Economic Forecasting Project

Old Dominion University
2017 Regional Economic Forecast

January 25, 2017

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www.odu.edu/forecasting

Presentation outline

I. 2016 Economic Performance

a) Regional and National Economies

b) Defense

c) Civilian Nonfarm Jobs

d) Residential Market in Hampton Roads

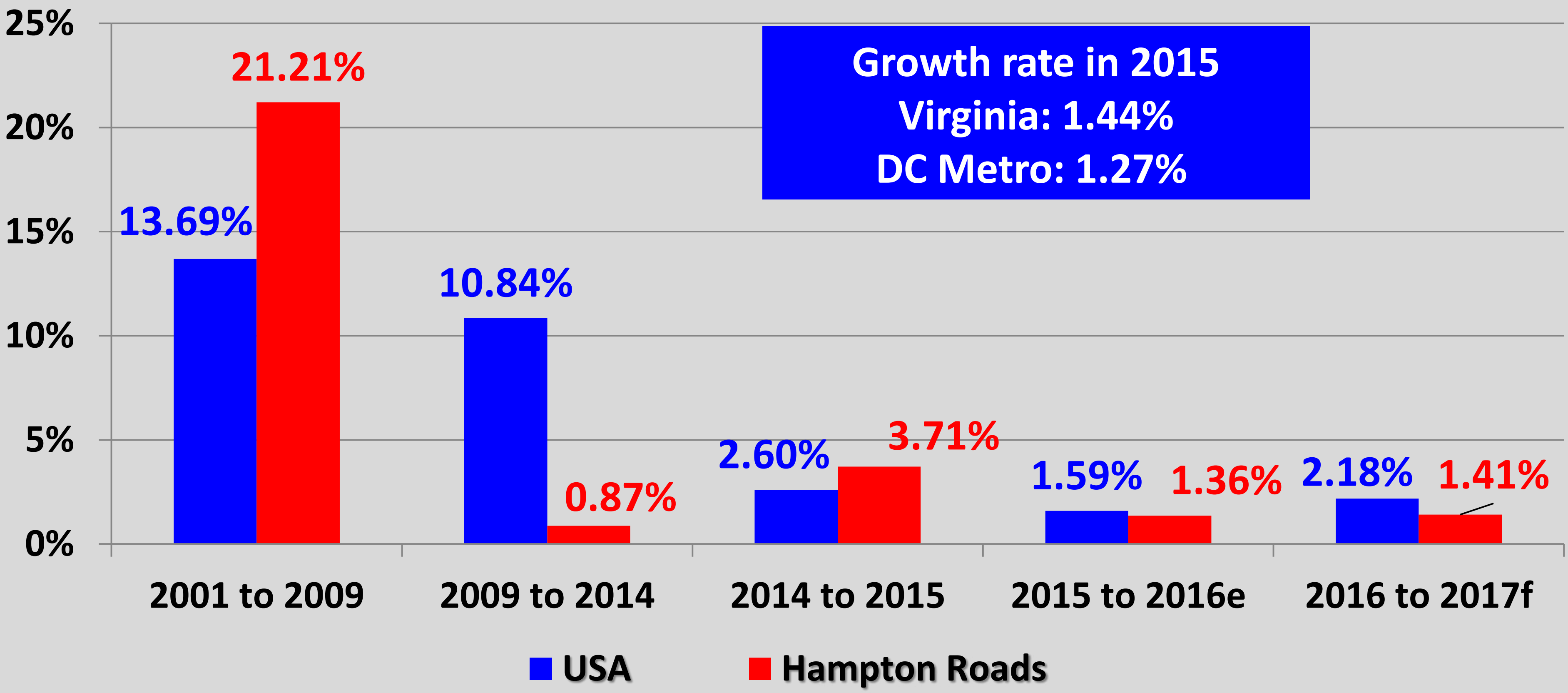
e) Taxable Sales and Hotel Revenue

f) Port and Cargo

II. Forecast for 2017

Rate of Growth of Real Gross Domestic Product (U.S.) and Gross Regional Product (Hampton Roads)

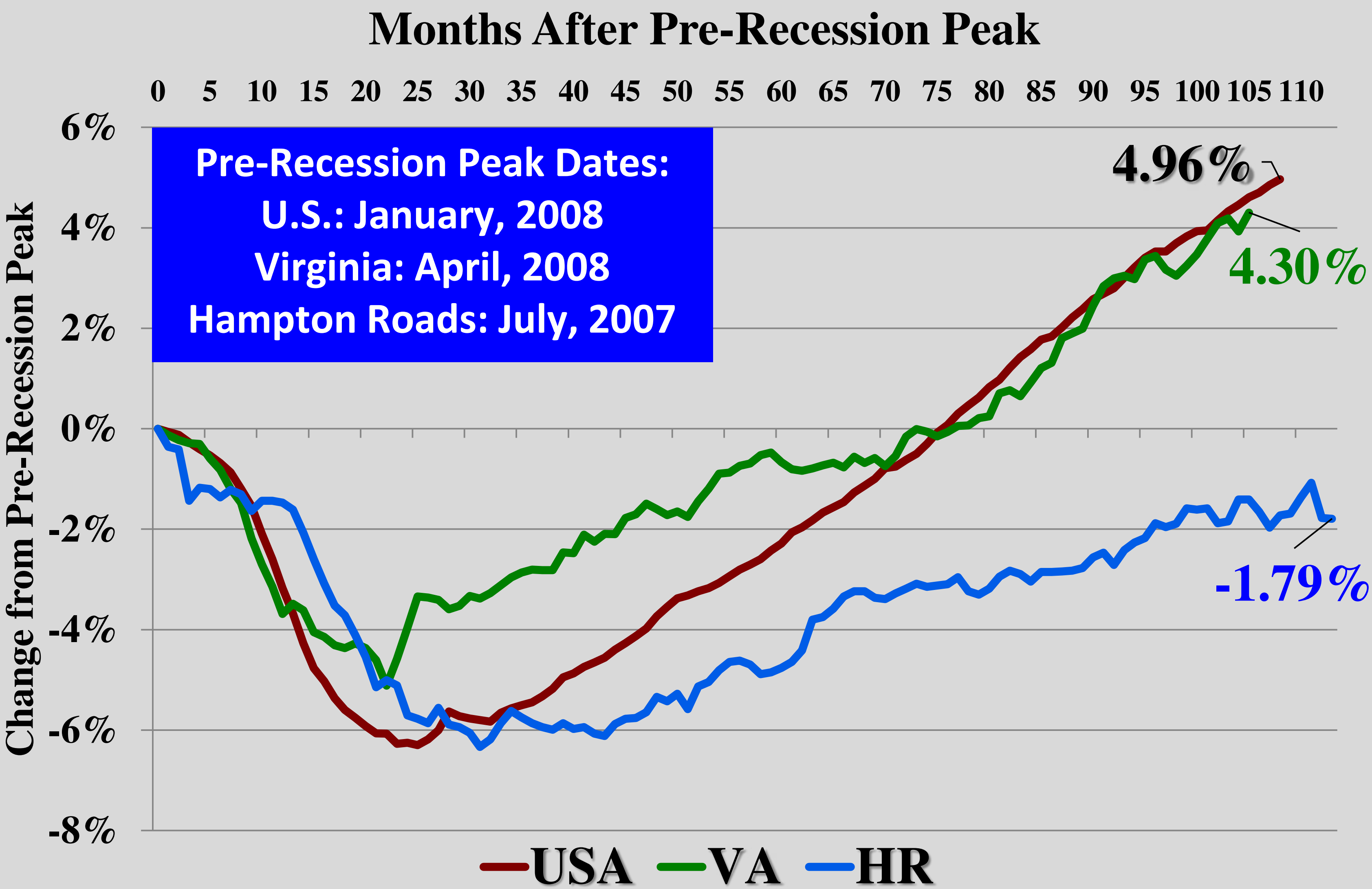
Selected Time Periods from 2001 to 2017*



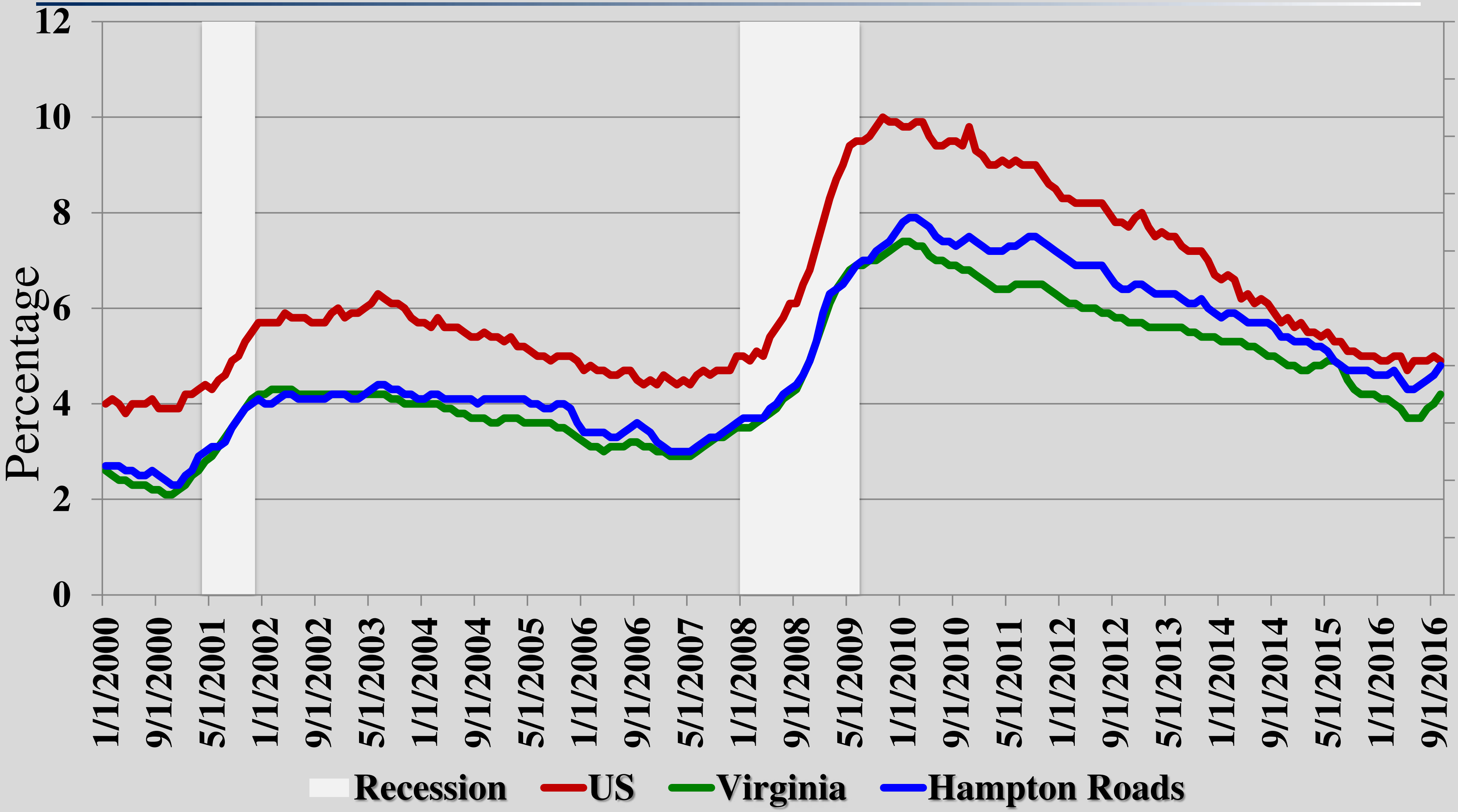
Source: Bureau of Economic Analysis and the Old Dominion University Economic Forecasting Project. Data on GDP incorporates latest BEA revisions in September 2016. * numbers for 2016 are estimates.

The 2007-2009 Recession and its Recovery through December 2016

% Change in Total Non-farm Payroll Employment from Pre-Recession Peak



Unemployment Rates in U.S., Virginia, and Hampton Roads

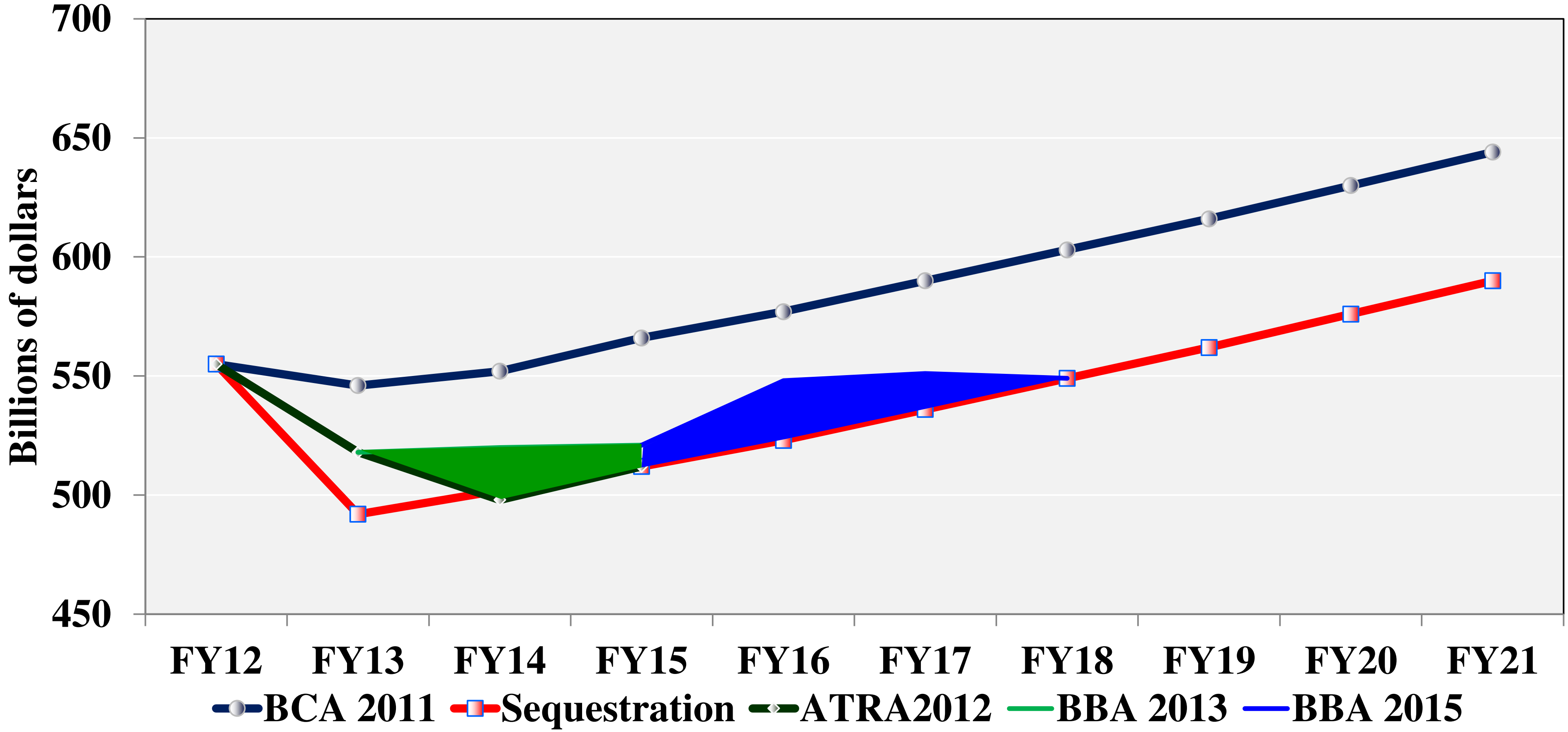


Source: Bureau of Labor Statistics

Defense Spending

Caps on Department of Defense Discretionary Spending, FY 2012 to FY 2021

The legislated cap on spending increased by $27B (5.18%) during FY 2016 and by only $3B or 0.55% during FY 2017; is expected be $2B less in FY 2018.



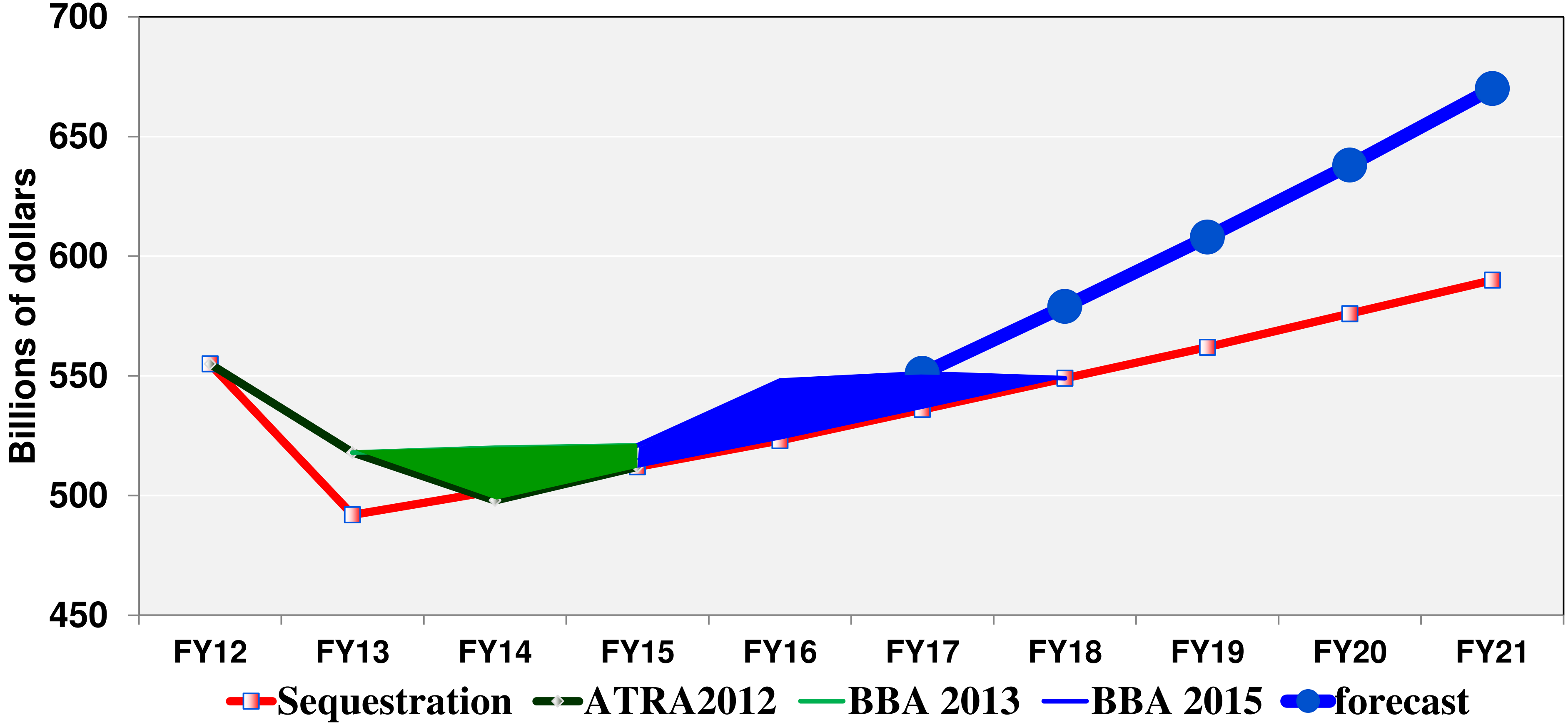
Source: BCA2011,Budget Requests for FY14, CBO Sequestration Update Report and the Old Dominion University Economic Forecasting Project.

What can we expect from President Trump's Administration?

