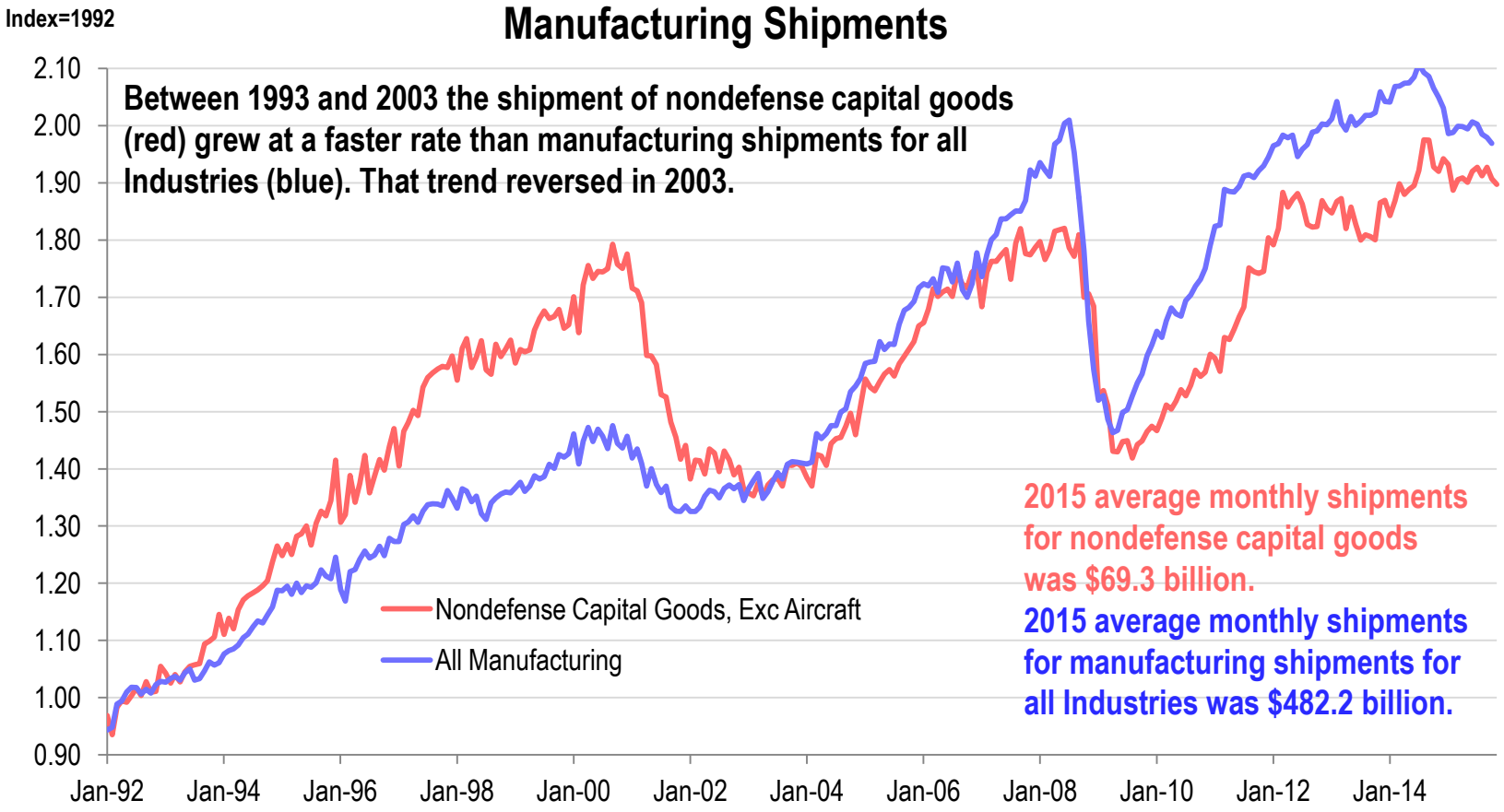
ISM PMI Composite Indices
Manufacturing vs. Non-manufacturing



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

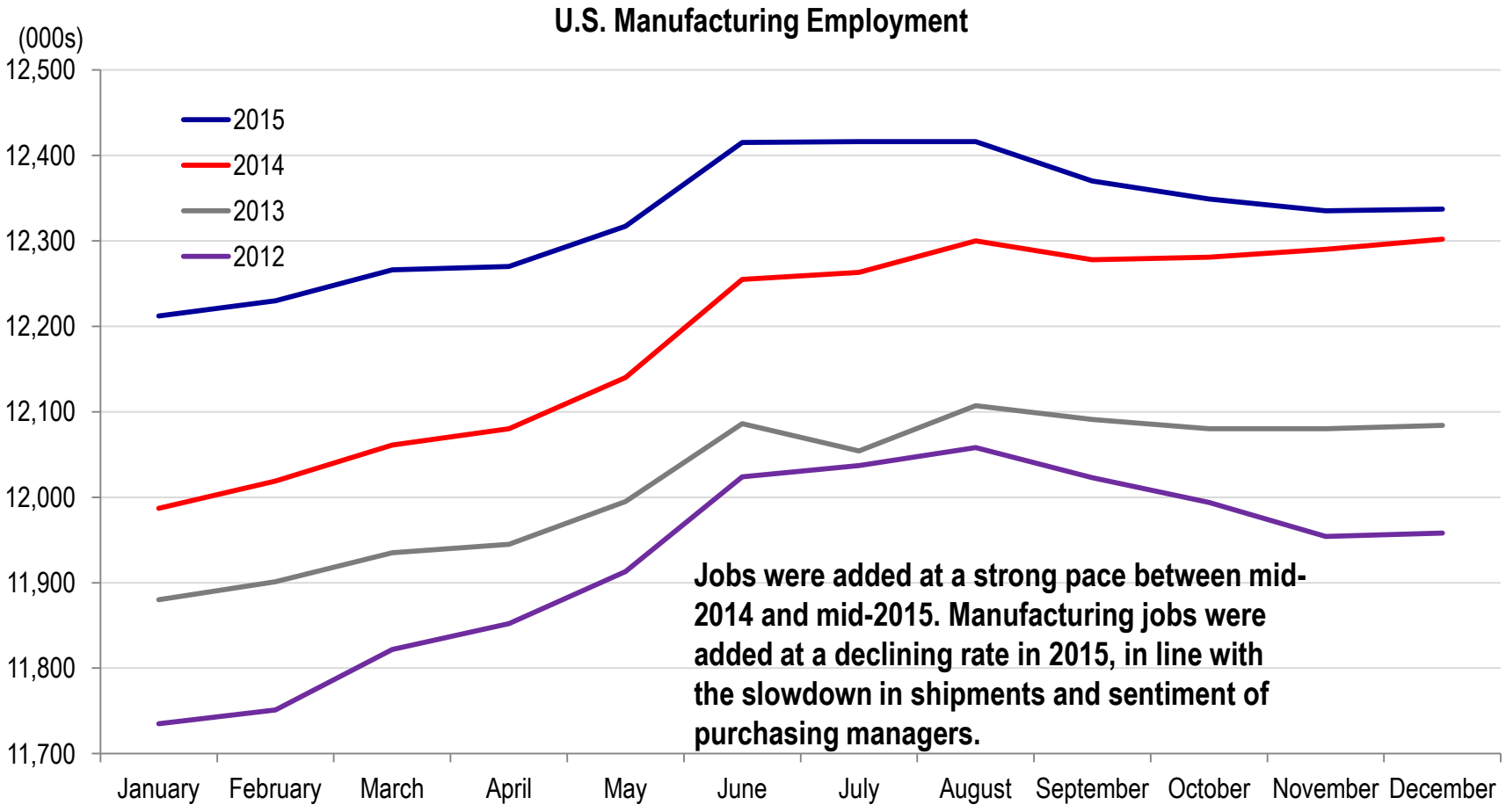
U.S. Manufacturing Shipments

All Industries vs. Nondefense Capital, Excluding Aircraft



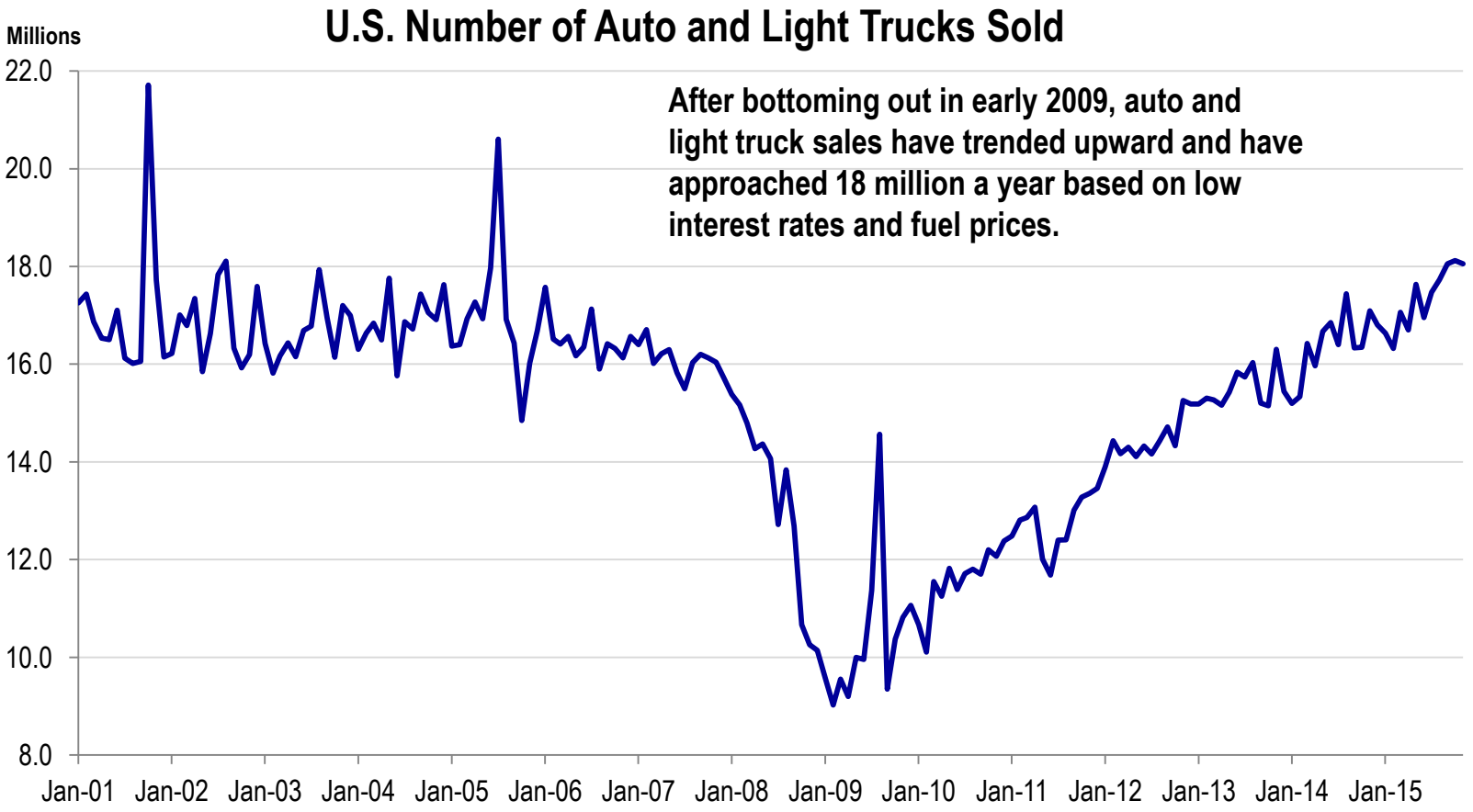
Source: FRED, SA. Note: Not adjusted for inflation.

U.S. Manufacturing Employment
2012 to 2015



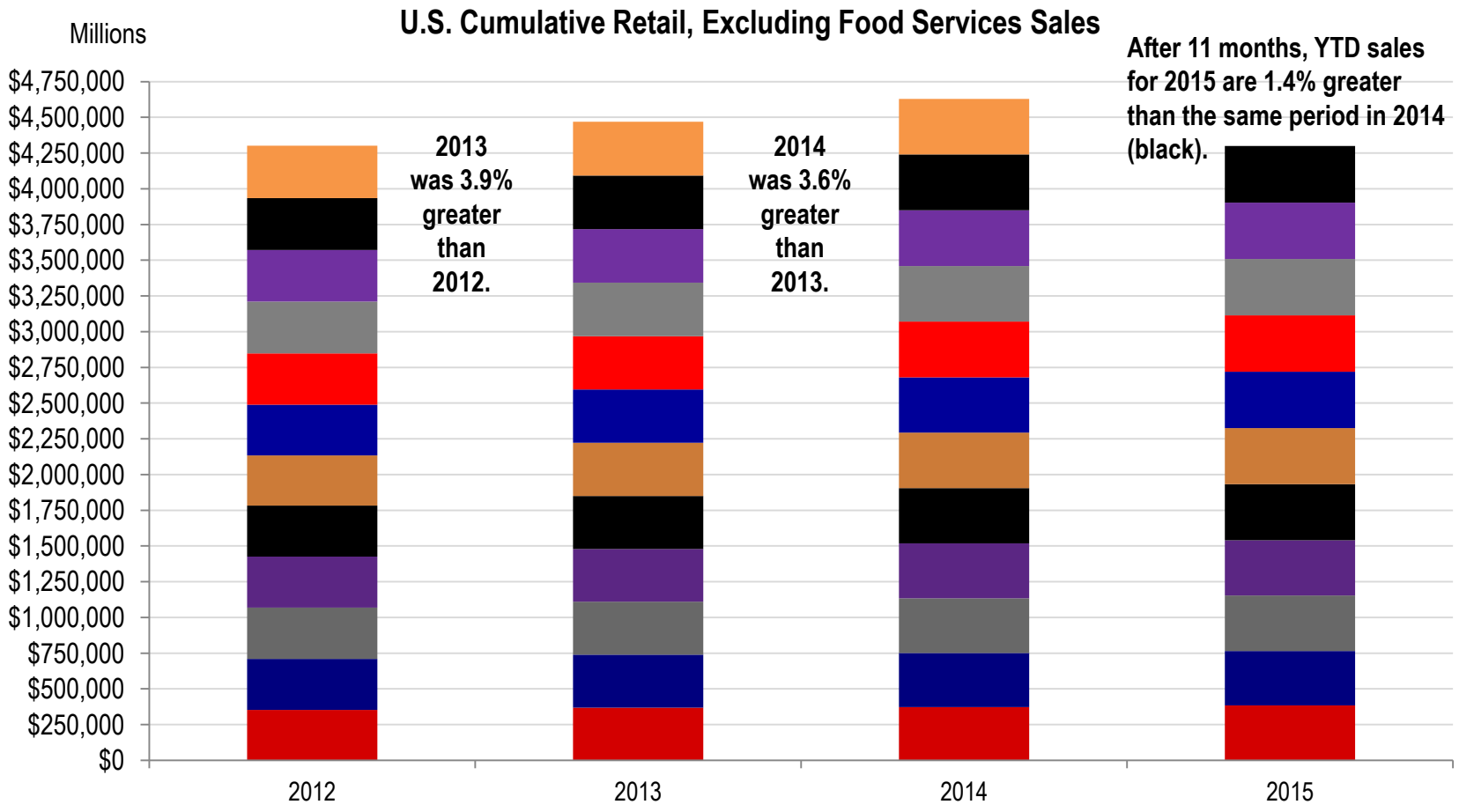
Source: Bureau of Labor Statistics, NSA.

U.S. Weekly Auto and Light Truck Sales



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

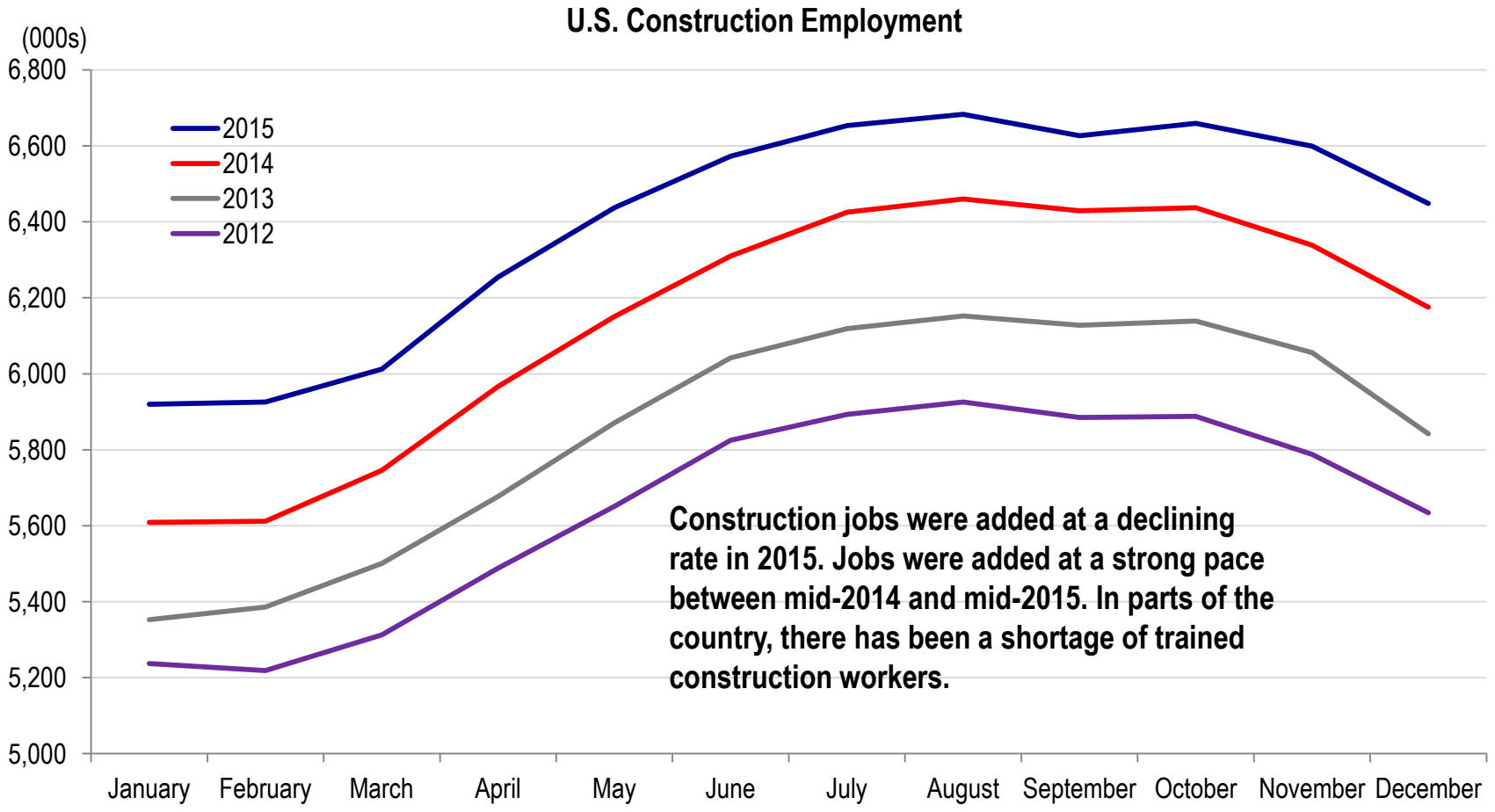
Cumulative Retail, Excluding Food Services Sales



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

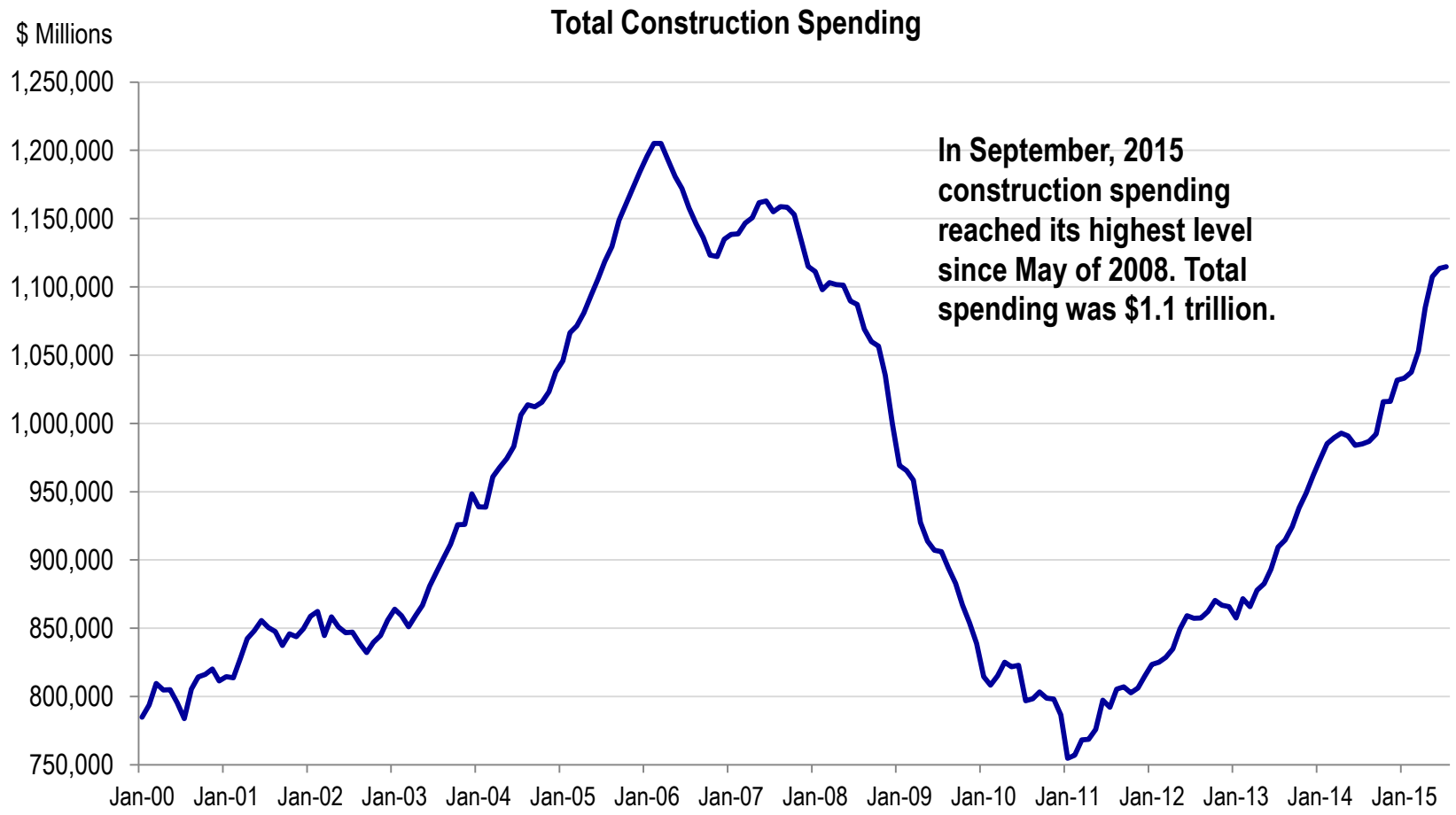
The U.S. Economy
Construction

U.S. Construction Employment
2012 to 2015



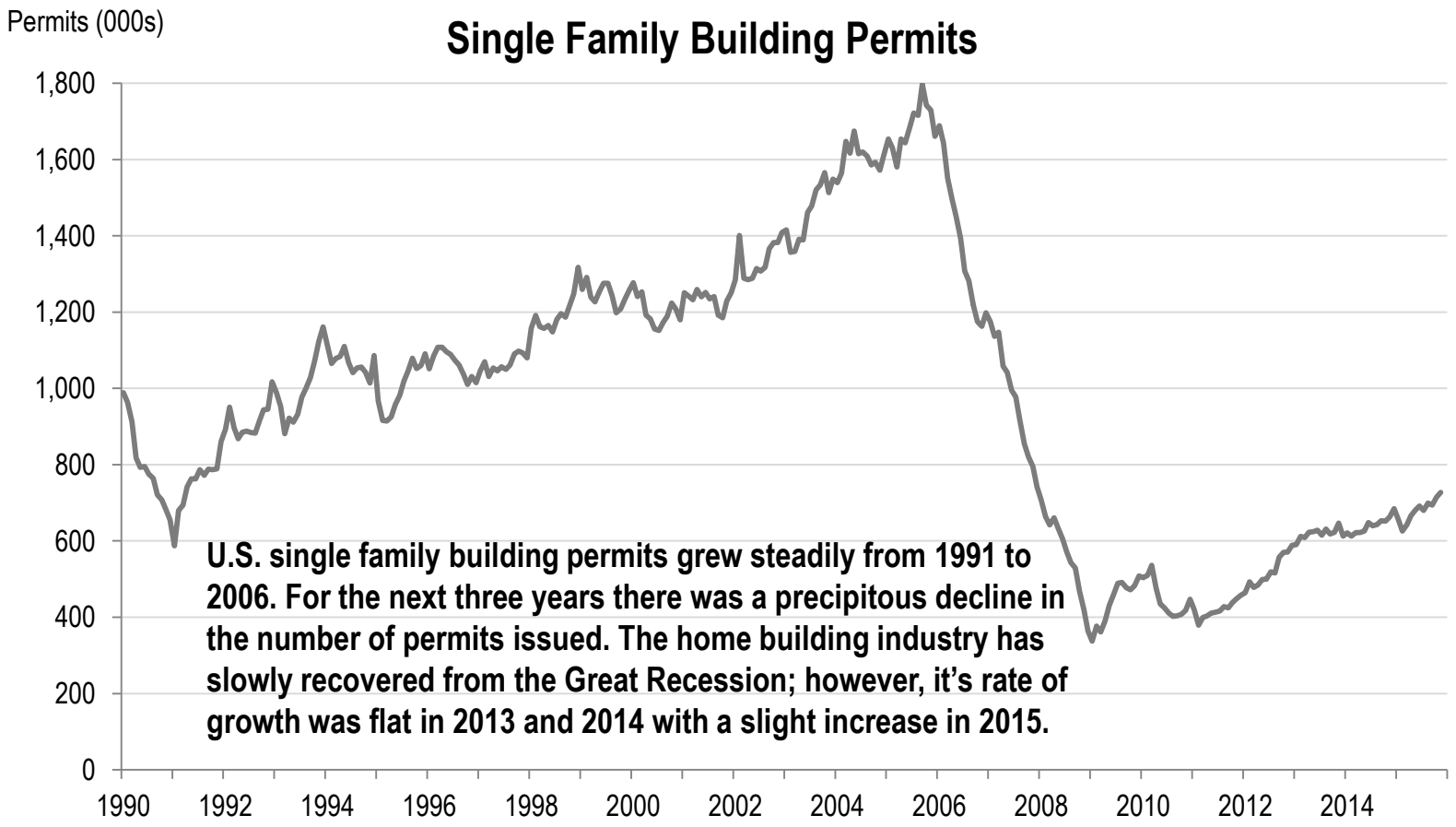
Source: Bureau of Labor Statistics, NSA.

Total U.S. Construction Spending



Source: FRED, Census Bureau.

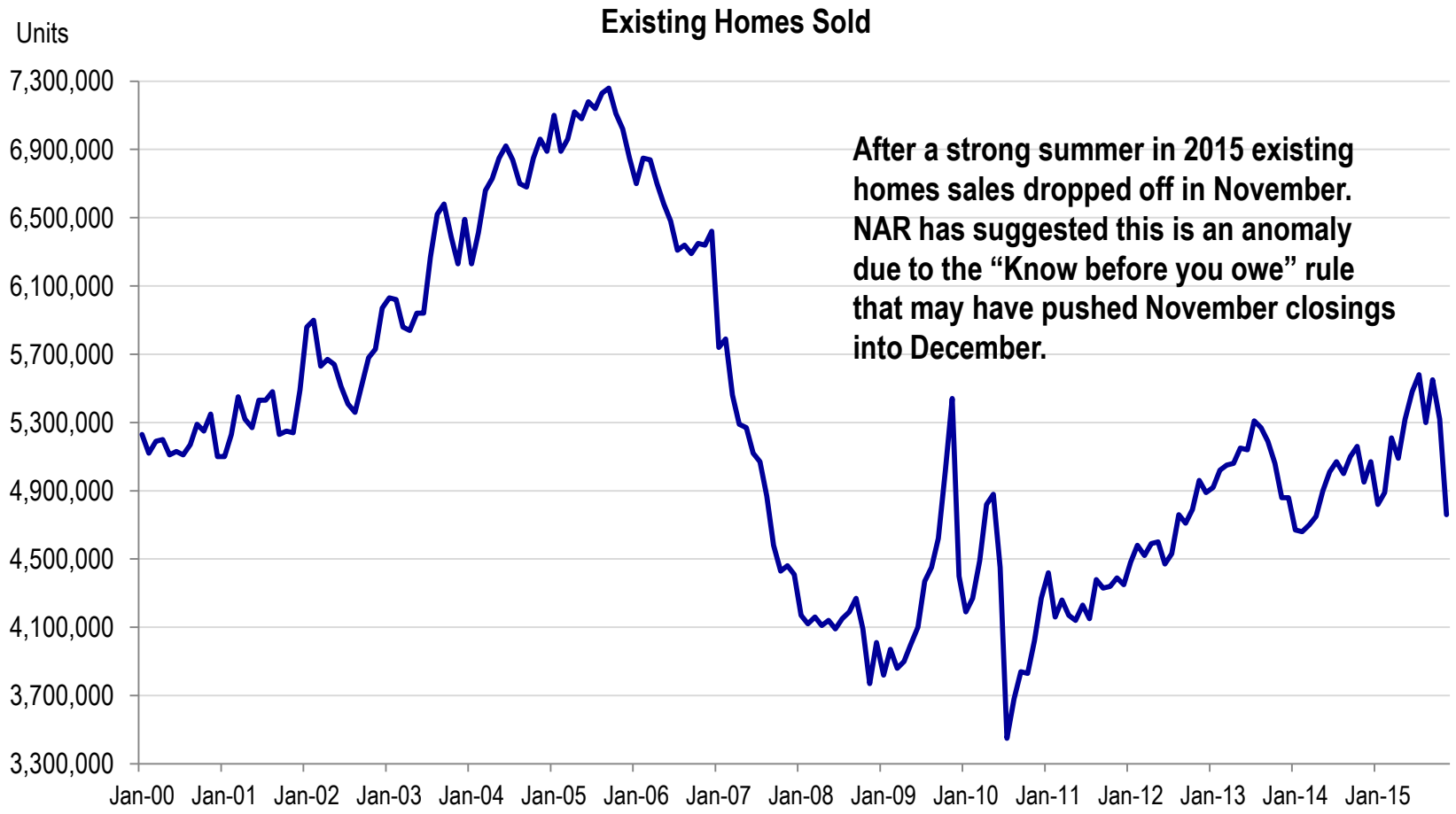
New Single Family Building Permits – U.S.



Source: FRED, U.S. Census Bureau.

