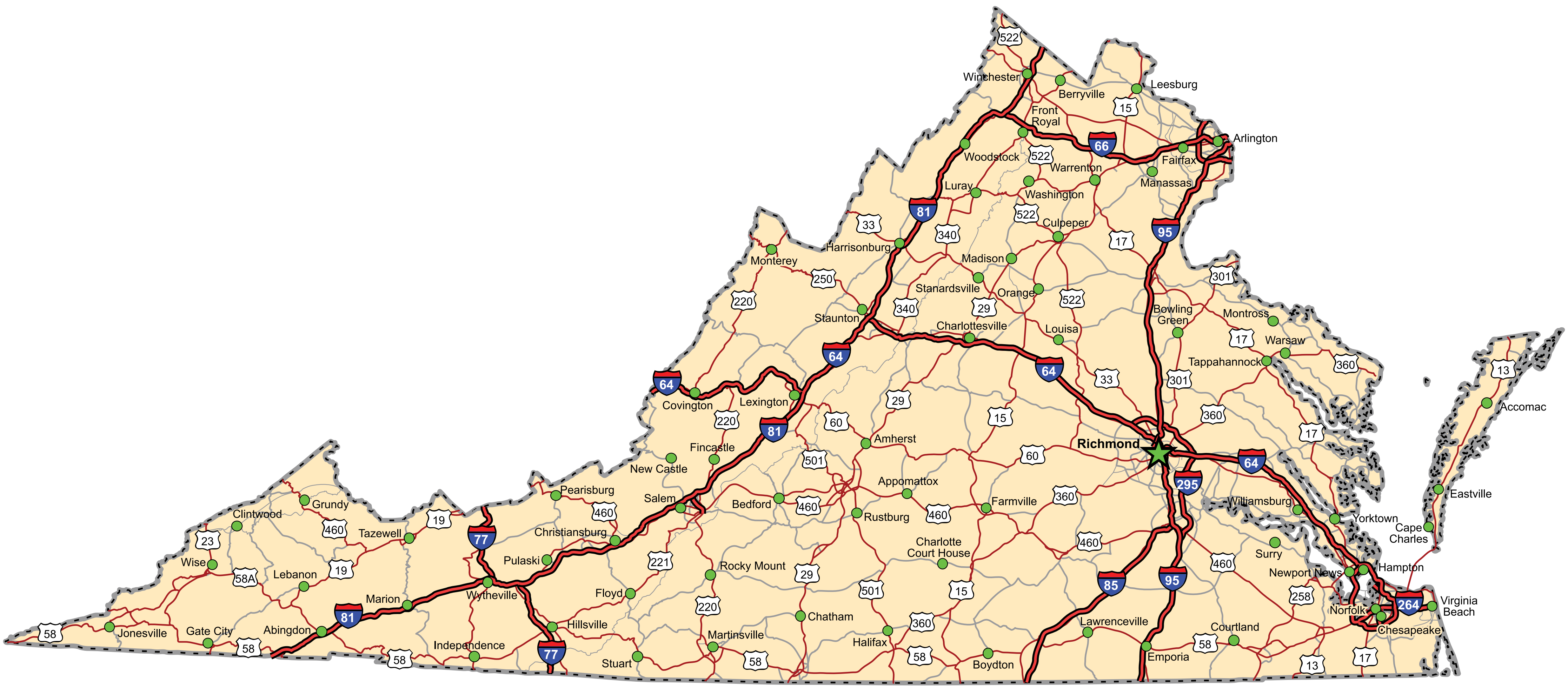
2015 State of the Commonwealth Report

- PRODUCED BY THE STROME COLLEGE OF BUSINESS AT OLD DOMINION UNIVERSITY
- SPONSORED BY THE VIRGINIA CHAMBER FOUNDATION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November 2015

Dear Reader:

This is the first State of the Commonwealth Report. It is jointly sponsored by the Strome College of Business at Old Dominion University and the Virginia Chamber Foundation. While the report represents the work of many people connected in various ways to the university, it does not constitute an official viewpoint of Old Dominion or its president, John R. Broderick. Similarly, it does not represent the views of the Virginia Chamber of Commerce or its president and CEO, Barry DuVal.

The goal of the report is to stimulate thought and discussion that ultimately will make Virginia an even better place to live, work and do business. We are proud of the Commonwealth's many successes, but realize that it is possible to improve our performance. In order to do so, we must have accurate information about "where we are" and a sound understanding of the policy options open to us.

The 2015 report is divided into eight parts:

The Virginia Economy Struggles to Cope with Economic Headwinds: The Virginia economy grew 0.02 percent in real terms in 2014, will grow only about 1.33 percent in 2015, and we forecast only a 1.98 percent growth rate in 2016. The villain in this scenario is stagnant or declining federal spending, especially defense spending.

Northern Virginia: Standing at a Fork in the Road? Direct federal employment and procurement spending accounts for almost 40 percent of all economic activity in Northern Virginia, which in turn accounts for more than 40 percent of all economic activity in Virginia. Sequestration has hobbled Northern Virginia's growth. However, George Mason University's leading economic index suggests better times are on the horizon.

Digging Deeper: A Closer Look at Defense Spending in Virginia: An estimated 11.8 percent of Virginia's GDP depends upon defense spending. An important part of this are the contracts awarded to Virginia businesses by the Department of Defense. Two regions – Northern Virginia and Hampton Roads – account for 86 percent of these contracts.

If You Can Make It There . . . You Can Make It Even Better in Virginia: The good news is that the "real," inflation-adjusted incomes of Virginians in nearly every area of the Commonwealth are higher than in nearly all comparable regions along the Atlantic Coast, including New York City.

Fly Away With Me: A Look at Virginia's Airports: For several years, both passenger traffic and the number of available seats have been in decline at nearly all of the Commonwealth's airports. Reagan/Washington National and Charlottesville are the major exceptions. Decisions made by the U.S. Congress have placed a particular burden on Dulles International.

The Small-Business Story in Virginia: What a Quarter Century of Data Reveal: Very small businesses in Virginia (those with fewer than 10 employees) have been holding their own, but many have found it difficult to grow beyond this size. Very small businesses now account for smaller proportions of total employment and payrolls in Virginia than was true 25 years ago. However, public policy changes can alter this situation.

Consolidating or Merging the Public Service Provision in Virginia Cities and Counties: Where Can We Save the Most Money? Controlling for variables such as the cost of living and local characteristics, we examine the provision of 25 distinct public services by the 95 counties and 39 independent cities in Virginia. Could we save money and perhaps provide better services if we combined the provision of some of these services across county and city lines? The evidence suggests that the answer is yes for at least 13 of these public services and perhaps for another four.

Domestic Migration: What Moves Us? Virginians and all other Americans can vote with their feet and move from one location to another in response to job opportunities, amenities and other factors. Recently, Virginia has experienced very low or even negative levels of net domestic migration. We look at the migration experience of 358 metropolitan regions nationally (including the largest eight in Virginia) to provide some answers.

The Strome College of Business provides support for this report, which is produced by Old Dominion's Center for Economic Analysis and Policy. George Mason's Center for Regional Analysis and GMU Professor Terry L. Clower provided essential data analysis for Northern Virginia. However, the report would not appear without the vital backing of the private donors whose names appear below. They believe in the Commonwealth and the power of rational discussion to improve our circumstances, but they also are not responsible for the views expressed in the report.

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The following individuals were instrumental in the writing, editing, design and dissemination of the report:

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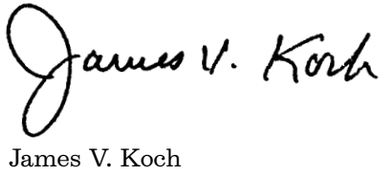
The State of the Commonwealth Report is available in PDF form at www.stateofthecommonwealth.com and www.jamesvkoch.com. If you have comments or suggestions, please direct them to James V. Koch at jkoch@odu.edu or 757-683-3458. Individual copies may be purchased for $25.

Sincerely,



James V. Koch

Board of Visitors Professor of Economics
and President Emeritus, Old Dominion University

November 2015

Dear Reader:

The Virginia Chamber Foundation is pleased to present to you the first State of the Commonwealth Report, to give an unprecedented economic profile of significant trends that will affect Virginia's future growth. This independent report, produced by Old Dominion University's Center for Economic Analysis and Policy, is a key part of the Virginia Chamber Foundation's mission to strengthen Virginia's long-term competitiveness through research that provides relevant metrics for our economy's progress.

Virginia for many years has been blessed by a strong economy, being recognized as the best state for business by CNBC as recently as 2011. However, our growth has slowed in recent years. Virginia faces economic headwinds, and it's up to our businesses to have an accurate understanding of where we are in order to chart a course for long-term economic growth.

I would like to thank those who contributed their support to the Virginia Chamber Foundation, which allows us to invest in this statewide economic profile. Those foundation sponsors are recognized on the following page.

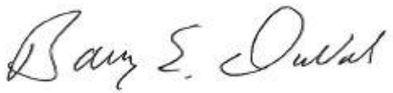
While the conclusions of this independent report are the authors' alone, and do not necessarily reflect those of the Virginia Chamber of Commerce or our members, the State of the Commonwealth Report presents a critically important benchmark for Virginia's economy. I hope that it will spark candid conversations about the best ways to overcome our challenges, and that those conversations turn into positive action.

The Virginia Chamber will continue to be a catalyst for ideas to improve Virginia's long-term business climate and for implementing those policy ideas at the state and federal level. The Chamber's Blueprint Virginia Business Plan for the Commonwealth engaged more than 7,000 business and community leaders to lay out our long-term vision. With 23,000 members, we will continue to be a strong voice for business in Virginia.

This year, the Virginia Chamber had a 94 percent success rate in implementing Blueprint priorities in the General Assembly, and we were recognized by the Southern Political Report as the top Virginia Government Affairs Association. Our work is not done.

Please give careful consideration to the content of this benchmark report. We know that when we strengthen the voice of the private sector and make it easier to start and grow a business, Virginia wins.

Sincerely,



Barry DuVal
President & CEO
Virginia Chamber of Commerce

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Contents

THE VIRGINIA ECONOMY STRUGGLES TO COPE WITH ECONOMIC HEADWINDS

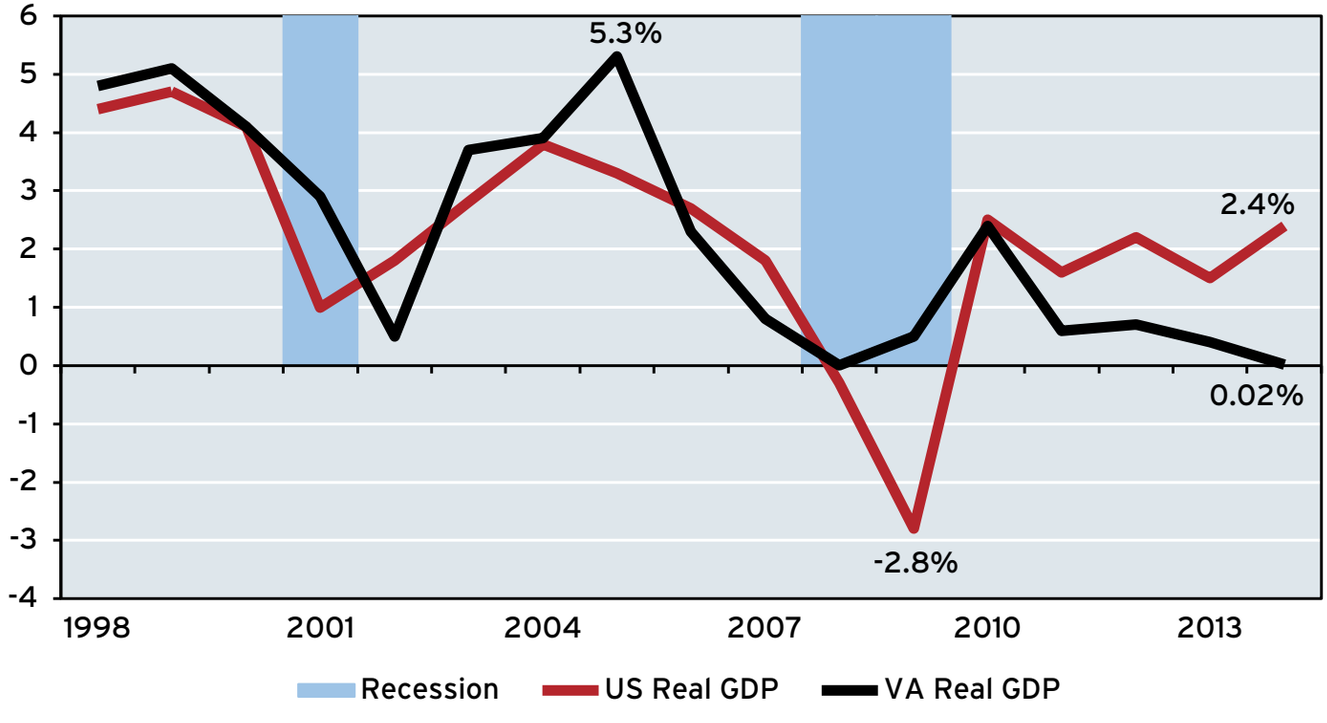
The end of the 2009 Great Recession brought with it significant optimism as well as economic recovery in Virginia. The Commonwealth's economy expanded in real terms at 2.4 percent in 2010, signaling what appeared to be a strong recovery. However, that optimism soon faded and Graph 1, which reports year-over-year real economic growth rates for gross domestic product (GDP) inside Virginia between 2002 and 2015, shows why.

The good news from Graph 1 is that the state's economy did not contract as much as the U.S. economy during 2009. The bad news is that since 2010, real GDP growth has been anemic in Virginia, with no year-over-year growth rate exceeding 1 percent. This trend continued into 2014. **The U.S. Department of Commerce's Bureau of Economic Analysis (BEA) estimate of 2014 real GDP growth for Virginia was a meager 0.02 percent, placing us a distant 48th among the 50 states. Our 2014 growth rate exceeded only the growth rates of Mississippi (-1.2 percent) and Alaska (-1.3 percent) – the only two states actually to experience contractions. Meanwhile, the nation's economy was growing at 2.4 percent.**

The GDP (gross domestic product) attributable to Virginia used to be labeled GSP – gross state product. The BEA now uses these two terms almost synonymously.

GRAPH 1

UNITED STATES AND VIRGINIA REAL GDP



Source: Bureau of Economic Analysis

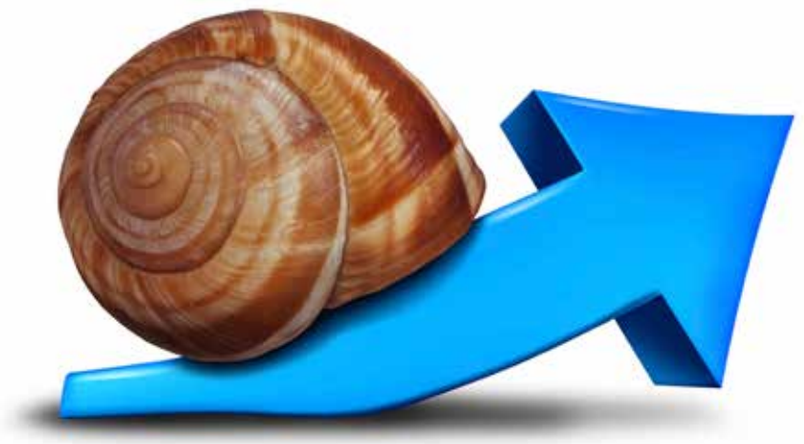
Why Has Virginia Been Growing So Slowly?

One way to provide an answer to this question is to examine the industry sectors within the state's economy to see if they have either been growing or contracting. Graph 2 provides the industry contributions to the change in GDP between 2013 and 2014, the latest period for which we have data. The BEA numbers reveal that the construction sector easily experienced the largest slowdown between 2013 and 2014, contracting 5 percent. This alone shaved .19 percent from Virginia's 2014 GDP growth. Other sectors that exercised a significant drag on economic growth included professional and technical services (-0.10 percent), real estate, rental and leasing (-0.06 percent) and the government (-0.03). Taken together, these four large sectors reduced GDP growth by 0.38 percent.

Nevertheless, several of Virginia's major industry sectors did expand at least modestly in 2014. Information, along with health care and social assistance, continued to be bright spots and together contributed 0.27 percent to GDP growth, thus extending the strong performance both have evidenced in recent years. Administrative and waste services (0.10) and retail trade (0.07) also provided positive contributions to growth in 2014.

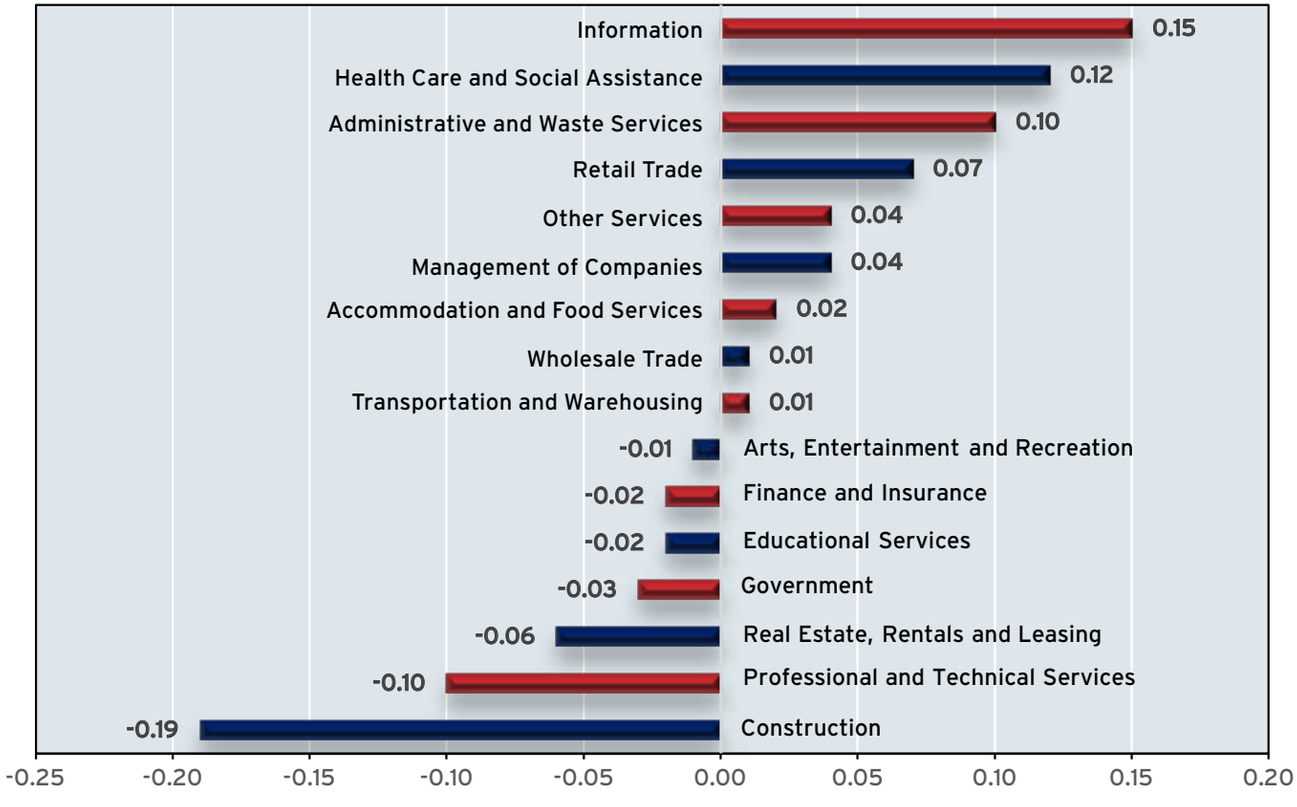
Note that government (local, state and federal) was not a major source of GDP weakness in the Commonwealth over the past year, accounting for only a -.03 percent decline. This better-than-expected performance reflects in part the "deal" that Congress made to diminish the impact of budget sequestration in the federal government's 2014 and 2015 fiscal years. This made a significant difference. In 2014, with sequestration in full force, Virginia's GDP grew by a very modest 0.02 percent, but government-sector contraction reduced that growth by 0.28 percent.

However, in 2014, thanks to sequestration budget relief approved by Congress, the government sector's drag on economic growth declined to only -.03 percent. Since the state's overall GDP grew only .02 percent, this underlines that the contributions of both the government and private sectors in 2014 to Virginia's economic growth were rather close to zero. **Simply put, neither the public nor the private sector exhibited much economic thrust in Virginia in 2014.**



GRAPH 2

CONTRIBUTION TO VIRGINIA 2014 GDP GROWTH RATE BY MAJOR INDUSTRY SECTOR



Source: Bureau of Economic Analysis

Government Spending Often Drives Sector Declines

Much, though not all, of Virginia's lackadaisical economic performance in 2014 can be laid at the door of stagnant or declining federal spending. There's no way to avoid this conclusion: Federal spending is a big deal in Virginia. A 2014 study conducted by the Joint Legislative Audit Review Commission (JLARC) estimated that federal spending approached $136 billion in 2012 and that nearly half of all Virginians received a direct federal payment during that year – either through assistance programs, retirement benefits or federal employment.[1]

Defense spending in Virginia is a particularly important part of the federal government-spending picture where Virginia is concerned and will approximate $65 billion in 2015 (The Washington Post, Aug. 23, 2015). A 2013 Bloomberg study estimated that 13.9 percent of Virginia's GDP could be attributed to defense spending.[2] The relevant point is that fluctuations in federal spending in general and defense spending in particular have much to do with the expansion or contraction of major industry sectors in the Commonwealth's economy.

Let's take a look at one particular aspect of federal spending in Virginia – the awarding of federal contracts and related financial assistance. Table 1 reports the total financial awards made by the federal government and received by organizations located in the Commonwealth between FY 2010 and FY 2015 and also compares those awards to national trends. One can see that during this time period, not only did Virginia's awards decline (by 33 percent), but also that our share of total federal awards declined from 4.04 percent to 3.04 percent. Graph 3 illustrates these data for Virginia.

TABLE 1

FEDERAL AWARDS TO VIRGINIA AND THE UNITED STATES, FY 2010 TO FY 2015

	VIRGINIA	UNITED STATES	VIRGINIA SHARE
FY 2010	$100,360,955,880	$2,483,467,578,015	4.04%
FY 2011	$117,719,352,350	$3,291,133,474,231	3.58%
FY 2012	$114,727,180,194	$3,707,697,652,770	3.09%
FY 2013	$92,834,852,113	$2,917,384,826,071	3.18%
FY 2014	$91,792,683,992	$2,763,815,862,356	3.32%
FY 2015	$67,245,801,851	$2,214,678,966,201	3.04%
Change FY2010-FY2015	-33.0 percent	-10.8 percent	-1.00%

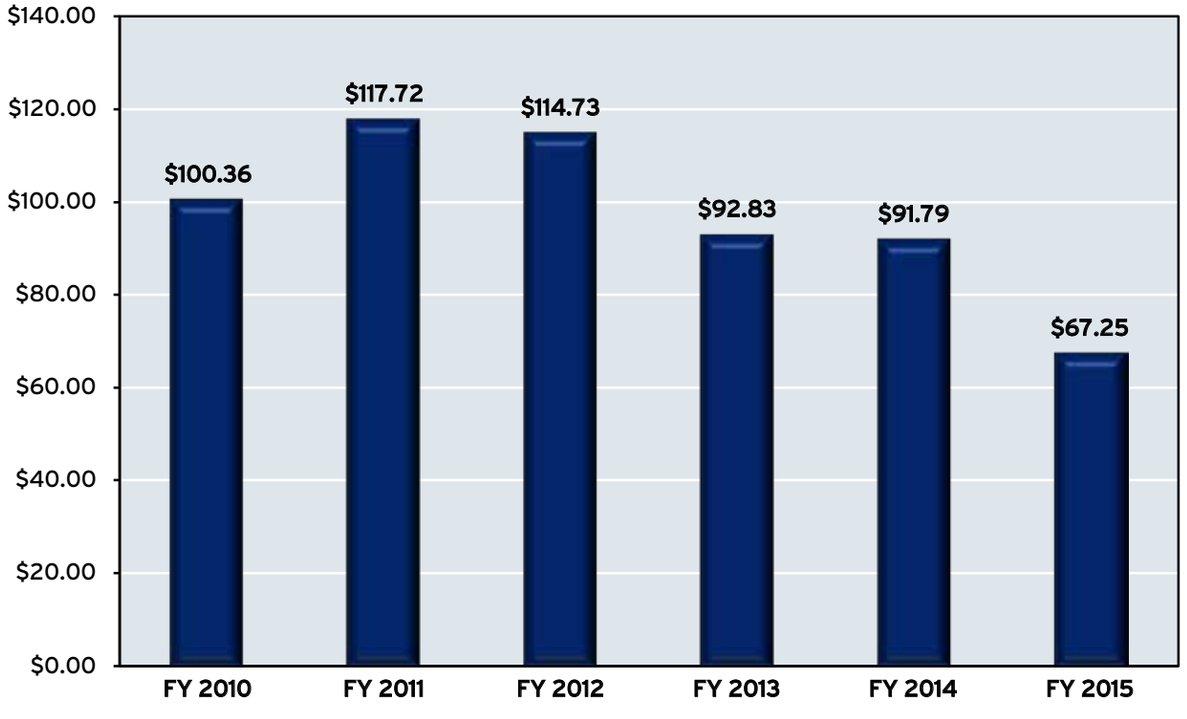
Source: www.usaspending.gov

1 *Size and Impact of Federal Spending in Virginia*, Joint Legislative Audit Review Commission, June 2014.

2 Robert Levinson et al., *Impact of Defense Spending: A State-by-State Analysis*, November 2011.

GRAPH 3

FEDERAL AWARDS TO VIRGINIA, FY 2010 TO FY 2015
(BILLIONS OF $)



Source: www.usaspending.gov

Federal Sequestration And Sequestration Relief

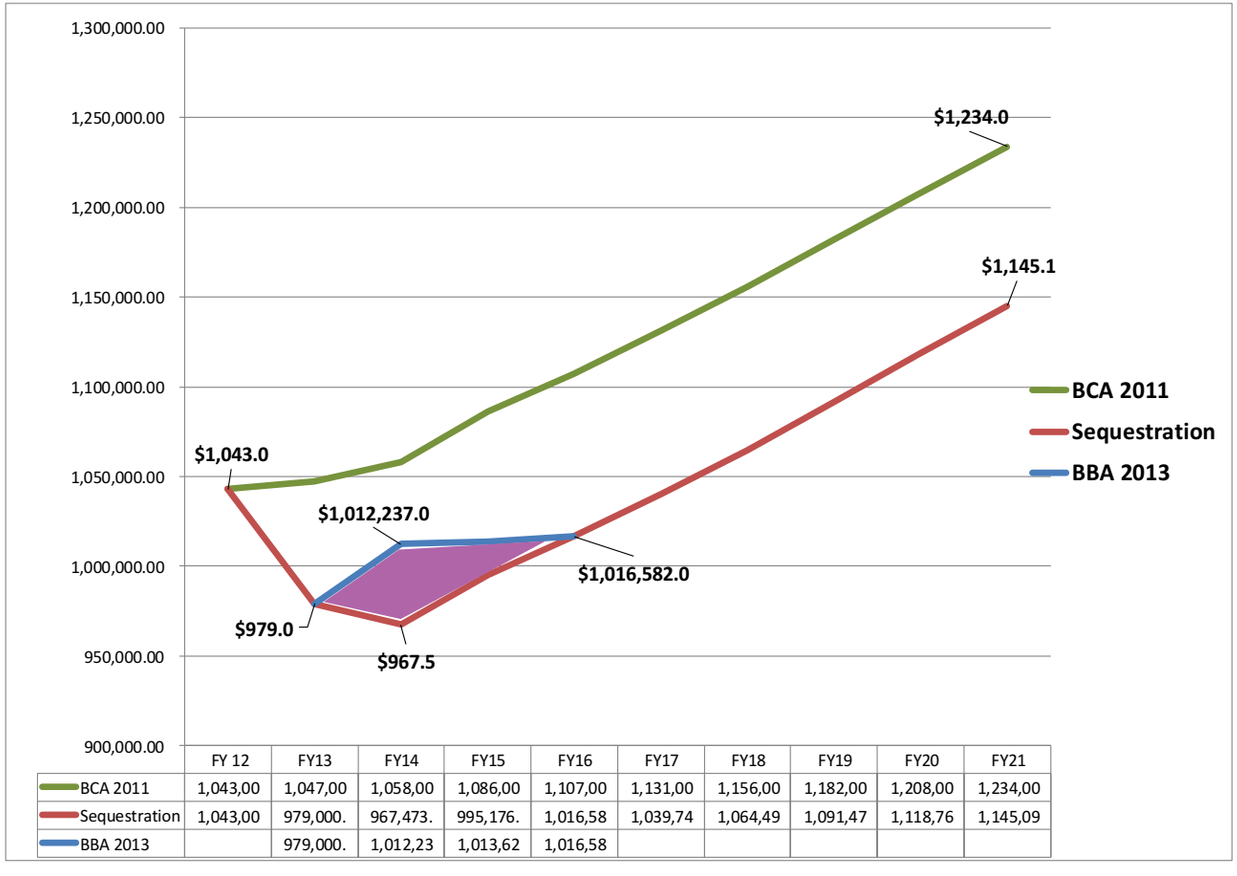
The Bipartisan Budget Act of 2013 (BBA) provided some financial relief from the sequestration cuts in the federal government's 2014 and 2015 fiscal years. However, even this medicine was insufficient to cure the patient named Virginia. Graph 4 provides an illustration of the impact of the BBA and related pieces of legislation through FY 2021. The green line in Graph 4 tells us what federal spending would have been if there had been no sequestration. The red line tells us what federal spending will be like with sequestration and without another spending agreement. The red line is a reality scenario and reflects what federal budgets will be from FY 2016 through FY 2021 if we revert to the full sequestration spending caps enunciated in the Budget Control Act of 2011. A renewal of something like the BBA would fill in some of the gap between the spending levels of BCA and the spending levels that will take effect if full sequestration caps are renewed. The area of the purple trapezoid in Graph 4 represents the increased spending (about $63 billion) that occurred in FY 2014 and FY 2015 because of the BBA. Roughly one-half of this amount ($32 billion) involved restoration of defense spending.

Sequestration relief has undeniable political dimensions. Republicans tend to favor relaxing spending caps with respect to defense expenditures, while Democrats tend to favor relaxing spending caps for nondefense items and social programs. If a solution is to emerge, then that agreement probably will involve a bit of both. The issue, a critical one for Virginia, was still unresolved by late October.

While the major financial pain experienced by Virginia due to sequestration was felt in 2013, 2014 and 2015, if there is no new sequestration relief, then defense spending in FY 2016 could be as much as $45 billion less than the amount budgeted under the BCA. Other nondefense federal spending would decline approximately an equivalent amount.

GRAPH 4

DISCRETIONARY FEDERAL SPENDING CAPS UNDER ALTERNATIVE LEGISLATION



	FY 12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21
BCA 2011	1,043,00	1,047,00	1,058,00	1,086,00	1,107,00	1,131,00	1,156,00	1,182,00	1,208,00	1,234,00
Sequestration	1,043,00	979,000.	967,473.	995,176.	1,016,58	1,039,74	1,064,49	1,091,47	1,118,76	1,145,09
BBA 2013		979,000.	1,012,23	1,013,62	1,016,58					

Sources: Old Dominion University Economic Forecasting Project and the Department of Defense

An Alternative (And Perhaps More Useful) Way To Assess The Virginia Economy

Reliance upon GDP estimates alone to evaluate the health of a state's economy is problematic because, unlike national GDP data which are issued quarterly, state data are reported with a significant lag – typically nine months in length. As a consequence, often we cannot definitively announce a turning point in Virginia's economic performance until six to nine months after that change actually has occurred.

Fortunately, there is available another set of reputable statewide economic data that is generated both on a monthly and quarterly basis for states. These data, which come from the Federal Reserve Bank of Philadelphia, provide a much more timely view of economic conditions. The "Philly Fed" produces both a *Coincident Economic Index* and a *Leading Economic Index* for all 50 states. The Coincident Index combines four important monthly measures of the economy into one index.[3] The Leading Index projects forward the growth of the Coincident Index over the succeeding six months.

Let's focus on the Leading Economic Index because we are interested in what is going to happen with Virginia's economy in 2016. Graph 5 provides the Philly Fed's Leading Index for Virginia along with the same indices for Texas, Florida and North Carolina. These states were selected for comparison because each, like Virginia, is highly dependent on federal government spending. Indeed, Texas, Florida and North Carolina are ranked 2nd, 4th and 12th, respectively, in terms of the total number of dollars of federal spending they receive. Virginia ranks in the middle of this pack at 6th.

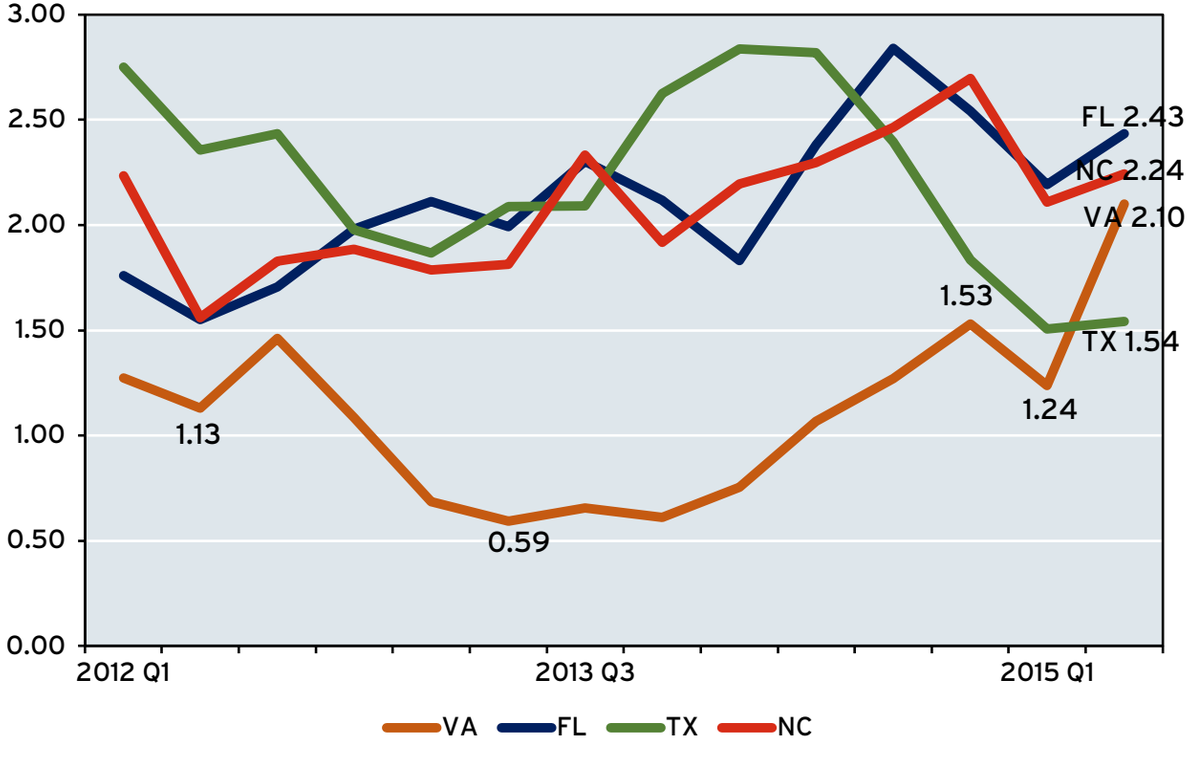
One can see in Graph 5 that the Philly Fed Leading Index captured Virginia's anemic real GDP growth in both 2013 and 2014. More substantively, however, the Leading Index provides us with considerable cause for optimism for 2016. Since the beginning of 2015, Virginia's Leading Index has shot upward from 1.24 to 2.10, even while an oil-dependent state such as Texas was experiencing a declining index value. Optimism with respect to the remainder of 2015 and 2016 therefore is in order. If – and this is a big if – Congress once again is able to craft meaningful sequestration spending relief, then 2016 could see expanding, robust economic conditions in the Commonwealth.

FEDERAL RESERVE BANK OF PHILADELPHIA

3 The index includes four measures of economic activity: nonfarm payroll employment, average hours worked in the manufacturing sector, the unemployment rate, and real wages and salaries.

GRAPH 5

PHILADELPHIA FEDERAL RESERVE LEADING INDEX OF ECONOMIC ACTIVITY: FLORIDA, NORTH CAROLINA, TEXAS, VIRGINIA, 2012-2015



Source: www.philadelphiafed.org/research-and-data/regional-economy/indexes/leading

Employment

In the eyes of many, jobs are the ultimate payoff insofar as economic activity is concerned. Graph 6 illustrates the pace of employment growth in both the United States and Virginia since 2008. **The Commonwealth reached a milestone of sorts in November 2014 when payroll employment finally surpassed the pre-recession peak level of 3,787,000. Alas, it took nearly 81 months after the start of the recession to re-establish this level of employment, providing a stark illustration of the sometimes job-less nature of our recent economic recovery.** By contrast, the nation had recovered all the jobs lost in the Great Recession already by April 2014.

While total employment in Virginia did snap back to its 2008 levels (3.78 million jobs) in November 2014, jubilation was short-lived because job losses in the first quarter of 2015 pushed the state back below that level. Fortunately, the Commonwealth's post-January 2015 payroll growth has been stronger and by August 2015, total employment in Virginia exceeded the 2008 peak level by nearly 1 percent, or approximately 30,000 jobs.

Job creation in the United States continues to be robust. In August 2015, national employment stood at about 3 percent, or 3.9 million higher than the previous peak level of employment in January 2008.

Payroll employment growth generally results in declining unemployment rates. Graph 7 presents unemployment rates for both Virginia and the United States. Virginia fared better than the nation insofar as unemployment rates were concerned during the recession. When the national unemployment rate topped out at 10 percent in October 2009, Virginia's rate was only 7.1 percent and our maximum unemployment rate of 7.4 percent was reached three months later in January 2010.

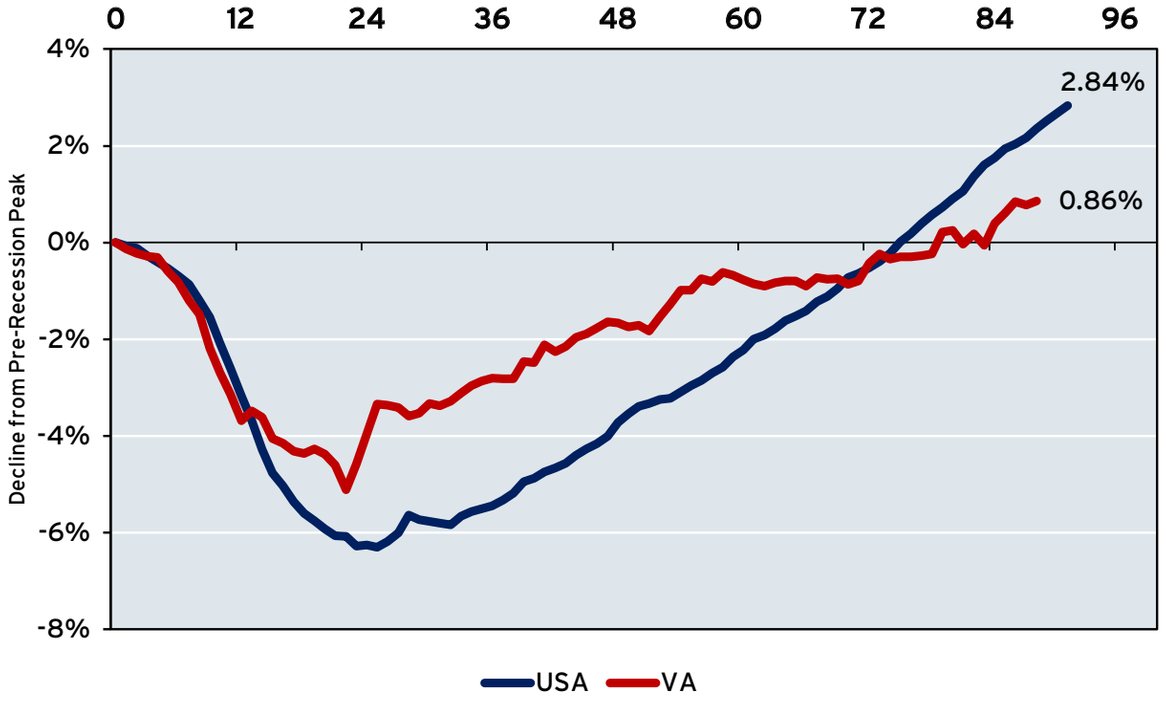
However, as we will discuss in greater detail, while unemployment rates provide us with broad information about the condition of the economy, they are calculated on the basis of who is actively looking for a job, but can't find one. If one isn't looking, one isn't counted as unemployed. Unfortunately, labor force participation both in the United States and Virginia has declined in recent years. As a consequence, it is possible for both the rate of unemployment and the number of jobs to decline at the same time.

Initial claims for unemployment compensation always have been regarded as a useful, forward-looking economic indicator because they often disclose trends. Those filing for unemployment compensation today not only will show up in unemployment statistics in the near future, but also their unemployment often portends lower expenditures and potential economic decline.

Graph 8 illustrates that initial claims for unemployment definitely have trended downward since the recession. On average, initial claims have fallen about 1,000 per month since 2010. The dotted line exhibits that trend. Note that these data are not seasonalized, so many of the sharp ups and downs in the initial claims line reflect normal calendar year variations, not long-term trends.

GRAPH 6

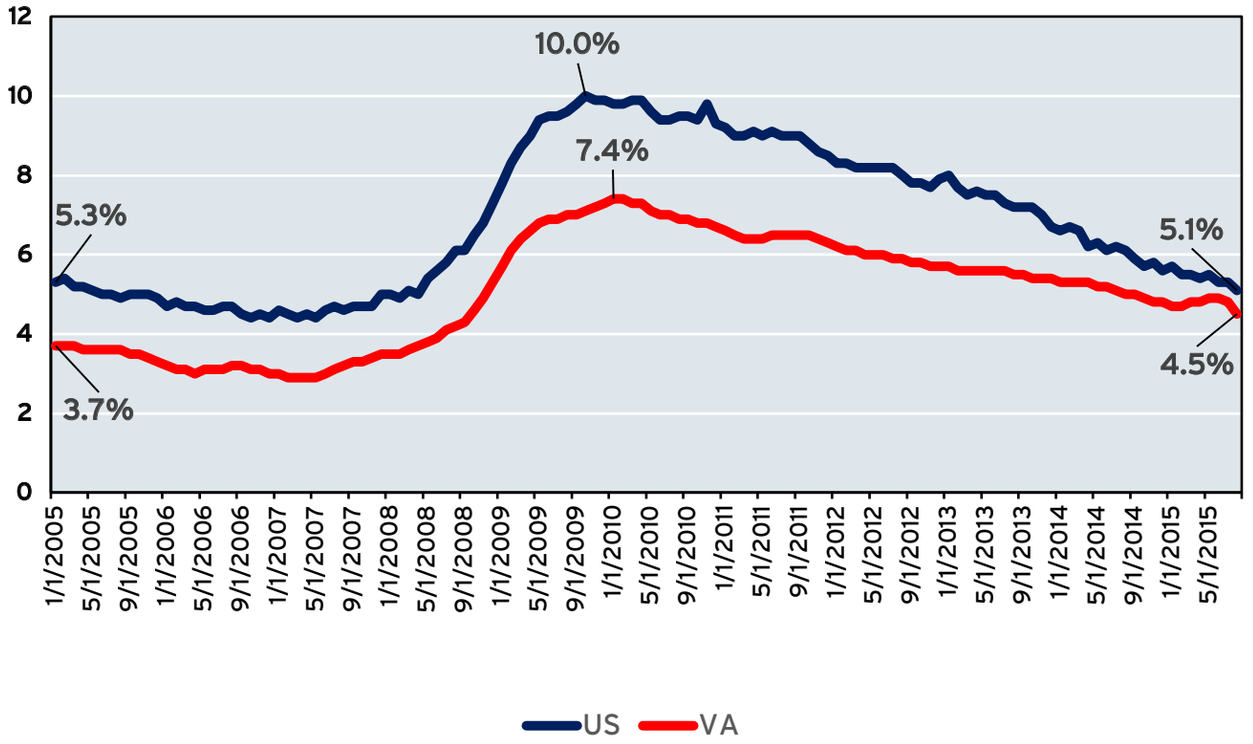
MONTHS REQUIRED TO RE-ESTABLISH PEAK EMPLOYMENT LEVELS



Sources: Bureau of Labor Statistics and the Bureau of Economic Analysis

GRAPH 7

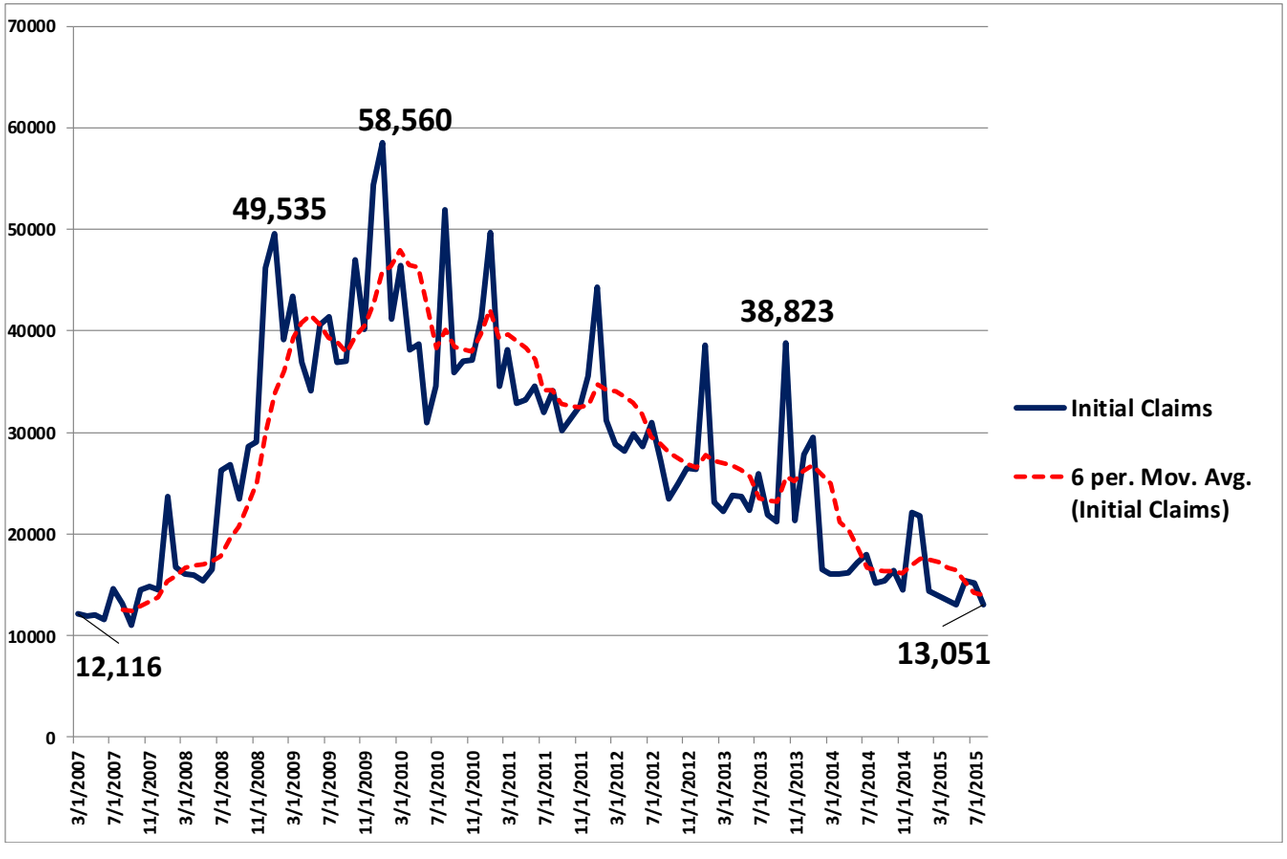
UNEMPLOYMENT RATES: UNITED STATES AND VIRGINIA



Source: Bureau of Labor Statistics

GRAPH 8

INITIAL UNEMPLOYMENT CLAIMS AND THEIR SIX-MONTH MOVING AVERAGE



Source: Bureau of Labor Statistics

The Port

While the Commonwealth's economy has not exhibited much energy in the past several years, one particular sector – international trade, as symbolized by the Port of Virginia – has reversed field and become an engine for economic growth. Perhaps the most important measure of Port activity is the number of ubiquitous TEUs (20-foot equivalent units) that the Port handles. These metal boxes often are 20 feet long and their most common height is 8 feet, 6 inches.[4] Their contents (technology equipment, food products, clothing, etc.) are the foundation stones of international trade.