Three among many possibilities…

Caps on Department of Defense Discretionary Spending, FY 2012 to FY 2021

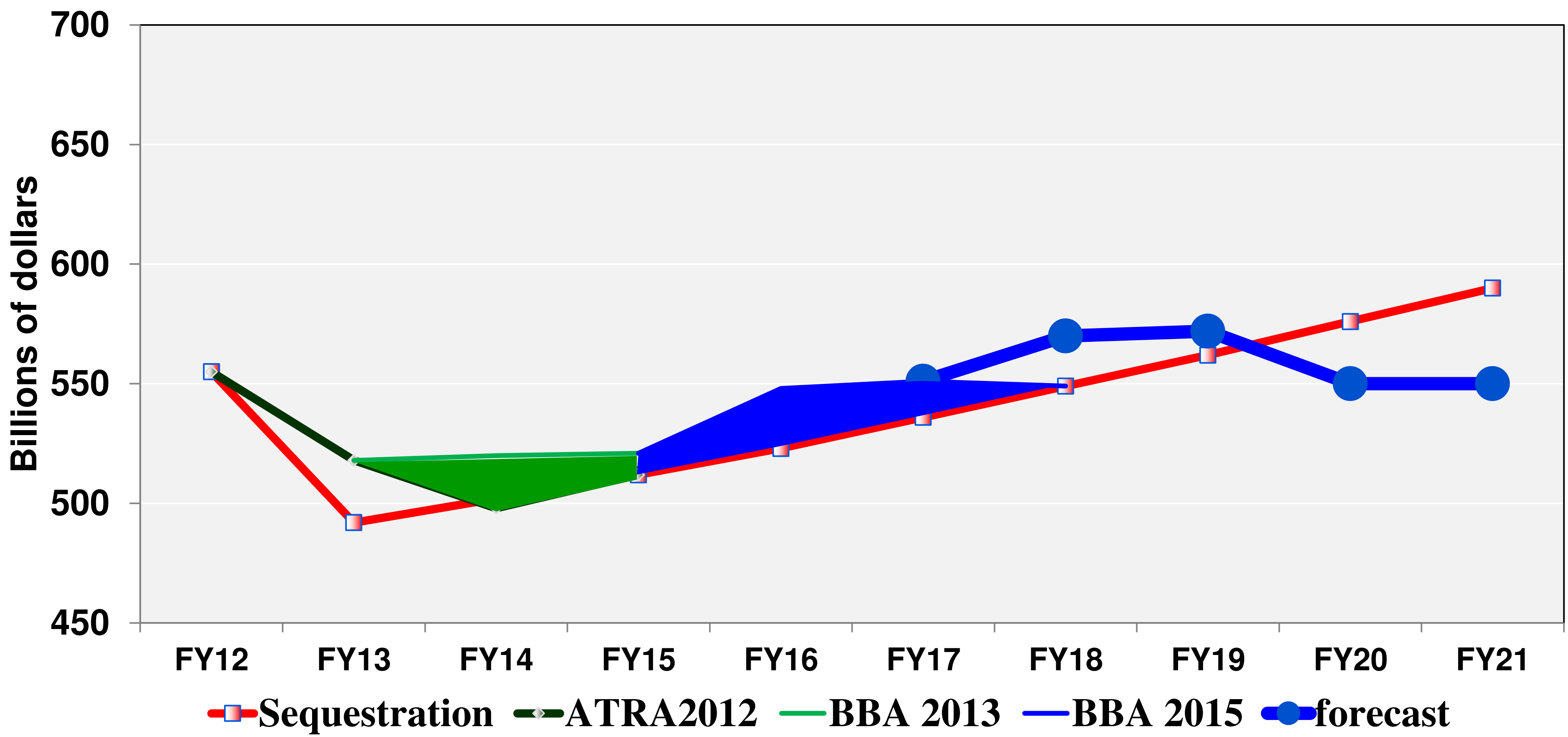
Good times are here again!! 350 Ships; Full Rate F-35; Growing the Army and Marine Corps. National Defense Expenditures rise by 5% annually



Source: BCA2011,Budget Requests for FY14, CBO Sequestration Update Report and the Old Dominion University Economic Forecasting Project.

Caps on Department of Defense Discretionary Spending, FY 2012 to FY 2021

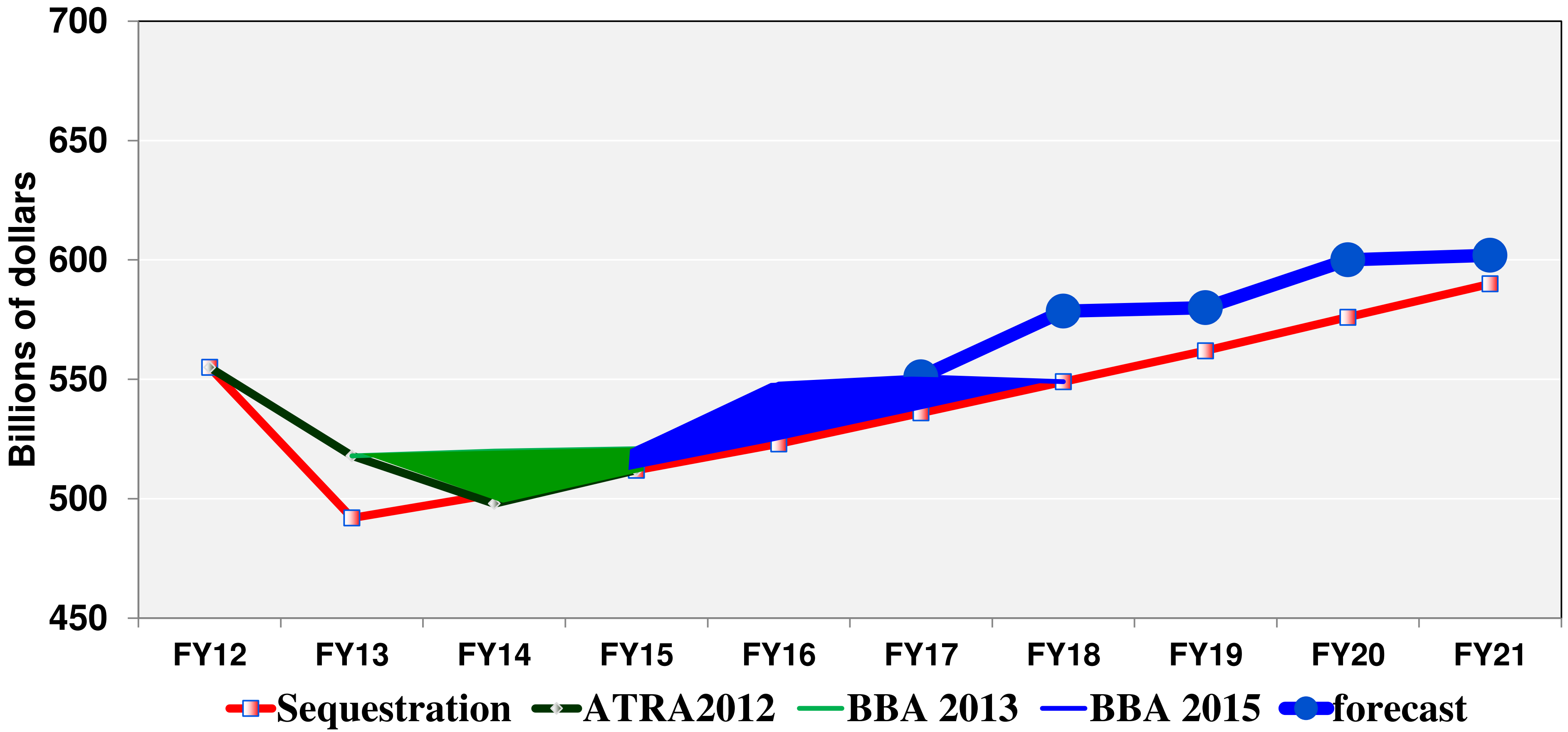
Remember the Good Times? Tax Reform, Infrastructure Crowd out Defense Spending after first year. Possibility of BRAC.



Source: BCA2011,Budget Requests for FY14, CBO Sequestration Update Report and the Old Dominion University Economic Forecasting Project.

Caps on Department of Defense Discretionary Spending, FY 2012 to FY 2021

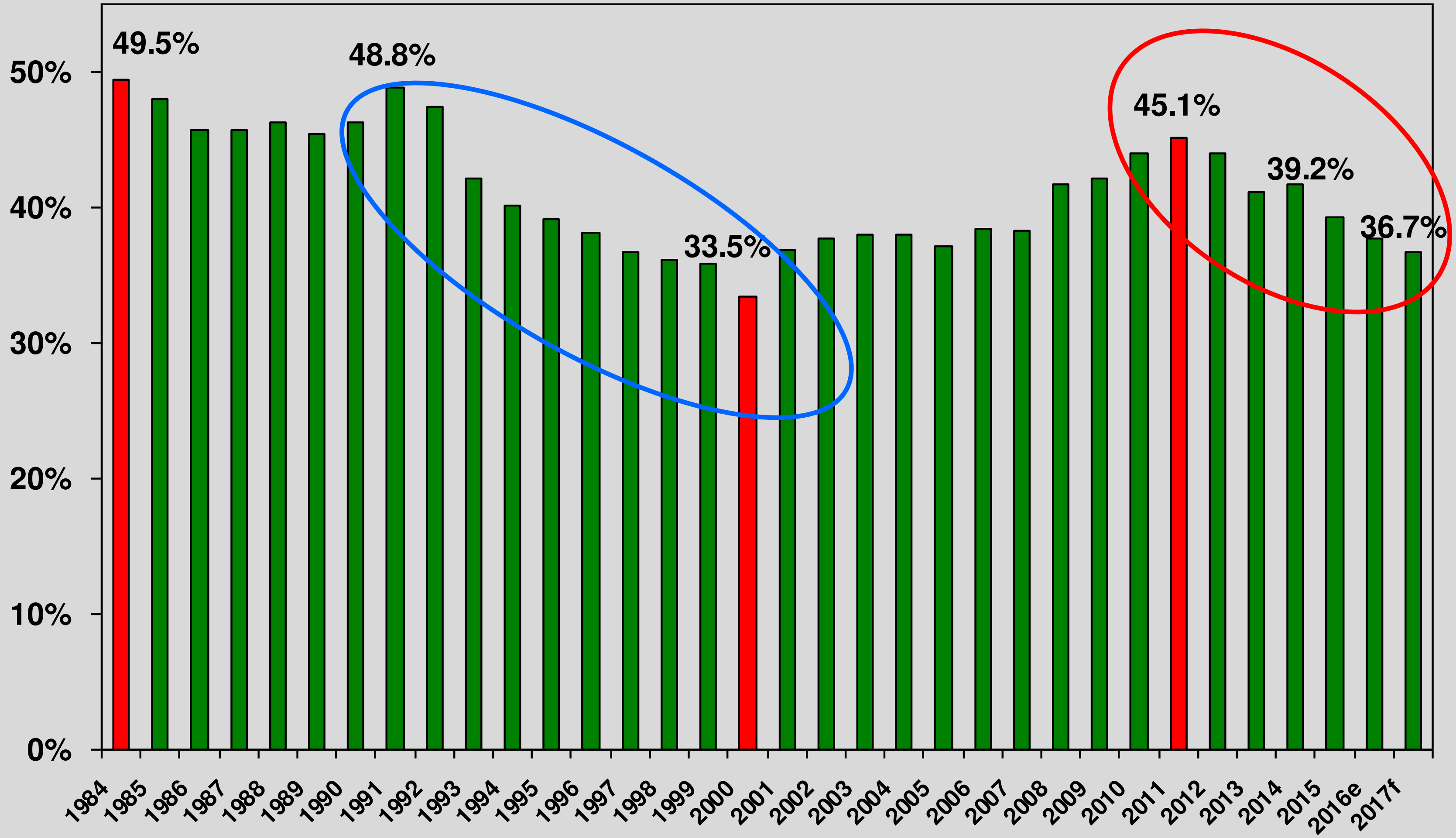
Status Quo becomes the new Normal. Tax Reform, Infrastructure and Defense all compete for attention. Congress continues to modify BCA caps.



Source: BCA2011,Budget Requests for FY14, CBO Sequestration Update Report and the Old Dominion University Economic Forecasting Project.

Hampton Roads Gross Regional Product Attributable to DOD Spending

1984-2017

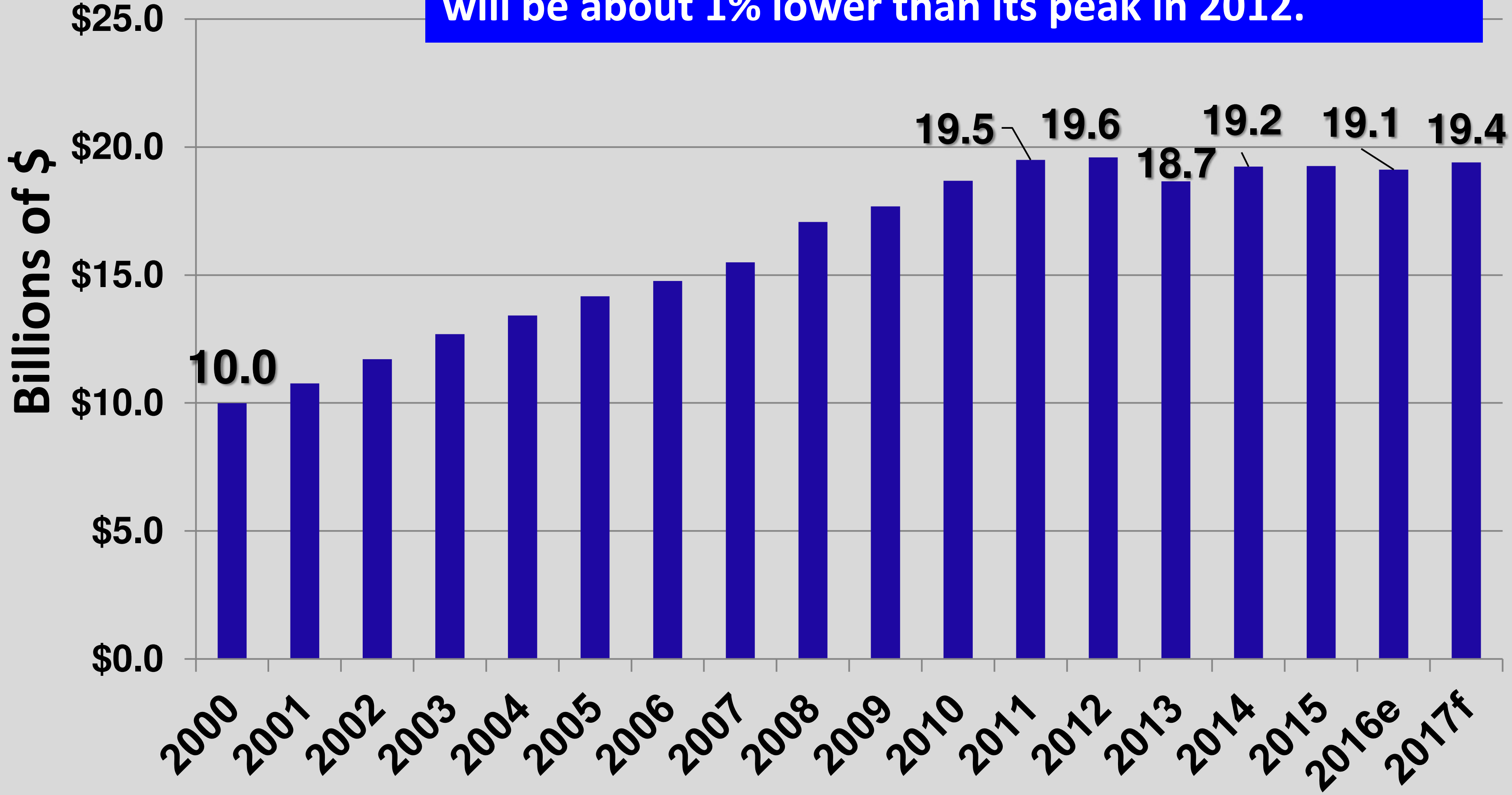


Source: U.S. Department of Defense , U.S. Department of Commerce, and the Old Dominion University Economic Forecasting Project

Estimated Direct DOD Spending in Hampton Roads

2000 to 2017

Between 2000 and 2012, DOD spending in our region increased by an annual average of 5.8% . In 2017, it will be about 1% lower than its peak in 2012.



Source: U.S. Department of Defense and the Old Dominion University Economic Forecasting Project. *Includes Federal Civilian and Military Personnel and Procurement

Estimated Average Compensation (Wages, Salaries and Fringe Benefits): Selected Categories

Hampton Roads: 2014 and 2015

	Earnings in 2014	Earnings in 2015	Percent change 2014 to 2015
Military	$91,531	$91,283	-0.27%
Federal Civilian Govt. Employees	$103,583	$107,521	3.80%
State and Local Govt. Employees	$59,150	$60,088	3.28%
Private Nonfarm	$41,279	$42,185	2.19%

Source: U.S. Bureau of Economic Analysis (BEA) and the Old Dominion University Economic Forecasting Project. * BEA calls compensation as earnings. Data updated on November 17, 2016

Growth (CAGR) in Estimated Average Compensation (Wages, Salaries and Fringe Benefits) Selected Categories

Hampton Roads: 2001 to 2015

	Compound Annual Growth Rate 2001 to 2010	Compound Annual Growth Rate 2010 to 2015
Military	7.2%	0.7%
Federal Civilian Govt. Employees	4.5%	2.6%
State and Local Govt. Employees	3.6%	2.1%
Private Nonfarm	2.9%	2.0%

Source: U.S. Bureau of Economic Analysis (BEA) and the Old Dominion University Economic Forecasting Project. BEA refers to compensation as earnings.

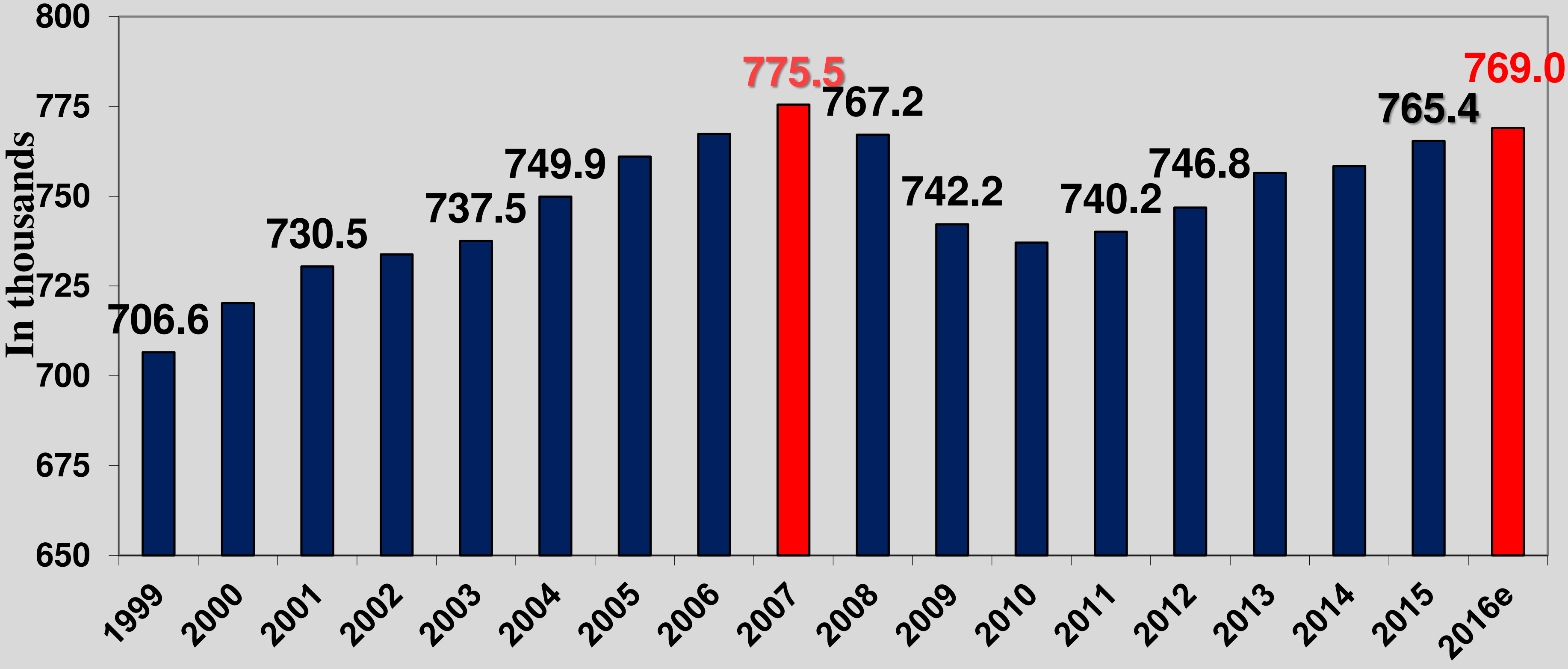
Old Dominion University 2016 Hampton Roads Scorecard

	Actual Change 2016*	Predicted Change 2016
Civilian Employment**	0.47%	+0.94%
Unemployment Rate**	4.59%	4.30%

Source: Old Dominion University Economic Forecasting Project. Figures for calendar year 2016 include predicted values for December 2016. **Employment data for 2015 and 2016 will be revised by U.S. BLS in March /April 2017.