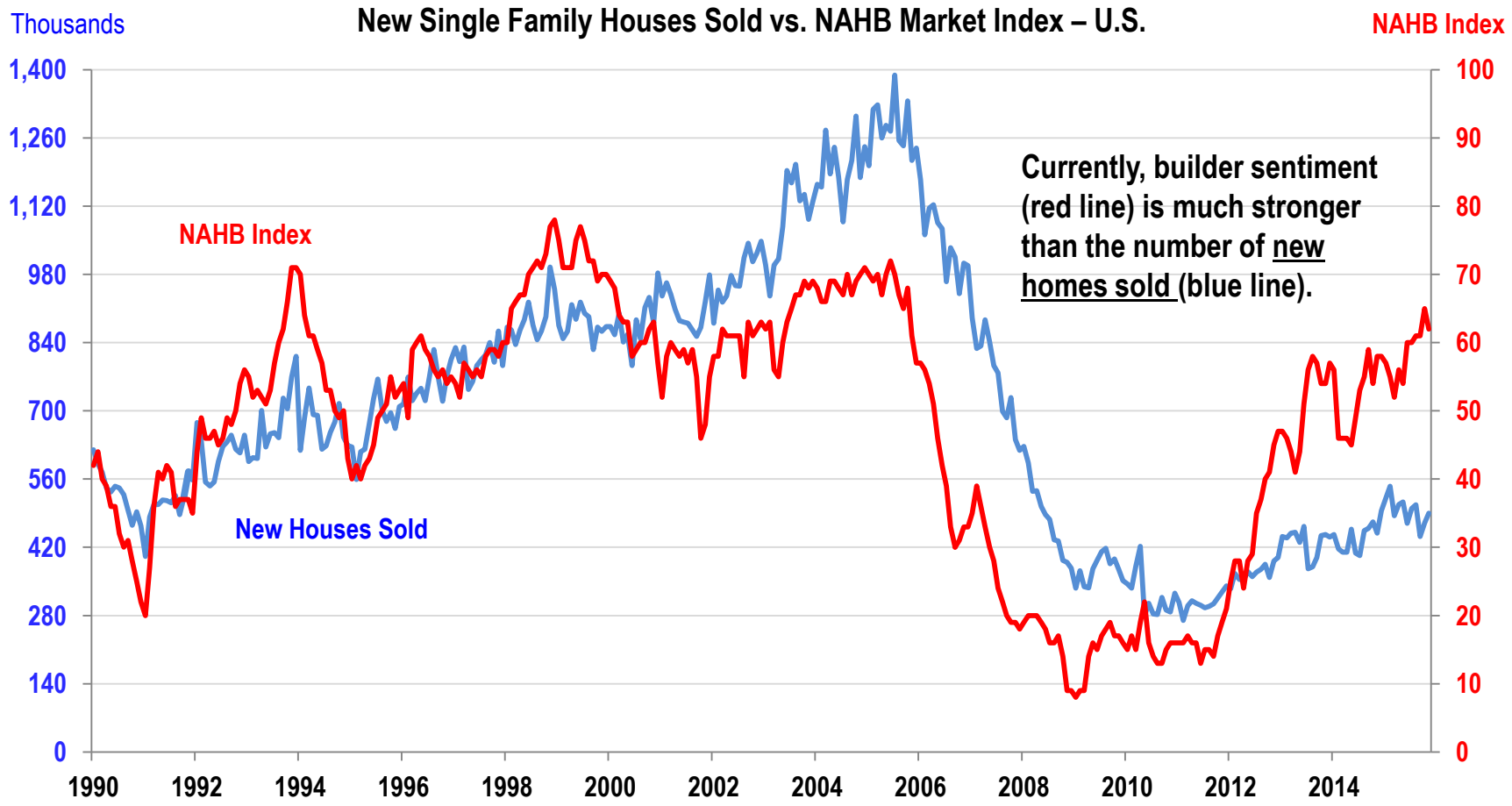
The U.S. Economy
Housing, Mortgage Rates, Equities, and Oil Prices

U.S. Existing Homes Sold



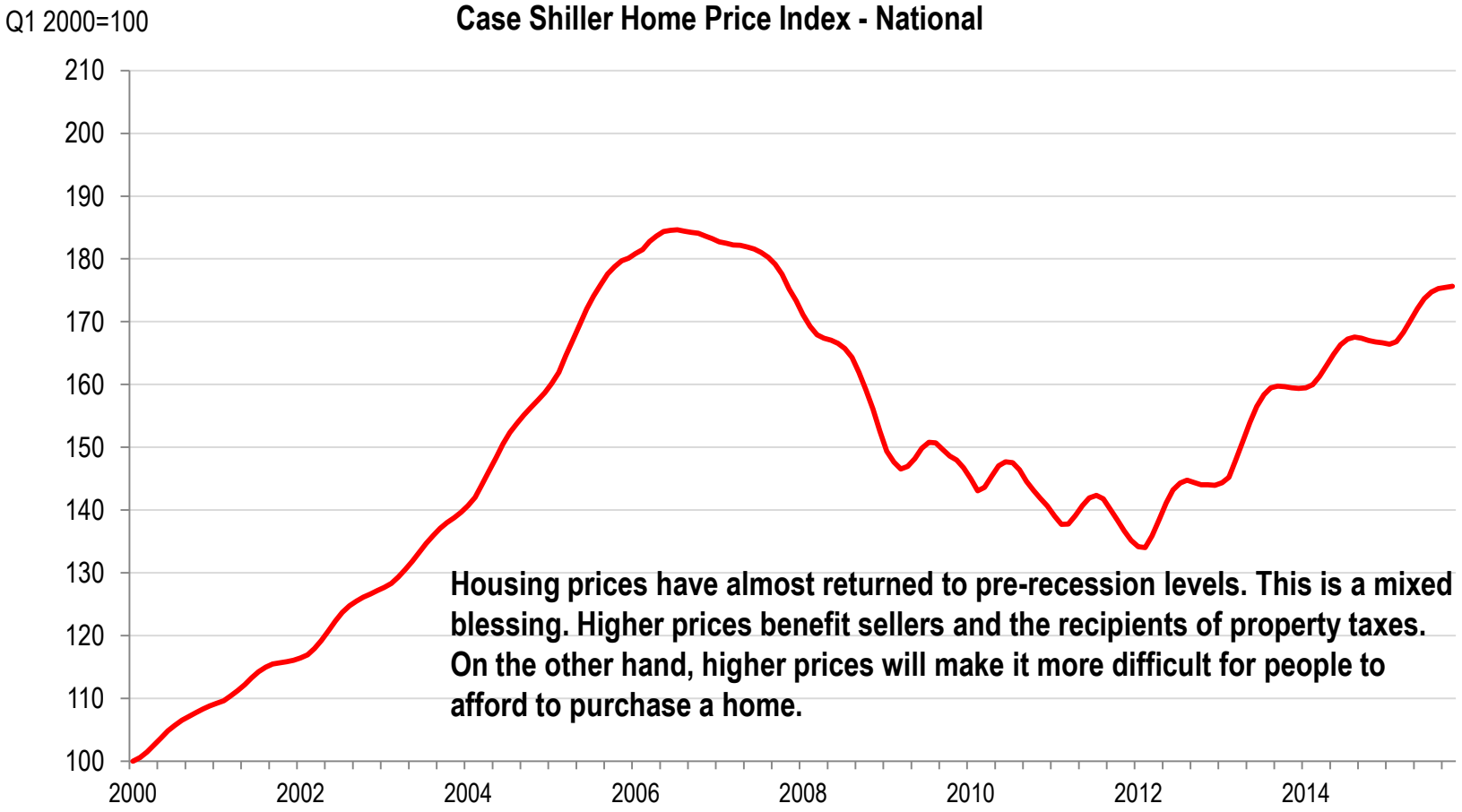
Source: FRED, National Association of Realtors.

New Single-Family Houses Sold vs. NAHB Market Index



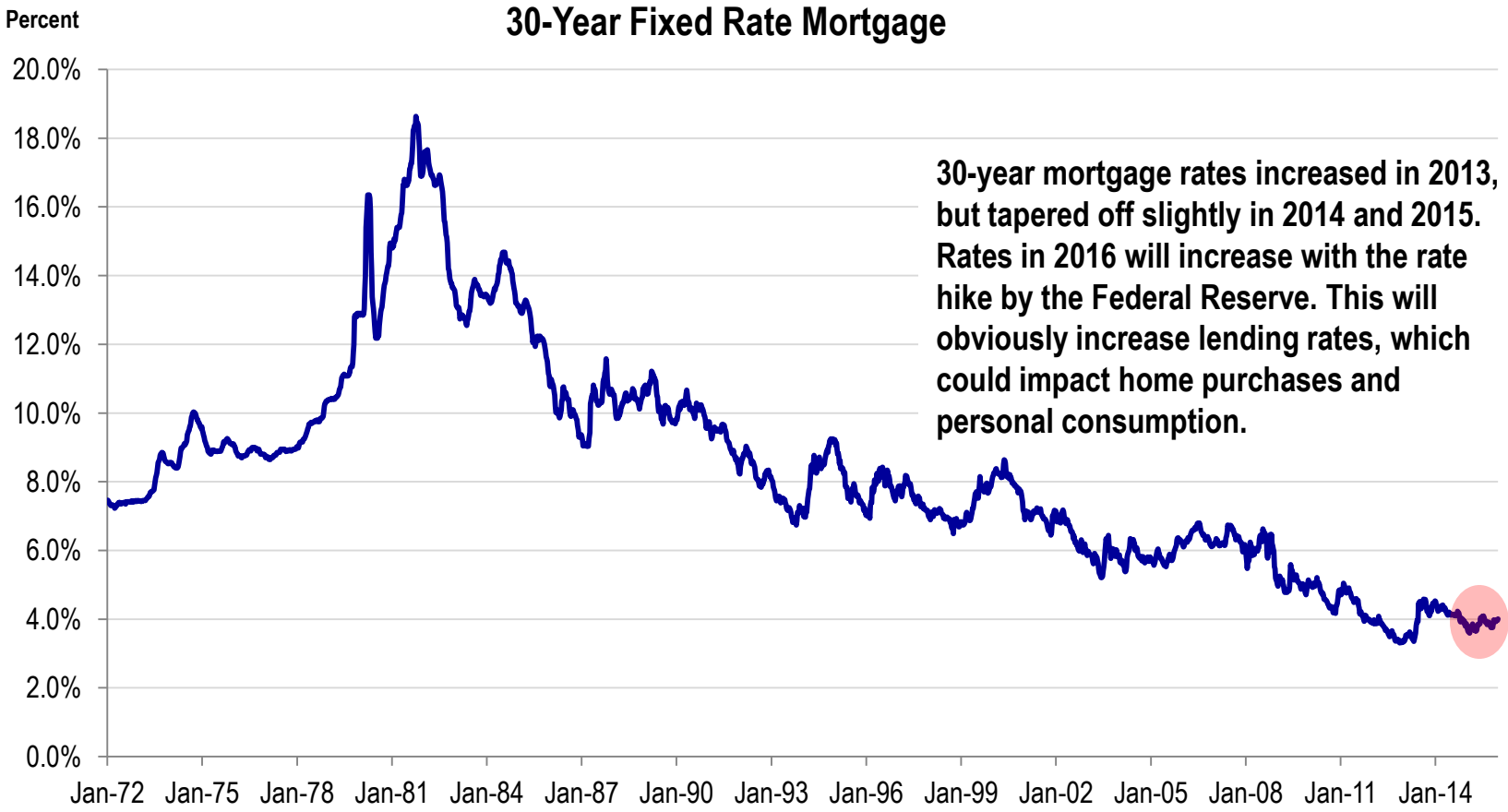
Source: FRED, Census Bureau SA., NAHB.

Case Shiller Home Price Index
National Index



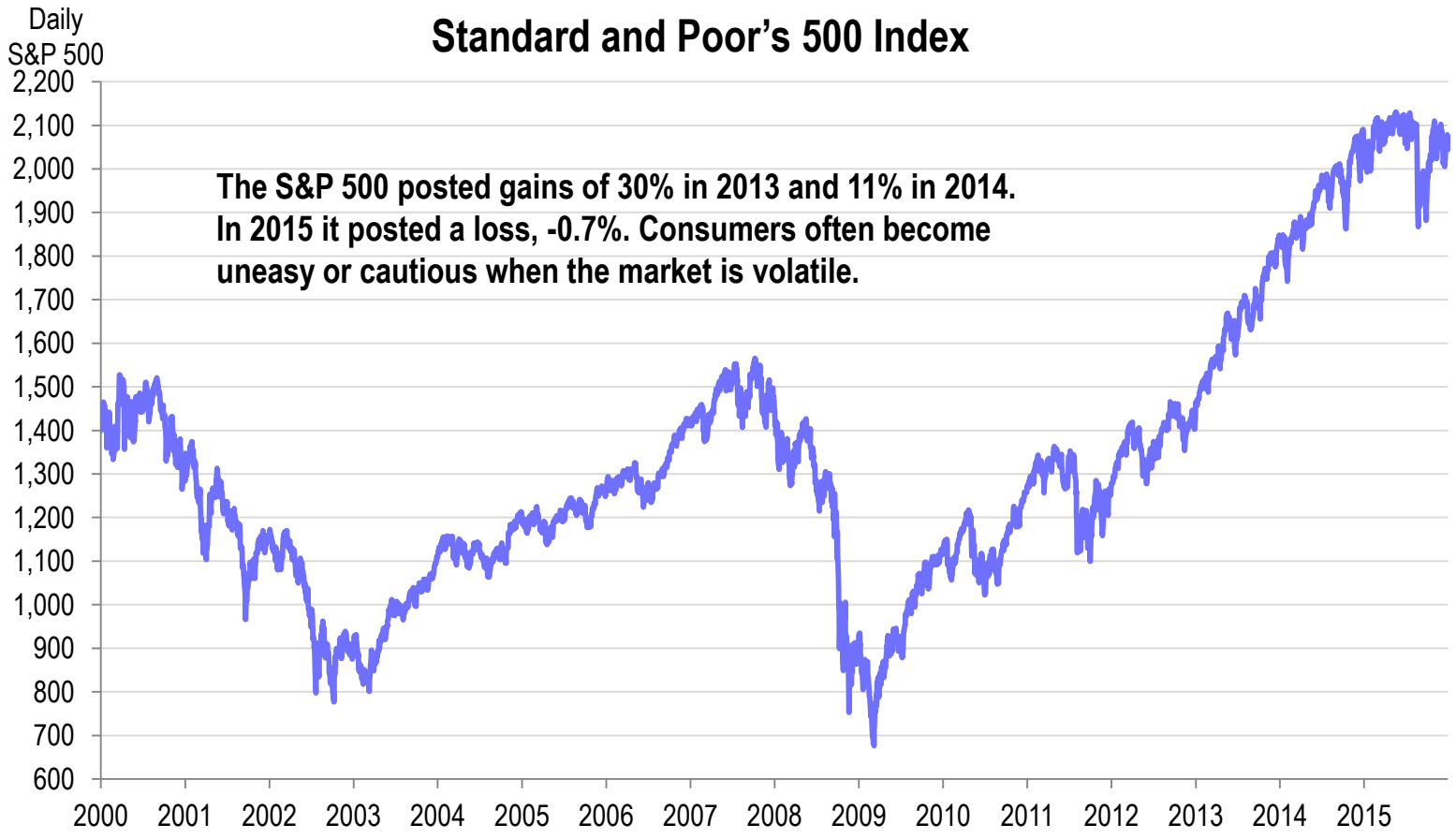
Source: S&P Case-Shiller.

30-Year Fixed Rate Mortgage



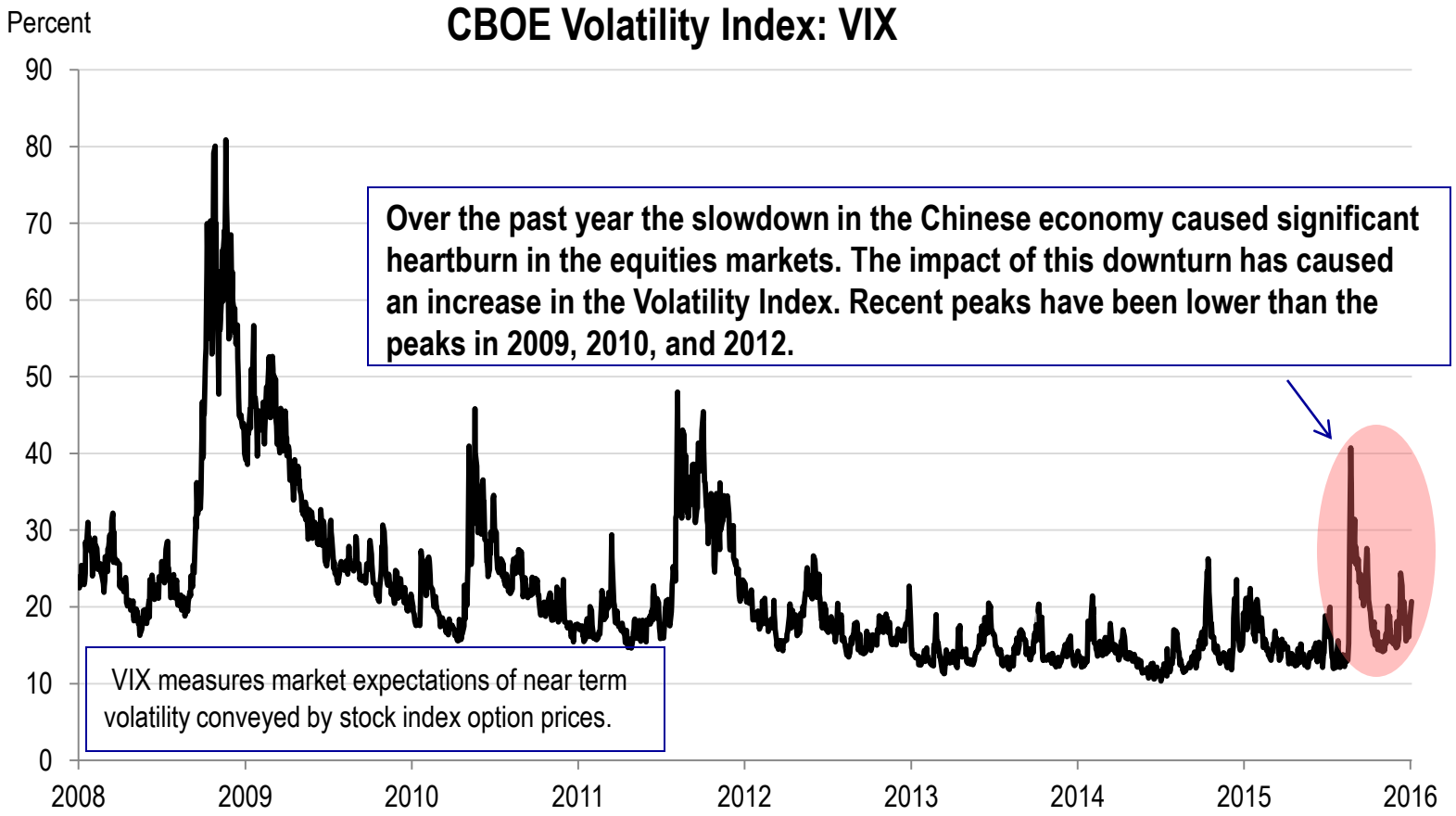
Source: FRED, Freddie MAC.

Standard and Poor's 500 Index



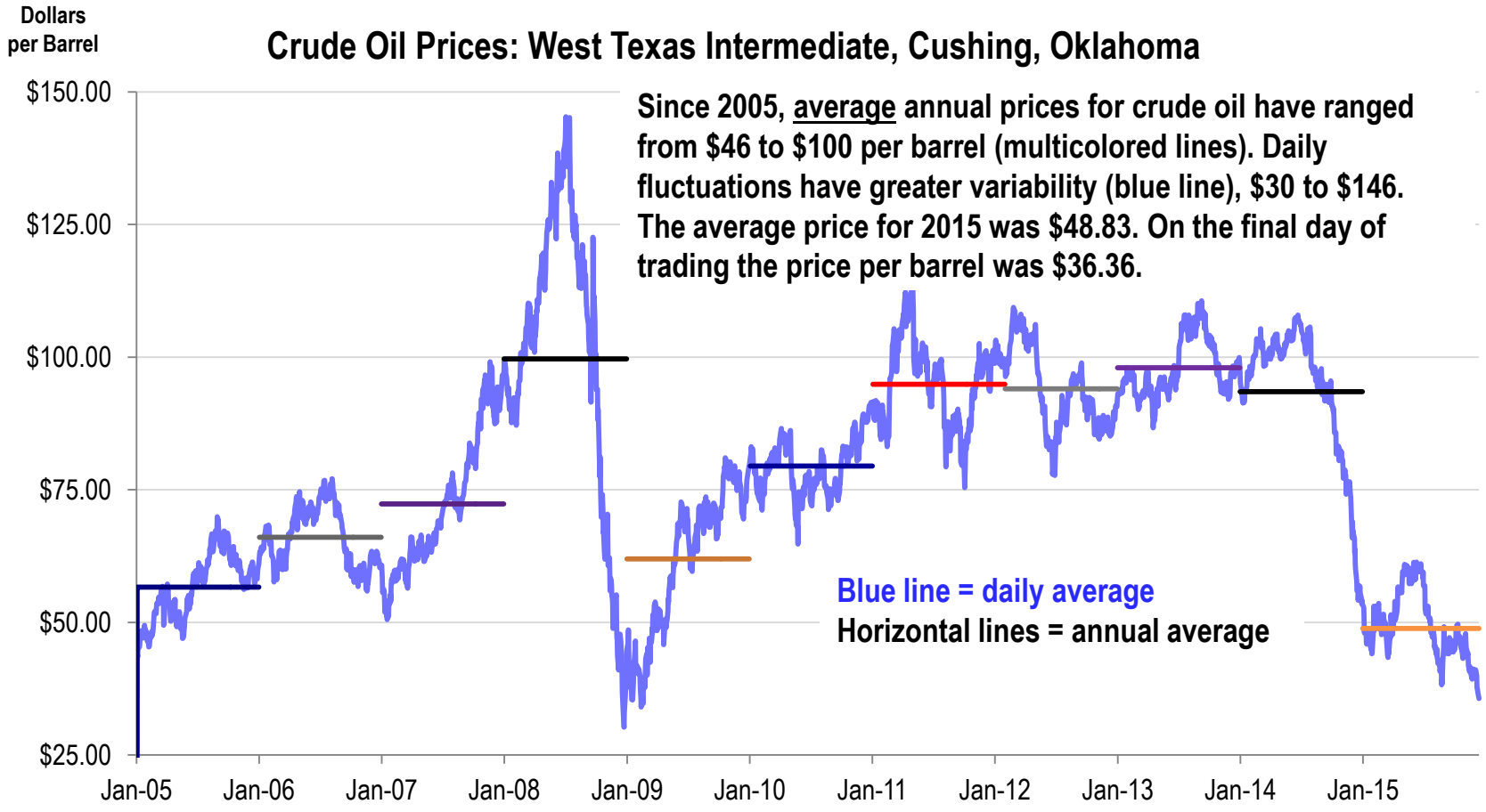
Source: FRED, S&P 500.

CBOE Volatility Index
VIX (VIXCLS)



Source: FRED, CBOE.

Crude Oil Prices
West Texas Intermediate



Source: FRED, EIA.

The U.S. Economy
Debt

Debt – Reason for Concern

Debt is good if it is responsibly used to make purchases that stimulate consumption and growth.

Debt is bad if debt service obligations prevent consumption and growth.

Whether or not you believe debt is good for the economy, one thing is for sure. Debt has increased!

Federal Debt

- In Q1 2006 the Federal debt was $8.4 trillion.
- In Q3 2014 the Federal debt was $17.8 trillion.
- Federal debt has been above $18 trillion since Q4 2014.

Consumer Credit Outstanding

- In January 2006 Consumer Credit Outstanding was $2.37 trillion.
- In October 2015 Consumer Credit Outstanding was $3.51 trillion.

Student Loans

- In Q1 2006 Student Loans Outstanding were $500 billion.
- In Q3 2015 Student Loans Outstanding were $1,3 trillion.

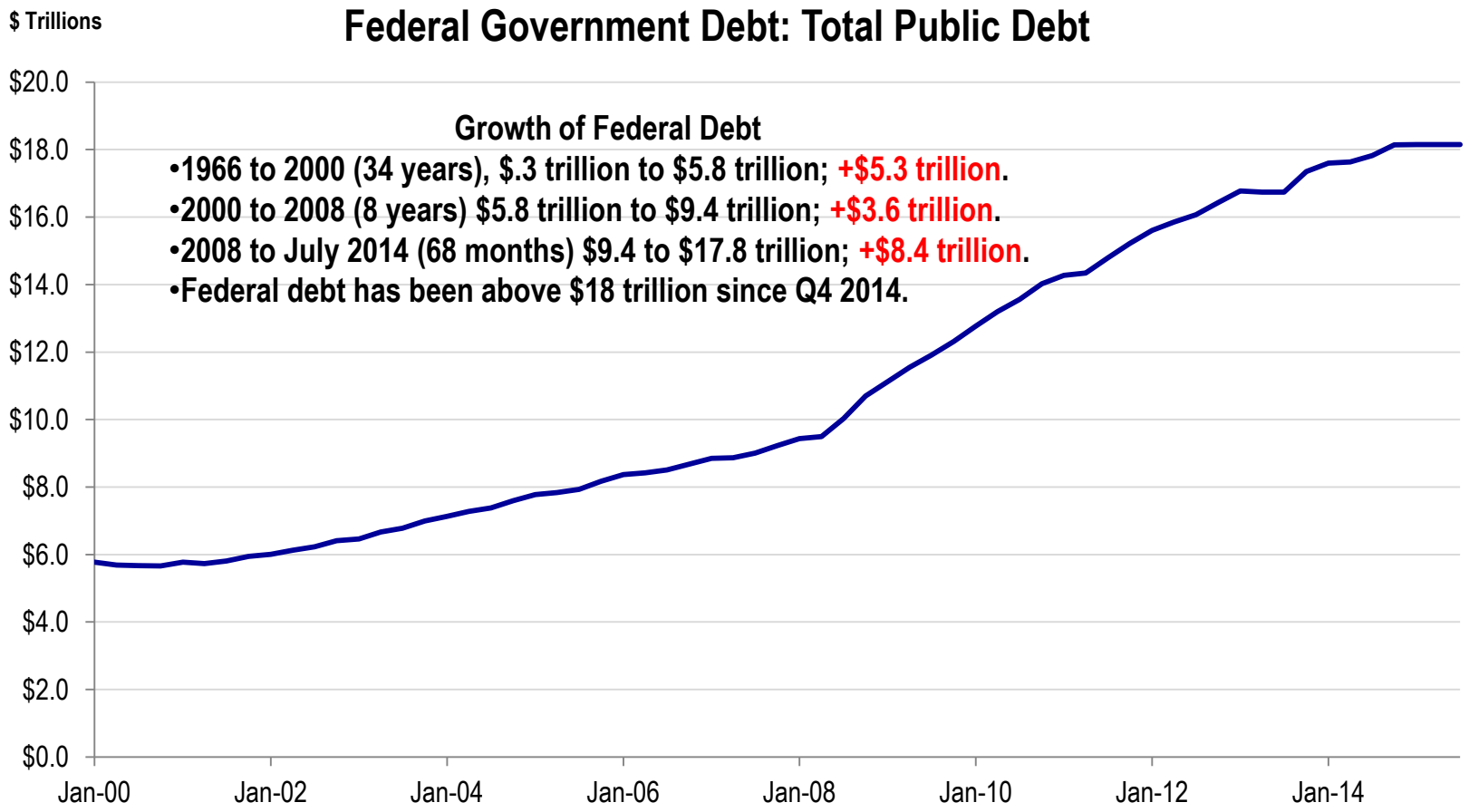
Motor Vehicle Loans

- In Q1 2006 Motor Vehicle Loans Outstanding were $.780 billion.
- In Q3 2015 Motor Vehicle Loans Outstanding were $1.0 trillion.

For the past year the personal savings rate has been in the range of 4.9% to 5.6%, even with an increased level of credit and spending.

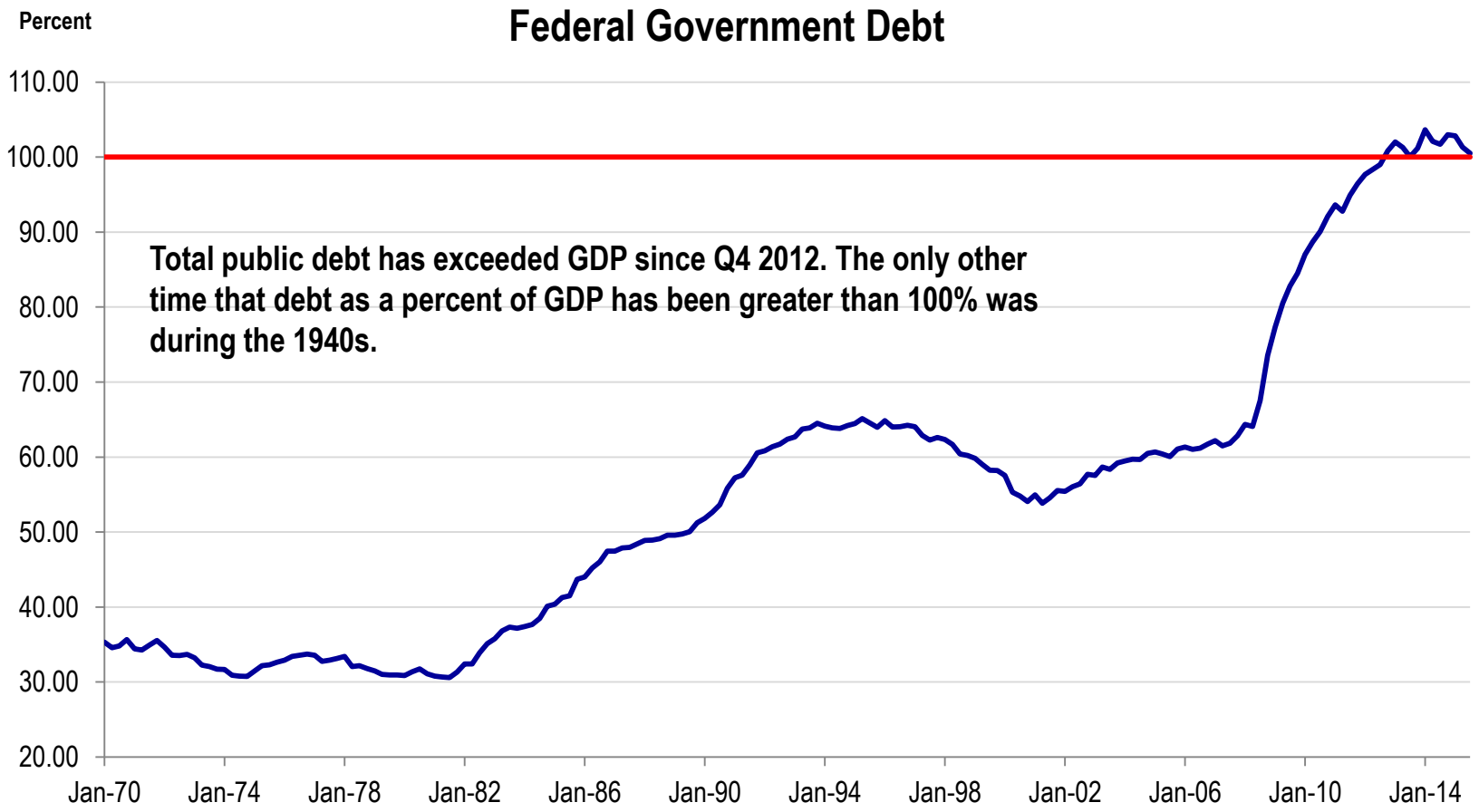
"It is the debtor that is ruined by hard times."
-Rutherford B. Hayes

U.S. Federal Government Debt



Source: FRED.

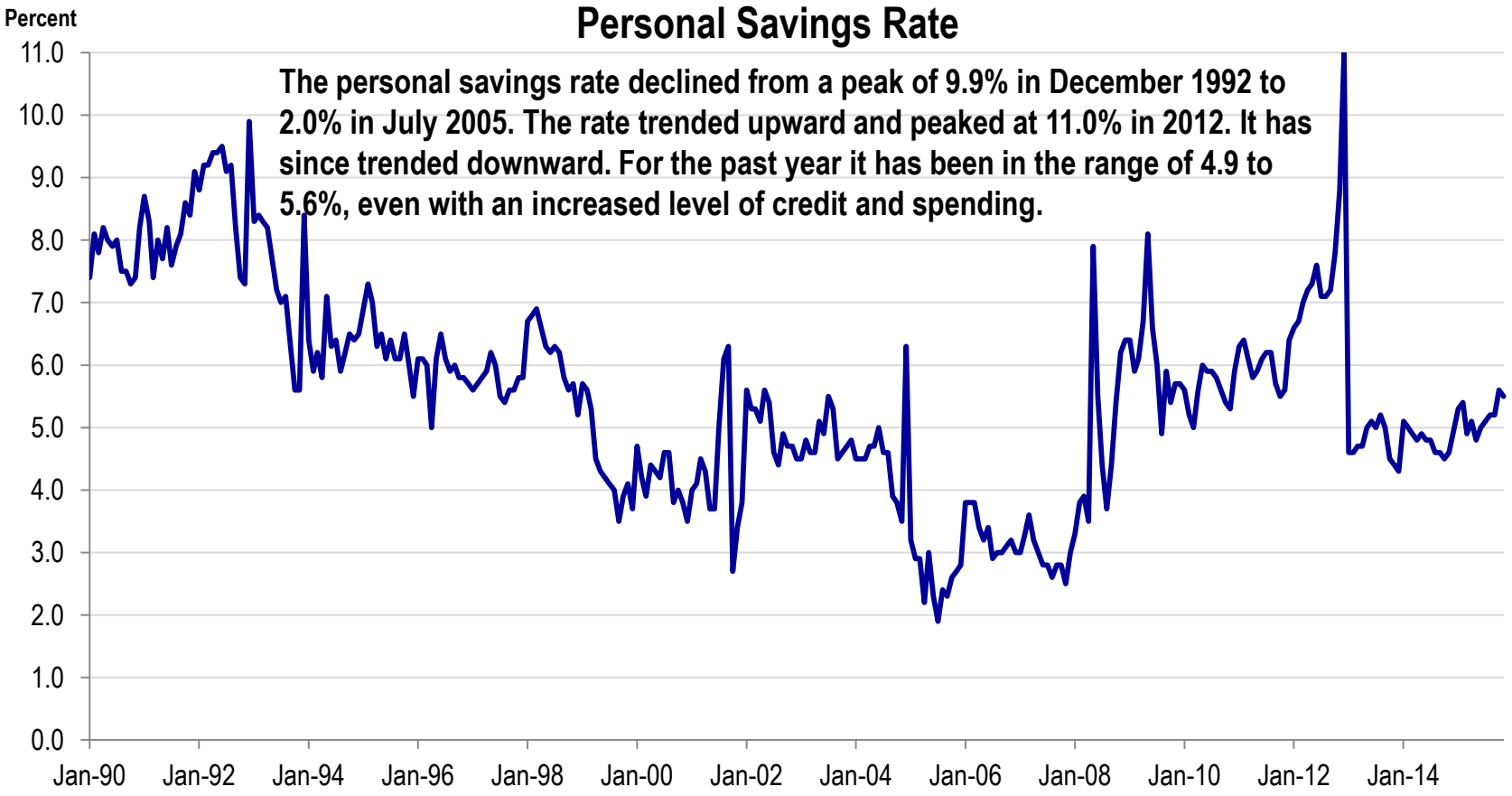
U.S. Public Debt as a Percent of GDP



Source: FRED.