One can see in Graph 9 that since July 2010, the number of TEUs handled by the Port of Virginia has increased by 59 percent. This is an impressive performance that not only reflects recession recovery, but also more efficient (and profitable) management of the flow of TEUs.

The Port of Virginia, which serves the entire Commonwealth (see Figure 1), currently enjoys a comparative advantage over most East Coast ports because it is a deep-draft port and therefore able to handle the very large, super ships that can carry 10,000 or more TEUs. This advantage will dissipate within several years as competitor ports such as New York/New Jersey re-engineer themselves so they can handle the largest ships. New York/New Jersey, for example, is spending $1.3 billion to raise the Bayonne Bridge about 65 feet so that it can accommodate the largest ships. The Port of Miami is investing more than $2 billion to improve its facilities.

If our Port wishes to maintain its current "large ship" advantage, then it must be dredged to 55 feet (from its current 50 feet). The largest ships that enter the Port of Virginia today already draft 48 feet. It must also find ways to handle these larger ships efficiently, not the least because it may take 24 hours or more to unload their cargo. Clearly, this cannot be accomplished by a single shift of workers, and the mere size of these ships often requires different equipment and trucking arrangements.

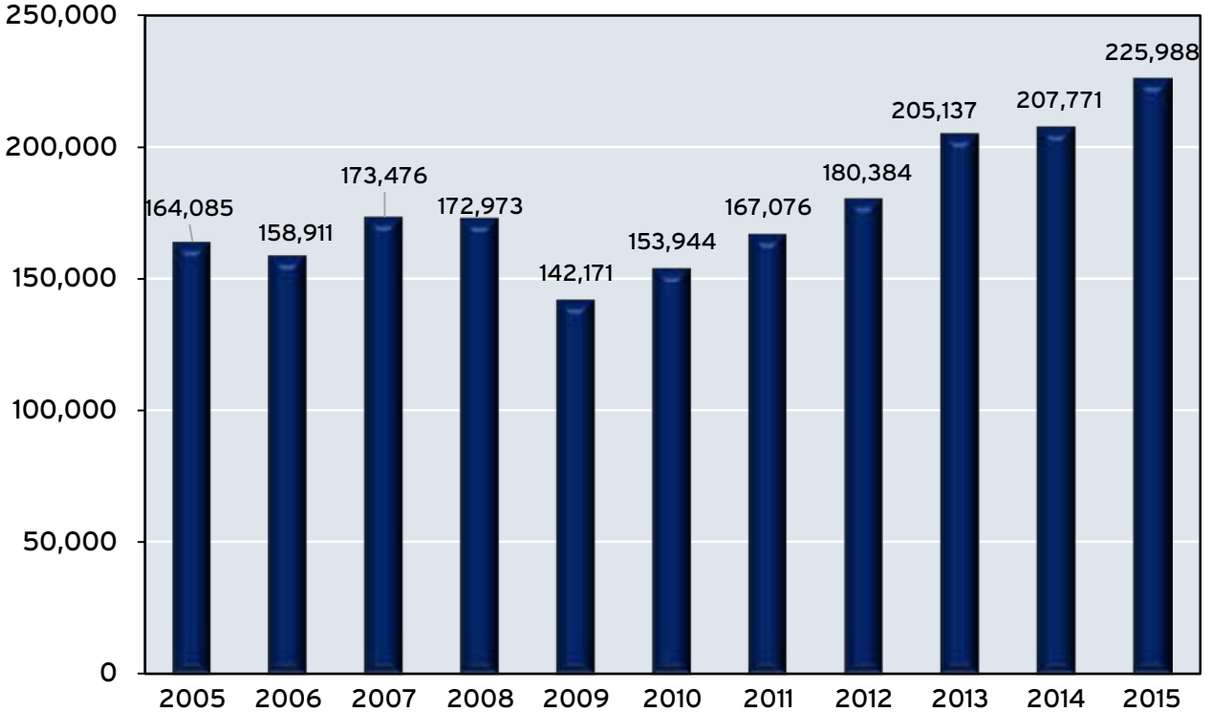
There are several potential wild cards to consider within this situation, however. The Panama Canal is being expanded and improved so that it will be able to handle larger ships, and the Port of Virginia could benefit from (or be passed over by) this development. The Suez Canal already has been widened and deepened and has become more attractive to ships that carry goods from Asia to East Coast ports. In addition, traffic in and out of the Port of Virginia also now must contend with tunnel tolls. The deal negotiated by the Commonwealth with Elizabeth River Crossings means that truck tolls could rise from $7.36 per truck, one-way, in 2016 to as high as $86.24 per truck, one-way, in 2070 if experience holds. It will not surprise the reader that this agreement has been unpopular with the citizenry of Hampton Roads and commercial truckers.

In 2011, APM Maersk ordered 20 super-sized ships, each of which will be able to carry more than 18,000 TEUs, and in June 2015 announced a $1.8 billion order for 11 new megaships that will handle more than 19,000 TEUs each (Costas Paris, The Wall Street Journal, June 5, 2015). As recently as 10 years ago, such huge ships were a pipe dream.

4 "Double" TEUs also exist and typically measure 45 feet in length. Such boxes usually are counted as 2.25 TEUs in the United States.

GRAPH 9

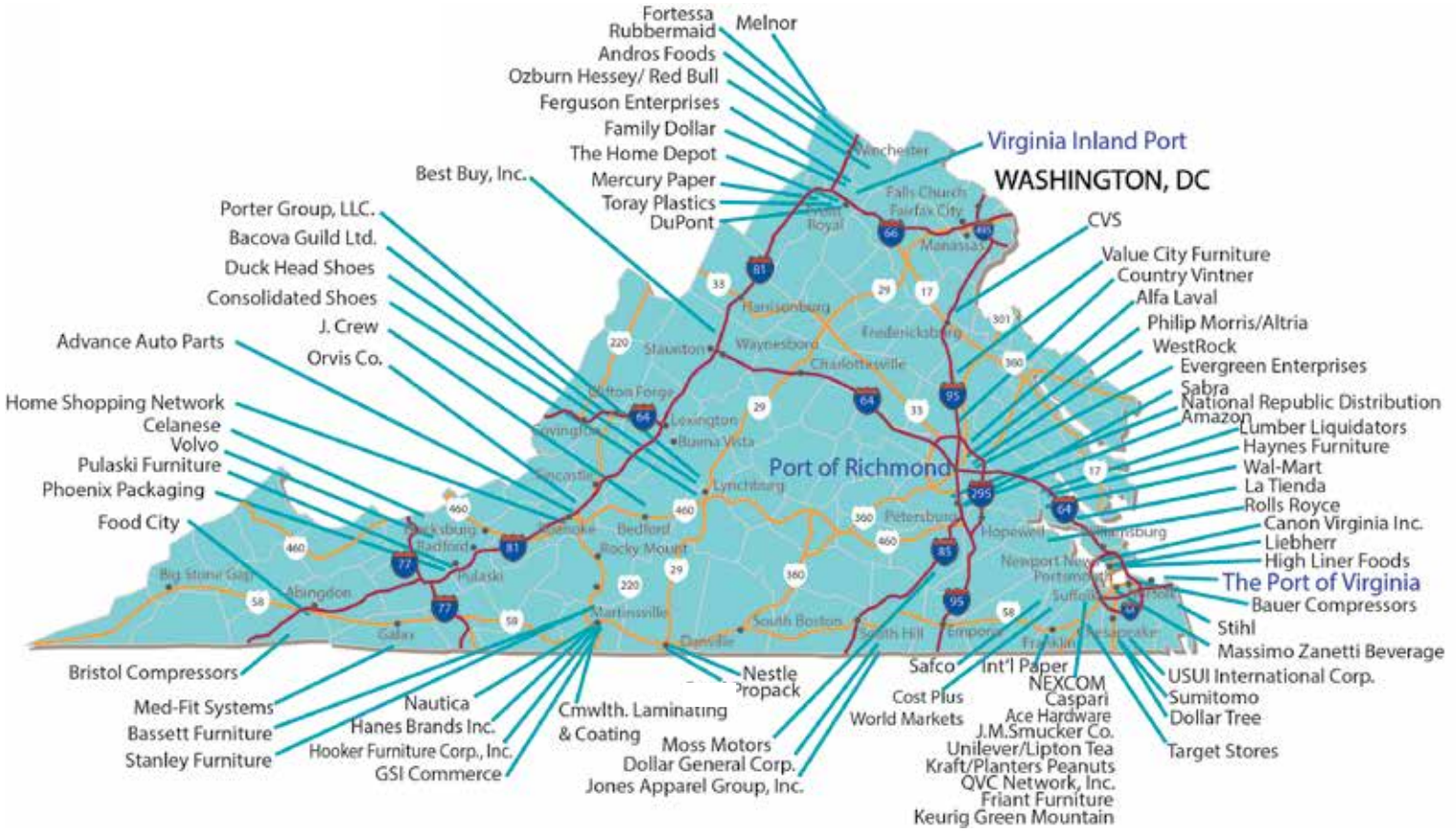
TWENTY-FOOT EQUIVALENT UNITS (TEUS) HANDLED BY THE PORT OF VIRGINIA, 2005-2015 (JULY OF EACH YEAR)



Source: Virginia Port Authority

FIGURE 1

VIRGINIA DISTRIBUTION FACILITIES CONNECTED TO THE PORT OF VIRGINIA



Source: Virginia Port Authority

Hotels And Tourism

The Commonwealth's "Virginia is for Lovers" website reports that in 2014, domestic travelers inside the state spent $22.4 billion on transportation, lodging, food, amusement and recreation – a 3.67 percent increase over 2013 and an 18.05 percent increase over 2010.[5] There is no doubt that tourism constitutes a major industry within Virginia and that several regions of our state depend on travelers and tourists for substantial income and employment.

The occupancy of hotels where tourists and travelers stay and the revenues earned by those hotels are important indicators of the health of the tourism industry. Consider Graph 10, which reports the revenues of Virginia hotels from 1996 to 2014. The 2008 recession took a huge bite out of hotel revenues, and even six years later those revenues were only 5.8 percent above their 2007 level. During this time period, the CPI-U, the consumer price index for all urban consumers, increased 8.8 percent. Hence, in real terms, hotel revenues in Virginia shrank between 2008 and 2014.

Graph 11 tells us that the hotel occupancy rate in Virginia was 59.7 percent in 2014; this was below the 61.8 percent occupancy rate in 2007 that existed prior to the recession. Note also in Graph 11 that the reduced occupancy rates were not the result of Virginia hoteliers building lots of new room capacity. The total number of hotel rooms available in Virginia in 2014 actually declined slightly between 2011 and 2014.

Within the hotel industry, REVPAR, the revenue earned by hotels per available room, often is considered to be the best indicator of overall industry health because it incorporates both supply and demand influences. Graph 12 divulges that REVPAR in 2014 still was 3.9 percent below its 2007 level. **When price inflation is taken into account, "real," price-adjusted hotel REVPAR in Virginia fell more than 12 percent between 2007 and 2014.** This demonstrates that Virginia's hotels (which are directly connected to the tourist industry) have yet to regain the financial ground they lost after 2008.

Reality is that some hotels in some locations in the Commonwealth are doing quite well, yet the overall economic picture for Virginia hotels has been mixed in recent years. It would be a mistake to lay the entire blame for this on the depth and length of the recent recession because there have been supply-side problems as well. Between 2007 and 2011, hotel capacity in Virginia (the number of available rooms) increased more than 10 percent (see Graph 11) even while the demand for hotel rooms was lethargic. It appears that the Commonwealth still is in the process of working off excess capacity in many hotel markets.

Conventions and meetings of all sorts are an important lifeblood for the tourist industry and hotels. Unfortunately, attendance at such events nationally has been stagnant or even declining since the turn of the century (well before the recession).[6] Declining federal budgets for travel (particularly for the Department of Defense) have put a dent in convention and meeting attendance in Virginia and "virtual" conventions and meetings held over the Internet are becoming increasingly popular. One doesn't need to leave town to have the opportunity to interact with others.

Tourism revenues, as calculated by the U.S. Travel Association for the Commonwealth, usually include all trips to places 50 miles or more away from the traveler's original destination, plus expenditures for lodging, campground stays, time shares, vacation rentals, food and recreation.[7] U.S. Travel relies upon a proprietary economic impact model in order to generate its estimates, a model that seeks to portray the significant impact of tourism on local economies. The U.S. Travel model generously estimates that more than $3 billion in tourism-related expenditures were made in Arlington County in 2014 (generating 24,700 jobs), followed closely by Fairfax County with $2.9 billion (29,000 associated jobs). "Touristy" Virginia Beach ranked only fourth in Virginia with an estimated $1.4 billion in expenditures and 12,600 jobs, according to U.S. Travel. Graph 13 provides U.S. Travel estimates of the growth in tourism expenditures in various parts of the Commonwealth between 2013 and 2014.

5 www.virginia.org/pressroom/tourism.asp.

6 See the work of Professor Heywood Sanders of the University of Texas at San Antonio, including his book, *Convention Center Follies: Politics, Power, and Public Investment in American Cities* (University of Pennsylvania Press, 2014). Attendance data from 2014 and 2015, however, indicate that this long-term trend may finally be reversing itself, albeit gently.

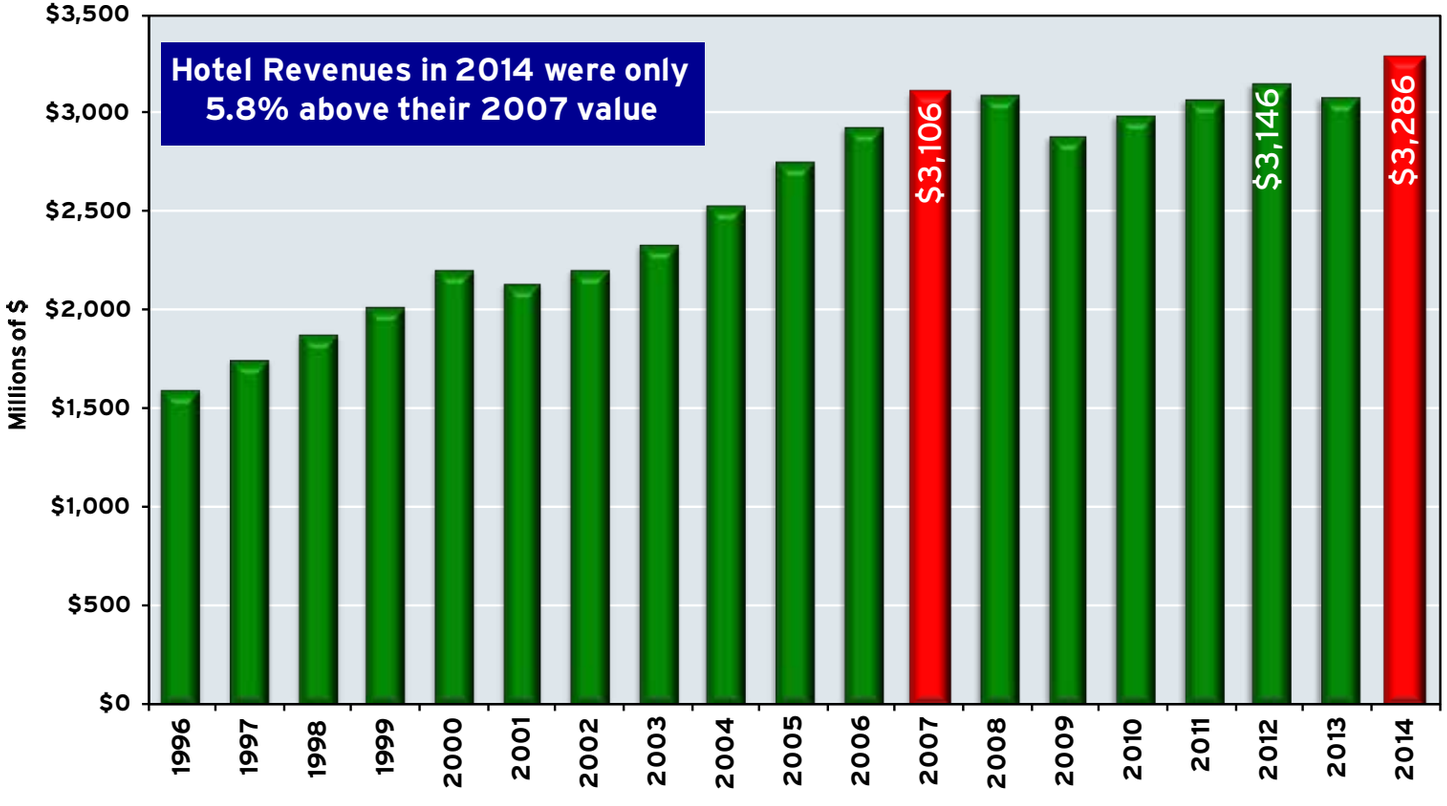
7 www.vatc.org/uploadedFiles/Research/2014EconomicImpactofDomesticTravelonVirginiaandLocalities.pdf.

U.S. Travel's estimates of tourism expenditure growth between 2013 and 2014 are encouraging, though perhaps generous. Other indicators of tourism activity, such as hotel occupancy and revenues, are not quite so promising. Major economic and social forces – including declining defense spending, increasing use of the Internet in lieu of travel to meetings, declining flights and traffic at many Virginia airports, and subpar economic growth rates in the Commonwealth – have altered the competitive landscape for tourism and hotels.

Against this, falling fuel prices and a recovering economy have made travel less expensive for many. Continuing national economic expansion also bodes well for tourism.

GRAPH 10

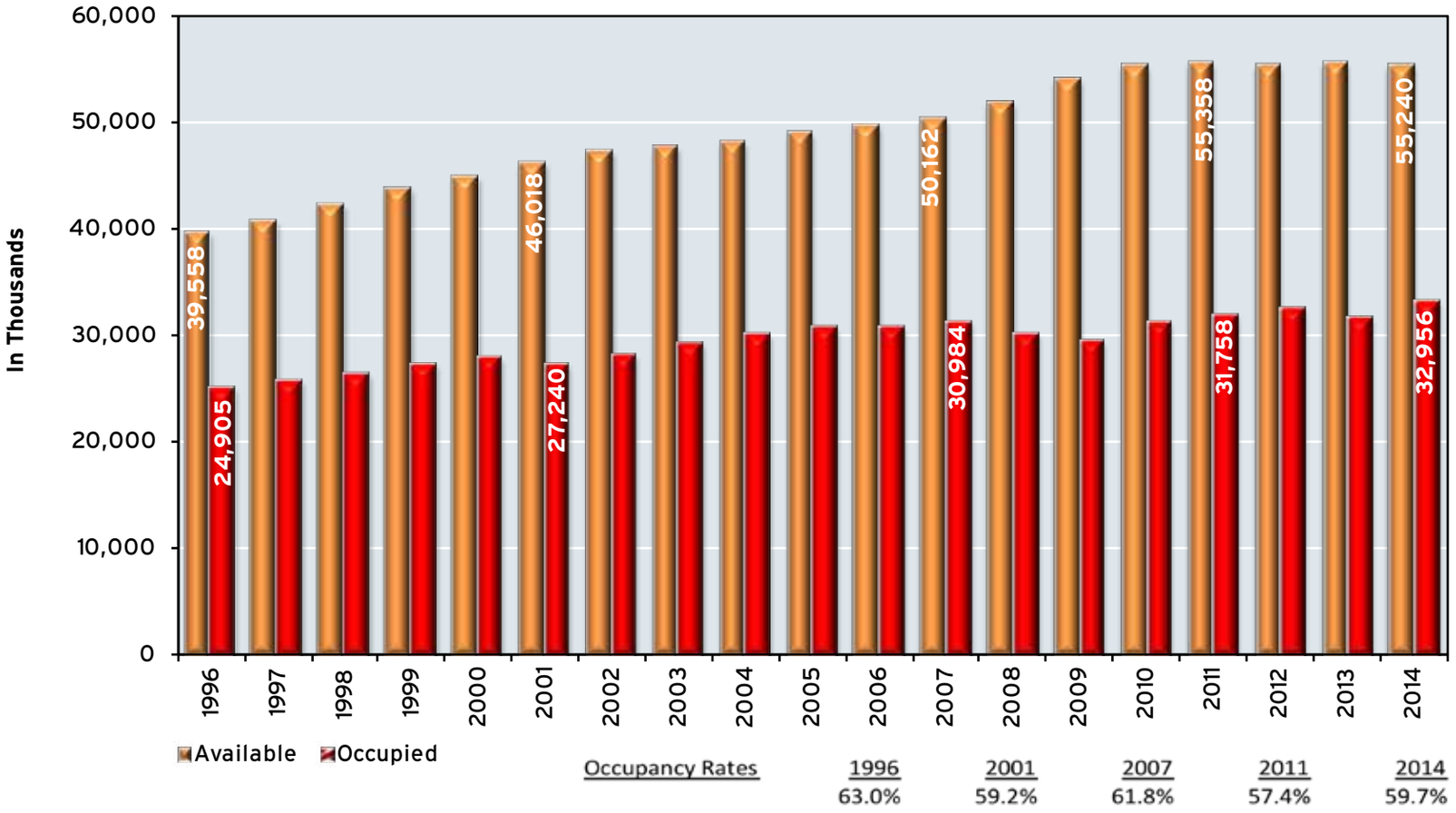
HOTEL REVENUES IN VIRGINIA, 1996-2014



Sources: Smith Travel Research Trend Report, Sept. 4, 2015, and the Old Dominion University Economic Forecasting Project

GRAPH 11

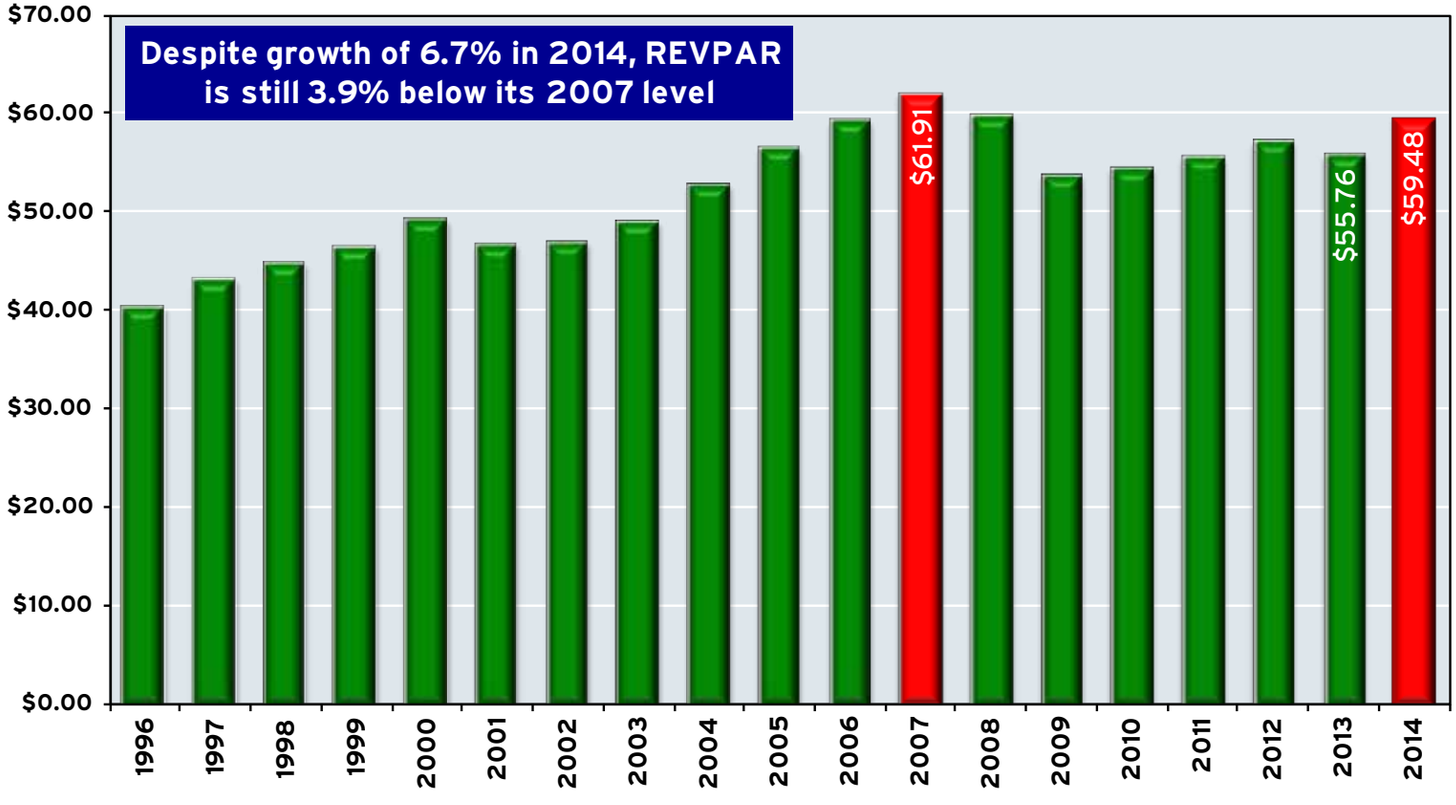
TOTAL HOTEL ROOMS AVAILABLE, ROOMS OCCUPIED AND HOTEL OCCUPANCY RATES IN VIRGINIA, 1996-2014



Sources: Smith Travel Research Trend Report, Sept. 4, 2015, and the Old Dominion University Economic Forecasting Project

GRAPH 12

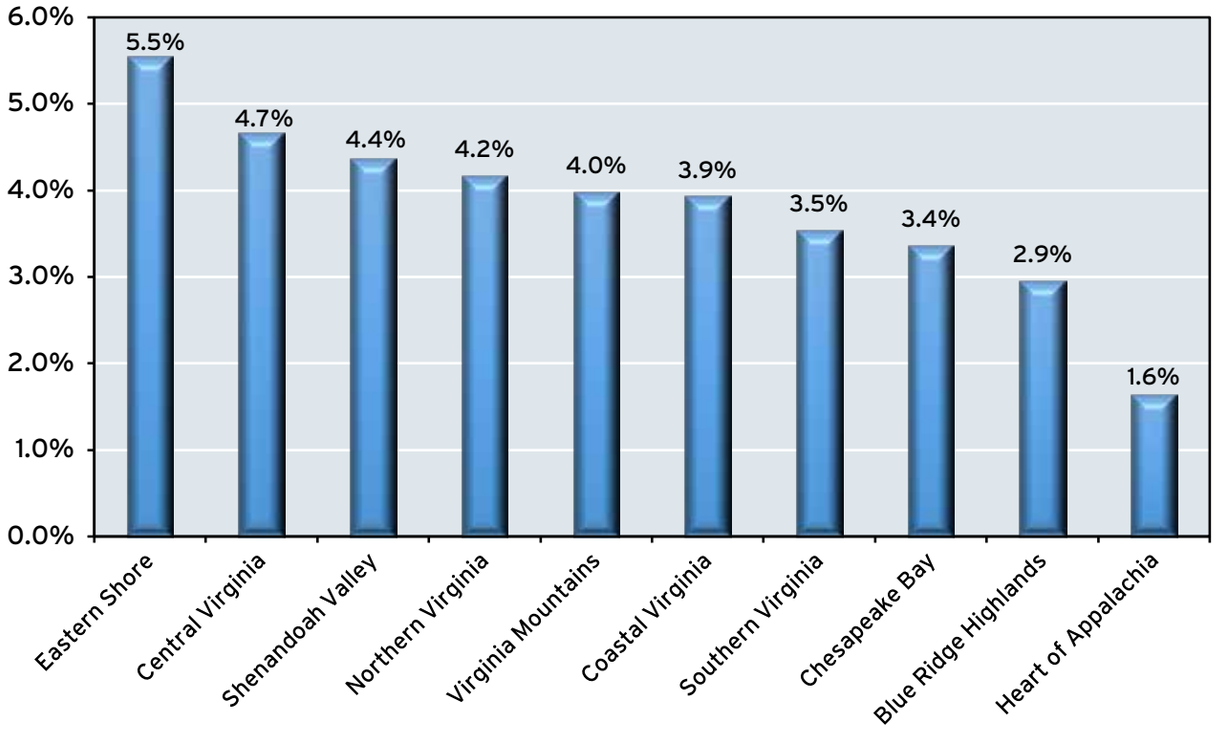
REVENUE PER AVAILABLE ROOM (REVPAR) IN VIRGINIA HOTELS, 1996-2014



Sources: Smith Travel Research Trend Report, Sept. 4, 2015, and the Old Dominion University Economic Forecasting Project

GRAPH 13

U.S. TRAVEL ESTIMATES OF DIRECT TOURISM EXPENDITURE GROWTH BETWEEN 2013 AND 2014



Source: U.S. Travel Association

Housing

The Federal Housing Finance Agency (FHFA) is a relatively new independent federal agency that was created to deal with the statutory merger of the Federal Housing Finance Board, the Office of Federal Housing Enterprise Oversight and the housing-oriented mission team that exists inside the U.S. Department of Housing and Urban Development. FHFA regulates both Fannie Mae and Freddie Mac, which together insure approximately 75 percent of all mortgages and the 11 Federal Home Loan Banks.

Our major interest here is not the FHFA's regulatory activities, but the FHFA Expanded Data House Price Index that it publishes because this provides us with important information about the overall trend in housing prices. Graph 14 records the ups and downs of the FHFA All-Transactions House Price Index for Virginia between 2001 and 2014. It is readily apparent that between 2001 and 2006, there was a significant run-up in home prices – 80.9 percent cumulatively – followed by a 31.3 percent cumulative decline between 2007 and 2010. Since then, there has been a modest 11.1 percent increase. The bottom line is that Virginia housing markets have shaken off most of the effects of the recession, but certainly have not returned to the dynamic days that we saw in the first half of the first decade of the 2000s.

How do these price changes compare to those that have occurred nationally? Graph 15 compares the path of housing prices in Virginia to those in the nation's largest 20 cities and the United States overall. Each of those three price variables has been indexed to 1.00 in 2000. Hence, the 1.741 value for Virginia indicates that home prices in Virginia have risen 74.1 percent since 2000.

Graph 15 tells us that since 2000, home prices in Virginia have increased cumulatively more than either home prices in the largest 20 cities of the United States, or home prices in the nation as a whole. However, one also can see that since 2012, home prices in the largest 20 cities have been rising more rapidly than home prices in Virginia. Even so, the paths of home prices in Virginia and in the entire United States have been quite similar since 2012 – both have been increasing modestly.

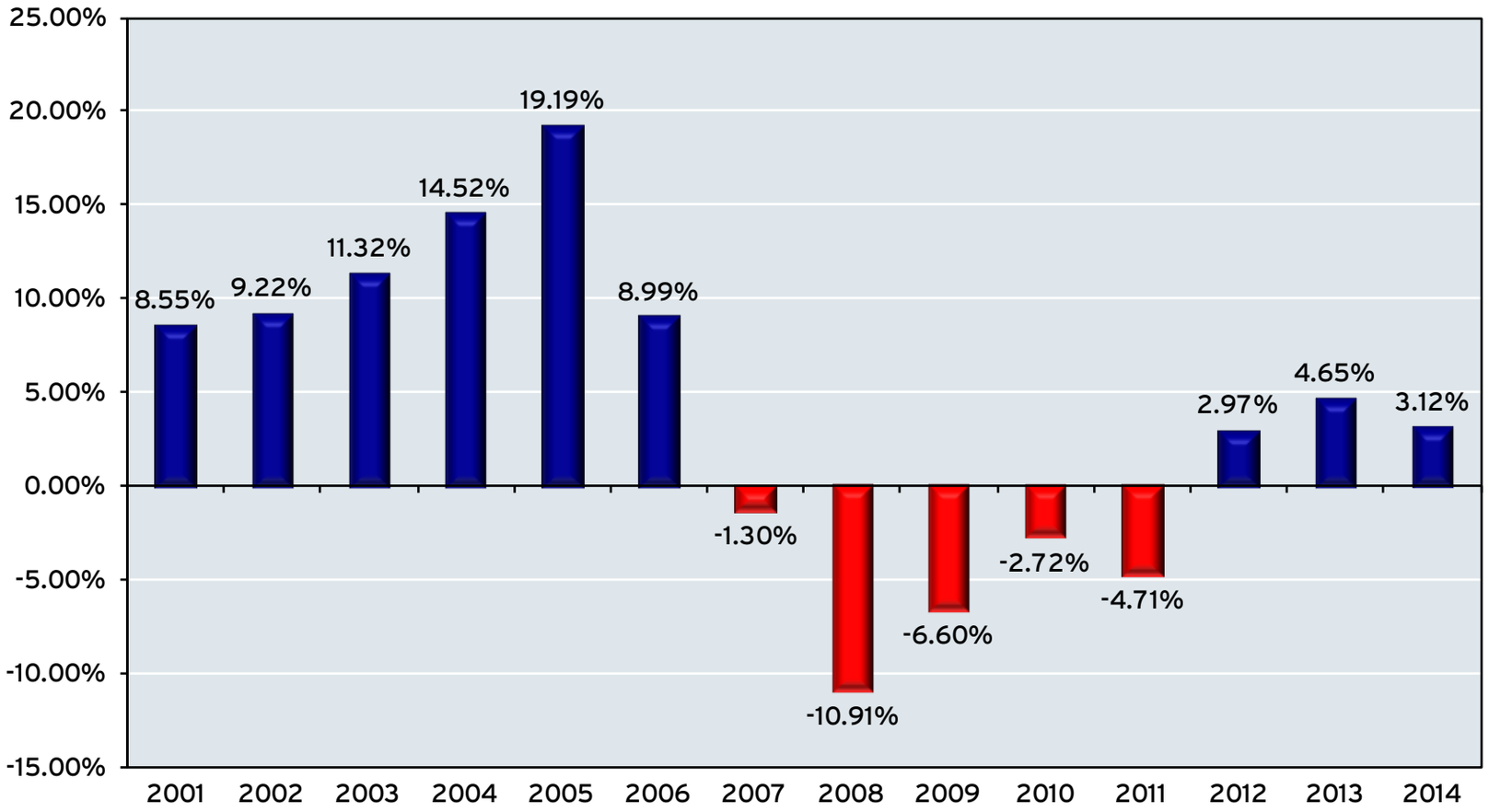
Another important indicator of the health of the housing sector is the number of building permits issued. Except in unusual circumstances, builders and developers construct homes because they believe they will be able to sell them for a profit. Rising numbers of building permits often presage improved economic conditions in the near future.

Graph 16 depicts the annual average for permits to construct one-unit (single-family) structures. One can readily detect that while the volume of building permits is highly cyclical, the volume of new single-family housing is far below previous peak levels. Declines in single-family housing permits were leading indicators for each of the last three economic recessions. Since the 2008 recession, there has been only modest recovery in the number of single-family housing permits, and that number actually declined between 2013 and 2014. **The message is that new home building in Virginia, at least that involving single-family residences, remains in the doldrums by historical standards. This may be one of the reasons why home prices in Virginia have increased faster than those nationally.**

Housing price changes and building permits provide interesting data, but do not directly tell us how affordable a home purchase is for a typical Virginia household. Table 2 examines housing affordability in Virginia since 2006. In 2006, 27 percent of the median (50th percentile) household's income was required to cover the principal and interest (P&I) on a median-priced single-family home. The affordability percentage fell to 13.9 percent in 2012, but began to move in the opposite direction in 2013 and by 2014 was 15.7 percent. Table 2 also tells us that housing usually has been a bit more affordable to the median household in the United States than in the Commonwealth.

GRAPH 14

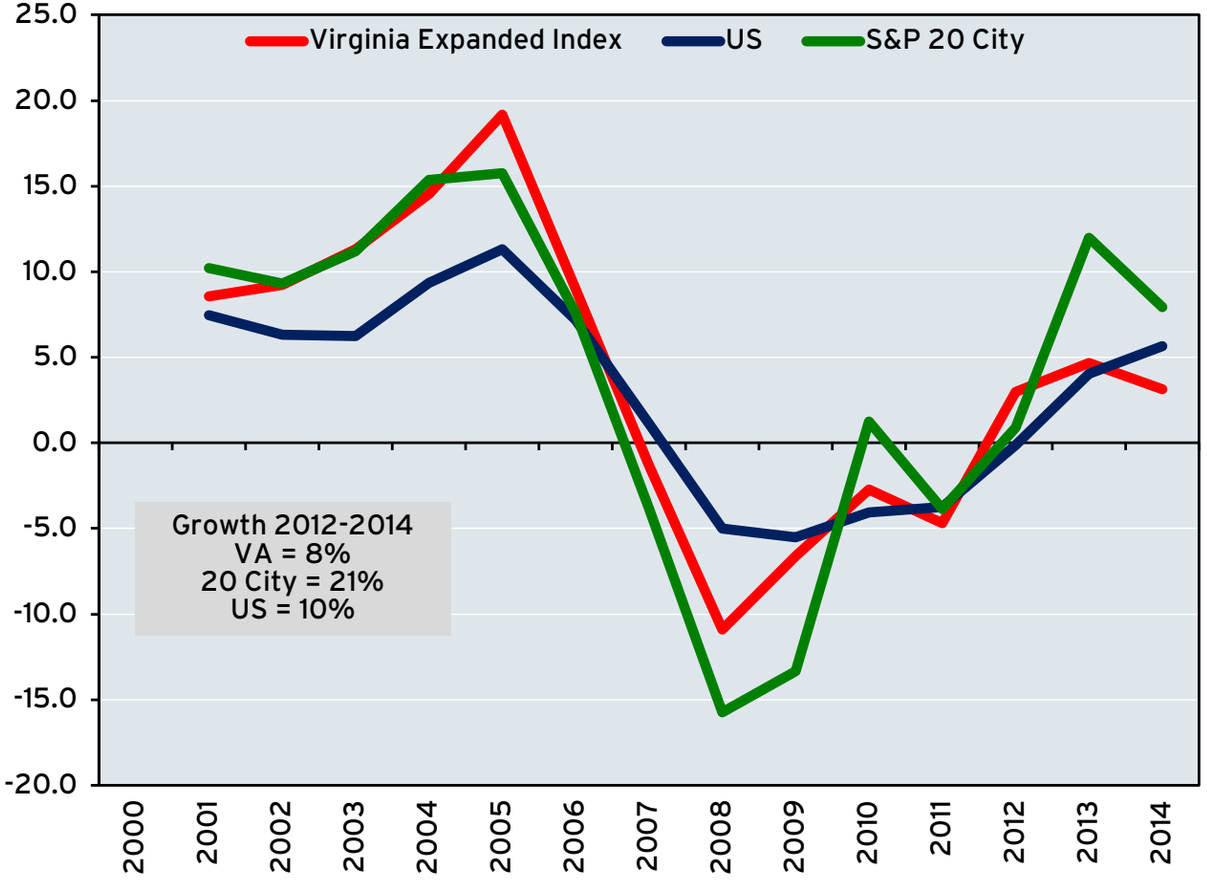
CHANGES IN HOUSING PRICES IN VIRGINIA AS MEASURED BY THE FHFA ALL-TRANSACTIONS HOUSE PRICE INDEX, 2001-2014



Source: Federal Housing Finance Agency

GRAPH 15

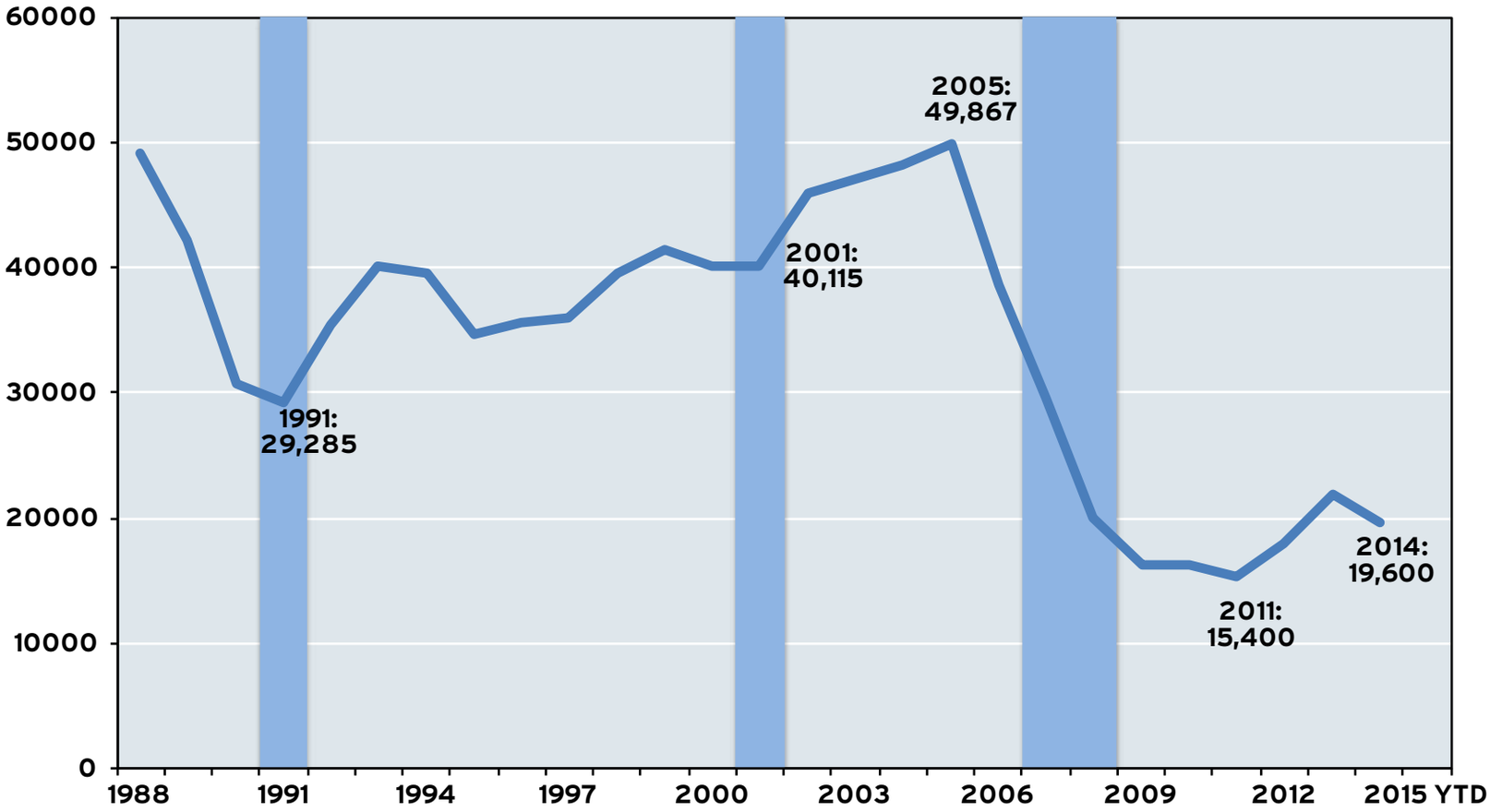
COMPARING HOME PRICE CHANGES IN VIRGINIA TO THOSE IN THE 20 LARGEST CITIES IN THE U.S. AND THE U.S. OVERALL, 2000-2014



Sources: Federal Housing Finance Agency and Standard & Poor's

GRAPH 16

BUILDING PERMITS: SINGLE-FAMILY STRUCTURES, 1988-2015



Sources: Federal Housing Finance Agency and Standard & Poor's

TABLE 2

HOUSING AFFORDABILITY: VIRGINIA AND THE UNITED STATES, 2006-2014

YEAR	MEDIAN PRICE SINGLE-FAMILY HOME	MORTGAGE RATE	MONTHLY P&I	REAL MEDIAN HOUSEHOLD INCOME	PAYMENT PERCENTAGE OF INCOME (VA)
2006	$244,267	6.64%	$1,253	$57,119	26.3%
2007	$246,575	6.53%	$1,251	$59,161	25.4%
2008	$233,717	6.19%	$1,144	$61,985	22.1%
2009	$219,692	5.15%	$ 960	$60,501	19.0%
2010	$212,050	4.97%	$ 908	$60,367	18.0%
2011	$203,542	4.83%	$ 857	$61,616	16.4%
2012	$200,800	3.83%	$ 751	$64,632	13.9%
2013	$207,267	4.00%	$ 792	$65,907	14.4%
2014	$218,950	4.31%	$ 868	$66,155	15.7%

Note: Estimates assume a 20 percent down payment and a 30-year fixed rate mortgage product. Median household income is the Census Bureau's American Community Survey estimate.
Sources: U.S. Census Bureau and the Old Dominion University Economic Forecasting Project

A Look At Our Largest Metropolitan Areas

Let's narrow our focus and look at some broad measures of economic performance in Virginia's largest metropolitan areas. Northern Virginia is temporarily excluded from this analysis because our next chapter is entirely devoted to the Northern Virginia economy.

Economic growth in Virginia's metro areas has been uneven. Table 3 provides real GDP growth for Virginia's eight largest MSAs during the post-recession period (2009-2014). Note that GDP measures the value of economic activity, not the number of jobs.

While Roanoke and Richmond had the highest GDP growth rates in the state in 2013, a number of the MSAs experienced negative growth rates. Northern Virginia shrank by nearly 1 percent and Hampton Roads, the other metropolitan area highly dependent on federal spending, barely grew at 0.18 percent.

For the full 2009-14 period, average real GDP growth was anemic in nearly every metropolitan area in Virginia. The two exceptions were the largest college towns, Blacksburg and Charlottesville, and neither grew very rapidly by historical standards. Roanoke and Lynchburg in particular have struggled to overcome the effects of the recession. After accounting for inflation, the value of the output produced in these two regions actually shrank over this five-year period.

A focus on employment, however, delivers a slightly different story. Table 4 focuses on job recovery, post-recession, in the eight metropolitan areas. How long did it take each area to recover the jobs lost in the recession? Alas, in three of the eight metropolitan areas (Lynchburg, Roanoke and Hampton Roads), employment remains smaller than it was in 2009. Interestingly, while Hampton Roads has recorded modest real GDP growth, it has achieved this with 22,800 fewer employees.

Which major industry sectors have been doing the best (and worst) in each of the eight metropolitan areas? Table 5 reveals that the federal government, information employers and construction firms were the most likely to have shed jobs between 2009 and 2014. The best-performing sectors, job-wise, were education, health and professional services.

Stagnant employment growth usually translates into unimpressive wage growth, and that is the message delivered by Graph 17. Once again, the imprint of declining federal spending is present – Washington, D.C., recorded only a 1.5 percent increase in average wages between 2009 and 2014, a rate which fell to 0.9 percent between 2012 and 2014. Blacksburg recorded the largest increase in wages between 2009 and 2014, while Roanoke experienced the largest increase between 2012 and 2014, despite having a negative real GDP growth rate in recent years and losing employment as well. This suggests a change in the mix of jobs in the Roanoke metropolitan area in favor of higher-paying employment.

Our analysis of metropolitan economic performance has not included or emphasized unemployment rates. Here's why: Unemployment rates have been falling continuously in the Commonwealth and all of its metropolitan areas. Yet, this is somewhat deceptive because unemployment rates have been falling significantly even in Virginia regions where there now are fewer individuals employed than there were in 2009. Why? Because increasing numbers of people have been migrating out of Virginia, or dropping out of the labor force. This latter phenomenon of falling labor force participation is occurring across the country. It includes both men and women, virtually all ethnic groups and all age groups, except those 65 or older.

The bottom line is that falling labor force participation seriously biases the usefulness of measured unemployment rates. One is not counted as unemployed if one isn't actively seeking a job. This means that other variables we have introduced, including the size of the labor force and wage increases, generate more useful information about labor markets.