Annual Civilian Employment (Jobs) in Hampton Roads: 1999 to 2016

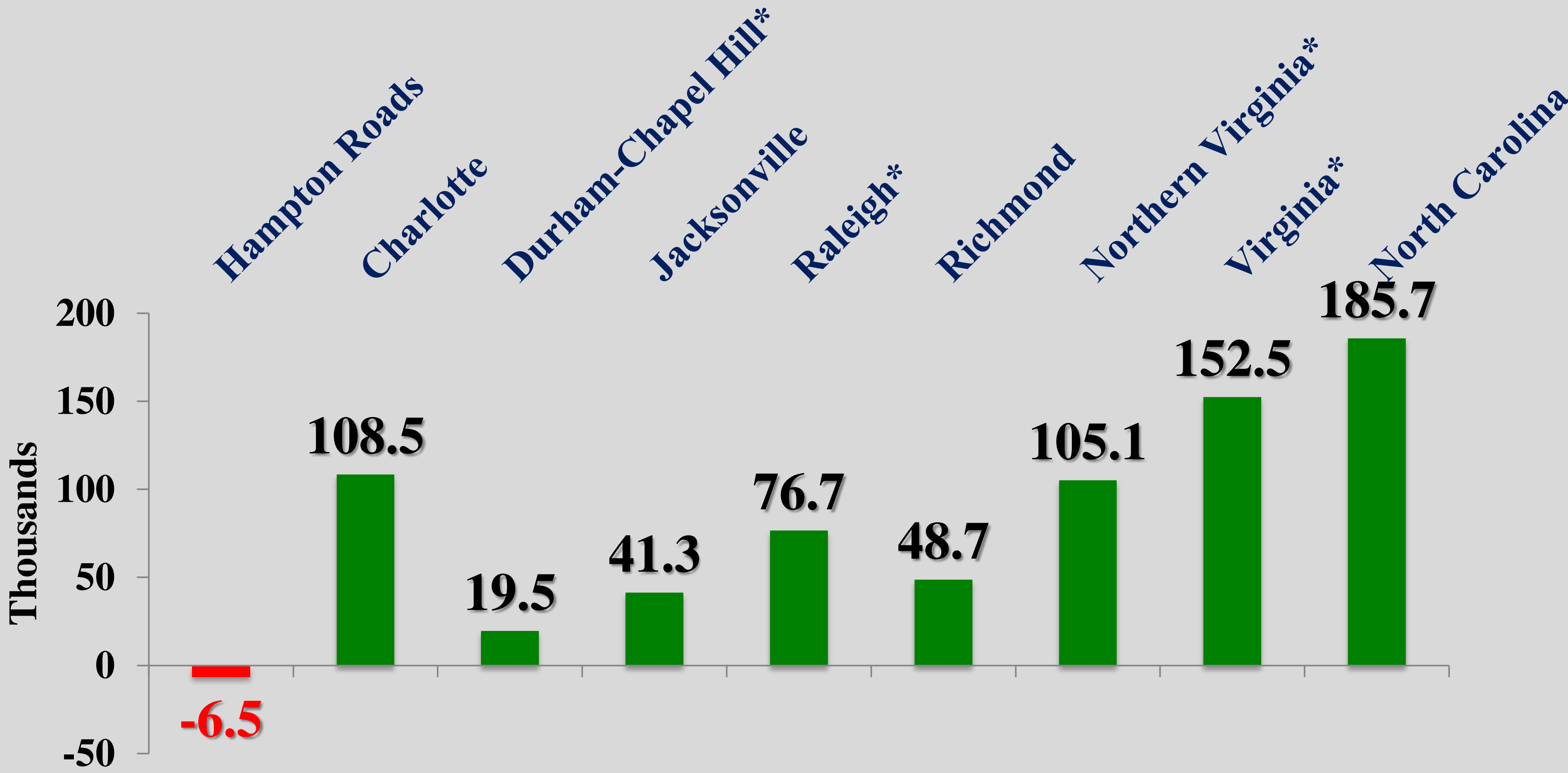
The HR economy added only 3,600 jobs in 2016. At the end of 2016, we will still be about 6,500 jobs below our pre- recession level.



Source: U.S. Department of Labor CES data and the Old Dominion University Economic Forecasting Project. Not seasonally adjusted.

Net New Civilian Jobs Gained/Lost in Selected MSA's, Virginia, and North Carolina

From 2007* to 2016



Source: U.S. Department of Labor CES **seasonally unadjusted data** and the Old Dominion University Economic Forecasting Project. * Peak employment in Raleigh, Durham, Northern Virginia, and Virginia occurred in 2008. Change for these areas is shown for 2008 through 2016. Data will be revised in March 2017.

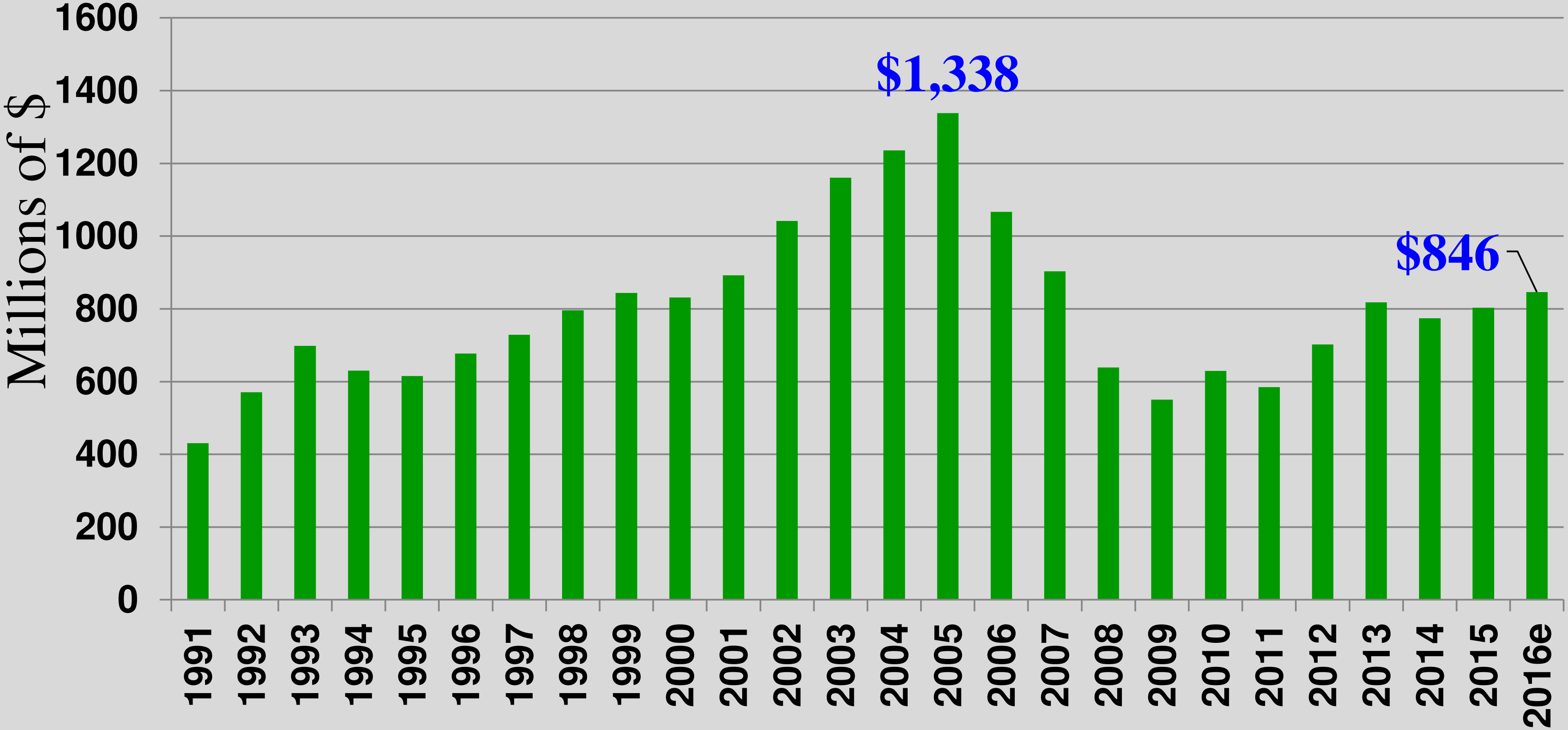
Rethink and Invest in Our Strengths

- REGION --not just individual cities and counties
  - *Go Virginia* has potential
- Traffic Problems– Not just roads, but also airports
- Diversification – HR Community Foundation Economic Competitiveness Initiative suggested:
  - Advanced manufacturing --- Bio Sciences
  - Coastal Energy --- Cyber Security
  - Modelling and Simulation --- Unmanned Systems
- Entrepreneurship

Performance of Residential Housing Market During 2016

Value of Building Permits for One Unit Family Homes in Hampton Roads: 1991-2015

Value of permits increased by 5.4% in 2016; Our forecast was an increase of 3.4%. It is 37% below its peak in 2005



Source: U.S. Bureau of the Census and the Old Dominion University Economic Forecasting Project

Number of Existing and New Construction Homes Sold

Hampton Roads: 2002-2016

Year	Existing Homes Sold	New Construction Homes Sold	Percent New Construction
2002	19,869	4,969	20.0%
2003	21,421	4,757	18.2%
2004	23,548	4,587	16.3%
2005	24,755	4,379	15.0%
2006	22,405	4,327	16.2%
2007	19,154	3,912	17.0%
2008	15,046	3,178	17.4%
2009	15,851	2,673	14.4%
2010	14,703	2,265	13.4%
2011	15,818	2,366	13.0%
2012	16,856	2,664	13.6%
2013	18,791	2,878	13.3%
2014	18,700	2,485	11.7%
2015	20,595	2,954	12.5%
2016	22,456	3,219	12.5%

41% decline in sale of existing homes from 2005 to 2010

existing homes Sales Have increased by 7,753 from 2010 to 2016

Source: Real Estate Information Network and Old Dominion University Economic Forecasting Project. Information Deemed Reliable But not Guaranteed. Figures reported here represent only those properties that are listed through REIN by REIN members and may not represent all new construction activity in our region.

Median Sale Price of Existing Residential Homes

Hampton Roads: 2002-2016

Year	Median Price	Percent change year to year
2002	$116,900	7.3%
2003	$130,000	11.2%
2004	$156,500	20.4%
2005	$192,000	22.7%
2006	$214,900	11.9%
2007	$223,000	3.8%
2008	$219,000	-1.8%
2009	$207,000	-5.5%
2010	$203,900	-1.5%
2011	$180,000	-11.7%
2012	$185,000	+2.78%
2013	$190,000	+2.70%
2014	$193,205	+1.70%
2015	$203,000	+5.07%
2016	**$210,000**	**+3.5%**

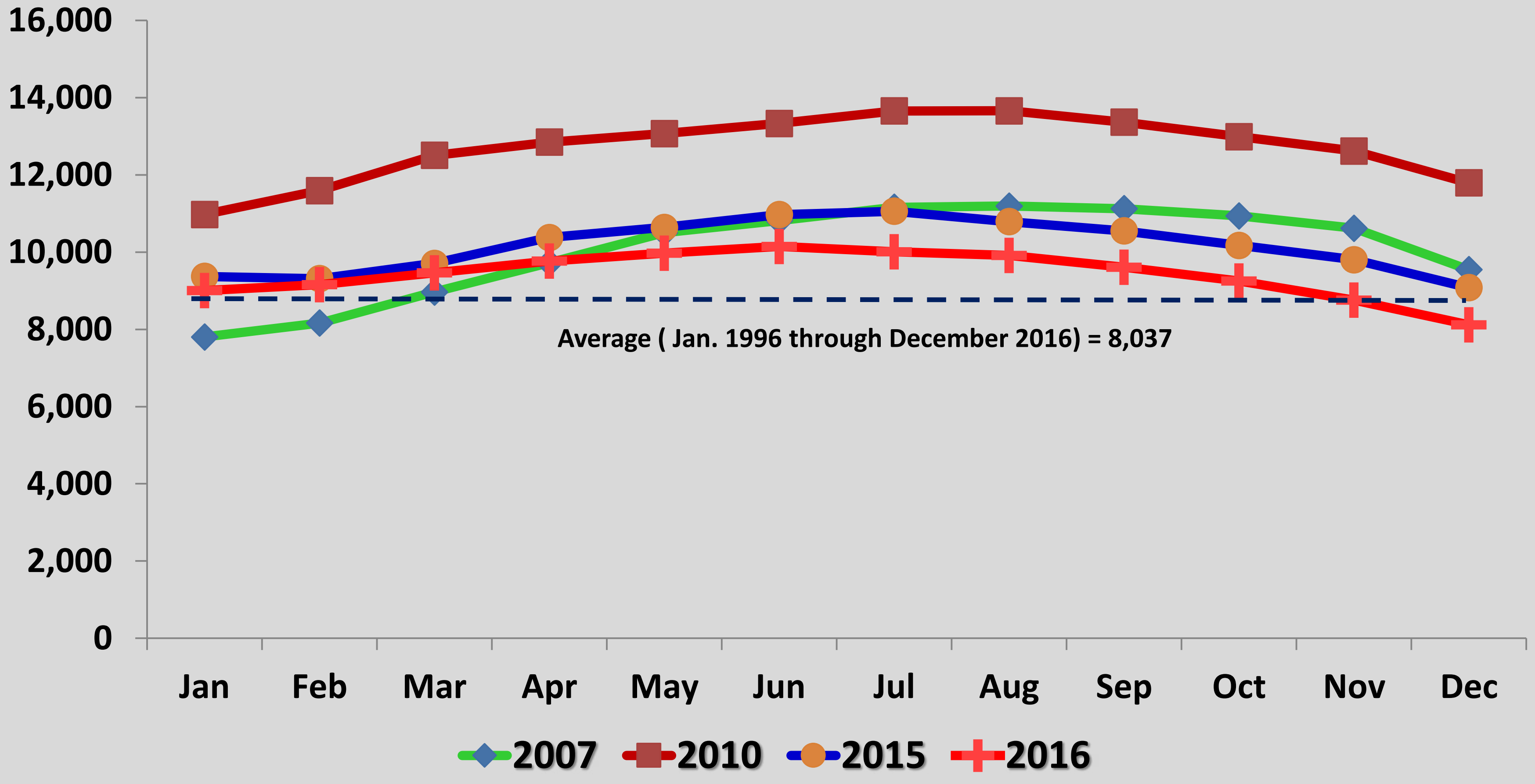
90% increase from 2002-07

19% decrease From 2007-11

Source: Real Estate Information Network and Old Dominion University Economic Forecasting Project. Information deemed reliable but not guaranteed.

Estimated Inventory of Existing Residential Homes as Measured by Active Listings

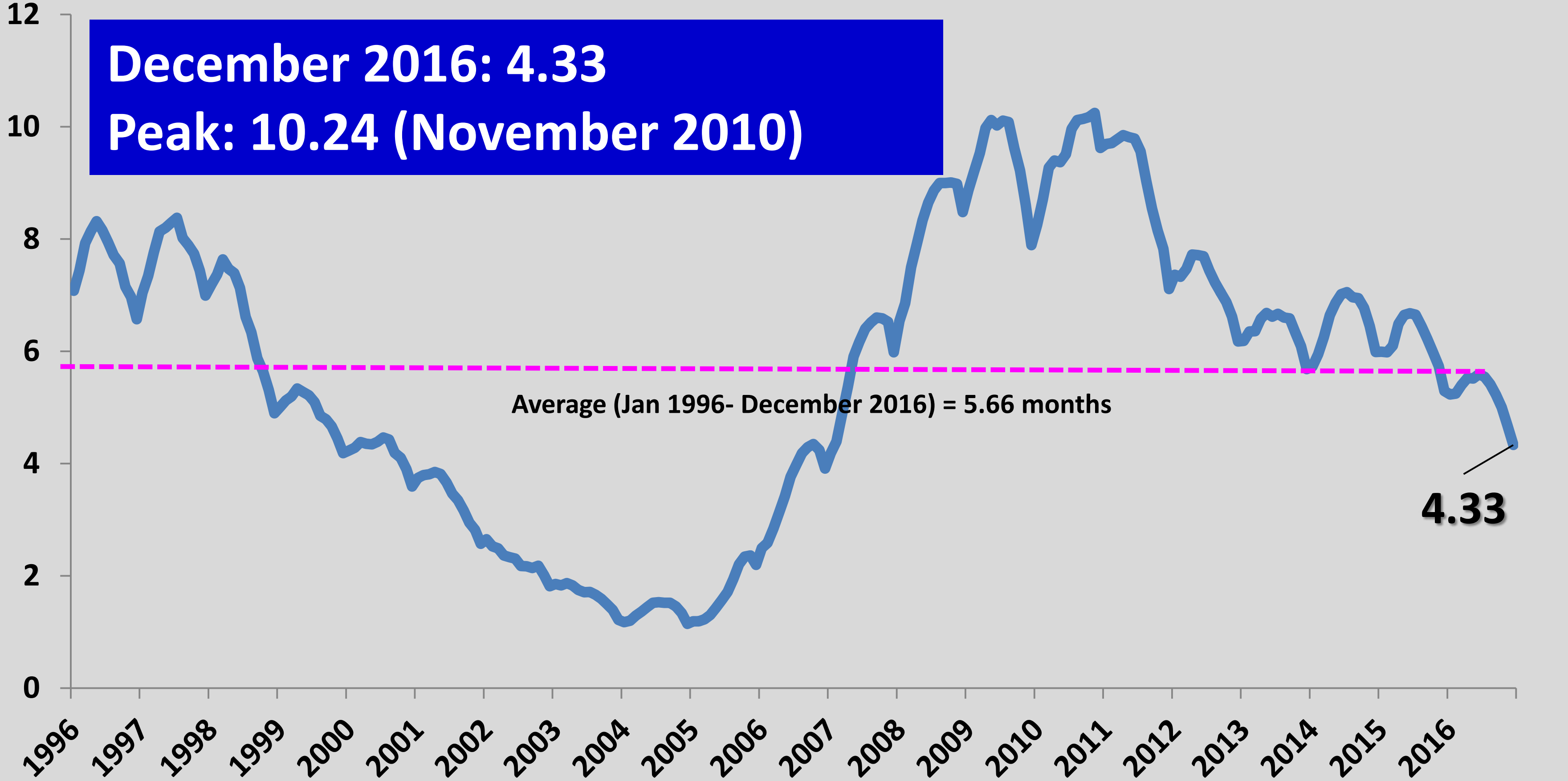
Hampton Roads: 2007, 2010, 2015, and 2016



Source: Real Estate Information Network Inc. and the Old Dominion University Economic Forecasting Project. Information deemed reliable but not guaranteed.

Estimated Months of Supply of All Existing Homes in Hampton Roads

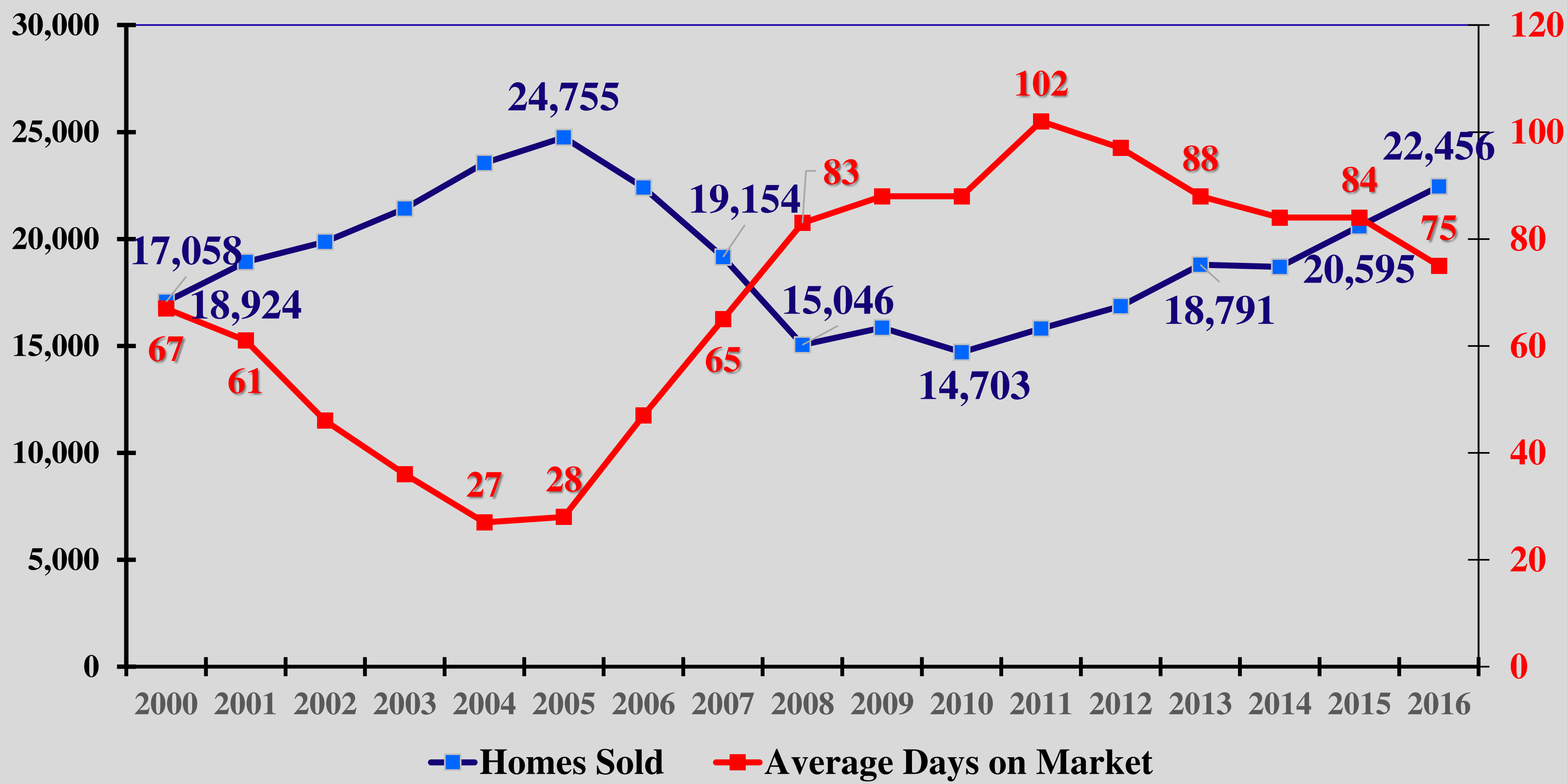
Based on Average Sales in the Last 12 Months: January 1996 – December 2016



Source: Real Estate Information Network and Old Dominion University Economic Forecasting Project. Information deemed reliable but not guaranteed.