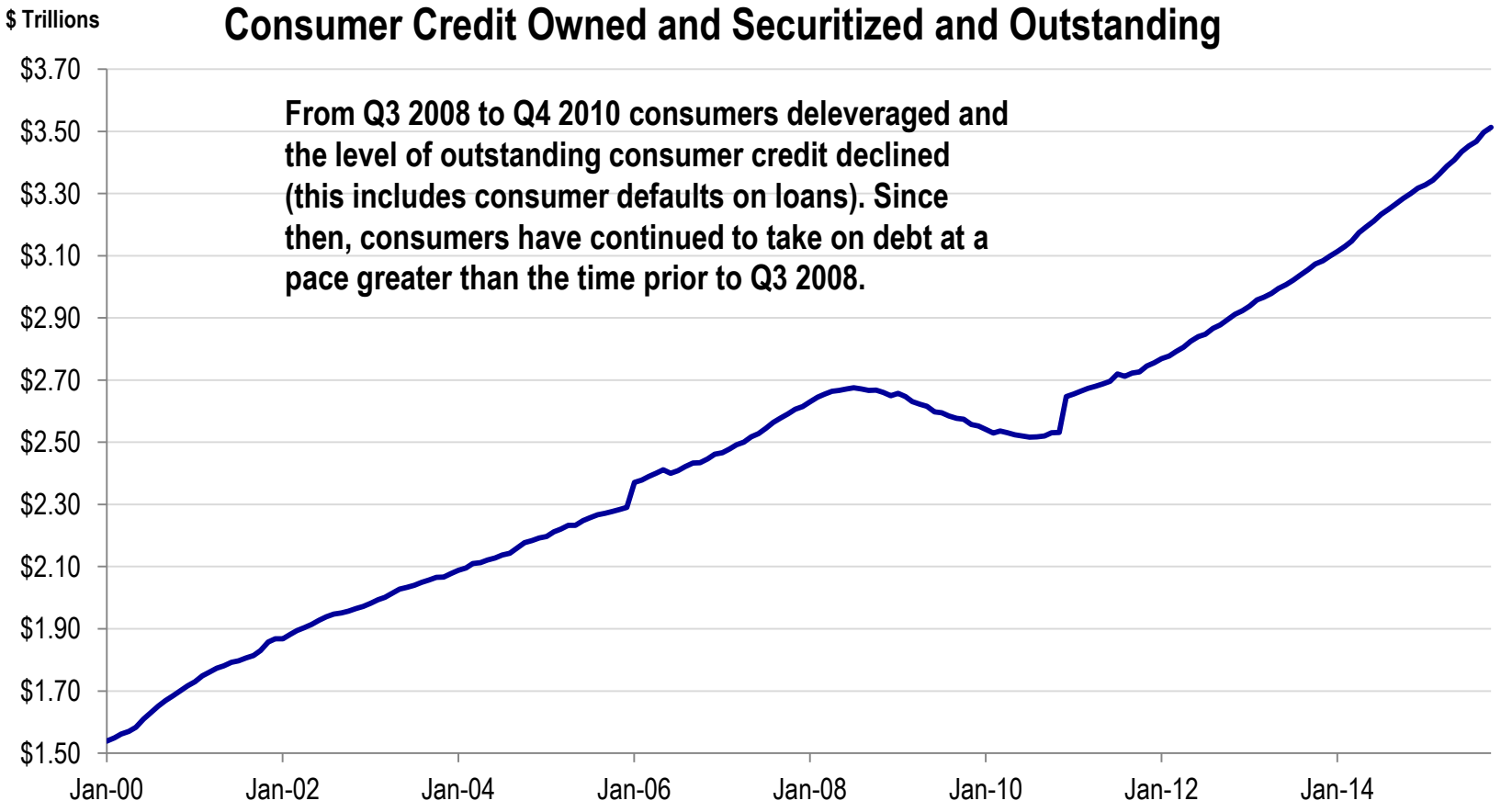
U.S. Personal Savings Rate

Percentage of Disposable Personal Income



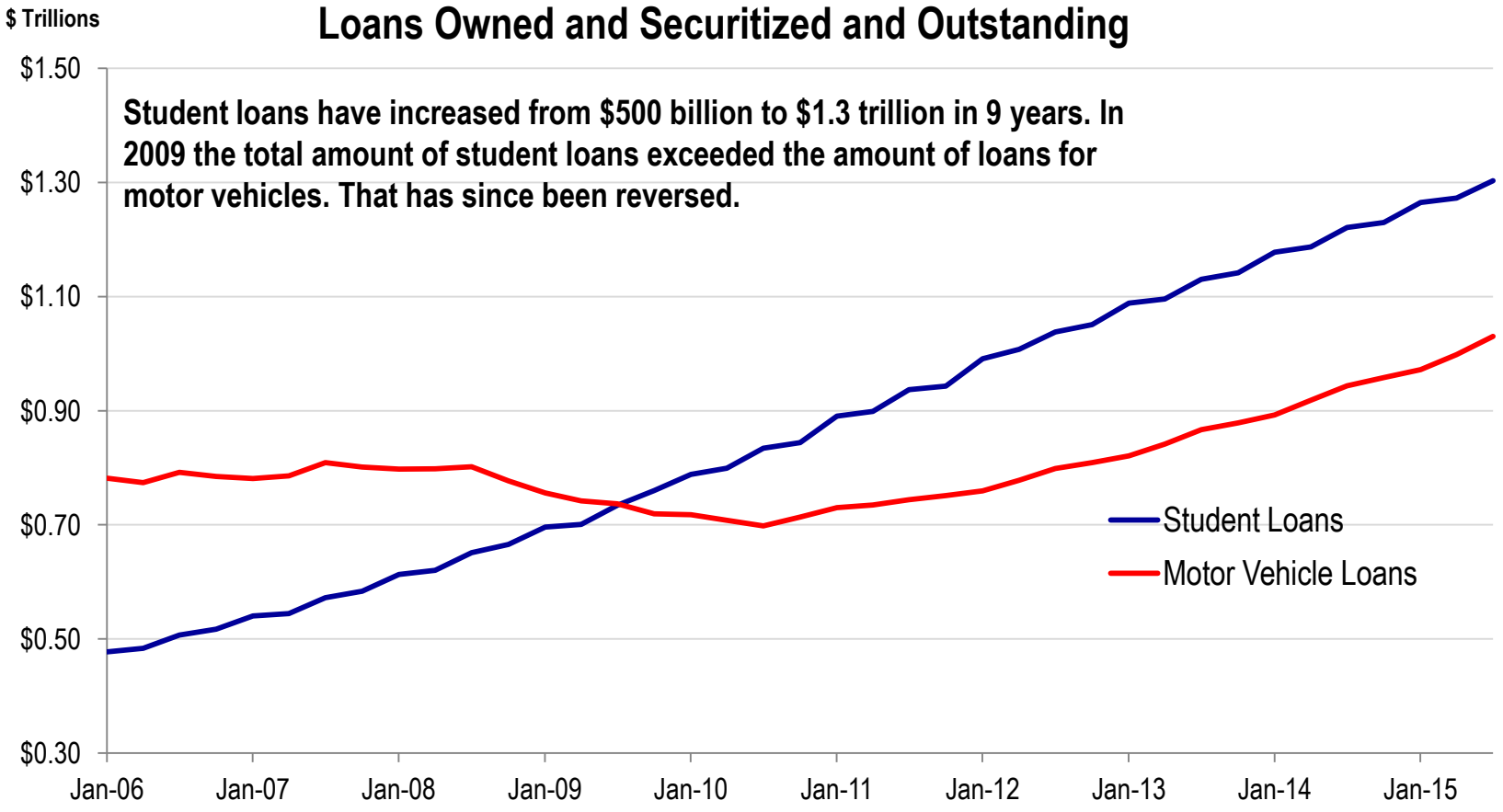
Source: FRED, SA.

U.S. Consumer Credit Outstanding



Source: FRED, Federal Reserve, G.19, SA.

U.S. Loans Outstanding
Student Loans vs. Motor Vehicle Loans



Source: FRED.

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.

Global GDP–Global GDP growth will be slightly stronger in 2016.	**U.S. GDP Growth**–U.S. GDP growth will be stronger in 2016, fueled by solid personal consumption.
Jobs - The U.S. will add 2.7 million jobs in 2016. The strength of the labor market can be seen by the growth in the number of job openings.	**Construction** - There is solid activity in both the residential and non-residential markets. Construction job growth will be constrained by the lack of trained workers.
Inflation - Inflation will increase, but it will continue to be below the Fed's target rate of 2.0%.	**Service Industries** – The service sectors have been strong since 2010. Continued growth is on tap in 2016.
Cash Rich Companies – Companies have shown they are willing to spend to acquire, merge, or expand.	**Housing Prices** - U.S. housing prices continue to rise, which increases consumer confidence and "wealth".
Weekly Earnings – Weekly earnings may increase at a higher rate than in the past as the pool of drug-free, qualified workers gets smaller.	**PCPI** – Per Capita Personal Income increased by 2.9% in 2015 and will increase by a similar rate in 2016.
Millennials – Those born between 1982 and 2004 are beginning to have a stronger presence in society and the workplace.	**Auto Sales** – Low interest rates, easy access to capital, and low gas prices will continue to drive solid auto and light truck sales in 2016.

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 in 2016.

Global GDP – Despite geopolitical tensions and problems in China, global GDP growth will be stronger in 2016. Will U.S. GDP growth be sufficient to support the forecast?	**U.S. Real GDP Growth** - Currently, there is only modest demand for business investments (new equipment, and software). Will demand increase as 2016 progresses?
China –The devaluation of China's Yuan and the slowdown in their economy have caused concerns about the performance of the global economy.	**Price of Oil** - Low prices for a barrel of oil have benefitted consumers and some industries, but they have hurt the extractive industries and their supply chain.
Geopolitical Tensions – The most recent concern is the situation in Syria and Iran. Who is next?	**U.S. Housing** - In some parts of the country the rate of housing price appreciation is becoming problematic.
Productivity – The downward trend in labor productivity has been caused by weak business investment, catering to special interest groups, and the impact of technology.	**Interest Rates** – Historically, interest rates will remain low; however, there will be some businesses and consumers who may feel pinched by higher rates.
Manufacturing – Improvement will occur when business investment and the Chinese economy get stronger. Will that happen in the second half of 2016?	**Election 2016** –At some point businesses may take a "wait and see" attitude before making business decisions, which could put the economy on hold.
Debt – At the moment consumers seem to be managing their debt levels. Will that continue?	**Labor Shortages** – There will be shortages for qualified workers in some industries and key occupations.
Equity Markets – The equity markets will remain volatile.	**The R-Word** – A recession is not likely in 2016. 2017?

The Colorado Economy

Summary of Key Data
United States and Colorado

United States

Real GDP – Annual Real GDP growth will be in the 2.3% to 2.7% range for 2016, similar to 2015.

Real PCE – Annual personal consumption growth will be in the 2.6% to 3.0% range for 2016.

U.S. Employment – The U.S. will to add 2.7 million jobs in 2016.

Unemployment Rate – Average unemployment of 5.3% for 2015; expect 4.6% to 4.8% in 2016.

Consumer Price Index – The CPI is estimated to be 0.2% in 2015 with an increase to 1.7% in 2016.

PCPI – Annual per capita personal income will increase by 2.6% to 3.0% in 2016.

Price of a Barrel of Oil (WTI) – Oil closed the year at $36 per barrel. Look for higher prices in 2016.

Case Shiller Housing Prices – Y-O-Y U.S. prices for October were up 5.2%. Appreciation will continue at a slower rate.

Standard and Poor's 500 – The S&P 500 posted a loss of 0.7% in 2015. Expect continued volatility in 2016.

The U.S. economy will post solid growth in 2016.

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

Colorado

Population - Colorado's population will increase by 95,000 in 2016 to a total of 5,538,480.

2016 Colorado GDP – The state real GDP will expand by 4.0% to 4.4% in 2016, slightly lower than 2015.

Wage and Salary Employment – Colorado will add 70,000 jobs in 2015 and 67,000 to 73,000 jobs in 2016.

Unemployment Rate – Unemployment will stabilize between 3.7% and 4.1% in 2016. Rates will be lowest in Ft. Collins and Boulder.

Consumer Price Index – The Denver-Boulder Greeley CPI is expected to be 1.2% in 2015 with an increase to 2.5% in 2016.

PCPI – Annual 2016 Colorado per capita personal income will approach $52,000 and be about $3,100 greater than the U.S. PCPI.

Construction – About 22,800 single-family permits will be issued in 2016 – if the industry can find enough trained workers.

Case Shiller Housing Prices – Y-O-Y Colorado prices for October are up 10.9%. There will be a slower rate of appreciation in 2016.

The Colorado economy will have a solid year in 2016. Growth will outpace the U.S.

The Colorado Economy
GDP, Inflation, Income, and Wages

Colorado GDP

A Measure of Economic Performance that Tells a Different Story

It is important to consider Gross Domestic Product as part of an economic forecast because industries contribute to the economy in different ways. Some contribute more to job growth than GDP growth and vice versa.

The 2014 real GDP data (the most current data) shows:

- Colorado's nominal GDP was $305.9 billion.
- Private sector GDP vs. public sector GDP.
  - The private sector accounted for 87.9% of the total GDP. ($212.0 billion).
  - The private sector accounted for 83.4% of wage and salary employment.
- Goods producing sectors vs. service producing sectors.
  - The goods producing sectors accounted for 18.6% of total GDP ($56.9 billion)
  - The goods producing sectors accounted for 12.7% of wage and salary employment.

In 2014, the five largest sectors were:

- Financial activities 19.1%
- Professional business services 13.9%
- Government 12.1%
- Information 7.6%
- Manufacturing 7.1%

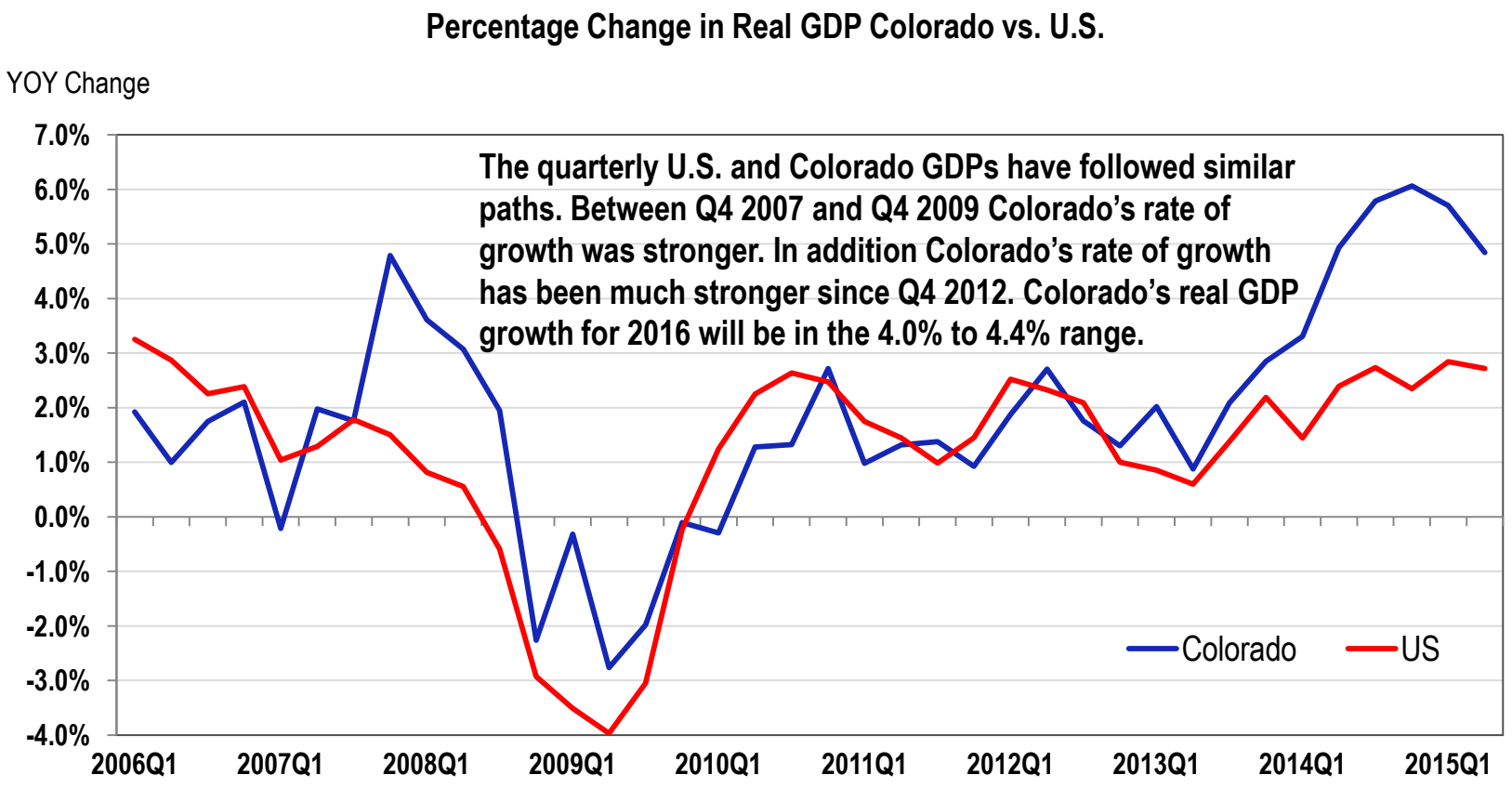
These sectors are 59.8% of total GDP.

In 2014, the five sectors that contributed the most to the change in the GDP were:

- Financial activities 18.0%
- Mining 15.5%
- Professional business services 13.4%
- Construction 8.2%
- Manufacturing 6.6 %

These sectors account for 61.7% of the contribution to the change in the 2014 GDP.

Change in Quarterly Real GDP (Year-Over-Year)
Colorado vs. U.S.



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

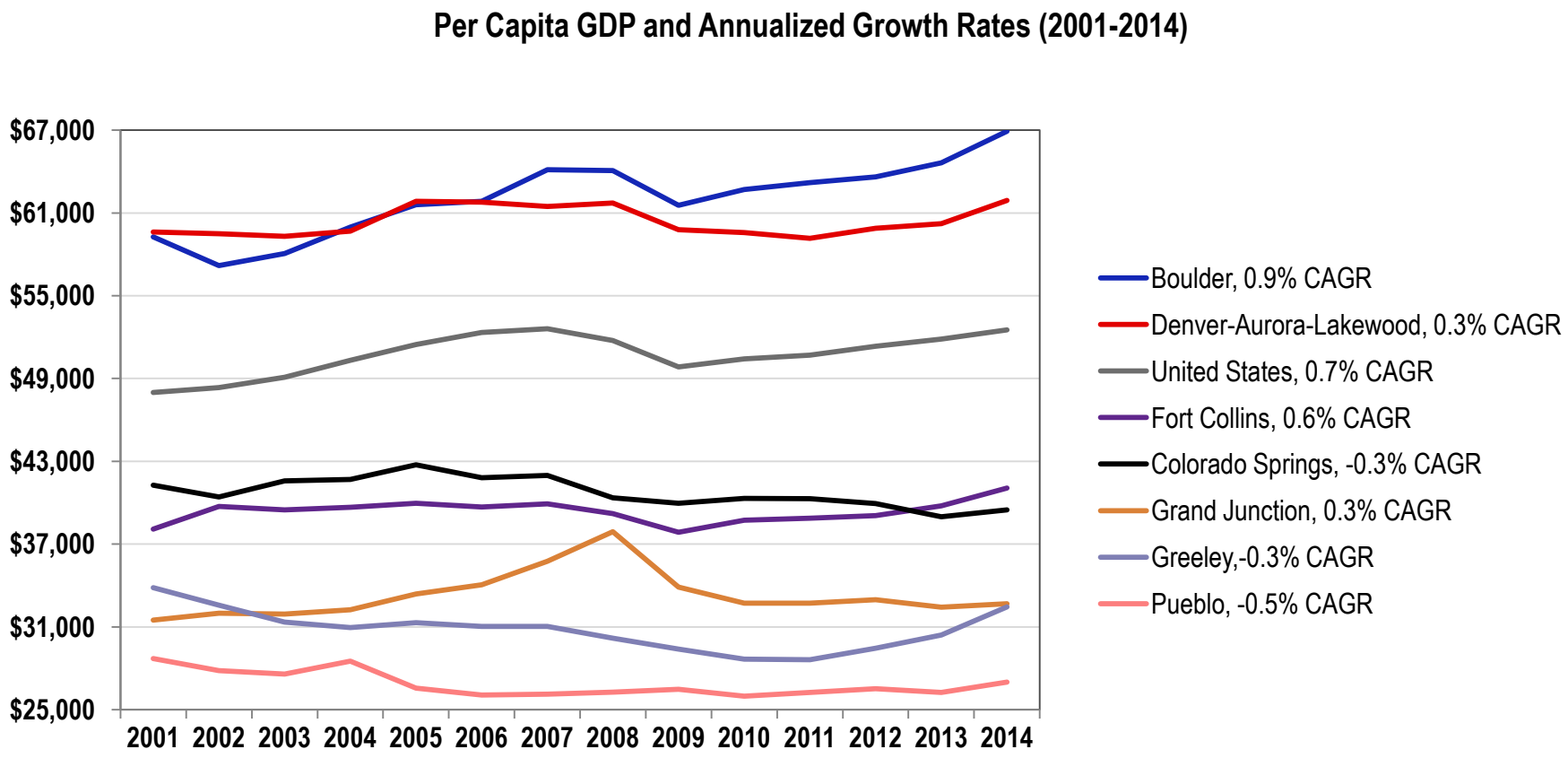
Colorado MSA Real Per Capita GDP

Real per capita GDP for a region is the GDP for that region divided by it's population.

The following comments (and chart on the next page) are based on the Colorado MSA real per capita GDP for the period 2001 to 2014 (most current data).

- Boulder and Denver had real per capita GDP that was above the level of the U.S. Metro per capita GDP.
- Only Boulder had an annualized growth rate (0.9%) that was above the U.S. (0.7%). This is the result of low population growth for Boulder rather than a high growth rate in GDP.
- Greeley, Pueblo, and Colorado Springs showed negative growth rates for their real per capita GDP between 2001 and 2014.

Real Per Capita GDP by MSA and Annualized Growth Rates



Source: Bureau of Economic Analysis.

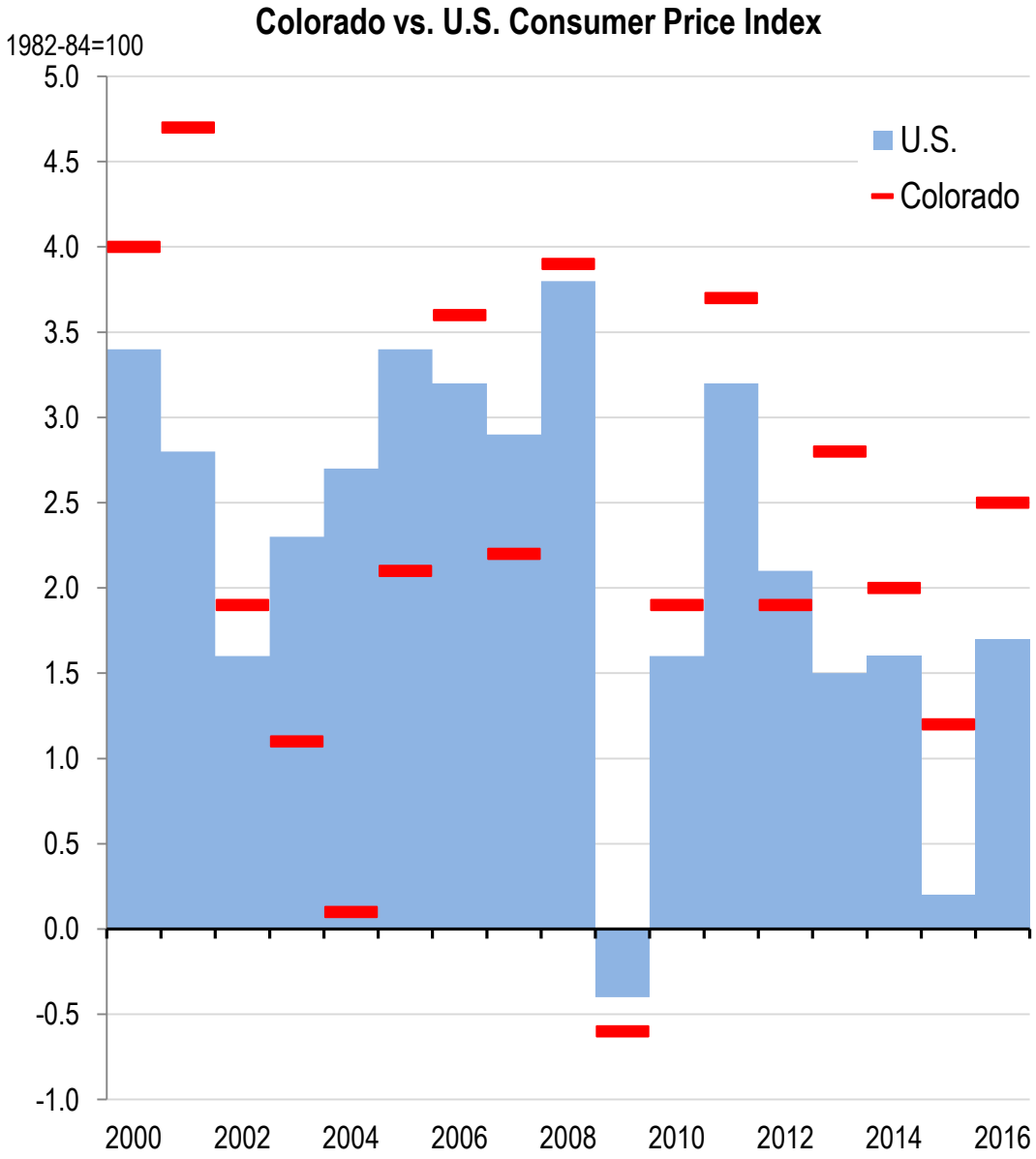
Consumer Price Index (CPI)

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

The Colorado annual CPI has been greater than the U.S. CPI 11 of 17 times between 2000 and 2016. Five of the six years that Colorado inflation was lower were between 2003 and 2009.

Recently, higher housing prices have caused Colorado to be a more expensive place to live.

The Colorado CPI is expected to rise by 2.5% in 2016.



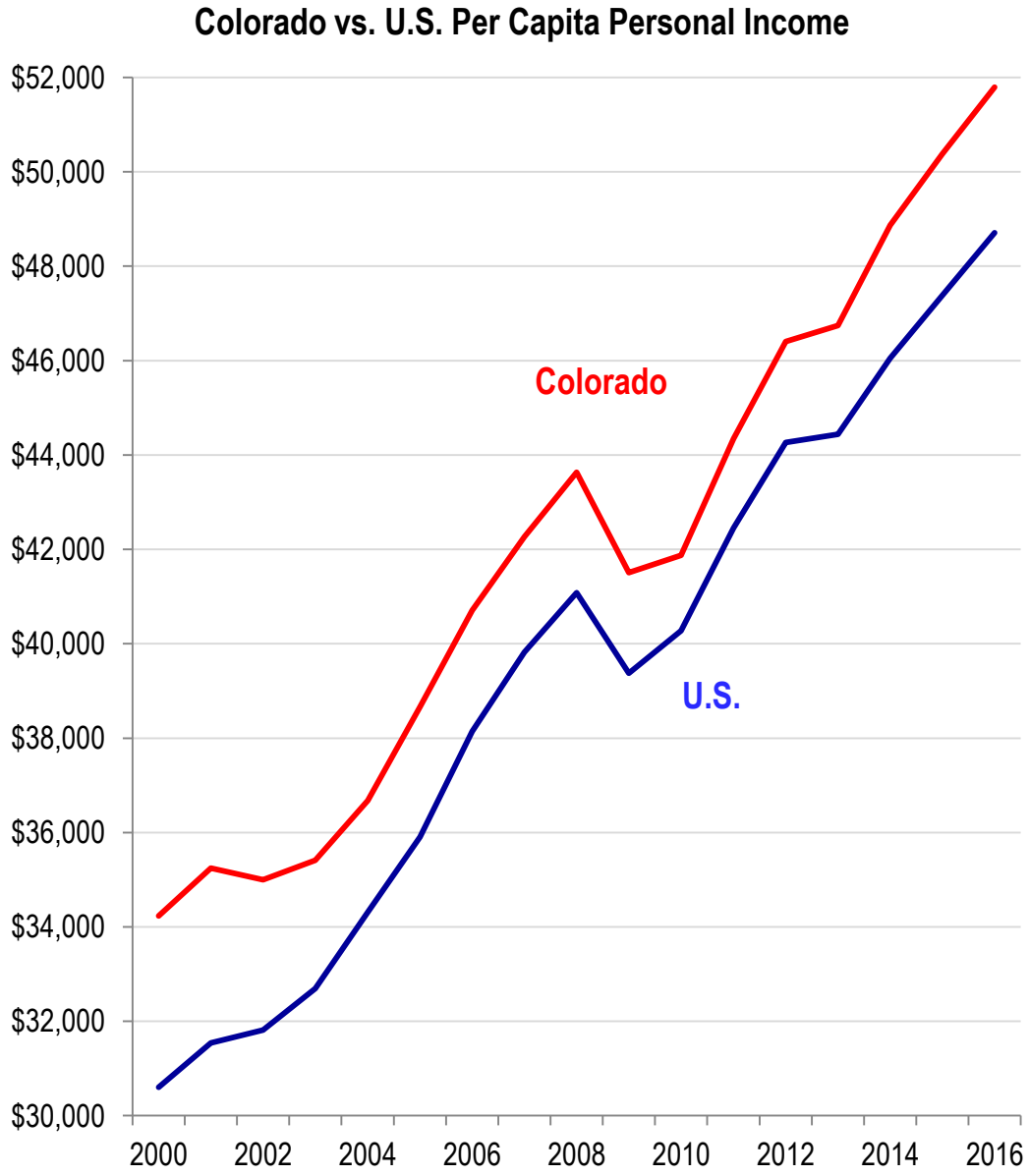
Source: Bureau of Labor Statistics, cber.co.

Per Capita Personal Income (PCPI)

Both the Colorado and U.S. PCPI have posted gains every year since 2009. During that period the U.S. rate increased at a slightly greater rate than the rate for Colorado.

Since 2000, the gap between the state PCPI and the national PCPI decreased to $1,600 in 2010. It has since increased and will be about $3,100 in 2010.

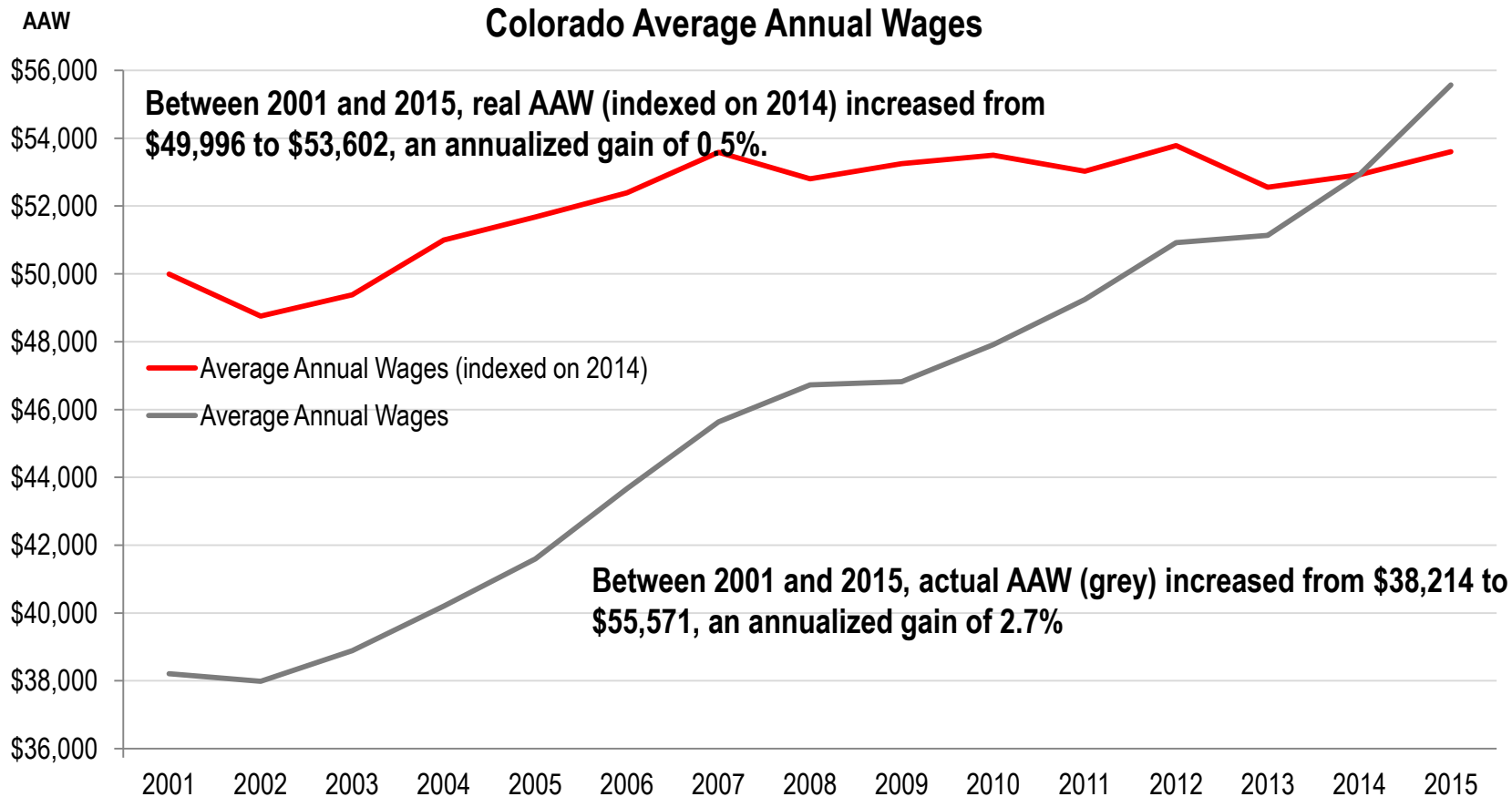
The Colorado PCPI will increase 3.1% in 2015 and the U.S. PCPI will increase by 2.9%. In 2016 the PCPI for the U.S. and Colorado will both increase by about 2.8%.



Source: Bureau of Economic Analysis, cber.co.

Colorado Average Annual Wages

Wages and Wages Adjusted for Inflation (2014=100)



Source: Bureau of Labor Statistics, cber.co.

The Colorado Economy
Population and Unemployment

Change in Colorado Population

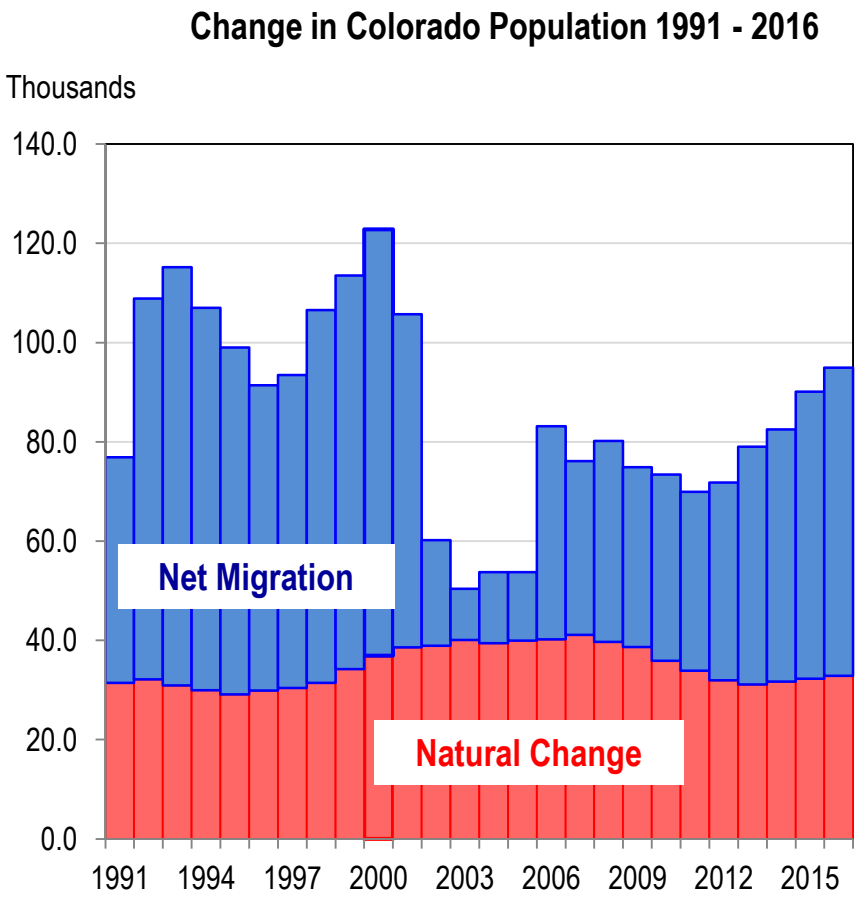
Colorado is an Attractive Place to Live, Work, and Play

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

Over the past 2½ decades the natural change (red bars) varied from a low of 29,145 in 1995 to a peak of 41,124 in 2007.