TABLE 3

REAL GDP GROWTH IN THE EIGHT LARGEST VIRGINIA METROPOLITAN AREAS, 2009-2014

	2009	2010	2011	2012	2013	2014	AVERAGE ANNUAL GROWTH 2009-2014
Blacksburg-Christiansburg-Radford, VA	-4.79	1.68	3.01	5.61	-0.29	0.7	2.36
Charlottesville, VA	-0.01	3.71	3.54	3.22	-0.71	-0.2	2.35
Harrisonburg, VA	5.28	7.75	-1.38	0.20	-0.04	-1.7	0.28
Lynchburg, VA	-1.94	3.40	-1.86	-0.41	-0.41	-1.1	-0.50
Richmond, VA	-2.22	2.41	-0.05	1.48	2.53	1.6	1.06
Roanoke, VA	-2.57	-1.11	-0.81	0.80	1.64	1.3	-0.18
Virginia Beach-Norfolk-Newport News, VA-NC	0.14	0.45	0.46	1.62	0.18	-0.1	0.31
Washington-Arlington-Alexandria, DC-VA-MD-WV	-0.01	3.14	1.69	0.60	-0.82	0.3	1.00

Source: Bureau of Economic Analysis

TABLE 4

MONTHS TO RECOVER JOBS LOST IN 2009 RECESSION OR NUMBER OF JOBS STILL SHORT

METROPOLITAN AREA	JOB RECOVERY CYCLE
Blacksburg	74 months
Charlottesville	72 months
Hampton Roads	Still 22,800 short of 2009
Harrisonburg	77 months*
Lynchburg	Still 6,500 short of 2009
Richmond	77 months
Roanoke	Still 3,300 short of 2009
Washington, D.C.	30 months

* Harrisonburg initially recovered all of its lost jobs in 58 months, but then suffered an economic relapse.
Sources: Bureau of Labor Statistics and the Old Dominion University Economic Forecasting Project

TABLE 5

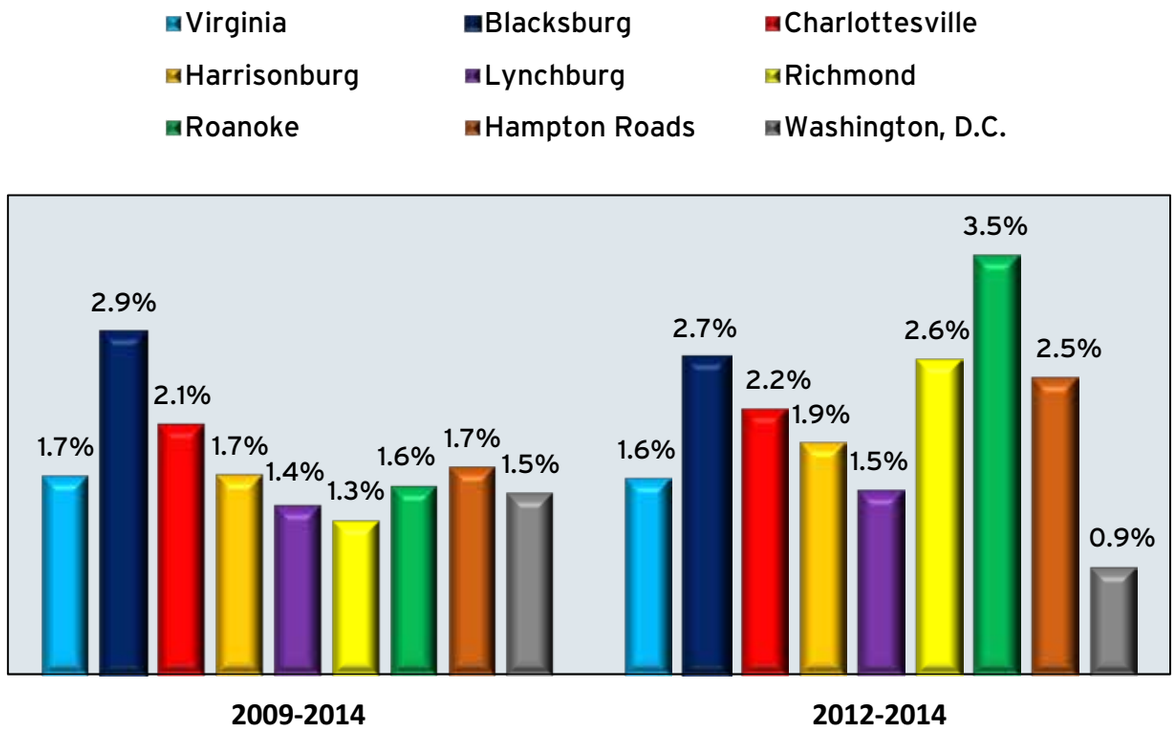
SECTOR-LEVEL EMPLOYMENT CONTRACTION AND GROWTH, 2009-2014

METROPOLITAN AREA	BEST-PERFORMING SECTOR	WORST-PERFORMING SECTOR
Blacksburg	Goods Producing 9.02%	Federal Government 0%
Charlottesville	Professional and Business Services 20.34%	Manufacturing -7.32%
Hampton Roads	Employment Services 28.36%	Information -30.13%
Harrisonburg	Private Service Provision 11.30%	Goods Producing -9.59%
Lynchburg	Education and Health Services 20.42%	Construction -31.25%
Richmond	Employment Services 44.66%	Information -22.77%
Roanoke	Education and Health Services 13.19%	Information -22.73%
Washington, D.C.	Ambulatory Health Services 29.48%	Hospitals -7.66%

Sources: Bureau of Labor Statistics and the Old Dominion University Economic Forecasting Project

GRAPH 17

2013 AVERAGE WAGE GROWTH IN THE EIGHT LARGEST METROS IN VIRGINIA, 2009-2014 AND 2012-2014



Source: Bureau of Labor Statistics

Summing It Up

Table 6 and Graph 18 summarize where we have been, economically speaking, in the Commonwealth of Virginia and where the Economic Forecasting Project within the Center for Economic Analysis and Policy in Old Dominion University's Strome College of Business believes we are going. In a nutshell, 2013 and 2014 were uninspiring. Thankfully, we are seeing some improvement in the year-to-date 2015 numbers. The Philadelphia Fed's Leading Economic Index for Virginia increased rapidly through the summer, suggesting the next six months will be favorable. Payroll employment is up over 2014, and through July 2015, taxable sales data are quite strong – up almost $3 billion compared to July 2014.

Even with the state's recent economic turnaround, our real GDP forecast for 2015 is only 1.33 percent (see Graph 18). Unfortunately, our forecast for 2016 – 1.98 percent – will place us well below the consensus national growth rate estimate of almost 3 percent in 2016. This is hardly a sensational performance for Virginia, but clearly superior to the zero economic growth we posted in 2014.

The Commonwealth of Virginia is in the midst of a period of economic transition. Perhaps this is a description that would fit any time period. However, currently, federal financial sequestration and related constant or declining defense spending in Virginia constitute the equivalent of a modest-sized anchor tied to our economy's ankle. This chilling economic influence is compounded by the gradual decline in the size of Virginia's coal industry and an international economic slowdown most visibly exemplified by China, Latin America and Europe.

Yet, this is reality and Virginia must find ways to adjust to a new world in which the Commonwealth will be somewhat less dependent on federal spending than it is currently. Economic diversification, refocusing of defense contractors, increased attention to export activity (Virginia's Economic Development Partnership is providing vital leadership here), improved K-12 education, additional focus on job-generating research and development at the Commonwealth's research universities and medical schools, intelligent investments in infrastructure, and well-devised regional economic development efforts are among the most productive means by which Virginia can transform its current situation into an opportunity rather than accepting it as an unavoidable sentence.

TABLE 6

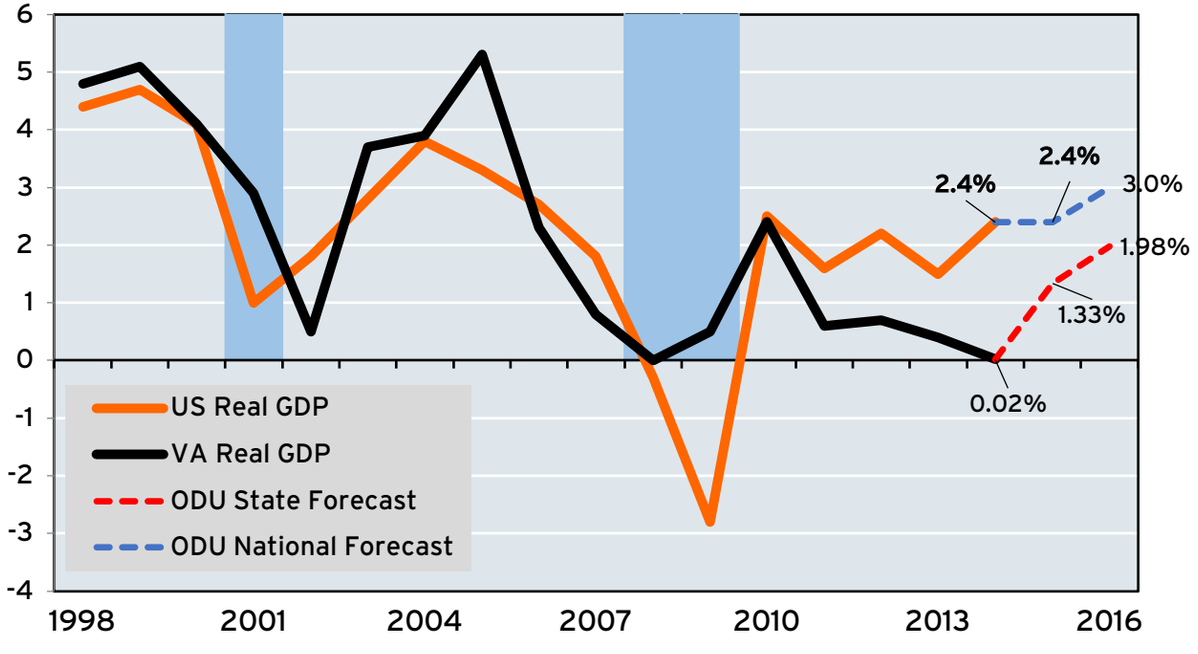
COMMONWEALTH OF VIRGINIA ECONOMIC DASHBOARD

	2013	2014	2015
Real GDP Growth Rate	0.45%	0.02%	1.33%F
Leading Index	164.48	166.47	169.59 (YTD)
Payroll Employment	3.76 million	3.78 million	3.80 million
Unemployment Rate (August)	5.5%	5.0%	4.5%
Taxable Sales* (in Billions)	$62.6	$63.6	$66.2
Building Permits*	18,480	10,844	10,772

F – Forecasted Value
* January-July for comparison
Sources: Bureau of Economic Analysis, Bureau of Labor Statistics and the Old Dominion University Economic Forecasting Project

GRAPH 18

REAL GDP FORECAST FOR VIRGINIA AND THE UNITED STATES



Sources: Bureau of Economic Analysis and the Old Dominion University Economic Forecasting Project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NORTHERN VIRGINIA: STANDING AT A FORK IN THE ROAD?

It is no accident that Northern Virginia often is referred to as the economic engine of the Commonwealth of Virginia. After all, it accounts for more than 40 percent of the value of all economic activity in the state.

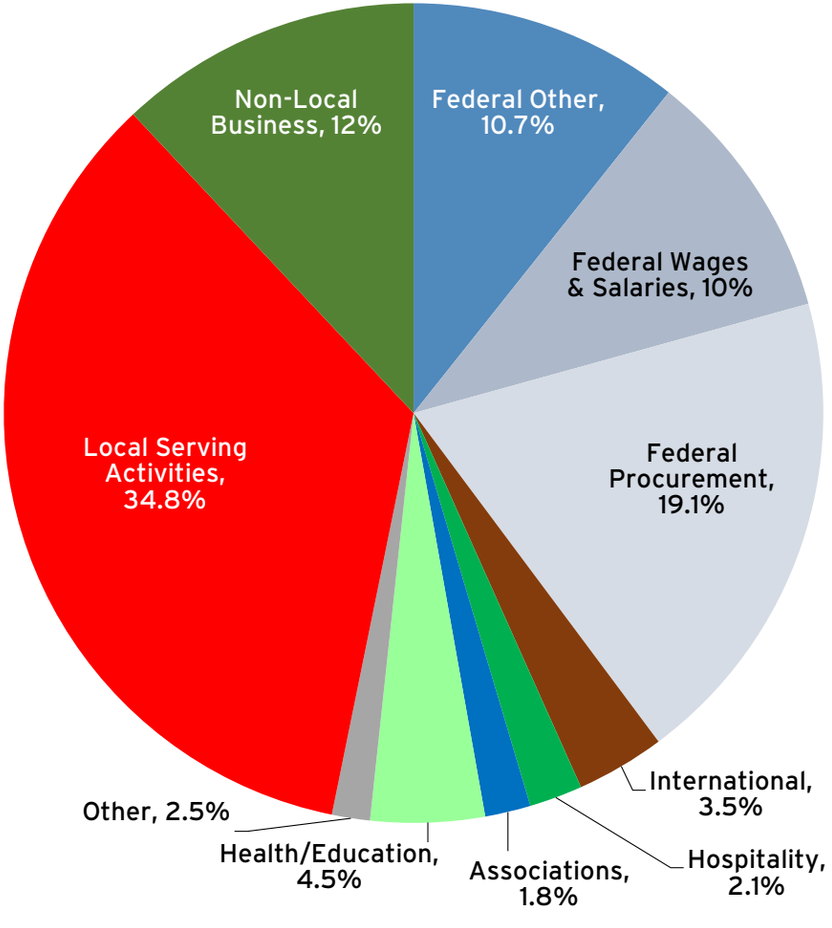
A history of sustained economic growth in Northern Virginia has kept office buildings full, housing prices at lofty levels and unemployment rates low. Taken together, these factors have ensured that the Washington, D.C., metropolitan region, of which Northern Virginia has become a dominant part, has been at or near the top of the nation for many years in terms of both population and job growth.

Retrospectively, we can say that the Great Recession, which officially began in December 2007, resulted only in an interruption in Northern Virginia's growth trajectory. Sluggish federal spending, however, has been a different matter. It is hardly a mystery that much of Northern Virginia's economic strength has come from a single economic sector – the federal government – and that federal government sequestration has throttled the growth of that spending in Northern Virginia. Graph 1 reveals that direct federal employment and procurement spending in 2010 represented almost 40 percent of all economic activity in the Greater Washington, D.C., metropolitan region.

The Washington, D.C., metropolitan region has three identifiable subregions: (1) Northern Virginia, (2) Suburban Maryland and (3) Washington, D.C. Northern Virginia includes: Arlington County, Clarke County, Culpeper County, Fairfax County, Fauquier County, Loudoun County, Prince William County, Rappahannock County, Spotsylvania County, Stafford County, Warren County and the independent cities of Alexandria, Fairfax, Falls Church, Fredericksburg, Manassas and Manassas Park. Suburban Maryland counties include Calvert County, Charles County, Frederick County, Montgomery County and Prince George's County.

GRAPH 1

ECONOMIC STRUCTURE OF THE WASHINGTON, D.C., METROPOLITAN ECONOMY



Source: GMU Center for Regional Analysis

Northern Virginia is in many ways a quintessential company town in which the federal government assumes the role of the company. As long as federal spending is increasing, *laissez les bon temps rouler* – let the good times roll. However, as often holds true in company towns, significant problems arise when the company falters, or in this case, when its management chooses to pass a Budget Control Act, or even decides to shut down.

In the following pages, we examine recent economic trends and assess the state of the economy in Northern Virginia. As we shall see, the region stands at an apparent fork in the road – one created primarily by federal budget issues. Northern Virginia must choose between the strategies of the past, namely, relying on federal spending, with a likelihood of sluggish long-term growth, or engaging in a comprehensive realignment of economic priorities that creates a more resilient and globally competitive economy in Northern Virginia.

Employment

Post-recession employment in the Washington, D.C., metropolitan region took off smartly by the end of 2010 as the federal government's spending associated with the American Recovery and Reinvestment Act of 2009 (ARRA) took off. Seemingly, the regional economy once again appeared to be an economic hot spot. Graph 2 illustrates these positive employment changes in 2011, 2012 and 2013.

However, below the headlines attached to rising employment, there were signs that a fundamental shift was occurring in the regional economy. As a compromise solution to the federal debt ceiling crisis that emerged in the summer of 2011, Congress enacted and President Obama signed the Budget Control Act of 2011 (BCA). In addition to raising the debt ceiling and reducing spending over a 10-year period, the BCA included a set of automatic budget cuts that we have described in Chapter 1. The effects of these cuts in federal employment and spending, which are illustrated in Graphs 3 and 4, became apparent in 2013 as job growth plunged.

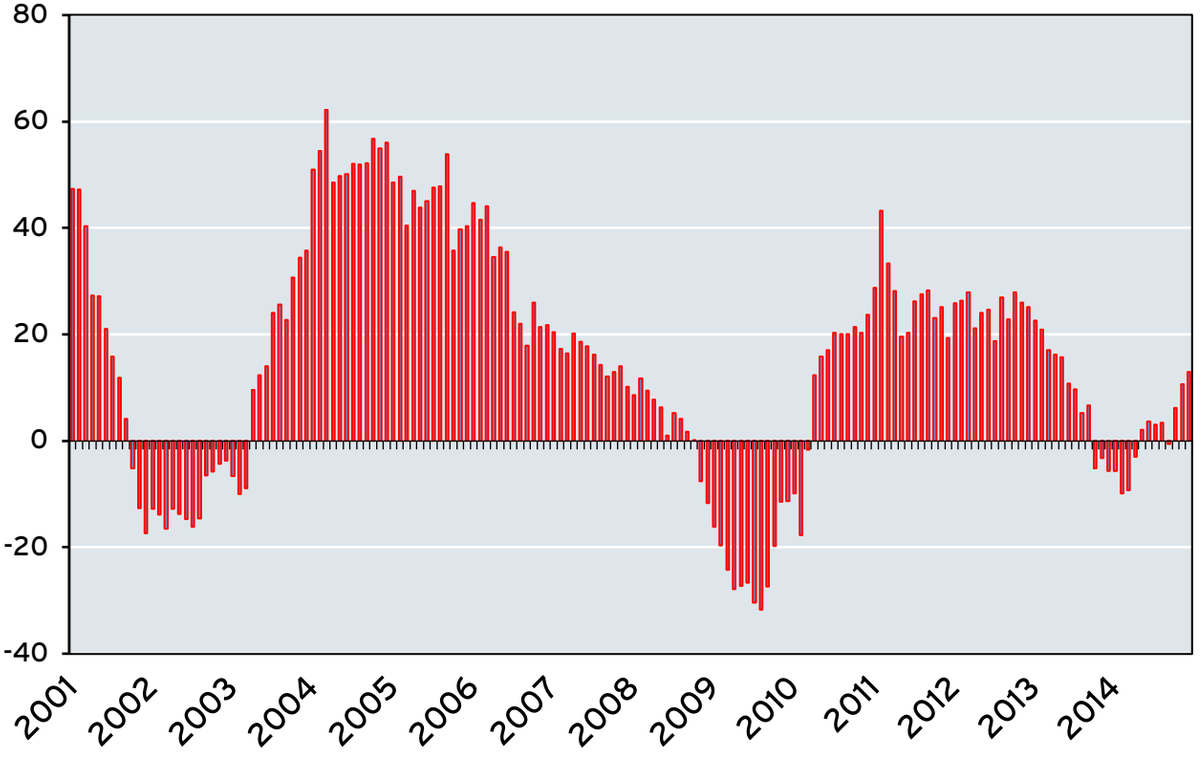
One of the keys to federal spending and activity in the Washington, D.C., metropolitan area is federal procurement spending on items ranging from weapons and information technology to food and fuel. Historically, procurement spending has injected great energy into the regional economy. Between 1980 and 2000, for example, federal procurement spending in the region grew an amazing 598 percent, or more than 10 percent annually. During the next decade (2001-2010), federal procurement spending grew even faster – 11.8 percent. Unfortunately, as economist Herbert Stein once sagely remarked, things that cannot go on forever do not, and this phenomenal growth came to an end. Between 2010 and 2014, federal procurement spending in the region actually declined by 11.2 percent. This accompanied declining federal government employment in the region, which is clearly visible in Graph 4.

The federal spending cuts constituted nothing less than a body blow to the region's economic growth. Graph 5 discloses that although job growth in the Washington, D.C., metropolitan area was positive between January 2014 and January 2015, it was among the slowest in the nation. The region actually trailed Detroit. Further, there was a change in the mix of jobs, with lower-wage retail and hospitality jobs taking the place of higher-wage professional services jobs. The net effect was that starting in 2010, the average wage for all jobs in the Washington, D.C., metropolitan area declined for three straight years. At the same time, office vacancy rates increased to more than 20 percent in key regional markets and consequently local governments found themselves facing a fiscal crunch.

Fortunately, 2015 has turned out to be a better year than 2013 and 2014 for the region, in terms of job creation, with particular gains occurring in professional and business services and education and health services (see Graph 6). Local governments have surmounted many of their budget difficulties and are hiring again. Still, construction employment has not been growing quickly and information-sector growth has been modest. It remains to be seen if this recent surge in job growth is sustainable. More important, while the trend was generally positive over the past two quarters, on a year-over-year basis, the region still trails many of its key peer regions across the nation.

GRAPH 2

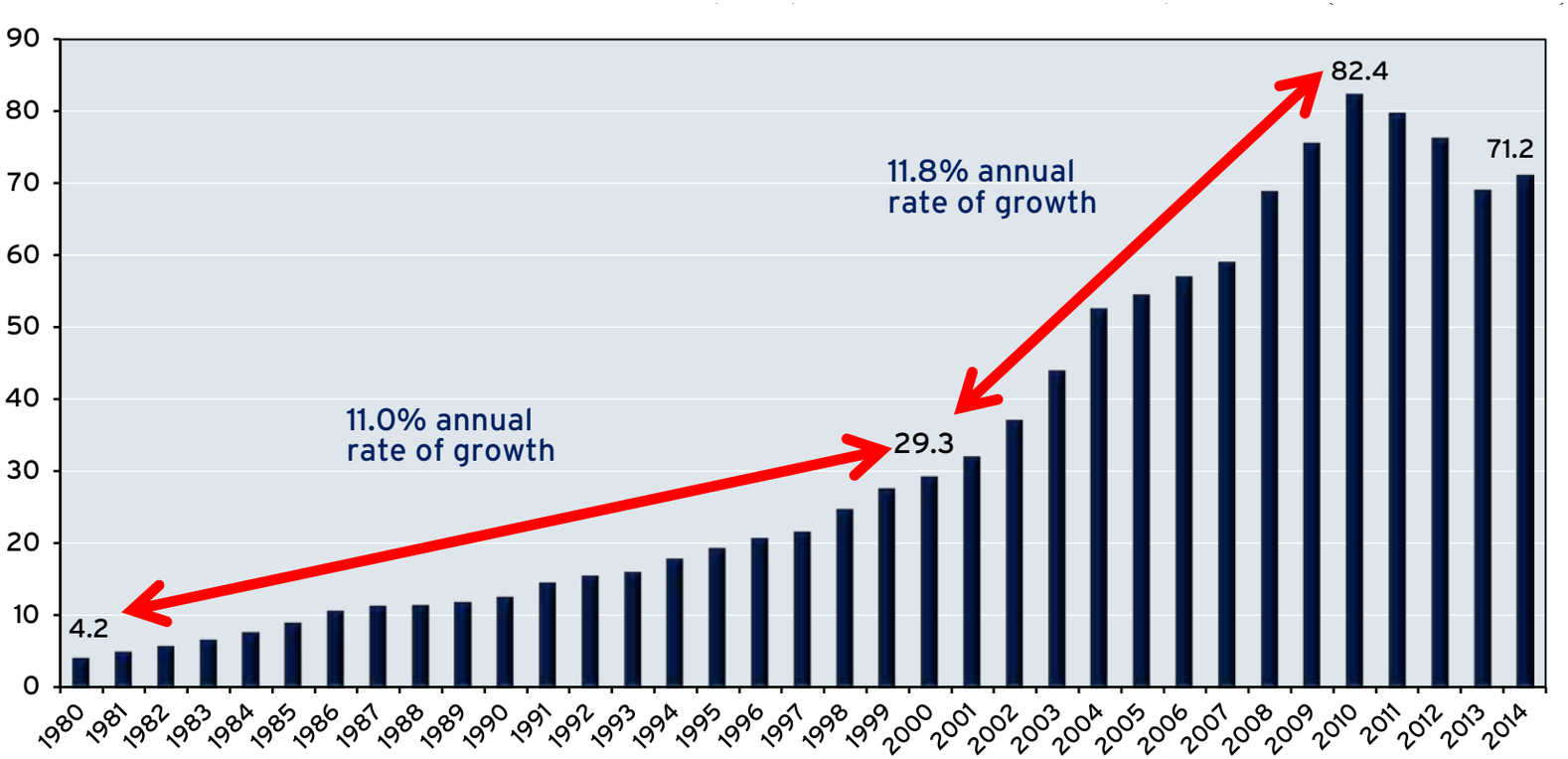
WASHINGTON, D.C., METROPOLITAN AREA ANNUAL JOB CHANGE, ANNUAL MONTH OVER YEAR, JANUARY 2001 TO DECEMBER 2014 (IN THOUSANDS)



Sources: Bureau of Labor Statistics and the GMU Center for Regional Analysis

GRAPH 3

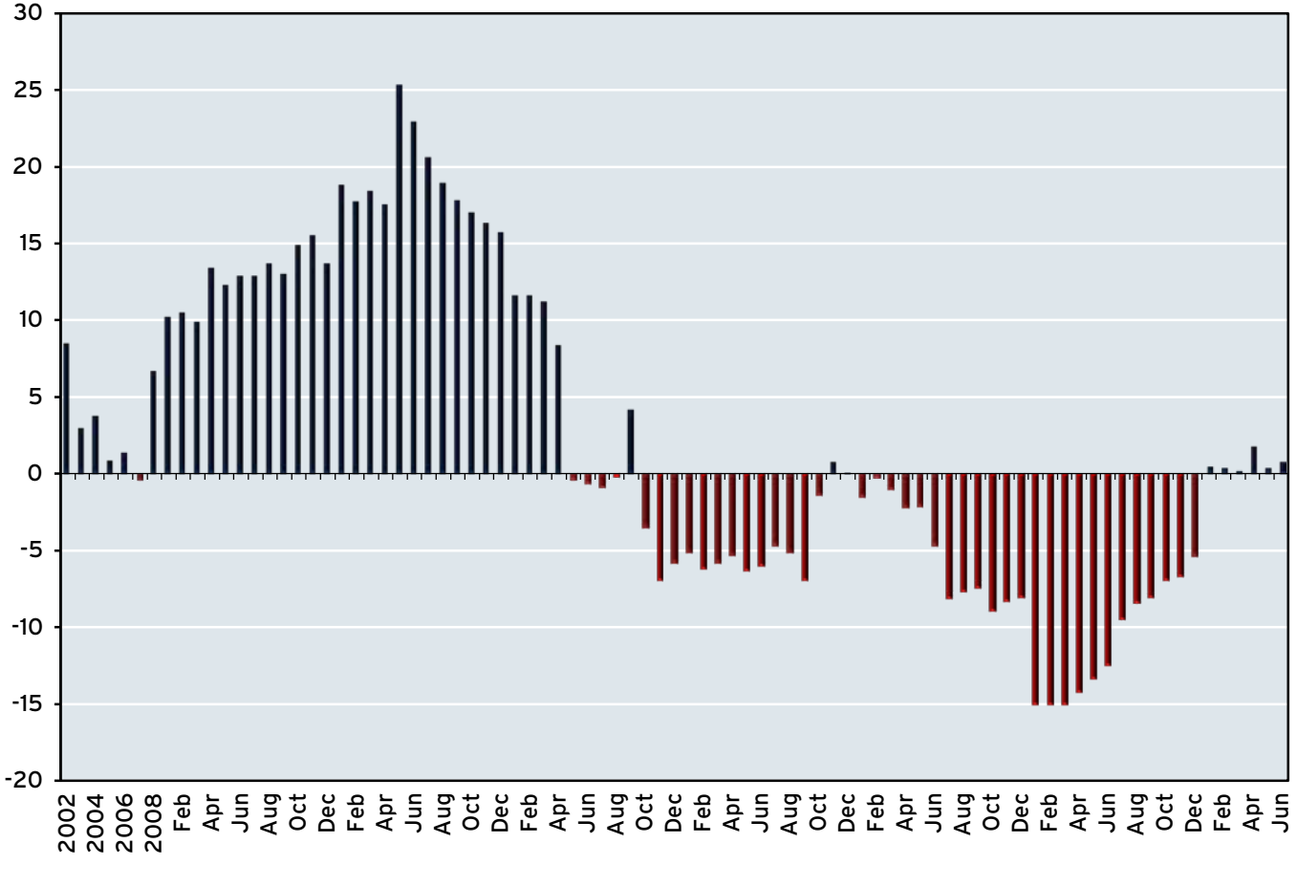
FEDERAL PROCUREMENT IN THE WASHINGTON, D.C., METROPOLITAN AREA, 1980-2014 (BILLIONS OF $)



Sources: Bureau of Labor Statistics and the GMU Center for Regional Analysis

GRAPH 4

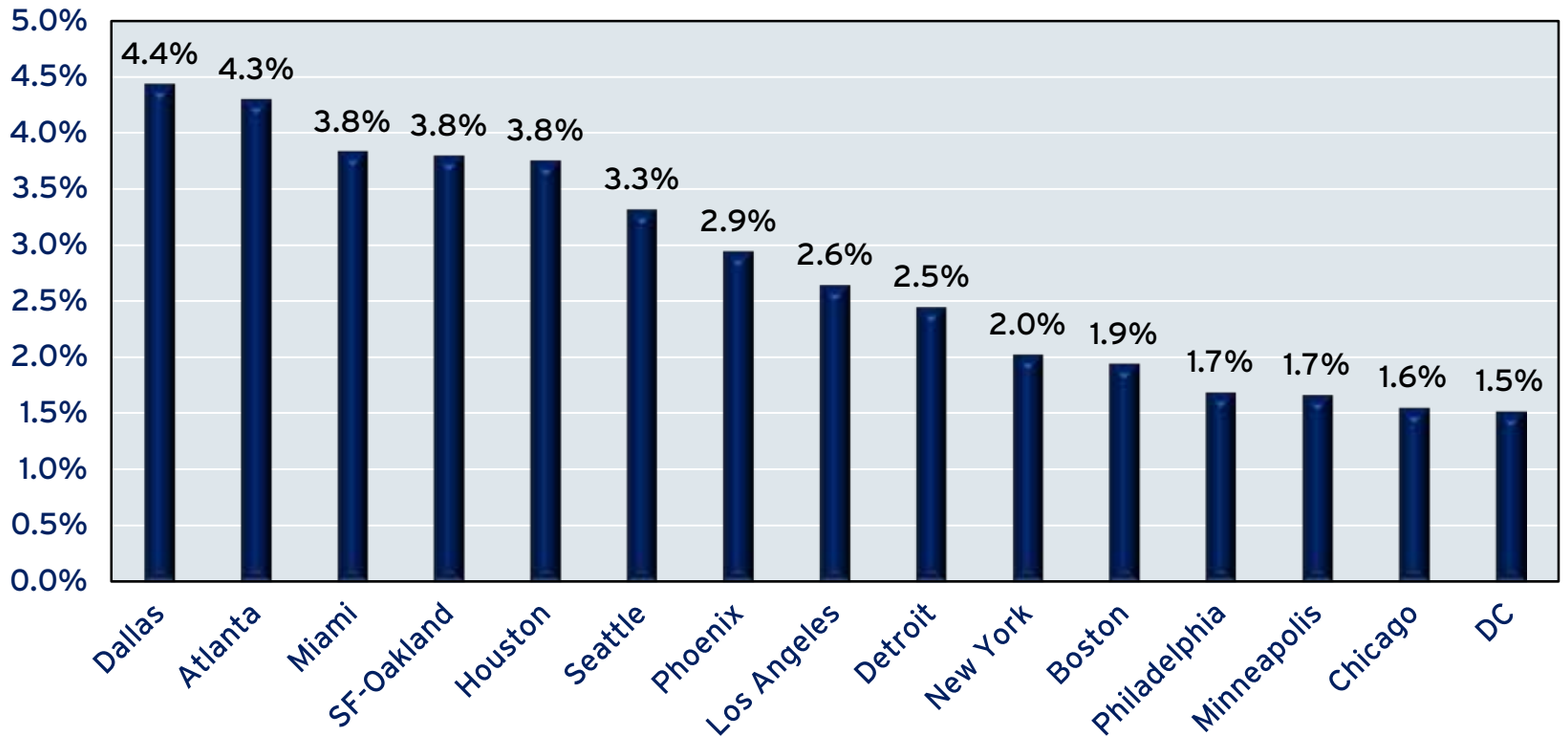
CHANGES IN FEDERAL GOVERNMENT EMPLOYMENT, 2002-2014 (IN THOUSANDS)



Source: Bureau of Labor Statistics

GRAPH 5

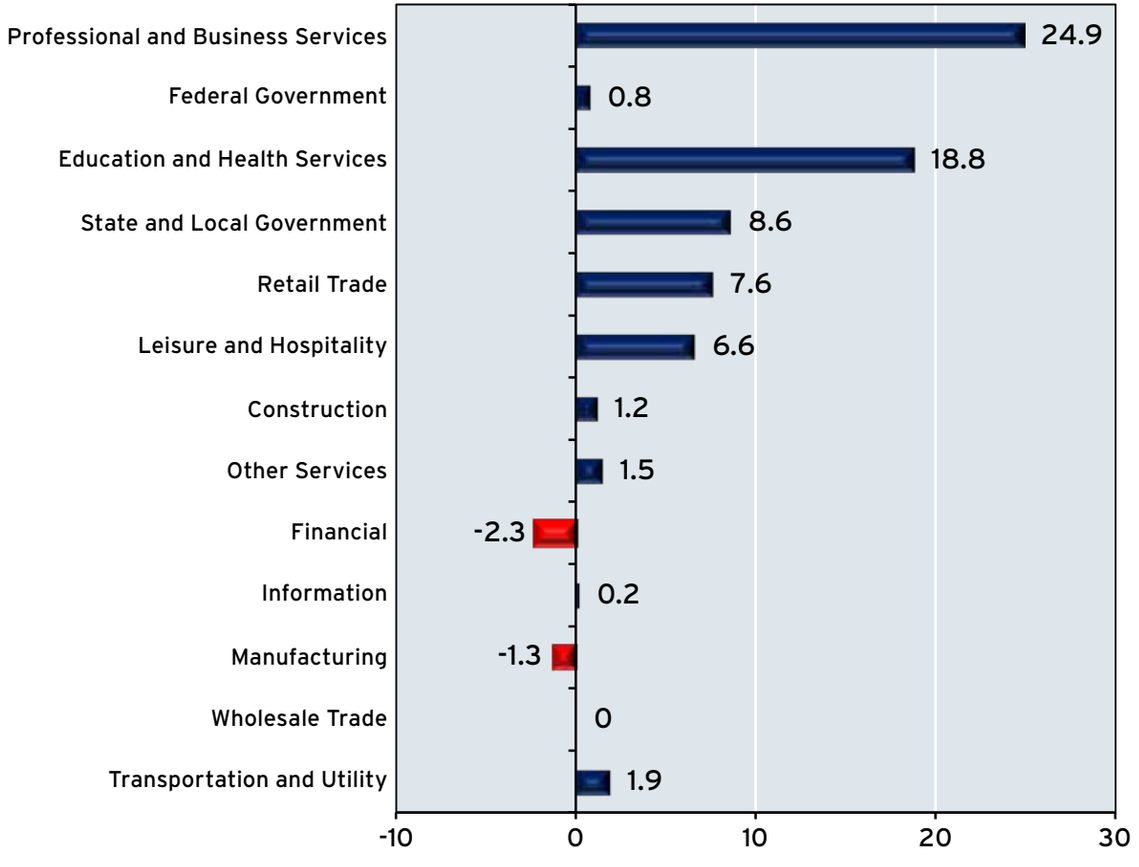
JOB GROWTH IN THE LARGEST U.S. METROPOLITAN AREAS, JANUARY 2014 TO JANUARY 2015



Sources: Bureau of Labor Statistics and the GMU Center for Regional Analysis

GRAPH 6

JOB CHANGES IN THE WASHINGTON, D.C., METROPOLITAN AREA BETWEEN JUNE 2014 AND JUNE 2015 (IN THOUSANDS)



Sources: Bureau of Labor Statistics (not seasonally adjusted) and the GMU Center for Regional Analysis

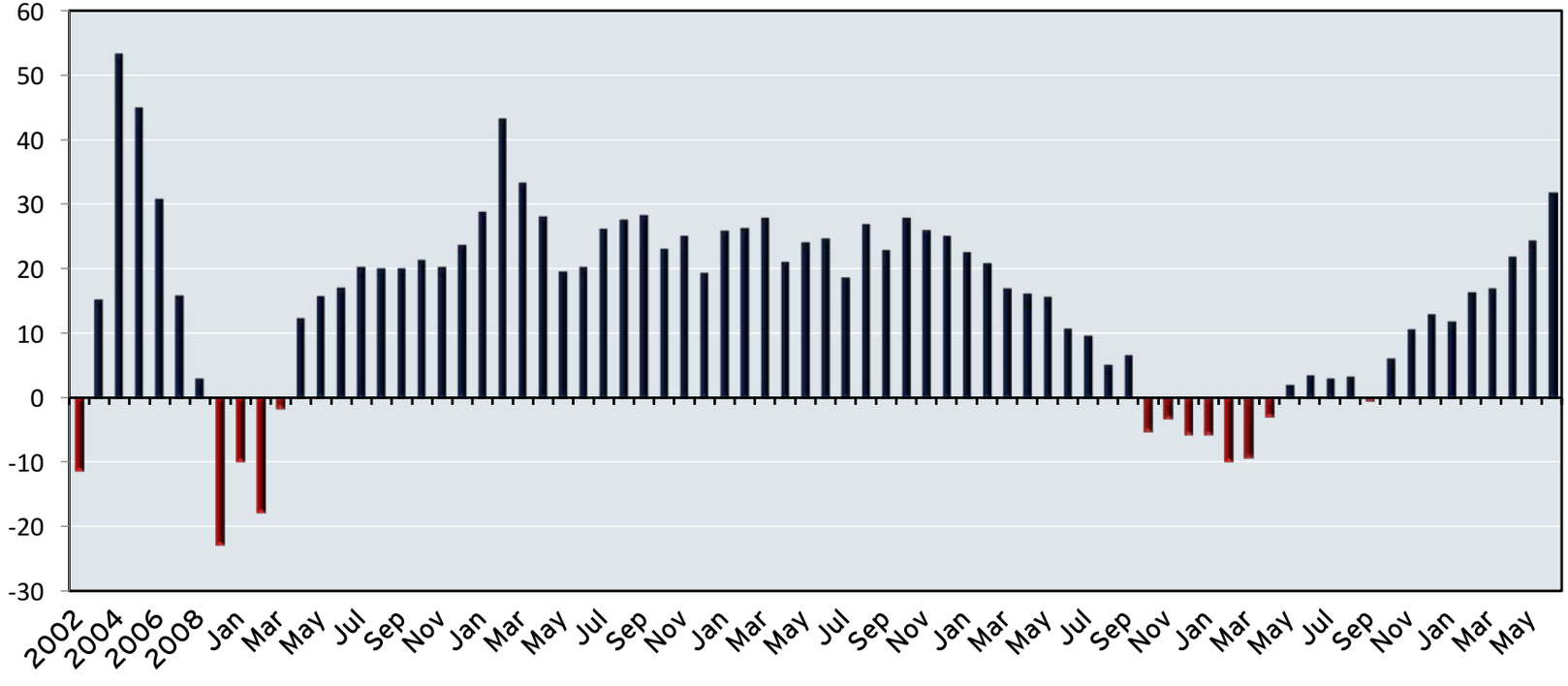
Northern Virginia

Shifting our attention to the Northern Virginia component of the regional economy, we see most of the same economic trends as we observed for the entire metropolitan region, with one notable exception. The decline in job growth in 2013 that hit the overall region was more muted in Northern Virginia. One can see in Graph 7 that job growth was negative in 2013, but recovered and generally has shown positive trends over the past two years. Further, the rate of unemployment in Northern Virginia has been lower than either the national or regional rates (see Graph 8). **Simply put, while Northern Virginia has not been booming, economically speaking, over the past year it has performed better than the nation, the Washington, D.C., metropolitan area and the Commonwealth of Virginia.**

Even so, Northern Virginia, like Hampton Roads to the south, remains vulnerable because of its substantial dependence upon federal spending. One can see in Graph 9 that federal procurement spending in Northern Virginia has declined every year since 2011 and fell 15.8 percent during this time period. Once again, this has been reflected in employment. Graph 10 reveals that federal government employment in Northern Virginia fell from 91,200 to 84,600 between June 2010 and June 2015 (7.2 percent). Since the average wage for federal jobs in Northern Virginia exceeded $102,000 in 2014 (see Graph 11), this reduction in employment has had a noticeable negative impact upon the subregion.

GRAPH 7

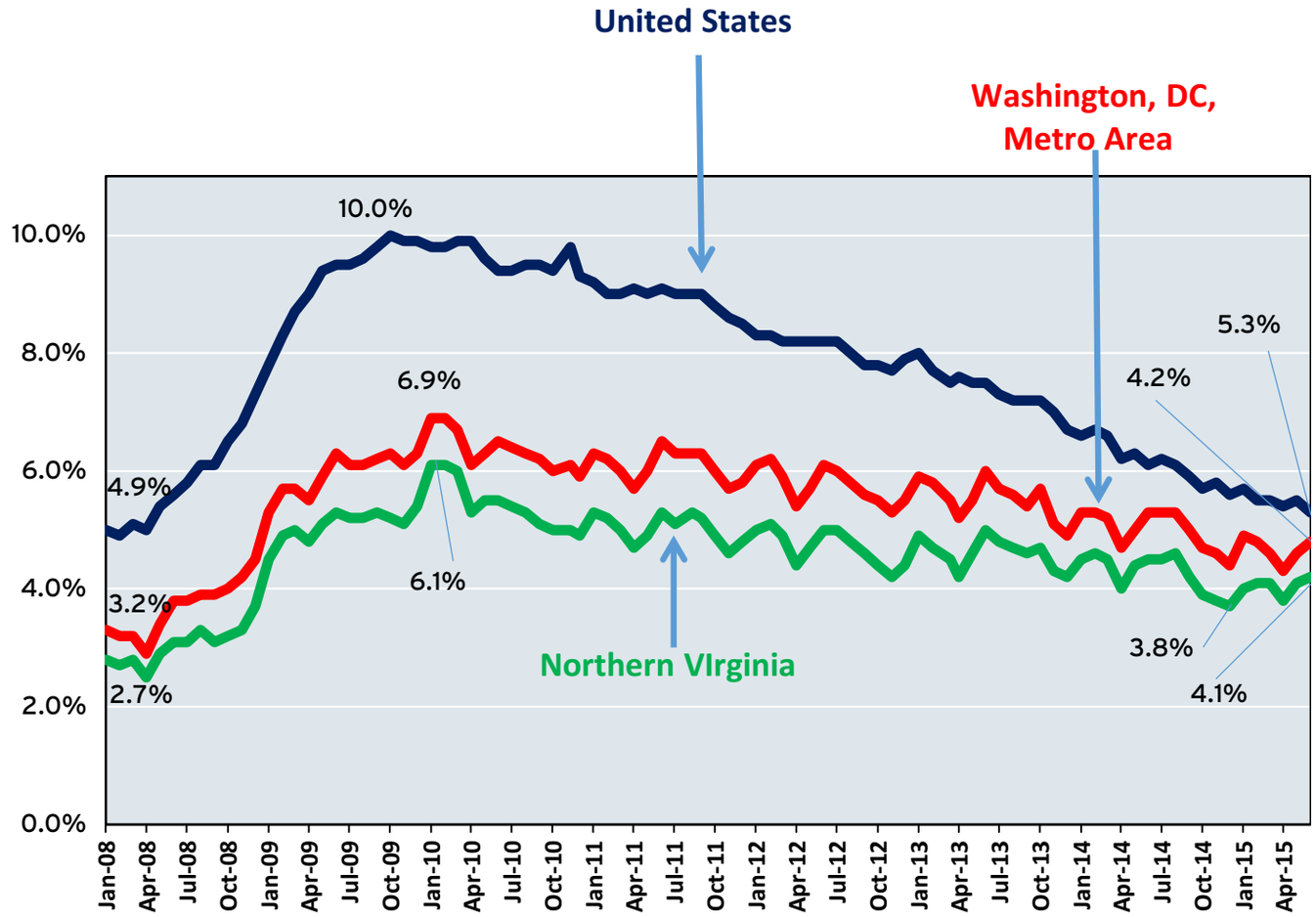
CHANGES IN NONFARM EMPLOYMENT IN NORTHERN VIRGINIA, 2002-2015 (IN THOUSANDS)



Sources: Bureau of Labor Statistics and the GMU Center for Regional Analysis

GRAPH 8

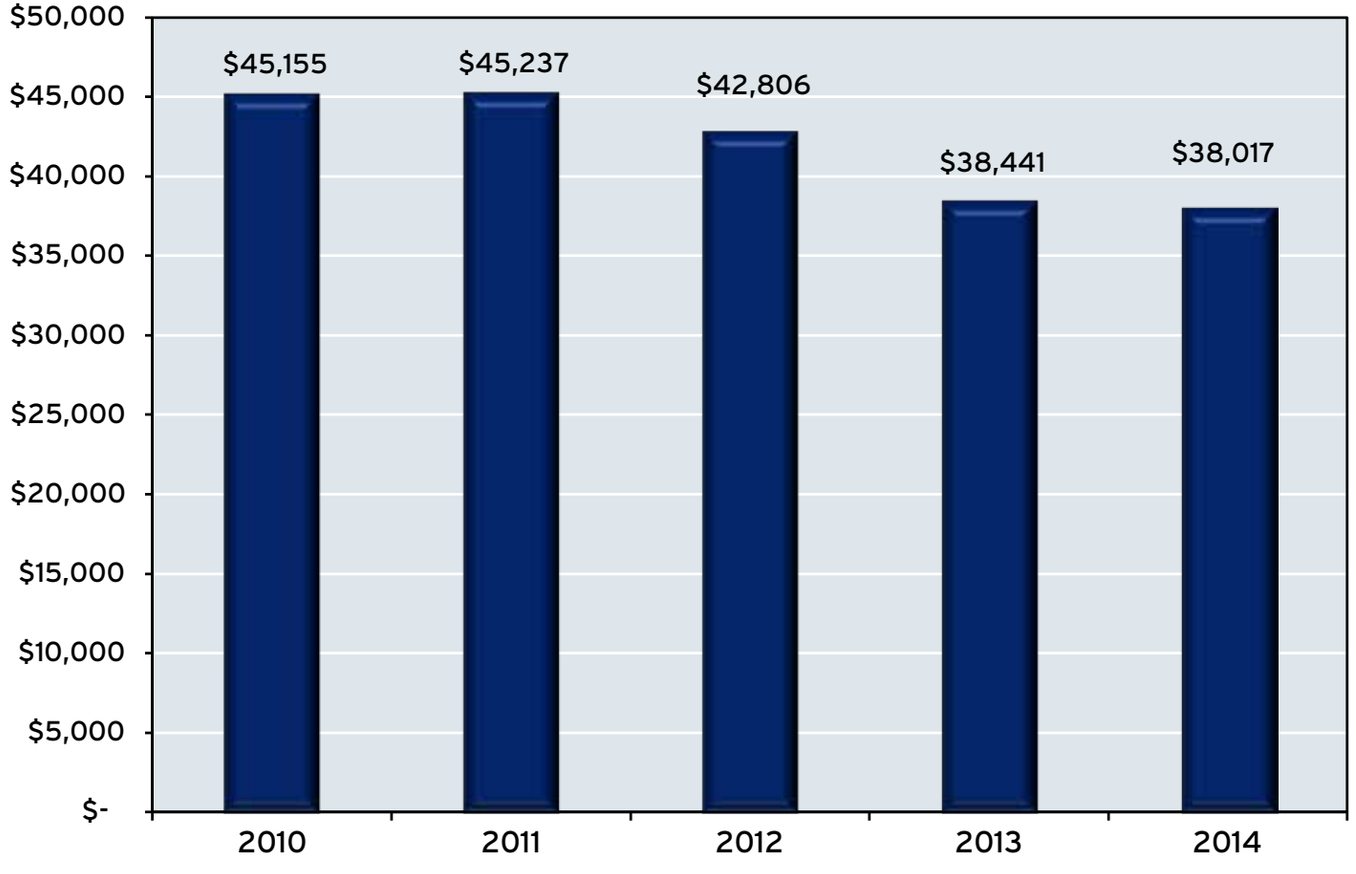
COMPARING RATES OF UNEMPLOYMENT: NORTHERN VIRGINIA, WASHINGTON, D.C., METROPOLITAN AREA, UNITED STATES, 2008-2015