Existing Residential Homes Sold and Average Days on the Market

Hampton Roads: 2000-2016



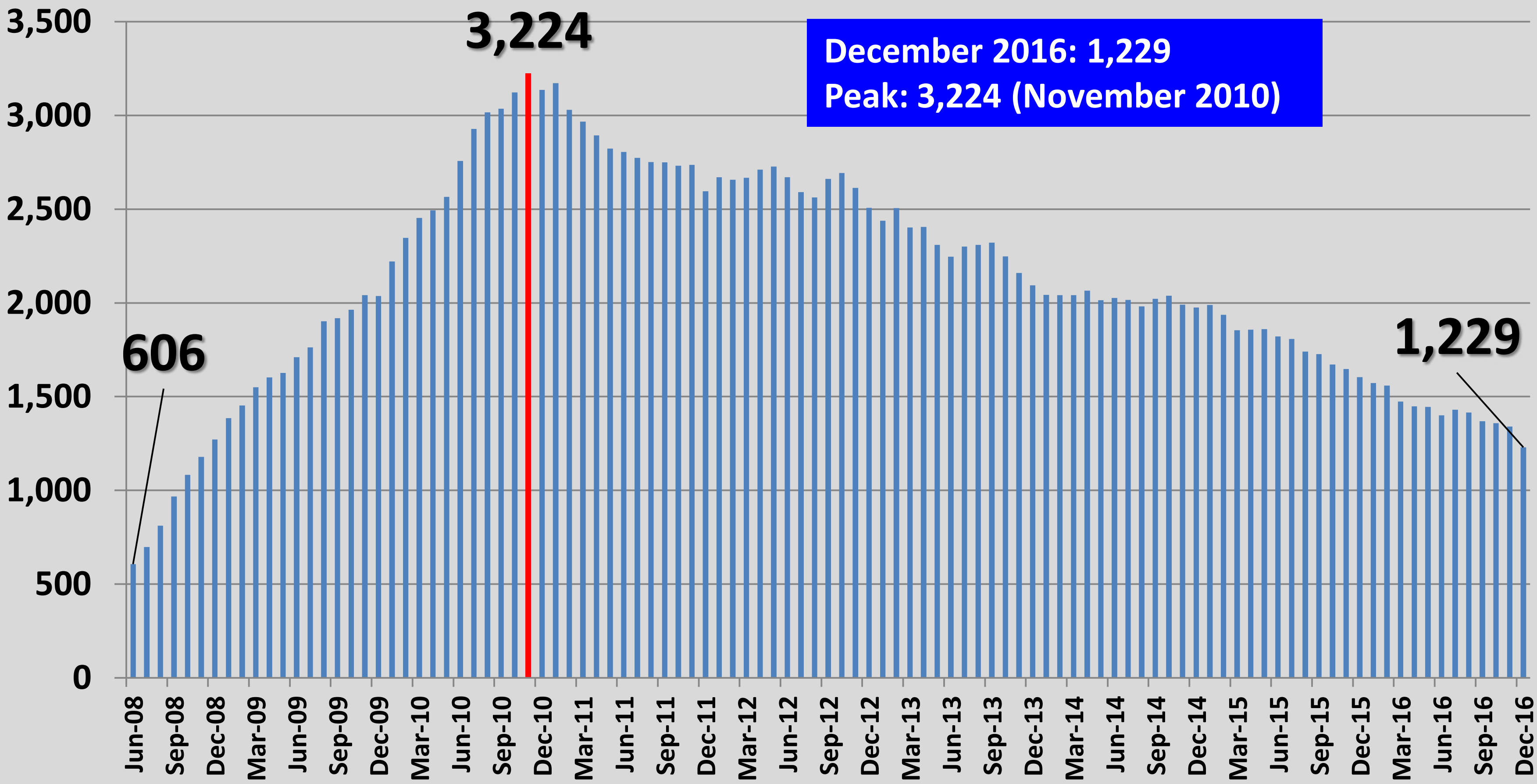
Source: Real Estate Information Network Inc. and the Old Dominion University Economic Forecasting Project. Information deemed reliable but not guaranteed.
Days on Market is calculated from the date listed to the date under contract date for existing homes sold.

Summary on Existing Homes Market since 2011

- **Inventories have decreased substantially.**
- **Days on market have also decreased.**
- **Number of homes sold has increased.**
- **Estimated months of supply have declined substantially.**
- **But the median price of homes has increased only slightly**
- **The explanation lies in the size of the *distressed market*---which consists of short sales and bank-owned homes (REOs).**

Number of Active Listings of Distressed Homes (REO & Short Sales)

Hampton Roads: June 2008 to December 2016



Source: Real Estate Information Network (REIN) and the Old Dominion University Economic Forecasting Project.

Number of Existing Short Sale and REOs Residential Homes Sold

Hampton Roads: 2006- 2016

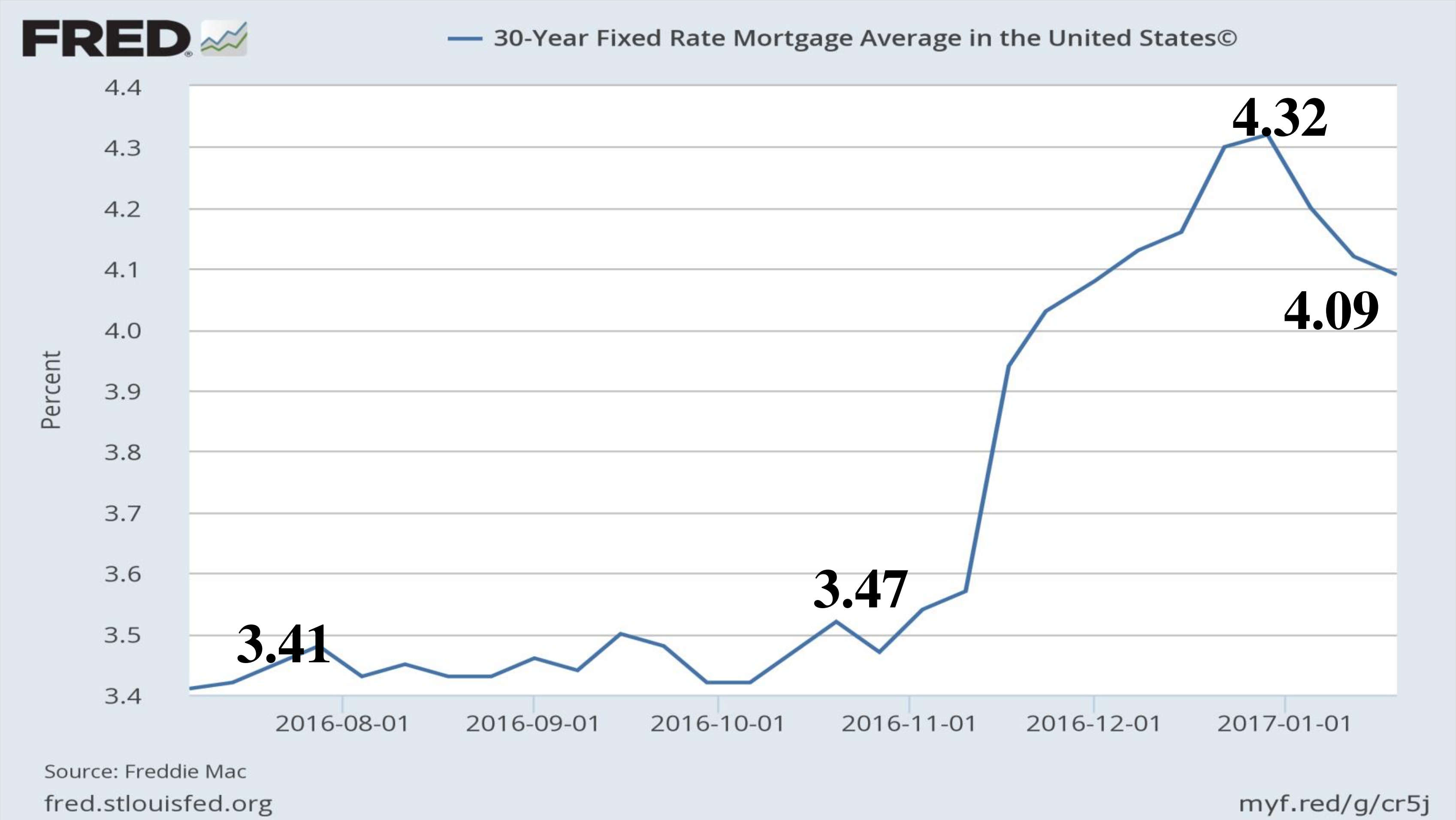
Year	All Sales	Short Sales	Percent Short Sales	REO Sales	Percent REO Sales
2006	22,405	3	<1%	56	<1%
2007	19,152	40	<1%	223	1.2
2008	15,047	217	1.4	833	5.5
2009	15,849	598	3.8	2,271	14.3
2010	14,696	784	5.3	3,021	20.6
2011	**15,817**	**1,127**	**7.1**	**4,213**	**26.6**
2012	16,856	1,644	9.8	3,337	19.8
2013	18,791	1,769	9.4	3,178	16.9
2014	18,700	1,347	7.2	2,744	14.7
2015	20,592	1,230	6.0	2,542	12.3
2016	**22,456**	**1,002**	**4.5**	**2,294**	**10.2**

Source: Real Estate Information Network and Old Dominion University Economic Forecasting Project. Information Deemed Reliable But not Guaranteed.

Housing Affordability

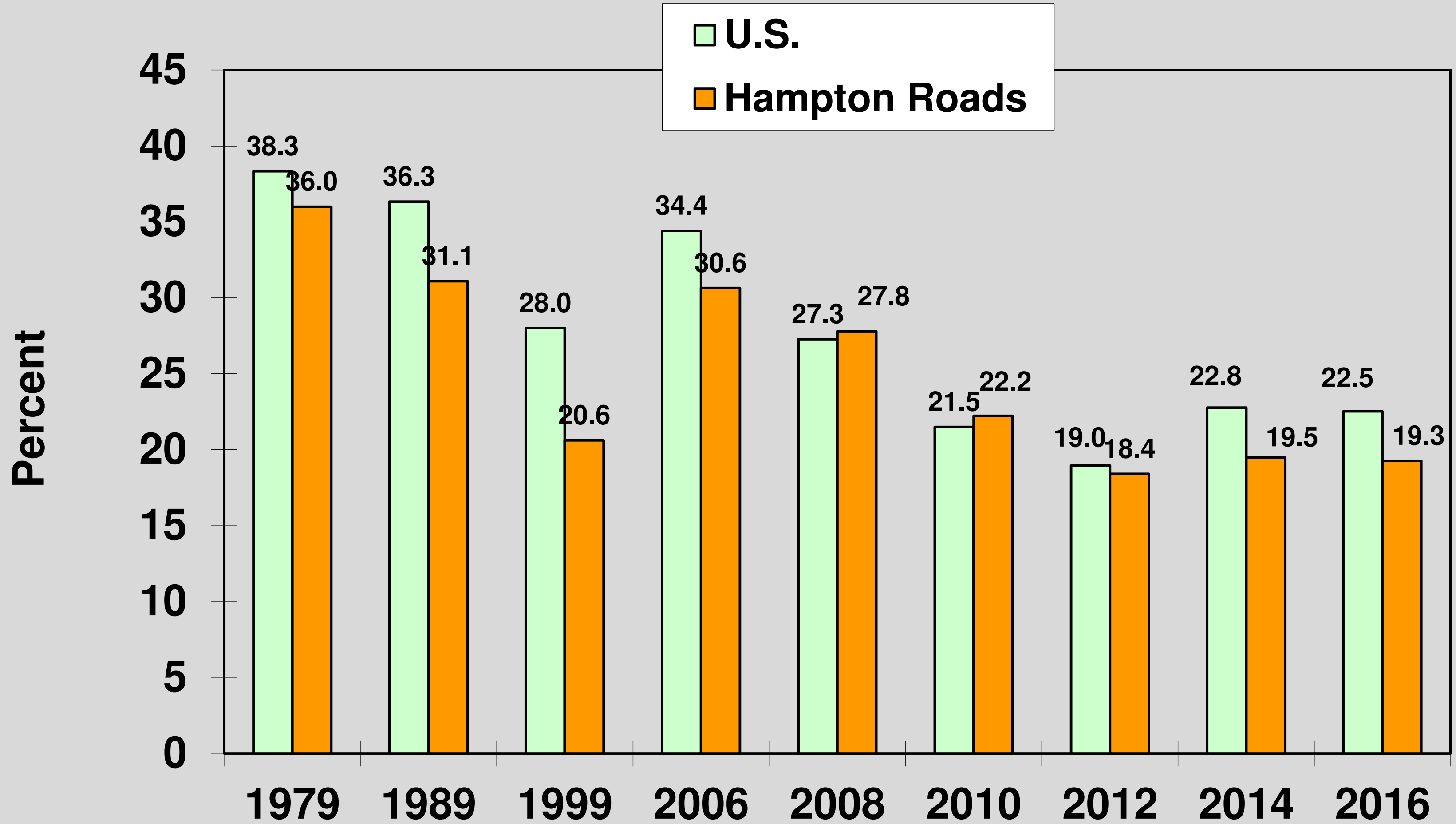
30-Year Fixed Mortgage Rate (Weekly, ending Thursday)

July 7, 2016 to January 19, 2017



Housing Affordability: Monthly Payment for a Median Price Resale House as a Percent of Median Household Monthly Income

Hampton Roads and the U.S. : *1979 to 2016*



Source: The Old Dominion University Economic Forecasting Project. Prevailing 30 year average mortgage rate is used for each year. For example rate used for 2015 is 3.85 percent and for 2016 it is 3.65 percent

Estimated House Rental and Principal, Interest, and Taxes for a House Payment

Hampton Roads: 2002-2016

Year	Median Monthly Rent for a Three Bedroom House	PI&T Monthly for a Median Priced Existing House	Ratio of Monthly Rent to PI&T
2002	911	861	1.06
2003	1,037	890	1.16
2004	1,044	1,073	0.97
2005	1,087	1,315	0.83
2006	1,118	1,533	0.73
2007	1,164	1,598	0.73
2008	1,247	1,507	0.83
2009	1,236	1,307	0.95
2010	1,277	1,233	1.04
2011	1,319	1,071	1.23
2012	1,454	1,015	1.43
2013	1,570	1,080	1.45
2014	1,562	1,118	1.40
2015	1,530	1,154	1.33
2016	**1,601**	**1,163**	**1.38**

Source: H.U.D. and the Old Dominion University Economic Forecasting Project. It is assumed that real estate tax rate is 1% and the tax reduction received by home owners would compensate for home owners insurance and maintenance expenditures. Prevailing 30 year average mortgage rate is used for each year. For example rate used for 2015 is 3.85 percent and for 2016 it is 3.65 percent

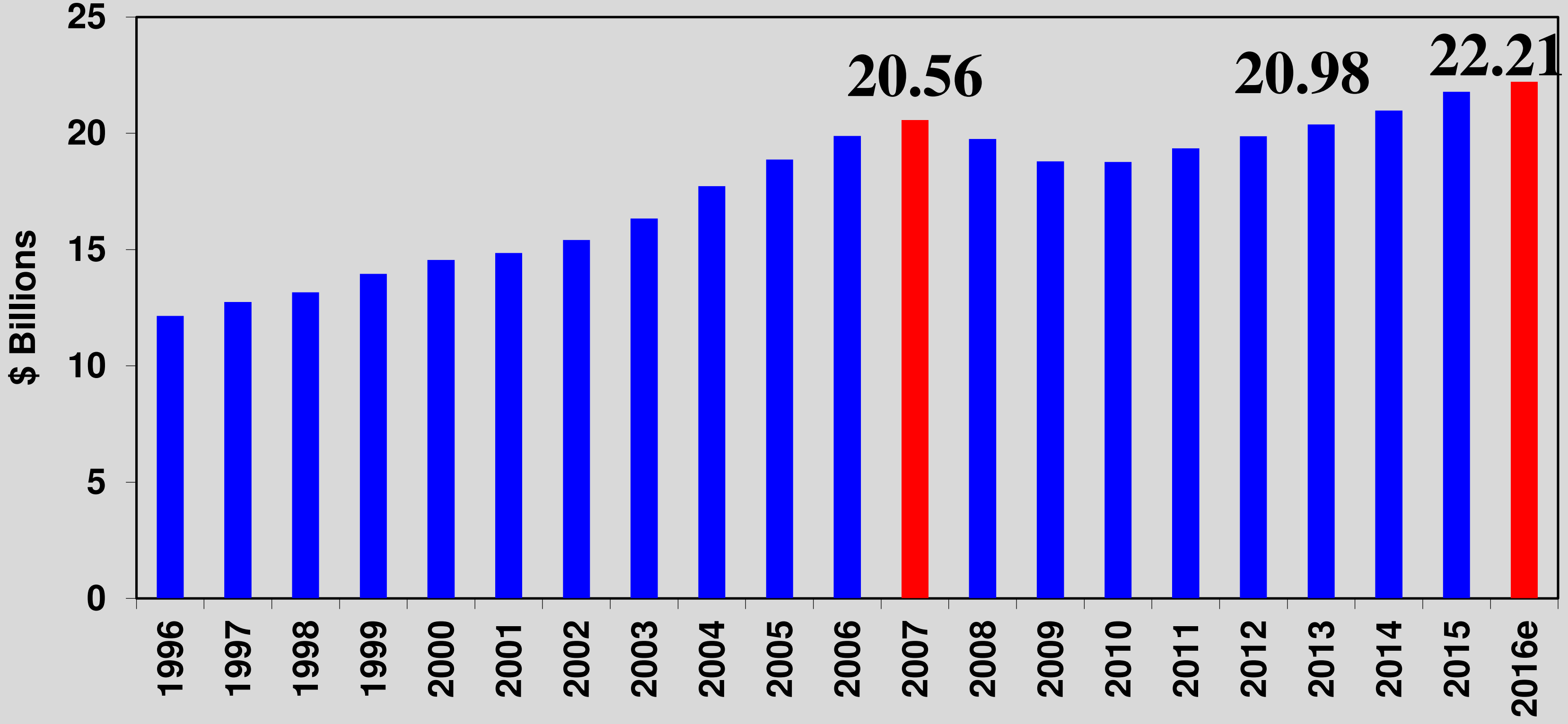
Old Dominion University 2016 Hampton Roads Scorecard

	Actual Change 2016*	Predicted Change 2016
Taxable Sales	+1.97%	+3.60%
Hotel Revenue	+6.72%	+4.20%

Source: Virginia Department of Taxation, Smith Travel Research and the Old Dominion University Economic Forecasting Project.
*Figures for calendar year 2016 include predicted values for December 2016.