Changes resulting from net migration (blue bars) are closely tied to the strength of the economy. For example, there were five years, from 1986 to 1990, when net migration was negative. More people moved out of state than moved into the state to escape a regional recession. During the past two recessions, net migration declined, but did not turn negative because it was difficult for people to move - anywhere.

The Colorado population increased by about 90,141 in 2015 and will increase by about 95,000 in 2016. Net migration increase by 57,000 in 2015 and will increase by 62,100 in 2016. In 2016 the state's population will increase by 1.7% to 5.538,480.



Sources: State Demography Office and cber.co.
Colorado-based Business and Economic Research http://cber.co

Colorado Unemployment Rate and Number of Unemployed

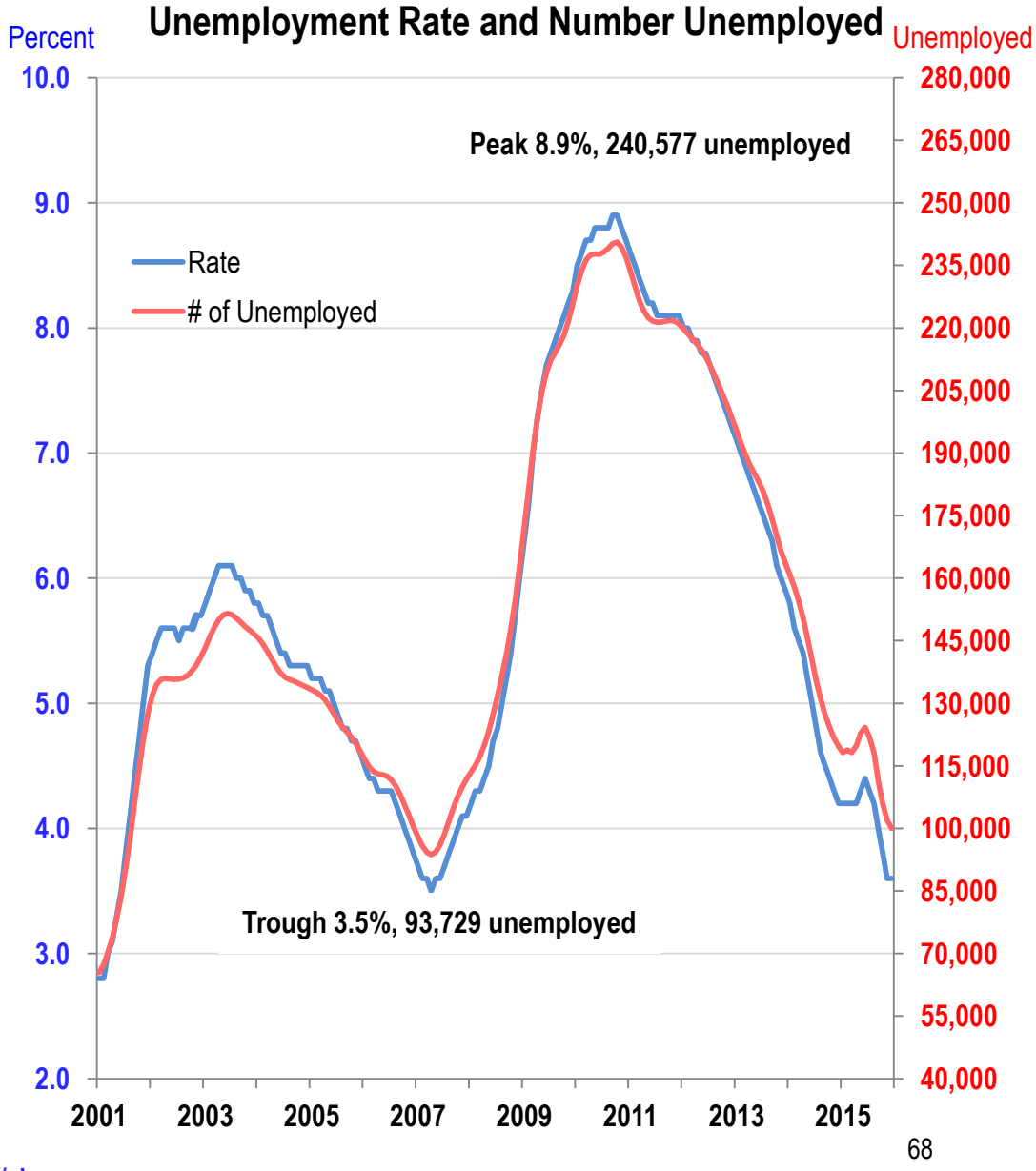
The number of unemployed has slowly trended downward since peaking in late 2010.

The total number of unemployed workers (red) at the end of 2015 will be 100,000.

The total number of unemployed is 6,271 greater than the trough in May 2007 and 140,577 less than the peak in October 2010.

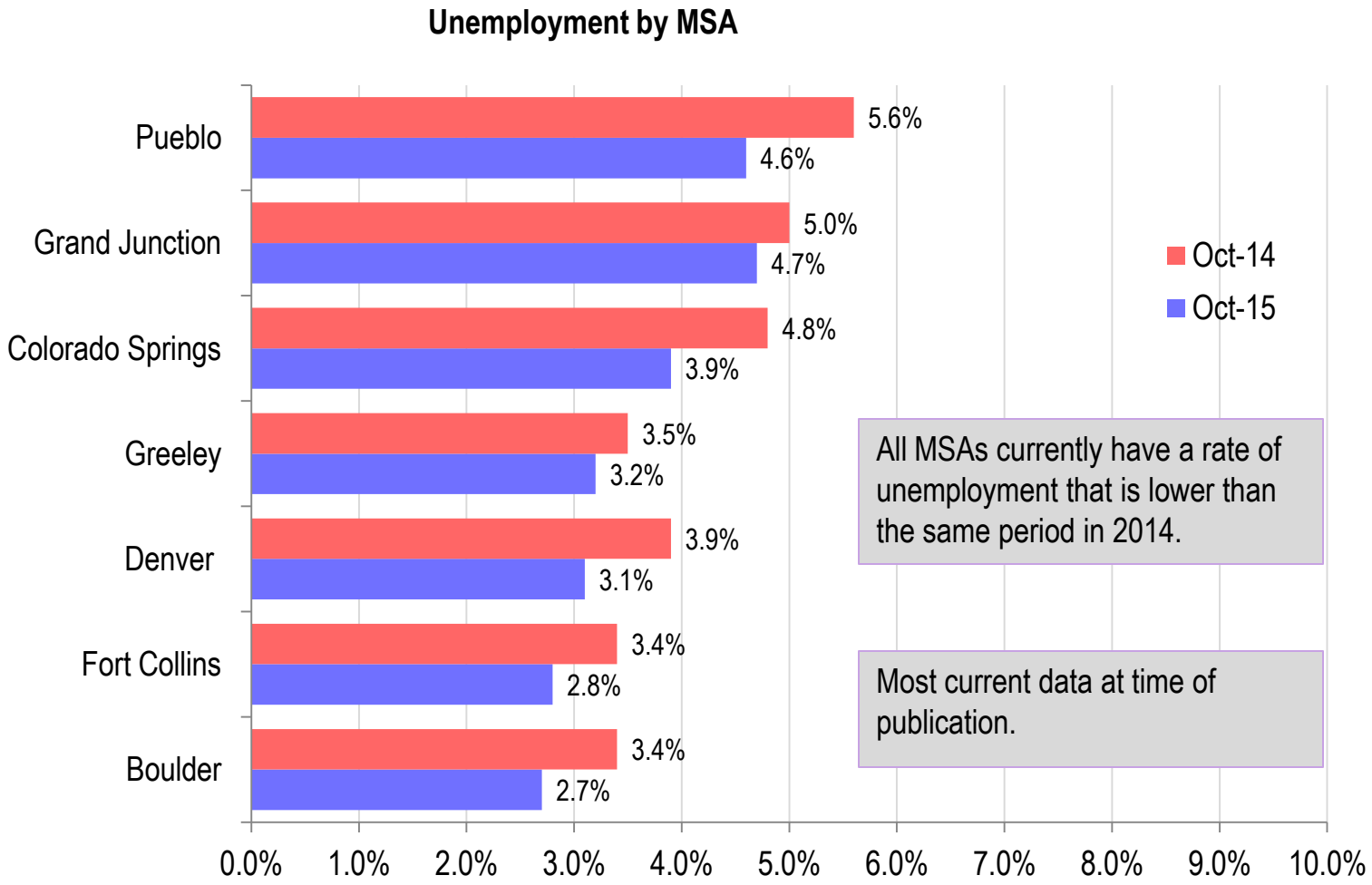
Lower unemployment rates have brought about shortages of trained workers in key sectors and occupations. The average 2015 unemployment rate (blue) will be 4.1%.

The unemployment rate will be between 3.7% and 4.1% for 2016.



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

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.

The Colorado Economy
State Government

The State of the State Revenue and Economics

The Great Recession played havoc with the budgets of state governments across the U.S. The good news is that revenue has improved, although many states are facing a gap between revenues and spending.

CLC and OSPB Projections

Since 2001, the Colorado state government has felt the same pain in the pocketbook as many Colorado residents. Wages or revenues have either declined or remained flat. At the same time, expenses have escalated every year.

The following charts show some of the revenue projections and economic updates provided by the Colorado Legislative Council (CLC) and the Governor's Office of State Planning and Budgeting (OSPB). The quarterly updates provided by both groups are recommended reading for those anxious to learn more about the Colorado economy.

Sales Tax, Individual Income Tax, and General Fund

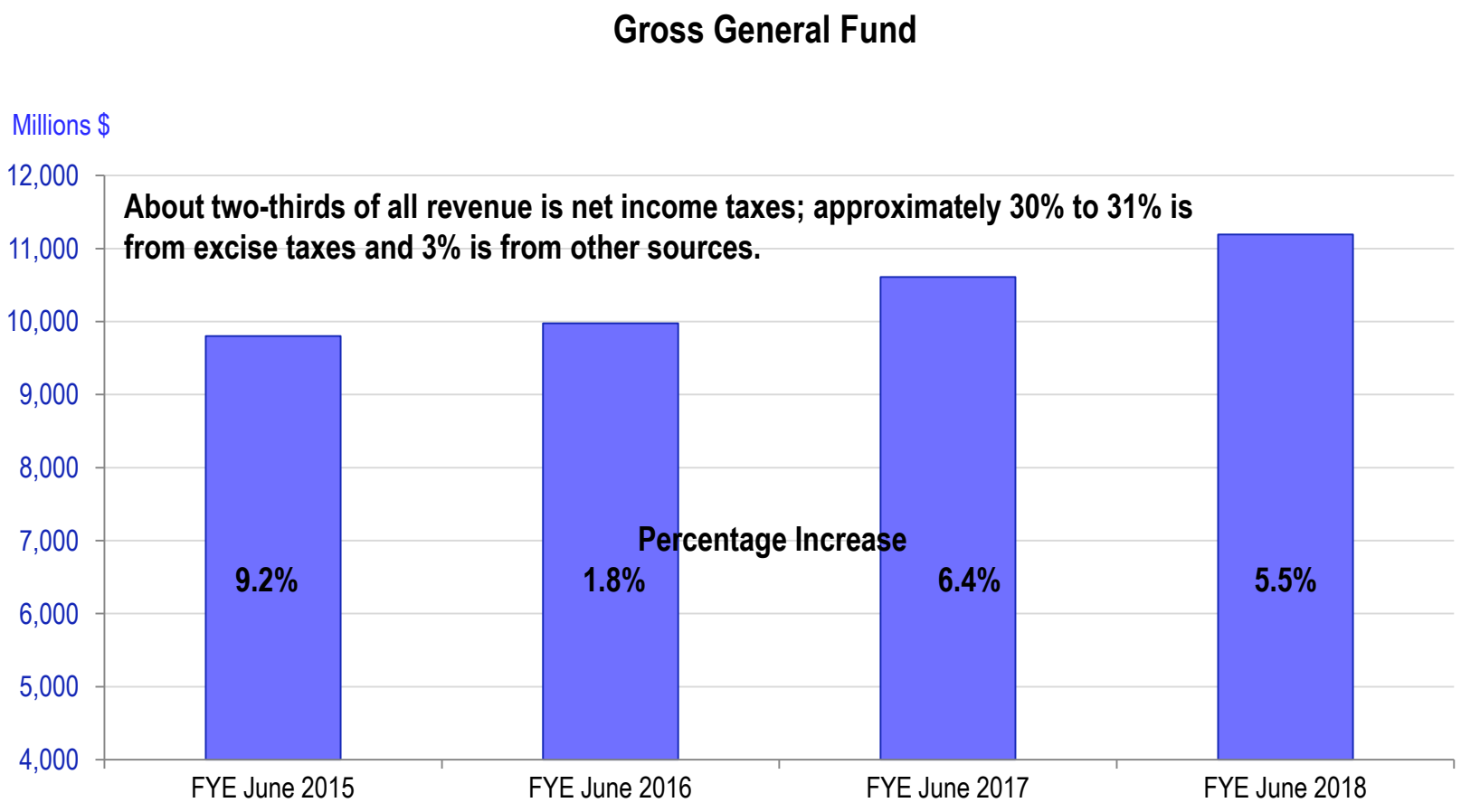
Excise and Sales Tax Revenue accounts for about one-fourth of the Gross General Fund. The Sales Tax Revenue for FYE 2016 is projected to be approximately $3.3 billion.

Net Income Tax accounts for about two-thirds of the Gross General Fund Revenue. Income Tax Revenue for FYE 2016 is projected to be about $6.5 billion.

General Fund Revenue for FYE 2016 will increase by 1.8% and be $10.0 billion.

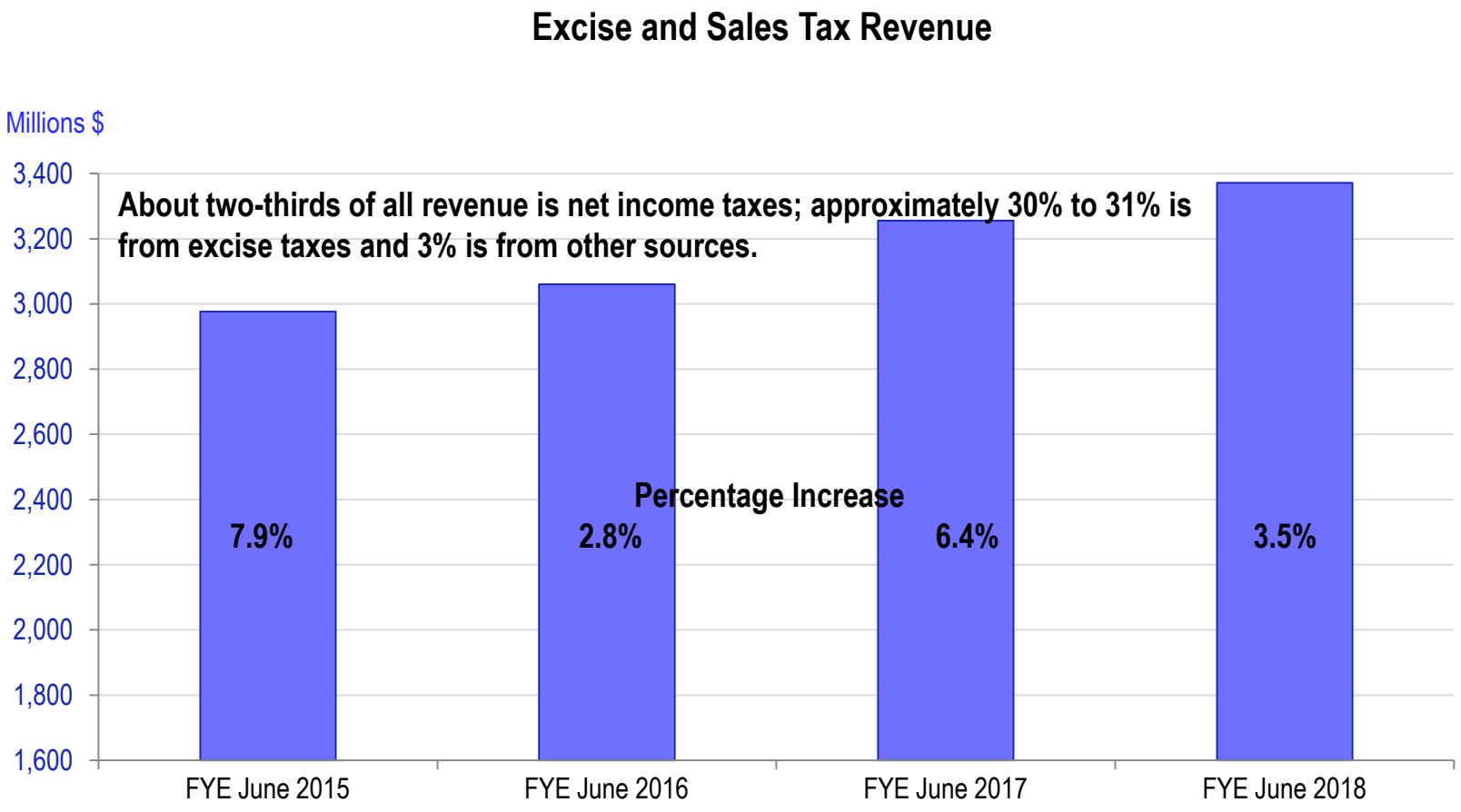
Note: The State Fiscal Year is July 1st through June 30th.

Colorado Gross General Fund



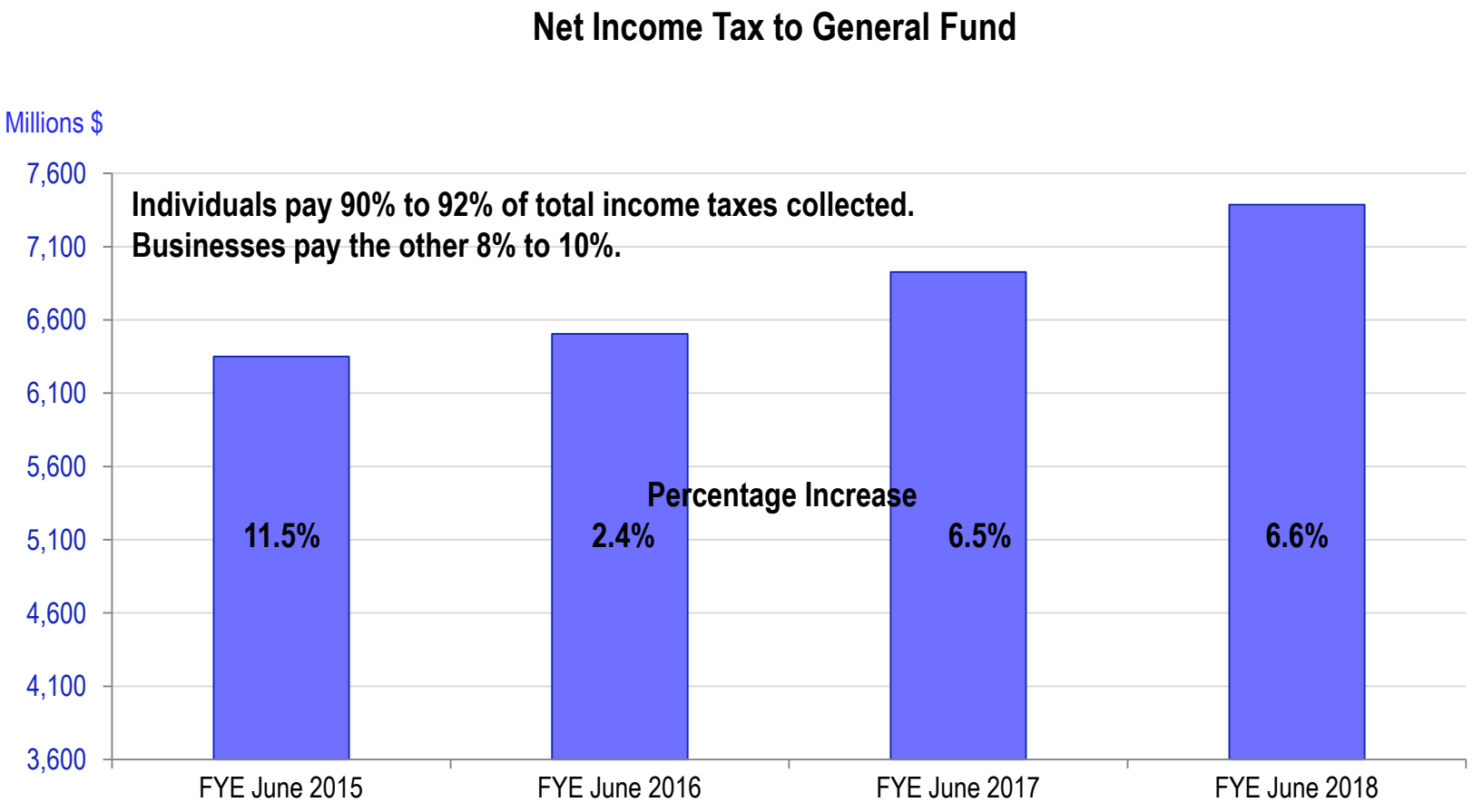
Source: Colorado Legislative Council, December 2015.

Colorado Excise and Sales Tax Revenue



Source: Colorado Legislative Council, December 2015.

Colorado Net Income Tax



Source: Colorado Legislative Council, December 2015.

CLC and OSPB December 21 Quarterly Forecasts 2015 Estimates

The Colorado Legislative Council and the Governor's Office of State Planning and Budgeting recently released their quarterly updates. (https://www.colorado.gov/cga-legislativecouncil and https://sites.google.com/a/state.co.us/ospb-live/). The two reports provide slightly different forecasts, both of which are supported by rational explanations. A comparison of key indicators follows below.

U.S. Economy December 2015 Estimate for 2015

Category	CLC	OSPB
Real GDP % Change	2.5%	2.4%
Employment Change %	2.9 million 2.1%	2.8 million 2.0%
Unemployment Rate	5.0%	5.3%
Inflation (CPI)	0.1%	0.1%

Colorado Economy December 2015 Estimate for 2015

Category	CLC	OSPB
Population Change /%	+101,200 1.9%	+98,000 1.8%
Employment Change/%	+57,600 2.3%	+69,000 2.8%
Unemployment Rate	4.0%	4.1%
Retail Trade Sales (Millions)/%	$93,191 2.8%	$94,200 4.3%
Home Permits (000s)	28.6	31.0
Denver-Boulder Inflation Rate	1.1%	1.5%

Source: CLC and OSPB.

CLC and OSPB December 21 Quarterly Forecasts 2016 Forecasts

The Colorado Legislative Council and the Governor's Office of State Planning and Budgeting recently released their quarterly updates. (https://www.colorado.gov/cga-legislativecouncil and https://sites.google.com/a/state.co.us/ospb-live/). The two reports provide slightly different forecasts, both of which are supported by rational explanations. A comparison of key indicators follows below.

U.S. Economy December 2015 Forecast for 2016

Category	CLC	OSPB
Real GDP % Change	2.3%	2.3%
Employment Change/%	2.6 million 1.8%	2.4 million 1.7%
Unemployment Rate	4.8%	4.8%
Inflation (CPI)	1.6%	1.8%

Colorado Economy December 2015 Forecast for 2016

Category	CLC	OSPB
Population Change /%	+95,200 1.7%	+97,300 1.8%
Employment Change/%	+47,300 1.9%	+66,800 2.6%
Unemployment Rate	3.8%	3.8%
Retail Trade Sales (Millions)/%	$98,037 5.2%	$99,400 5.5%
Home Permits (000s)	32.0	37.9
Denver-Boulder Inflation Rate	2.4%	2.5%

Source: CLC and OSPB.

The Colorado Economy

Establishments, Housing, Construction, Consumers

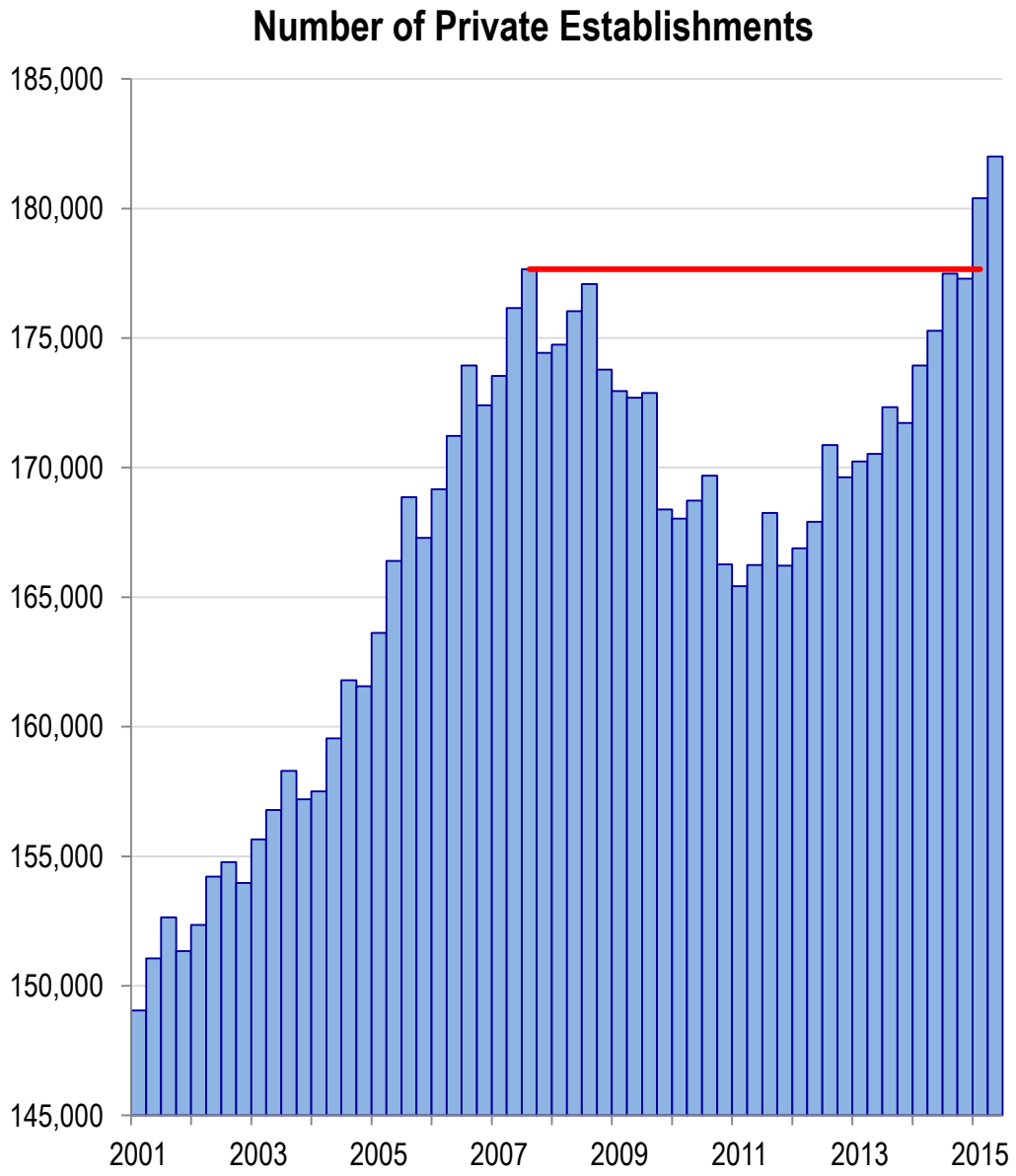
Number of Colorado Private Establishments

The number of Colorado private sector establishments peaked at 177,657 in Q3 2007.

As a result of the Great Recession, the number of Colorado business establishments declined to 165,249 in Q1 2011.

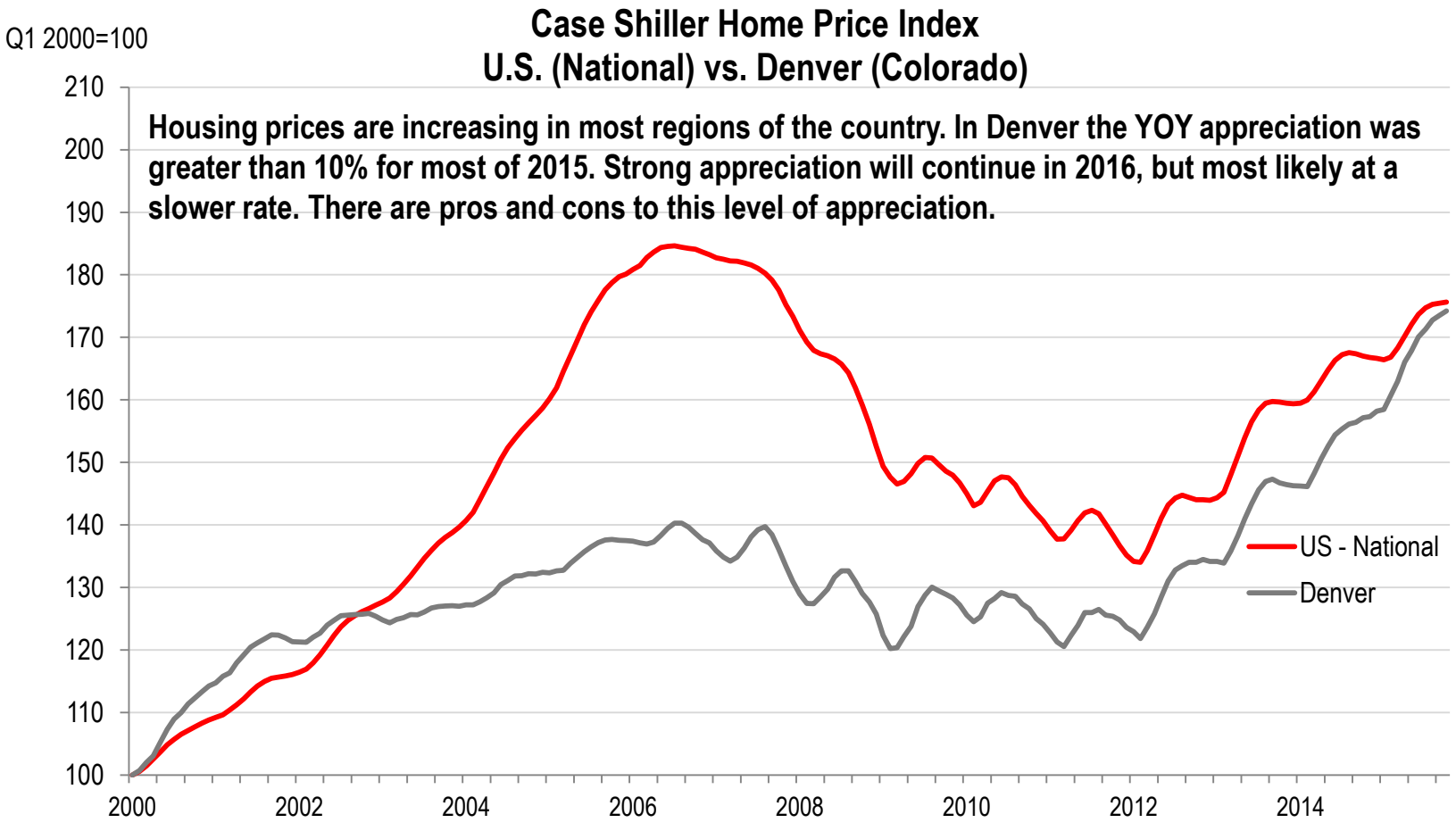
There was steady growth in the number of establishments and in Q1 2015 the state returned to the previous 2007 peak.

The creation of new establishments will be a source of job growth in 2016 and beyond.



Source: Bureau of Labor Statistics, cber.co.

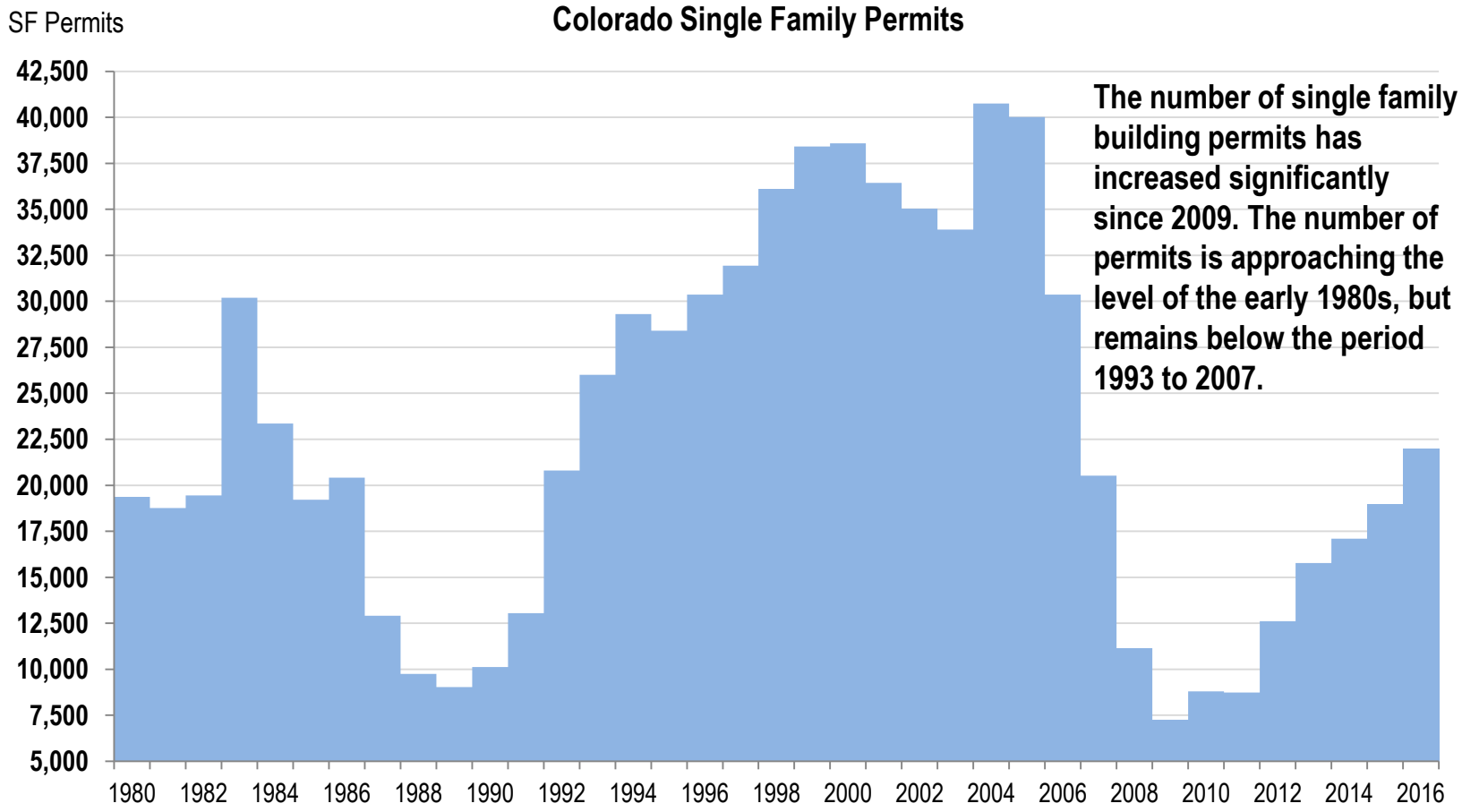
Case Shiller Home Price Index National vs. Denver (Colorado)



Source: S&P Case-Shiller.