Sources: Bureau of Labor Statistics and the GMU Center for Regional Analysis

GRAPH 9

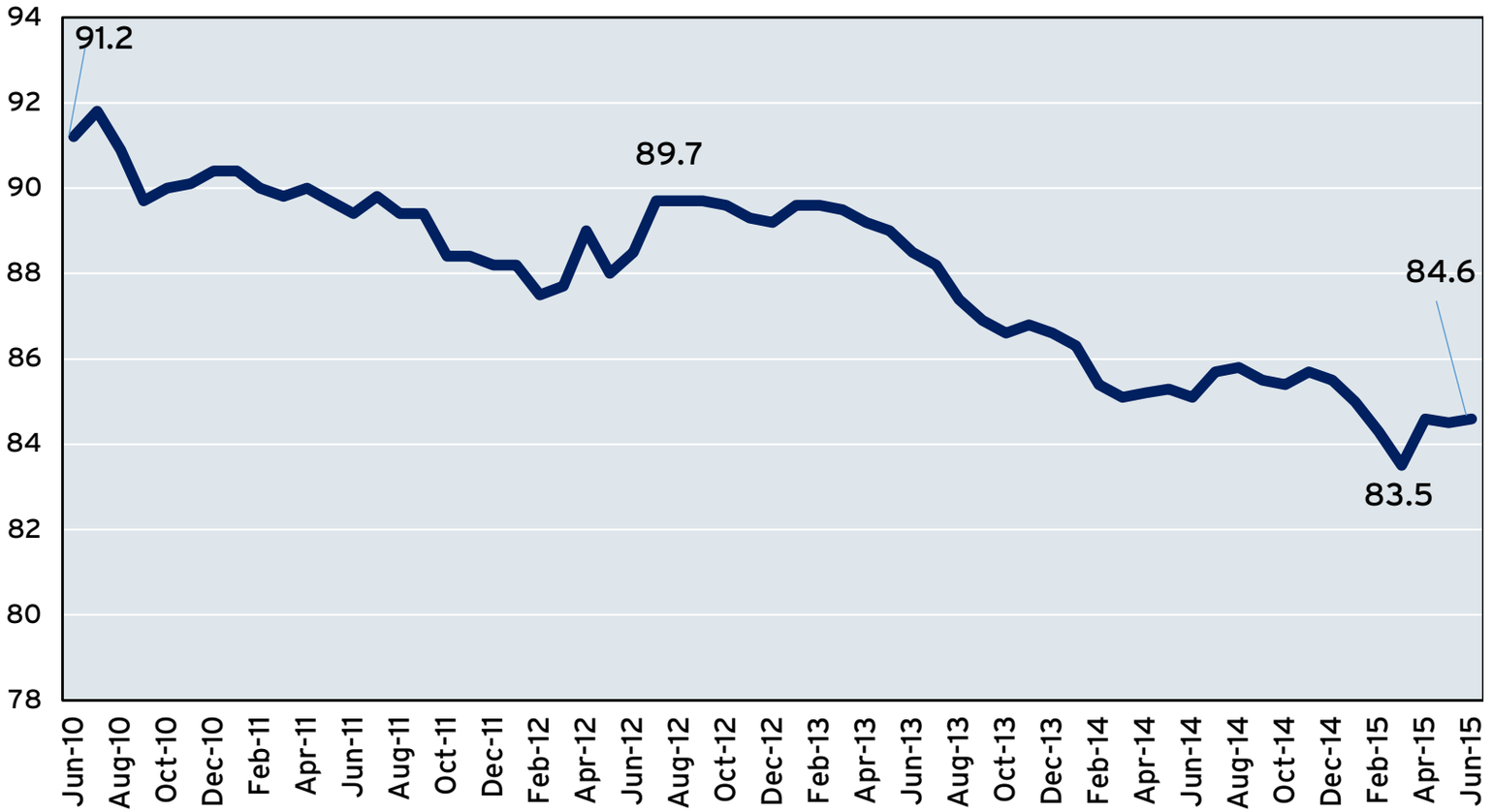
FEDERAL PROCUREMENT SPENDING IN NORTHERN VIRGINIA, 2010-2014 (MILLIONS OF $)



Source: www.usaspending.gov

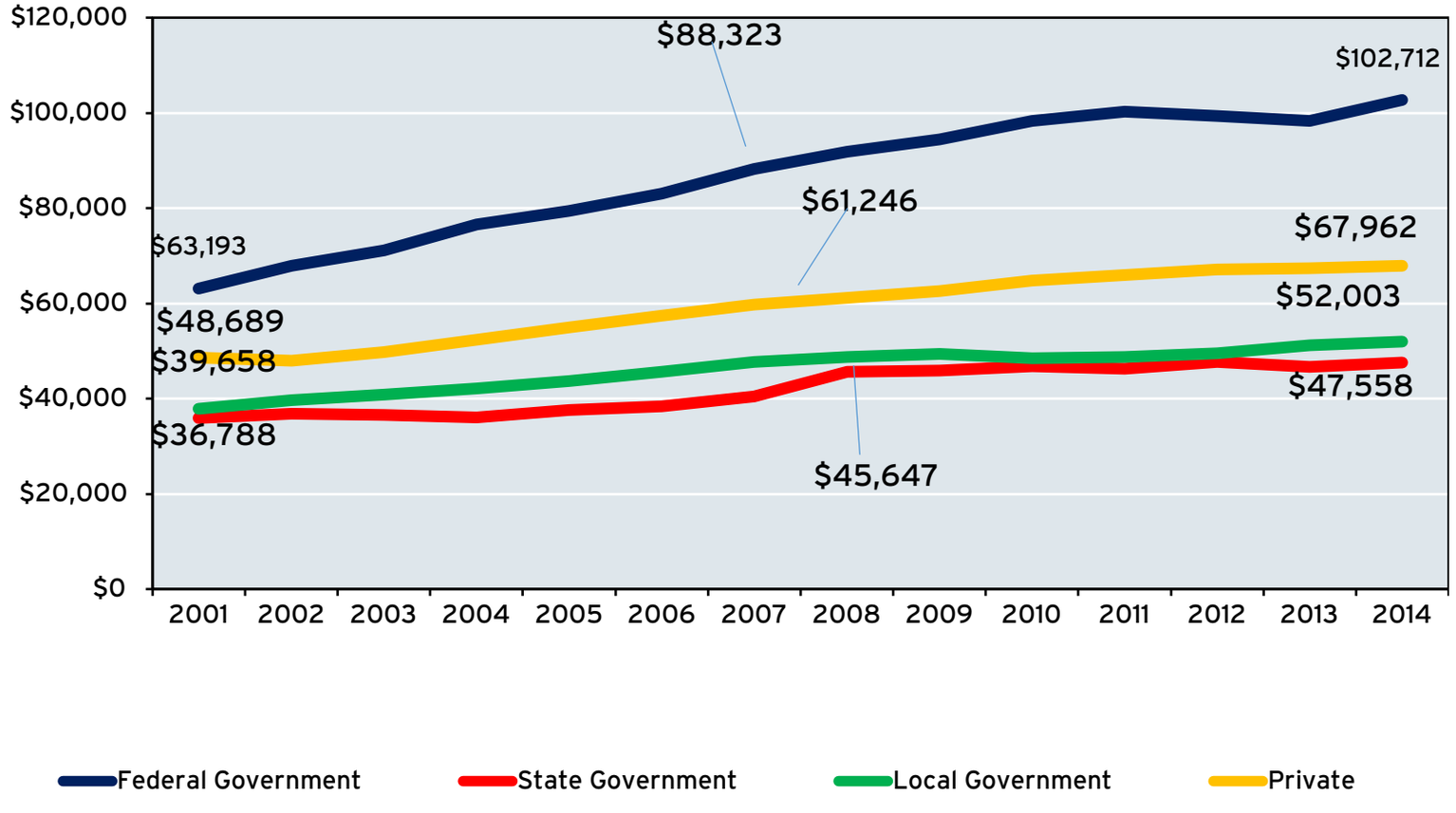
GRAPH 10

FEDERAL GOVERNMENT JOBS IN NORTHERN VIRGINIA, 2010-2015 (IN THOUSANDS)



GRAPH 11

AVERAGE WAGES PER JOB IN NORTHERN VIRGINIA BY EMPLOYMENT SECTOR, 2001-2014



Source: Bureau of Labor Statistics

DISSECTING EMPLOYMENT CHANGES IN NORTHERN VIRGINIA

The post-recession economy for Northern Virginia, much like the Washington, D.C., metropolitan area, can be characterized as one in which high-wage jobs often have been traded for jobs with more modest earnings. For example, one can see in Table 1 that the largest absolute sectoral loss in employment in Northern Virginia between 2010 and 2014 was in professional, scientific and technical services, where the average 2014 wage was a healthy $110,918. On the other hand, the largest absolute sectoral gain occurred in accommodation and food services, where the average wage in 2014 was only $21,110. The lesson is clear – while respectable numbers of new jobs have appeared in Northern Virginia in 2014 and 2015, these jobs often have been concentrated in industries characterized by lower than average wage rates.

Some job losses that have occurred in Northern Virginia reflect fundamental changes in supply-and-demand relationships in the American economy rather than the effects of recession (see Table 2). Consider the information industry, which historically in Northern Virginia was dominated by the presence of America Online (AOL) and other early Internet companies that co-located in the Dulles corridor. While AOL remains a significant employer, the "dial-up" Internet access model that propelled its growth no longer is dominant and, in any case, AOL now is headquartered in New York City.

Against this, the growth of data centers has been a boon for some Northern Virginia jurisdictions and has provided a significant boost to local commercial property values. Even so, data centers typically have not turned out to be large employers.

The finance services and insurance sector presents a less attractive picture. Even with the headquarters of Capital One, and some recent job recovery, employment in the finance and insurance sector still is only about one-third the size of its pre-recession peak.

Table 2 also reveals that the construction sector remains depressed. Employment in the construction sector in Northern Virginia in 2014 still was 27,267 below its pre-recession peak in 2006.

As this is written, it appears that there will have been significant new job creation in Northern Virginia in 2015. Graph 12 demonstrates that between June 2014 and June 2015, there was significant positive job growth in the subregion's staple — professional and business services — and the leisure and hospitality sector continued its strength. Leisure and hospitality jobs may not confer high incomes, but they are critical in terms of reducing the rate of unemployment.

TABLE 1

CHANGES IN EMPLOYMENT IN VARIOUS ECONOMIC SECTORS IN NORTHERN VIRGINIA, 2010-2014

FASTEST-GROWING EMPLOYMENT SECTORS, 2010-2014

INDUSTRY	2010	2014	JOB CHANGE	% CHANGE	AVERAGE WAGE ('14)
Accommodation and Food Services	99,995	113,552	13,557	13.6%	$ 21,110
Health Care and Social Assistance	114,675	124,326	9,651	8.4%	$ 51,017
Administration and Waste Management	73,022	81,298	8,276	11.3%	$ 47,068
Retail Trade	133,371	140,606	7,235	5.4%	$ 31,555
Educational Services	111,411	115,846	4,435	4.0%	$ 48,161
Other Services	56,750	60,261	3,511	6.2%	$ 52,736
Transportation and Warehousing	41,259	43,156	1,897	4.6%	$ 58,876
Finance and Insurance	41,742	43,637	1,895	4.5%	$ 104,292

LARGEST LOSSES BY INDUSTRY, 2010-2014

INDUSTRY	2010	2014	JOB CHANGE	% CHANGE	AVERAGE WAGE ('14)
Professional, Scientific and Technical Services	252,164	248,847	(3,317)	-1.3%	$110,918
Manufacturing	26,077	25,003	(1,074)	-4.1%	$72,686
Wholesale Trade	28,072	27,205	(867)	-3.1%	$95,854
Information	42,354	41,816	(538)	-1.3%	$113,149
Management of Companies and Enterprises	26,794	26,272	(522)	-1.9%	$147,531
Data, Real Estate, Leasing	20,582	20,284	(298)	-1.4%	$63,396
Arts, Entertainment and Recreation	23,901	23,706	(195)	-0.8%	$33,062

Sources: Bureau of Labor Statistics and the GMU Center for Regional Analysis

TABLE 2

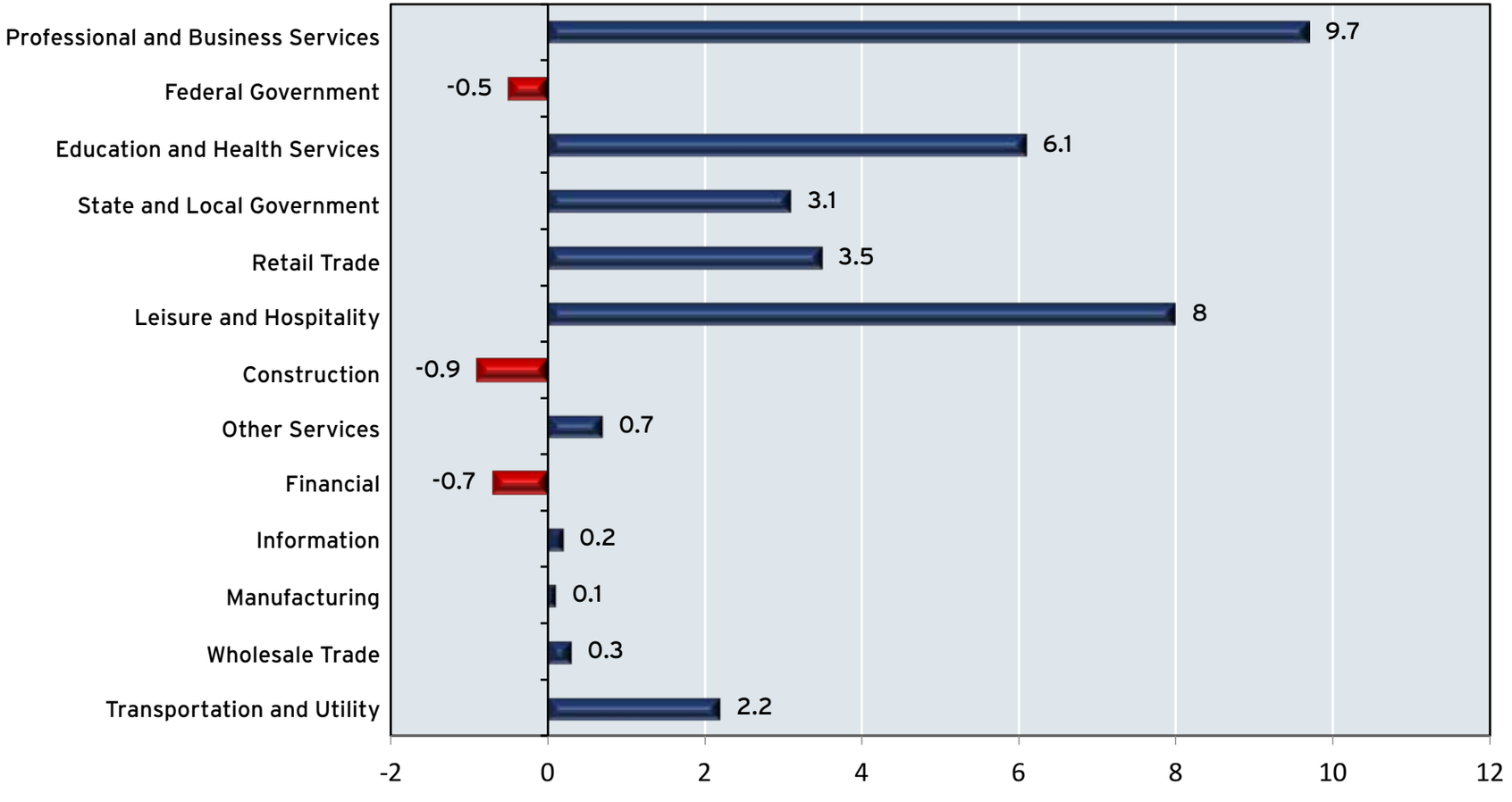
INDUSTRIES IN DECLINE IN NORTHERN VIRGINIA, 2010-2014

INDUSTRY	2014 JOBS	% CHANGE 2010-2014	PEAK EMPLOYMENT	PEAK EMPLOYMENT YEAR	JOB CHANGE SINCE PEAK
Information	41,816	-1.3%	75,895	2001	(34,079)
Finance and Insurance	43,637	4.5%	75,385	2006	(31,748)
Construction	68,277	1.2%	95,544	2006	(27,267)
Manufacturing	25,003	-4.1%	33,157	2001	(8,154)
Wholesale Trade	27,205	-3.1%	32,639	2005	(5,434)
Transportation and Warehousing	43,156	4.6%	48,498	2001	(5,342)
Data, Real Estate, Leasing	20,284	-1.4%	23,168	2005	(2,884)

Sources: Bureau of Labor Statistics and the GMU Center for Regional Analysis

GRAPH 12

SOURCES OF JOB GROWTH AND CONTRACTION IN NORTHERN VIRGINIA, JUNE 2014 TO JUNE 2015



Sources: Bureau of Labor Statistics (not seasonally adjusted) and the GMU Center for Regional Analysis

POPULATION CHANGES

Despite its economy-related challenges, Northern Virginia has continued to see population growth. Between 2010 and 2014, its population increased by an impressive 200,000 residents. The subregion's population growth in any time period can be divided into four parts: (1) births, (2) deaths, (3) in-migration into Northern Virginia and (4) out-migration from Northern Virginia. During this period, international in-migration became a key component of regional population growth (see Table 3).

Northern Virginia has experienced declining domestic migration in recent years (see Table 3). As the impacts of federal spending cuts and declining federal employment took hold, net domestic migration into Northern Virginia declined from 2013 to 2014.

On the other hand, Northern Virginia has continued to act as a magnet for international immigrants (see Graph 13). Between 2013 and 2014, for example, the subregion attracted 21,177 international immigrants. This continued a long-term trend such that in Fairfax County, more than 30 percent of its residents are foreign-born, and more than half of all public elementary school students speak a language other than English at home (Tom Gjelten, "A Nation of Nations," Simon & Schuster, 2015).

TABLE 3

ANALYZING NORTHERN VIRGINIA POPULATION CHANGE, 2010-2014

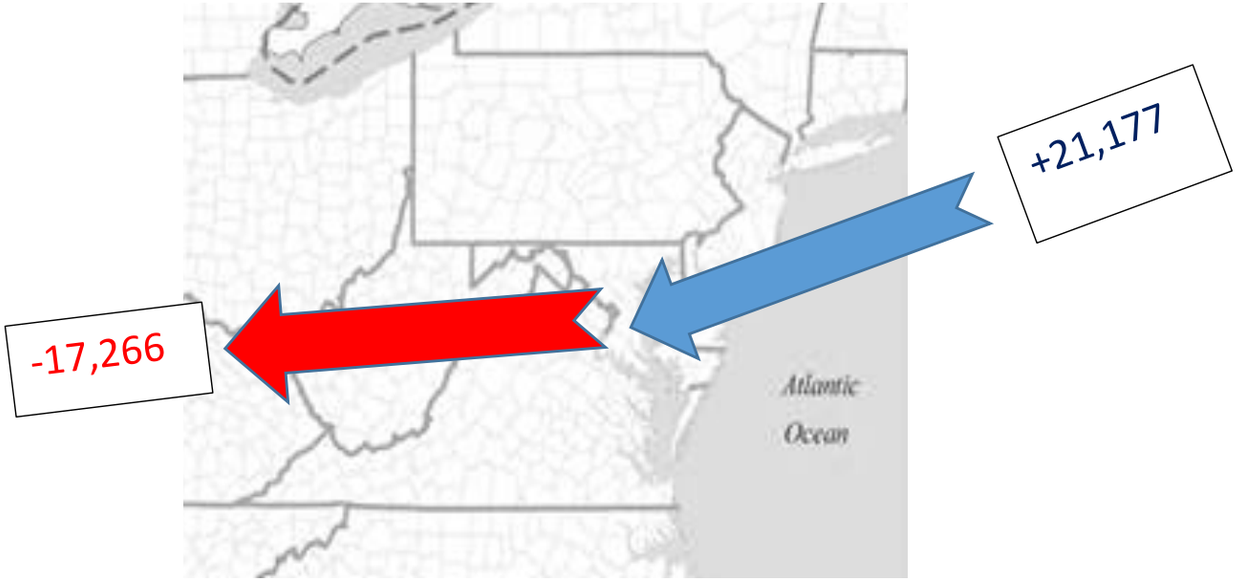
POPULATION CHANGES, NATURAL INCREASE AND MIGRATION	
2014 Population (estimated)	2,895,219
2010 Population (estimated)	2,695,005
Change	200,214
Natural Increase	109,070
Births	159,896
Deaths	50,826
Domestic Migration (estimated)	8,731
International Migration	82,413

POPULATION CHANGE BY COMPONENT, 2010-2014				
	2010-2011	2011-2012	2012-2013	2013-2014
Natural Change (Births-Deaths)	27,259	27,523	27,324	26,964
International Migration	19,143	20,786	21,307	21,177
Domestic Migration	17,409	6,318	2,270	(17,266)
Total Change	63,811	54,627	50,901	30,875

Sources: U.S. Census Bureau - Population Estimates and the GMU Center for Regional Analysis

GRAPH 13

DOMESTIC AND INTERNATIONAL MIGRATION INTO AND OUT OF NORTHERN VIRGINIA



Note: Red indicates net domestic out-migration, while blue indicates net international in-migration.

Source: GMU Center for Regional Analysis

HOUSING

In Northern Virginia, few things draw as much attention as housing market conditions. Declining employment in many higher-wage sectors of the economy, the uncertainty generated by the federal shutdown and sequestration, plus new regulations and mortgage-lending standards imposed after the financial crisis together have put a damper on the residential real estate market in Northern Virginia. This market, while improving, still is struggling in some submarkets. However, the broad trends are positive.

One of the most visible and frequently cited measures of the health of residential housing markets is the median price paid for existing, single-family homes. **Graph 14 reveals that the median price of existing, single-family homes in Northern Virginia has rebounded dramatically. The median sale price of these homes rose 67.7 percent between March 2008 and March 2015.** Meanwhile, as one can see in Graph 15, the average number of days a home was listed before selling fell from 120 in January 2008 to 47 in March 2015. On the other hand, the number of active listings for sales of homes in Northern Virginia, while more than double its December 2012 low, still is less than half of its June 2006 high (see Graph 16). "Reality has returned to the housing market," remarked one veteran Northern Virginia housing developer.

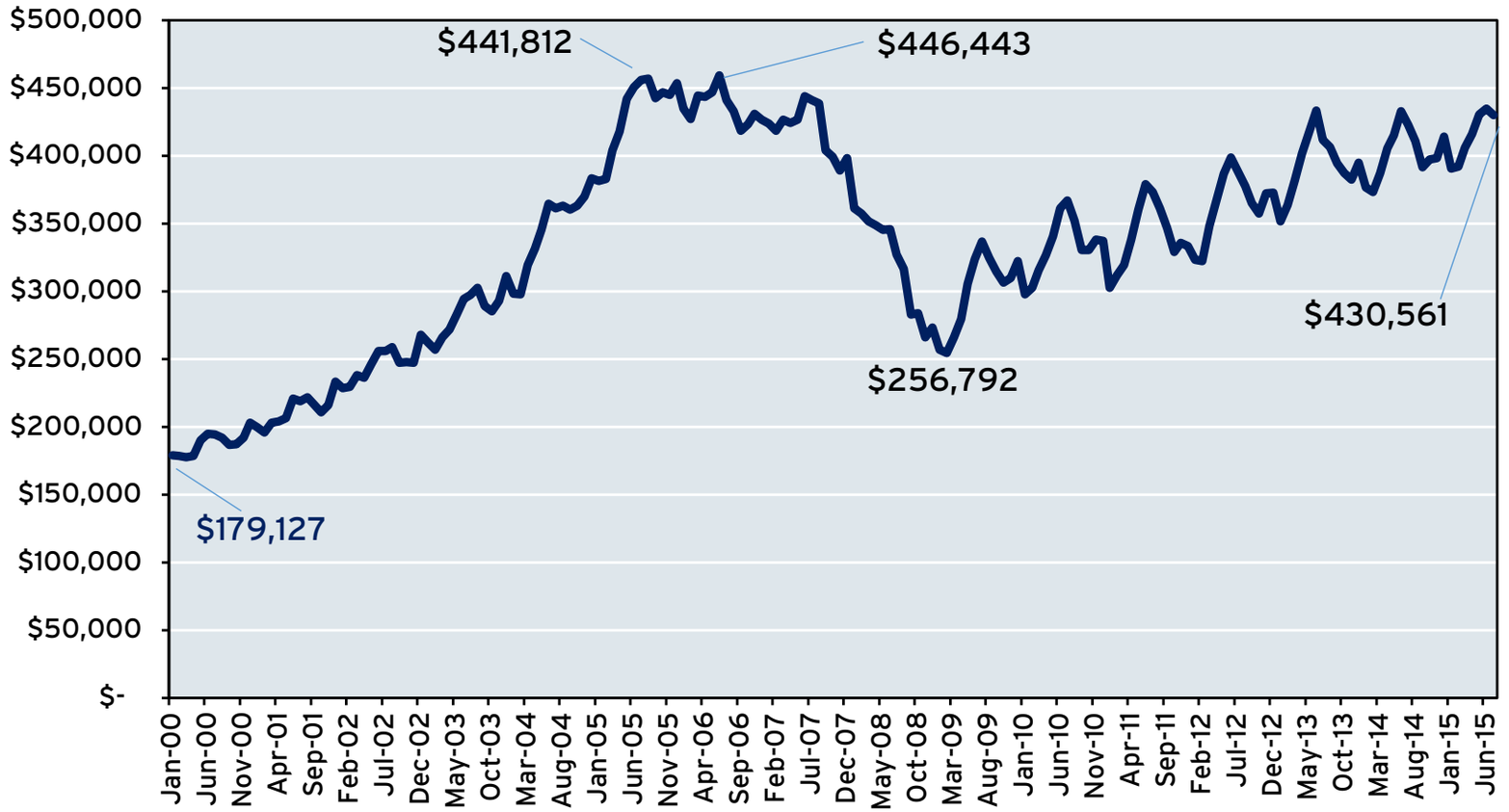
In general, households are thought to experience housing-based financial stress when the cost of their housing exceeds 30 percent of their income. The U.S. Census Bureau's American Community Survey reports that during the 2009-13 period, there were 1.39 million reportable households in Northern Virginia; 63.6 percent of these homes were owner occupied and 36.4 percent were occupied by renters. **Fully 38.32 percent of the renters and 21.98 percent of the homeowners were paying more than 30 percent of their income in order to meet their housing costs.** Almost one-quarter of all renters were paying more than 40 percent of their income in rent. Table 4 reports these data.

The net effect of this housing stress has been to push more Northern Virginia households to locate in outlying suburban communities where housing prices are not so high, or to push more of them into multiple-family and multiple-generation households. In the former case, this requires many householders to undertake increasingly arduous commutes. Unfortunately, metropolitan Washington, D.C., recently was ranked as the worst city in the United States for traffic congestion – not the "We're No. 1" chant boosters want to hear (Jonathan Chew, Fortune, Aug. 26, 2015). If quality of life characteristics gain prominence in business site location decisions, then Northern Virginia may find itself disadvantaged when such decisions are made.

Yes, building additional transportation infrastructure would help address traffic congestion challenges in the short run, but the story of development in Northern Virginia often has been, "If you build it, they will come." New roads attract drivers and drivers alter their commuting paths until an equilibrium is reached, such that no specific commuting path from one site to another ordinarily is superior to any other. It is the textbook competitive economic model with minimal barriers to entry in operation.

GRAPH 14

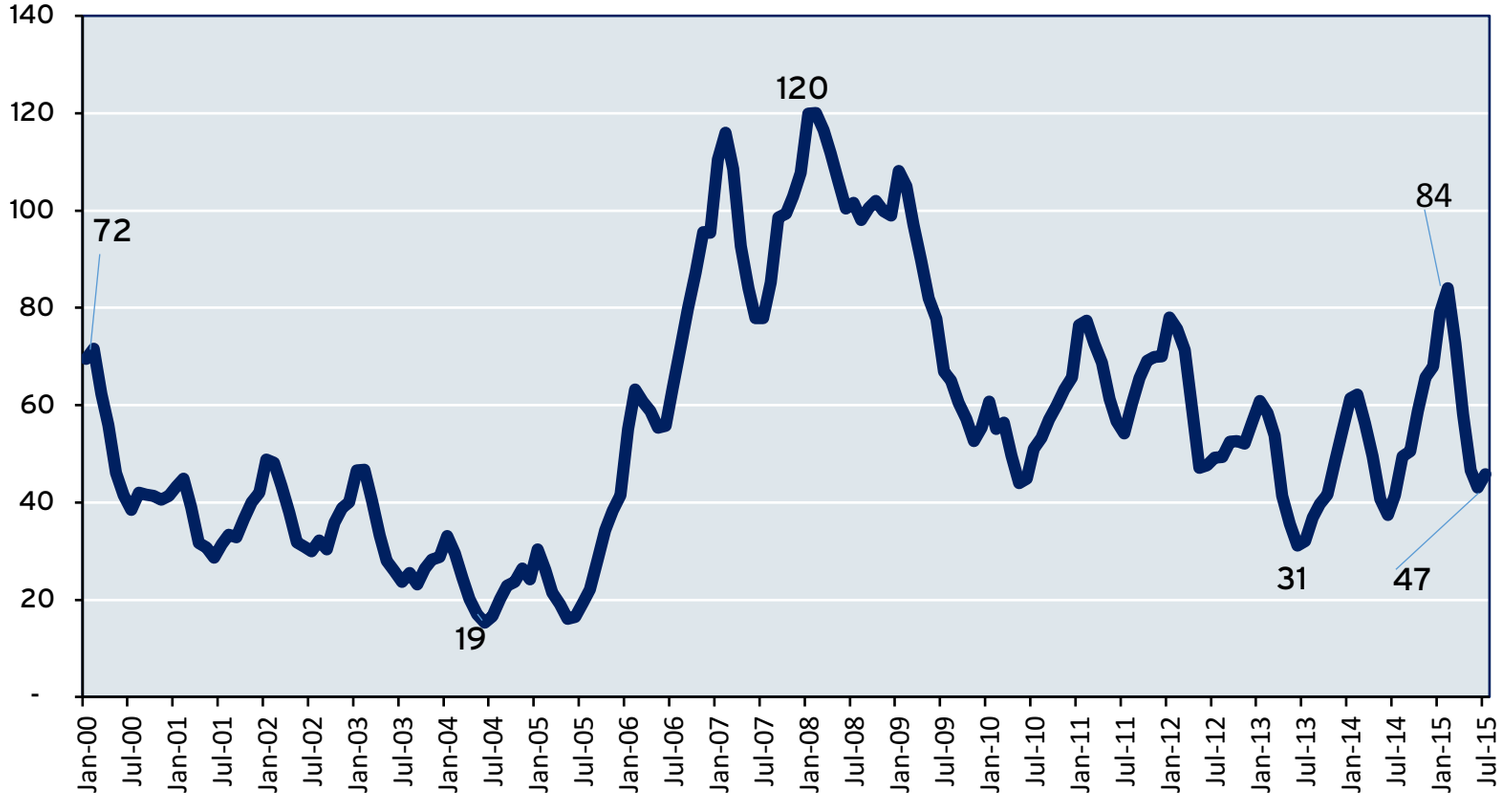
MEDIAN SALES PRICE OF EXISTING HOMES IN NORTHERN VIRGINIA



Sources: RealEstate Business Intelligence, LLC, Metropolitan Regional Information Systems and the GMU Center for Regional Analysis

GRAPH 15

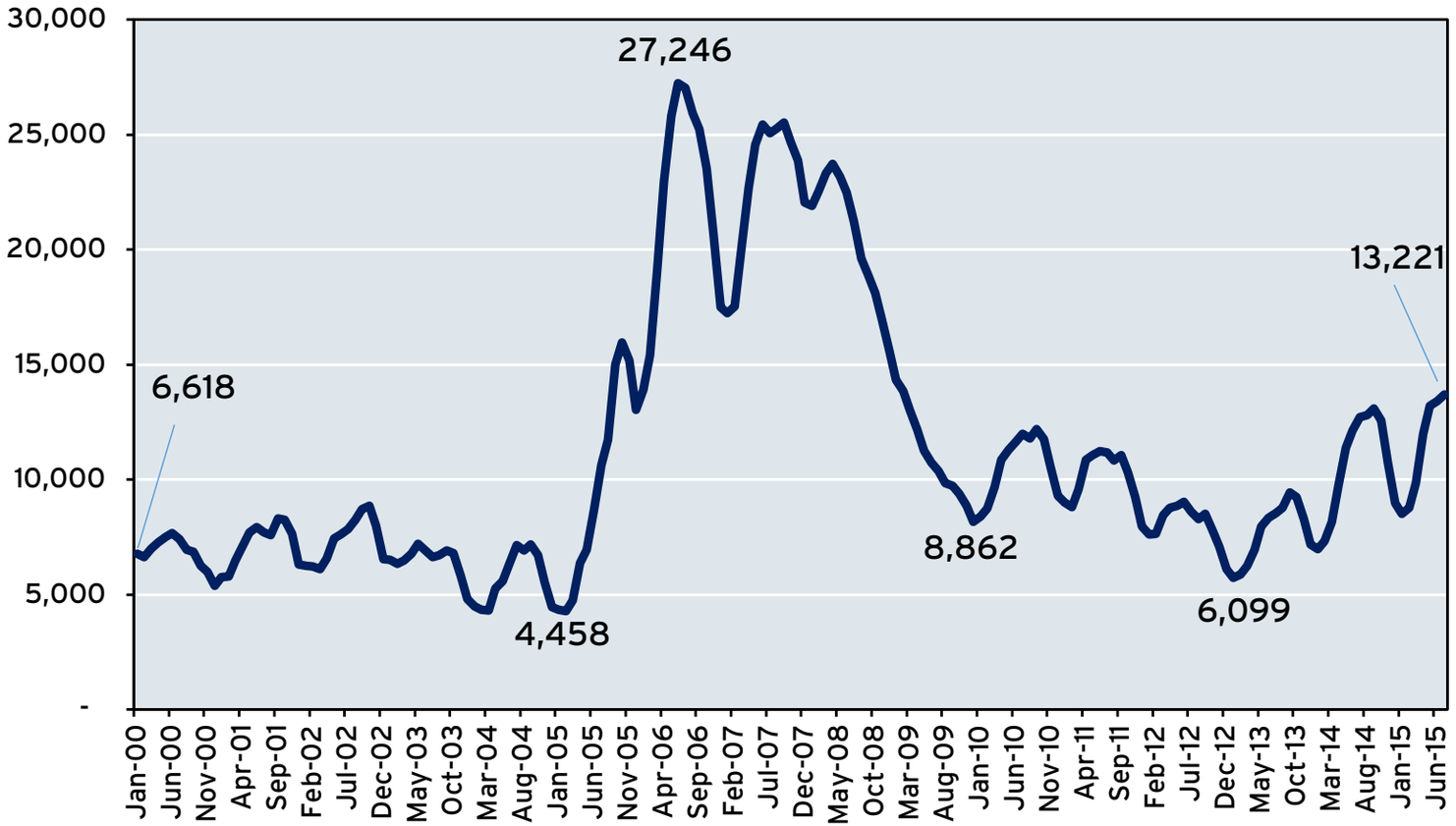
AVERAGE DAYS A HOME IS ON THE MARKET PRIOR TO SALE IN NORTHERN VIRGINIA, 2000-2015



Sources: RealEstate Business Intelligence, LLC, Metropolitan Regional Information Systems and the GMU Center for Regional Analysis

GRAPH 16

NUMBER OF ACTIVE LISTINGS OF HOMES IN NORTHERN VIRGINIA, 2000-2015



Sources: RealEstate Business Intelligence, LLC, Metropolitan Regional Information Systems and the GMU Center for Regional Analysis

TABLE 4

AVERAGE SHARES OF HOUSEHOLD INCOME SPENT ON RENTAL OR OWNER COSTS IN NORTHERN VIRGINIA, 2009-2013

PERCENTAGE OF HOUSEHOLDS	CUMULATIVE RENTING PERCENTAGE	CUMULATIVE OWNING PERCENTAGE
✣ 9.9%	2.66%	5.85%
10.0-14.9%	10.58%	19.53%
15.0-19.9%	24.30%	38.44%
20.0-24.9%	38.89%	55.98%
25.0-29.9%	52.01%	69.30%
30.0-34.9%	61.67%	78.02%
35.0-39.9%	68.35%	83.62%
40.0-49.9%	76.98%	89.67%
50.0%+	96.05%	99.76%
Not Computed	99.99%	100.00%

Sources: Bureau of Labor Statistics (not seasonally adjusted) and the GMU Center for Regional Analysis

What's Next?

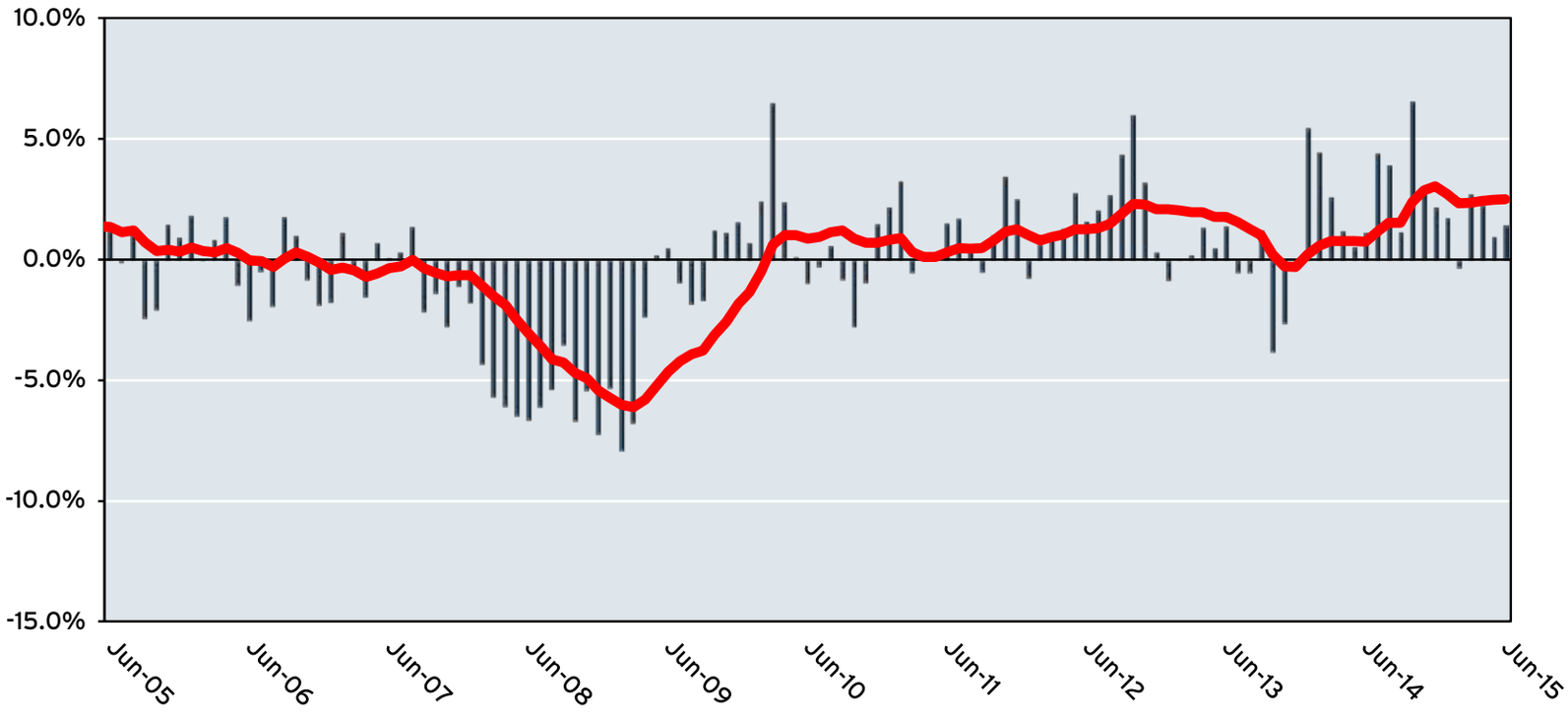
The quarterly Leading Economic Index (LEI) of the George Mason University Center for Regional Analysis for the Washington, D.C., metropolitan area is designed to provide information on how the regional economy is likely to perform in the succeeding six months, though it also has use beyond that time horizon. The index generally has been rising over the past 18 months; however, one can see in Graph 17 that a 12-month moving average of the index has flattened a bit as 2015 closes out. This is given credence by softer job reports for the most recent reporting period.

Longer term, the outlook for economic growth in Northern Virginia is quite favorable. The nexus of governmental/political/military/biotechnical/human capital/university resources that propelled Northern Virginia forward in recent decades will not have disappeared. By all odds, Northern Virginia is superbly located. Intermediate term, the subregion will have to adjust to less-rapid rates of growth in federal expenditures.

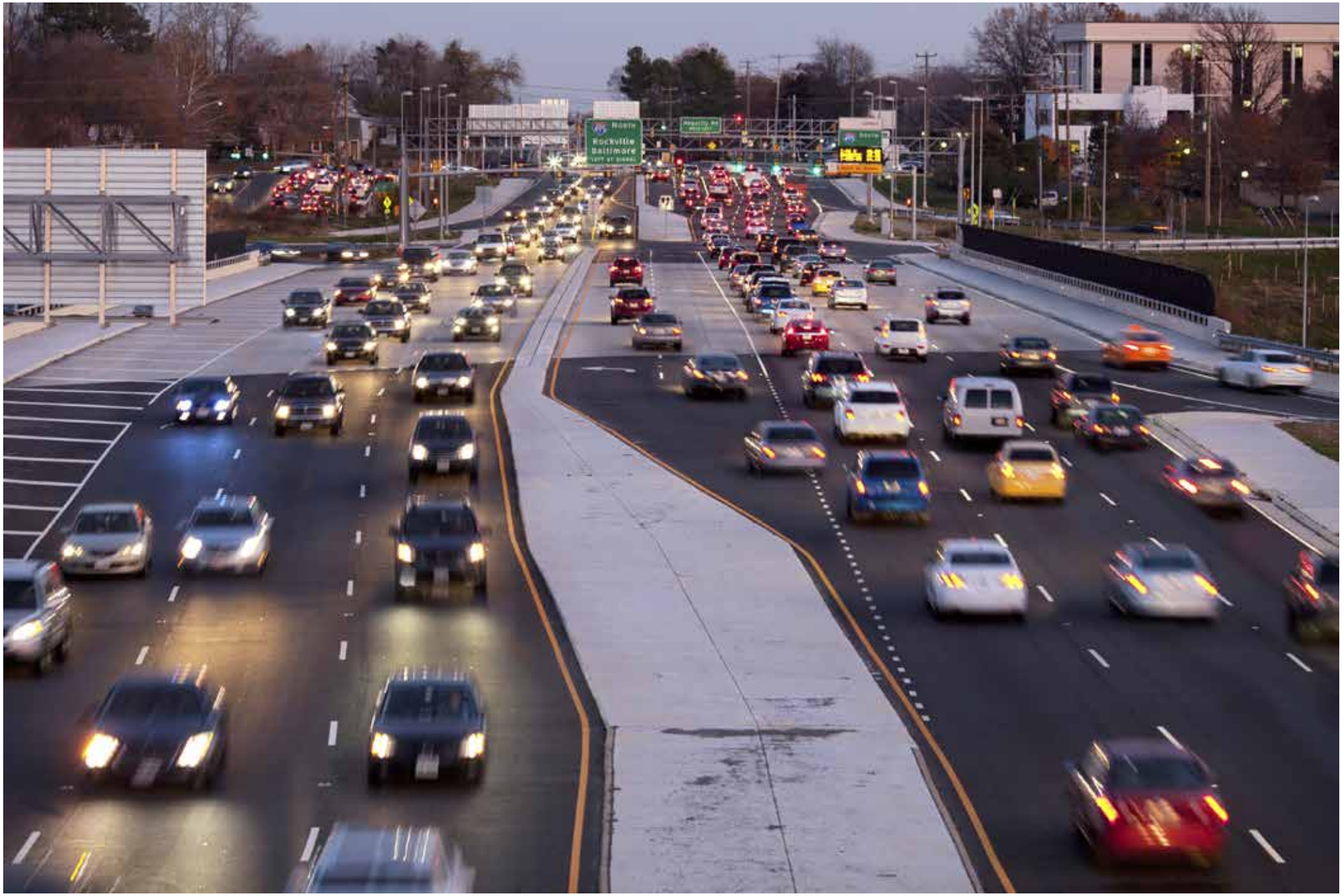
In any case, if necessity is indeed the mother of invention, then stagnant federal spending will encourage, if not force, Northern Virginia firms and organizations to develop new products, approaches and markets. In fact, the current interregnum in governmental expansion already has had a disciplining effect on Northern Virginia firms and organizations. They have been forced to cut costs, become more efficient and think about the world through new, more competitive, lenses. In fact, though there has been some undeniable pain involved in the economic adjustments Northern Virginia has had to make in recent years, it has been positioning itself for better things in the future.

GRAPH 17

WASHINGTON, D.C., MSA LEADING ECONOMIC INDEX, MONTH-OVER-YEAR PERCENTAGE CHANGE (WITH 12-MONTH MOVING AVERAGE)



Sources: IHS Economics and the GMU Center for Regional Analysis


Rockville
Baltimore

DIGGING DEEPER: A CLOSER LOOK AT DEFENSE SPENDING IN VIRGINIA

We know that Virginia is heavily dependent upon defense spending – the Department of Defense (DOD) estimates that 11.8 percent of the value of the Commonwealth's economic activity is contingent upon defense spending. This is the highest in the nation (Office of Economic Adjustment, DOD, 2015).[1] Direct defense spending in Virginia will exceed $64 billion in 2015 (The Washington Post, Aug. 23, 2015).[2] To place this number in perspective, consider that Virginia's state government spends approximately $46 billion annually.

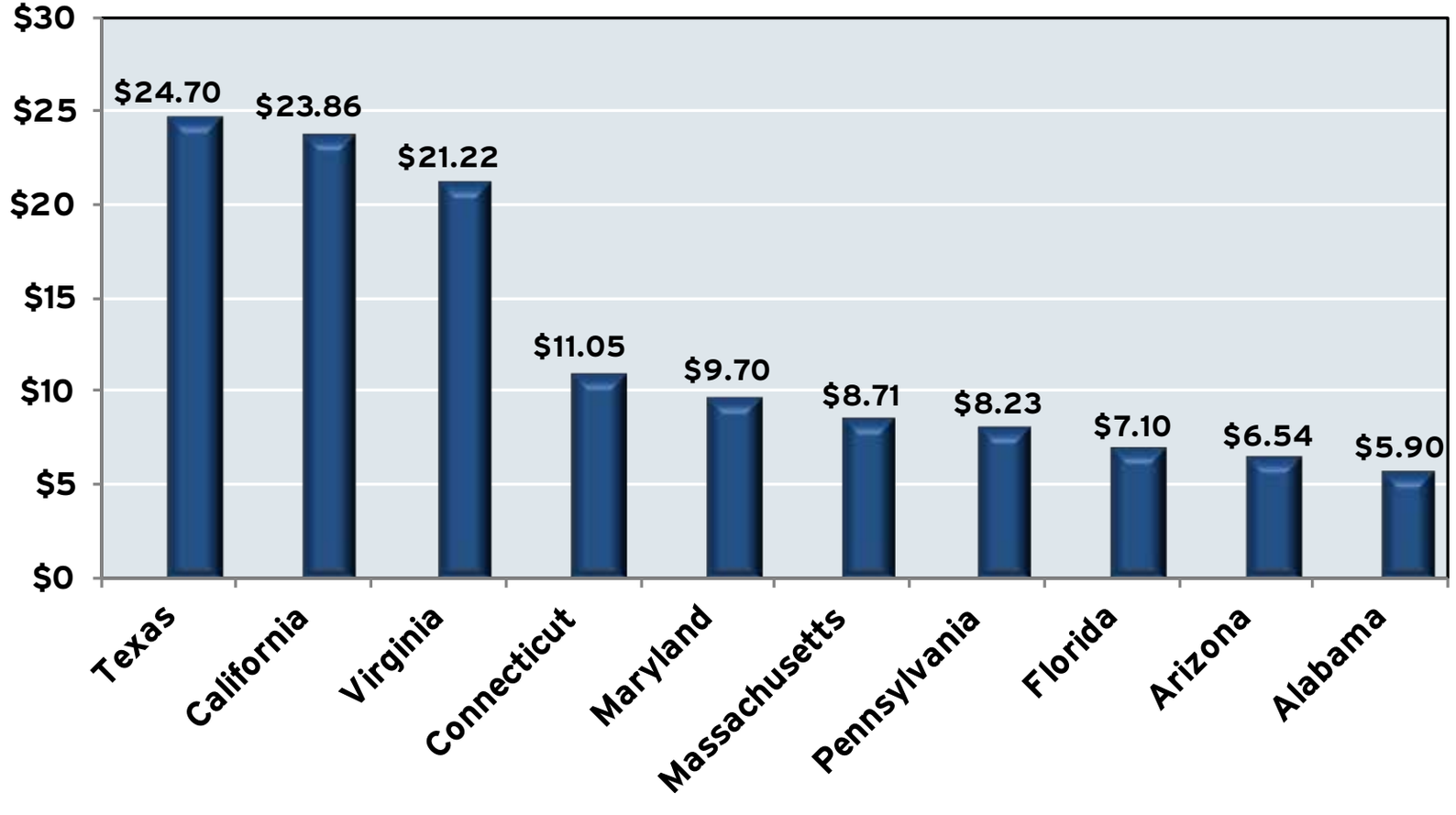
Further, in the federal government's 2015 fiscal year, the DOD will have awarded at least $21.22 billion in contracts to firms headquartered in the Commonwealth. Virginia ranks third nationally in terms of receiving the most defense contract awards (see Graph 1).