Taxable Sales, Hampton Roads: 1996 to 2016

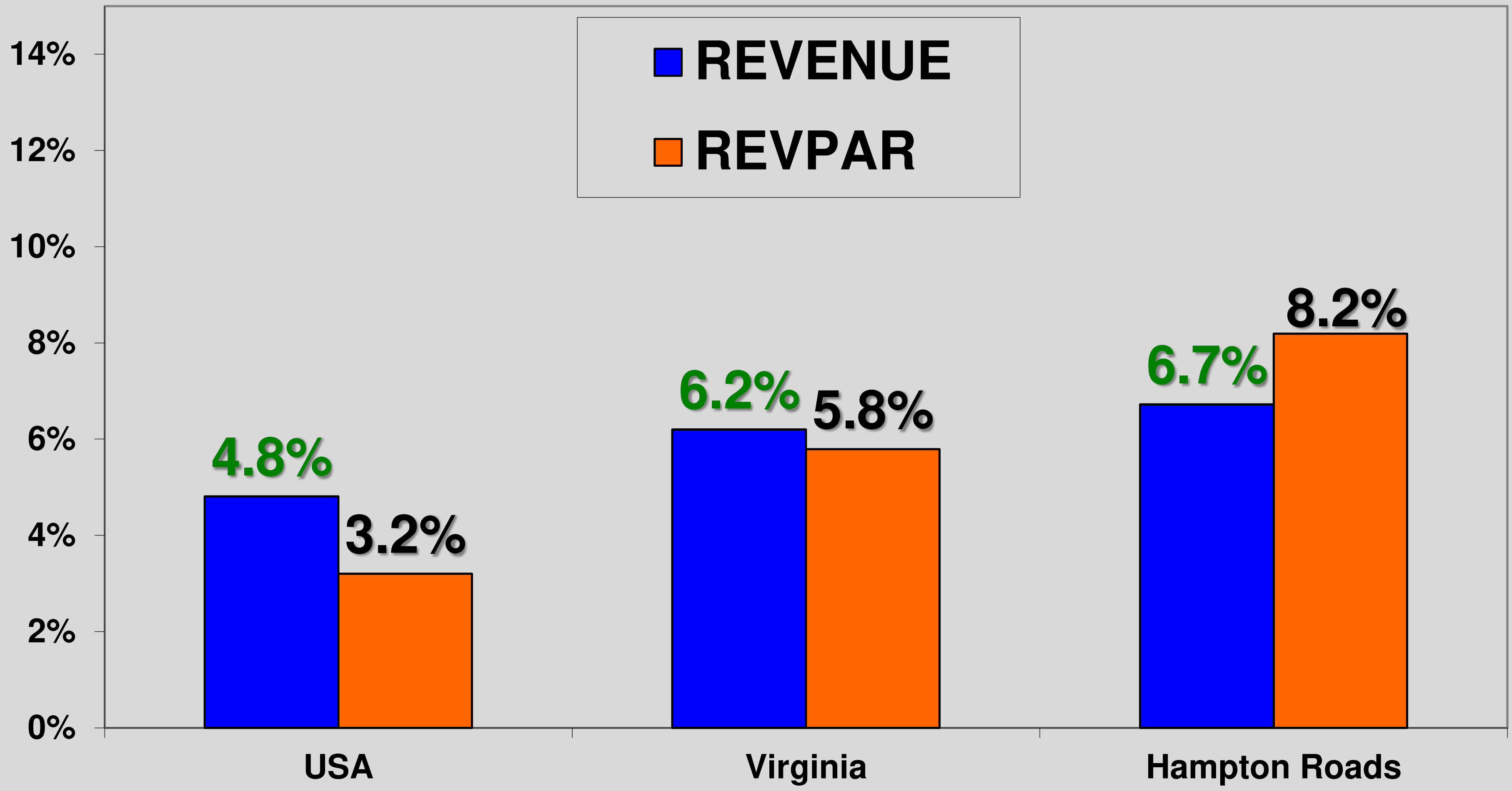
Taxable sales increased by 3.8% during 2015 and an estimated 2.0% during 2016.



Source: Virginia Department of taxation and the Old Dominion University Economic Forecasting Project. *Figures for calendar year 2016 include predicted values for December 2016.

The Performance of the Hotel Industry in Hampton Roads

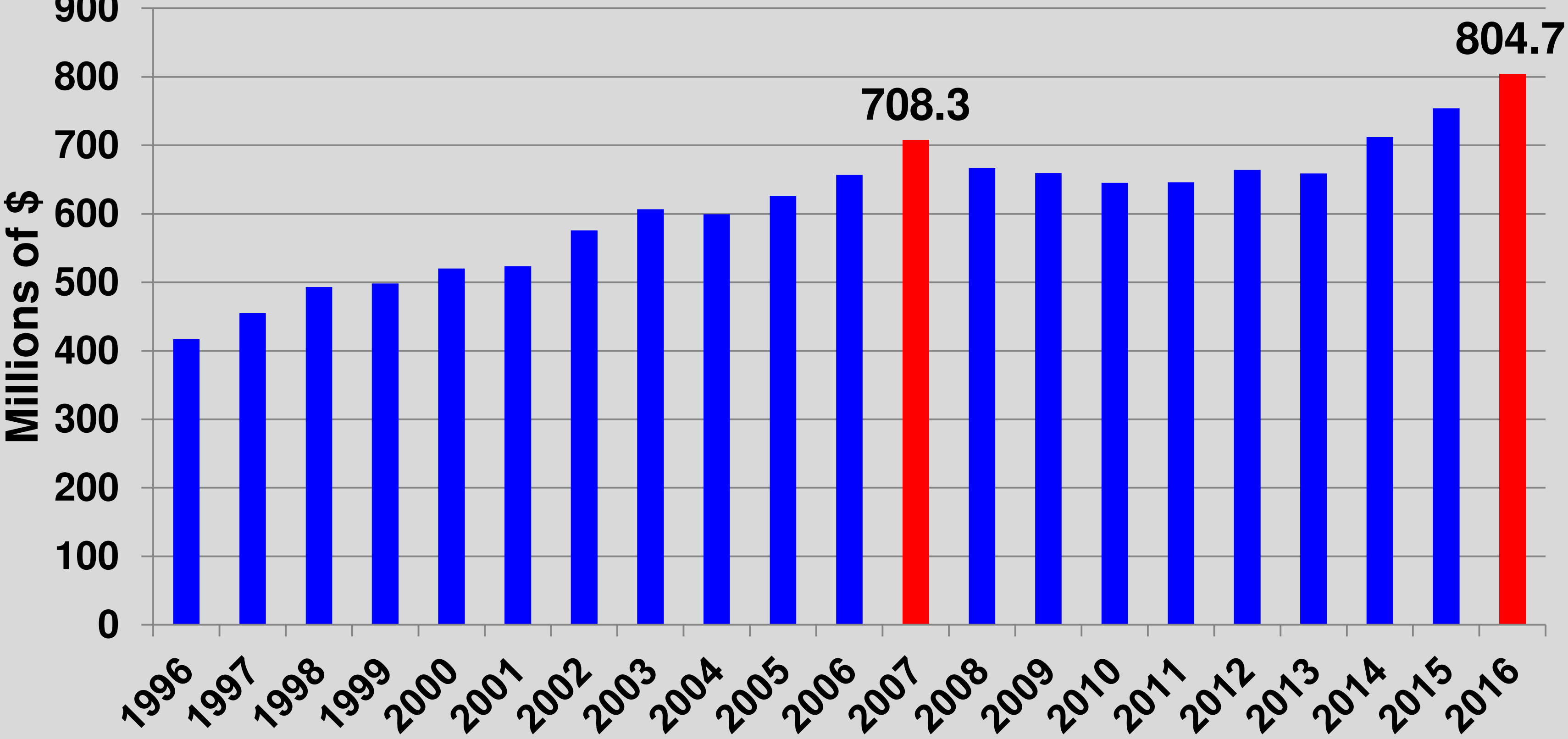
Percent Change in Hotel Revenue and REVPAR 2015 to 2016



Source: STR Trend Report January 24, 2017 and the Old Dominion University Economic Forecasting Project.

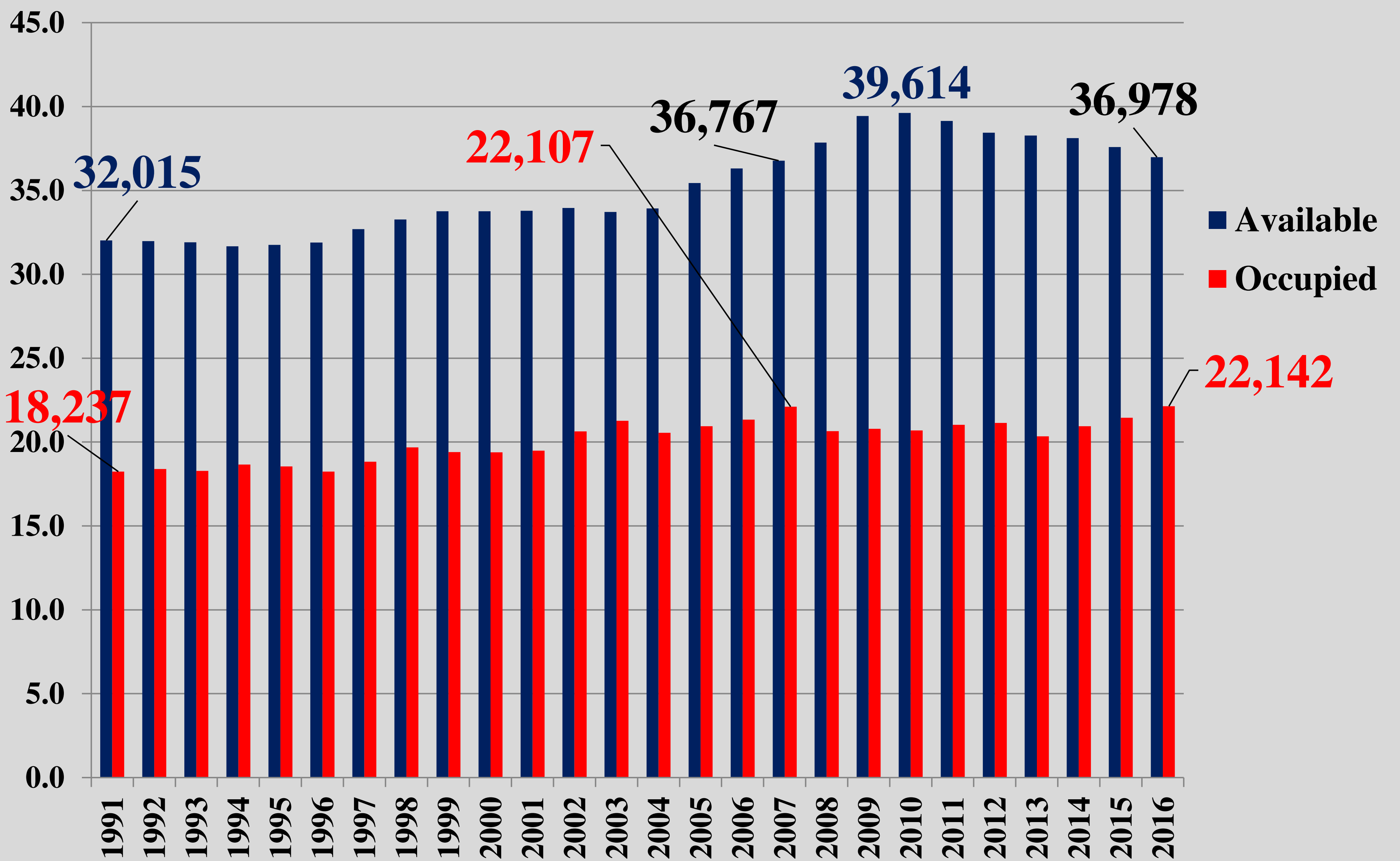
Hotel Revenue in Hampton Roads 1996-2016

Hotel Revenue grew by 5.9 % during 2015 and by another 6.7 % during 2016.



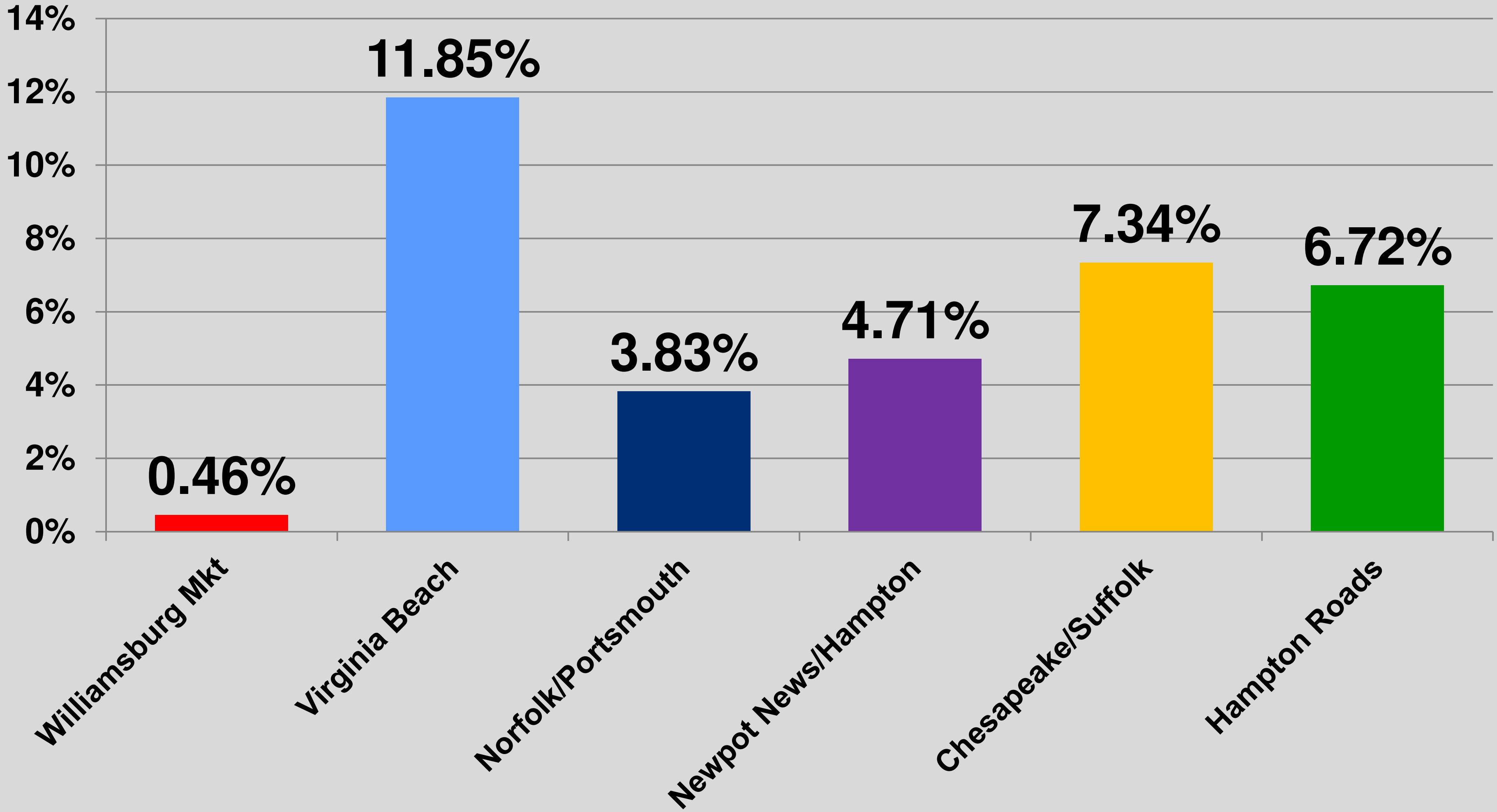
Source: STR Trend Report January 24, 2017 and the Old Dominion University Economic Forecasting Project.

Available Hotel Rooms and Rooms Occupied in Hampton Roads (000s): 1991-2016



Source: STR Trend Report January 24, 2017 and the Old Dominion University Economic Forecasting Project.

Percent Change in Hotel Revenue within Hampton Roads: 2015 to 2016



Source: STR Trend Report January 24, 2017 and the Old Dominion University Economic Forecasting Project.

Performance of the Port of Virginia

Operating Income/Loss for the Port of Virginia (In Million $)

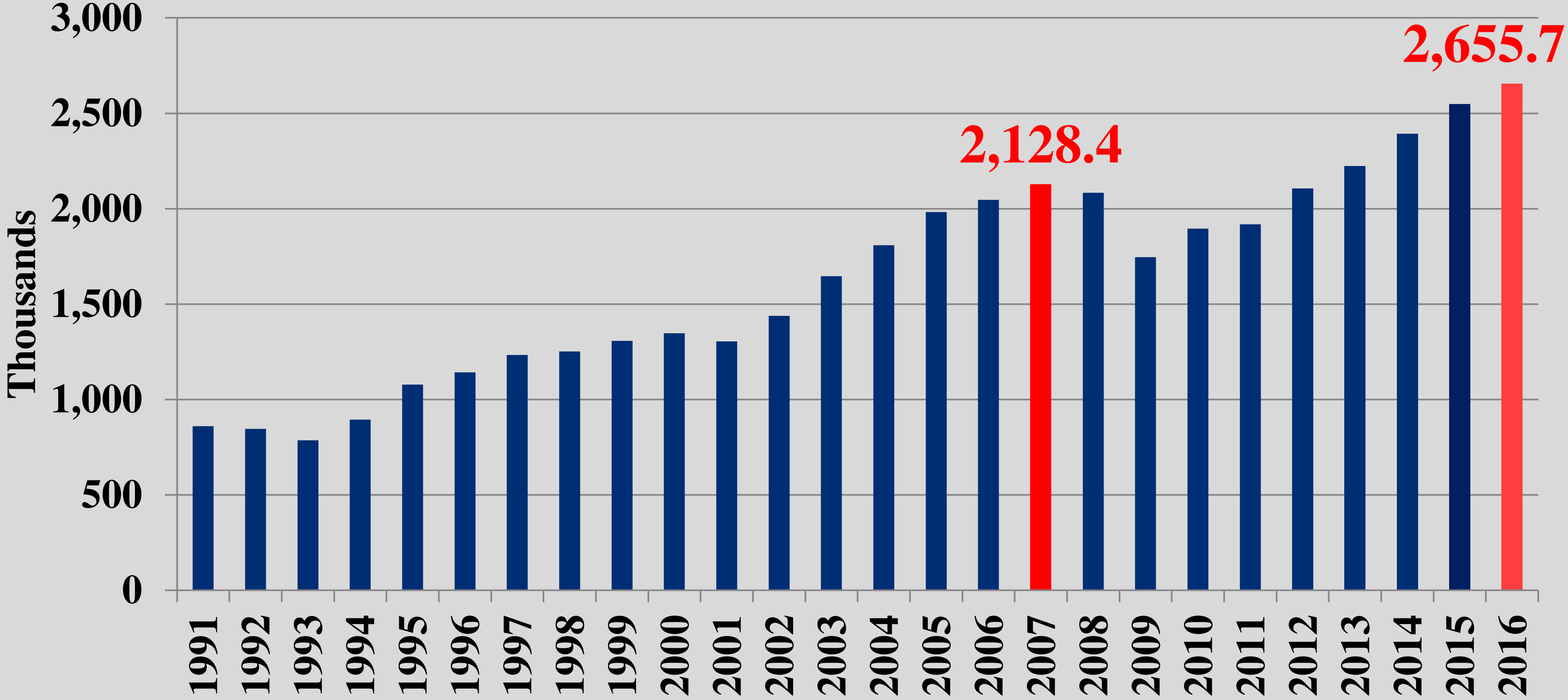
Fiscal Year 2006 through Fiscal Year 2016 (ending June 30)

Port of Virginia's Operating Income from January to October 2016 was $14.6M compared to $9.6M for the same time period in 2015.

Source: Virginia Port Authority Comprehensive Annual Financial Report for Fiscal year 2015 and Fiscal Year 2016, and the Old Dominion University Economic Forecasting Project.