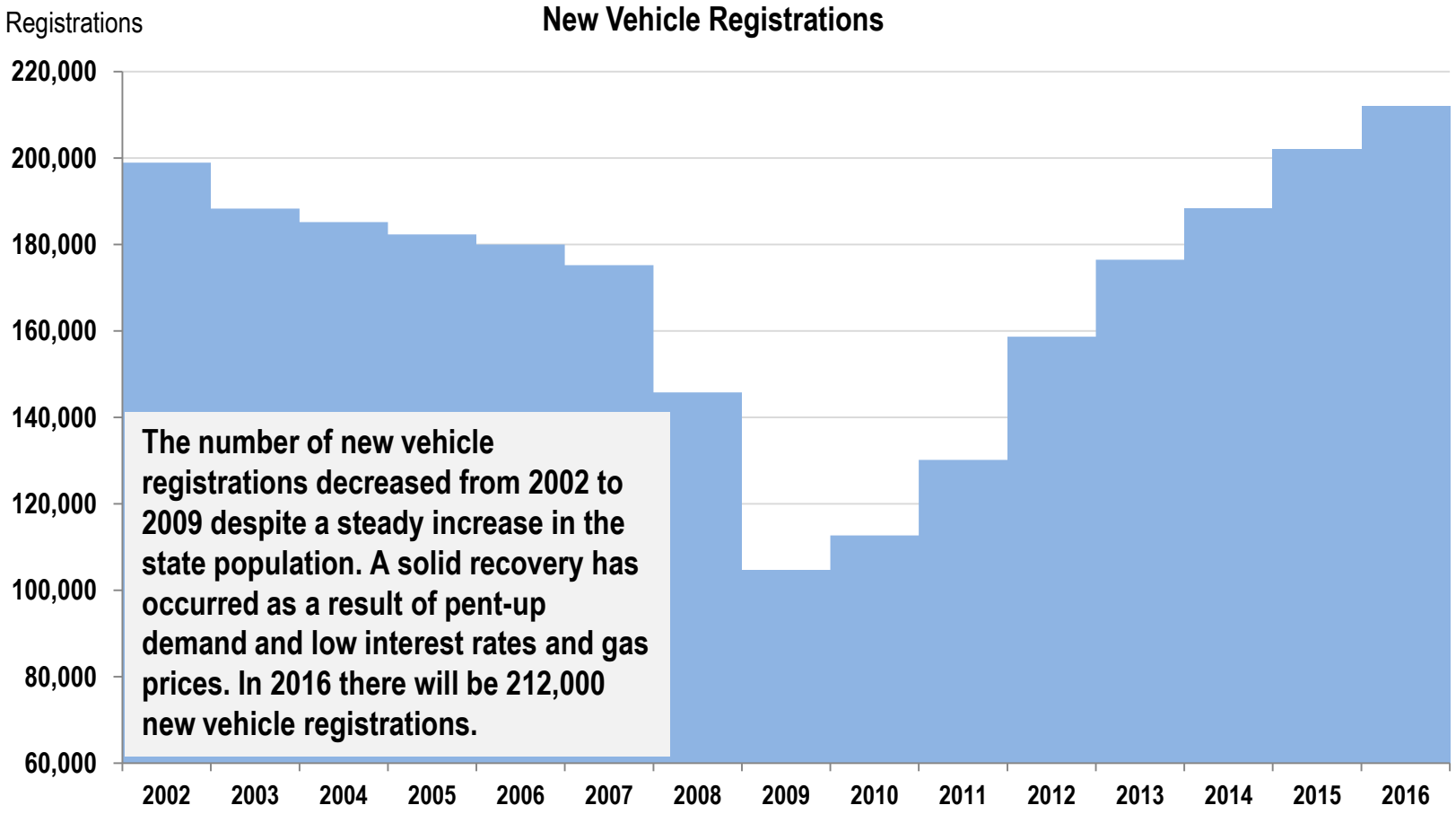
Colorado Construction

Single Family Permits



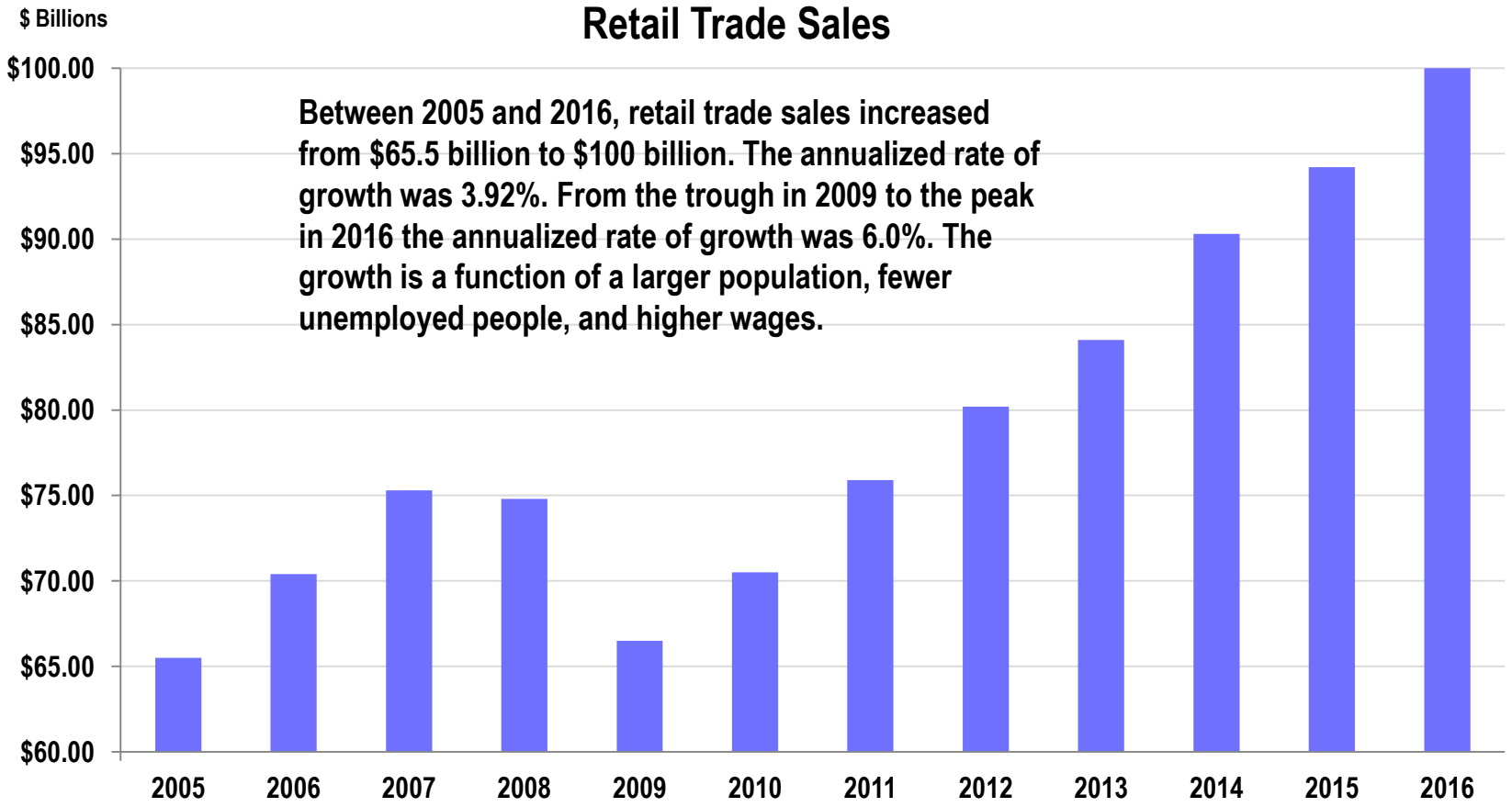
Source: TAMU Real Estate Center, U.S. Census Bureau, cber.co.

New Vehicle Registrations Colorado



Source: Colorado Auto Dealers Association, cber.co.

Colorado Retail Trade Sales (Including Food Services)



Source: Colorado Department of Revenue, cber.co.

DIA Passengers

Source: flydenver.com, cber.co.

The Colorado Economy

Extractive Industries

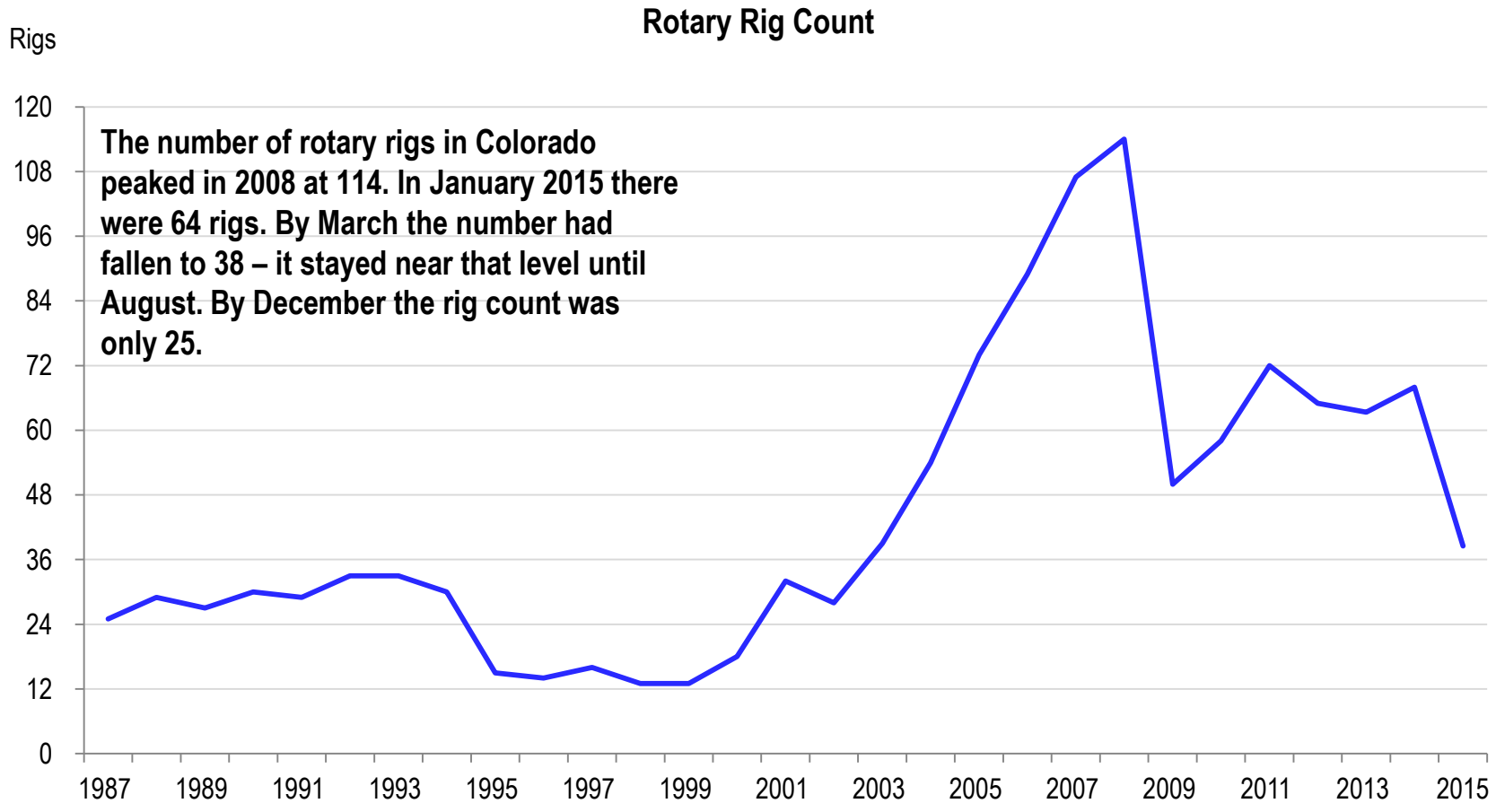
What is Happening in the Extractive Industries?

Changes in employment in the oil and gas industry may result in the loss of as many as 4,000 workers. A quick analysis using IMPLAN shows the loss of 3,200 oil and gas workers and 800 support workers would result in a loss of $4.2 billion in economic activity and a total loss of 12,486 jobs. The direct average annual wages for the oil and gas industry are $96,425 and the direct average annual output per worker is $701,480.

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	4,000	$385,699,807	$1,495,932,215	$2,805,918,880
Indirect Effect	4,237	$325,199,655	$483,426,675	$834,280,381
Induced Effect	4,249	$207,475,211	$355,183,996	$575,137,110
Total Effect	12,486	$918,374,673	$2,334,542,886	$4,215,336,371
Source: IMPLAN.				

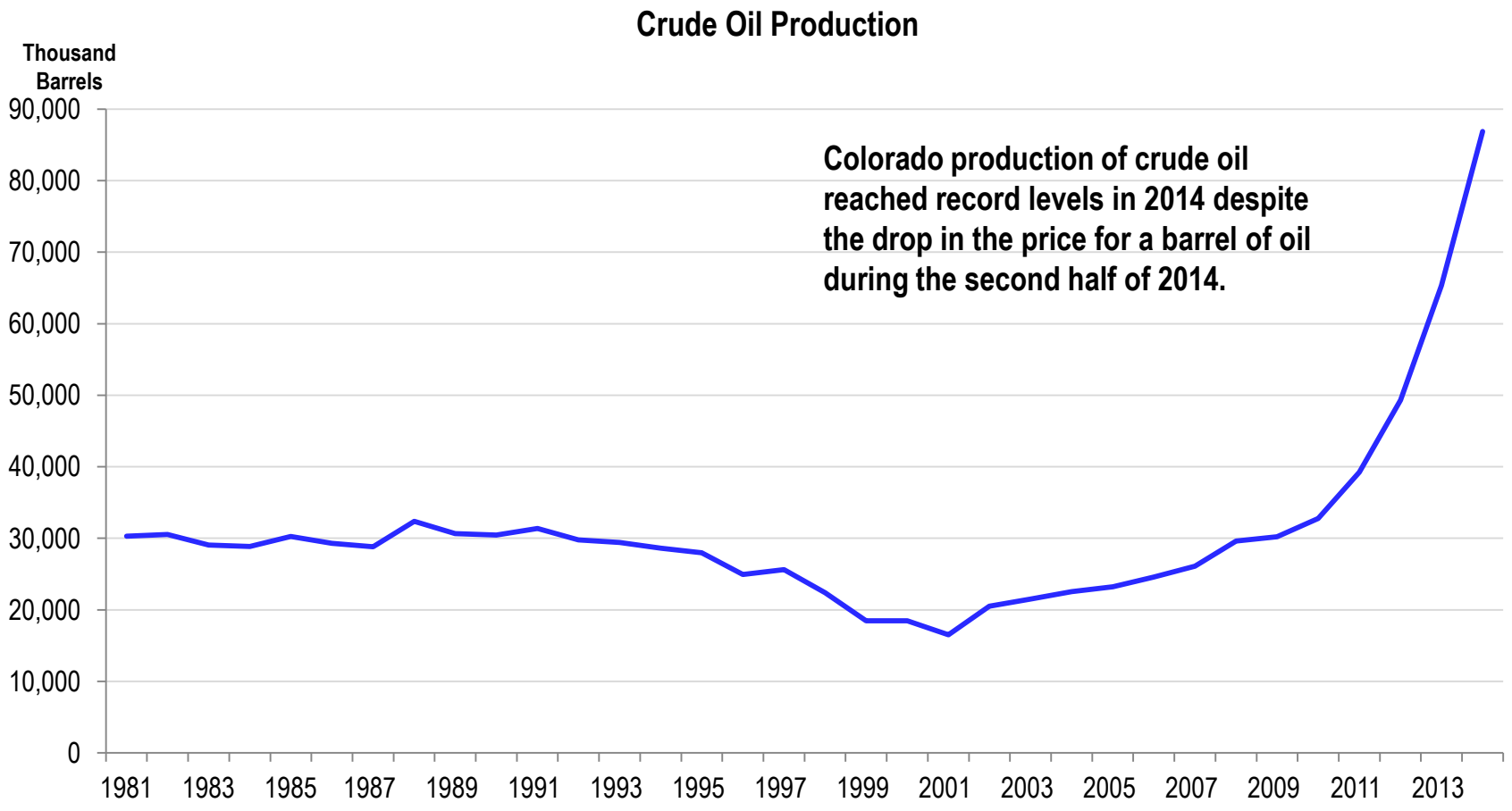
Source: IMPLAN, cber.co.

Colorado Annual Rotary Rig Count 1987 to 2015



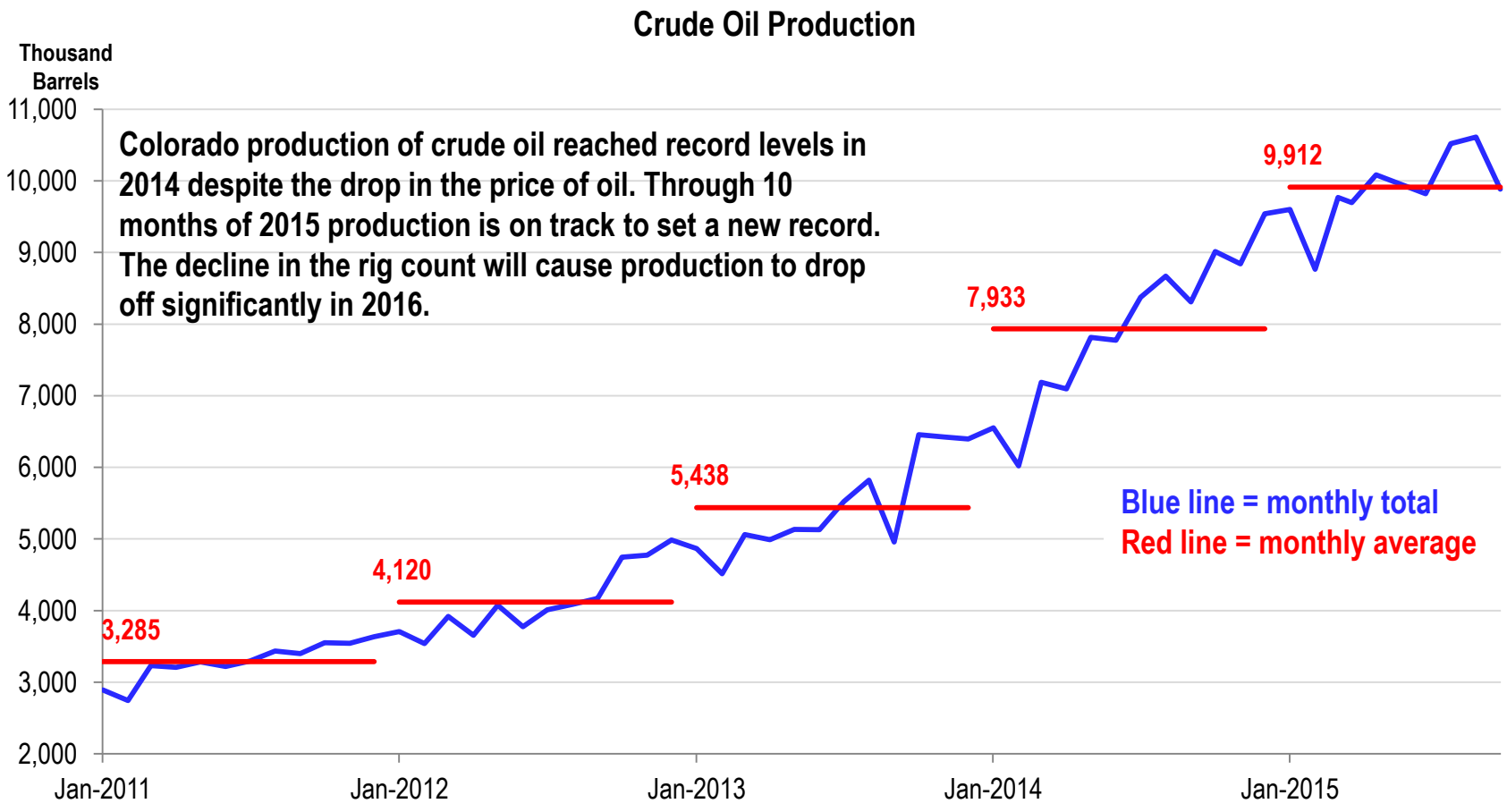
Source: Baker-Hughes.

Colorado Crude Oil Production 1981 to 2014 (Thousand Barrels)



Source: EIA.

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



Source: EIA.

The Colorado Economy
Industries that Provide Colorado with a Competitive Advantage

Job Growth and Location Quotients in Industry that Provide a Competitive Advantage

All industries are important to the economy for different reasons. Some generate sales tax revenue, contribute to the quality of life, or they are a source of goods and services that attract outside wealth to the state. The following charts show the change in location quotient (LQ) for a select group of industries.

LQ greater than 1.25

Sectors with LQs greater than 1.25 are considered "export industries" – a significant portion of their goods and services are exported out of state.

- Information, LQ = 1.46
- Professional, scientific, and technical, LQ = 1.34
- Extractive industries, LQ=1.34
- Construction, LQ=1.33

LQ greater than 1.0

The concentration of these industries in Colorado is greater than the concentration of these industries for the United States.

- Leisure and hospitality, LQ = 1.17.

The LQ = the percentage of Colorado workers in the sector divided by the percentage of U.S. workers in the sector.

LQ near 1.0

Charts are not shown for industries such as health care, trade, utilities, government, other services, and finance. The location quotient of these sectors should be near 1.0. In other words, the concentration of these industries in Colorado is similar to the concentration of these industries for the U.S. In other words, these are usually not sectors where states develop competencies.

LQ less than1.0

- Manufacturing, LQ = .64

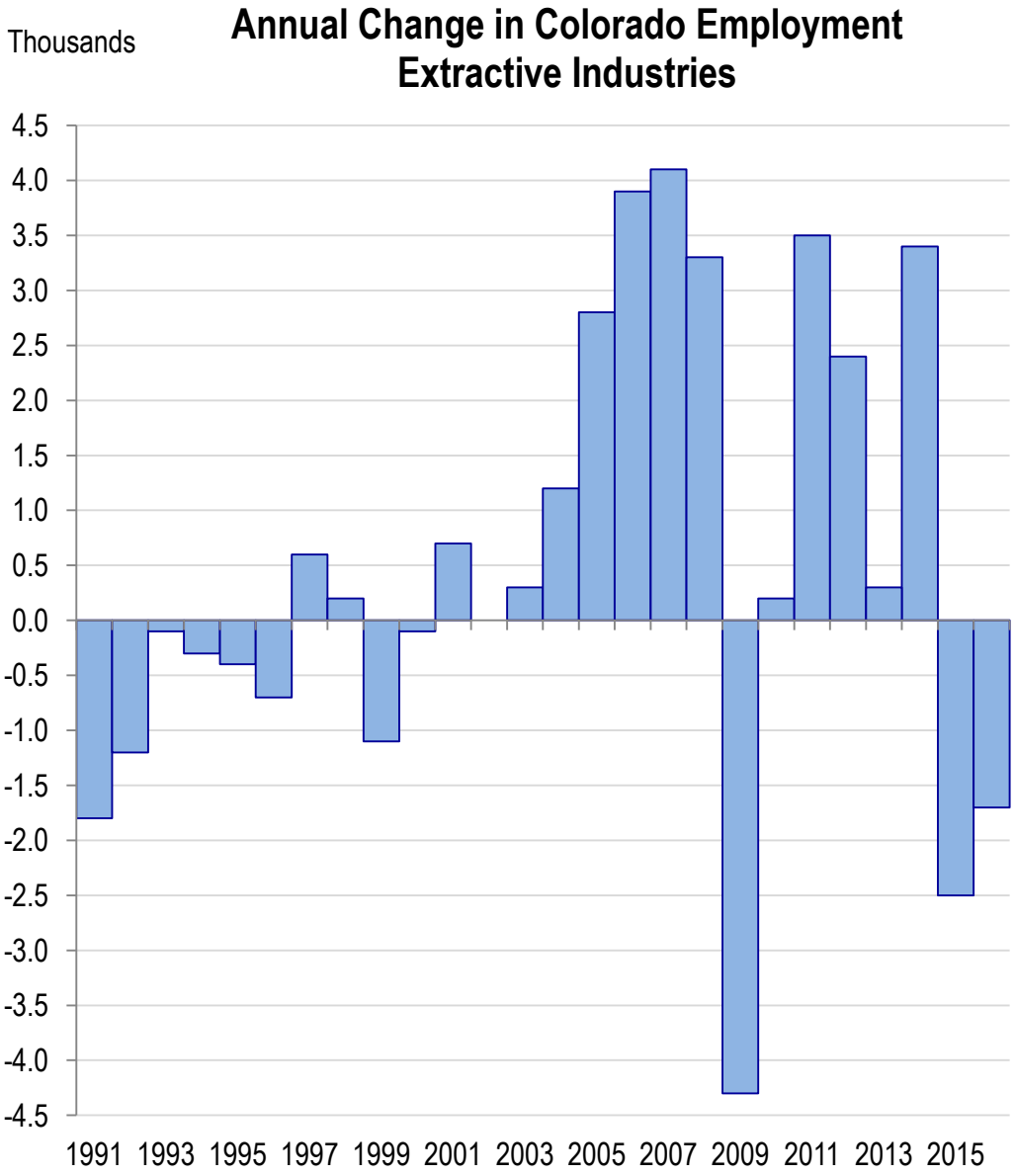
The concentration of workers in Colorado is less than the U.S. concentration.

Annual Employment Change in Colorado Employment – Extractive Industries

Colorado's extractive industries, which include mining and the oil and gas industries, have been extremely volatile. During the 1990s they typically lost jobs, Since 2001 they have typically added workers.

The declines in 2015 and 2016 are a function of the fall in the price of oil. In addition, the coal industry has come under fire. Other mining industries have been impacted by low commodity prices.

The most current location quotient based on QCEW data is 1.34.



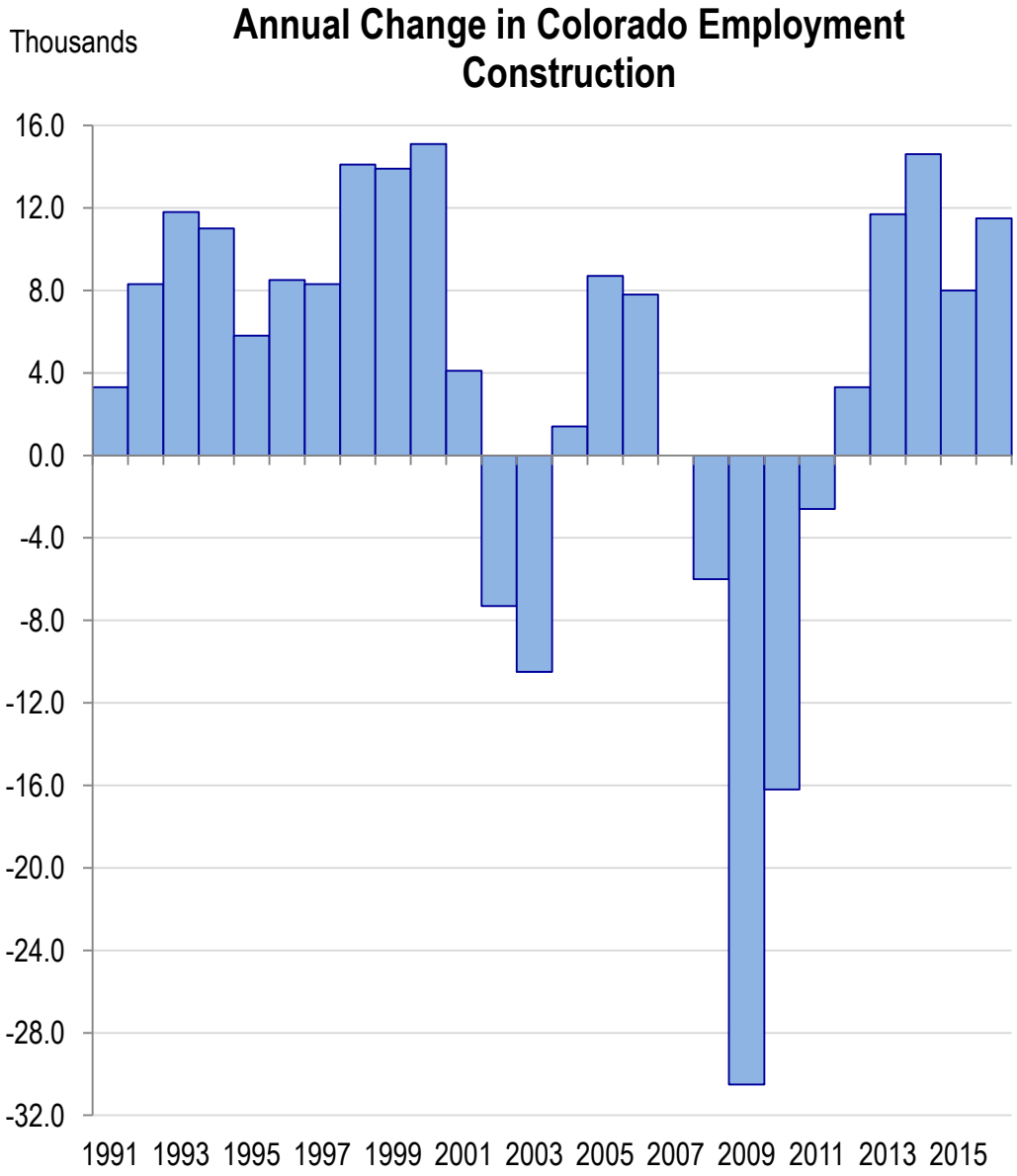
Source: Bureau of Labor Statistics, cber.co.

Annual Employment Change in Colorado Employment – Construction

Historically Colorado employment has grown at a faster rate than the U.S. As a result the construction industry has had a stronger than "normal" presence in the state.

The most current location quotient based on QCEW data is 1.33.

For the last 25 years Colorado has had an abnormally high construction LQ because its population and employment have expanded at a faster rate than the nation.



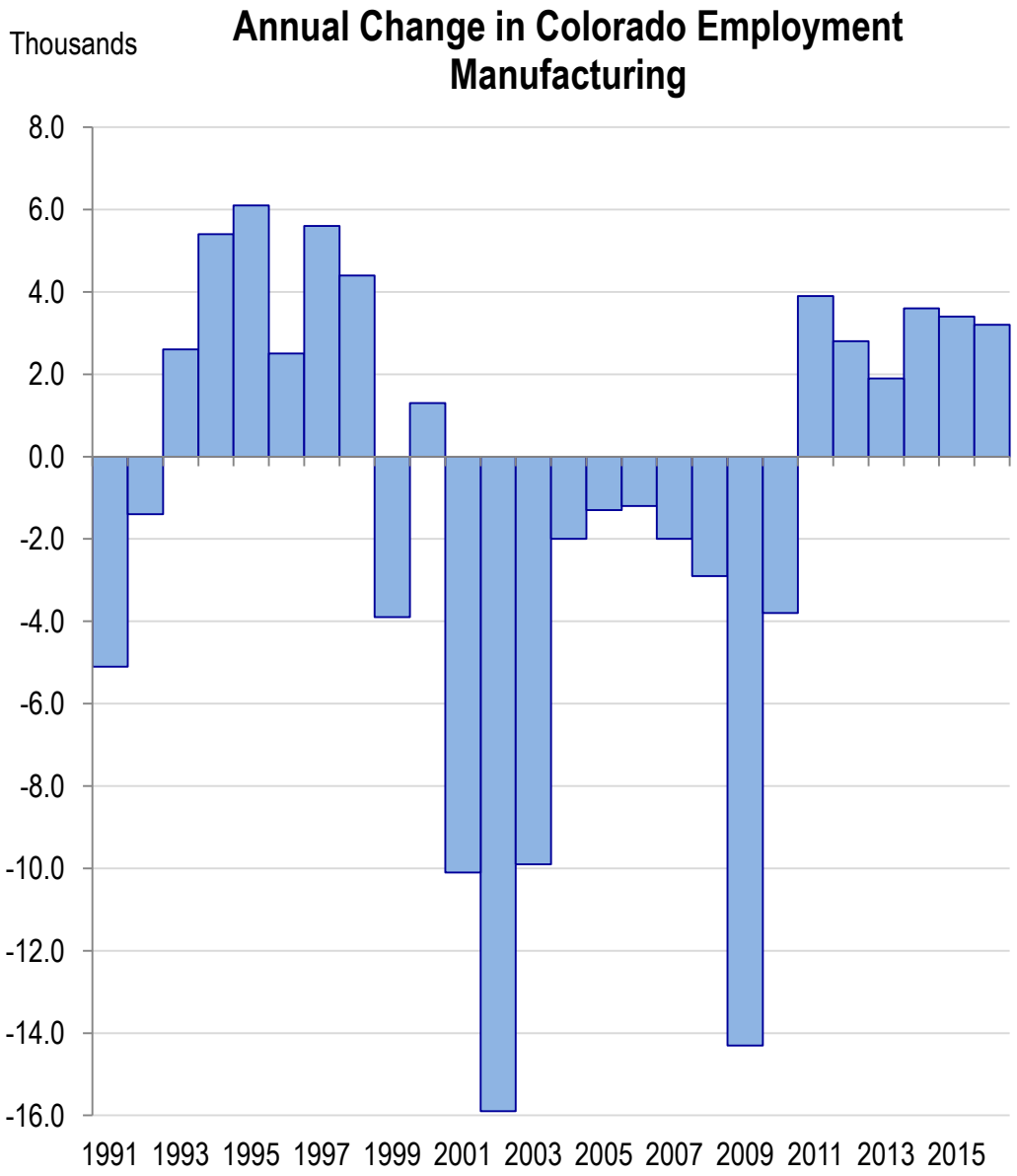
Source: Bureau of Labor Statistics, cber.co.