Two regions of the state – Northern Virginia and Hampton Roads – dominate defense spending in Virginia and together account for about 86 percent of all DOD spending in the Commonwealth. DOD spending in Northern Virginia is considerably greater than in Hampton Roads and accounts for 70 percent of all DOD spending in Virginia, while Hampton Roads is responsible for about 16 percent (JLARC Report, June 2014).

1 www.oea.gov/library/directory/defense-spending-by-state-fy14.
2 The DOD's Office of Economic Adjustment report for FY 2014 notes that DOD spending in Virginia in FY 2014 was only $54.7 billion.

GRAPH 1

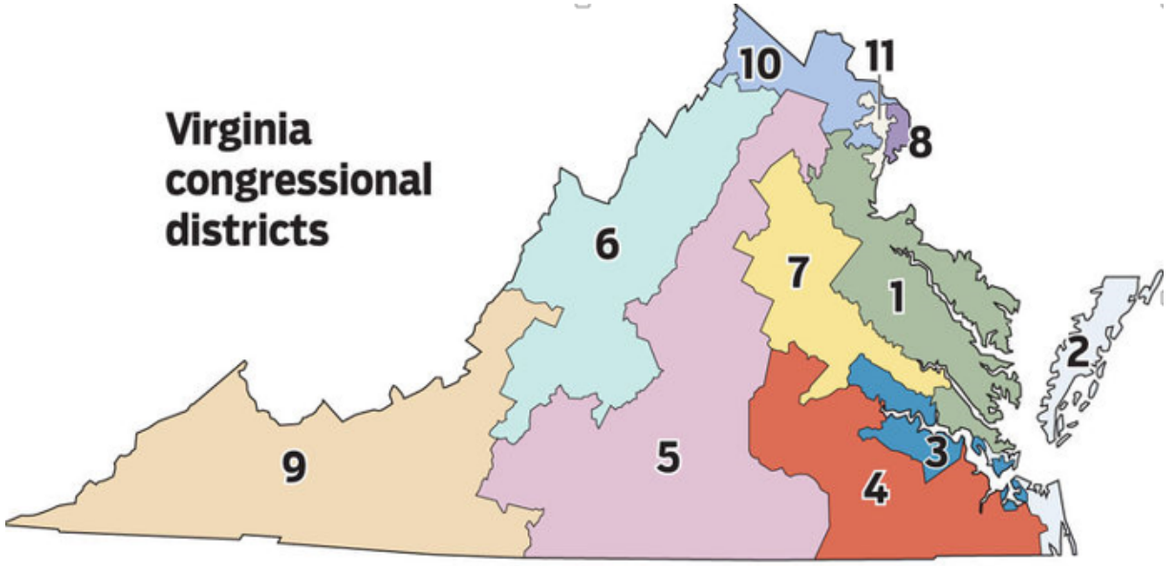
TOP 10 STATES IN TERMS OF TOTAL DEFENSE CONTRACT AWARDS RECEIVED (IN BILLIONS OF $)



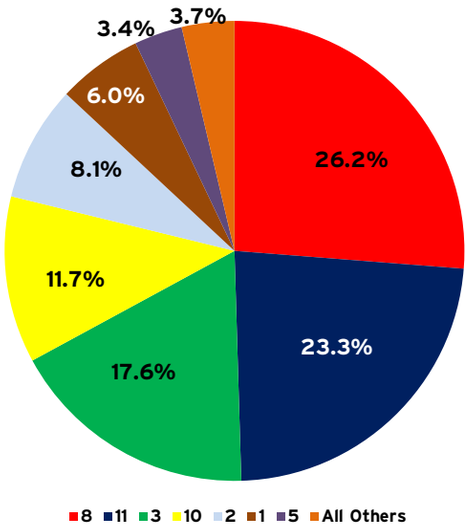
Source: www.usaspending.gov

GRAPH 2

VIRGINIA'S U.S. CONGRESSIONAL DISTRICTS AND DOD CONTRACT, GRANT AND GIFT AWARD ACTIVITY IN THOSE DISTRICTS, FY 2014



Source: John G. Ownby, Richmond Times-Dispatch, June 5, 2015



Source: www.usaspending.gov

Graph 2 provides two illustrations. The first is a map of Virginia's U.S. congressional districts. The second is a pie chart showing the percentage of DOD contract awards made to firms and organizations in these districts during FY 2014.

Congressional districts 8, 10 and 11 in Northern Virginia accounted for 61.2 percent of all contract award activity in Virginia in FY 2014, while districts 1, 2 and 3 in Hampton Roads were responsible for 31.7 percent of that activity. Critically, however, the economy of Hampton Roads is much less diversified than that of Northern Virginia. In 2014, more than 39 percent of all economic activity within Hampton Roads was related to DOD spending (The State of the Region report for Hampton Roads, 2015). This illustrates the vulnerability of Hampton Roads to defense spending reductions.

In 2014, an estimated 125,000 active-duty military members were stationed in Virginia and an estimated additional 90,000 civilians worked for the DOD within Virginia.[3] Approximately 72 percent of the *active-duty military personnel* were located in Hampton Roads, primarily at several U.S. Navy facilities. We estimate that 50 percent of the Commonwealth's *civilian* DOD employees are located in Northern Virginia, while almost 40 percent work in Hampton Roads. Reality is that despite the location of the Pentagon in Arlington, DOD activity in Northern Virginia is carried out predominantly via contractual relationships with private firms rather than at military installations.

These data easily demonstrate that the DOD spends large sums of money in Virginia and that the Commonwealth is one of the most important national locations for the DOD as well.

Sequestration

The bad economic news is that Department of Defense expenditures on both personnel and contracts have been declining and "sequestration" is a very important reason for this.[4] Sequestration is the term used to refer to automatic spending cuts that have been built into federal government budgets by virtue of the Budget Control Act of 2011.

One can see the impact of sequestration on DOD spending in Graph 3. Only "discretionary" DOD spending is reported in this graph; so-called "special operations" DOD spending for activities in areas such as Afghanistan and Iraq is not included. Discretionary DOD spending, then, represents the core DOD budget absent any items that Congress has declared to reflect special operational and one-time needs.

The blue line in Graph 3 indicates what DOD spending would have been without any sequestration reductions. The red line depicts the level of DOD spending after the sequestration agreement. Discretionary defense spending was scheduled to decline by a total of $454 billion between FY 2013 and FY 2021. Each individual year's DOD spending would have been 8 percent to 10 percent lower because of sequestration.

However, Congress agreed to sequestration relief in FY 2014 and FY 2015. The purple trapezoid in Graph 3 represents the amount of that relief, which totaled $31.6 billion for the DOD during the time period. This relief disappears in FY 2016 unless Congress reverses its current course.

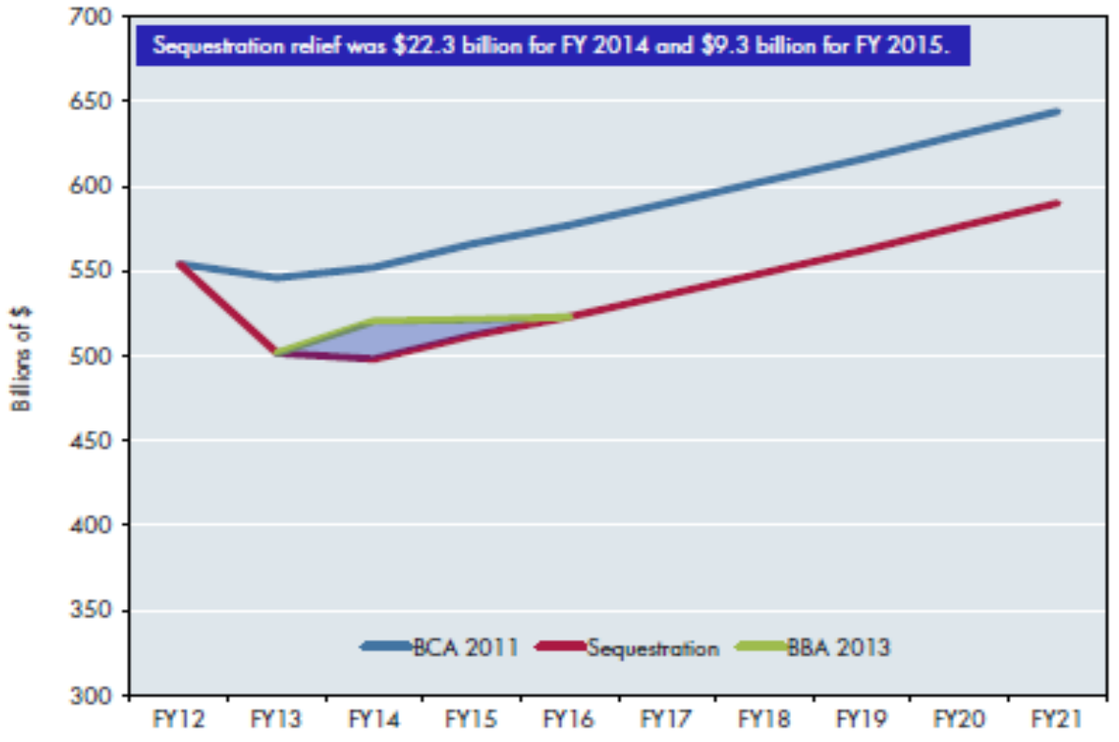
If sequestration continues, then discretionary DOD spending will increase slightly in FY 2016 to $523.1 billion – only a 0.35 percent increase. Given the dependency of the Commonwealth's economy on defense spending, it is understandable why Virginia recorded a zero real growth rate in 2014 and also why there is likely to be only modest economic growth in 2015 and 2016.

3 These 2014 estimates came from DOD personnel who cannot be quoted. However, 2013 data are available by service at http://www.governing.com/gov-data/military-civilian-active-duty-employee-workforce-numbers-by-state.html.

4 For example, in Hampton Roads, DOD personnel expenditures declined 6.9 percent between 2010 and 2013 even while nonfarm personnel expenditures were increasing 9.3 percent. (See The State of the Region report for Hampton Roads, 2015.)

GRAPH 3

SEQUESTRATION FUNDING CAPS, FY 2012 TO FY 2021



Sources: Budget Control Act 2011, budget requests for FY14, Congressional Budget Office Sequestration Update Report and the Old Dominion University Economic Forecasting Project

Two Major Categories Of Defense Spending

The two major conduits for Department of Defense funds that come to Virginia are (1) expenditures made on personnel and (2) expenditures made via contracts negotiated by the DOD with private firms or other governmental units for construction, equipment, fuel, supplies, services, etc. In addition, the DOD makes loans and provides a variety of other kinds of financial assistance that may not fall directly into these two categories. We will focus initially on personnel costs.

DECLINING NUMBERS OF DOD PERSONNEL

The number of DOD personnel in Virginia – both active-duty and civilian – has been declining. **Table 1 reveals that active-duty military employment in Virginia now is 30 percent below where it was in 1991.**

Let's consider an instructive example. The aircraft carrier Gerald R. Ford (CVN 78), a Huntington Ingalls project that will join the fleet in 2016, will cost $13.7 billion. Its crew will number 4,500, about 1,000 fewer than those serving on existing carriers.[5] **This underscores a distinct trend in defense spending – increasingly expensive, technology-rich assets such as aircraft carriers translate into a reduced ability to employ and support personnel. The tradeoff is straightforward: As the DOD expends increasing proportions of its budget on expensive ships, airplanes and technology, it inevitably finds that it cannot hire as many people.** This means that the number of active-duty military personnel and DOD civilian employees must ineluctably decline until Congress is willing to spend more money.

In fact, the DOD has fewer dollars available to hire people today than in the past. This is an important reason why the number of active-duty military declined from 2.04 million in 1990 to only 1.35 million in 2014. The decline has been even more significant in the U.S. Navy. Active-duty naval personnel in 2014 were only about half the number in 1990.[6] **In defense-heavy Hampton Roads, the most recent peak in the number of active-duty military personnel occurred in 2003, when 113,400 men and women were deployed here. This number has declined every year since then to 86,500 in 2013.**

The deployment of superior new technology sometimes results in smaller numbers of individuals being needed to accomplish necessary tasks. As already noted, the crew of the Gerald R. Ford will number 1,000 fewer individuals than the crews of predecessor aircraft carriers, and the Navy attributes much of this to the incorporation of new technology into its physical structure and operations. It is a trend, however, that encompasses all of the military services.

DECLINING COMPENSATION

Even if the deployment of new technology were not a factor in reducing the number of active-duty military personnel, there is another trend that also has played an important role in the decline in DOD employment – the increasingly expensive compensation packages received by DOD personnel. Table 1 compares the compensation increases received by active-duty military personnel, other government personnel and private-sector employees between 2001 and 2013. Because we have an all-volunteer military, the United States must offer compensation packages sufficient to attract and retain personnel. Important elements of these packages include housing allowances, health care coverage and pensions systems, all of which are attractive because of their mostly nontaxable status. One can see that between 2001 and 2010, *total* military employee compensation increased much more rapidly than either government or private-sector employee compensation. During this time period, total private, nonfarm compensation increased 38.5 percent, while military compensation increased 71.8 percent.

After historically large increases in compensation between 2000 and 2010, the *total* compensation earned by active-duty military personnel in the Commonwealth has been declining and fell 6.9 percent between 2010 and 2013 (see Table 1).

Total compensation is one thing; *average* compensation per employee is another. The data presented in Table 2 demonstrate **the average compensation of active-duty military personnel has stalled; there was**

5 www.naval-technology.com/projects/cvn-21.
6 http://historyinpieces.com/research/us-military-personnel-1954-2014.

only a 0.8 percent increase per individual between 2010 and 2013 and an actual 2.8 percent decline between 2012 and 2013. This contrasts visibly with the 3.3 percent increase in average federal civilian employee compensation and the 4.3 percent increase in the average compensation of private-sector nonfarm employees between 2010 and 2013.

Here is the rub for Virginia. Holding other things constant, the increased compensation costs inherited from the previous decade and the DOD's increased reliance upon more expensive assets such as aircraft carriers will result in fewer active-duty personnel at DOD installations throughout the Commonwealth. The same DOD dollar cannot be spent two places.

DOD asset cost escalation is exemplified by the cost of top-of-the-line fighter aircraft. In 1945, the foremost U.S. fighter was the P-51 Mustang, which cost about $50,000 per copy to produce. In 2015 prices, this translates to $656,000. Compare this to the estimated $300 million-plus cost of a single new F-35C fighter in 2015. Of course, the two planes are in no way equivalent, but it is precisely the tremendous upgrading of such equipment that has accelerated procurement costs and reduced the funds available to support personnel.

TABLE 1

CHANGES IN EMPLOYMENT AND TOTAL COMPENSATION (WAGES PLUS FRINGE BENEFITS) FOR MILITARY, FEDERAL CIVILIAN AND PRIVATE-SECTOR EMPLOYEES, 1991-2013

	PERCENT CHANGE, 1991-2000	PERCENT CHANGE, 2001-2010	PERCENT CHANGE, 2010-2013	PERCENT CHANGE, 2012-2013
Military Employment	-19.5%	-9.0%	-7.7%	-0.6%
Military Compensation	5.3%	71.8%	-6.9%	-3.4%
Federal Government Civilian Employment	-11.8%	21.8%	1.2%	-0.4%
Federal Government Civilian Compensation	27.0%	93.8%	4.5%	-0.7%
Private Nonfarm Employment	26.7%	7.7%	4.1%	1.0%
Private Nonfarm Compensation	89.15%	38.5%	8.6%	1.9%

Sources: Bureau of Economic Analysis and the Old Dominion University Economic Forecasting Project

TABLE 2

CHANGES IN EMPLOYMENT AND AVERAGE COMPENSATION (WAGES PLUS FRINGE BENEFITS) FOR SELECTED EMPLOYEE CATEGORIES IN VIRGINIA, 2001-2013

	EARNINGS IN 2001	EARNINGS IN 2012	EARNINGS IN 2013	PERCENT CHANGE, 2001-2010	PERCENT CHANGE, 2010-2013	PERCENT CHANGE, 2012-2013
Military Active-Duty Employees	$47,536	$93,058	$90,500	88.9%	0.8%	-2.8%
Federal Government Civilian Employees	$72,732	$120,022	$119,631	59.2%	3.3%	-0.3%
State and Local Government Employees	$42,796	$59,086	$60,122	36.8%	2.7%	1.8%
Private Nonfarm Employees	$35,891	$47,644	$48,090	28.5%	4.3%	0.9%

Sources: Bureau of Economic Analysis and the Old Dominion University Economic Forecasting Project

DOD CONTRACT AWARD ACTIVITY IN VIRGINIA

As Graph 1 disclosed, Virginia ranked third among the states in terms of the total annual volume of DOD contract awards received in FY 2015 to date. However, if anyone has been harboring doubts that DOD spending in Virginia has been on the decline, Graph 4 should erase such. It reports the total dollar value of all DOD contracts, grants, loans and other assistance to firms and organizations in Virginia, FY 2010 through FY 2015 to date. These awards declined 21.2 percent between FY 2011 and FY 2014.

DOD "TRANSACTIONS" IN VIRGINIA

DOD contracts for weapons, equipment, fuel, food, etc., often are less visible than personnel expenditures. Exceptions include the very large DOD contracts awarded to firms such as Huntington Ingalls relating to the construction or rehabilitation of aircraft carriers. These events justifiably garner considerable attention, but most other DOD contracts merit no more than a sentence in the business section of local publications. Even some large contracts occasionally float by without much notice. How many Virginians are aware of the $858 million contract for fuel that the DOD negotiated with Foster Fuels, which is located in the small town of Brookneal, south of Lynchburg?

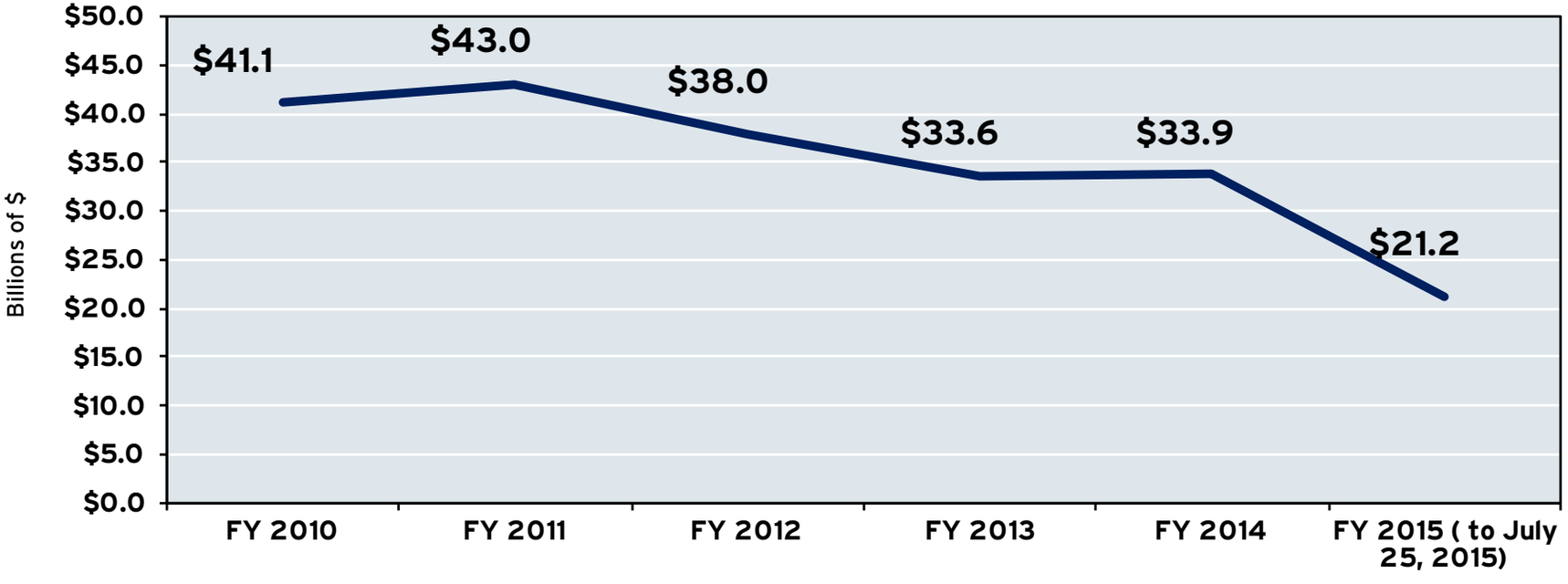
As Graph 5 indicates, DOD contracts made with firms and governmental units in Virginia, though below previous peak levels, still remain significant in number, not the least because after they are signed, they frequently are modified and extended. Such events are termed "transactions" and are commonplace. Despite their frequency and ultimate economic impact when considered as a whole, DOD transactions in Virginia seldom capture the public's attention for extended periods of time.

The total value of the DOD procurement contracts in Virginia metropolitan areas roughly mirrors the number of transactions, except for the Lynchburg metro area, which boasts the huge Foster Fuels contract. Let's initially consider those contracts awarded outside of Northern Virginia and Hampton Roads. One can see in Graph 6 that in FY 2014, Lynchburg (with the Foster Fuels contract) and Richmond dominated the play.

A major lesson of Graph 6, however, is that virtually every metropolitan area in Virginia has a stake in DOD contractual procurement spending. Metropolitan areas such as Charlottesville, Lynchburg, Richmond and Roanoke all are substantial DOD participants in addition to Northern Virginia and Hampton Roads. Taking a longer view, however, this is both good and bad for Virginia. During the first decade of this century, our dependence on the DOD turned out to be very good for us, economically speaking, because defense spending was increasing rapidly. However, conditions became less salubrious for the Commonwealth in 2015 as a consequence of sequestration and stagnant or declining DOD spending.

GRAPH 4

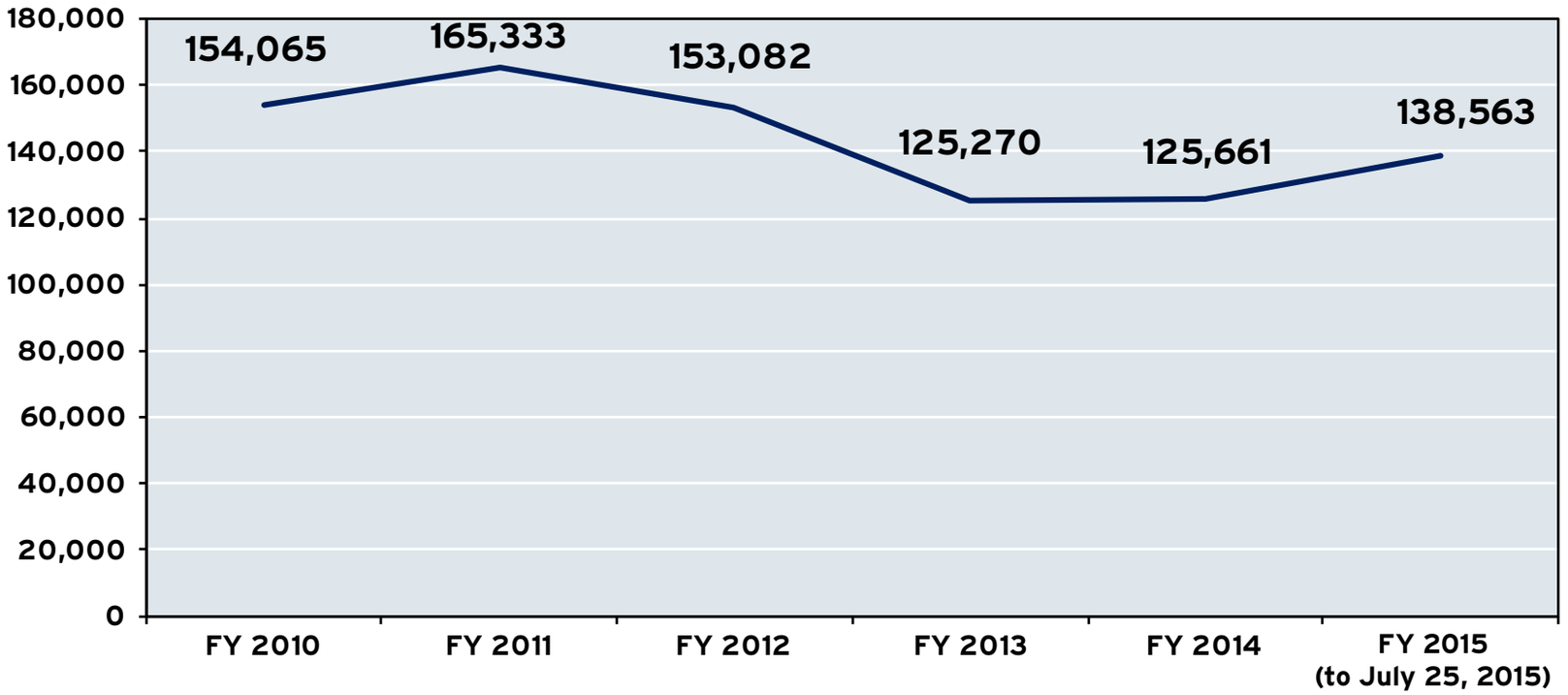
DOD CONTRACTS, GRANTS, LOANS AND OTHER ASSISTANCE AWARDED TO FIRMS AND ORGANIZATIONS IN VIRGINIA, FY 2010 TO FY 2015 TO DATE



Source: www.usaspending.gov

GRAPH 5

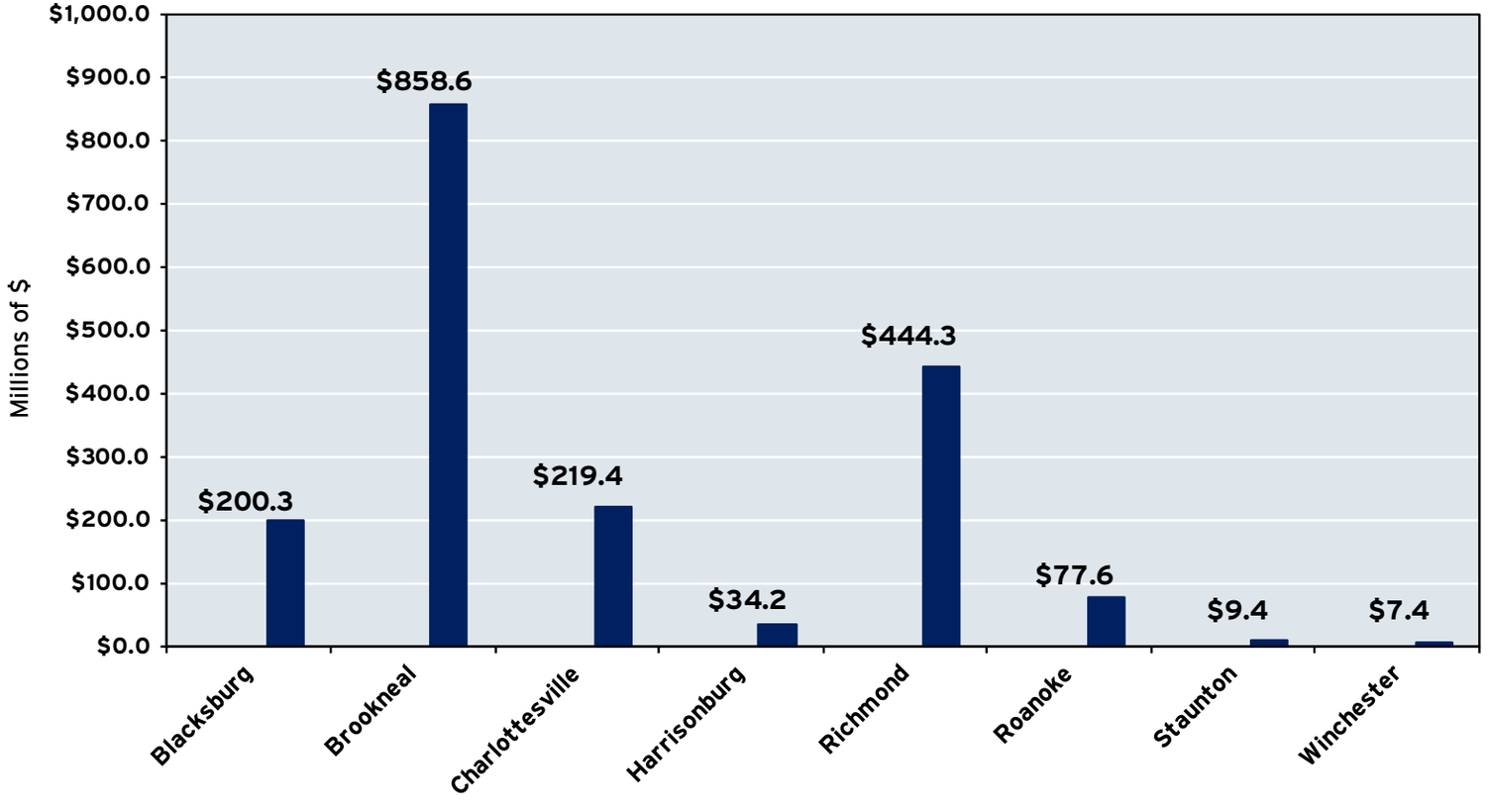
DOD CONTRACTUAL TRANSACTIONS IN VIRGINIA, FY 2010 TO FY 2015 TO DATE



Source: www.usaspending.gov

GRAPH 6

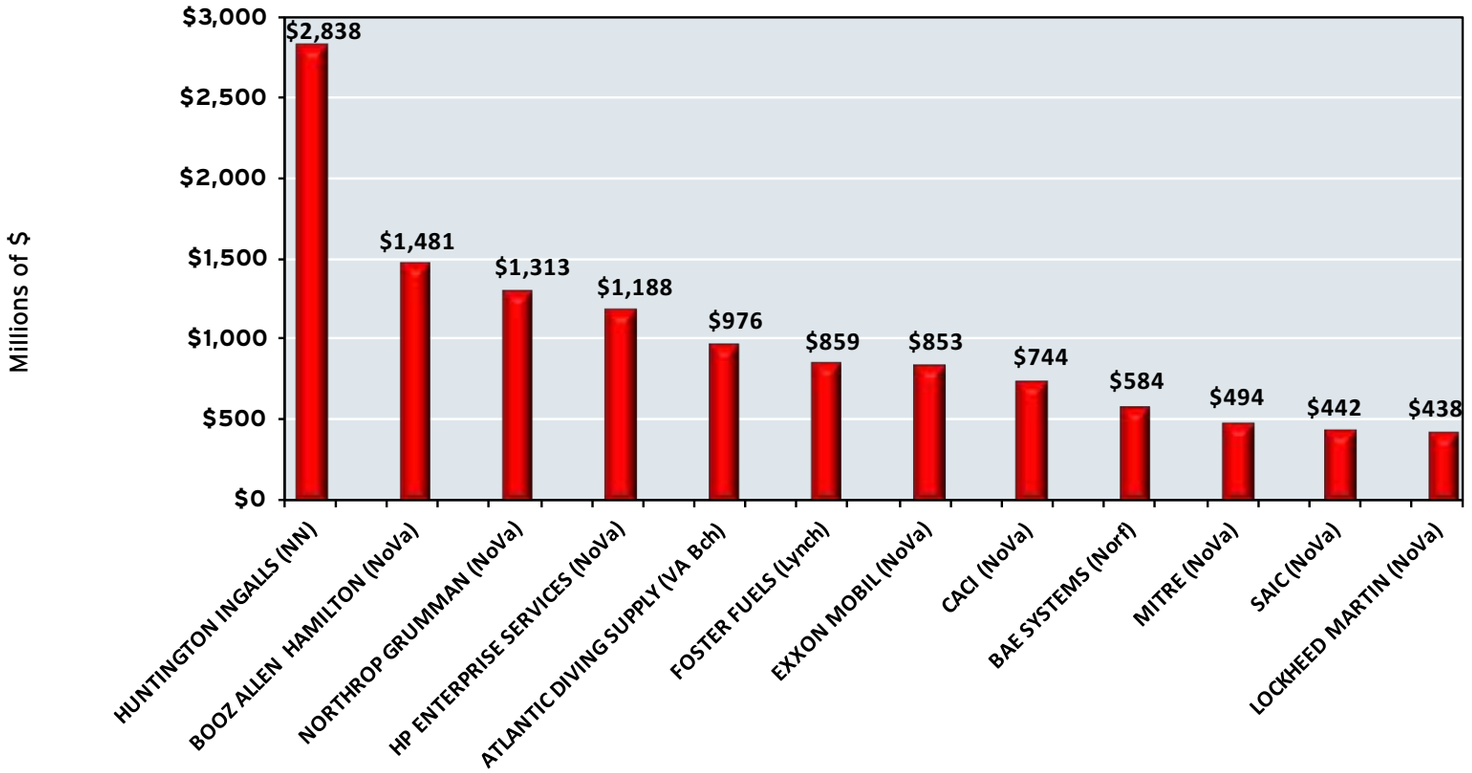
DOD CONTRACTS AWARDED TO RECIPIENT METROPOLITAN AREAS OUTSIDE OF NORTHERN VIRGINIA AND HAMPTON ROADS, FY 2015 TO DATE



Note: Brookneal is an incorporated city within Campbell County in the Lynchburg Metropolitan Area.
Source: www.usaspending.gov

GRAPH 7

LARGEST RECIPIENTS OF DOD CONTRACT AWARDS IN VIRGINIA, FY 2014



Source: www.usaspending.gov

Who Receives DOD Contracts In Virginia?

What companies and firms are actually receiving the Department of Defense contracts? Graph 7 supplies FY 2014 data to date for the Commonwealth. These numbers should be interpreted with care. While Huntington Ingalls easily is one of the largest DOD contract recipients, not all of the $2.838 billion of activity in FY 2015 actually relates to Newport News, the company's headquarters. Some of these dollars may well have been spent in other locations.

The money received by a firm headquartered in one city or county may be spent in another city or county, or even in another state. For example, approximately three-quarters of all employed individuals in Northern Virginia cross city or county lines when they commute to their jobs. Thus, DOD contractual spending tends to diffuse broadly across that region, and hence the information in Graph 7 should be regarded as guidance, not as gospel.

There are two other things to bear in mind. First, the federal government's fiscal year begins on Oct. 1 and therefore cannot be compared to a calendar year. Second, many widely publicized DOD contracts involve multiple years' activity. In June 2015, for example, Huntington Ingalls announced that it had received a $3.35 billion contract award for future work on the detail, design and construction of the nuclear-powered aircraft carrier John F. Kennedy (CVN 79). The company also received a $941 million contract for modifications on existing construction on the ship. Work on the 100,000-ton John F. Kennedy began in 2011; it is scheduled to join the fleet in 2017. The lesson is that DOD contract expenditures in a specific fiscal year sometimes by themselves do not provide an accurate picture of the influence of DOD expenditures on economic activity.

Assessing The Future For Defense Spending In Virginia

In addition to sequestration, the rising cost of military assets and increased DOD employee costs, there are other things for Virginians to worry about where the future of defense spending in the Commonwealth is concerned. These include: (1) the refocusing of U.S. defense attention toward the Pacific Rim as a consequence of rising consideration being given to China; (2) risk factors associated with homeporting so many carriers in a single location, such as Norfolk; (3) questions whether aircraft carriers really are the most cost-effective assets the United States can deploy in a variety of combustible, confined naval situations and unconventional warfare situations around the world; (4) shifting DOD expenditure emphasis away from assets such as aircraft carriers and submarines, and toward activities involving drones and cyber warfare; and (5) rising sea levels that could make Naval Base Norfolk a comparatively less attractive place for the U.S. Navy.

Of the five factors noted above, only Nos. 3 and 4 offer Virginia the possible prospect of increased defense spending, and those would occur because of defense spending shifting from Hampton Roads to Northern Virginia.

With respect to No. 1, the refocusing of attention toward the Pacific Rim might well translate into the loss of an aircraft carrier group to the Pacific. Each aircraft carrier group has an economic impact of approximately $800 million per year, so this is hardly a negligible consideration.

Where No. 2 – homeporting – is concerned, both military and political factors could cause the Navy to move aircraft carriers out of Norfolk to locations such as Jacksonville. It would be expensive for the Navy to replicate the public- and private-sector facilities currently available in Hampton Roads, but perceived needs for disbursal of defense assets might eventually override those costs.

Nos. 3 and 4 overlap and eventually reduce to this question: Will emerging emphases on nonconventional warfare (including cyber warfare) and changing international weaponry make aircraft carriers a less effective way for the DOD to spend its limited dollars? China, for example, now boasts that it will deploy a "carrier-killer" missile (Charles Clover, Financial Times, Sept. 3, 2015). One can conceive of circumstances where Northern Virginia's collection of private-sector and governmental talent might result in significantly increased DOD expenditures there and decreased DOD expenditures in Hampton Roads because of a de-emphasis on aircraft carriers and increased emphasis upon cyber warfare and related technology.

Rising sea levels, noted in No. 5, afflict the entire East Coast, but Hampton Roads more virulently than nearly all other regions because of its gradually sinking ground. At some point, the Navy might decide that it simply is too expensive to deal with these challenges in Hampton Roads and/or increase its investment in nonship assets as a result.

What's the bottom line on the future of defense spending in Virginia? It is clear that the outlook for future DOD spending in Hampton Roads is not particularly favorable. However, Hampton Roads' losses might translate into Northern Virginia's gain. Increased emphasis upon cyber warfare, drone technology and unconventional warfare could fit Northern Virginia's portfolio of strengths rather well. Northern Virginia already dominates DOD spending in Virginia and future developments may only increase that ascendancy.

Summing It Up

One prominent Virginian, upon reviewing the list of the largest Department of Defense contract recipients provided in the previous graphs, exclaimed, "I've never heard of half of these companies." He's not the only one. Defense contracting is very big business in the Commonwealth, but much of it occurs outside of public and media scrutiny.

While DOD activities in Virginia have been adversely affected by sequestration, our statewide numbers can be sensitive to the periodic awarding of large contracts to firms such as Foster Fuels or Huntington Ingalls. Year-to-year changes, therefore, sometimes can be deceptive.

Even so, the post-sequestration trend in DOD spending in Virginia cannot be mistaken – it is constant or declining in most categories. As a consequence, it seems likely that the roster of DOD employees will continue to decline in Virginia, at least partially because the prices of major defense assets, such as aircraft carriers, continue to increase significantly and personnel costs have accelerated upward. The DOD simply does not have sufficient funds to purchase these expensive assets, compensate its current and former employees, and maintain its current active-duty numbers. Unless counteracted by sequestration spending relief or other intervening events, this new reality will exercise a noticeable drag on the Commonwealth's economic growth for the remainder of this decade.

IF YOU CAN MAKE IT THERE … YOU CAN MAKE IT EVEN BETTER IN VIRGINIA

There's no place like home.

– "The Wizard of Oz" (1939)

New Yorkers love to boast about the Big Apple and its numerous attractions. And, even if Philly cheesesteak sandwiches were nonexistent, Philadelphians still would brag about the livability of their city. Unprompted, Atlanta's citizens tout that city as a great place to put down roots and earn a living.

Most readers of the State of the Commonwealth Report have visited each of these cities at some time and would agree that each is an alluring place. Nevertheless, the "real," price-adjusted spendable income of a typical Virginian is higher than that earned by the typical New Yorker, Philadelphian or Atlantan ... and, for that matter, more than the typical resident of Charlotte, Jacksonville, Miami, New Orleans and Savannah. **Simply put, once we adjust for differences in the cost of living, the spendable, "real" income of most Virginians exceeds that earned by typical residents of the cities along the East Coast to whom we often are frequently compared. Our dollars go further and our money has more purchasing power than that of our competitors. The moral to the story: If you're concerned about your standard of living, there's hardly any better place to live than Virginia.**

As we shall see, the typical Virginian earns a higher than national average income and also benefits from a cost of living that is below that of residents in selected cities up and down the East Coast. Consider an easy example: Median (50th percentile) household income in Lynchburg in 2013 was $47,444 and Lynchburg's cost-of-living index was right on the national average

at 100. Hence, the real spending power of a typical Lynchburg household in 2013 was $38,138/100 = $38,138. Meanwhile, in New York City (Manhattan), median household income was much higher ($69,659), but Gotham's cost-of-living index was 185.5, yielding a "real" income of $69,659/185.5 = $37,522. Therefore, economically speaking, the typical household in Lynchburg is slightly better off than the typical household in New York City.

Note that we're not attempting to compare the cultural amenities, populations, choices available or lifestyles of Lynchburg and New York City. We'll leave that task to others. Instead, our comparison is a simple, straightforward "real income" comparison: What is the ability of the median (50th percentile) household in each city to purchase goods and services? And, the answer is, the median household in Lynchburg has a greater command over goods and services than the median household in New York City.

Let's look at the evidence in greater detail.

Virginia Incomes Compared To Others

Table 1 reveals that the median (50th percentile) household income in Virginia was $62,666 in 2013, more than $10,000 above the U.S. median value of $52,250. Of course, not all Virginia communities enjoy this status. In general, the Commonwealth's rural and older urban areas report lower median household incomes. Northern Virginia communities and newer suburban areas throughout the state boast higher median household incomes. Loudoun and Prince William counties and the city of Chesapeake typify this circumstance.

A household's standard of living, however, depends significantly on the prices it must pay for the goods and services it chooses to purchase. Graph 1 discloses that major differences exist in the cost of living in Virginia cities and counties. Relative to a national average cost-of-living index of 100, Alexandria's cost-of-living index is 137.7 and Arlington County's is 135.3. One of the Commonwealth's lowest cost-of-living indexes is owned by Scott County at 96.7. More often than not, however, the cost-of-living index for a Virginia city or county exceeds 100, telling us that the cost of living in Virginia typically exceeds the national average.

Fortunately, Virginia's much higher than average incomes more than make up for the higher cost of living most of us face. Table 2 matches city/county cost-of-living indexes to each city/county median household income. Note that Loudoun County has the highest "real," cost-of-living-adjusted median household income in Virginia, followed by its neighbors Fairfax County, Arlington County and Prince William County. Indeed, there are many communities in Virginia that boast "real" median household incomes higher than the U.S. average. **Even after adjusting for the somewhat higher than national average cost of living in many Virginia communities, "real" median household income in the Commonwealth is more than $8,800 higher than the comparable number for the entire United States.**

Even more interesting, however, are the comparisons one can draw between Virginia and other cities along the East Coast. Table 3 adds median household incomes and cost-of-living indexes for Atlanta, Charlotte, Jacksonville, Miami, New Orleans, New York City, Philadelphia and Savannah. Graph 2 illustrates these numbers. The following facts emerge:

- **All eight of the comparable cities have "real" median household incomes below those of Virginia and the United States as a whole.**
- **"Real" median household income in Virginia in 2013 was more than $13,000 higher than the next highest East Coast comparable city, Charlotte.**
- **Even one of the Commonwealth's more rural counties, Scott, has a "real" annual median household income that is $2,000 higher than that of New York City (Manhattan) and $12,000 higher than that of Philadelphia.**
- **"Real" annual median household income in Loudoun County is an astonishing $71,000 higher than that in New York City (Manhattan).**
- **All of Virginia's older, more urbanized cities – Hampton, Newport News, Norfolk, Portsmouth, Richmond and Roanoke – have "real" annual median household incomes that are at least $7,000 more than the comparable number for Philadelphia.**

- **There is not a single city or county in Virginia that does not have a higher "real" annual median household income than Philadelphia.**

- **Virginia has a higher "real" annual median household income than any of the five individual boroughs of New York City (see box on Page 91). Virginia's "real" 2013 median household income exceeded that of the Bronx by more than $42,000 and that of Brooklyn by more than $37,000.**

TABLE 1

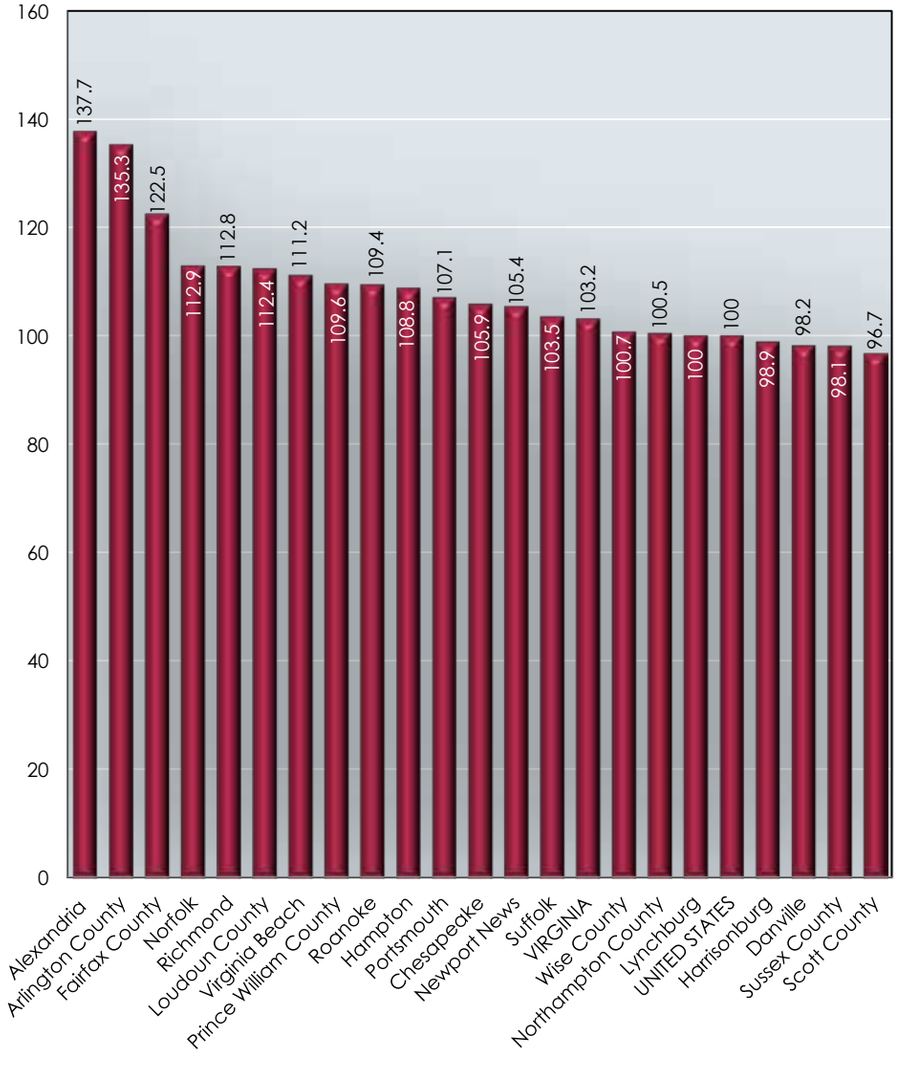
MONEY AND "REAL" MEDIAN HOUSEHOLD INCOMES: VIRGINIA CITIES AND COUNTIES, 2013

CITY OR COUNTY	MEDIAN HOUSEHOLD INCOME	NUMBER OF HOUSEHOLDS
Loudoun County	$122,238	106,997
Fairfax County	$110,292	389,908
Arlington County	$103,208	94,454
Prince William County	$ 98,071	132,442
Alexandria	$ 85,706	65,369
Chesapeake	$ 69,743	79,421
Suffolk	$ 66,085	30,492
Virginia Beach	$ 65,219	164,944
Commonwealth of Virginia	$ 62,666	3,055,863
United States	$ 52,250	116,291,033
Newport News	$ 51,027	69,211
Hampton	$ 50,705	52,511
Portsmouth	$ 46,166	36,690
Norfolk	$ 44,747	85,557
Richmond	$ 40,496	84,833
Sussex County	$ 39,635	3,704
Scott County	$ 38,355	9,692
Roanoke	$ 38,145	42,494
Lynchburg	$ 38,138	28,556
Harrisonburg	$ 38,048	15,701
Wise County	$ 36,218	15,406
Northampton County	$ 33,635	5,149
Danville	$ 30,786	18,659

Sources: Income and household numbers for cities and counties come from the U.S. Census Bureau, American Fact Finder, http://quickfacts.census.gov/qfd/states/51000.html; cost-of-living data come from The Council for Community and Economic Research, www.c2er.org.