Twenty-Foot Equivalent Container Units (TEUs) at the Port of Virginia: 1991 to 2016

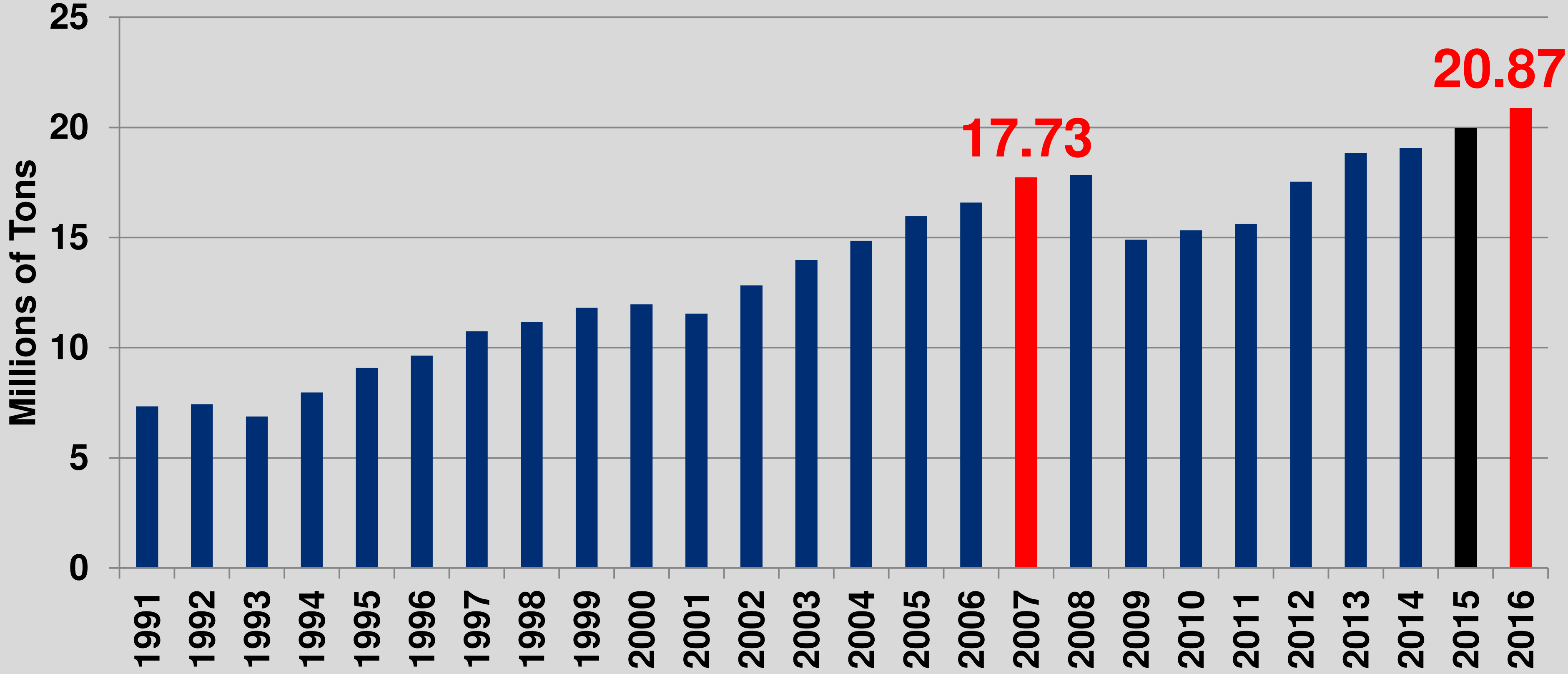
TEUs increased by 4.2% in 2016; we had forecasted a 4.8% increase. Loaded TEUs increased by 4.8%,; empty TEUs increased by only 1.2%.



Source: Virginia Port Authority and Old Dominion University Economic Forecasting Project.

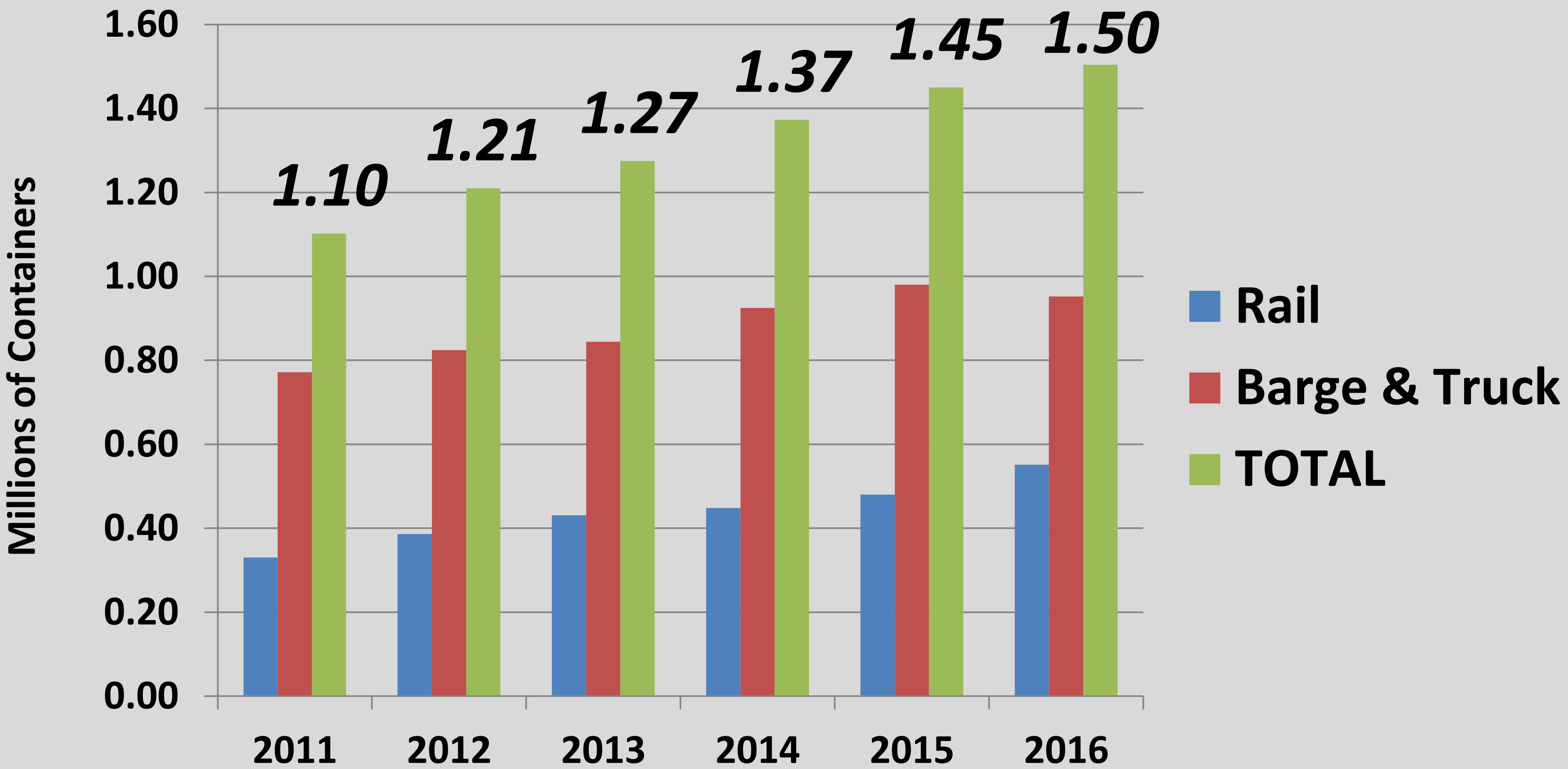
General Cargo Tonnage at the Port of Virginia: 1991 to 2016

General Cargo Tonnage increased by 4.5% in 2016; we forecasted a 2.7% increase.



Source: Virginia Port Authority and Old Dominion University Economic Forecasting Project.

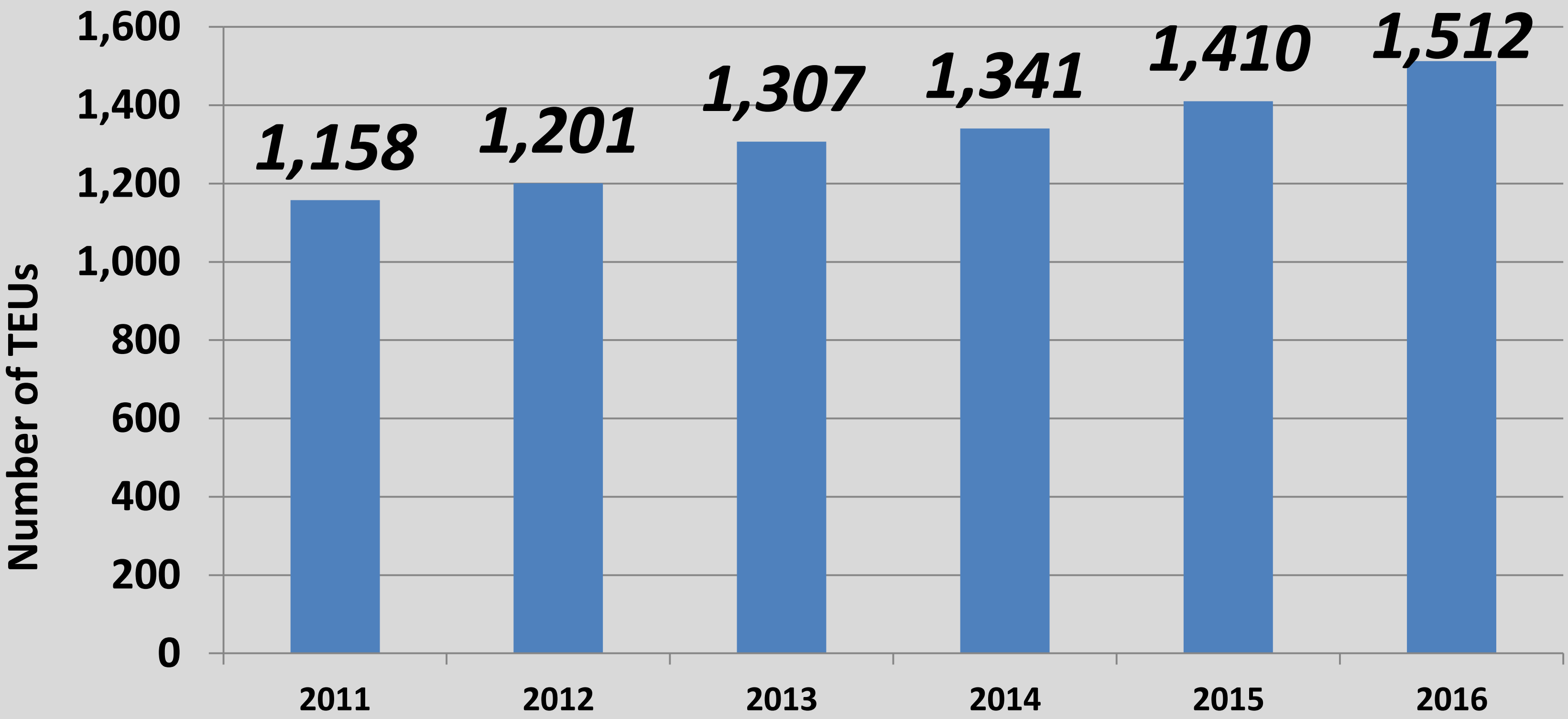
Movement of Containers at the Port of Virginia by Type of Transportation: 2011 to 2016



Percent of containers moved by rail has gradually increased from 31.9% in 2012 to 36.7% in 2016.

Source: Virginia Port Authority and the Old Dominion University Economic Forecasting Project

Average TEUs per Container Vessel Call 2011 to 2016



Average TEU capacity of the largest 10 percent of Container Vessels calling at the port has increased from 5,691 TEUs in 2009 to 9,067 TEUs in 2014 or by 59% and this trend is continuing.

Source: Virginia Port Authority and the Old Dominion University Economic Forecasting Project

Forecast for 2017

Old Dominion University 2017 Forecast for Hampton Roads MSA

	2016*	2017	% Change
Nominal Gross Regional Product	$98.96B	$103.17B	
Real Gross Regional Product**	$86.73B	$87.95B	+1.41%
Civilian Employment	768,975	772,820	+0.50%
Unemployment Rate	4.59%	4.40%	
Taxable Sales	$22.21B	$22.79B	+2.60%
Hotel Revenue	$804.70M	$840.11M	+4.40%
General Cargo Tonnage	20.87M	21.43M	+2.70%
Housing Permit Value	$846.38M	$868.39M	+2.60%

*Figures for **calendar** year 2016 include predicted values for Dec. 2016. ** Base year is 2009

2017 Regional Summary

- **Look for regional economic growth to be below its half-century annual average of 2.6 percent and also below that of the nation.**

- **The port, health-care industries, and tourism are likely to help the region's moderate economic expansion in 2017**

- **Single-family home prices in 2017 are likely to continue to increase at a moderate pace.**
  - **Inventories, sale volume, and days-on-market are all moving in the right direction. Months of supply of existing homes are lower than their historic average.**
  - **Slightly higher Mortgage Rates**

- **Lingering distressed home volume remains a concern**

The Dashboard: Center for Economic Analysis and Policy, Strome College of Business

COMMONWEALTH ECONOMIC DASHBOARD

Select Area: VA

REAL GDP 2016 Q2 **$434.53 bil** ↑ 0.65% from 2016 Q1	UNEMPLOYMENT RATE November 2016 **4.0%** ↑ 0.1% from November 2015	TOTAL NONFARM EMPLOYMENT 2016 Q3 **3.93 mil** ↑ 1.73% from 2015 Q3
SIZE OF THE LABOR FORCE November 2016 **4.23 mil** ↑ 0.30% from November 2015	AVERAGE WEEKLY WAGES 2016 Q2 **$1,011** ↑ 1.20% from 2015 Q2	INITIAL UNEMPLOYMENT CLAIMS December 2016 **12,670** ↓ -36.85% from December 2015
TAXABLE RETAIL SALES 2016 Q3 **$30,126,034,100** ↑ 1.56% from 2015 Q3	FHFA HOUSING PRICE INDEX 2016 Q3 ↑ **3.22%** from 2015 Q3	HOTEL REVENUE PER AVAILABLE ROOM (REVPAR) YTD December 2016 **$68.04** ↑ 5.78% from YTD 2015

Center for Economic Analysis and Policy, Strome College of Business at Old Dominion University

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Economic Forecasting Project

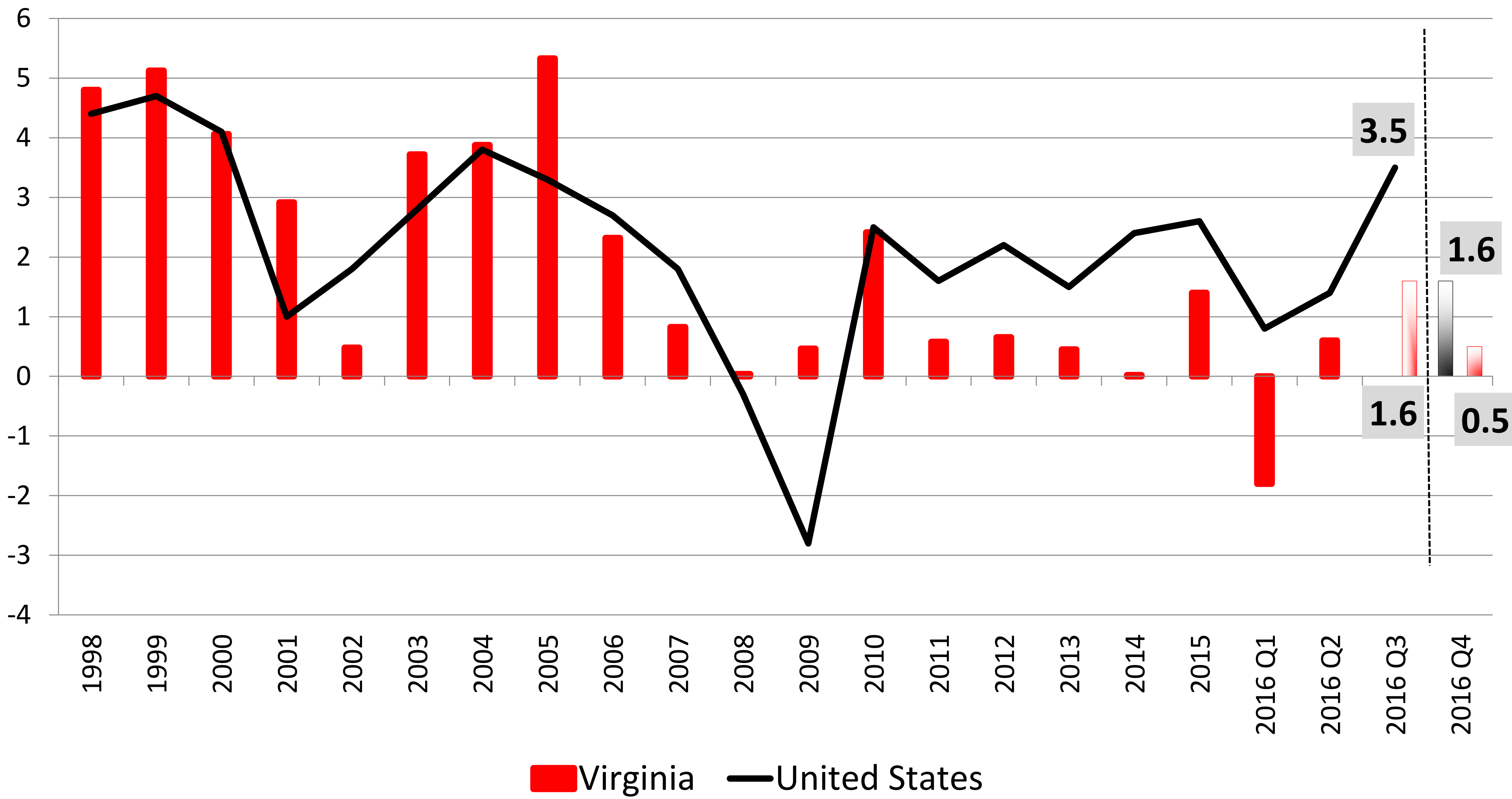
Old Dominion University
2017 National Economic Forecast