Annual Employment Change in Colorado Employment – Manufacturing

After posting declines for 11 of 12 years, manufacturing jobs have been added since 2011. More recently Colorado's greatest competencies in manufacturing include aerospace, beverages, and high tech devices based on enabling technologies.

The most current location quotient based on QCEW data is .64.

The location quotient for beverage manufacturers is 1.73.



Source: Bureau of Labor Statistics, cber.co.

Annual Employment Change in Colorado Employment – Information

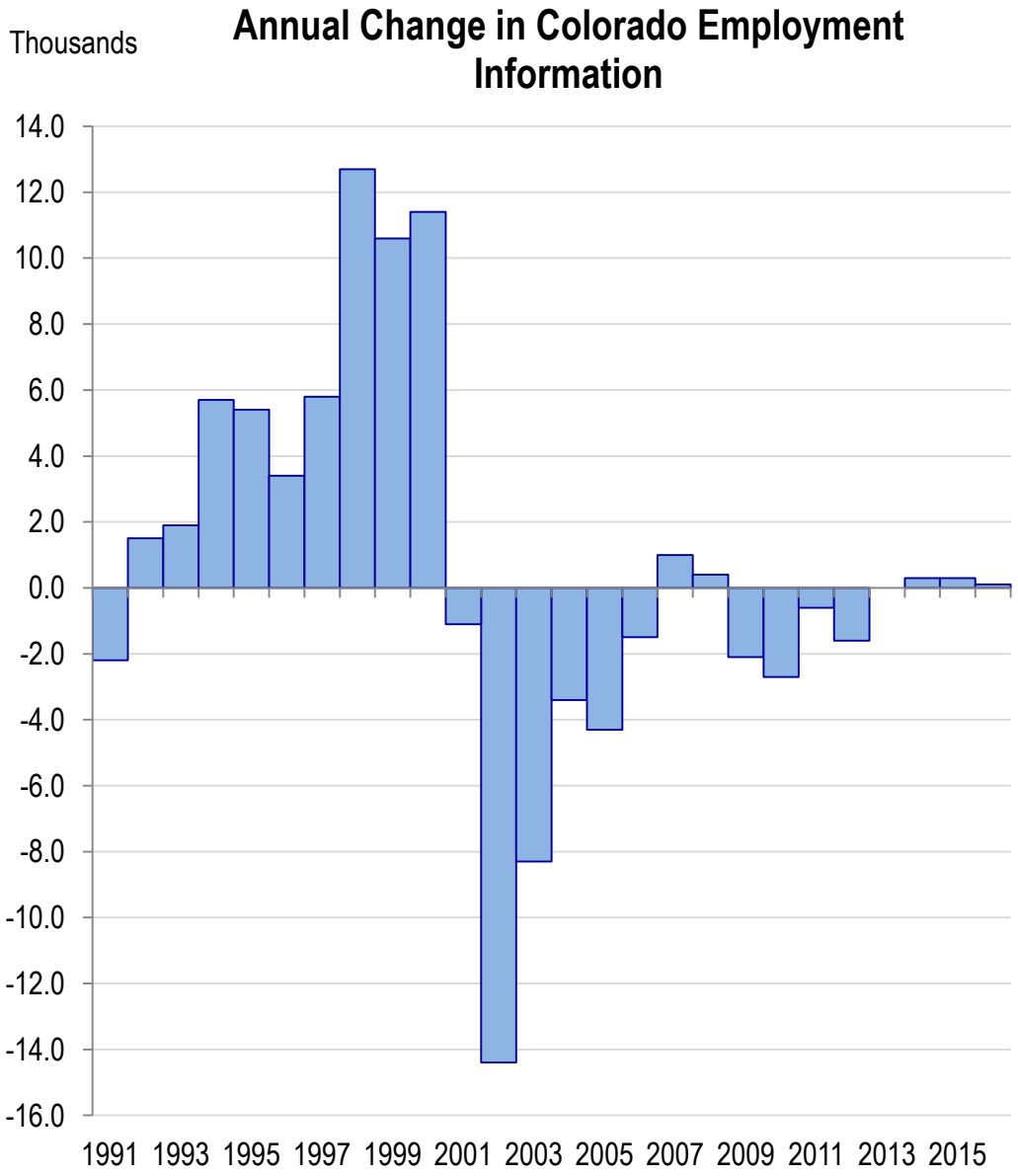
Between 2001 and 2013, information jobs were added in only two years.

Employment in the sector has remained flat since 2013.

The sector has been positively and negatively impacted by technology and mergers.

The most current location quotient based on QCEW data is 1.46.

Telecommunications, an information subsector has a location quotient of 1.83.



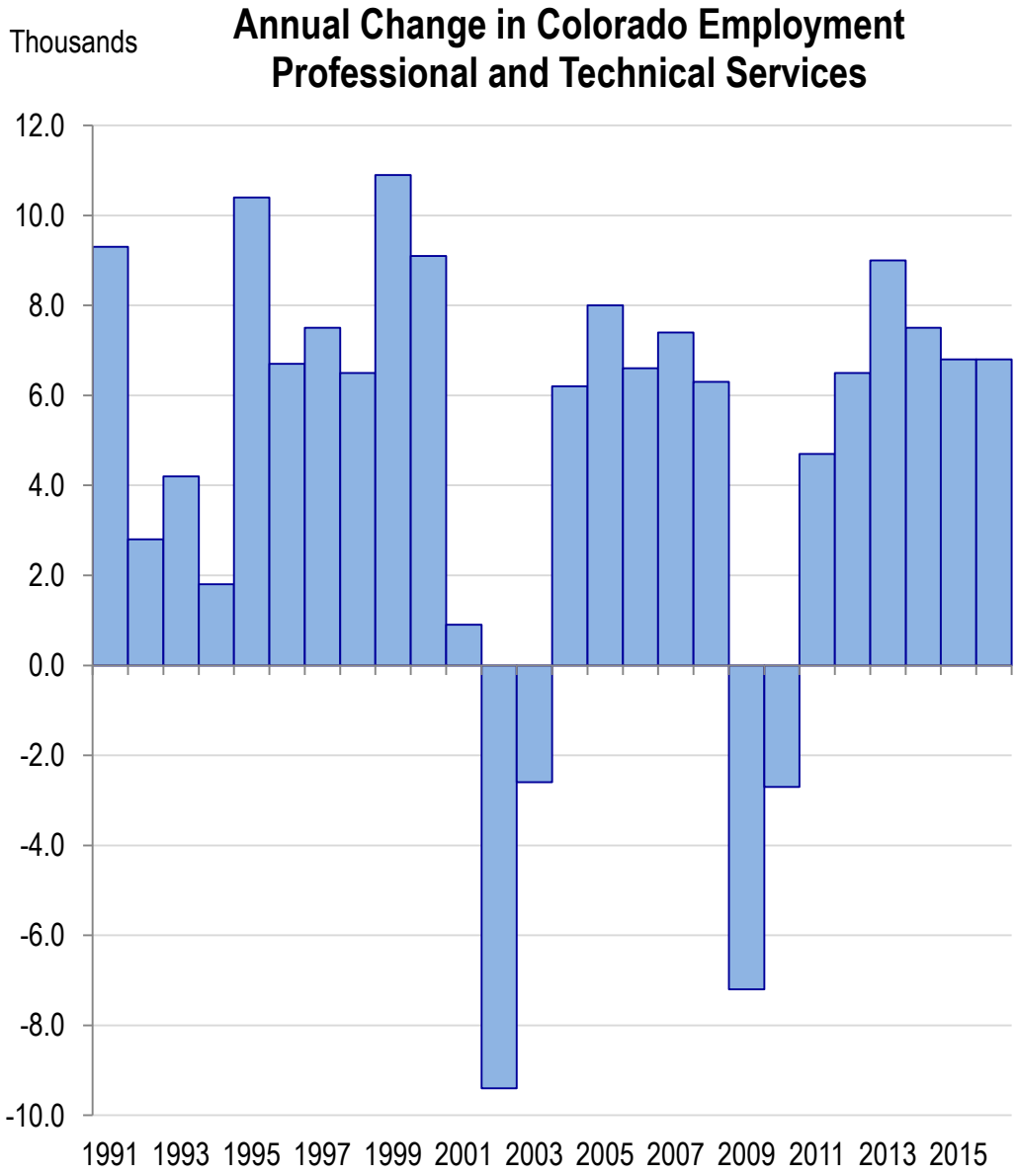
Source: Bureau of Labor Statistics, cber.co.

Annual Employment Change in Colorado Employment – PTS

The PTS sector has been a steady source of high paying jobs for Colorado.

The most current location quotient based on QCEW data is 1.34.

The location quotient for architects and engineers is 1.80 and it is 1.61 for designers of computer systems.



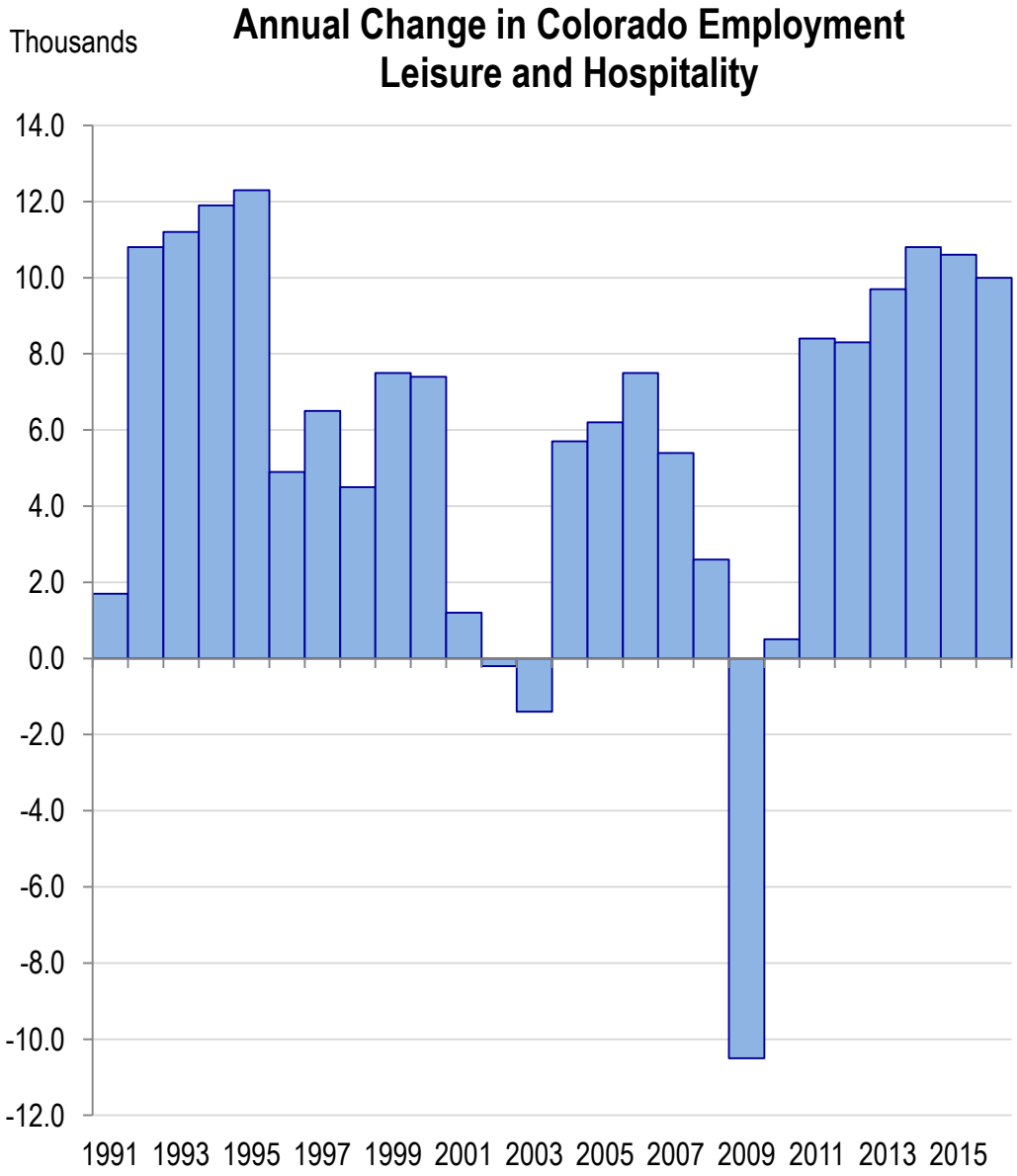
Source: Bureau of Labor Statistics, cber.co.

Annual Employment Change in Colorado Employment – Tourism

Tourism jobs have been a steady source of growth for Colorado that touches all counties.

The most current location quotient based on QCEW data is 1.17.

The location quotient for accommodations is 1.32. In addition, the location quotient for amusement and gambling workers is 1.47.



Source: Bureau of Labor Statistics, cber.co.

Colorado's Competitive Advantage
Are Leaders Fostering Success in these Industries?

From a policy perspective, private and public leaders must be able to address the following issues to ensure that these industries play a key role in the growth of Colorado.

- **Construction** – Normally states do not have a high location quotient in Construction. Is Colorado's LQ greater than 1.0 because the state has shown steady growth? Is the LQ high because of the strong relationship between construction and the extractive industries? Is the LQ "too high", i.e. does Colorado have too many construction workers?
- **Extractive Industries** - The extractive industries provide the state with a distinct competency, i.e. other states cannot duplicate it. The industry will die if one of two things happen: The oil, gas, and minerals can be completely extracted or the state can develop a business climate that is not supportive of the sector. Can state leaders strike a balance between being environmentally responsible and business-friendly?
- **Information** -. As technology continues to change, will Colorado lose its edge and critical mass in this sector?
- **Professional, Scientific, and Technical** - Many of the companies in the PST Sector are part of the state's high tech cluster. Can the state do a better job of retaining in-state college graduates and attracting out-of-state talent to ensure that PST companies can provide world-class services?
- **Leisure and Hospitality** – The tourism sector includes accommodations and food service businesses and those in arts, entertainment, and recreation. The mountains and natural beauty in the state provide a distinctive competency. Are state leaders appropriately protecting the growth of this industry and the environment?
- **Manufacturing** – The manufacturing sector is an important part of the state's high tech cluster. What can state leaders do to strengthen the workforce and the ability of these companies to become world class manufacturers?

Colorado Employment Forecast

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.

From 2012 through 2015 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. In this short period that 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.

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.

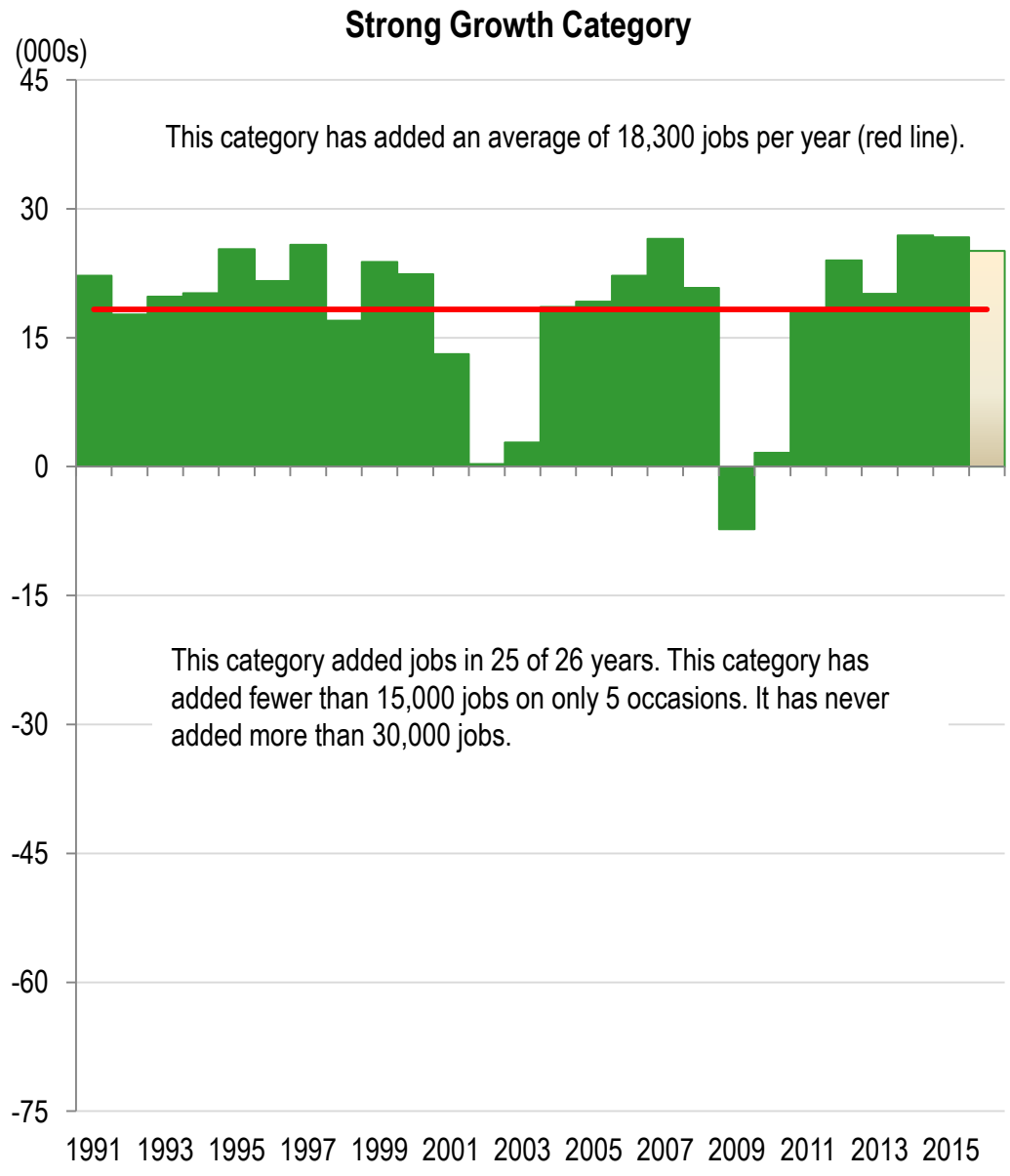
Total employment for this category was:

1996 492,100 workers, 25.9% of total employment

2006 657,300 workers, 28.8% of total employment

2016 840,100 workers, 32.3% of total employment

In 2016, between 24,000 and 26,000 workers will be added at a rate of 2.9% to 3.2%. This rate of growth is similar to the last two years.



Source: Bureau of Labor Statistics, cber.co.

Three Things to Look for in 2016 Strong Growth Category

Strong Growth Category

- 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

Three Things to Look For

- The health care sector has been a job creation machine, despite critical shortages in key occupations such as nursing. The growth of the population and the Affordable Care Act will continue to cause change in the structure of the sector . In the short term, there will be growth in this sector in 2016. Health care providers are being pressed to provide more and better service at lower prices. At some point that will cause a reduction in the number of workers.
- The growth in the number of establishments will result in growth of the administrative sector, as companies need more b-to-b services.
- The PST sector has experienced minimal fallout from the decline in the extractive industries. Limited fallout is expected in 2016.

Annual Employment Situation for the Solid Growth Category

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

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

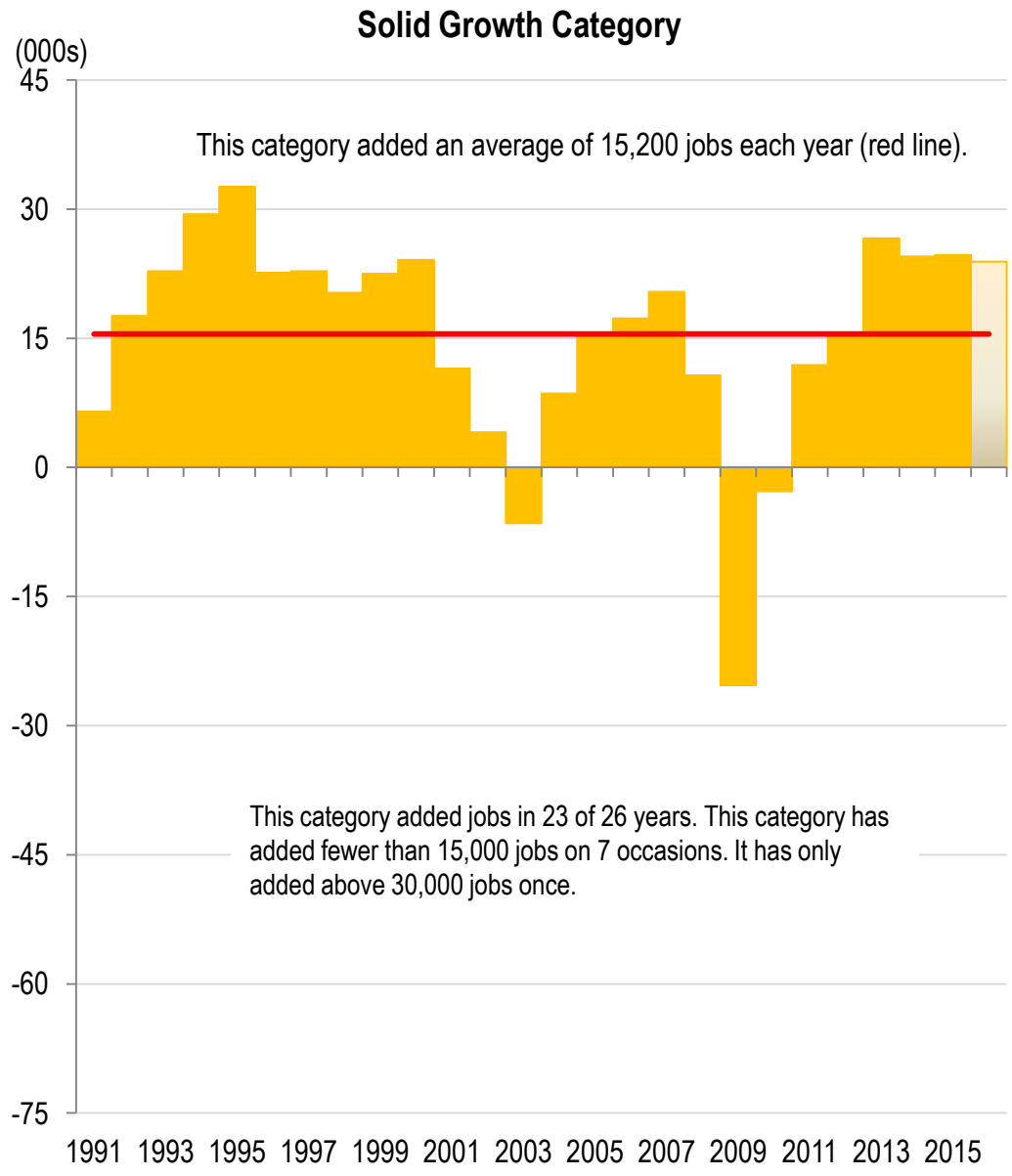
Total employment for this category was:

1996 740,600 workers, 39.0% of total employment

2006 880,700 workers, 38.6% of total employment

2016 1,010,900 workers, 38.8% of total employment

In 2016, between 23,000 and 25,000 jobs will be added, at a rate of 2.3% to 2.5%. This rate of growth is similar to the last two years.



Source: Bureau of Labor Statistics, cber.co.

Three Things to Look for in 2016 Solid Growth Category

Solid Growth Category

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

Three Things to Look For

- Stronger personal consumption will be driven by a larger population, more wage and salary workers and higher wages. Gains in retail sales should benefit state and local government coffers.
- The process for financing state government services is a mess thanks to the initiative process, TABOR, the Gallagher Amendment, Amendment 23, and the state constitution. Leadership from the private sector is seeking solutions and ways to address the challenge. It is unlikely they will be successful in 2016.
- Public education will benefit from larger budgets. Since 1990 higher education employment has increased almost every year, including recessions and years when finances were lean. Despite having strong labor unions, K-12 employment has been more volatile than higher education.

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

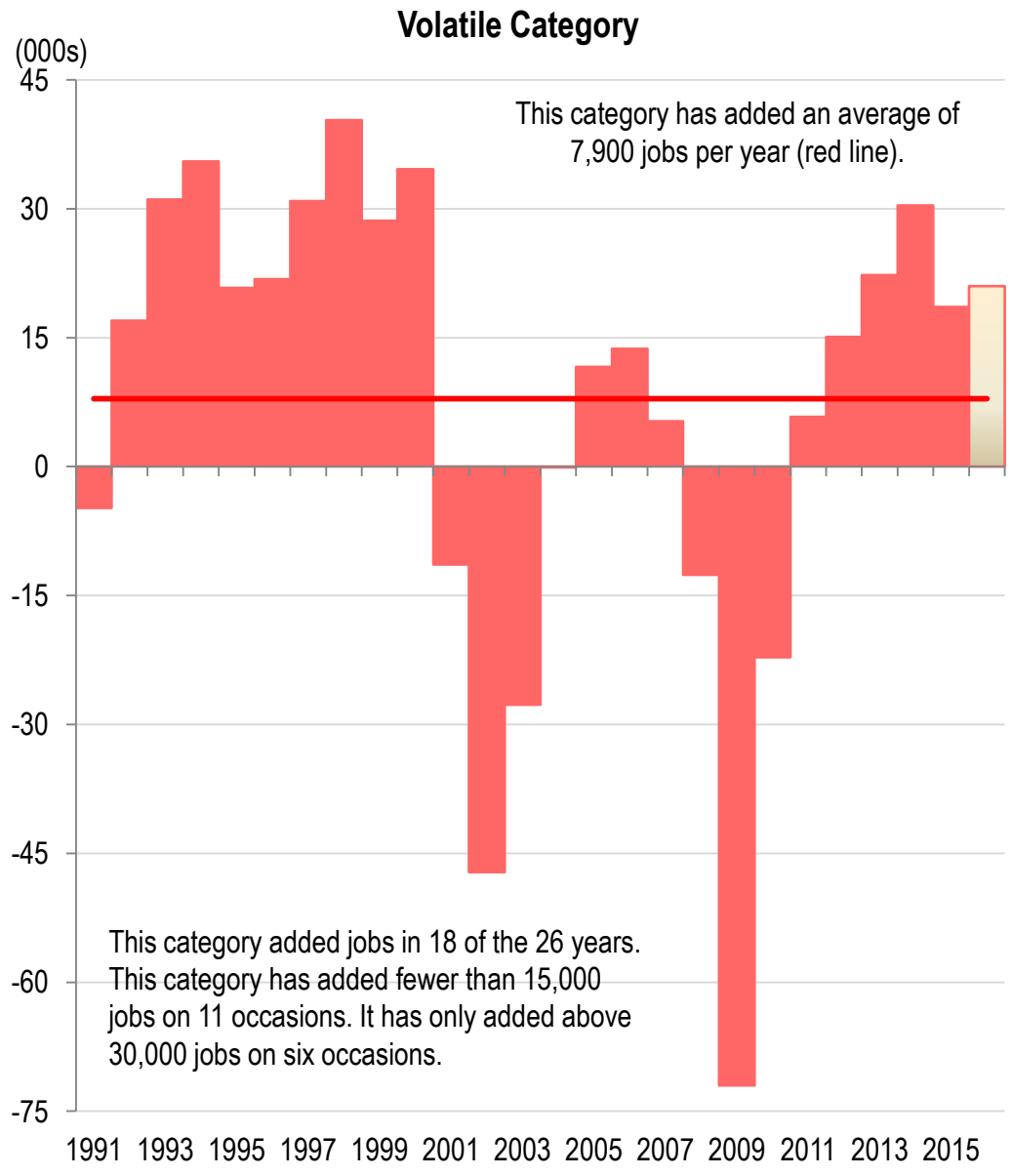
Total employment for this category was:

1996 668,000 workers, 35.1% of total employment

2006 741,300 workers, 32.5% of total employment

2016 753,000 workers, 28.9% of total employment

In 2016 between 20,000 and 22,000 jobs will be added, at a rate of 2.7% to 3.0%. This rate of growth is slightly greater than 2015.



Source: Bureau of Labor Statistics, cber.co.

Three Things to Look for in 2016 Volatile Category

Solid Growth Category

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

Three Things to Look For

- Construction will have a strong year in 2016; however, there are concerns about 2017.
- The price of oil dropped sharply in Q4 2014 and the decline continued in 2015. Production remained strong, but the rig count has continued to drop. There will be continued layoffs in 2016 and lower production. With good luck, the price for a barrel of oil will increase in 2016. Some pundits have suggested the price for a barrel of oil will reach $50 next year, while others believe it will stay below $50 for an extended period,
- The number of manufacturing jobs has increased significantly because of Vestas and its in-state supply chain. Efforts have been made to strengthen and support high tech manufacturing. For example, Front Range Community College has established training programs for machinists at its campus in Longmont.

Summary of Strong, Solid, and Volatile Growth Categories

In 2016, the growth of the Strong and Solid Growth Categories will be similar to 2015 and the Volatile Category will be more aggressive.

The Strong Growth Category of sectors (green) has performed consistently over time. The category expanded at a rate of 3.4% in 2015 and will grow at a slightly slower rate in 2016.

Over time, the Solid Growth Category of sectors (yellow) has shown growth rates similar to the overall growth rate for the state. In 2015, this category grew at a rate of 2.6% and will add jobs at a slightly slower rate in 2016.

Finally, the Volatile Category of sectors (red) was a disappointing source of growth in 2015. In 2015 the category added jobs at a rate of 2.6%. Jobs will be added at a slightly faster rate in 2016.

Note: This data reflects projected changes to the 2014 and 2015 data when BLS makes its revisions in March 2016.

Source: Bureau of Labor Statistics, cber.co.

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 2015 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 that 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 Employment Forecast
Most Likely Scenario

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.

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

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

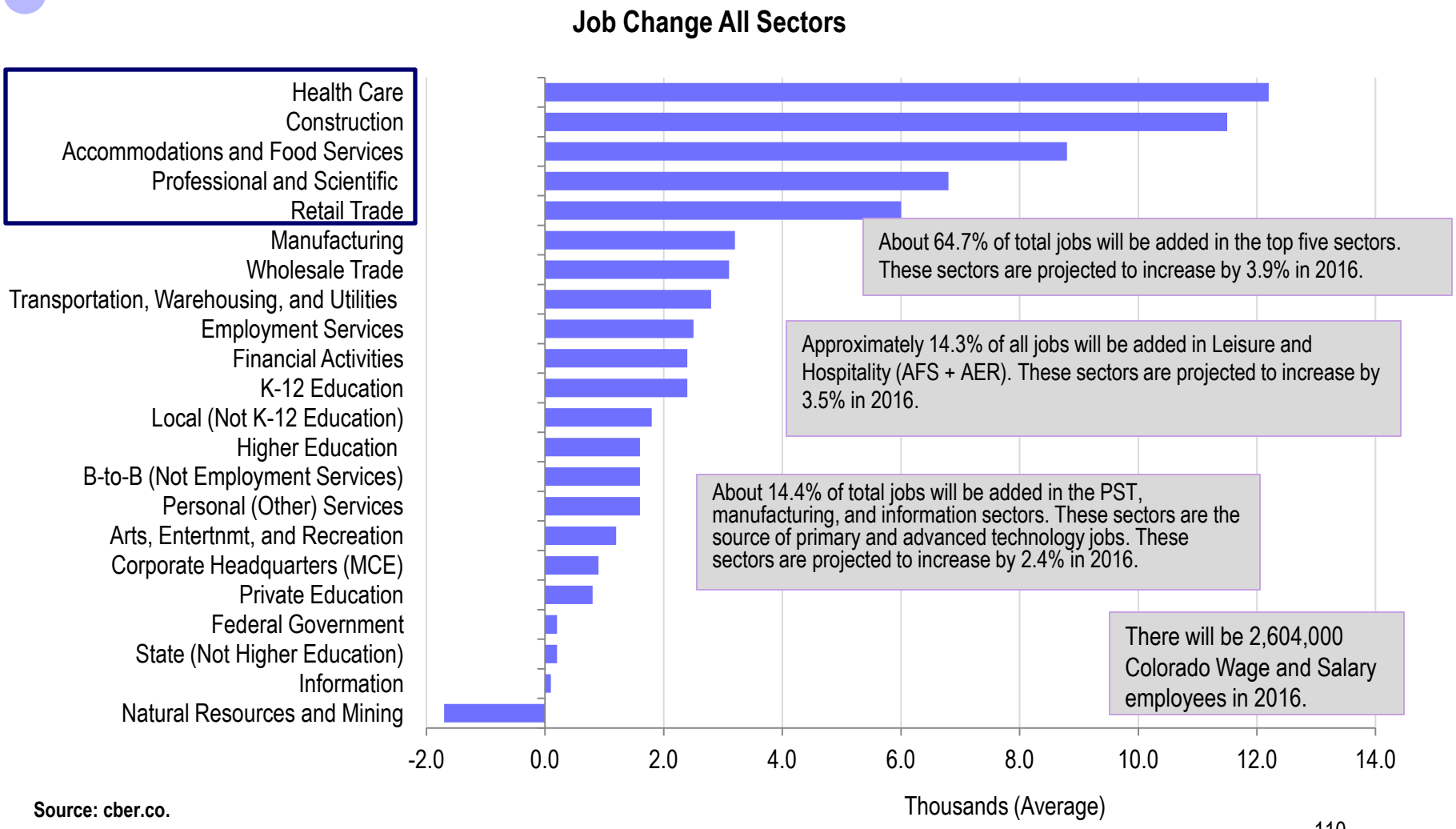
- Natural Resources and Mining
- Construction
- Manufacturing
- Transportation, Warehousing, and Utilities
- Employment Services
- Financial Activities
- Information
- Federal Government

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

Source: cber.co.