GRAPH 1

COMPARING THE COST-OF-LIVING INDEXES OF SELECTED VIRGINIA CITIES AND COUNTIES TO THE VIRGINIA AND UNITED STATES AVERAGES



Source: The Council for Community and Economic Research, www.c2er.org

TABLE 2

MEDIAN MONEY AND "REAL" HOUSEHOLD INCOMES: VIRGINIA CITIES AND COUNTIES VS. VIRGINIA AND THE UNITED STATES, 2013

CITY OR COUNTY	MEDIAN HOUSEHOLD INCOME	COST-OF-LIVING INDEX	"REAL" MEDIAN HOUSEHOLD INCOME
Loudoun County	$122,238	112.4	$108,753
Fairfax County	$110,292	122.5	$ 90,034
Arlington County	$103,208	135.3	$ 76,281
Prince William County	$ 98,071	109.6	$ 89,481
Alexandria	$ 85,706	137.7	$ 62,241
Chesapeake	$ 69,743	105.9	$ 65,857
Suffolk	$ 66,085	103.5	$ 63,850
Virginia Beach	$ 65,219	111.2	$ 58,650
Virginia	$ 63,907	103.2	$ 61,925
United States	$ 53,046	100.0	$ 53,046
Newport News	$ 51,027	105.4	$ 48,413
Hampton	$ 50,705	108.8	$ 46,604
Portsmouth	$ 46,166	107.1	$ 43,106
Norfolk	$ 44,747	112.9	$ 39,634
Richmond	$ 40,496	112.8	$ 35,901
Sussex County	$ 39,635	98.1	$ 40,403
Scott County	$ 38,355	96.7	$ 39,664
Roanoke	$ 38,145	109.4	$ 34,867
Lynchburg	$ 38,138	100.0	$ 38,138
Harrisonburg	$ 38,048	98.9	$ 38,471
Wise County	$ 36,218	100.7	$ 35,966
Northampton County	$ 33,635	100.5	$ 33,468
Danville	$ 30,786	98.2	$ 31,350

Sources: Income and household numbers for cities and counties come from the U.S. Census Bureau, American Fact Finder, http://quickfacts.census.gov/qfd/states/51000.html, except for the Virginia cost-of-living number, which comes from The Wall Street Journal (Feb. 20, 2015), www.wsj.com. Other cost-of-living data come from The Council for Community and Economic Research, www.c2er.org.

TABLE 3

ACTUAL AND "REAL" MEDIAN HOUSEHOLD INCOMES: VIRGINIA CITIES AND COUNTIES VS. VIRGINIA AND THE UNITED STATES, 2013

CITY OR COUNTY	ACTUAL MEDIAN HOUSEHOLD INCOME	COST-OF-LIVING INDEX	"REAL," COST-OF-LIVING-ADJUSTED MEDIAN HOUSEHOLD INCOME
Loudoun County	$122,238	112.4	$108,753
Fairfax County	$110,292	122.5	$ 90,034
Prince William County	$ 98,071	109.6	$ 89,481
Arlington County	$103,208	135.3	$ 76,281
Chesapeake	$ 69,743	105.9	$ 65,857
Suffolk	$ 66,085	103.5	$ 63,850
Alexandria	$ 85,706	137.7	$ 62,241
Virginia	$ 63,907	103.2	$ 61,925
Virginia Beach	$ 65,219	111.2	$ 58,650
United States	$ 53,046	100	$ 53,046
Newport News	$ 51,027	105.4	$ 48,413
Charlotte	$ 52,375	108.6	$ 48,227
Hampton	$ 50,705	108.8	$ 46,604
Jacksonville	$ 47,557	105.2	$ 45,206
Portsmouth	$ 46,166	107.1	$ 43,106
Atlanta	$ 46,631	114.1	$ 40,869
Sussex County	$ 39,635	98.1	$ 40,403
Miami/Dade County	$ 43,100	107.0	$ 40,280
Scott County	$ 38,355	96.7	$ 39,664
Norfolk	$ 44,747	112.9	$ 39,634
Harrisonburg	$ 38,048	98.9	$ 38,471
Lynchburg	$ 38,138	100	$ 38,138
New York City (Manhattan)	$ 69,659	185.5	$ 37,552
Richmond	$ 40,496	112.8	$ 35,901

TABLE 3

ACTUAL AND "REAL" MEDIAN HOUSEHOLD INCOMES: VIRGINIA CITIES AND COUNTIES VS. VIRGINIA AND THE UNITED STATES, 2013

CITY OR COUNTY	ACTUAL MEDIAN HOUSEHOLD INCOME	COST-OF-LIVING INDEX	"REAL," COST-OF-LIVING-ADJUSTED MEDIAN HOUSEHOLD INCOME
Wise County	$ 36,128	100.7	$ 35,877
Roanoke	$ 38,145	109.4	$ 34,867
New Orleans	$ 37,146	107.1	$ 34,683
Philadelphia	$ 37,146	134.5	$ 27,618

Sources: Income and household numbers for cities and counties come from the U.S. Census Bureau, American Fact Finder, http://quickfacts.census.gov/qfd/states/51/51107.html, except for the Virginia cost-of-living number, which comes from The Wall Street Journal (Feb. 20, 2015), www.wsj.com. Other cost-of-living data come from The Council for Community and Economic Research, www.c2er.org.

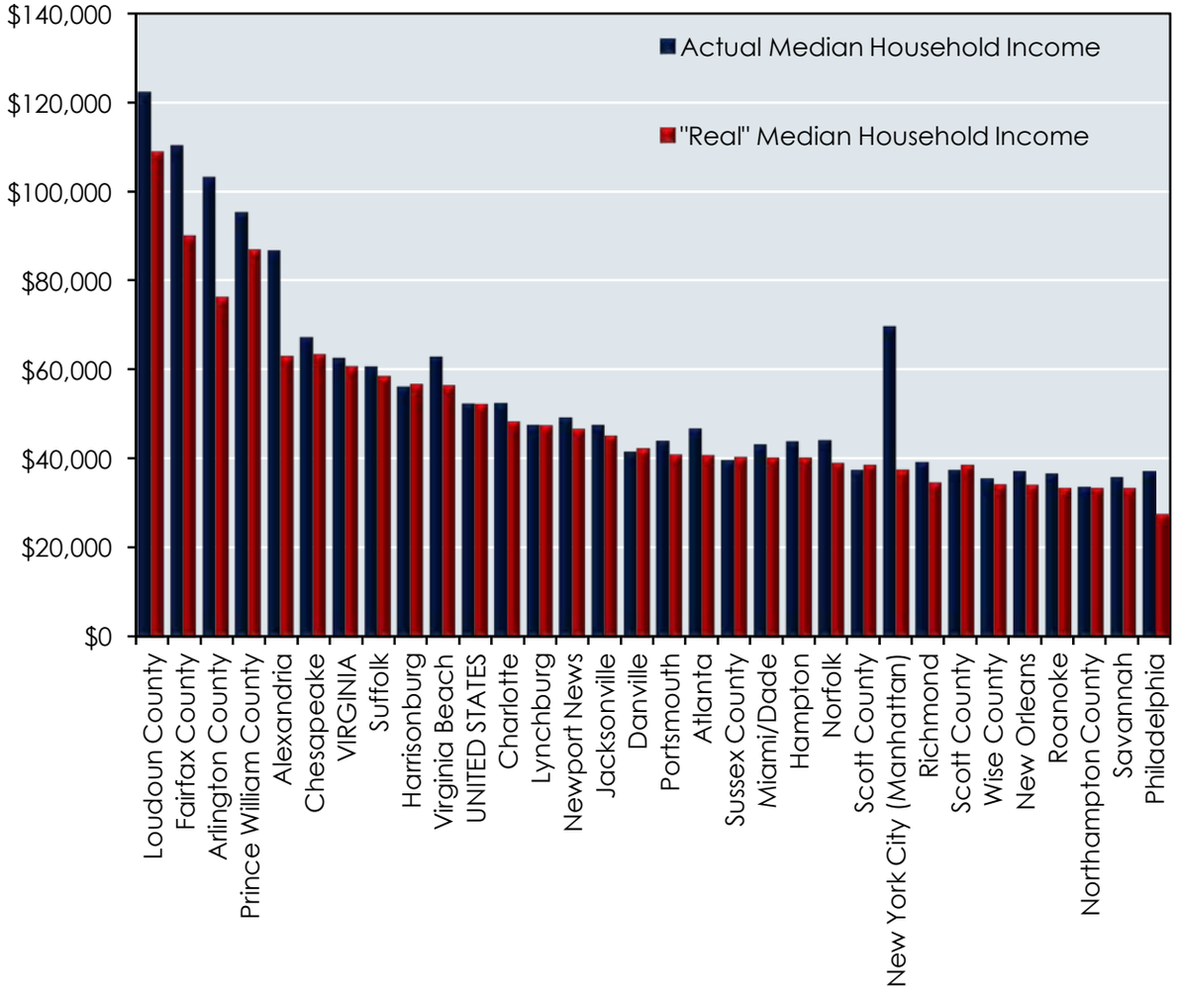
The other four boroughs of New York City differ from Manhattan. Here's how the five boroughs compare to each other and Virginia in terms of "real" median household incomes in 2013:

Borough	Median HH Income	COLI	"Real" Income
Virginia	$62,666	107.0	$60,722
Staten Island	$72,569	125.4	$57,870
Manhattan	$69,659	185.5	$37,552
Queens	$57,001	158.6	$35,940
Brooklyn	$46,085	188.3	$24,472
The Bronx	$34,388	176.8	$19,450

It is difficult to avoid concluding that the typical Virginia household enjoys a higher financial standard of living than the typical household in New York City.

GRAPH 2

MEDIAN ANNUAL HOUSEHOLD INCOME DEFLATED BY THE COST OF LIVING: VIRGINIA CITIES AND COUNTIES AND SELECTED EAST COAST CITIES, 2013



Sources: Income and household numbers for cities and counties come from the U.S. Census Bureau, American Fact Finder, http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml#none, except for the Virginia cost-of-living number, which comes from The Wall Street Journal (Feb. 20, 2015), www.wsj.com. Other cost-of-living data come from The Council for Community and Economic Research, www.c2er.org.

The Distribution Of Income

Much has been made recently about income inequality. Interestingly, not only does Virginia boast higher "real" median household incomes than its comparators, but also those incomes nearly always are distributed more equally among households in Virginia than elsewhere. Graph 3 reports Gini Coefficients for the Virginia cities and counties we have examined plus the selected eight East Coast comparable cities. The value of a Gini Coefficient can vary between 0 and 1. If a Gini Coefficient is 0, then income is distributed absolutely equally – everyone reports the same income. On the other hand, if a Gini Coefficient is 1, then only one rather fat cat captures all the income.

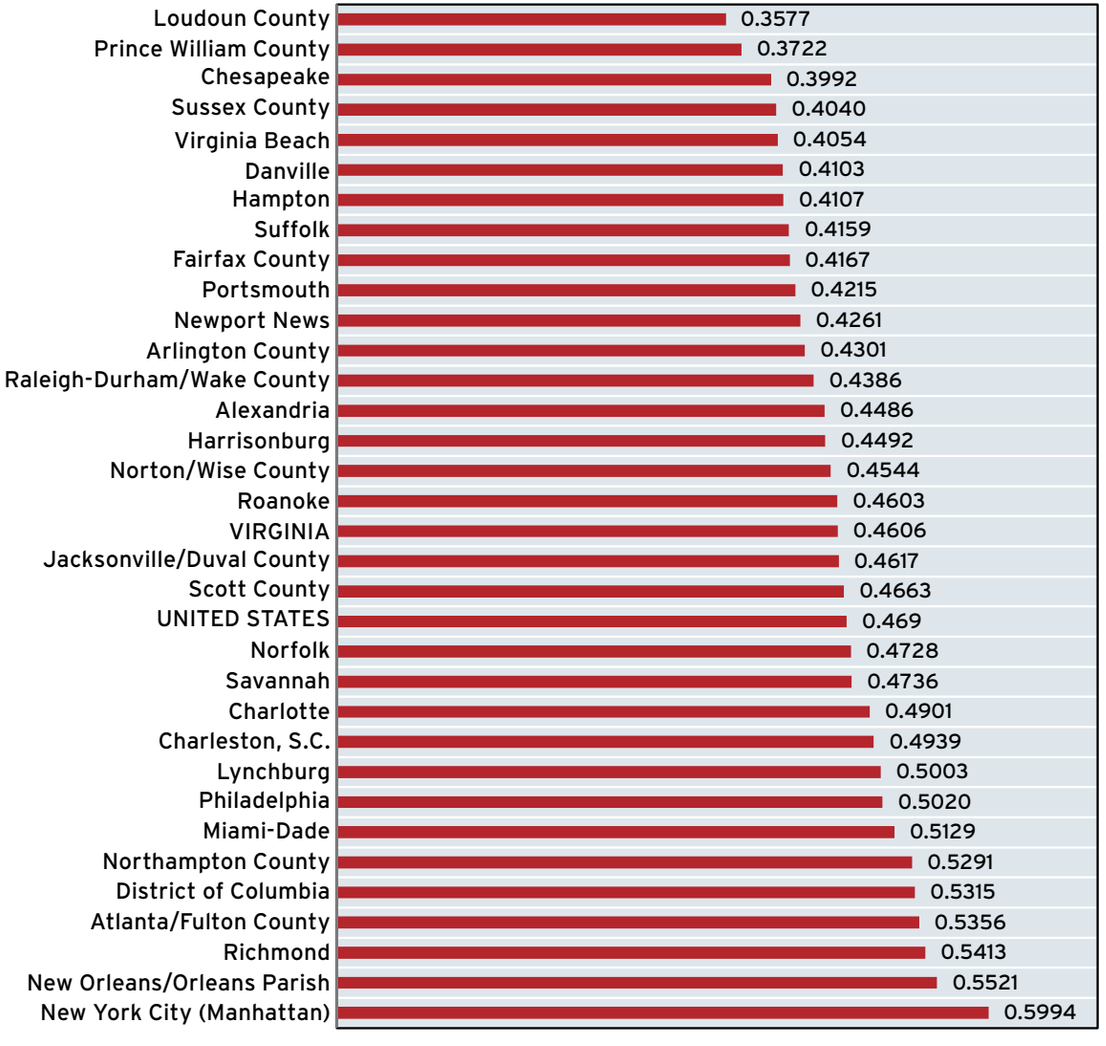
The Gini Coefficient for the entire United States in 2013 was .4690.[1] Virginia's Gini Coefficient was .4606. One can see in Graph 3 that each of the 10 comparable cities has a Gini Coefficient above that of the Commonwealth of Virginia. Only four of the 20 Virginia cities and counties have Gini Coefficients higher than that of the United States. Interestingly, Loudoun County, which boasts the highest "real" median household income in Virginia, also has the lowest Gini Coefficient in our sample. This suggests that nearly every household in Loudoun County is doing well.

The bottom line is that Virginia's higher "real" incomes usually are distributed more equally than those in the United States as a whole. Not only is the typical Virginia household better off than typical households located in other states up and down the East Coast, but also Virginia's prosperity is shared more equally than usually is the case in other states.

1 This is a 2010 number and comes from http://en.wikipedia.org/wiki/List_of_U.S._states_by_Gini_coefficient.

GRAPH 3

COMPARING INCOME INEQUALITY: GINI COEFFICIENTS FOR SELECTED VIRGINIA CITIES AND COUNTIES VS. OTHER EAST COAST CITIES



Source: https://mmj.vcu.edu/2013/12/20/income-inequality-data

Final Thoughts

The Commonwealth of Virginia has a proud and distinguished history. Not all are aware, however, of the scope of its economic achievements. **In fact, if the purchasing power of the typical household in Virginia is the measure of welfare, then Virginia households are better off than the typical household in any of the five boroughs of New York City, or the typical households in Atlanta, Charlotte, Jacksonville, New Orleans, Miami-Dade County, Philadelphia and Savannah.**[2] Further, incomes are more equally distributed in Virginia as a whole than in any of those cities.

While we face numerous challenges, this is a good time to be a Virginian.

2 Of course, were we to compare Virginia to some of the wealthy suburbs located outside of these eight East Coast locations, then this conclusion would be modified.

FLY AWAY WITH ME: A LOOK AT VIRGINIA'S AIRPORTS

All of the most exhilarating and depressing aspects of human existence can be found in America's airports.

– An airport director who wishes to remain anonymous

If the number of flights leaving Virginia's seven largest commercial airports on a monthly basis is any indication, then all but one of those airports are experiencing difficult times and four are encountering long-term problems that cannot be ignored.

Graph 1 helps explain why. On July 22, 2015, The Wall Street Journal published data for the 200 busiest commercial airports in the United States that compared the weekly average number of flights leaving these airports in July 2011 and July 2015. One can see that only Ronald Reagan Washington National (DCA) enjoyed an increase in the number of departing flights between July 2011 and July 2015. The other six largest commercial airports in Virginia recorded declines in outbound flights that exceeded the national average decline of 7 percent.

Why is this occurring? There are at least five reasons. First, the Great Recession had a negative influence on air travel, and regions such as Hampton Roads have yet to recover all of the jobs they lost in that recession.

Second, Virginia is highly dependent upon (some might say addicted to) federal spending, especially defense spending. A combination of sequestration and repositioning of assets has diminished defense spending in Virginia.

Third, nearly all of the commercial airlines in the United States have returned to profitability. One tool they have utilized to do so has been a reduction in capacity – that is, reducing the number of their outbound flights. This

has increased their capacity utilization and made them more profitable enterprises.

Fourth, in some cases, decisions outside the control of airport managers have altered the competitive arena. In the case of the Washington, D.C., market, for example, Congress has mandated that more flights depart from Reagan National (DCA), effectively reducing the number departing from Dulles International (IAD). We will have more to say about this below.

Fifth, airports outside of Virginia, including Baltimore-Washington International (BWI), have sucked away passengers, often by means of carriers such as price-competitive Southwest Airlines. BWI now is larger than Dulles when measured either by the number of departing flights or the number of departing passengers. This was not true in 2011.

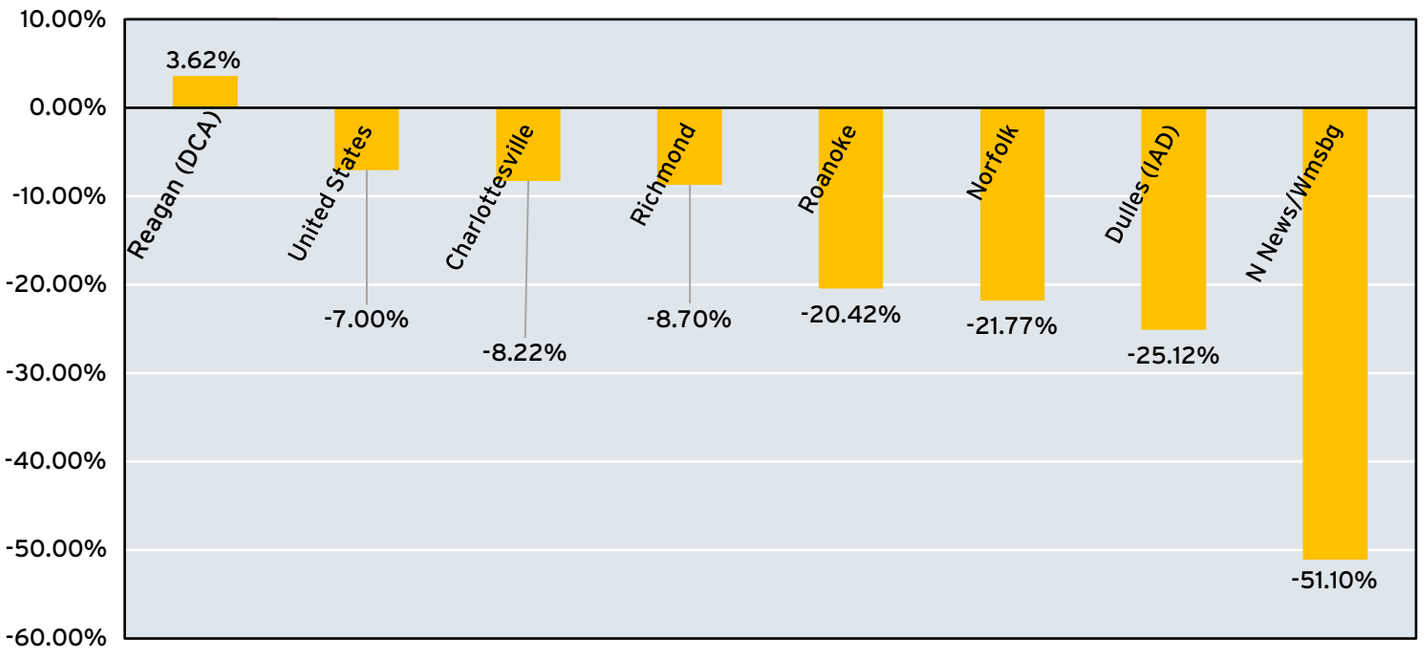
All things considered, the plight of our commercial airports is not a good news story for the Commonwealth because airports act both as a thermometer of economic activity (more flights and passengers reflect expanding economic activity) and as a tool of economic development (good air connections are vitally important to a wide range of firms and organizations). Hence, this is a situation worthy of additional exploration.

Seats vs. Fares: A Sept. 11, 2015, Wall Street Journal article reported these changes in seats and fares at Virginia's four largest commercial airports and nationwide between 2007 and 2014:

	Change in Seats	Change in Fares
Dulles	-28.6%	+10.4%
Norfolk	-27.9%	+ 6.5%
Reagan	+ 1.6%	- 4.8%
Richmond	-12.9%	+ 7.8%
Largest 10 Airports, U.S.	- 1.6%	+ 0.9%
Airports Ranked 11-100 in Size	-14.5%	+ 6.4%

GRAPH 1

PERCENT CHANGES IN THE NUMBER OF WEEKLY FLIGHTS LEAVING VIRGINIA'S SEVEN LARGEST COMMERCIAL AIRPORTS, JULY 2011 VERSUS JULY 2015



Source: Scott McCartney, "The Cities That Have Lost the Most Flights," The Wall Street Journal, 265 (July 22, 2015), www.wsj.com/articles/the-cities-that-have-lost-the-most-flights-1437585049

Classifying Virginia's Airports

Airports in Virginia (see Figure 1) are classified in the Virginia Air Transportation System Plan in one of five ways:

- *Commercial Service* – Defined by the Federal Aviation Administration (FAA) as airports with scheduled air carrier or regional/commuter services and enplaning at least 10,000 passengers per year
- *Reliever* – Located in metropolitan areas and serving to reduce congestion in nearby commercial service airports
- *General Aviation Regional* – Serving large geographic areas with business and recreational services and amenities and are often the only airport facility in the region
- *General Aviation Community* – Serving business and recreational users over a more limited market area than the regional airports
- *Local Service* – Providing limited general aviation services at a low level of activity.

Virginia has numerous facilities that fall under each of these classifications. Figure 1 shows where these airports are located.

Virginia Aviation: Economic Impact

How important are these airports to Virginia's economy? The most recent economic impact study of Commonwealth airports was published in August 2011 by the Virginia Department of Aviation ("Virginia Airport System Economic Impact Study"). The study asserted that the state's airports:

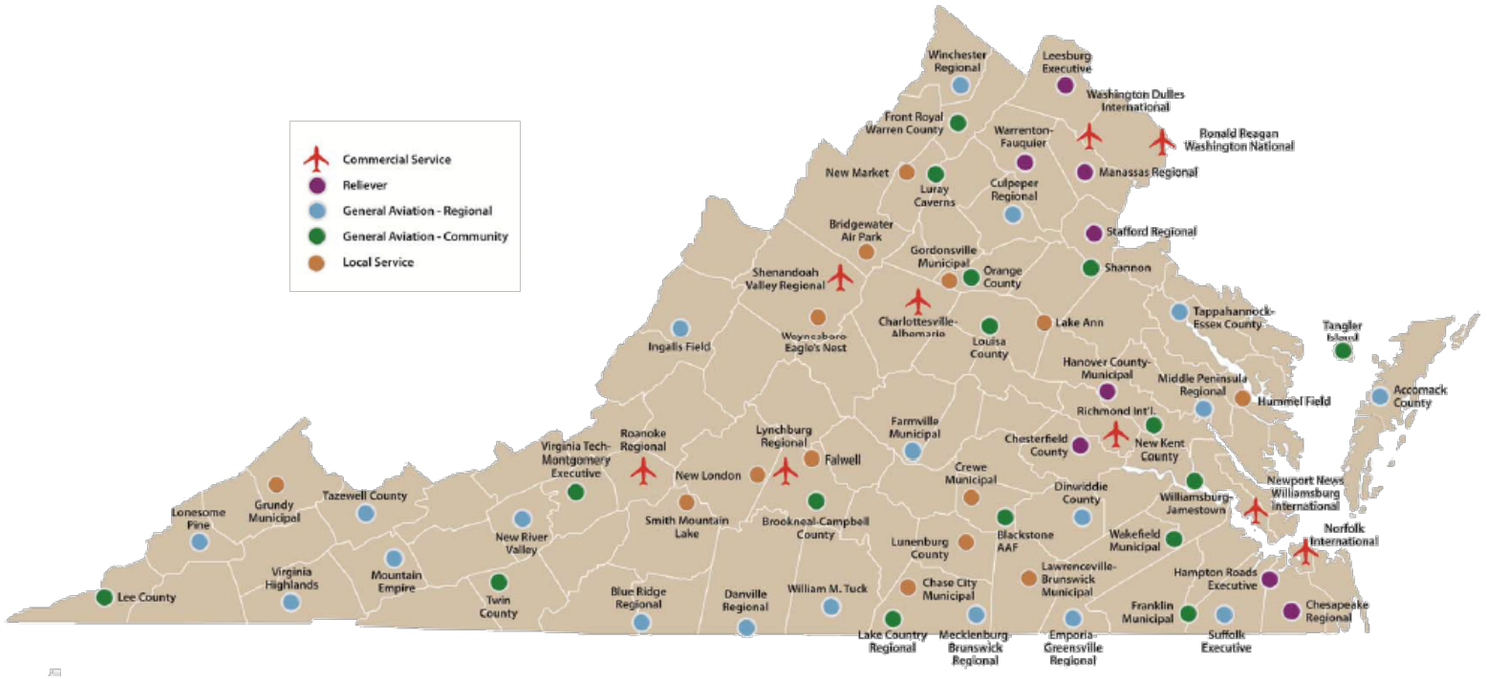
- Contribute $28.8 billion in economic activity to the Virginia economy, or about 4.4 percent of the state's total economic output;
- Create and sustain approximately 259,000 jobs, or about 5.5 percent of total jobs in Virginia;
- Produce $11.1 billion in payroll; and
- Generate an additional $3.48 in economic activity for every $1 spent at Virginia airports.

The study also found that:

- More than 69,000 people each day board commercial aircraft in Virginia;
- Approximately 23,000 visitors arrive in the state each day by commercial airline or general aviation aircraft;
- Over 6,000 aircraft take off from and land at Virginia airports each day; and
- Each job at Virginia's airports supports an additional seven jobs in the state.

FIGURE 1

AIRPORTS IN VIRGINIA



Source: Virginia Department of Aviation

The Changing Airport Environment In Virginia

Anyone who flies knows the word "turbulence." The entire airline industry has encountered the equivalent of a period of adverse weather. In turn, these struggles have affected the airports that handle commercial aircraft – those airplanes carrying passengers and cargo on a for-profit basis.

Table 1, which reports calendar year enplanements (passenger outbound boardings) at Virginia's nine busiest commercial airports, illustrates the nature of this adversity. From 2011 to 2013, four of Virginia's five largest airports lost passenger volume, and in the case of Roanoke, the loss approached 40 percent. Passenger losses at Richmond and Norfolk were minimal during this time period, but Richmond's passenger volume was off 14.4 percent since 2007, while Norfolk was down 13.6 percent during the same time period. Each entry in Table 1 that is colored red represents a year in which enplanements declined. There is plenty of red in Table 1.

The major exception is Reagan National, whose traffic increased every year since 2009 and grew another 4 percent between 2012 and 2013. On a much smaller scale, Charlottesville also enjoyed increases. However, the greatest challenges appeared at the Commonwealth's busiest airport, Dulles International. Since 2005, annual enplanements at Dulles declined by 2,461,509 (18.9 percent). Between 2011 and 2013, for example, 473,390 fewer individuals boarded planes at Dulles – a 4.3 percent decline in its volume. Graph 2 illustrates this trend.

Why have so many of Virginia's airports been struggling at a time when national air traffic has been increasing? **By 2013, total annual enplanements in Virginia had yet to recover to their 2008 level. Meanwhile, U.S. enplanements rose 3.1 percent between March 2014 and March 2015, according to the U.S. Department of Transportation's Bureau of Transportation Statistics.** Is the mediocre performance of Virginia's airports simply a matter of reductions in federally financed travel, especially in defense-oriented regions such as Hampton Roads and Northern Virginia? Is the Great Recession to blame? Has increased reliance on the Internet reduced the need to travel and/or to send packages? Are other factors at work? Providing answers to these questions is the focus of this chapter.

TABLE 1

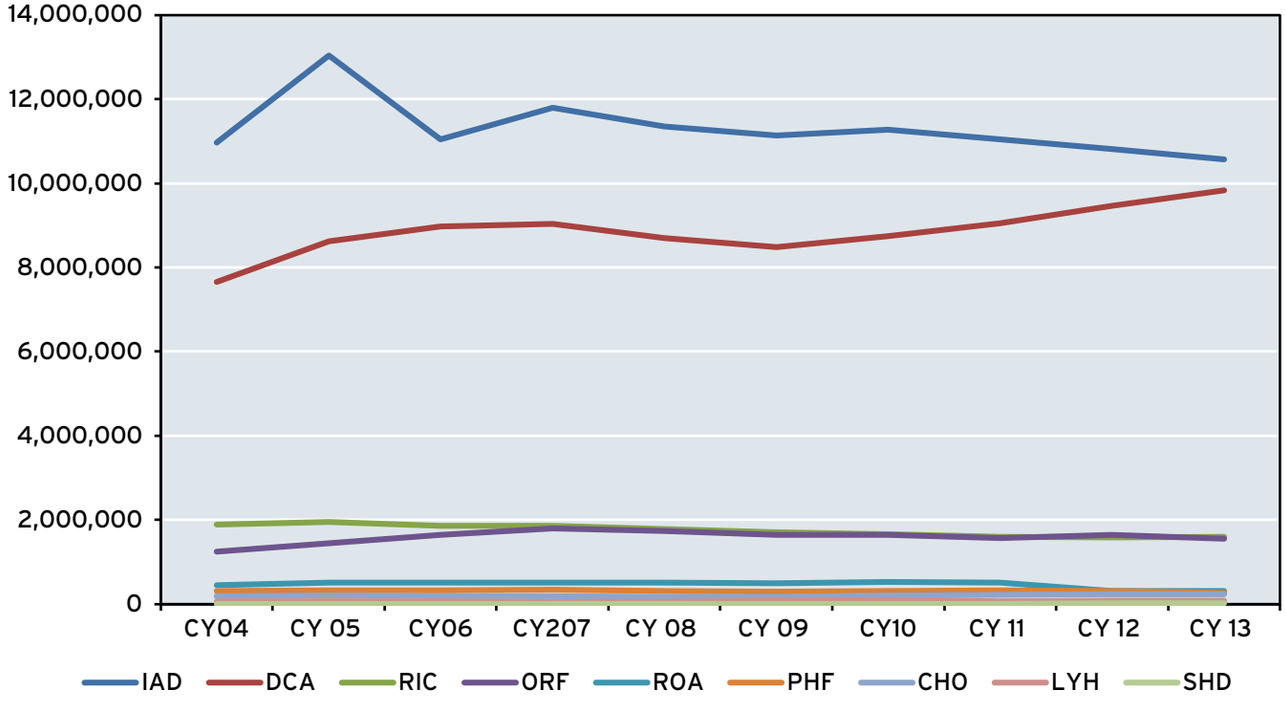
ENPLANEMENTS BY CALENDAR YEAR, VIRGINIA COMMERCIAL AIRPORTS

ID	CITY	AIRPORT NAME	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004
IAD	Dulles	Washington Dulles International	10,570,993	10,816,216	11,044,383	11,276,481	11,132,098	11,348,775	11,789,441	11,045,217	13,032,502	10,961,614
DCA	Arlington	Ronald Reagan Washington National	9,838,034	9,462,231	9,053,004	8,736,804	8,490,288	8,704,466	9,038,174	8,973,410	8,623,907	7,661,532
RIC	Highland Springs	Richmond International	1,597,913	1,582,565	1,606,695	1,663,294	1,701,246	1,786,594	1,867,307	1,862,325	1,953,003	1,895,472
ORF	Norfolk	Norfolk International	1,560,754	1,651,440	1,571,155	1,651,131	1,649,284	1,733,668	1,805,992	1,644,419	1,452,066	1,251,406
ROA	Roanoke	Roanoke Regional	310,295	315,877	516,789	519,906	498,205	504,292	513,381	513,367	514,361	451,113
PHF	Newport News	Newport News/ Williamsburg International	263,964	314,139	320,961	316,478	297,588	315,293	348,634	326,214	326,202	306,896
CHO	Charlottesville-Albemarle	Charlottesville Albemarle	230,699	230,097	216,957	197,776	180,462	169,843	187,078	185,891	198,133	185,531
LYH	Timberlake	Lynchburg Regional	77,795	79,889	73,821	93,772	86,366	55,307	55,785	60,737	65,895	61,441
SHD	Weyers Cave	Shenandoah Valley Regional	19,730	15,179	12,033	10,408	8,364	7,746	4,907	5,375	5,307	7,709
Annual Totals			24,480,177	24,467,633	24,415,798	24,466,050	24,043,901	24,625,984	25,610,699	24,616,955	26,171,376	22,782,714

* Red entries indicate a reduction from the previous year.
Source: http://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/

GRAPH 2

ENPLANEMENTS BY VIRGINIA COMMERCIAL AIRPORT LOCATION, 2004-2013



Source: http://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/

Some Background

The Massachusetts Institute of Technology (MIT) Global Airline Industry Program gathers and analyzes information on the global airline industry. The program describes the airline industry in this country as follows:

> *The U.S. commercial airline industry is one of the most diverse, dynamic and perplexing in the world. It is fast-evolving, labor intensive, capital intensive, hyper-competitive and highly susceptible to the ebb and flow of business cycles as well as being among the most regulated of deregulated businesses.*

A brief review of the history of the airline industry, as the MIT experts have described it, can aid in an understanding of what is happening today. The past couple of decades have been particularly volatile for the industry in Virginia and in this country, and significant changes have come about as a result.

During much of the early years of the airline industry, the focus was on technological changes. Jet airplanes for commercial use were introduced in the 1950s, followed by the introduction of the wide-body jumbo jets in the 1970s. During this time the industry was heavily regulated. Attention was given more to technological advances and government policy than to profitability and competition.

With deregulation of the industry in 1978, attention shifted to cost efficiency, operating profitability and competition. From 1990 to 1993, the world airline industry posted four consecutive years of losses totaling over $22 billion as a result of the Gulf War and subsequent economic recession. A return to profitability from 1995 to 1999 resulted in net profits of over $25 billion. The industry experienced a financial crisis between 2000 and 2005, when cumulative net losses reached $40 billion. An economic downturn and the terrorist attacks of Sept. 11 contributed to another round of losses, as did industry labor costs, rising fuel prices, a decline in business travel and an increase in the number of low-cost carriers.

The MIT historical account of the industry notes that between 2001 and 2005, four (US Airways, United, Delta and Northwest) of the six largest airline carriers went into Chapter 11 bankruptcy. The restructuring that resulted led to downsizing, operating-cost cuts and improved productivity. American and Continental accomplished many of the same changes just relying upon the threat of bankruptcy. During this period, more than 100,000 jobs were lost in the industry. While a doubling of fuel costs between 2003 and 2005 cut into the airlines' cost-reduction efforts, the general decline in energy prices that has occurred recently has actually benefited airlines. This is largely because the airlines do not appear to have passed on the fuel-cost savings to consumers in the form of lower ticket prices.[1]

The global financial crisis of 2007-08 and the Great Recession in the United States created further economic upheaval in the airline industry. With declining demand and higher fuel prices, airlines responded with a reduction in scheduled flights, many of which have yet to be restored. The recession provided an incentive for airlines to rid themselves of unprofitable flights. **An MIT study ("Trends and Market Forces Shaping Small Community Air Service in the United States"), released in May 2013, found that the nation's 29 largest airports lost 8.8 percent of their scheduled flights from 2007 to 2012. Smaller airports were hit harder and lost 21.3 percent of their flights.** Virginia's airports, both large and small, typically were among those experiencing reductions in flights.

The U.S. government's General Accounting Office (GAO) has demonstrated that air service to small communities has declined since 2007 due, in part, to higher fuel costs and declining population. For some smaller airports, this has been compounded by having larger airports within driving distance**. However, the GAO found that airports of all sizes have lost capacity in terms of the number of available seats. Smaller airport hubs and feeder airports proportionately have lost more service than large airports**.[2] This accurately describes all of Virginia's airports, except for Dulles International and Reagan National.

Not to be overlooked is the impact of increased airline profitability on Virginia's airports. Large airlines such as Delta have returned to profitability. An important contributing factor has been their elimination

1 Jad Mouawad and Nicola Clark, "Slide in Fuel Costs Lifts Profits for Airlines, but Fares Won't Fall," The New York Times, Dec. 10, 2014. http://www.nytimes.com/2014/12/11/business/slide-in-fuel-costs-lifts-profits-for-airlines-but-fares-wont-fall.html.

2 GAO: Status of Air Service to Small Communities and the Federal Programs Involved, 2014. http://www.gao.gov/assets/670/662831.pdf.

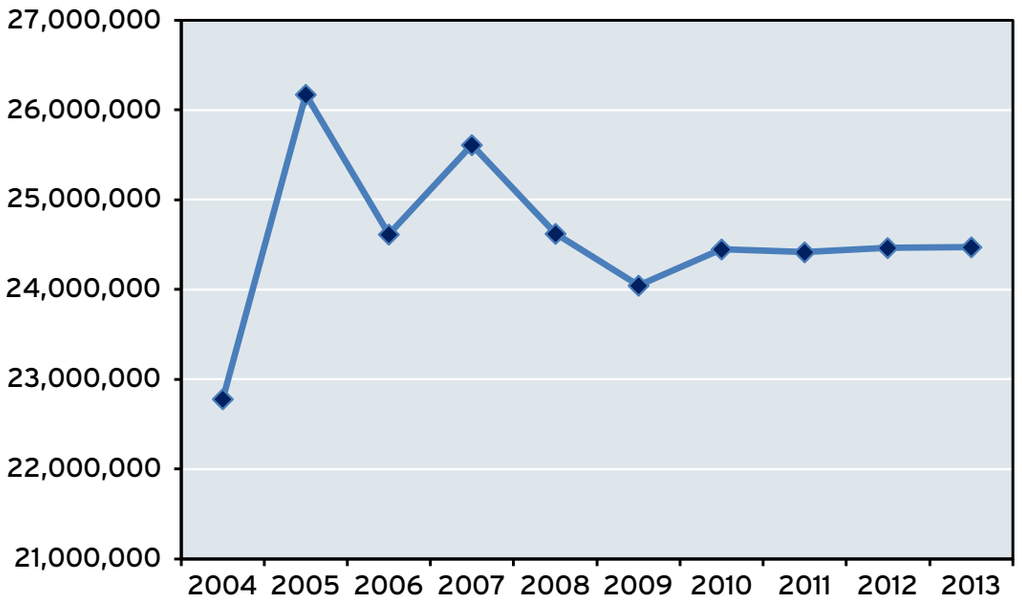
of low-traffic-volume flights as well as diminishing the size of airplanes that serve low-volume routes. **Fewer seats translate eventually to diminished traffic.**

Further, while the real price of air travel per passenger mile has declined over time, recent years have witnessed an upsurge in demand-sensitive pricing designed to extract the maximum revenue from prospective passengers, often based upon the time or manner in which they purchase tickets. On top of this, most airlines now assess fees for sundry matters, including those for baggage, seat location and even an extra six inches of legroom. The net effect at the margin has been an increase in the cost of air travel to many passengers, or an increase in the level of aggravation associated with air travel.

Taken together, these pricing developments cannot have had a positive effect on air travel volumes, though this does not explain why enplanements in Virginia should trail national enplanements by such a wide margin. Graph 3 demonstrates that enplanements at all of Virginia's airports combined have hardly changed at all since 2010.

GRAPH 3

TOTAL ANNUAL ENPLANEMENTS AT VIRGINIA COMMERCIAL AIRPORTS, 2004-2013



Source: http://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/categories/

The Matter Of Air Cargo

Airplanes can carry cargo as well as passengers, but less so than in former years. Total U.S. air cargo by weight was down 4.4 percent in 2013 compared to 2007 (Bureau of Transportation Statistics, U.S. Department of Transportation).

The first air flight carrying cargo occurred in November 1910 in Ohio between Dayton and Columbus, and involved 200 pounds of silk destined for a store opening. The pillar of air cargo today is the parcels being delivered by firms such as FedEx, DHL, TNT and UPS, but a wide variety of other items, often involving technology, also are carried by air.

Though at least five Virginia airports (Dulles International, Reagan National, Norfolk, Richmond and Roanoke) handle respectable amounts of cargo, Dulles historically has been the Commonwealth's leader in this regard. Nevertheless, its cargo volumes have declined dramatically since the turn of the century. This reflects a national trend, although Dulles' cargo decline has been more pronounced. Graph 4 illustrates this downward trend, which appears to have bottomed out for mail cargo.

A 2013 George Mason University study[3] of air cargo at Dulles International noted that:

> *There are two distinct methods for moving air cargo: air freighter and belly cargo. Air freighters are airplanes that only carry cargo, while belly cargo is carried in the storage area of passenger flights. Air freighter operations fall into two distinct categories: integrators and cargo airlines. Integrators, which include FedEx, UPS, and DHL, provide "door to door service for shippers or importers, usually providing their own road transport ... handling, transit warehousing facilities, often through an airport terminal dedicated to their use, and aircraft. ... All-cargo airlines only provide service between airports, and not the supplementary surface transportation.*

In fact, the volume of air cargo inside the United States has been in general decline over the past decade, at least partially due to increasing use of the Internet and lighter-weight manufacturing techniques, though total global air cargo finally began to increase in 2014. The aforementioned 2013 study of air cargo operations at Dulles conducted by GMU ("An Assessment of Factors Affecting Air Cargo Operations at Washington Dulles International Airport") concluded that the general decline in reliance upon air cargo, transportation problems around that airport, tightened cargo security requirements, the focus of firms such as FedEx on airports such as Memphis, and a decline in the number of international flights were the primary reasons why cargo activity at Dulles has plummeted.

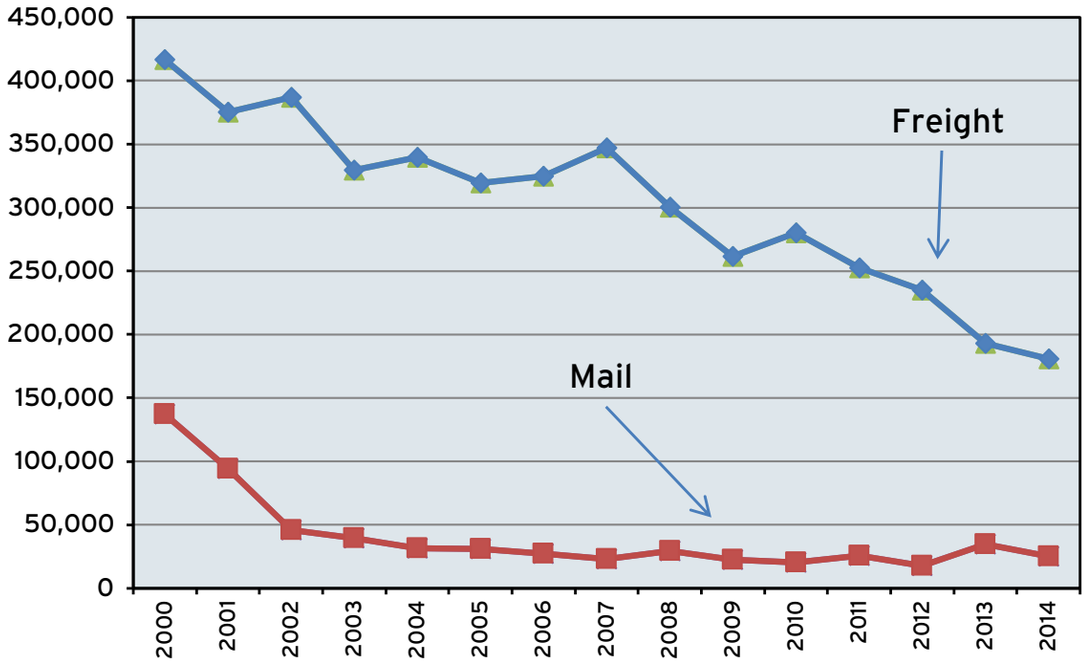
These are among the reasons why the outlook for future air cargo activity in Virginia is mixed at best, and it does not seem likely that Dulles International (which ranked 21st largest nationally in the cargo area in 2012) is likely to be able to restore its former position. Indeed, Reagan National may be more favorably situated than Dulles because it can be reached more quickly by prospective private- and public-sector Washington, D.C., shippers.

An airport "slot" confers the right to an airline either to land or take off an airplane at a specific time and place. No slot equates to no ability to land or take off, and therefore no ability to conduct business. Slots are scarce and often have significant economic value. However, if an airline doesn't use the slots it controls, it can lose them. Continental Airlines is said to have paid $209 million for four pairs of slots at London's Heathrow Airport in 2008 (Kevin Done, Financial Times, March 3, 2008).

3 http://cra.gmu.edu/pdfs/CRA2013-6_DVersel.pdf.

GRAPH 4

FREIGHT AND MAIL CARGO AT DULLES INTERNATIONAL AIRPORT, 2000-2014 (000S OF POUNDS)



Source: www.metwashairports.com/dulles/653.htm

The Special Cases: Dulles International And Reagan Washington National

On June 7, 1987, Dulles International (IAD) and Reagan National (DCA) airports were transferred from Federal Aviation Administration (FAA) direct responsibility to the Metropolitan Washington Airports Authority (MWAA) under a 50-year lease authorized by the Metropolitan Washington Airports Act of 1986, Title VI of Public Law 99-500. All property was transferred to the Airports Authority, though the federal government holds title to the lease. Prior to the transfer, the airports were owned and operated by the FAA.

The arrangement of Reagan National and Dulles International under MWAA is distinctive. Because Reagan National has limited capacity, it is governed by hourly flight limitations, referred to as "slot rules," and is subject to restrictions on the number of flights that can leave it for destinations beyond a 1,250-mile radius – the "perimeter rule." Congress established these regulations to create a complementary system of airports, with Reagan National being primarily responsible for short-haul domestic flights and Dulles International handling longer and international flights. However, as noted below, subsequent changes in these rules by Congress have had visibly adverse impacts on activities at Dulles (see Graph 5).

The MWAA is a big operation and employs more than 1,400 people in a structure that includes central administration, airports management and operations, and police and fire departments. In addition to operating Reagan National and Dulles International, it is responsible for capital improvements at both airports. It is not taxpayer-funded, but is self-supporting, using aircraft landing fees, rents and revenues from concessions to fund its operating expenses. Capital improvements are funded by bonds issued by the MWAA, federal and state Airport Improvement Program funds and passenger facility charges.