January 25, 2017

Larry “Chip” Filer
Associate Professor of Economics
Strome College of Business

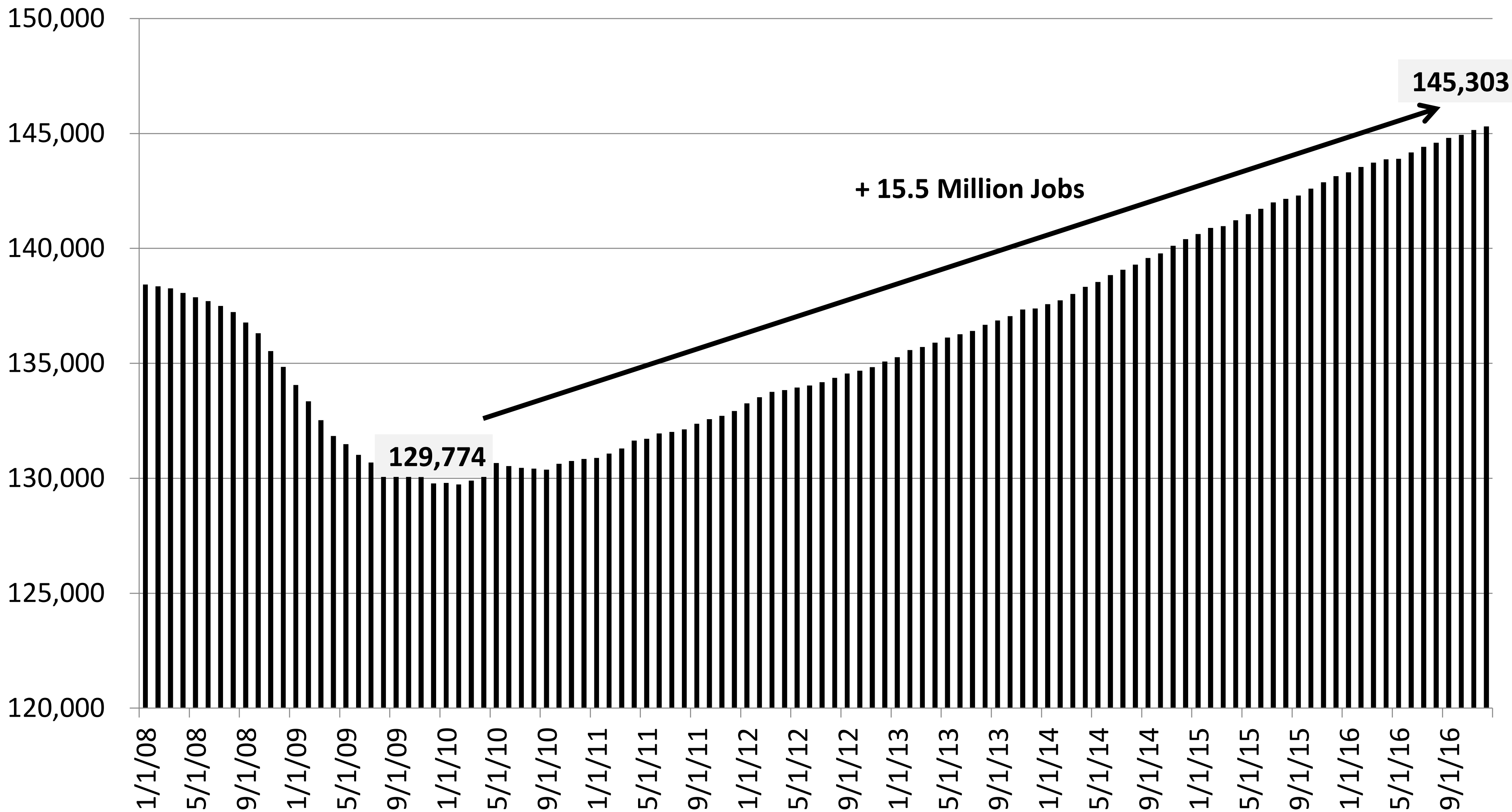
www.odu.edu/forecasting

Real GDP Growth
United States and Virginia



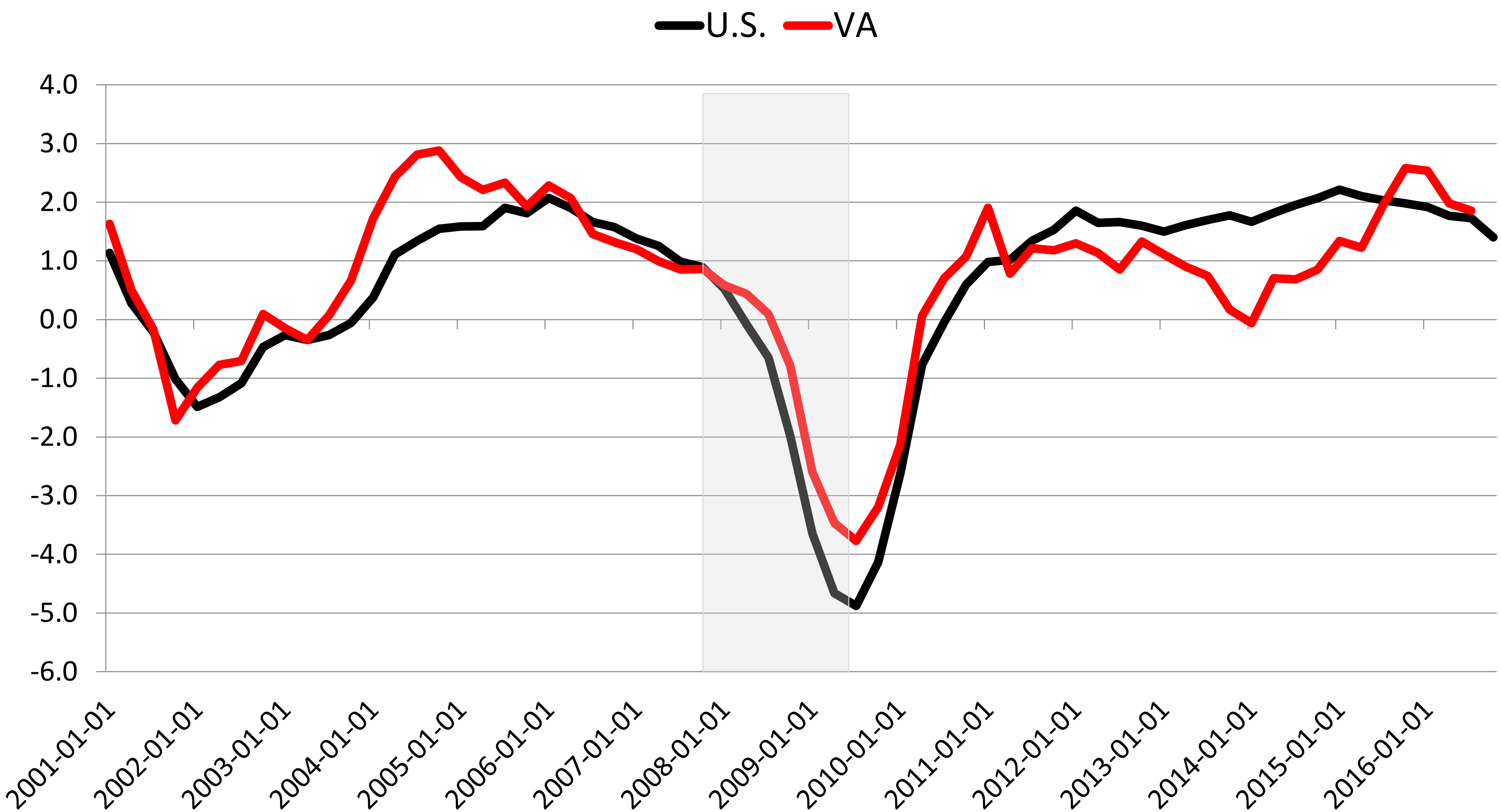
Source: Bureau of Economic Analysis and Center for Economic Analysis and Policy Forecasts

Total Nonfarm Payroll Employment



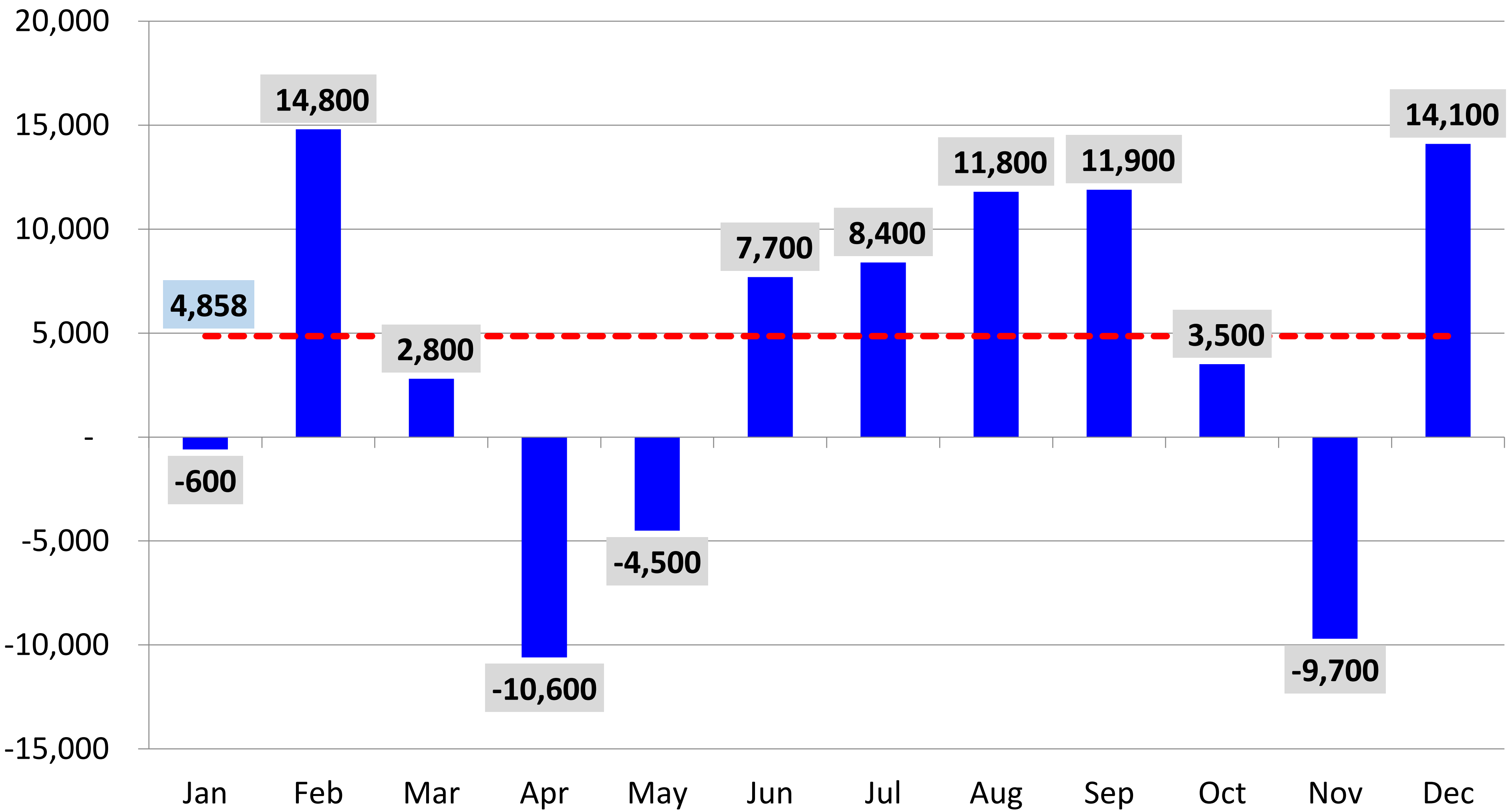
Source: Bureau of Labor Statistics

Percentage Growth in Total Nonfarm Employment
United States and Virginia



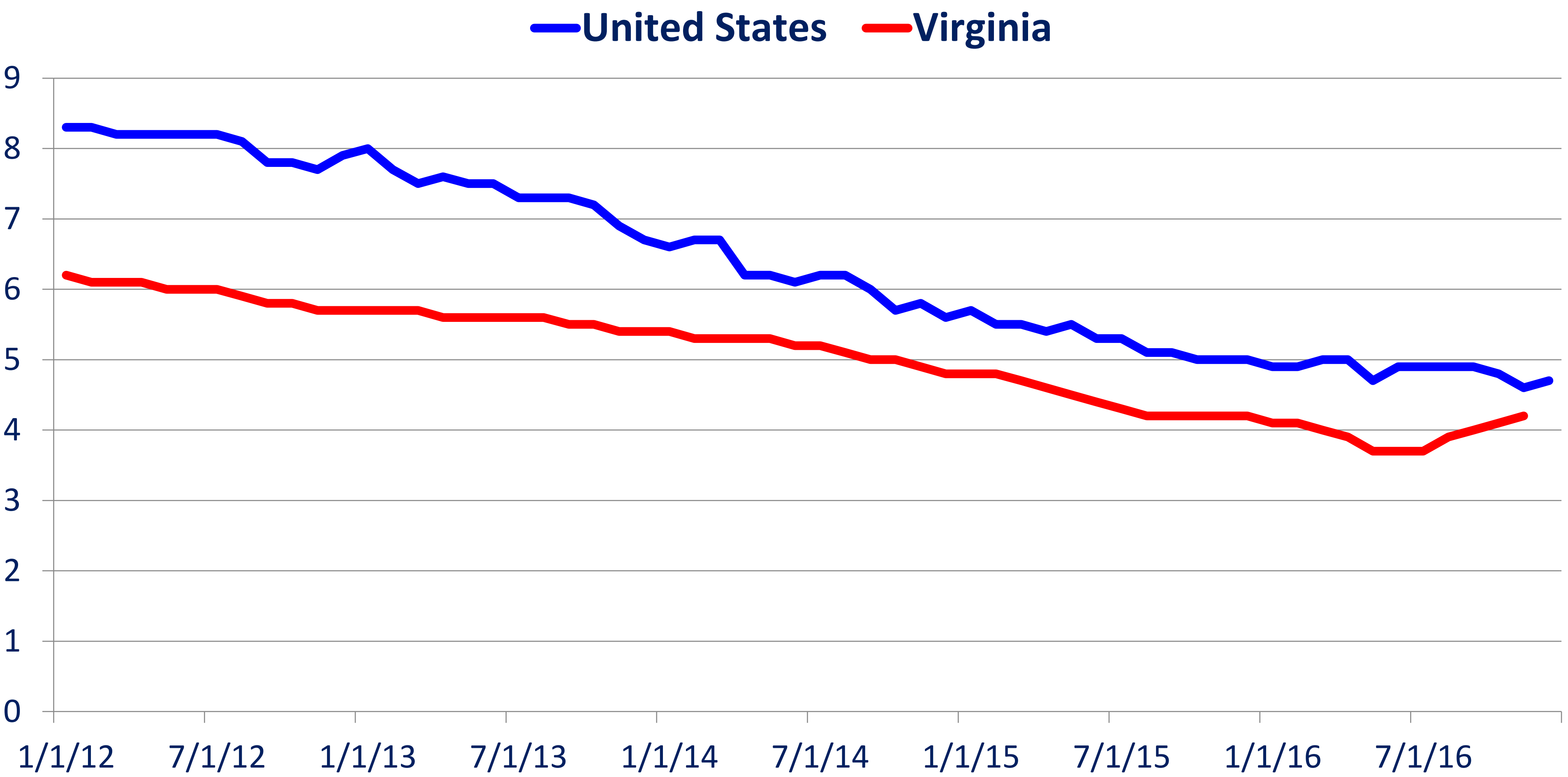
Source: Bureau of Labor Statistics

Monthly Net Job Creation For Virginia During 2016



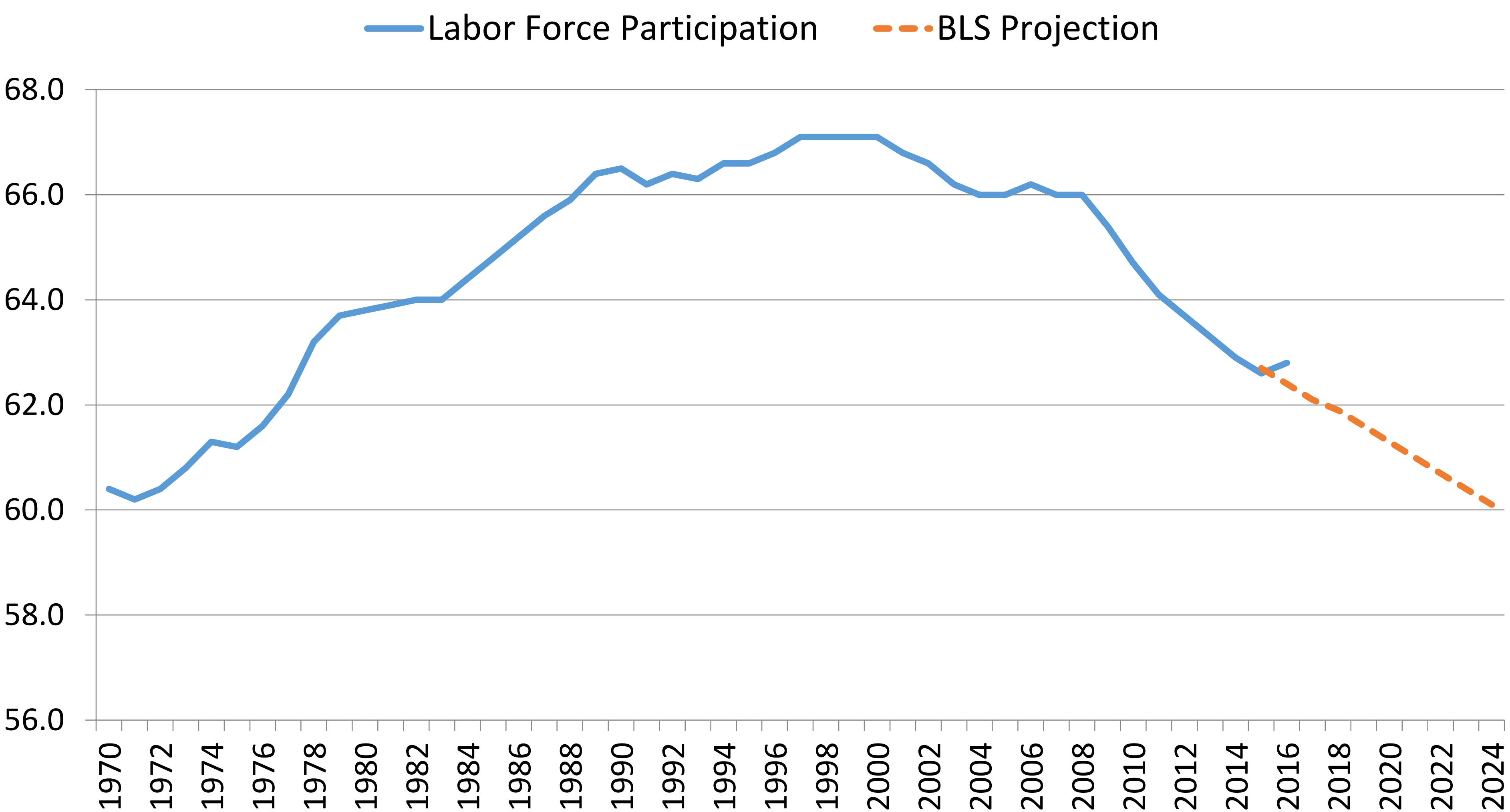
Source: Bureau of Labor Statistics and Center for Economic Analysis and Policy Calculations