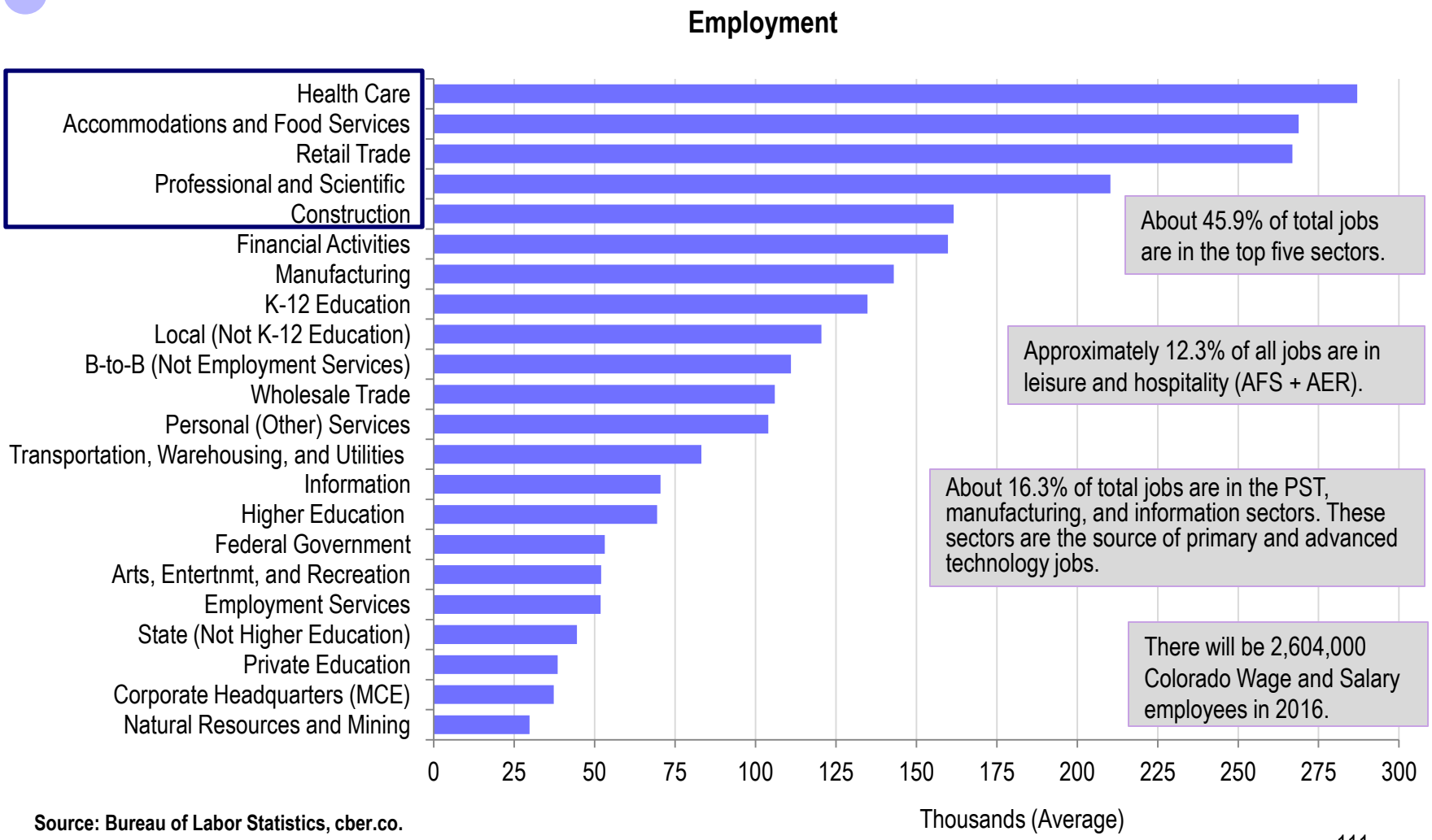
Summary, Opportunities, and Challenges

Projected Job Changes 2016



Source: cber.co.

Colorado Wage and Salary Employment 2016 Forecast



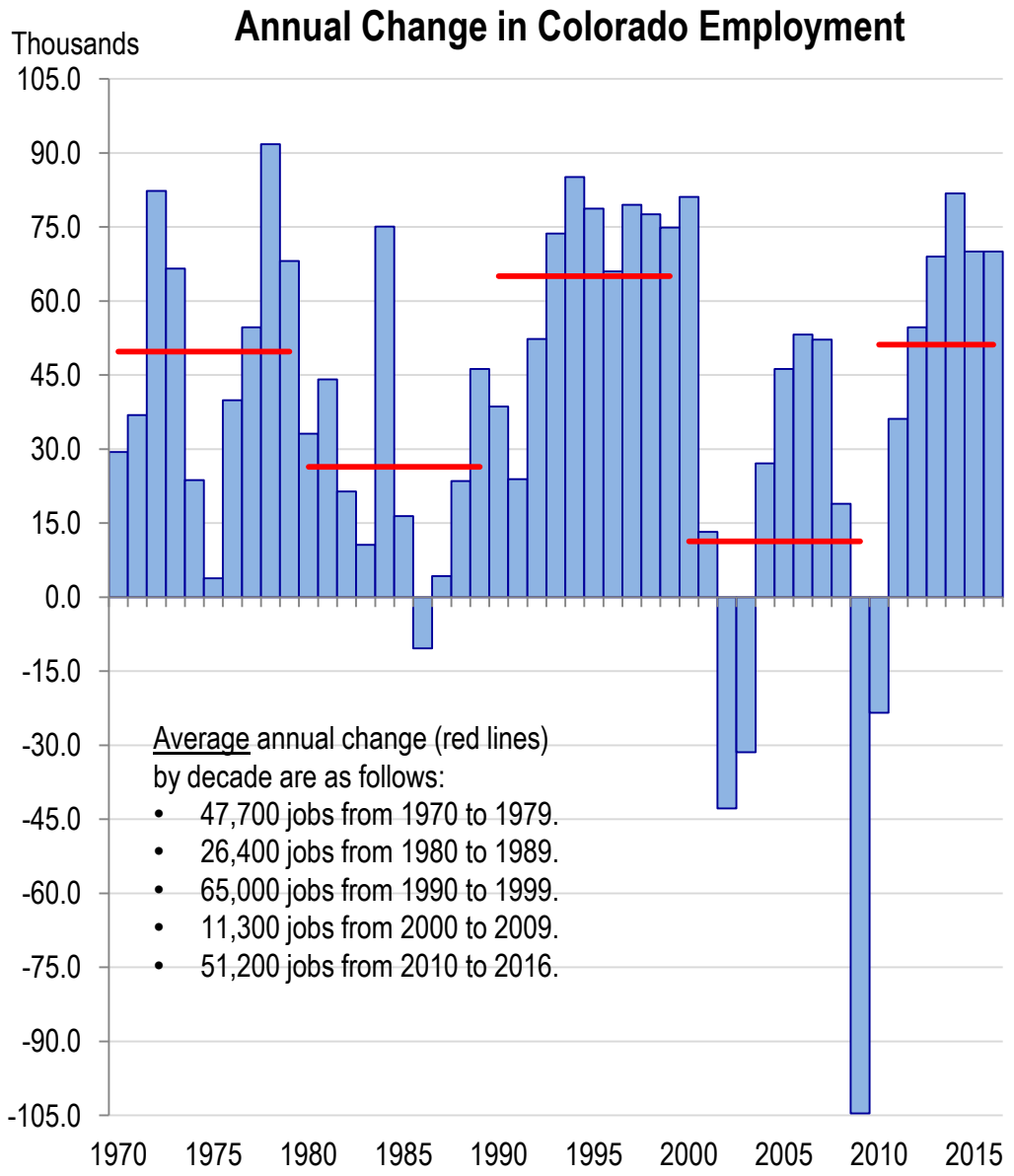
Source: Bureau of Labor Statistics, cber.co.

Annual Employment Change in Colorado Employment

The 2016 forecast assumes that Colorado added 81,800 jobs in 2014 and 70,000 jobs in 2015.

For the four quarters beginning Q2 2014 and ending Q1 2015 Colorado added more than 80,000 jobs per month (on average). In two of those months more than 90,000 jobs were added. This was near record level growth for the state – a rate that could not be sustained given lower oil prices and the slowdown in the Chinese economy.

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



Source: Bureau of Labor Statistics, 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.

Main Street Activity – Unofficial measures of the economy (rising prices, lines in restaurants, shoppers carrying bags out of retail stores, cone zones, low gas prices) indicate the Colorado economy is healthy.	**Job Growth** – From Q2 2014 through Q1 2015 Colorado experienced job growth in excess of 80,000. This level of growth was not sustainable. Solid growth is expected in 2016.
Population Growth - In 2015 the Colorado population increased by 90,000.	**Establishment Growth** – The increase in the number of establishments provides more people with places to work.
GDP Growth – Colorado's GDP growth will continue to exceed the growth rate of the United States	**PCPI Growth** – The state's per capita personal income will increase at a rate of 2.8% in 2016.
New Car Registrations – Colorado new car registrations remain strong.	**Manufacturing** – The sector will add jobs from 2011 to 2016 at an annualized rate of 2.4%.
Property Taxes – Increased home prices will benefit the coffers of local governments and school districts.	**Construction** – Cranes and cone zones are abundant. The industry is poised to have a strong year in 2016.
DIA Passengers – DIA will become a bigger part of the Denver economy in years ahead.	**Information** – After declining for more than a decade, employment has leveled out.

Economic Risks and Concerns

As always there are risks and headwinds in the Colorado economy.

State Government - The state government will collect record revenues this fiscal year, but experience shortfalls caused by Amendment 23, the Gallagher Amendment, TABOR, and the initiative process. This is a mess that will negatively impact roads, education, and other services.	**Low Unemployment Rate** – Industries such as construction, software, and advanced manufacturing have had difficulty finding trained workers because of low unemployment rates in key occupations. The problem will increase as the unemployment rate drops further.
Affordable Housing - It will be more difficult to find attainable and affordable housing as a result of the continued increases in housing prices. There is not evidence this has been detrimental to the state – yet.	**Empty Coal Cars** – There are several miles of coal cars being stored on tracks in Southwest Colorado. The implications are bad for the extractive industries and rail transportation.
Population – Twenty-seven of the state's 64 counties experienced declines in population between 2010 and 2014. Many are small rural counties.	**CPI** – Colorado's rate of inflation is expected to be about 1.0% point above the national rate. Rising home prices are a cause of this increase.
Oil and Gas Industry – The oil and gas industry will shed jobs in 2016 and production will decline from record levels.	**Transportation** – The state's transportation infrastructure (roads and bridges) needs a sugar daddy!

Appendix

The cber.co Forecast – A Review of the 2015 Forecast and Related Issues

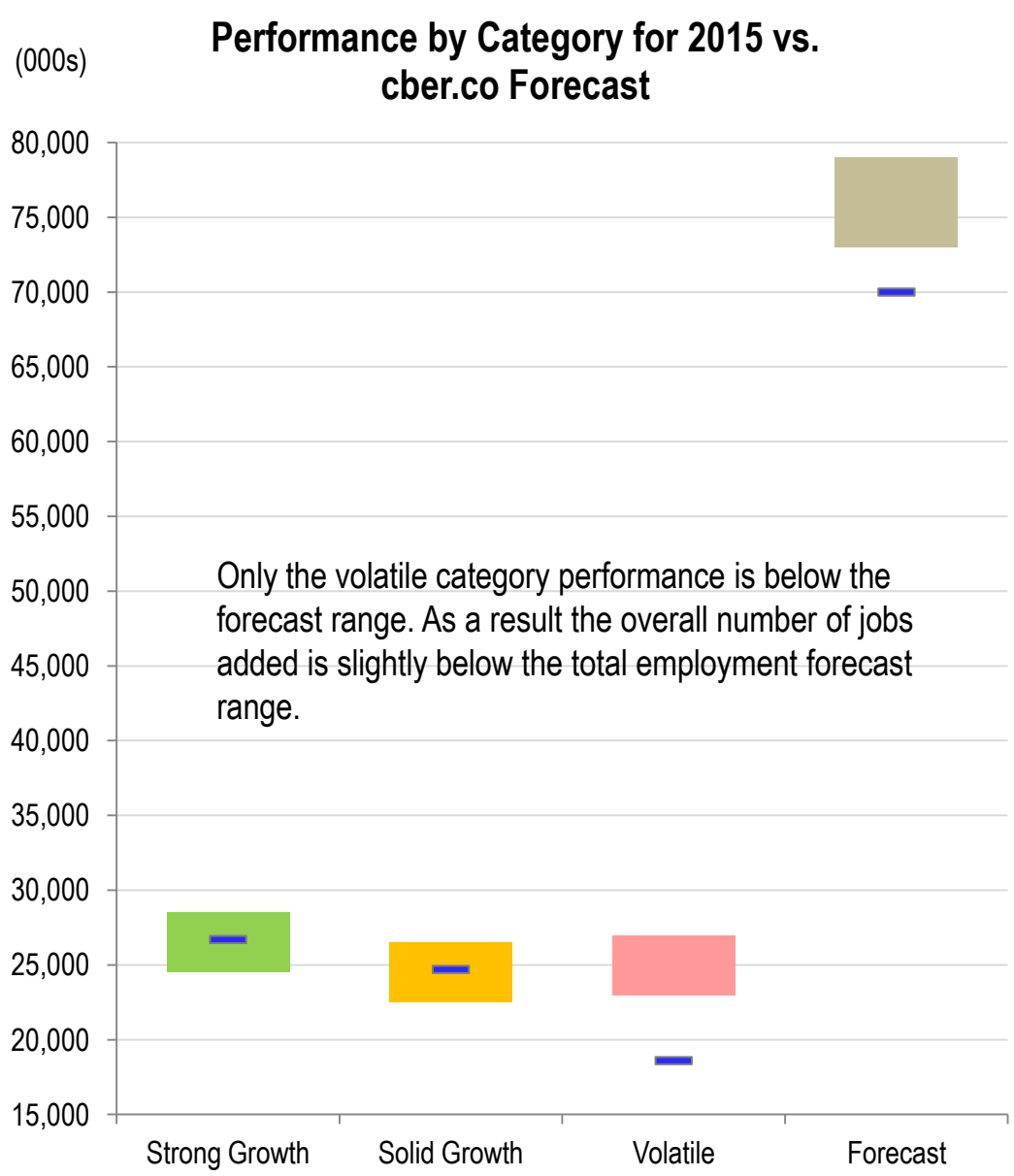
Summary of Performance to cber.co 2015 Employment Forecast

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.

Based on the estimated 2015 revisions, only the volatile category added fewer jobs than expected. As a result, the overall forecast was below the projected range (grey box).

The shortfall in the Volatile category was a function of slower than expected growth in the construction and oil and gas industries.



Source: Bureau of Labor Statistics, cber.co.

The Purpose of the cber.co Forecast

The purpose of this chartbook is to present an employment forecast for the state of Colorado based on factors that are driving change in Colorado and the United States. It can be used for economic development, workforce training, and decision making in business. In the end the only certainty is that the forecast will either be wrong or lucky. Either way, the value of the forecast is the "story" that explains the change in 2016 and beyond.

Changes in Gross Domestic Product

The foundation for the forecast is the factors that cause change and projected change in the global and U.S. GDP. Attention is paid to the four components of the GDP– consumption, business investment, government spending, and net exports. Because the Colorado economy is closely linked to the national economy, trends in these four components are relevant to Colorado.

Every effort has been made to use reliable information and perform accurate analysis to describe changes in the Colorado economy. This and any other forecast cannot fully account for major shocks to the system, such as unexpected policy decisions, geopolitical unrest in other parts of the world, acts of terrorism, and natural disasters.

Wage and Salary Data

This forecast focuses on wage and salary data for the following reasons:

- Everyone understands jobs.
- Employment data is available in the public domain.
- Employment data is produced on a timely basis and its level of accuracy is usually reasonable.
- From an economic development standpoint, employment is the metric of choice because "it all starts with a job" – demand for goods and services is created, workers are hired, wages are paid, goods and services are purchased and the cycle repeats.

Review of cber.co 2015 Forecast

Review of 2015 Forecast

The first step in the preparation of the 2016 forecast was to review the basic variance from the 2015 forecast. As well, other forecasts were reviewed and an effort was made to understand why they missed the mark.

Preparations for the 2015 forecast began shortly after Thanksgiving in 2014. In early January 2015, the cber.co.co forecast for 2014 was released. At that time the impact of the Great Recession had become less relevant. GDP growth remained historically weak, the unemployment rate was trending downward, and U.S. and Colorado job growth were solid and improving.

The probability of these scenarios follows:

- Most Likely 60%
- Optimistic 25%
- Pessimistic 15%.

There is slightly more upside potential than downside risk.

Scenarios for 2015 cber.co Forecast

Optimistic Scenario

- U.S. Real GDP greater than 2.9%.
- Colorado will add more than 79,000 work

Most Likely Scenario

- U.S. Real GDP 2.5% to 2.9%.
- The U.S. will add at least 2.6 million workers.
- Colorado will add 3.0% of total U.S. jobs added.
- Colorado will add 73,000 to 79,000 workers, job growth will be 2.8% to 3.0%.

Pessimistic Scenario

- U.S. Real GDP less than 2.5%.
- Less that 73,000 Colorado workers.

Source: cber.co.

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

How the 2015 Data Compared to the Most Likely Scenario Forecast

Variance to the 2015 Forecast

The major data points and their variance from the forecast follow:

- Real GDP growth rate was 2.5%. The actual value was at the bottom of the projected range of 2.5% to 2.9%.
- The U.S. added 2.9 to 3.0 million wage and salary workers, significantly above the forecast.
- Colorado's contribution to U.S. job growth was 2.4%. Below the forecast.
- Colorado added 70,000 jobs in 2015. Slightly below the forecast.

The basic projections were reasonably accurate.

Scenarios for 2015 cber.co Forecast

Optimistic Scenario

- U.S. Real GDP greater than 2.9%.
- Colorado will add more than 79,000 work

Most Likely Scenario

- U.S. Real GDP 2.5% to 2.9%.
- The U.S. will add at least 2.6 million workers.
- Colorado will add 3.0% of total U.S. jobs added.
- Colorado will add 73,000 to 79,000 workers, job growth will be 2.8% to 3.0%.

Pessimistic Scenario

- U.S. Real GDP less than 2.5%.
- Less that 73,000 Colorado workers.

Source: cber.co.

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

Reasons for Variance from the 2015 Most Likely Scenario Forecast

Variance to the 2015 Forecast

The major data points and their variance from the forecast follow:

- Real GDP growth rate was 2.5%. The actual value was at the bottom of the projected range of 2.5% to 2.9%.
- The U.S. added 2.9 to 3.0 million wage and salary workers, significantly above the forecast.
- Colorado's contribution to U.S. job growth was 2.4%. Below the forecast.
- Colorado added 70,000 jobs in 2015. Slightly below the forecast.

Reasons for Variance in 2015 Forecast

Real U.S. GDP Growth

Real GDP growth missed the forecast because of the slowdown in the Chinese economy, strong U.S. dollar, and weaker than anticipated demand for goods abroad.

U.S. Employment

U.S. employment was strong during the last half of 2014 and first half of 2015, which lead to a strong year even though growth dropped off in Q3 2015.

Colorado Contribution to U.S. Job Growth

The U.S. job growth was stronger than expected and Colorado job growth was slightly weaker.

Colorado Employment

The forecasts for the Strong and Solid Categories were on target. The forecast for the Volatile category was overstated because the construction and extractive industries added fewer jobs than anticipated.

Source: cber.co.

Other 2015 Economic Forecasts Forecast Accuracy

The assumptions and errors in other forecasts were reviewed as a means of understanding what activities caused expected and unexpected changes in the economy during 2015. Real GDP was 2.5% for 2015 and Colorado added 70,000 jobs.

2015 Colorado Forecasts	Accuracy of 2015 Colorado Forecasts
cber.co Economic Forecast ↑ Real GDP growth was expected to increase slightly 2.5%-2.9%. ↑ Colorado will add 73,000 to 79,000 jobs.	Slightly overstated. Real GDP at bottom of forecast range. Employment slightly overstated.
Colorado Legislative Council (CLC) • ↑ Real GDP growth would increase strongly from 2.2% to 3.1%. • ↑ Colorado job growth will be 73,600 in 2015 vs. 71,500 in 2014 – a slight increase.	Real GDP significantly overstated. Employment slightly overstated.
Office of State Planning and Budgeting (OSPB) • ↑ Real GDP growth would increase from 2.3% to 2.7%. • ↓Colorado job growth will be 68,300 in 2015 vs. 69,100 in 2014.	Real GDP slightly overstated. Employment slightly understated.
CU Leeds School Business Economic Outlook • ↑ Real GDP growth would increase strongly from 2.2% to 3.1%. ↓Colorado job growth will be 59,300 in 2015 vs. 71,900 in 2014.	Real GDP significantly overstated. Employment significantly understated. Strong increase in GDP and strong decrease in employment don't make sense.

What was Missed in 2015?
BLS Data Error and Forecast Bias Errors

A review of the cber.co and other state forecasts shows that a source of forecast error in the 2015 forecast was the underestimation of the job growth based on data provided by BLS.

BLS Data Error

Short-term employment forecasts use the CES or Wage and Salary data provided by the Bureau of Labor Statistics. There are a number of "flaws" in the survey methodology which caused a number of sectors to be significantly overstated or understated. A description of the revision process for correcting these flaws is provided in the Appendix.

Forecast Bias

It is a common practice for forecasters to understate job growth. This may occur for a variety of reasons:

- Many economic models understate growth during periods of expansion and overstate growth during periods of decline. This tendency is called regression to the mean.
- Some economists make conservative forecasts because they believe greater harm may occur from overstating rates of growth than from understating it.
- Some forecasts are understated so the economist can later state that the economy performed better than expected. They feel this puts them and their financial sponsors in a better light than if they overstate a forecast.

The moral of the story is to look at the track record of employment forecasts to determine their tendencies for errors. The intent of this forecast is to eliminate all sources of bias, including intentional bias.

Colorado Employment Forecast
Putting the Forecast in Perspective

Putting the Forecast in Perspective

Summary of Tests to Measure Reasonableness of Forecast

This section shows a series of tests that were used to measure the reasonableness of the forecast. Some of those results are mentioned below and others are included in the following charts.

Overall Job Growth

- Twenty-two of the 23 sectors followed by cber.co are projected to add jobs in 2016 – the same as 2013 and 2014.
- The projected range of job growth for 2016 is 2.7% to 2.9%. The forecast of 2.8% job growth (midpoint of the forecast range) is ranked 41st of 77 years. From this perspective, there is below average growth.
- The projected range of job growth for 2016 is 67,000 to 73,000 jobs. The forecast of 70,000 jobs (midpoint of the forecast range) is ranked 12th of 77 years. 1972 was the first year that more than 70,000 jobs were added. Using 1972 as a base, the forecast would be ranked 12th of 45 years. That suggests there is strong growth.

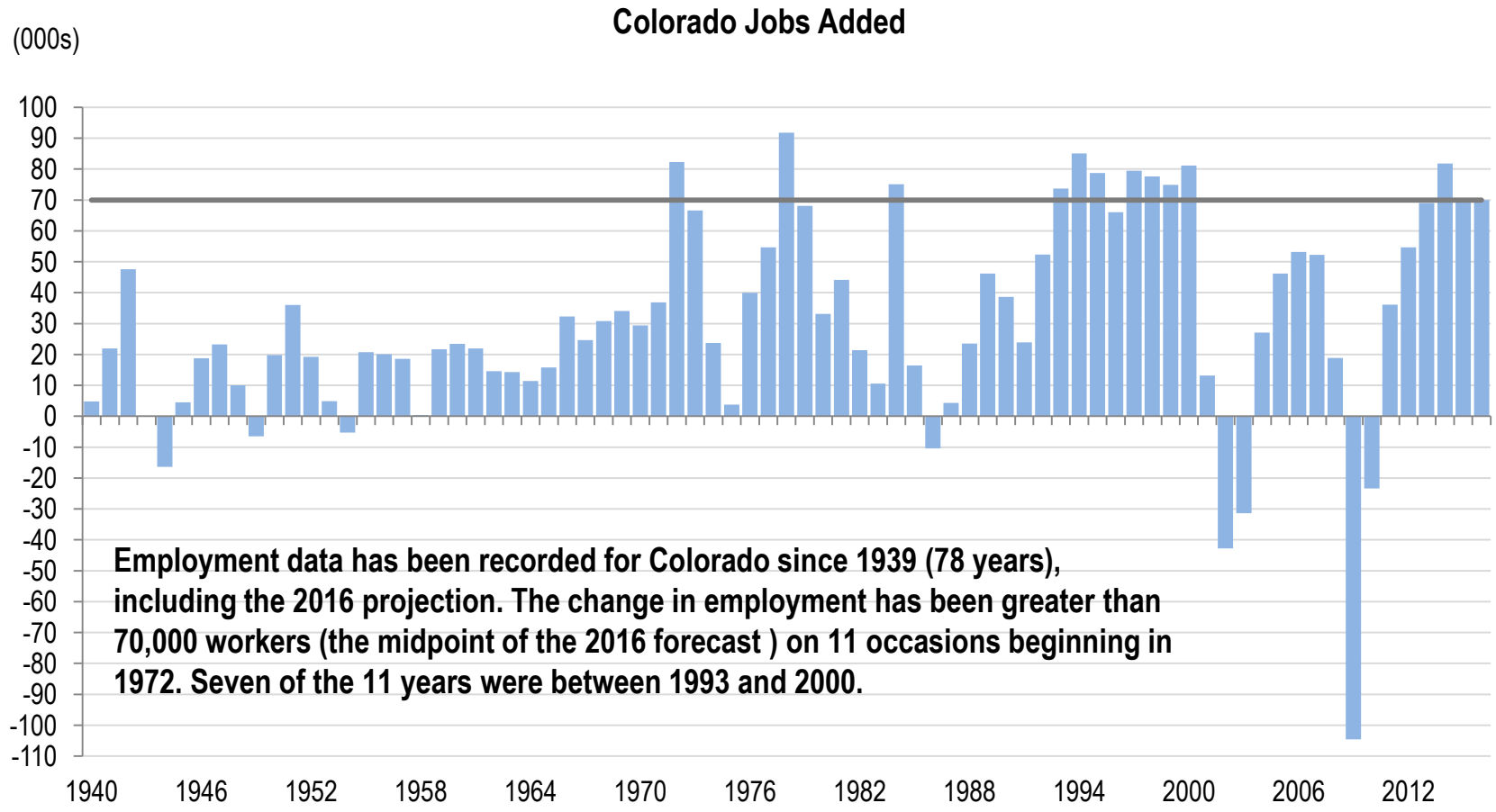
No matter how you look at it, job growth is occurring.

2015 Forecast for Job Growth Categories

The analysis of the rate of growth for the three job categories shows the following:

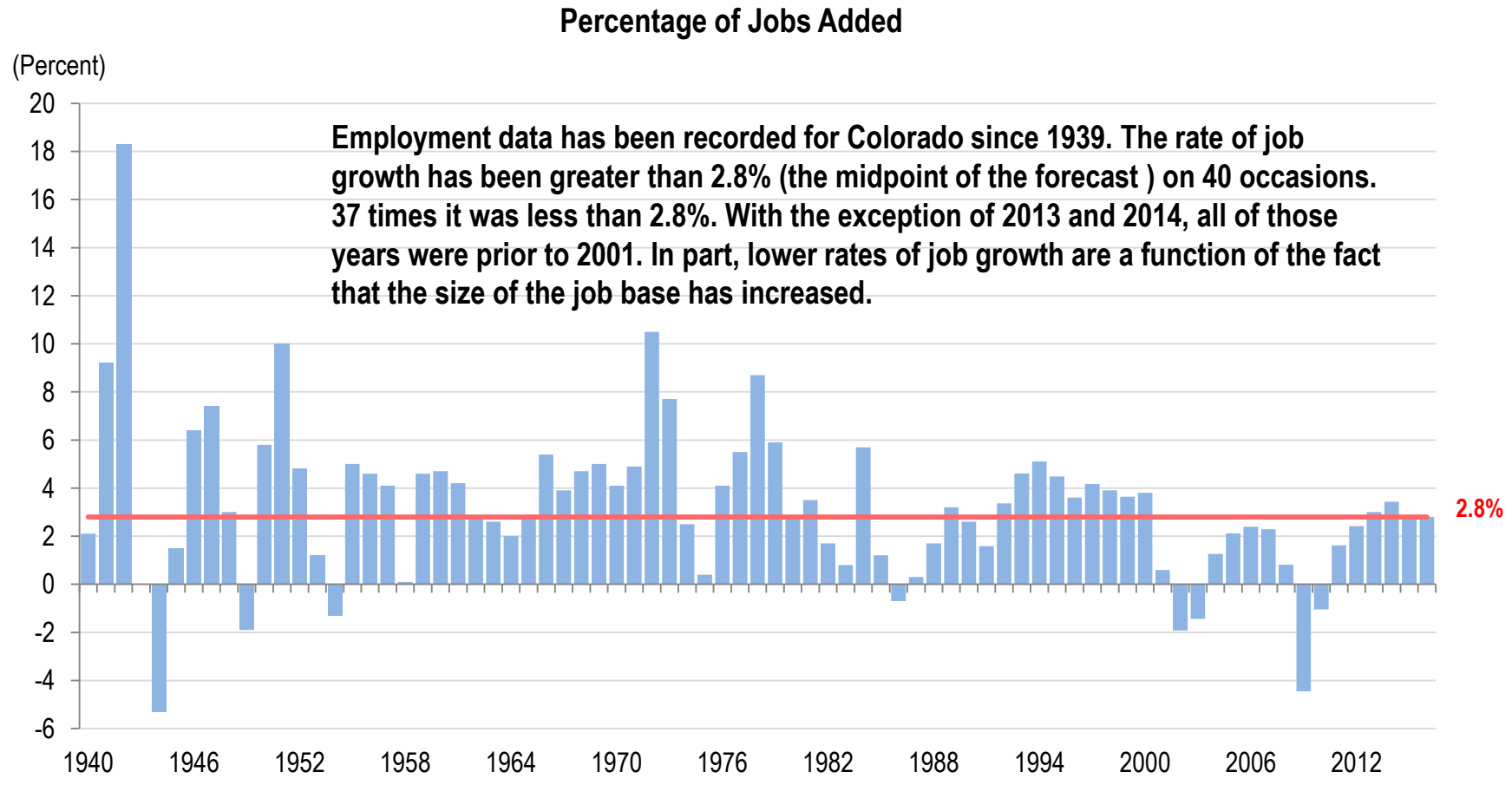
- **Strong** - In 2016, between 24,000 and 26,000 workers will be added at a rate of 2.9% to 3.2%. This rate of job growth is similar to the last two years.
- **Solid** - In 2016, between 23,000 and 25,000 jobs will be added, at a rate of 2.3% to 2.5%. This rate of growth is similar to the last two years.
- **Volatile** - In 2016 between 20,000 and 22,000 jobs will be added, at a rate of 2.7% to 3.0%. This rate of growth is slightly greater than 2015.

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



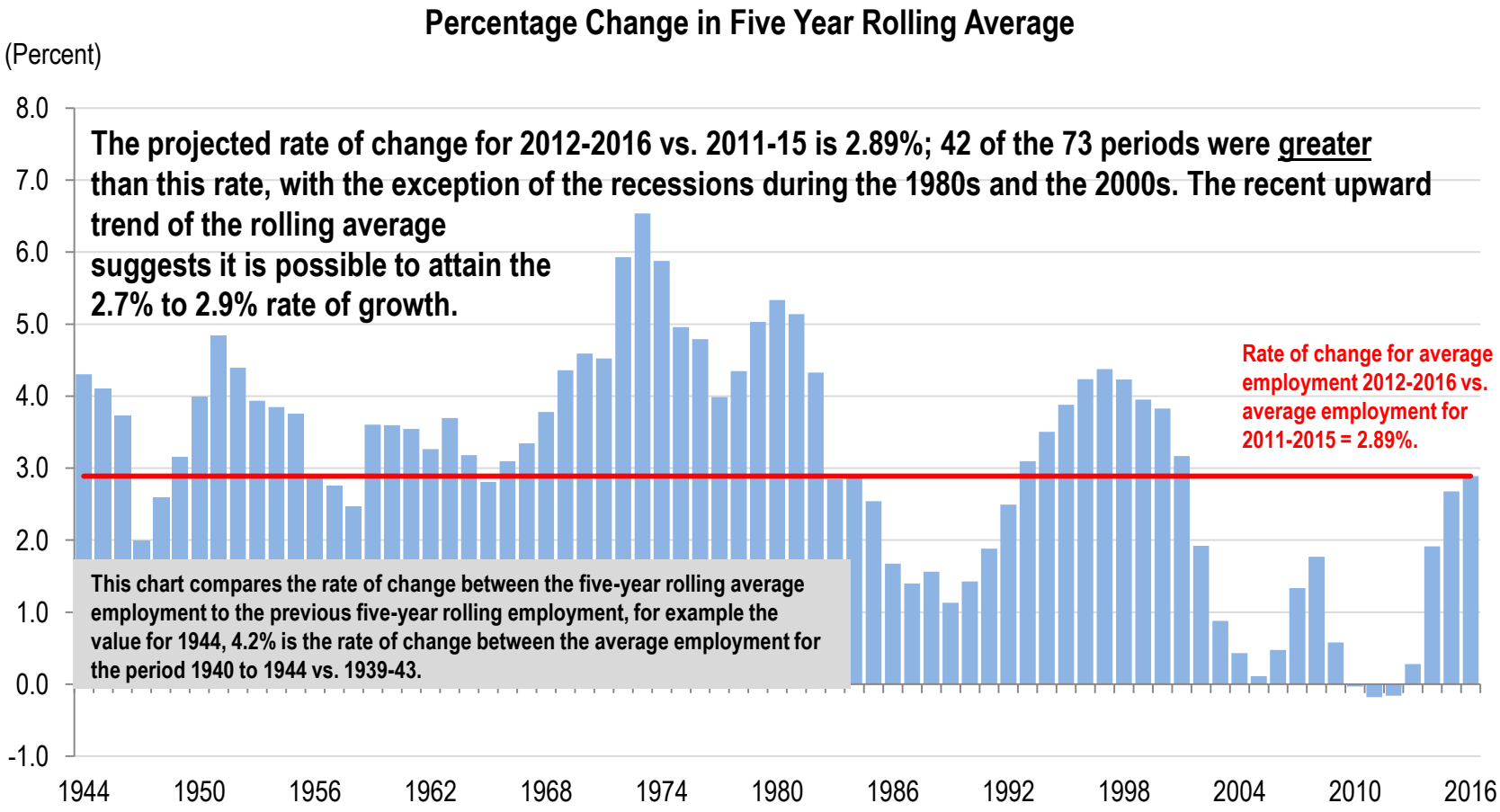
Source: Bureau of Labor Statistics, cber.co.