Things became more complicated on Nov. 1, 2008, when the Commonwealth transferred the daily operation, maintenance and control of the Dulles Toll Road to MWAA. Tolls are collected on that road and are used for operation, maintenance and improvements in the Dulles corridor, as well as to fund a portion of the Metrorail construction in the corridor. It is not yet clear that MWAA is the ideal administrative overseer for the toll road, but there is no visible movement to change the current arrangement.

The MWAA is currently managing the project to extend Metrorail from the existing Orange Line to Dulles International and Loudoun County. Construction commenced on March 10, 2009. Phase I to Wiehle Avenue in Reston has been completed and Phase II to Dulles International and into Loudoun County is expected to be completed in 2019.

The Dulles Corridor Metrorail Project is funded by the MWAA, with additional contributions from Fairfax and Loudoun counties, the Commonwealth of Virginia and the federal government, as well as from revenue generated by the Dulles Toll Road.

A salient question is whether the extension of the Metrorail to Dulles will increase passenger traffic at the airport. Clearly, that is the hope of Metrorail supporters, but it remains to be seen whether this will materialize. Evidence from other metropolitan areas is mixed in this regard.

Reagan National Airport (DCA) is the 26th-busiest airport in North America in terms of passenger traffic. Major renovations in 1997 at Reagan National resulted in the opening of Terminal B/C, providing more efficient passenger facilities that are convenient to the Metrorail system and parking garages. According to the MWAA's 2014 Comprehensive Annual Financial Report, enplanements for the 12 months of 2014 were a record high of 10.5 million, the fifth consecutive year of growth. Enplanements grew to 10.2 million in 2013 from 9.9 million in 2012. Reagan National's passenger traffic increases have been largely due to increased activity by Southwest, JetBlue and Virgin America airlines. A considerable portion of this activity has been diverted from Dulles International.

According to MWAA, an important reason for passenger traffic growth at Reagan National has been the FAA Reauthorization Act of 2012, which allowed each of four incumbent airlines to convert up to eight flight slots to "beyond-perimeter" flights (an exception to the federal law limiting flights to nonstop distances of 1,250 miles or less). These beyond-perimeter flights

typically involve larger aircraft that carry more passengers, and have had a negative effect on Dulles passenger traffic.

Additionally, a merger between US Airways and American Airlines was consummated in October 2015. A portion of this agreement required that flight slots be transferred by the new merged airline to Southwest, JetBlue and Virgin America. These airlines soon expanded their activities, which have been concentrated at Reagan National.

Plus, several technological improvements have been implemented, including Airport Surface Detection Equipment - Model X, Optimized Profile Descent, Performance Based Navigation (PBN) procedures and basic rerouting. In sum, Reagan National now is a more efficient, passenger-friendly operation than in the past.

Dulles International Airport is slightly busier than Reagan National and is the 24th most active airport in North America in terms of passenger traffic. Graph 5 provides another picture of the overall decline in enplanements at Dulles International compared to Reagan National, while Graph 6 subdivides the Dulles passenger traffic between domestic and international. One can see that international traffic at Dulles actually has been increasing in recent years, but that increase has been overshadowed the significant decay in domestic traffic.

As we already have seen, Congressional actions favoring Reagan National over Dulles International arguably may be the most important reason why Dulles passenger traffic has deteriorated. WAMU-FM reported in April 2015 that over time, Congress has added 52 slots – each slot represents the authorization for one takeoff or landing – at Reagan National and further that it has supplied Reagan with 40 slot exemptions to the perimeter rule. U.S. Sen. Tim Kaine, D-Va., has urged Congress to halt its practice of adding flights to Reagan National. He believes (correctly, we conclude) that this has had a negative impact upon traffic at Dulles.

For many years, the dominant airline at Dulles International has been United Airlines. In 2010, United merged with Continental. Since then, the United/Continental combination has reduced the number of seats it offers on Dulles flights in order to respond to potential antitrust concerns over its market share. As a consequence, United/Continental's Dulles international market share has fallen from 65.5 percent in December 2013 to 61.9 percent currently.

In 2014, Dulles International began to serve several new markets, including Air China to Beijing, and United to Madrid and Nassau. These followed additions in 2013 of Brussels Airline to Brussels, Belgium, and Etihad Airways to Abu Dhabi and the United Arab Emirates. In May 2014, Frontier Airlines started a new low-fare service from Dulles with nonstop flights to 14 destinations. In spite of these flight increases, the growth in international passenger traffic at Dulles generally has been below that of the industry average.

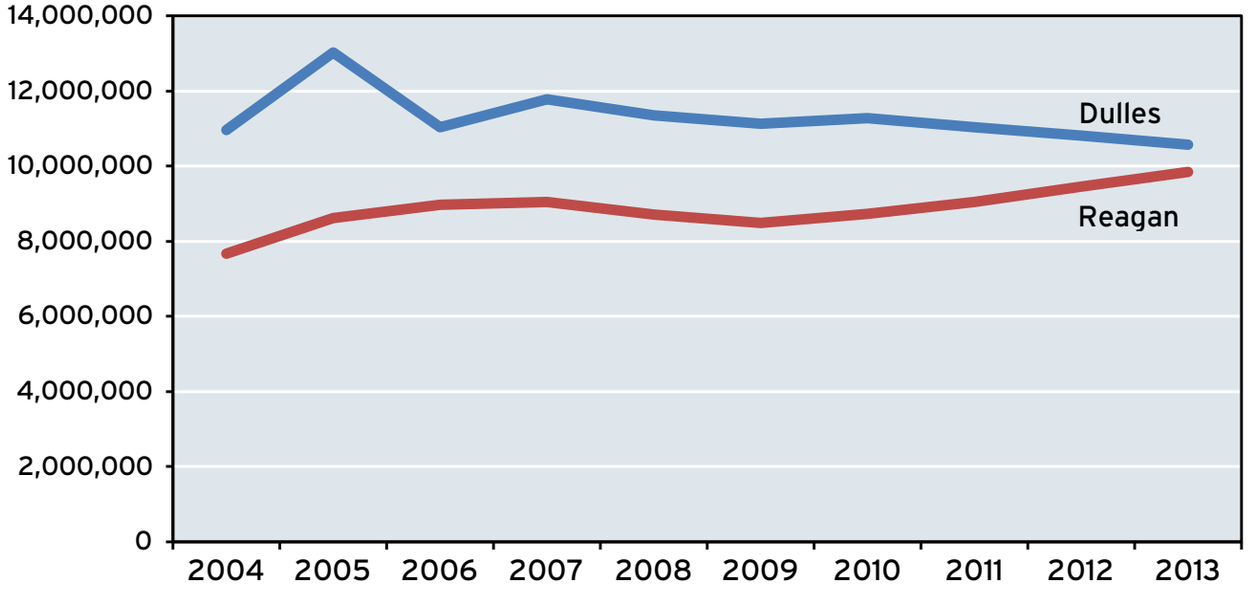
The long-term decline in Dulles International passenger and cargo traffic (only some of which has flowed to Reagan National) must be a major matter of concern for Virginia. The Commonwealth is losing longer-haul and international passenger traffic to other airports, such as Baltimore-Washington International. Indeed, BWI's annual passenger traffic now exceeds that at either Dulles or Reagan National.

Dulles International also is attempting to make itself more efficient and attractive. Dulles Development (D2) is a major capital construction program to improve the facilities and provide additional capacity at the airport. New facilities completed in the D2 program include a new airport traffic control tower, expanded airline gates, a fourth runway and an underground passenger transport system, AeroTrain, which opened in 2010. Other improvements include Dulles Passport Express automated kiosks to speed up international arrivals, Silver Line Express bus service, and technological improvements such as Airport Surface Detection Equipment - Model X, Performance Based Navigation procedures, basic rerouting and Time Based Flow Management, (similar to Regan National's upgrades.)

It remains to be seen whether these improvements will overcome the slot and perimeter awards that have been given by Congress to Reagan National. Blunt reality is that Reagan is a more convenient airport for legislators, staff, lobbyists and other Washington denizens to access and, hence, there is understandable pressure both to increase the number of slots at Reagan and to waive the perimeter flight distance restrictions.

GRAPH 5

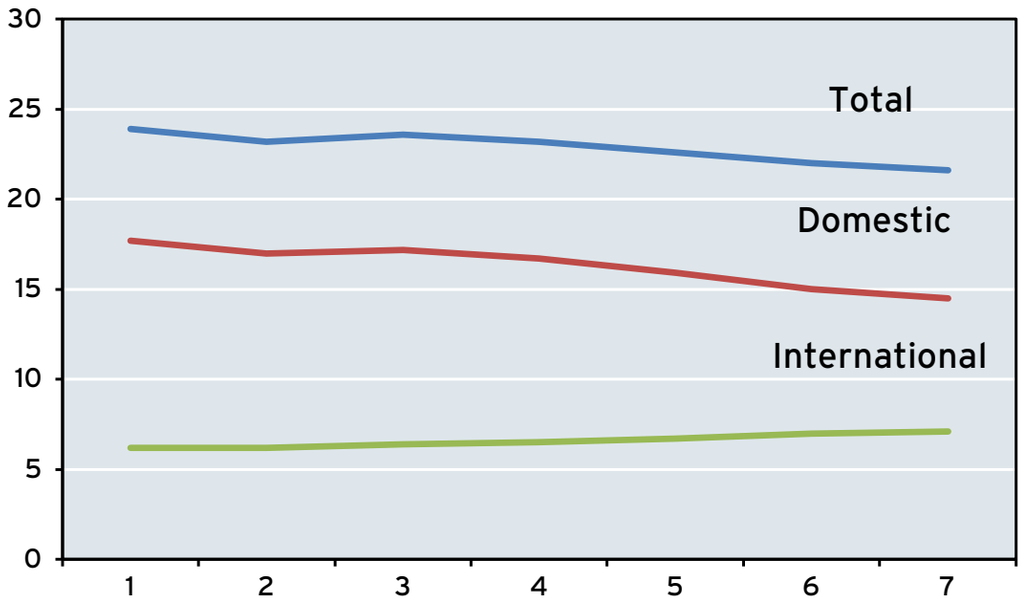
ANNUAL PASSENGER ENPLANEMENTS AT DULLES INTERNATIONAL AND REAGAN NATIONAL AIRPORTS, 2004-2013



Source: Metropolitan Washington Airports Authority Comprehensive Annual Financial Report, 2014

GRAPH 6

ANNUAL DOMESTIC, INTERNATIONAL AND TOTAL ENPLANEMENTS AT DULLES INTERNATIONAL, 2008 TO 2014 (IN MILLIONS)



Source: Metropolitan Washington Airports Authority Comprehensive Annual Financial Report, 2014

Virginia's Other Major Commercial Airports

Virginia has seven other significant commercial airports that serve the regions of the state. Ninety-five percent of Virginians are within 30 minutes of a general aviation airport, or within 45 minutes of commercial service airports. This number is expected to increase slightly in the future because of the increasing importance of smaller airports as feeders to larger airports.

Shenandoah Valley Regional Airport (SHD) in Weyers Cave recorded 19,730 enplanements in 2013 and now has three daily and three weekend flights to Dulles International by means of United Express. SHD understands its role as a feeder to airports such as Dulles and advertises:

> *Did you ever stop to think about how much you are actually spending when you drive to and from a larger airport several hours away? When you use SHD, travel time is minimal leaving more time at home or the office. Plus you won't have to worry about fuel costs, outrageous parking fees, long lines at security or traffic jams. When you think about the savings ... it just makes sense to fly SHD.*

Charlottesville Albemarle Airport (CHO) enjoyed a record high of 230,699 enplanements in 2013. CHO has experienced more than a 20 percent increase in enplanements over the past decade. Service at CHO is comprehensive and includes American Airlines, with daily direct flights to Chicago and New York-LaGuardia; Delta, with daily direct flights to New York-LaGuardia and Atlanta; United, with daily direct flights to Dulles; and US Airways, with daily direct flights to Philadelphia and Charlotte. Gradually, Charlottesville is evolving beyond its role as a feeder airport and increasingly is attracting passengers who are coming to the Charlottesville metropolitan region to do business.

Lynchburg Regional Airport (LYH) reported 77,795 enplanements in 2013, down substantially from a peak of 93,772 in 2010. Traffic appears to have been adversely affected by the Great Recession, the effects of which linger in Lynchburg, where the city's rate of unemployment was 5.9 percent in April 2015 as compared to 4.8 percent in Virginia as a whole. The airport now has six arrivals and six departures daily by regional carrier US Airways Express. Flights connect primarily to Charlotte International Airport. Activity at LYH is constrained by its location near Roanoke, where ROA annually records about four times as many enplanements.

Newport News/Williamsburg International Airport (PHF) hit a high in enplanements in 2007 with 348,634. By 2013, however, that number had fallen to 263,964, a decline of 24.3 percent, after bargain carrier AirTran left the airport and regional defense expenditures stagnated. PHF's location, roughly between busier airports at Norfolk (ORF) and Richmond (RIC), restricts its growth potential. However, PHF may be able to attract another lower-priced carrier similar to AirTran, in which case it retains the potential to siphon traffic away from ORF and RIC.

Norfolk International Airport (ORF) similarly hit a high in passengers served in 2007 when 1,805,992 travelers enplaned there. By 2013, however, enplanements had declined to 1,560,754 – a 13.6 percent reduction. The major airlines serving ORF are American, Delta, Southwest and United/Continental. Nonstop destinations are available daily to 15 different airports. Traffic at ORF (both passenger and freight) is highly sensitive to levels of federal spending within Hampton Roads and, along with the Great Recession, that is the primary reason why passenger traffic at ORF has declined. It is worth noting, however, that ORF, as the closest airport to Newport News/Williamsburg International, has benefited somewhat from the departure of AirTran from PHF.

Richmond International Airport (RIC) hit an enplanement high of 1,953,003 in 2005; however, by 2012, this had fallen to 1,582,565, a decline of 19 percent. RIC passenger activity was hit hard by the Great Recession, which not only affected the activity of the several Fortune 500 firms headquartered in the Richmond metropolitan region, but also put a serious crimp in state government revenue collections. A recent $300 million renovation has been made to the airport. RIC promotes itself in this way: "It's been said we've successfully balanced the sophistication of a large airport with the charm and convenience of a smaller one."

Roanoke-Blacksburg Regional Airport (ROA) offers approximately 50 scheduled airline flights arriving and departing daily with nonstop service to nine major cities. It is served by American, US Airways, United Airlines

and Delta. ROA enplaned a record 519,906 passengers in 2010, but by 2013 this number had fallen a momentous 40.3 percent to 310,295. ROA activity was severely impacted by the Great Recession, and in April 2015 the city's unemployment rate was 5.5 percent, well above the Commonwealth average of 4.8 percent.

A Southeast Virginia Master Airport?

For some time, discussions have occurred periodically that have focused on the possibility of a large super airport that would be located midway between Richmond and Hampton Roads. Such an airport, it is said, would supplant RIC, ORF and PHF and attract direct flights from Southeast Virginia to all major cities in the United States, as well as international flights to Europe and Latin America. The FAA invested $619,000 in a study of this possibility in 1992.

Virtually all agree that such a super airport, a 15,000-acre development south of the James River in Prince George, Surry or Isle of Wight counties, would be a tremendous boon to economic development in the region and could be a difference maker. But, it would be expensive, might come with significant environmental concerns and would require cities supporting the three regional airports (RIC, ORF and PHF) to sacrifice for the greater regional good. This may explain why the proposal has languished.

Military/Government Airports

While not available for consumer or commercial use, there are military aviation assets belonging to all four branches of the military service under the Department of Defense, and the Coast Guard under the Department of Homeland Security. There are 11 such installations in the state supporting more than 26,000 uniformed, civilian and contract employees. All are located in the easternmost region of the state. While the enplanements of each are low in number, Chambers Field at the Norfolk Naval Base reported 36,093 enplanements in calendar year 2013. The military/government airfields are listed in Table 2.

TABLE 2

MILITARY/GOVERNMENT AIRPORTS IN VIRGINIA

LOCATION SERVED		AIRPORT NAME
Fort A.P. Hill / Bowling Green	APH	A.P. Hill Army Airfield
Dahlgren	NDY	NSWC Dahlgren
Fentress	NFE	NALF Fentress
Fort Belvoir	DAA	Davison Army Airfield
Fort Eustis	FAF	Felker Army Airfield
Hampton	LFI	Langley Air Force Base
Norfolk	NGU	NS Norfolk (Chambers Field)
Virginia Beach	NTU	NAS Oceana (Apollo Soucek Field)
Quantico	NYG	MCAF Quantico (Turner Field)
Wallops Island	WAL	Wallops Flight Facility (NASA)
Williamsburg / Camp Peary	W94	Camp Peary Landing Strip

Source: U.S. Department of Defense

Airport Financing

As is often the case, airport operations and improvements inexorably depend upon financial circumstances. Investments in upgrading the infrastructure of Virginia's airports come from federal, state and local funds, but local funds usually constitute less than one-third of such costs.

Projected capital funding for the next six years (FY15-FY 20) from all sources for Virginia airports is as follows:

Federal Funding	$515,404,878 (57.5 percent)
State Funding	$135,324,883 (15.1 percent)
Local Funding	$245,223,734 (27.4 percent)
Total	$895,953,495

It is readily apparent that the federal government is the major source of funding for airport improvements. Table 3 gives some flavor to this general observation by listing all of the airports in Virginia that received FAA grants, the amount of those grants and a brief description of the work to be accomplished, for FY 2014.

At the state level, the Commonwealth Airport Fund (CAF) and the Aviation Special Fund (ASF) provide financial resources for the programs established and administered by the Virginia Aviation Board (VAB) and the Virginia Department of Aviation. The CAF receives its revenue from an annual allocation made by the Commonwealth Transportation Board to the VAB from the Transportation Trust Fund, as required by the Code of Virginia.

The Airport Trust Fund receives 2.4 percent of the Transportation Trust Fund, as required by the Code of Virginia. Table 4 discloses anticipated allocations totaling $146 million to the Airport Trust Fund for the years FY 2015 to FY 2020.

The Code of Virginia specifies that CAF resources must be allocated to airports on the basis of their service role, as identified in the Virginia Transportation System Plan (VATSP). Entitlement and discretionary funds are made available from the CAF and are allocated by the Commonwealth Aviation Board. State entitlement funds can be used for any project eligible under the Airport Capital Program, Facilities and Equipment Program, and Maintenance Program. **Operational costs are not eligible under any state funding program.** The funding received by specific airports, large and small, is reported in Table 5.

TABLE 3

FEDERAL AVIATION ADMINISTRATION AIRPORT IMPROVEMENT GRANTS, VIRGINIA, FY 2014

LOCID	AIRPORT	FEDERAL FUNDS*	ENTITLEMENT	BRIEF DESCRIPTION OF WORK
0V4	Brookneal/Campbell County	$78,994	$78,994	Rehabilitate Runway Lighting [Rehabilitate Lighting System (Design)] - 06/24
FRR	Front Royal-Warren County	$270,000	$270,000	Remove Obstructions [South Side - ROFA/Part 77 (Land Acquisition - Phase I)]
CJR	Culpeper Regional	$25,216	$325,216	Remove Obstructions [Acquire Land (Parcel 45, Gyory 37.3ac Fee; Parcel 48, Roubin 33.1ac Fee)]
PSK	New River Valley	$251,353	$251,353	Construct Taxiway [Design - RW 24]
SHD	Shenandoah Valley Regional	$63,234	$63,234	Wildlife Hazard Assessments [Wildlife Hazard Assessment]
OKV	Winchester Regional	$3,260,700	$850,000	Rehabilitate Apron [Construction]
SHD	Shenandoah Valley Regional	$594,900	$594,900	Update Airport Master Plan Study [ALP Update]
RIC	Richmond International	$17,772,312	$11,725,945	Rehabilitate Taxiway [Realignment (Construction - Multi-year)]
MFV	Accomack County	$819,268	$498,000	Remove Obstructions [Silviculture (On-Airport) - Requested $668K 4/2/14]
ROA	Roanoke Regional/ Woodrum Field	$537,741	$537,741	Acquire Aircraft Rescue & Fire Fighting Vehicle [Acquire ARFF Vehicle]
SFQ	Suffolk Executive	$72,000	$72,000	Remove Obstructions [Design]
PVG	Hampton Roads Executive	$3,577,500	$812,153	Construct Runway [Construction Ph 4 (Const. Parallel Taxiway)] - 10/28
CHO	Charlottesville-Albemarle	$1,024,650	$1,024,650	Rehabilitate Runway [RW Rehab (Design)] - 03/21
FKN	Franklin Municipal-John Beverly Rose	$1,017,000	$600,000	Rehabilitate Runway Lighting [Medium Intensity Edge Light System (Construction)] - 09/27
MKJ	Mountain Empire	$171,630	$171,630	Rehabilitate Runway [Preliminary Design] - 08/26
HWY	Warrenton-Fauquier	$148,500	$148,500	Conduct Environmental Study [5-YR Terminal Development Plan (Short Form)]

TABLE 3

FEDERAL AVIATION ADMINISTRATION AIRPORT IMPROVEMENT GRANTS, VIRGINIA, FY 2014

LOCID	AIRPORT	FEDERAL FUNDS*	ENTITLEMENT	BRIEF DESCRIPTION OF WORK
XSA	Tappahannock-Essex County	$750,000	$750,000	Construct Building [Construct Hangars (Construction)-Multiyear]
SFQ	Suffolk Executive	$144,000	$144,000	Construct Taxiway [Design]
ORF	Norfolk International	$12,648,600	$12,648,600	Modify Terminal Building [expand TSA checkpoint concourse "A"], Rehabilitate Taxiway Lighting [Rehabilitate Taxiway Lighting (various locations)], Rehabilitate Terminal Building [upgrade public restrooms]
OMH	Orange County	$ 177,300	$177,300	Remove Obstructions [(Acquire Land, Parcel 45-4 Fee; Parcel 31-41H Easement)]
HEF	Manassas Regional/ Harry P. Davis Field	$1,541,804	$1,541,804	Extend Taxiway [650'x50' (Construction)]
JYO	Leesburg Executive	$540,000	$540,000	Install Perimeter Fencing [(Construction)]
OKV	Winchester Regional	$171,000	$171,000	Conduct Environmental Study [(EA)]
PTB	Dinwiddie County	$85,500	$85,500	Rehabilitate Apron [Design]
MKJ	Mountain Empire	$72,261	$72,261	Remove Obstructions [Land Acquisition (Part 77 / Threshold Siting) - Phase II]
JFZ	Tazewell County	$ 675,000	$675,000	Improve Airport Drainage [Construction]
OMH	Orange County	$189,000	$189,000	Conduct Environmental Study [(EA)]
HSP	Ingalls Field	$300,000	$300,000	Rehabilitate Runway [Crack Seal and Marking] - 07/25
PHF	Newport News/ Williamsburg International	$9,408,309	$7,108,309	Improve Terminal Building [Construction]
BCB	Virginia Tech/ Montgomery Executive	$747,000	$747,000	Extend Runway [Design (RW, Road Relocation, Hangar Demo)] - 12/30
FVX	Farmville Regional	$214,500	$214,500	Extend Runway [Phase 2 - Acquire Land] - 03/21
LKU	Louisa County/Freeman Field	$117,000	$ 117,000	Rehabilitate Runway Lighting [(Design)] - 09/27

TABLE 3

FEDERAL AVIATION ADMINISTRATION AIRPORT IMPROVEMENT GRANTS, VIRGINIA, FY 2014

LOCID	AIRPORT	FEDERAL FUNDS*	ENTITLEMENT	BRIEF DESCRIPTION OF WORK
ROA	Roanoke Regional/ Woodrum Field	$592,847	$592,847	Improve Runway Safety Area [Modified EMAS (Preliminary Design)] - 06/24
LUA	Luray Caverns	$360,810	$360,810	Remove Obstructions [SR 652/647 Relocations (Design)]
FYJ	Middle Peninsula Regional	$189,000	$189,000	Update Airport Master Plan Study

* Includes all funds awarded, including projected future amounts for multiyear grants
Source: Federal Aviation Administration Airport Improvement Program Grant History, FY 2014
Virginia Airport Operators Council: "Virginia Airports 2014 Annual Review, Selected Projects"

TABLE 4

TRANSPORATION-RELATED FUNDING, FY2015 TO FY2020

PRELIMINARY ALLOCATIONS

	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	TOTAL
Debt Service	$338.70	$369.10	$424.20	$481.40	$540.20	$404.10	$2,557.70
Other Agencies/ Transfers	60.5	60.6	43.3	43.7	44.8	45.8	298.7
Maintenance & Operations	1,992.80	1,984.20	2,028.10	2,062.70	2,099.70	2,139.50	12,237.00
Tolls Admin. & Other Programs	431.2	441.4	453	464	474.1	484.4	2,748.10
Rail & Public Transportation	495.3	511.7	525.4	547.5	489.8	478.3	3,048.00
Port Trust Fund	38.5	41.1	42.3	43.5	44.7	45.8	255.90
Airport Trust Fund	**21.9**	**23.4**	**24.1**	**24.8**	**25.5**	**26.2**	**146.00**
NoVA Transportation Fund	299.3	310.4	321	332.3	344.1	356.4	1,963.40
Hampton Roads Fund	155.9	183.7	191.1	199.1	207.7	216.2	1,153.80
Construction	1,145.90	1,641.90	1,497.80	1,379.50	1,361.40	1,300.60	8,327.20
Total	$4,980.00	$5,567.50	$5,550.30	$5,578.50	$5,632.00	$5,497.30	$32,735.80

Numbers are in millions of dollars
Source: Virginia Department of Transportation: Fiscal Years 2015-2020 Outlook, Preliminary Six-Year Financial Plan (January 2014)

TABLE 5

COMMONWEALTH FUNDING OF SPECIFIC AIRPORTS, FY 2014

AIRPORT	TOTAL	ENTITLEMENT	DISCRETIONARY	F&E	MAINTENANCE	SECURITY	PROMOTION	AIR SERVICE
Accomack County Airport	$143,502		$69,569	$62,742	$11,191			
Allen C. Perkinson Municipal Airport	$1,656					$1,656		
Blue Ridge Regional Airport	$77,160		$60,657	$600	$15,903			
Bridgewater Air Park	$19,686		$16,000	$3,686				
Brookneal-Campbell County Airport	$4,952			$3,784		$1,167		
Charlottesville-Albemarle Airport	$1,638,598	$1,516,767			$79,331		$22,500	$20,000
Chase City Municipal	$0							
Chesapeake Regional Airport	$28,405		$7,200	$5,030	$16,175			
Crewe Municipal Airport	$9,021				$9,021			
Culpeper Regional Airport	$1,802,345		$1,725,000		$67,345		$10,000	
Danville Regional Airport	$139,253		$80,178		$59,075			

TABLE 5

COMMONWEALTH FUNDING OF SPECIFIC AIRPORTS, FY 2014

AIRPORT	TOTAL	ENTITLEMENT	DISCRETIONARY	F&E	MAINTENANCE	SECURITY	PROMOTION	AIR SERVICE
Dinwiddie County Airport	$73,118			$60,880	$12,238			
Eagles Nest	$1,680				$1,680			
Emporia-Greensville Regional Airport	$261,893		$249,600		$12,293			
Falwell Airport	$4,899		$1,011		$3,888			
Farmville Regional Airport	$33,750				$33,750			
Franklin Municipal Airport	$3,962				$3,962			
Front Royal-Warren County Airport	$13,956				$3,956		$10,000	
Gordonsville Municipal Airport	$0							
Grundy Municipal Airport	$3,200				$3,200			
Hampton Roads Executive Airport	$939,2165		$615,933	$265,000.00	$51,135	$2,148	$5,000	
Hanover County Municipal Airport	$72,958		$9,402		$12,587	$50,968		
Hummel Field	$17,177				$11,177		$6,000	

TABLE 5

COMMONWEALTH FUNDING OF SPECIFIC AIRPORTS, FY 2014

AIRPORT	TOTAL	ENTITLEMENT	DISCRETIONARY	F&E	MAINTENANCE	SECURITY	PROMOTION	AIR SERVICE
Ingalls Field	$121,796		$10,000	$53,192	$38,603		$20,000	
Lake Anna Airport	$18,117		$5,600		$12,517			
Lake Country Regional Airport	$204,635		$184,235		$20,400			
Lawrenceville-Brunswick Municipal Airport	$0							
Lee County Airport	$2,600				$2,600			
Leesburg Executive Airport	$340,771		$220,157	$4,116	$106,498		$10,000	
Lonesome Pine Airport	$25,403		$1,599		$23,804			
Louisa County Airport	$58,234		$13,200		$13,434	$21,600	$10,000	
Lunenburg County Airport	$3,352				$3,352			
Luray Caverns Airport	$3,049				$3,049			
Lynchburg Regional Airport	$560,225	$535,225					$25,000	
Manassas Regional Airport	$238,272		$178,876		$49,396		$10,000	

TABLE 5

COMMONWEALTH FUNDING OF SPECIFIC AIRPORTS, FY 2014

AIRPORT	TOTAL	ENTITLEMENT	DISCRETIONARY	F&E	MAINTENANCE	SECURITY	PROMOTION	AIR SERVICE
Mecklenburg-Brunswick Regional Airport	$130,870			$116,736	$14,134			
Middle Peninsula Regional Airport	$869,292		$643,354	$150,000	$30,091	$45,000	$846	
Mountain Empire Airport	$115,810		$98,734		$16,221	$855		
New Kent County Airport	$18,246		$2,668		$14,449	$1,128		
New London Airport	$0							
New Market Airport	$7,560		$7,560					
New River Valley Airport	$94,030		$15,200	$52,377	$26,452			
Newport News - Williamsburg International Airport	$2,100,773	$2,000,000			$50,773		$15,000	$35,000
Norfolk International Airport	$2,045,000	$2,000,000					$25,000	$20,000
Orange County Airport	$406,571		$309,968		$6,748	$89,854		

TABLE 5

COMMONWEALTH FUNDING OF SPECIFIC AIRPORTS, FY 2014

AIRPORT	TOTAL	ENTITLEMENT	DISCRETIONARY	F&E	MAINTENANCE	SECURITY	PROMOTION	AIR SERVICE
Richmond Executive - Chesterfield County Airport	$16,509				$6,509		$10,000	
Richmond International Airport	$5,193,829	$2,000,000	$3,139,566		$23,144		$11,118	$20,000
Roanoke-Blacksburg Regional Airport	$2,065,000	$2,000,000					$25,000	$40,000
Shannon Airport	$21,008			$5,129	$15,879			
Shenandoah Valley Regional Airport	$238,869	$101,693	$6,458	$2,801	$72,915		$35,000	$20,000
Smith Mountain Lake Airport	$7,979				$7,979			
Stafford Regional Airport	$117,215		$73,685	$2,802	$3,087	$27,640	$10,000	
Suffolk Executive Airport	$178,435		$53,920	$51,198	$51,580	$14,237	$7,500	
Tangier Island Airport	$0							
Tappahannock-Essex County Airport	$82,795		$45,000		$13,452	$24,343		

TABLE 5

COMMONWEALTH FUNDING OF SPECIFIC AIRPORTS, FY 2014

AIRPORT	TOTAL	ENTITLEMENT	DISCRETIONARY	F&E	MAINTENANCE	SECURITY	PROMOTION	AIR SERVICE
Tazewell County Airport	$71,193		$46,600		$14,593		$10,000	
Twin County Airport	$197,053		$95,684	$78,424	$7,540	$15,403		
Virginia Highlands Airport	$232,791		$29,468		$9,765	$183,557	$10,000	
Virginia Tech-Montgomery Executive Airport	$18,694		$3,288		$15,406			
Wakefield Municipal Airport	$7,136		$7,136					
Warrenton-Fauquier Airport	$41,785		$30,080		$11,083		$622	
William M. Tuck Airport	$439				$439			
Williamsburg-Jamestown Airport	$37,723		$24,589		$13,134			
Winchester Regional Airport	$443,869		$384,949	$28,927	$22,492		$7,500	
Total	$21,627,341	$10,153,686	$8,466,126	$947,430	$1,129,449	$479,561	$296,087	$155,000

* DOAV disbursed $2,000,000 to the Metropolitan Washington Airports Authority for Dulles International Airport.
Source: Virginia Department of Aviation

Summing It Up

Virginia boasts a well-developed infrastructure insofar as traditional airline service is concerned. The system of large, medium-sized and small airports throughout the Commonwealth provides easy access to passengers and cargo for commercial service and general aviation, and to government and military users. A wise, foresighted decision in 1986 to create a Virginia Aviation Fund as part of its transportation program has served the state well. Virginia airports have made good use of available federal, state and local funds to upgrade and modernize their facilities with the latest technology for safety and convenience.

Nevertheless, both the number of departing flights and the number of departing passengers has been declining at six of the Commonwealth's seven largest commercial airports in recent years. This reflects slowing economic growth rates, which in turn are sensitive to stagnant levels of federal spending, particularly defense spending in the case of Virginia. While it is true that airport traffic reflects general economic conditions and population growth, it also is true that the quality of air connections is an important consideration when firms decide where to locate or expand. Hence, our declining air passenger traffic not only reflects lackadaisical economic growth, but also handicaps us in economic development competition.

It would be helpful if Congress would heal its desultory strategy concerning airport regulation. While the industry as a whole has been deregulated substantially since 1978, this has not been true in the Washington, D.C., metropolitan region, and this has had a significant negative impact on Dulles International. **Dulles International and Reagan National airports continue to labor under slot and perimeter rules that threaten the financial health of Dulles. The Washington Post concluded that Dulles "is in trouble" (Lori Aritani, Nov. 27, 2014). Dulles is too important to the Commonwealth and Northern Virginia to allow it to be misused. This is the No. 1 airport problem/challenge for Virginia for the remainder of this decade.**

As MWAA observed in its 2013 Annual Review: "Several times over the past decade Congress has reduced the slot and perimeter rules, which when combined with airline consolidation and market forces, has shifted about 2 million domestic passengers from Dulles International to Reagan National. The result is that today we serve nearly the same number of passengers on the 12,000 acre Dulles International complex as on the 800 acres constituting Reagan National."

It will suffice to say that it will be difficult for Dulles International to prosper under current legislative mandates and restrictions.

THE SMALL-BUSINESS STORY IN VIRGINIA: WHAT A QUARTER CENTURY OF DATA REVEAL

Nineteenth-century author Horatio Alger's portraits of young Americans who started their own businesses and quickly went from rags to riches became part of the American Dream. One could start a business, perhaps even selling lemonade on a street corner, but by dint of personal energy, lots of hard work, determination and insight, end up a millionaire.

While some view the Alger stories as unrealistic, or myths, they do contain certain elements of truth. Yes, very few of us start our own businesses and become billionaires these days, and there is evidence that intergenerational economic mobility has declined.[1] Nevertheless, tens of thousands of Americans continue to start their own businesses and many experience conspicuous success. Further, one need not harken back to Andrew Carnegie or John Rockefeller to discover such examples. Witness the inspiring success stories of Ursula Burns, who grew up in poverty on the Lower East Side of New York City, but ascended to chairman and CEO of Xerox, or well-known individuals such as Ralph Lauren and Oprah Winfrey. All of them surmounted imposing barriers and achieved huge success.

These few examples, of course, are not indicative of a trend. How often do people really start their own businesses today? Is this more or less common than it used to be? Are small businesses being pushed out of existence by larger businesses? How well are small businesses doing? While we'll look at national data, we'll focus on Virginia as we provide answers to these questions.

1 Is the economic mobility glass half full, or half empty? See the work of the Pew Charitable Trusts, www.pewtrusts.org/en/multimedia/data-visualizations/2013/faces-of-economic-mobility.

New Startup Firms

For many people today, starting a firm remains an attractive proposition. In 2012, a total of 5,030,962 new firms were started in the United States. Some had multiple locations ("establishments"), so that the total number of new establishments was 6,667,322 (www.sba.gov).

Here in the Commonwealth, the U.S. Census tells us that 9,899 *firms* (7.5 percent of all existing firms) were less than a year old in 2012 and 7,588 firms had been open one year to two years in 2012. Thus, there is considerable new business formation in Virginia in a typical year and it is fair to infer that most are able to survive for at least a year.

Even so, the rate at which new *establishments* are being created has declined. Graph 1 reveals that roughly one in six (17.1 percent) of all establishments that existed in 1977 were created in that year. However, by 2012, the comparable number had declined to 11 percent. Further, this decline has been almost continuous except for a burst of new firm, new establishment activity that occurred in the middle of the previous decade. That particular surge often is attributed to a pre-Great Recession atmosphere that included rising real estate, financial asset and commodity prices, plus tax rules that favored certain types of business formation. Whatever the cause, that ripple of business startup activity has dissipated. A May 2014 Brookings Institution study suggested that this trend should be characterized as "declining business dynamism" and noted that this has been true in the United States since the mid-1970s. Further, since 2008, more firms have been dying than have been created, both nationally and regionally.

Virginia has not been exempt from the decline in the formation of new businesses. Graph 2 reports the percentage of all firms that were accounted for by new firms in 1988 through 2012. One can see that the rate of new business formation in Virginia exceeded national averages for both metropolitan and non-metropolitan regions in 1988. By 2001, however, the Commonwealth's advantage had disappeared with respect to all U.S. metropolitan regions, though it remained with respect to non-metropolitan regions. While we do not have data for non-metropolitan Virginia, it is worth noting that new business firm formation has fallen off dramatically in the non-metropolitan regions of the United States in the past few decades. This has paralleled a well-documented flow of more highly educated people into metropolitan regions nationally.[2]

Why have we seen such a noticeable decline in new business formation in the United States, metropolitan regions, non-metropolitan regions and Virginia? No one knows for certain, but at least one influential group of economists, led by Robert Gordon of Northwestern University, argues that we are in the midst of a "Great Economic Stagnation" that is unlikely to end in the foreseeable future.[3] They point to laggard productivity growth over the past decade as an indicator of this.

George Mason University's Tyler Cowen offers a nuanced version of this argument.[4] He argues that American economic growth has slowed, especially since 1973, because we have picked most of our "low-hanging fruit." We've occupied most of our available land, educated most of our people and no longer benefit from a constant flow of important new innovations such as electricity, gasoline engines and computers. Thus, many of our major engines for progress are sputtering. On the other hand, the GMU economist also contends that our economic history is characterized by unpredictable waves of innovation and hence we cannot say the current stagnation is a permanent state of affairs.

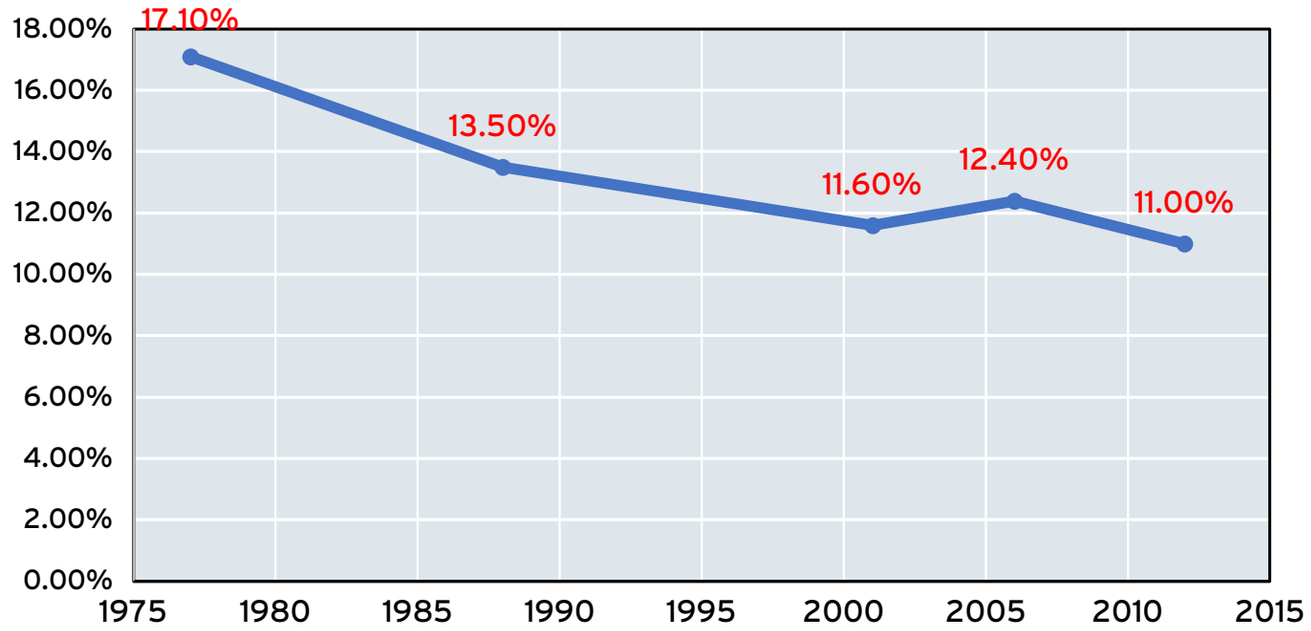
2 Ian Hathaway and Robert E. Litan, "Declining Business Dynamism in the United States: A Look at States and Metros," Brookings Institution, www.brookings.edu/~/media/research/files/papers/2014/05/declining%20business%20dynamism%20litan/declining_business_dynamism_hathaway_litan.pdf.

3 Robert Gordon, "Is U.S. Economic Growth Over? Faltering Innovation Confronts the Six Headwinds," National Bureau of Economic Research Working Paper No. 18315 (August 2012).

4 Tyler Cowen, *Average Is Over: Powering America Beyond the Age of the Great Stagnation* (New York: Penguin, 2013).

GRAPH 1

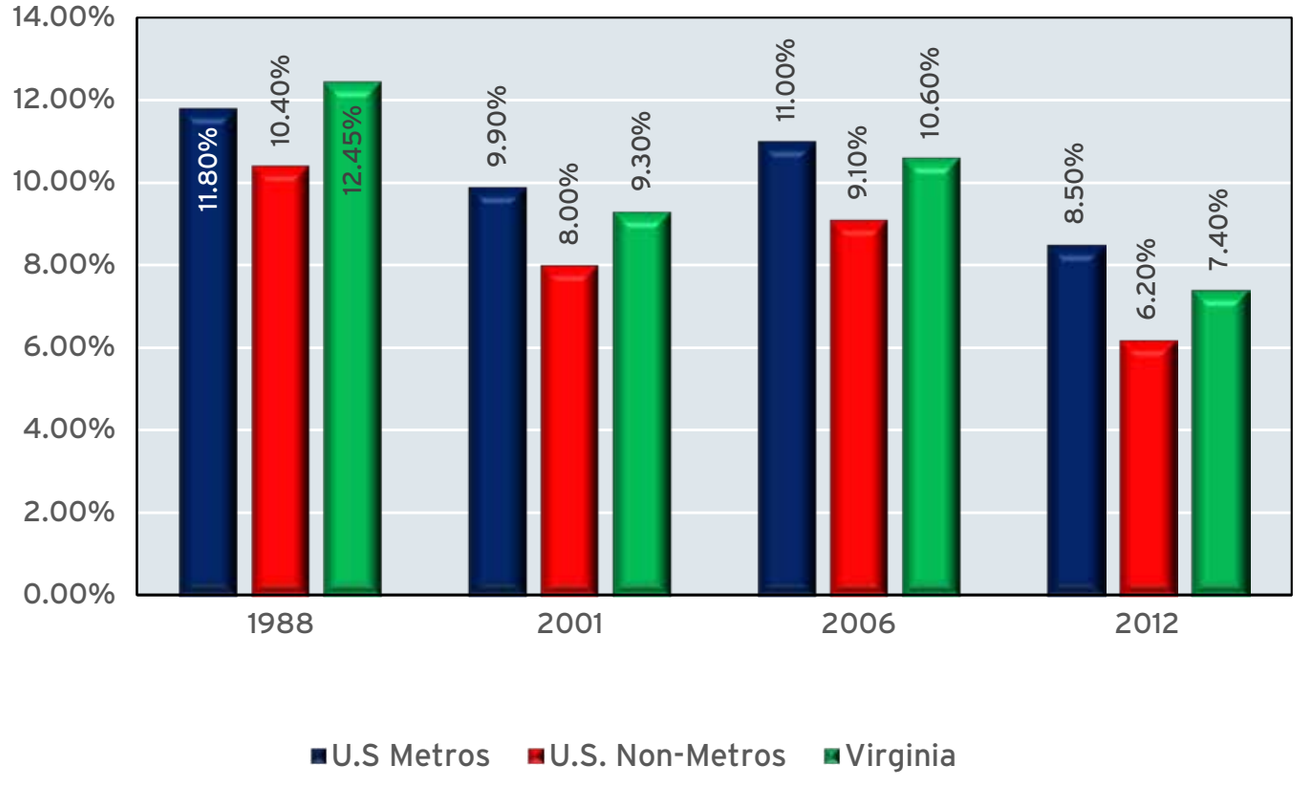
PERCENTAGE OF ALL ESTABLISHMENTS ACCOUNTED FOR BY NEW FIRMS: U.S., 1977, 1988, 2001, 2006 AND 2012



Source: U.S. Small Business Administration, www.sba.gov

GRAPH 2

PERCENTAGE OF ALL FIRMS NEWLY FOUNDED IN 1988, 2001, 2006 AND 2012: U.S. METROS, U.S. NON-METROS AND VIRGINIA



Source: U.S. Small Business Administration, www.sba.gov

But Small Firms Have Become Relatively More Numerous

Let's accept as an empirical truth: The rate at which new firms are being created has declined in recent years, both nationally and in Virginia. Nevertheless, when we set aside the issue of the age of firms in Virginia, very small firms – those that have 0 to 4 employees – have fared rather well. Indeed, as Graph 3 reveals, the percentage of all firms in Virginia that have four or fewer employees actually has increased in recent years, from 56.58 percent in 1988 to 58.25 percent in 2012. Relatively speaking, there were more very small firms in Virginia in 2012 than in 1988.

The relative increase in small firms arguably reflects two different influences. First, there could be an increasing tendency for people, especially those who have recently become unemployed, to start their own firms. Such individuals may be the one and only employee of their firm before they are able to spread their wings. Second, quite apart from the influence of recessionary economic conditions on entrepreneurship, it may have become more common for people to strike out on their own as consultants who work part time and have multiple employers.

We should be cautious, however, to accept a so-called "gig economy" explanation of firm creation whereby increasing numbers of single individuals behave as economic free agents and flit from one employer to another, either working on short-term contracts or as part-time employees. A July 26, 2015, article in The Wall Street Journal reported that the percentage of all employees nationally who either are self-employed and unincorporated, or have multiple employers, has declined significantly over the past 20 years. "Gigging" actually has been declining rather than increasing, perhaps due to improving economic conditions.

Returning to Graph 3, we can also see that there has been a decline in the percentage of all Virginia firms that have 5 to 9 employees. This size class of small firms has become relatively less important quantitatively. Not shown are data that reveal that this relative decline also generally holds true for firms with 10 to 99 employees. Not surprisingly, it is easier to start a new firm than it is to grow that firm.

Graph 4 divulges that at the same time very small firms have become more common in Virginia, the proportion of large firms in the Commonwealth has increased. Both the percentage of all firms that had 100 to 499 employees in 2012 and those that had 500 or more employees in that year increased. This tells us that intermediate-sized firms have become relatively less common in Virginia.