Rate of Headline Unemployment (U3)
United States and Virginia



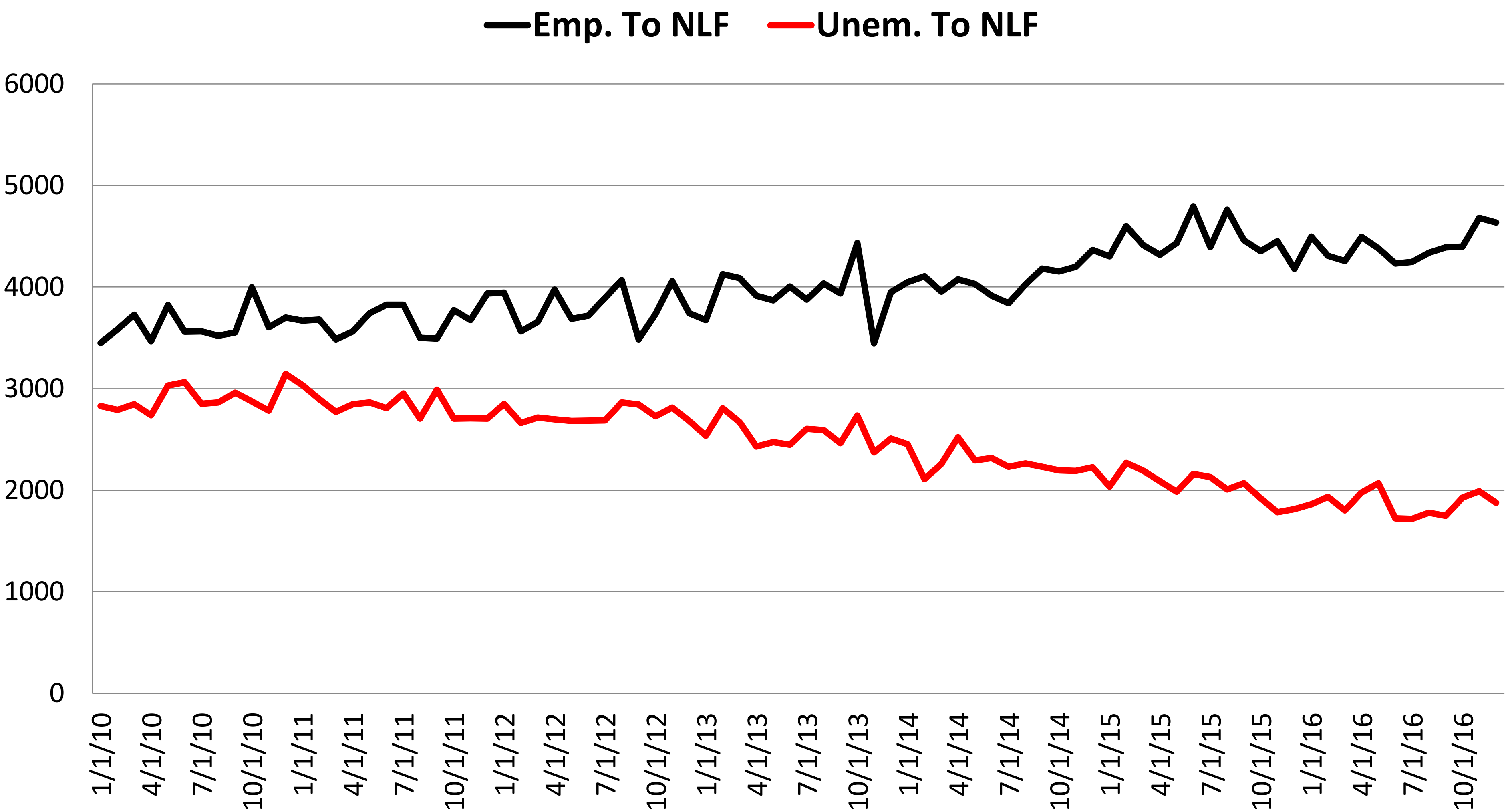
Source: Bureau of Labor Statistics

Labor Force Participation Rates Are Starting to Stabilize



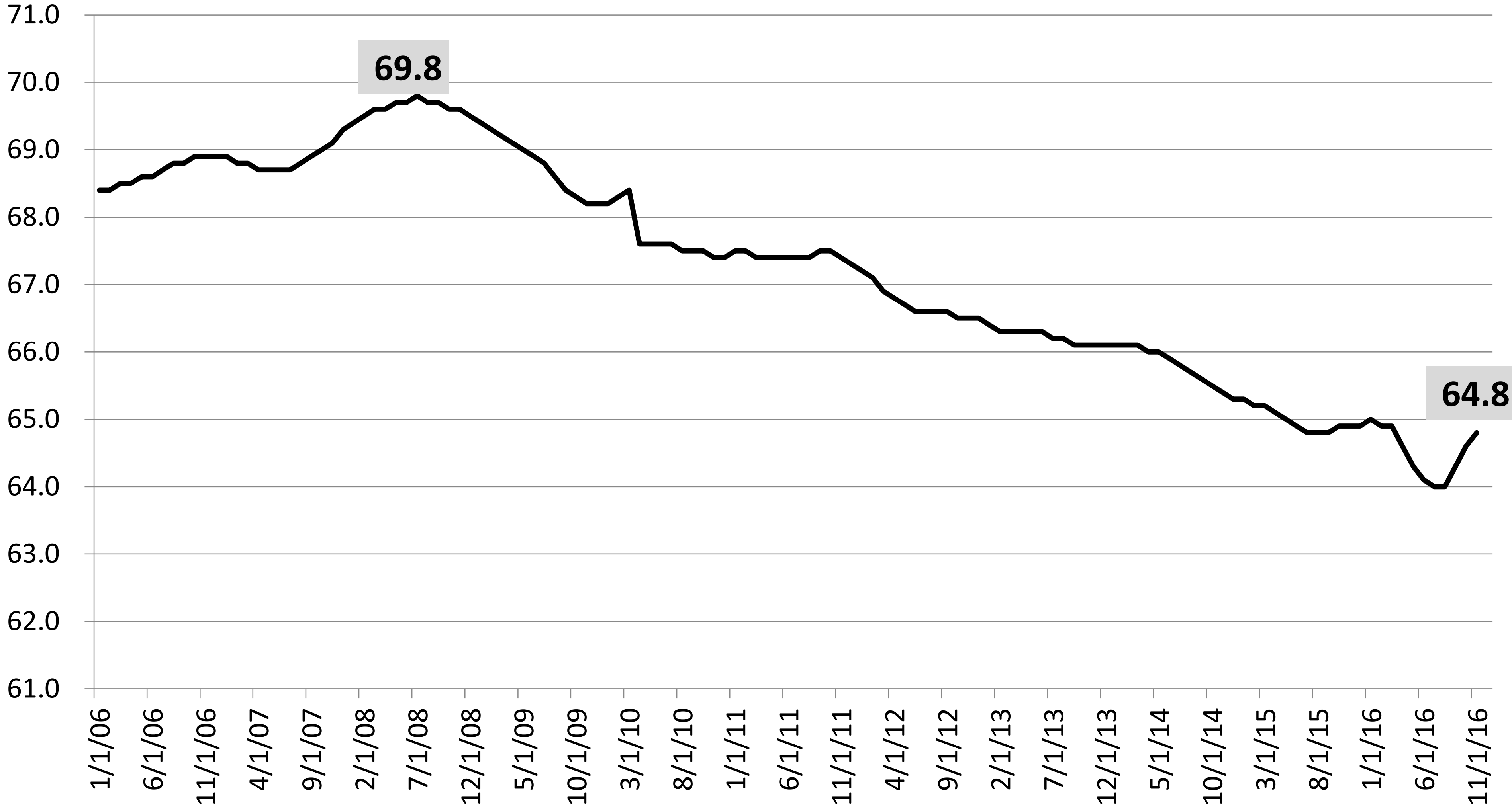
Source: Bureau of Labor Statistics

Labor Force Flows from Prior Month



Source: Bureau of Labor Statistics

Virginia Labor Force Participation Rates



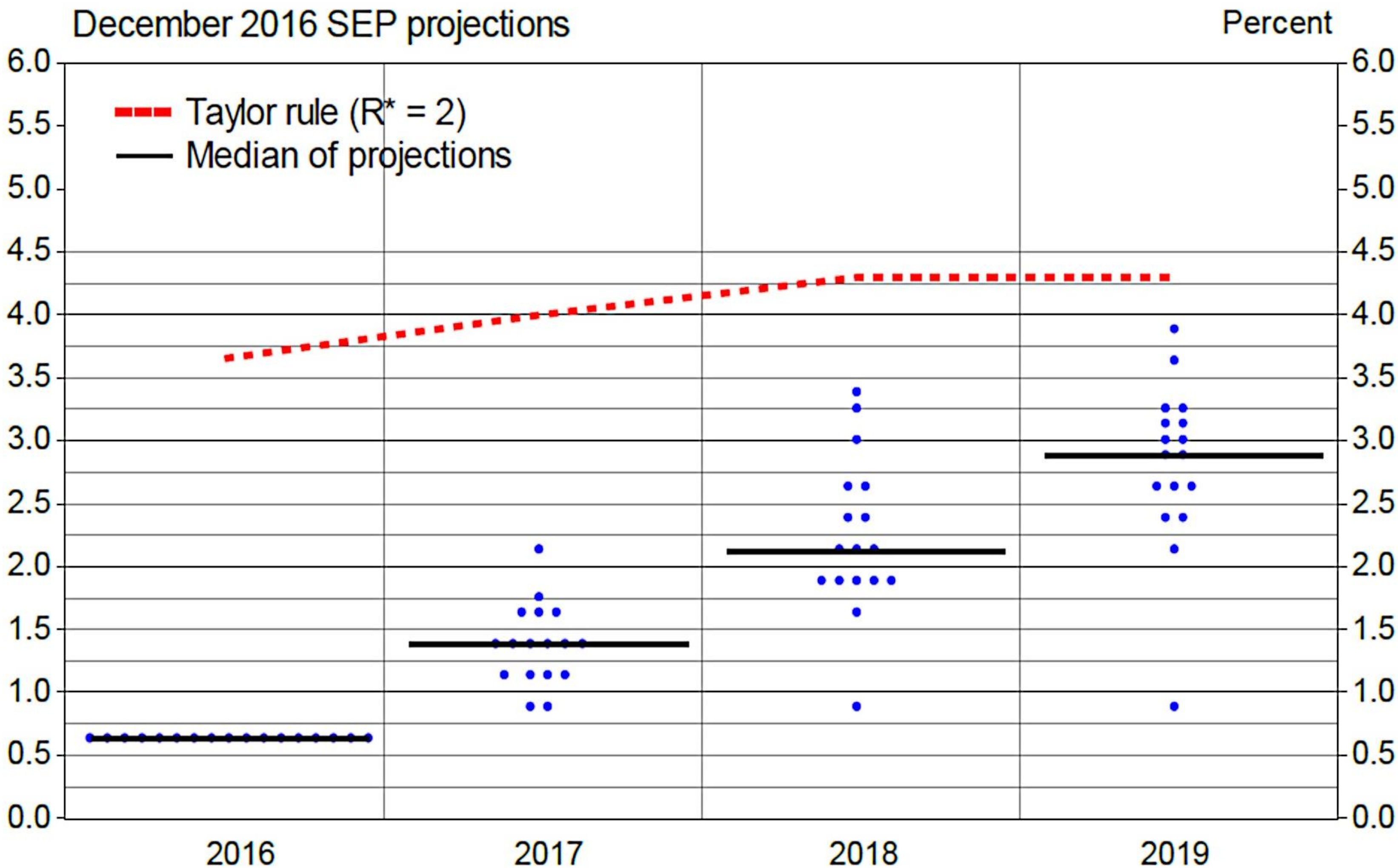
Source: Bureau of Labor Statistics

The Fed in 2017

- There is an expectation of 3 rate increases during 2017 (75 basis points total). This would leave the Fed Funds Target at the range 1.25% to 1.50% by December.

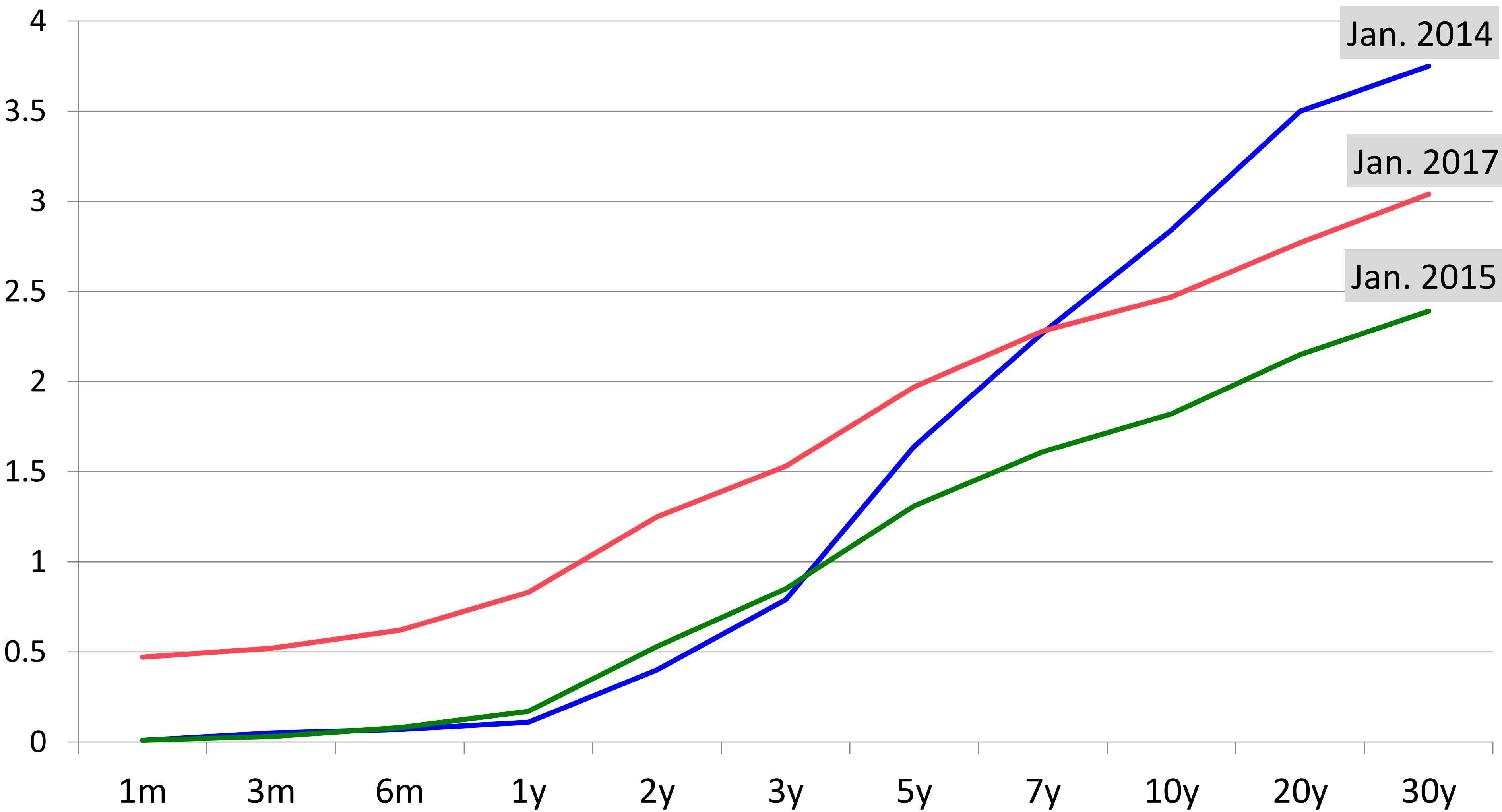
- Meeting dates in 2017:
  - Jan/Feb
  - March
  - May
  - June
  - July
  - Sept/Oct
  - December

Fed Dot Chart versus Taylor Rule



Source: Janet Yellen, Speech to Stanford Institute for Economic Policy Research on January 19, 2017.

Treasury Yield Curves



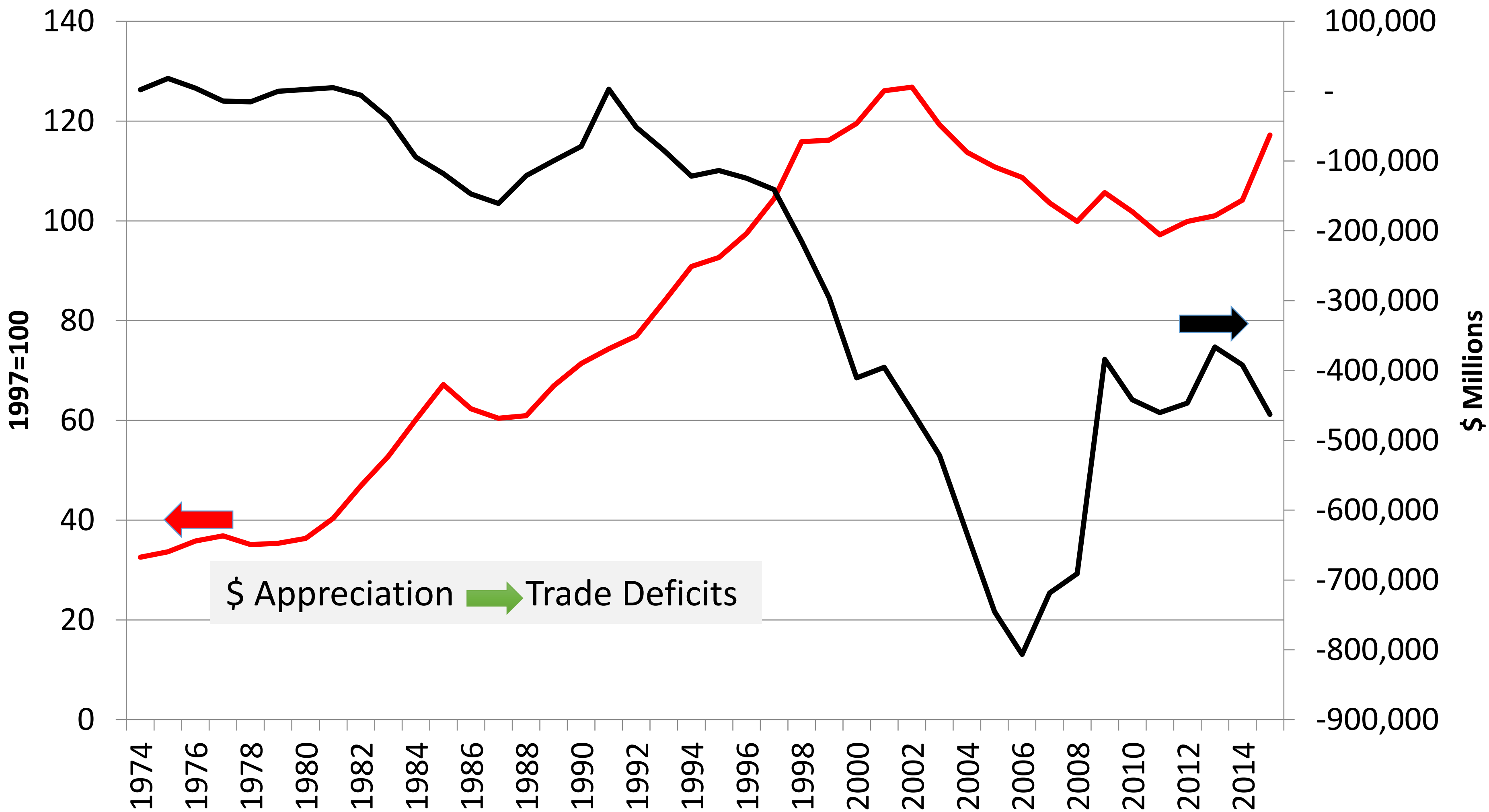
Source: US Department of the Treasury

The Trump Administration

- Very difficult to forecast. Campaign rhetoric is always more political and ideological than actual policy proposals.

- A few things we know (or don’t know):
  - Repeal of ACA
  - Infrastructure Bill
  - Immigration reform
  - Repeal of Dodd-Frank
  - Renegotiation of Trade Agreements

Trump's Trade Conundrum



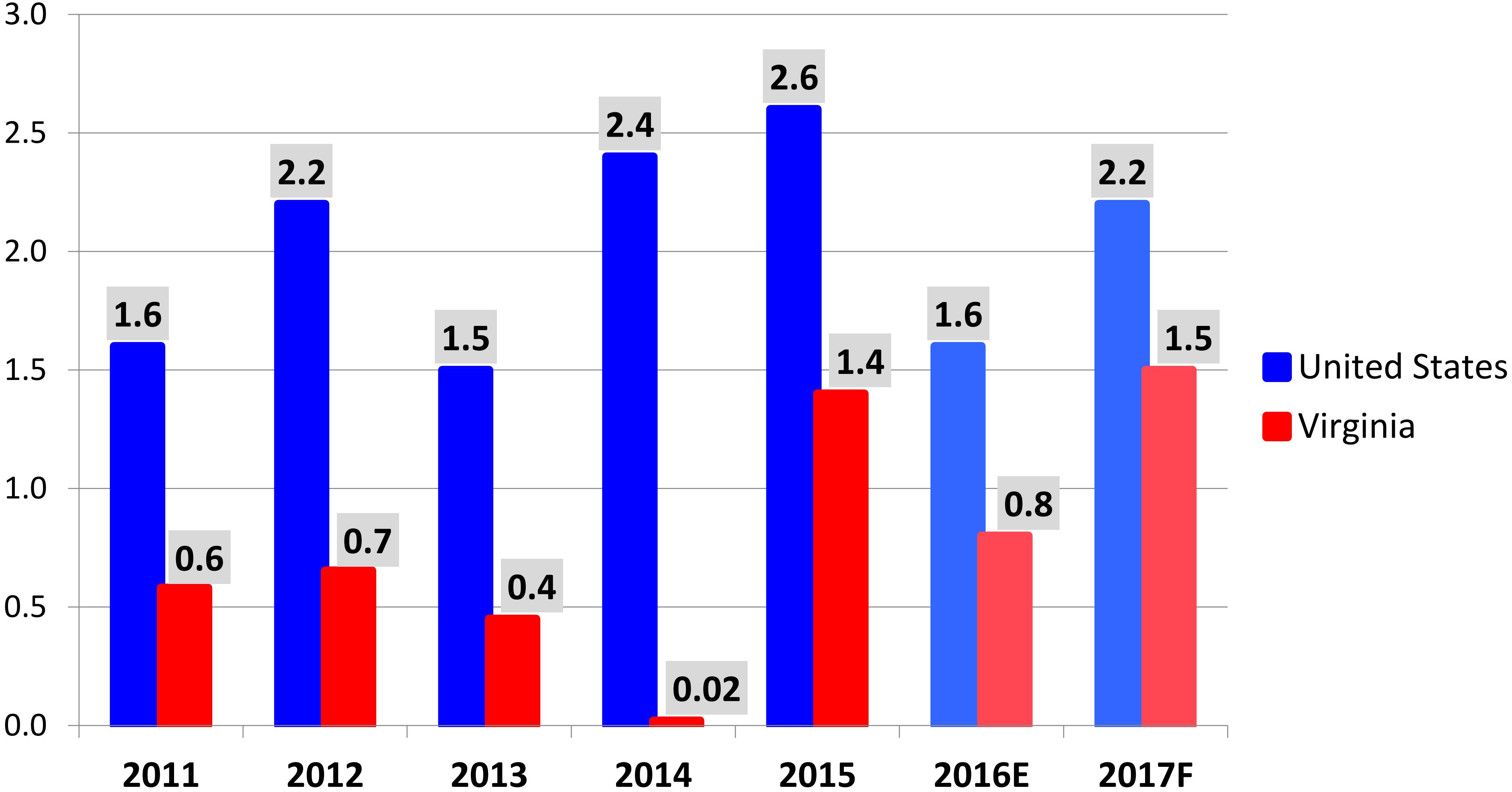
Source: Bureau of Economic Analysis and Board of Governors of the Federal Reserve System

The Current National Recovery

Recession End	Expansion Duration
October 1945	80 months
February 1961	106 months
March 1991	120 months
November 2001	73
June 2009	91 (ongoing)

Source: National Bureau of Economic Research

Real GDP Growth Forecasts
United States and Virginia



Source: Bureau of Economic Analysis and Center for Economic Analysis and Policy Forecasts

National Economic Outlook for 2017

	2016		2017
	Forecast	Actual	Forecast
Real Gross Domestic Product	2.03%	1.60% est.	2.2%
Employment Growth	1.50%	1.74%	1.5%
Unemployment Rate	5.1%	4.9%	4.7%
Consumer Price Index	1.34%	1.28%	2.80%
CPI - Core	2.03%	2.21%	2.40%
3-Month Treasury Bill	1.25%	0.32%	1.31%
10-Year Treasury Bond	3.15%	1.84%	3.15%
30-Year Conventional Mortgage Rate	4.25%	3.65%	4.25%