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



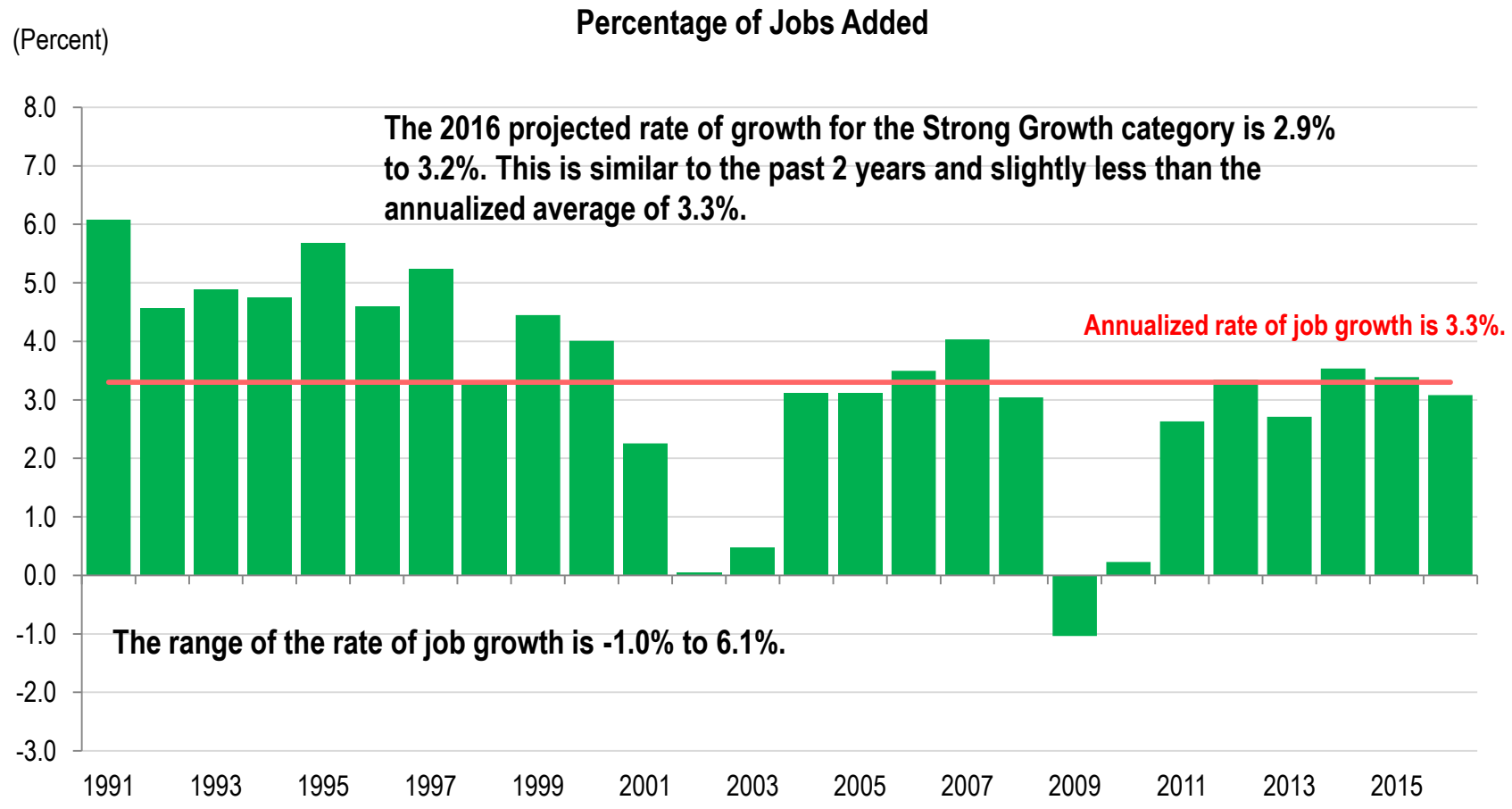
Source: Bureau of Labor Statistics, cber.co.

Job Growth of 2.7% to 2.9% in 2016 is a Reasonable Forecast Based on the Rate of Change for a Five Year Rolling Average (Employment)



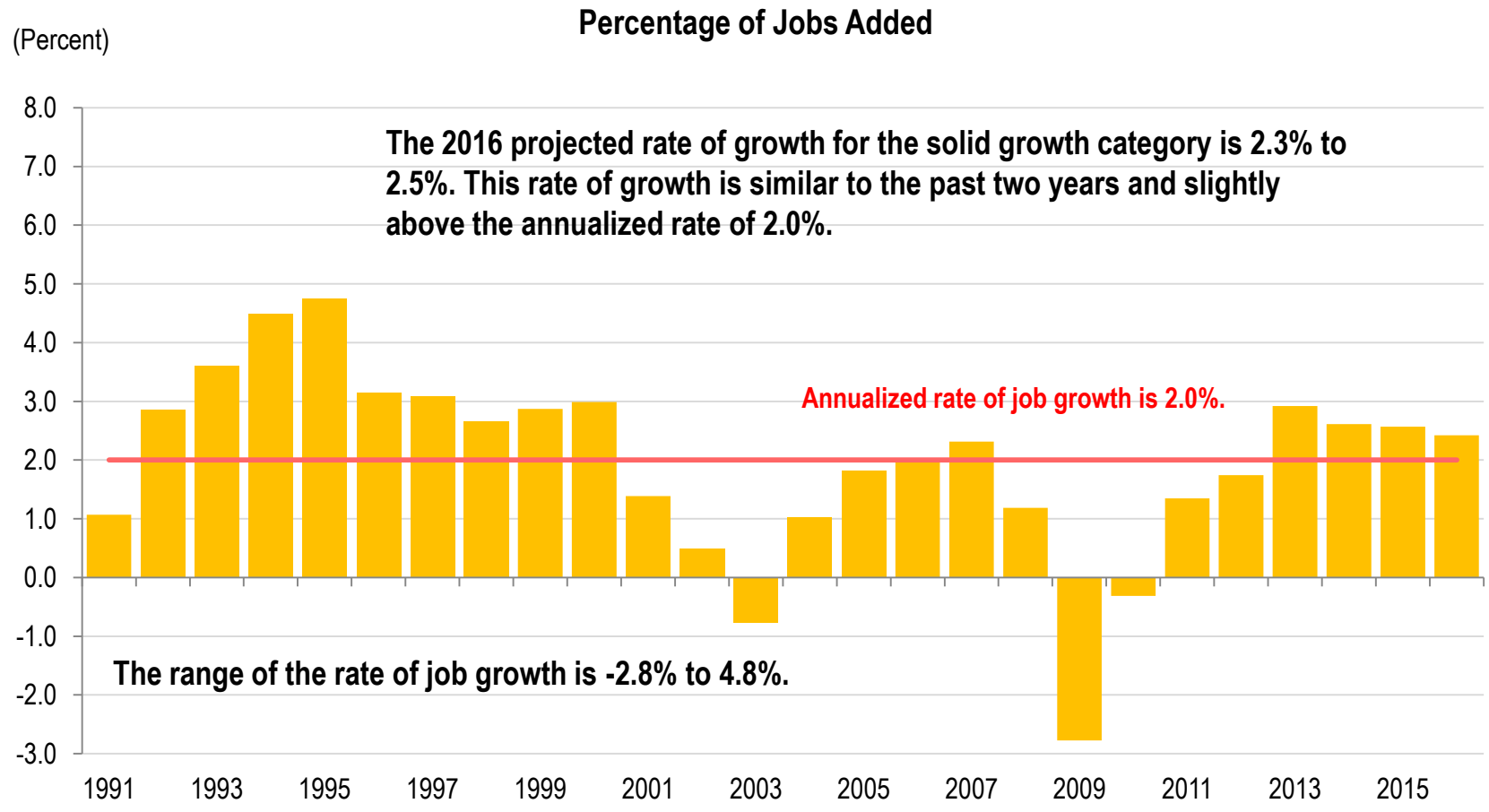
Source: Bureau of Labor Statistics, cber.co

The Projected Rate of Colorado Job Growth Strong Growth Category



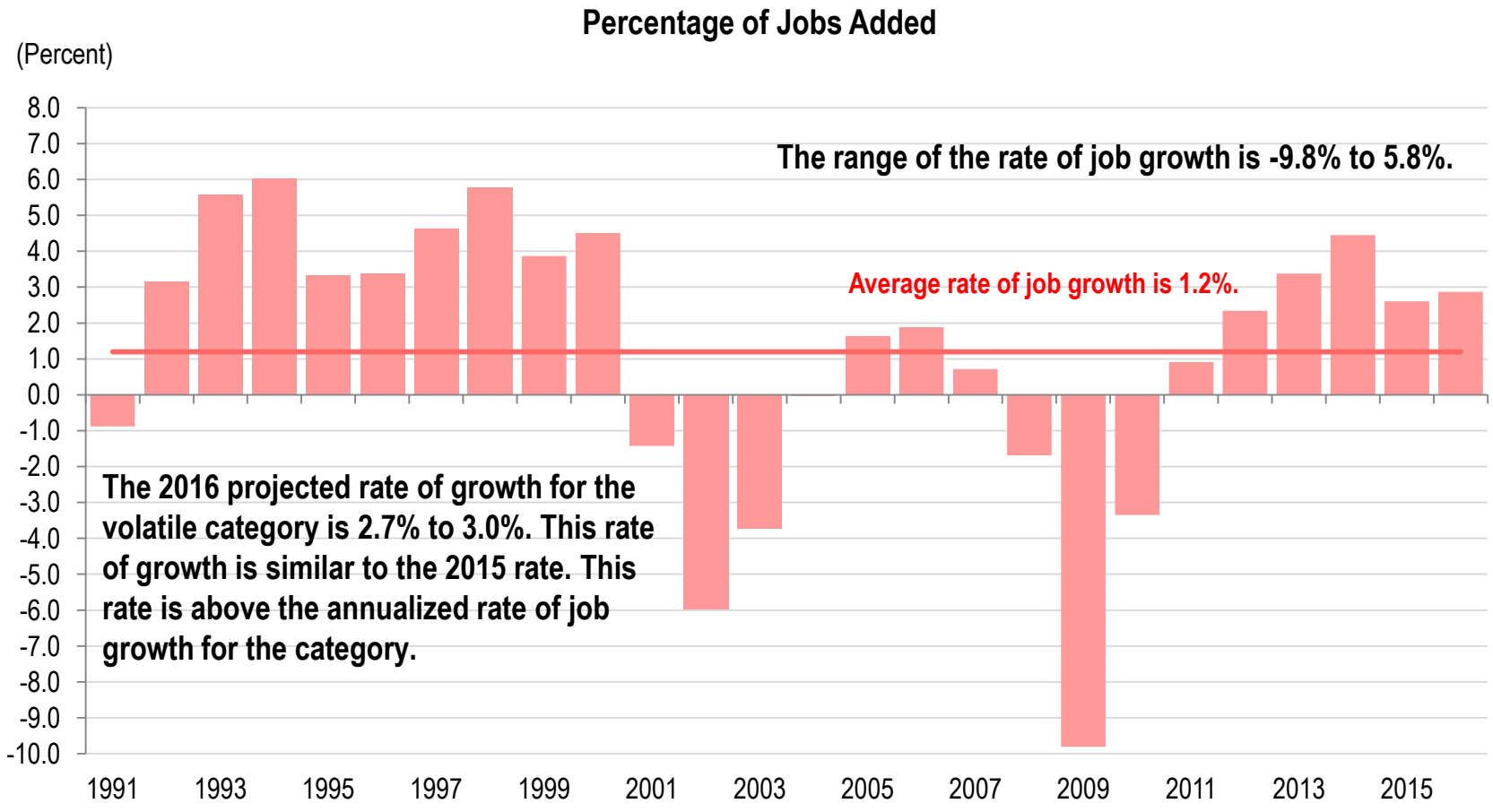
Source: Bureau of Labor Statistics, cber.co.

The Projected Rate of Colorado Job Growth Solid Growth Category



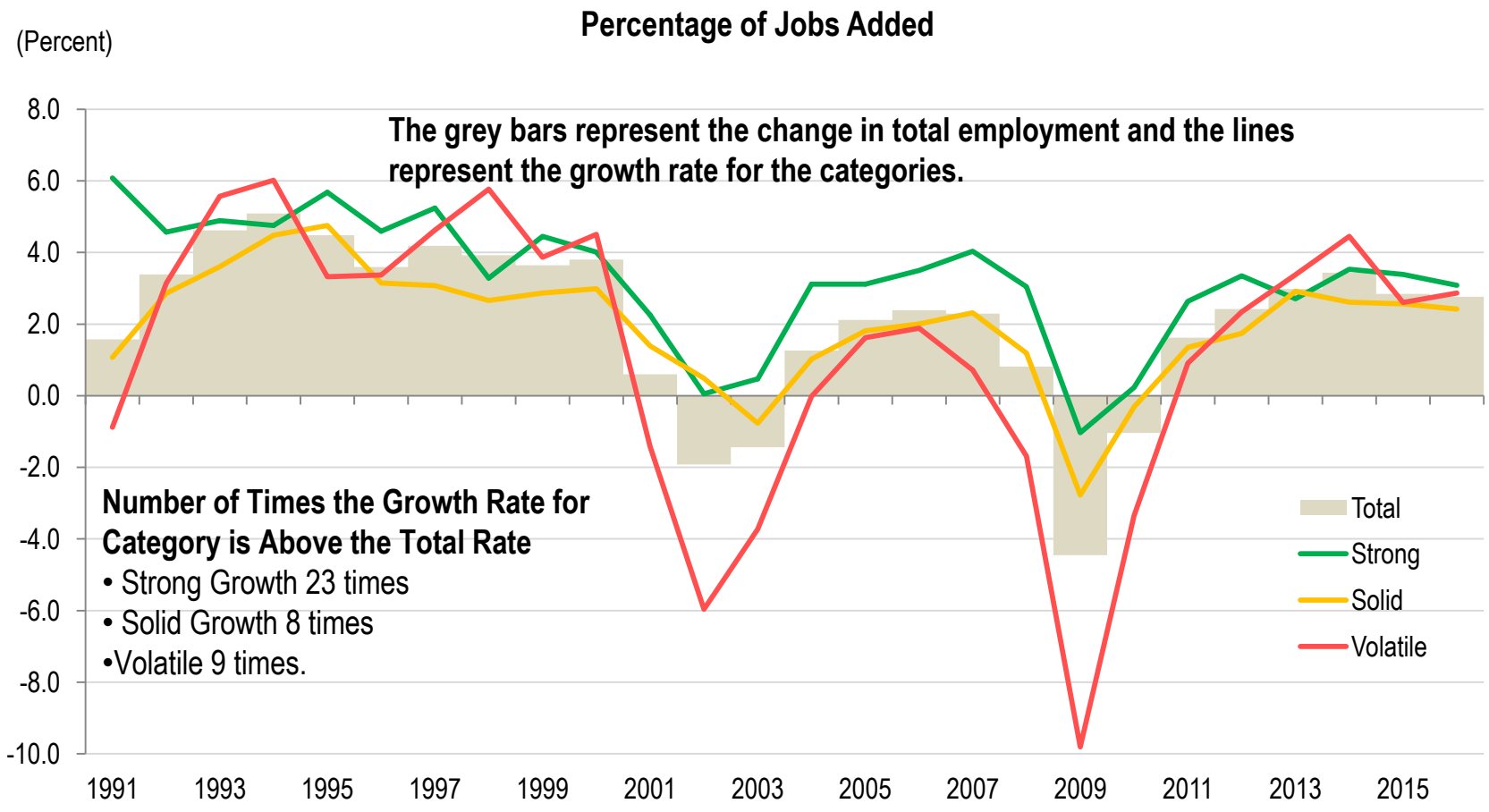
Source: Bureau of Labor Statistics, cber.co.

The Projected Rate of Colorado Job Growth Volatile Category



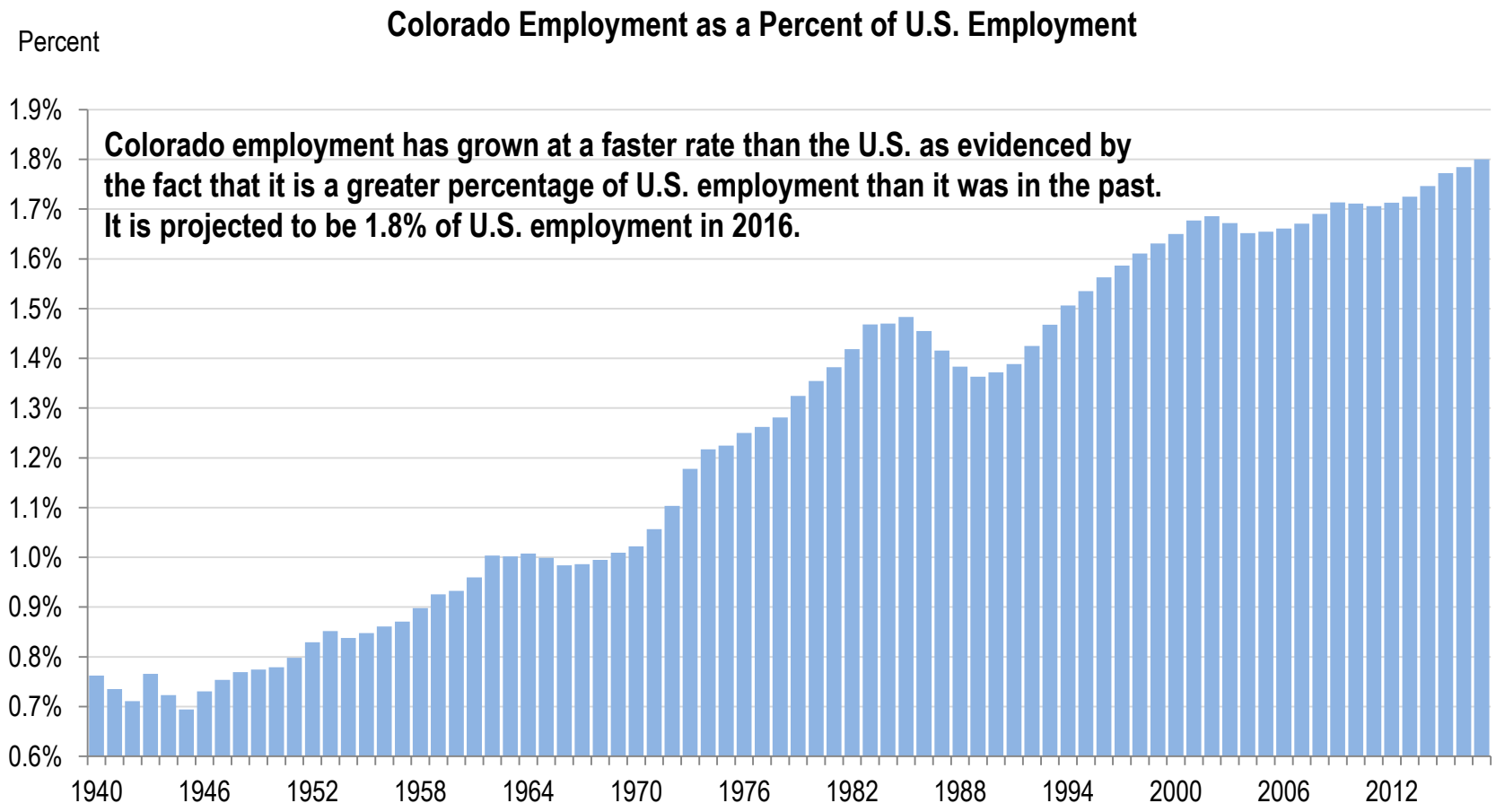
Source: Bureau of Labor Statistics, cber.co.

The Projected Rate of Job Growth Categories vs. Total Job Growth



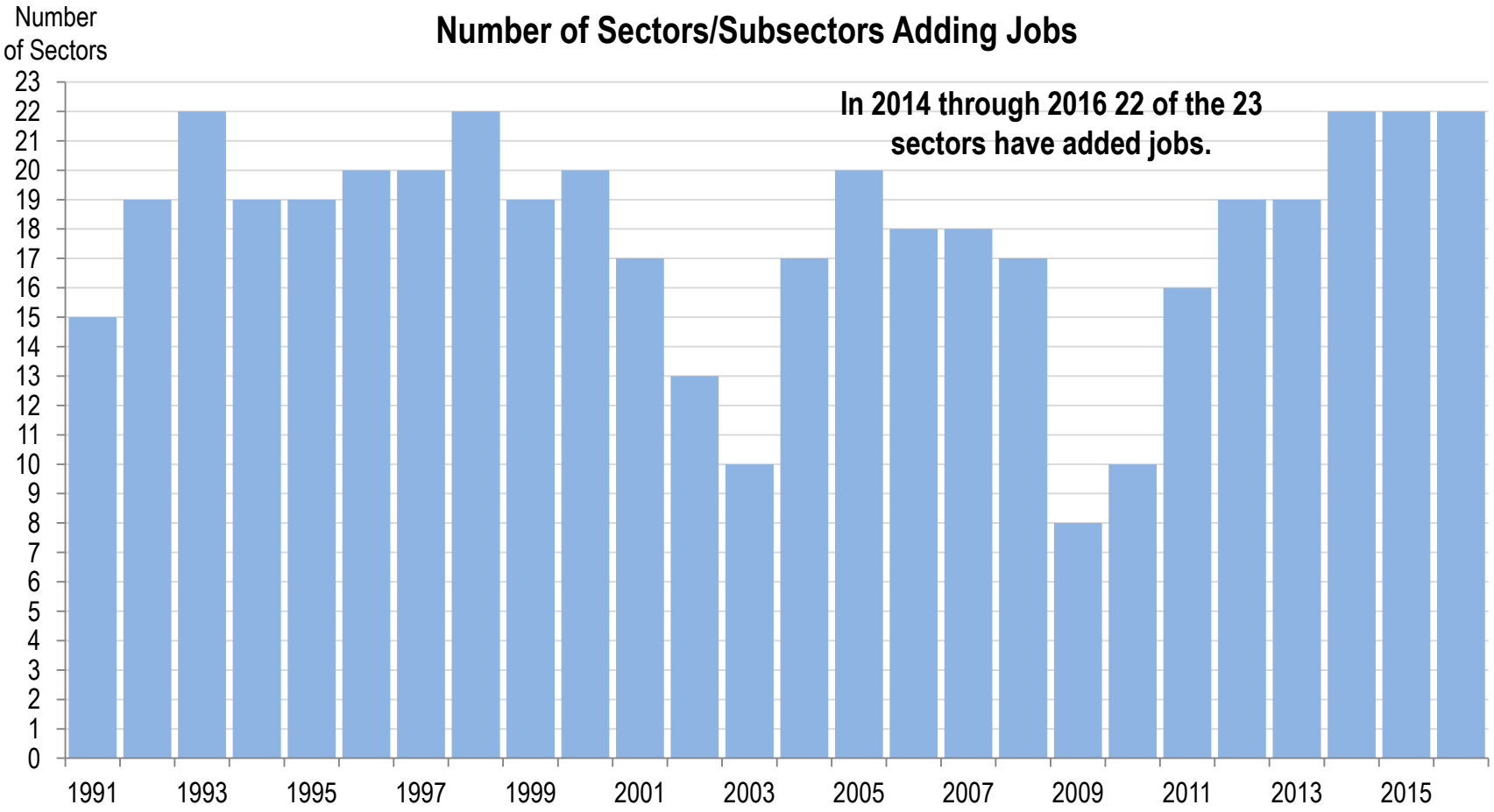
Source: Bureau of Labor Statistics, cber.co.

Colorado Employment as a Percent of U.S. Employment



Source: Bureau of Labor Statistics, cber.co.

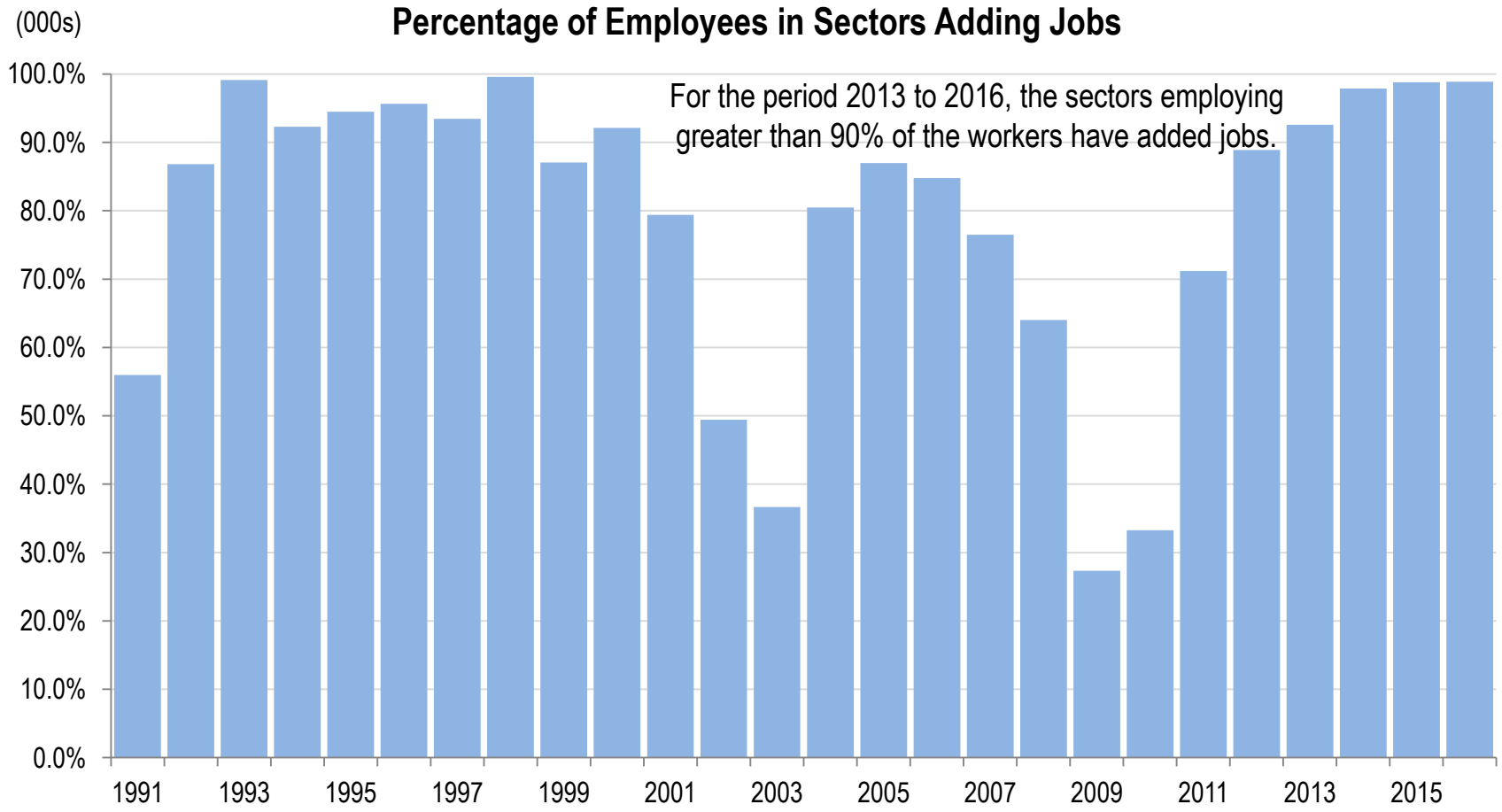
Diversity of Colorado Job Growth
Number of Sectors/Subsectors Adding Jobs



Source: BLS, cber.co.

Diversity of Colorado Job Growth

Percentage of Employees in Sectors Adding Jobs



Source: BLS, cber.co.

BLS/LMI Data Revision Process and Analysis for Determining Forecast Categories

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.

Analysis for Determining Forecast Categories

The tables in this section show tests that were used to categorize sectors into the Strong Growth, Solid Growth, and Volatile categories.

As it turns out, there is some logic to the different levels of volatility:

- The Strong Growth category includes sectors that are necessary and less susceptible to business cycles, for example, health care and other services. Combined, these sectors typically add jobs at a faster rate than the overall economy.
- The Solid Growth category is consumer based. It includes the trade sectors and sectors impacted by retail sales tax revenue, i.e. government agencies and education. Combined, these sectors typically add jobs at a rate similar to the overall rate of growth.
- The Volatile category includes sectors that are susceptible to business cycles and pressures from outside their industry. For example, the price of oil is driven by the amount of oil production around the world. This may cause booms and busts locally, which may directly impact the extractive Industries and indirectly alter growth in the construction, manufacturing, and retail industries.

Analysis for Determining Forecast Categories

Strong Growth Sectors

STRONG CONSISTENT GROWTH SECTORS

Category	1990 Employment	2012 Employment	% of Jobs 1990	% of Jobs 2012	Yrs Jobs Added '91 to '12	Change in Jobs '91-'00	Change in Jobs '01-'10	Change in Jobs '11-'12	% Jobs Added '91 to '12	% Jobs Added '91 to '12	CAGR '91 to '12
Arts, Ent, Rec	23.4	47.0	1.5%	2.0%	18	19.1	2.2	2.3	23.6	3.0%	3.22%
Admin Not Em Sv	56.7	104.9	3.7%	4.5%	19	34.7	8.2	5.3	48.2	6.1%	2.84%
Health Care	115.8	247.1	7.6%	10.7%	22	54.3	62.3	14.7	131.3	16.6%	3.51%
Mgmt Corp Ent	13.1	31.8	0.9%	1.4%	19	6.0	9.9	2.8	18.7	2.4%	4.11%
Other Serv	56.0	95.5	3.7%	4.1%	20	24.2	12.2	3.1	39.5	5.0%	2.46%
Private Educ	14.0	35.2	0.9%	1.5%	22	8.7	9.6	2.9	21.2	2.7%	4.28%
Prof, Scien, Tech	86.3	177.8	5.7%	7.7%	18	67.5	13.4	10.6	91.5	11.6%	3.34%
Strong Growth	365.3	739.3	24.0%	32.0%	21	214.5	117.8	41.7	374.0	47.4%	3.26%
State	1,520.9	2,310.0			18	692.9	8.5	87.7	789.1	100.0%	1.92%

Source: Bureau of Labor Statistics, cber.co.

Analysis for Determining Forecast Categories
Solid Growth Sectors

SOLID GROWTH SECTORS

Category	1990 Employment	2012 Employment	% of Jobs 1990	% of Jobs 2012	Yrs Jobs Added '91 to '12	Change in Jobs '91-'00	Change in Jobs '01-'10	Change in Jobs '11-'12	% Jobs Added '91 to '12	% Jobs Added '91 to '12	CAGR '91 to '12
Acc Food Serv	143.9	233.3	9.5%	10.1%	20	59.6	14.8	15.0	89.4	11.3%	2.22%
St-Higher Ed	40.6	63.6	2.7%	2.8%	20	7.4	12.3	3.3	23.0	2.9%	2.06%
Local Ed	81.7	125.6	5.4%	5.4%	19	23.5	21.6	(1.2)	43.9	5.6%	1.97%
Local Not Ed	72.9	117.8	4.8%	5.1%	20	25.5	19.5	(0.1)	44.9	5.7%	2.21%
Retail Trade	172.7	243.5	11.4%	10.5%	16	72.5	(8.3)	6.6	70.8	9.0%	1.57%
St-Not Higher Ed	24.4	33.1	1.6%	1.4%	19	6.2	2.1	0.4	8.7	1.1%	1.40%
Whls Trade	72.9	94.1	4.8%	4.1%	16	26.5	(8.6)	3.3	21.2	2.7%	1.17%
Solid Growth	609.1	911.0	40.0%	39.4%	19	221.2	53.4	27.3	301.9	38.3%	1.85%
State	1,520.9	2,310.0			18	692.9	8.5	87.7	789.1	100.0%	1.92%

Source: Bureau of Labor Statistics, cber.co.

Analysis for Determining Forecast Categories
Volatile Sectors

VOLATILE SECTORS

Category	1990 Employment	2012 Employment	% of Jobs 1990	% of Jobs 2012	Yrs Jobs Added '91 to '12	Change in Jobs '91-'00	Change in Jobs '01-'10	Change in Jobs '11-'12	% Jobs Added '91 to '12	% Jobs Added '91 to '12	CAGR '91 to '12
Construction	63.5	115.1	4.2%	5.0%	15	100.1	(48.5)	-	51.6	6.5%	2.74%
Empl Srvcs	22.8	40.7	1.5%	1.8%	16	31.7	(20.8)	7.0	17.9	2.3%	2.67%
Fed Govt	57.3	54.5	3.8%	2.4%	9	(2.5)	1.4	(1.7)	(2.8)	-0.4%	-0.23%
Fin Activities	104.6	146.1	6.9%	6.3%	15	42.4	(2.7)	1.8	41.5	5.3%	1.53%
Information	52.2	69.7	3.4%	3.0%	11	56.2	(36.4)	(2.3)	17.5	2.2%	1.32%
Manufacturing	170.2	132.1	11.2%	5.7%	9	18.7	(63.4)	6.6	(38.1)	-4.8%	-1.15%
Extractive Ind	17.1	15.3	1.1%	1.3%	12	(4.9)	12.2	5.9	13.2	1.7%	2.63%
Trans,Whs,Util	59.0	60.5	3.9%	3.1%	16	15.3	(4.4)	1.5	12.4	1.6%	0.87%
Volatile	546.7	542.0	35.9%	28.6%	14	257.0	(162.6)	18.8	113.2	14.3%	0.86%
State	1,520.9	1,545.0	100.0%	100.0%	18	692.9	8.5	87.7	789.1	100.0%	1.92%

Source: Bureau of Labor Statistics, cber.co.

cber.co Colorado Economic Forecast 2016

This analysis is for informational purposes only. Any opinions or interpretations of data are those of the presenter. As such, they do not represent the viewpoints of any group or particular organization.
For further information contact Colorado-based Business and Economic Research (cber.co).

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 programs.