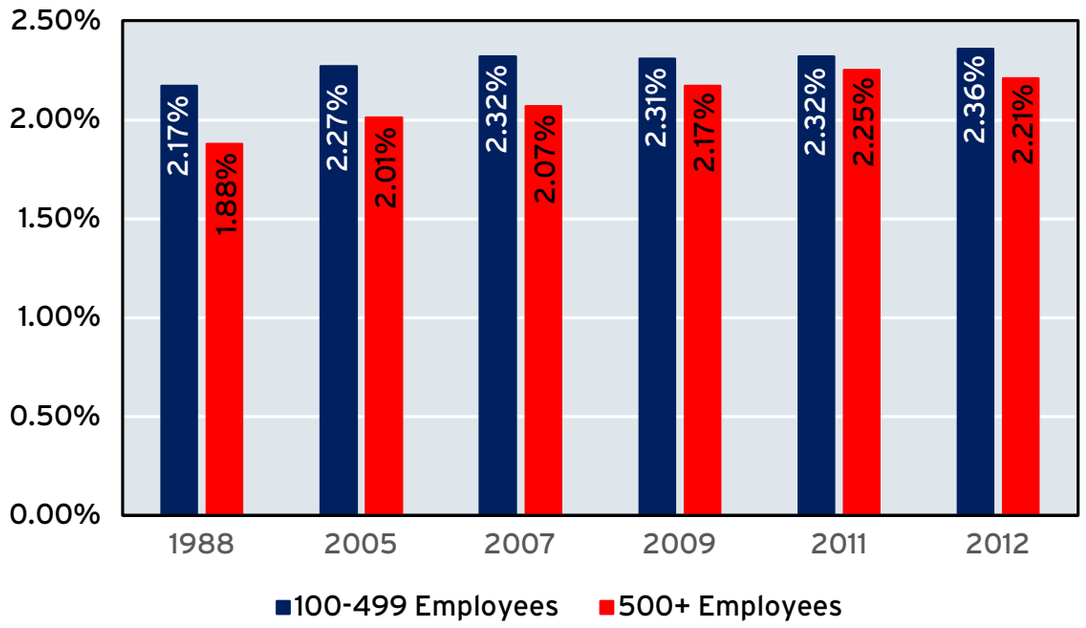
GRAPH 3

VERY SMALL BUSINESSES ARE HOLDING THEIR OWN IN VIRGINIA

Source: U.S. Small Business Administration, www.sba.gov

GRAPH 4

THE PROPORTION OF LARGE BUSINESSES IN VIRGINIA HAS INCREASED GRADUALLY BETWEEN 1988 AND 2012



Source: U.S. Small Business Administration, www.sba.gov

What About Employment And Payrolls?

The founding or operation of a firm doesn't necessarily inform us about its economic importance as measured by variables such as the number of employees or the size of the payroll. Graph 5 reports the percentage of total *employees* in private-sector firms in Virginia that were accounted for by firms of various sizes in 1988 and 2012. It is immediately apparent that large firms (those with 500 employees or more) increased their share of total private-sector employment in Virginia during this time period. **More than half of all private-sector employees in the Commonwealth now work for a firm with 500 or more employees. The share of employment accounted for by firms with 0 to 4 employees fell to 4.77 percent in 2011 from 5.17 percent in 1988.**

The slowly increasing economic dominance of large firms in Virginia extends even more decisively to *payrolls*. Graph 6 reports that the percentage of all private-sector payrolls in Virginia accounted for by firms with 500 or more employees rose from 52.13 percent in 1988 to 58.24 percent in 2011. Meanwhile, the percentage of private-sector payrolls accounted for by firms with 0 to 4 employees declined from 5.03 percent to 3.79 percent. The same general picture holds true for firms with 5 to 9 employees.

Thus, while small firms have become relatively more numerous in Virginia's economy over the past quarter century, they have become relatively less important in terms of employees and payroll.

What lesssons can we draw from all of this?

- Relatively speaking, Virginia has proven to be a more attractive place for new business formation than the United States as a whole. The proportion of small private-sector firms with 0 to 4 employees has increased in the Commonwealth. "Striking out on your own" is common in Virginia.

- At the same time, the proportion of all private-sector firms that have 500 or more employees also has increased, as have both the total number of employees of these large firms and their payrolls.

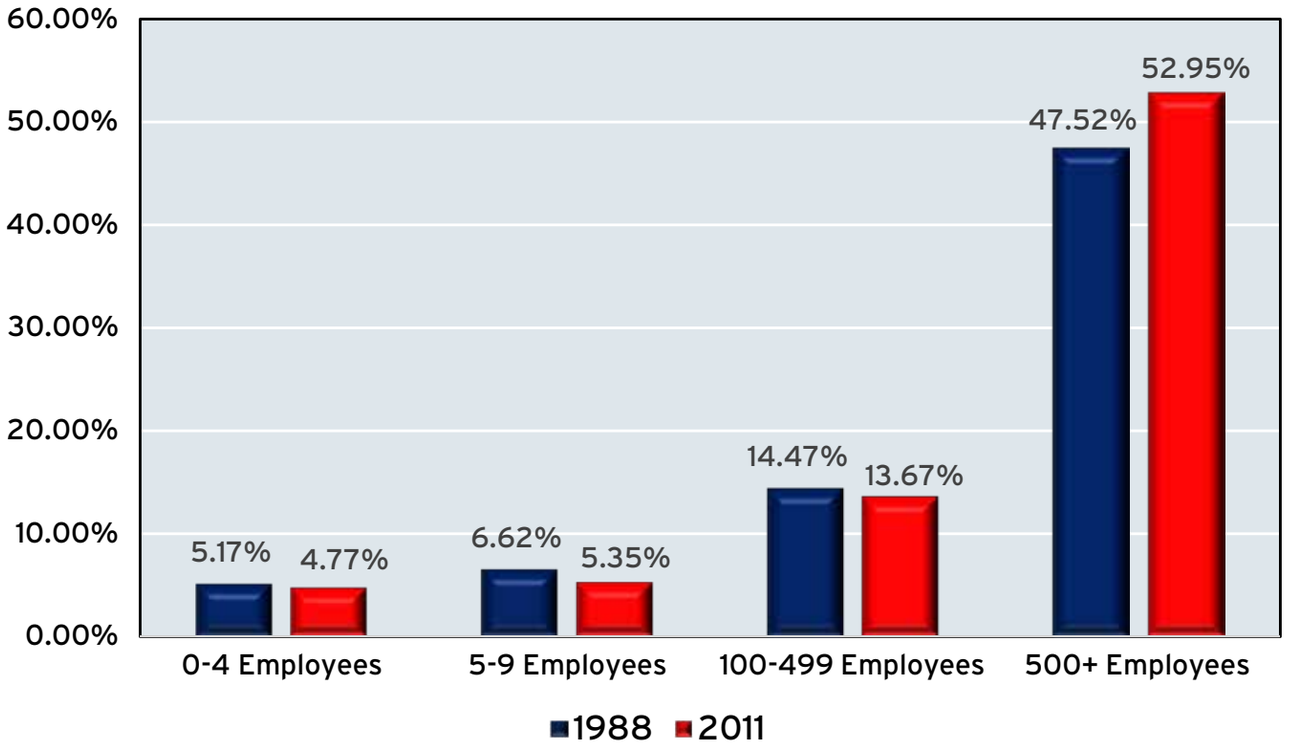
- **Virginia has proven to be a good place to start a business, when compared to other states, but the data also tell us that it is challenging for those firms to grow out of their small-firm status.** Plausibly, public policy could devote increased attention to moving small firms to the "second stage," in which they expand, acquire both employees and sophistication, and probably require additional capital to do so. Available national empirical evidence suggests that small firms often encounter roadblocks as they expand. These impediments may involve a lack of expertise in specific areas, such as information technology or marketing, or a simple lack of management competence and sophistication.

- **Frequently, however, it is the inability of small firms to attract capital that derails their growth.[5] Wise public policy here does not imply that the Commonwealth should become a banker and provide that capital (although North Dakota does operate a very successful state bank). Few governmental agencies have demonstrated long-term expertise in choosing winners and losers in the business arena. Instead, the Commonwealth should focus on developing user-friendly programs that connect demonstrably successful small businesses with financial institutions and angel investors. It will not be easy either to develop such a program, or to find ways to supply such assistance in nonthreatening circumstances. Nevertheless, the numbers provided in Graphs 3 through 6 tell us that our very small firms are encountering problems moving to the second stage, and public policy should react accordingly.**

5 Benjamin Ryan, "Starved of Financing, New Businesses Are in Decline," Business Journal (September 4, 2014), www.gallup.com/businessjournal/175499/starved-financing-new-businesses-decline.aspx.

GRAPH 5

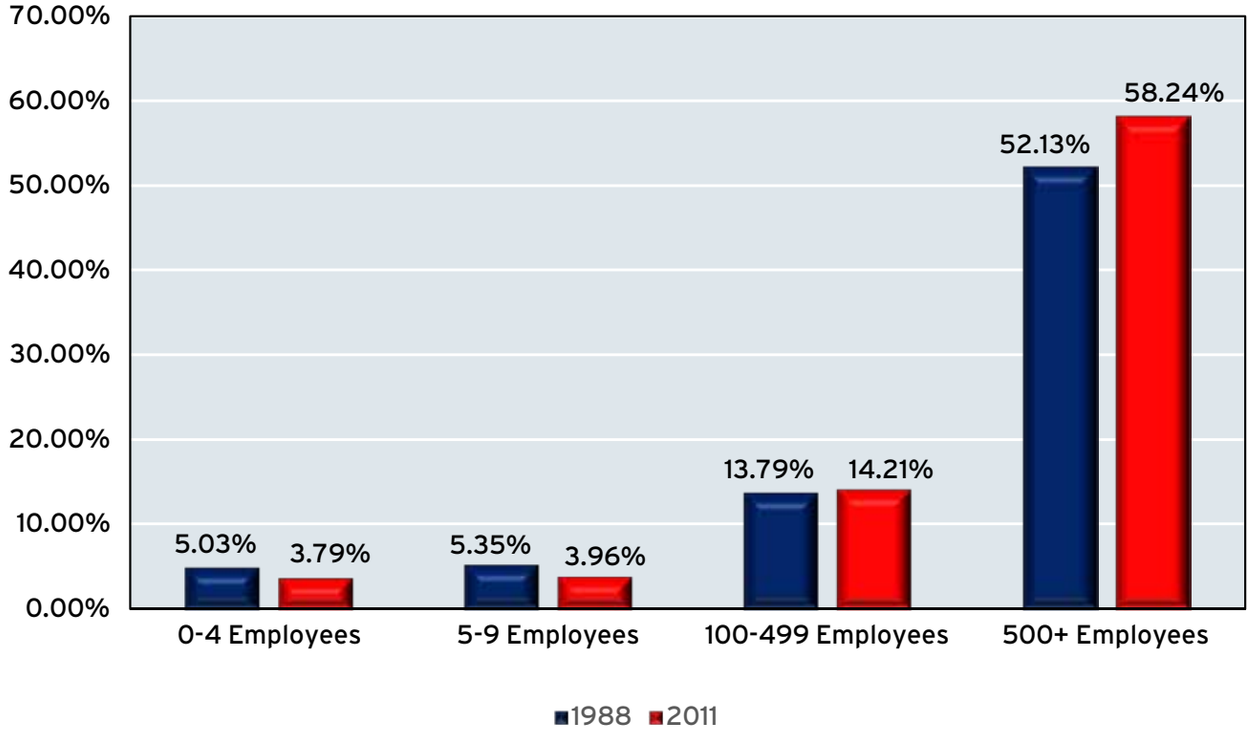
THE PERCENTAGE OF EMPLOYMENT ACCOUNTED FOR FIRMS OF VARIOUS SIZES: VIRGINIA, 1988 AND 2011



Source: U.S. Small Business Administration, www.sba.gov

GRAPH 6

THE PERCENTAGE OF PAYROLL ACCOUNTED FOR FIRMS OF VARIOUS SIZES: VIRGINIA, 1988 AND 2011



Source: U.S. Small Business Administration, www.sba.gov

Which Kinds Of Small Firms Are Doing Best In Virginia?

The U.S. Department of Commerce's Small Business Administration (SBA) publishes interesting data concerning the number of firms that operate in large sectors of the economy. The SBA utilizes the North American Industrial Classification System (see text box for explanation) to slot a firm in one economic sector or another and then collects voluminous data about the firms in each classification. Further, it breaks down the information by state. Frequently, these data go unused, but a determined researcher can mine the information and find useful numbers that provide a detailed picture of what is happening in either the United States or Virginia.

Graph 7 provides data on the number of firms in a variety of different sectors of the economy in 1998 and 2011. For example, in the education sector, there were 89 percent more very small firms (those with 0 to 4 employees) in Virginia in 2011 than in 1998. This produces the 1.89 value in Graph 7 for the education sector. In the United States as a whole, however, there were only 46 percent more firms of all sizes in the education sector in 2011 compared to 1998, and so Graph 7 records a value of 1.46 for the country. In general, an index greater than 1.00 indicates a sector in which there were more firms in 2011 than in 1998.

Graph 7 reports all of the NAICS two-digit economic sectors where Virginia clearly outpaced the United States between 1998 and 2011. In some sectors, the absolute number of firms in the U.S. actually declined during this period. This was true in transportation, retail trade and management.

Further, Graph 7 reveals that Virginia was an especially fertile location for very small firms involved in education, accommodations, professional services, real estate and administration. Bear in mind, however, that we've already shown that new business formation did not slow down as much in Virginia as it has nationally (review Graph 2), and since 1998, the Virginia economy has grown faster than the economy of the United States. Thus, one might expect Virginia's 2011 to 1998 ratios in Graph 7 frequently to be higher than those for the entire country.

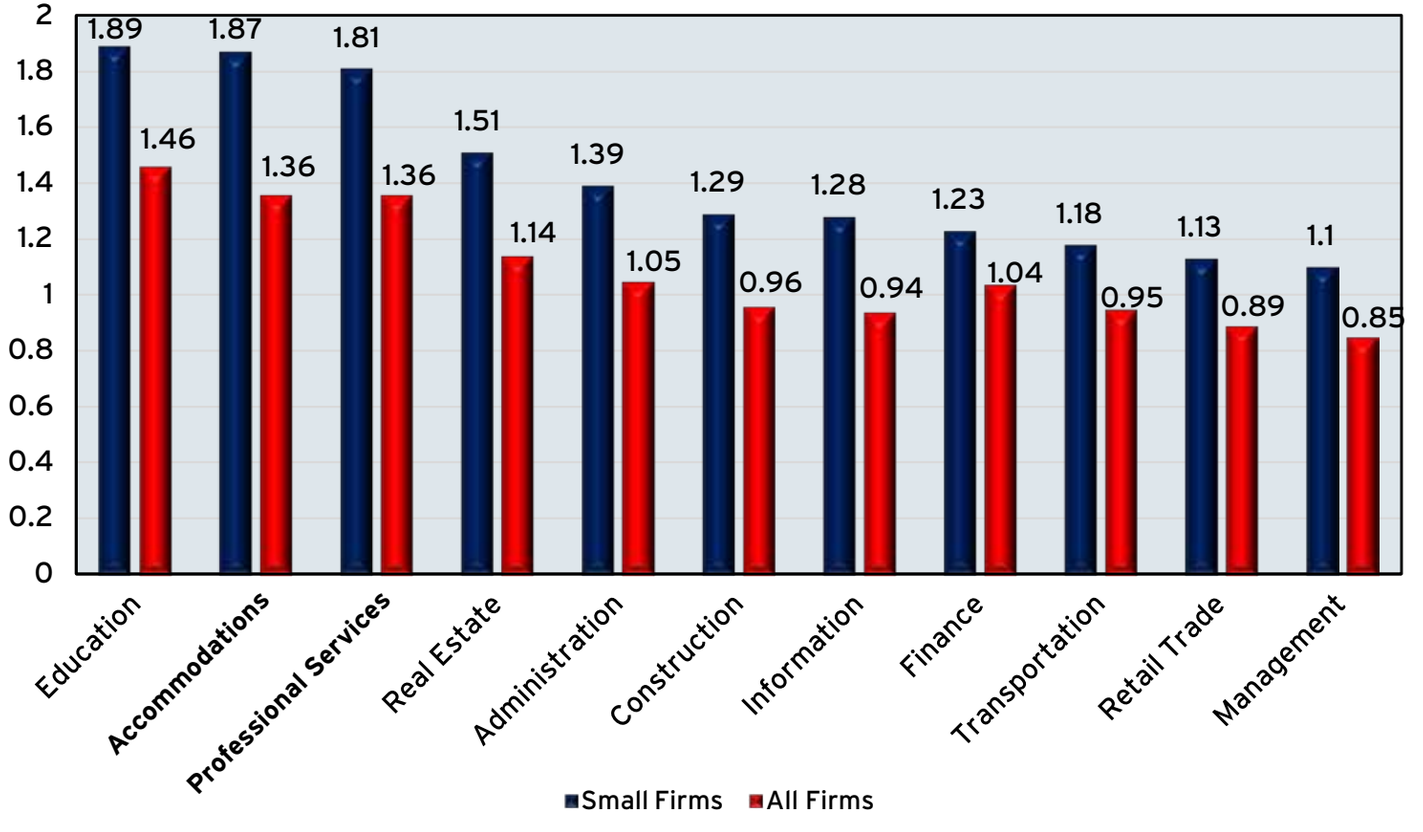
The relevant point, however is this: There have been many major sectors of the Virginia economy where very small firms (those with 0 to 4 employees) have been able to plant their feet successfully.

Which economic sectors were the least friendly for very small firms in Virginia between 1998 and 2011? Forestry, utilities, wholesale trade, transportation, management and health care. Pervasive economies of scale in utilities drove several very small, localized Virginia utilities to the wall during this time period, while mergers and consolidations eliminated some very small health care providers. Interestingly, there are some signs of a reversal in this trend in 2015 as alternate energy providers (think solar) and very small, private health care providers have begun to appear in greater numbers in both urban and rural Virginia locations.

NAICS, the North American Industrial Classification System, is widely used by federal agencies to standardize their classification and record keeping. Thus, construction is assigned the two-digit code 23, while the construction of buildings is 236 and residential construction is 2361. New single-family housing construction is 236115. The entire American economy is categorized in similar fashion.

GRAPH 7

SMALL FIRMS VERSUS ALL FIRMS IN VIRGINIA: WHERE WERE THE OPPORTUNITIES BETWEEN 1998 AND 2011?



Source: U.S. Small Business Administration, www.sba.gov

Summing It Up

Data provided by the Small Business Administration disclose that very small businesses (0 to 4 employees) have been holding their own in Virginia, while intermediate-sized businesses (10 to 99 employees) have been losing market share when measured by the percentage of firms in that size category, or the relative size of their workforces and payrolls. Larger businesses (100-plus employees), and especially those businesses with 500 or more employees, have been expanding their market shares.

Very small businesses in Virginia actually have become relatively more common in recent years, and Virginia's rate of new business formation (startups) exceeds that of the United States. However, very small businesses now account for a lower proportion of total employment and payrolls in the Commonwealth than was true 15 and 25 years ago.

The data reveal that Virginia is a good place to start a new small business. Challenges, however, appear to arise as these firms seek to grow larger. Many small firms have difficulties gaining traction as they attempt to move beyond their modest origins.

Policymakers often give considerable attention to generating new business startups, particularly those that are technology based. This is laudable and needs to continue, but we should recognize that a healthy majority of new business startups, especially those that are very small, are not technology based (though these firms usually are technology users). Further, additional attention needs to be given to moving small startup firms from infancy into what might be termed second-stage development – that is, growth beyond the 0 to 4 employee range.

The data suggest that energetic entrepreneurs with great ideas, particularly those who found and operate very small firms, often are not necessarily well equipped to deal with the tasks they subsequently confront as they attempt to grow. Increasingly, they face information technology, marketing and capitalization challenges in addition to day-to-day management issues. The data suggest many are not prepared for all of this. Hence, it is here that agencies such as the Small Business Administration and Virginia's Department of Commerce and Trade can provide critical assistance and guidance.

CONSOLIDATING OR MERGING THE PUBLIC SERVICE PROVISION IN VIRGINIA CITIES AND COUNTIES: WHERE CAN WE SAVE THE MOST MONEY?

Interest in consolidating or merging the provision of some publicly provided services in Hampton Roads has been a persistent topic of interest in the Commonwealth. The rationale usually has been twofold – mergers and consolidations could save money and at the same time improve the quality of services offered. Thus, many want to explore combining police forces, educational systems, Commonwealth's Attorney offices and the like.

The National League of Cities (www.nlc.org) takes a broad view of mergers and consolidations and asserts that at least six benefits could accrue from such combinations:

- **Cost Savings:** This is the classic reason motivating most joint service provision agreements between and among jurisdictions. Lower unit costs appear because larger operating units enable savings ("economies of scale").
- **Increased Efficiency:** Unification might reduce duplicative expenditures, especially overhead costs.
- **Increased Quality:** Increased scale in the provision of services could result in greater citizen choice and enhanced quality of those services.
- **Improved Resource Base:** This is essentially a political argument. Unification of jurisdictions generates more political clout, resulting in a greater ability to attract revenue and achieve goals.

- **Enhanced Ability to Plan:** The expectation is that unification results in more rational planning and thereby reduces the number of contradictory policies and operations.
- **Improved Accountability:** Because many citizens live in one jurisdiction but work and recreate in another, it can be difficult to assign responsibility for critical metropolitan services such as traffic, sanitation, crime prevention, etc., because these activities span boundaries. Unification is seen as a way to reduce such problems.

The Salient Question

Let's accept the notion that there could be benefits that accrue to governmental units and citizens if some (though not all) public services were combined/merged/consolidated across city lines. The salient question is: Which ones? How do we identify the prime candidates for the consolidation or merger of services (CMS) in Virginia's 95 counties and 39 independent cities?[1]

A perusal of discussions surrounding proposals for CMS in other cities around the United States reveals that the *sine qua non* of such discussions is cost savings. If government officials cannot promise cost savings from CMS proposals, then these ideas nearly always falter. Yes, arguments that CMS will increase the quality of services supplied do receive consideration, as do assertions that CMS will result in increased political clout. Nevertheless, decision makers and citizens usually focus intently on cost savings as their motivation for proposing public service CMS.

Cost arguments are more easily understood (and usually more easily measured) than are assertions concerning anticipated quality enhancements or political benefits. It is difficult to measure the quality of public service provision when increased political power for one group may mean decreased political clout for another. Thus, cost arguments usually dominate CMS discussions.

In this chapter, we focus on identifying which public services now being provided by the counties and cities of Virginia will offer the greatest cost savings to participating governmental units if these units were to decide upon selected CMS initiatives. Our analysis will reveal that there are more than one dozen public services where investigating consolidation and merger of those services makes sense.

We do not deny that there are many political and sociological motives that either spur or deter CMS. We're all aware of ancient divisions among our counties and cities as well as demographic and social differences that ultimately impinge on conversations concerning CMS between public governmental units. Instead, stating the question in terms of money recognizes the practicality that without demonstrable potential cost savings, CMS discussions are not likely to get out of the proverbial batter's box.

Our Approach To Identifying The Best Candidates For CMS

Virginia's Auditor of Public Accounts annually produces a report that discloses the total amount of money spent on more than two dozen public services as well as each city's per capita expenditures on those services (www.apa.virginia.gov). These cost data are reported by the auditor for all of Virginia's 95 counties and 39 independent cities. For example, in 2013, Manassas Park spent $428,819 ($228.90 per capita) on its city court system. Data such as these in the auditor's annual report constitute the primary basis for a rigorous analysis of the costs of service provision and the merits of possible CMS initiatives in Virginia's counties and cities.

The reality is that the service delivery costs reported by the auditor are numbers that do not take into account a host of factors that might cause one city to spend more than another city on a specific public service. For

1 Virginia also boasts more than 190 incorporated "towns," a few of which are larger than some of its 39 independent "cities." Cities are independent jurisdictions; towns are situated within one or more counties. Cities may be surrounded by counties, but are independent of the counties. Thus, city residents do not vote for county officials or pay county taxes. However, town residents vote for county officials and pay county taxes. Towns have not been included in this analysis because of their generally small size (though the "town" of Blacksburg, for example, has more than 40,000 residents, about 10 times as many as the "city" of Norton).

example, one must consider the impact that major differences in prices, wages and incomes among Virginia's cities have upon their expenditures. For example, in 2013, the cost of living was 37.7 percent above the national average in Alexandria, but only .6 percent above the national average in Bristol. Consequently, it would be misleading to assume that inefficiency is the only reason that Alexandria spent $109.52 per capita on its courts in 2013, while Bristol spent only $59.35 per capita on the same service.

In order to establish a level economic playing field where public service costs are concerned, one must adjust them for the differences in the cost of living just noted. C2ER (the Council for Community and Economic Research, www.c2er.org) publishes a cost-of-living index (COLI) for every city and county in the United States, and we use that index in all of our statistical analyses. We are interested in "real" cost differentials, not differences in the cost of living.

In order to make our results more easily understood, we index all of the per capita cost data so the average value is 100. For example, in the case of K-12 expenditures on instruction, Buchanan County spent a total of $15,344,250 in 2013; this was $888.23 per capita. Since the average per capita expenditure for the 134 counties and cities in Virginia was $1,183.68, Buchanan County is assigned an index number of $888.23/$1,183.68 = 75 for this service.

It's clear that the expenditures a city makes on public health, law enforcement or K-12 education reflect its peculiar circumstances and needs as they are interpreted locally. The demographic and economic structure of each city makes a difference. For example, a city with a higher rate of poverty would be expected to spend more on welfare and social services. To wit, Poquoson spent $52.01 per capita on welfare and social services, while its neighbor Newport News spent $225.51 per capita. Per se, this expenditure differential does not necessarily represent inefficiency, but rather the demographic and economic realities of the two different cities.

In order to deal with the effects of the distinctive characteristics of each city on its public service expenditures, one must estimate what each city likely would be expected to spend on this service, given its peculiar characteristics. This requires developing an estimating equation capable of predicting accurately what each city's per capita expenditures on a public service would be expected to be, given its demographic and economic circumstances.

What demographic, economic and political factors most likely influence spending on particular public services? We focused upon the following 11 factors, each of which plausibly influences the provision of public services in Virginia cities and counties:

The per capita expenditure of each city "i" on each service "j" (PCEij) depends upon:

- **City Size/Scale (POP):** This is measured by each city's population in all cases except public K-12 education, where scale is measured by the number of students in the city's school district. If economies of scale are present, then per capita costs will decline as population increases – holding all other influences constant. Scale (city size or school district size) is a critical variable when mergers and consolidations of public services are being considered.

- **City Size/Scale Squared (POP SQ):** Including the squared value of the POP variable allows for the possibility of nonlinear relationships between expenditure costs and city size/scale – costs per capita are allowed to increase or decrease in nonproportional ways as size increases. Put simply, including this variable allows for the possibility that the relationship between expenditures per capita and city size isn't best reflected by a straight line, but instead a curve.

- **Population Density (POP DENS):** Higher population densities may require higher levels of expenditures on some public services because the number of human interactions and complications rises rapidly as population density increases.

- **Cost-of-Living Index (COLI):** Including each county or city's C2ER cost-of-living index recognizes cost differences that have nothing to do with efficiency, but instead reflect the higher or lower cost of doing business in a county or city.

- **Poverty Rate (POV RATE):** It is reasonable to expect that expenditures upon certain public city services will be sensitive to city poverty rates. Even so, the impact of poverty upon law enforcement expenditures might well be different from the impact of poverty upon cultural expenditures.

- **Hosted Private-Sector Jobs to Population Percentage (PRIV JOBS PCT):** Cities that host high proportions of private-sector jobs relative to their populations (that is, cities to which many individuals commute to work) plausibly must expend funds upon infrastructure, traffic and law enforcement, and similar services to accommodate those job holders. However, such cities are not responsible for providing other services, such as K-12 education, to the inward-bound job commuters.[2]

- **Fiscal Stress Rank (FISCAL STRESS RANK):** Annually, the Commonwealth's Department of Housing and Community Development (www.dhcd.virginia.gov) produces a report that ranks each city and county in terms of their "composite fiscal stress," that is, the ability of each to pay for the apparent needs it faces. The supposition is that the greater a city or county's ability to pay (given its circumstances), the more it will spend on public services (though state financial assistance dulls this effect).

- **Homeowner Percent (HOME PCT):** Cities with higher proportions of homeowners (as opposed to renters and apartment dwellers) plausibly could prefer higher expenditures upon certain services, such as schools.

- **County or City (CITY DUMMY):** Both counties and cities are governmental units, but they are different animals in terms of their obligations, demographics and revenue capacity. This dummy variable, which assumes a value of 1 if the governmental body is a city and 0 otherwise, is designed to pick up such differences.

- **Revenue Per Capita (REV PER CAP):** This governmental version of "If you build it, they will come" instead is, "If you raise money in taxes, you will spend it." This variable reflects both the potential and actual revenue-raising activity of the counties and cities.

- **Percent Commonwealth Funding (COMMON REV PCT):** This variable measures the percentage of a city's expenditures that are self-funded by a particular city. A reasonable expectation is that cities' spending on public services will increase when the state and federal governments pay for increased proportions of that spending; however, the opposite could be true if those "outside" funding sources are viewed as not being dependable.

2 Public-sector jobs might make a difference as well, but in the case of the military, the Department of Defense bears a proportion of this cost that is difficult to ascertain, and therefore public-sector employees have not been included.

In the case of public school expenditures, two "scale" variables involving student headcount are used rather than city population:

- **Student Headcount Enrollment (ENROLL):** Student headcount enrollment measures the size of each city's school district and is critical in assessing the existence of economies of scale in the provision of K-12 educational services.

- **Student Headcount Enrollment Squared (ENROLL SQ):** As true for the POP SQ variable described previously, this variable allows for the possibility that the relationship between costs and school district size is best reflected by a curve rather than a straight line.

The Results

The results presented below constitute a cost-of-living-adjusted analysis of the spending of Virginia's 95 counties and 39 independent cities for 23 distinct public services. Five of these services involve K-12 education.

The statistical source of the results is a conventional linear regression estimating equation.[3]

We take into account the 11 factors noted above in estimating how much we would reasonably expect each of the 134 governmental units to spend on a particular public service, per capita, given its demographic and economic situations. We then utilize the results for two purposes:

- To determine if economies of scale exist in the provision of this public service such that it might be a viable candidate

3 $PCE_{ij} = a + b_1(POP) + b_2(POP\ SQ) + b_3(POP\ DENS) + b_4(COLI) + b_5(POV\ RATE) + b_6(FISCAL\ STRESS) + b_7(HOME\ PCT) + b_8(JOBS\ PCT) + b_9(CITY\ DUMMY) + b_{10}(REV\ PER\ CAP) + b_{11}(COMMON\ PCT)$

for consolidation or merger. If the average cost of providing a particular service (adjusted for the 11 factors above) declines as city size increases, then this constitutes a *prima facie* argument for considering the possibility of consolidation or merger because cost economies exist.

- To estimate the efficiency of operations of each public service by each city. The estimating equation tells us what a particular city might be expected to spend per capita on a particular public service. If it is spending noticeably more than this, then perhaps it is not efficient in providing this service. If it is spending noticeably less than this, then perhaps it is efficient in providing this service. While such differentials certainly are not definitive, wide variations from the expected should prompt analysis of the quality of the services provided as well as the efficiency of the provision of those services.

With respect to city service provision efficiency, if the estimating equation described above predicts that a governmental unit might be expected to spend $200 per capita annually on sanitation and waste removal, but actually it is spending $250 per capita for that purpose, then this is a finding worthy of attention and analysis. It could be that it is simply inefficient in its provision of sanitation and waste removal. However, it also could be that this governmental unit has decided to offer perceptibly higher levels of quality for this service. Elements of both could be true.

The most important result generated by this analysis, however, relates to economies of scale. If larger cities serving more citizens are able to supply a service at noticeably lower cost than smaller cities, then an argument exists for considering the possibility of CMS for that service. On the other hand, if costs per capita increase as city size increases, then this is a service that apparently would not generate any cost savings if CMS occurred. The goal, via this estimating process, is to identify public services that are the most obvious candidates for merger/consolidation.

Once again, it is important to note that costs are not the only thing that should be considered when merger and consolidation discussions occur. Nevertheless, arguments for merging or consolidating the delivery of a public service are not likely to gain significant traction if no cost economies can be demonstrated.

LIST OF PUBLIC SERVICES EXAMINED

This study examines the provision of the following 25 public services:

(1) General City Financial and Administrative Activities
(2) Commonwealth's Attorney
(3) Community Development
(4) Corrections and Detention
(5) Courts
(6) Cultural Activities
(7) Elections
(8) Environmental Activities
(9) Fire and Rescue
(10) Public Health
(11) Inspections
(12) Law Enforcement and Traffic
(13) Legislative and Governance
(14) Maintenance of Buildings and Grounds
(15) Maintenance of Roads, Bridges and Highways
(16) Mental Health and Mental Retardation
(17) Parks and Recreation
(18) Public Library
(19) Sanitation and Waste Removal
(20) Welfare and Social Services
(21) K-12 Educational Administration
(22) K-12 Food Provision and Non-Instruction
(23) K-12 Instruction
(24) K-12 Operations and Maintenance
(25) K-12 Pupil Transportation

EXAMPLE: GENERAL CITY FINANCIAL AND ADMINISTRATIVE ACTIVITIES

Graph 1 shows the estimated relationship between per capita expenditures on general financial and administrative activities in the 134 governmental units and the populations of those cities and counties – taking into account all of the factors noted above. **One can see that the 134 units enjoy reduced unit costs (they experience economies of scale) in their financial and administrative activities, as they grow larger – but only to a certain point. Beyond a certain point (roughly 630,000 population), estimated unit costs begin to rise.**[4]

Graph 1 and all of the graphs that follow are "best fit" relationships. They illustrate what the cost data tell us. County and city names have been inserted to provide context. This does not mean that a particular county or city actually resides precisely on the "best fit" line that characterizes all 134 counties and cities. In a succeeding section, we will illustrate how a specific city or county's situation can be compared to the "best fit" situation.

In Virginia, the median (50th percentile) size of our 134 counties and cities is only 25,655. Therefore, Virginia has more than 65 county and independent city governing entities that are comparatively small. This is an important reason why conversations concerning the cost-saving potential of CMS have immediate relevance for us. The impressively large economies of scale illustrated in Graph 1 for financial and administrative tasks suggest that many of our smaller governmental units could save money if they consolidated or merged these services.

Some words of caution are appropriate at this point. The population of the city of Virginia Beach is 449,628. There is only one governmental unit (Fairfax County) that has a larger population; Fairfax County's population was 1,116,897 in 2013. Hence, the estimates in Graph 1 between these two populations are extrapolations of what the relationship between costs and population looks like if that relationship is smooth and continuous. In any case, fully 132 of the 134 county/city observations involve populations smaller than Virginia Beach and we can have much greater confidence concerning the shape of the cost curve in that interval.

4 One must be very careful here, however, because there is only one governmental unit of this size in Virginia (Fairfax County). Hence, strong conclusions about rising unit costs beyond 630,000 population should be avoided.

If the cost relationship depicted in Graph 1 is accurate, then the optimal county/city size in terms of minimizing financial and administrative costs is about 630,000. This is the population that offers the lowest per capita financial and administrative costs. Note, however, that only Fairfax County, with more than 1.1 million residents, is larger than Virginia Beach's 449,628 citizens, so caution is called for with respect to the shape of the cost curve beyond 449,628 population.

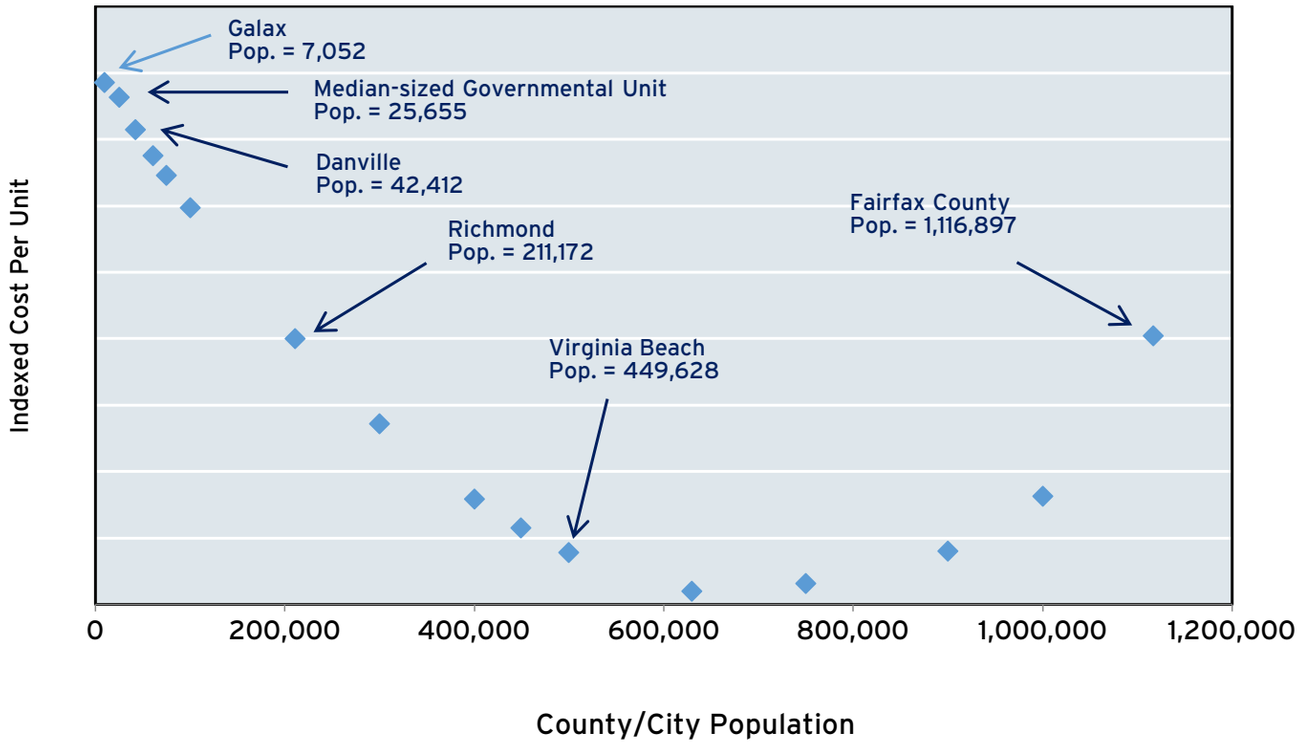
The apparent cost implications of Graph 1, however, cannot be missed – significant economies of scale exist in the provision of general financial and administrative services for at least 132 of Virginia's 134 counties and cities. Finance and administration is a service that appears to be ripe for CMS discussions. Graph 1 informs us that there is money to be saved by means of CMS where finance and administration are concerned. The logical place for counties and cities to start such discussions is with adjacent governmental units. Nevertheless, some of the available economies of scale potentially could be generated by non-adjacent counties and cities if, for example, they were to engage in joint purchases of items ranging from paper to automobiles, utilize common software licenses, and share affirmative action officers and retraining of specialists, etc.

The financial stakes are large. In 2013, according to the Auditor of Public Accounts, the 134 counties and cities spent $1.008 billion on general financial and administrative activities. If these governmental units were able to save only 5 percent of this amount ($50 million) by means of CMS, this would be worth $6 annually to every Virginian. Note that there are 24 other public service CMS possibilities that have the potential to add to this saving.

Some Virginians may feel that the Commonwealth maintains too many local governmental units because of our complicated system of independent cities, towns and counties. However, we have only 6.1 governmental units per 1,000 citizens – a paltry number when compared to North Dakota's 389.9 governmental units per 1,000 citizens, or even neighboring North Carolina's 10. www.governing.com/gov-data/number-of-governments-by-state.html

GRAPH 1

THE PER CAPITA COST CURVE FOR GENERAL FINANCIAL AND ADMINISTRATIVE SERVICES RELATIVE TO POPULATION IN 134 VIRGINIA COUNTIES AND CITIES, 2013



Source: Center for Economic Analysis and Policy, Old Dominion University

EXAMPLE: MAINTENANCE OF ROADS, BRIDGES AND HIGHWAYS

"Everybody has to do it," commented one elected official. She was referring to the need for government to maintain public roads, bridges and highways. Yes, this need includes filling ubiquitous road potholes, cutting grass, removing trash and other necessary, but unglamorous, tasks.

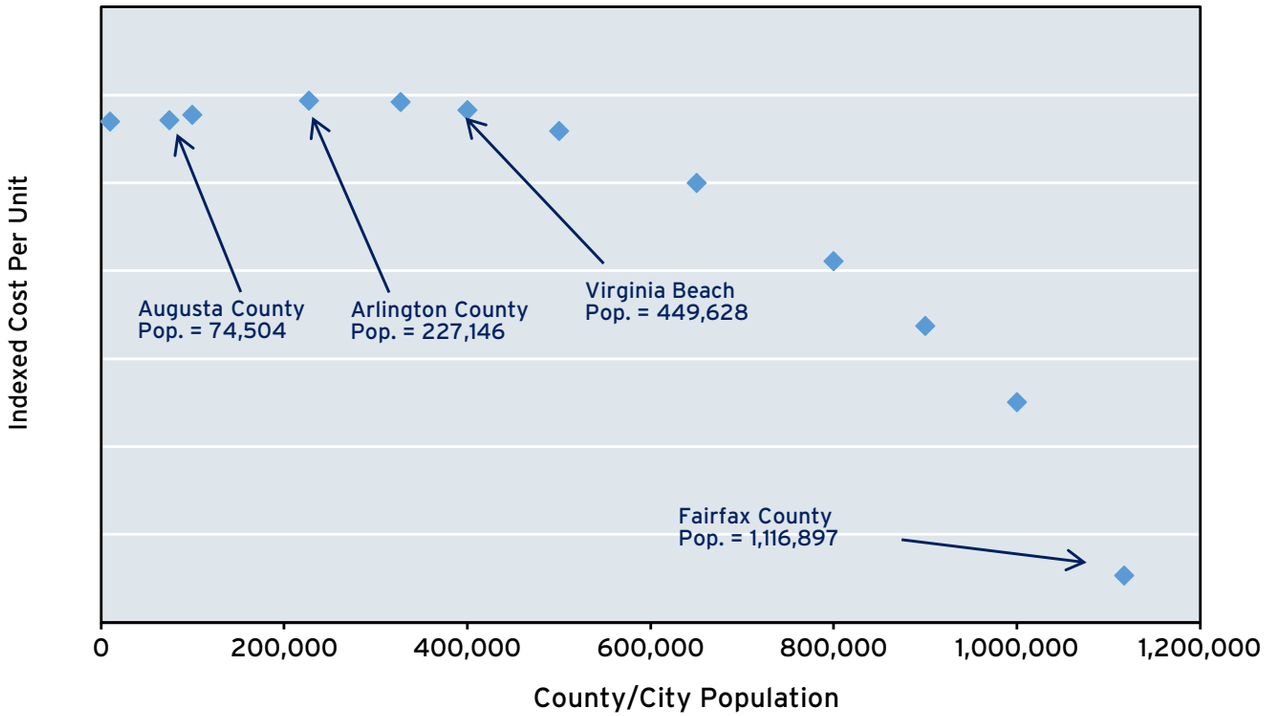
In contrast to financial and administrative tasks, mild diseconomies of scale exist for most Virginia governmental units with respect to the maintenance of their roads, bridges and highways. Graph 2 reveals that per capita costs rise gradually as city and county populations grow until governmental units serve about 250,000 people. After that, these per capita costs begin to recede. Fairfax County, with a population of 1,116,897, potentially enjoys substantial economies of scale. However, it is the only observation involving a population of this size so caution should be exercised concerning the shape of this cost curve beyond the size of Virginia Beach (449,628).

In addition to Fairfax County, only six other jurisdictions (Arlington County, Chesterfield County, Henrico County, Loudoun County, Prince William County and the city of Virginia Beach) are large enough to be able to experience available economies of scale on their own. There are, however, many medium-sized cities (Alexandria, Chesapeake, Hampton, Newport News, Norfolk, Richmond and Roanoke) and medium-sized counties (Spotsylvania and Stafford) that presumptively could lower their road, bridge and highway maintenance costs by CMS.

On the other hand, the maintenance data suggest that there is relatively little to be gained cost-wise by pursuing CMS in the Commonwealth's smaller governmental units.

GRAPH 2

THE PER CAPITA COST CURVE FOR MAINTENANCE OF ROADS, BRIDGES AND HIGHWAYS RELATIVE TO POPULATION IN 134 VIRGINIA COUNTIES AND CITIES, 2013



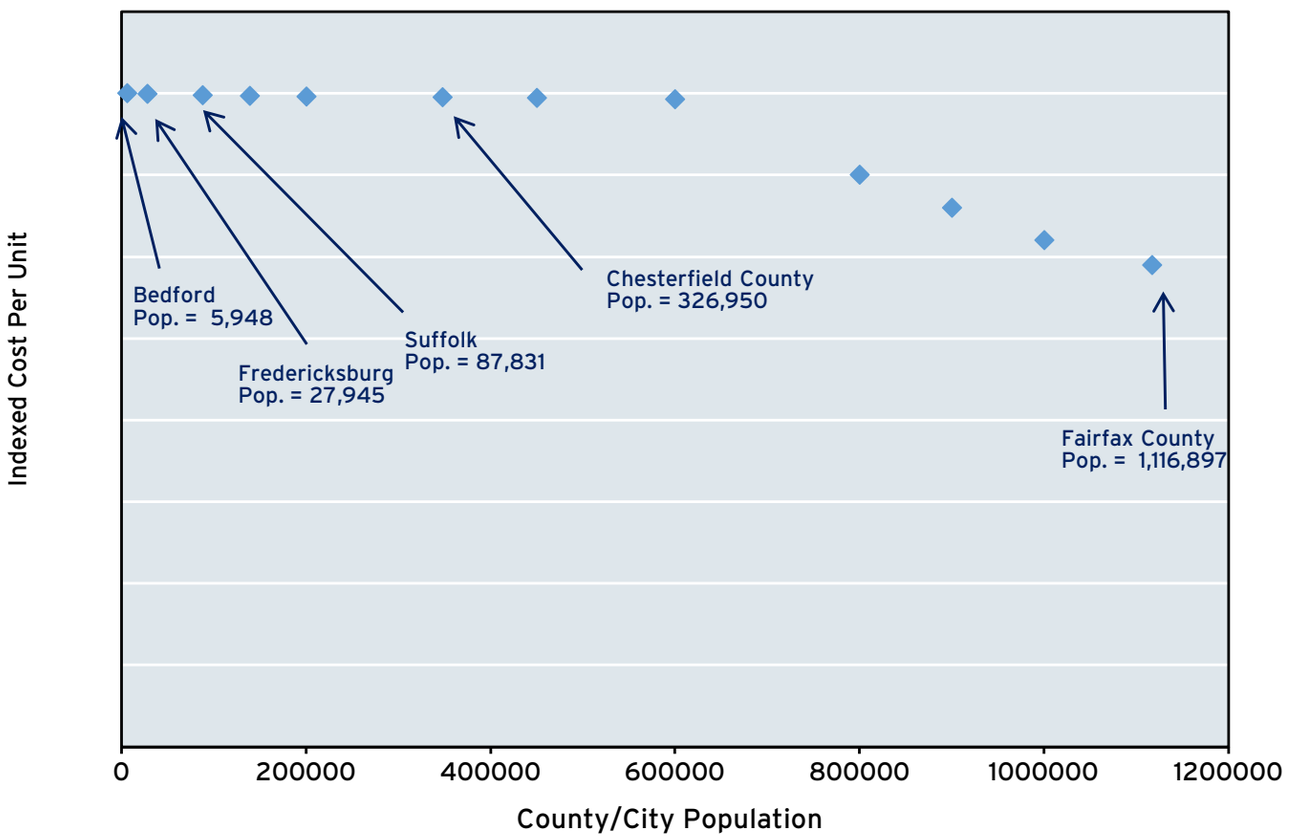
Source: Center for Economic Analysis and Policy, Old Dominion University

EXAMPLE: PARKS AND RECREATION

All but five of Virginia's 134 counties and cities reported cost information to the Auditor of Public Accounts concerning their expenditures on some type of parks and recreation system. Graph 3 discloses that "constant returns to scale" (level per capita costs as population increases) characterize parks and recreation activities until a county or city becomes very large. In our sample, only the city of Virginia Beach and Fairfax County are of such size that enables them to benefit from economies of scale in their parks and recreation activities. This is not true for a clear majority of the Commonwealth's counties and cities. Hence, CMS would not appear to be a pressing concern where parks and recreation programs are concerned.

GRAPH 3

THE PER CAPITA COST CURVE FOR PARKS AND RECREATION RELATIVE TO POPULATION IN 134 VIRGINIA COUNTIES AND CITIES, 2013



Source: Center for Economic Analysis and Policy, Old Dominion University

COMPARING COUNTIES AND CITIES TO OUR PREDICTIONS

Let's now illustrate where several counties and cities actually are compared to the "best fit" line that reflects our best estimate of the overall relationship and cost tendencies for the 134 counties and cities. In essence, we are asking, "How does this city/county compare to the way the typical city/county does things?"

We will use general financial and administrative expenditures as our example. However, the same techniques can be utilized to generate specific information for any of the 25 public services in any of the 134 counties and cities.

Using the statistical relationship we developed to generate the "best fit" line for financial and administrative expenditures, let's now insert specific values for each explanatory variable into our "best fit" equation for the cities of Lynchburg and Winchester, and Northampton County.

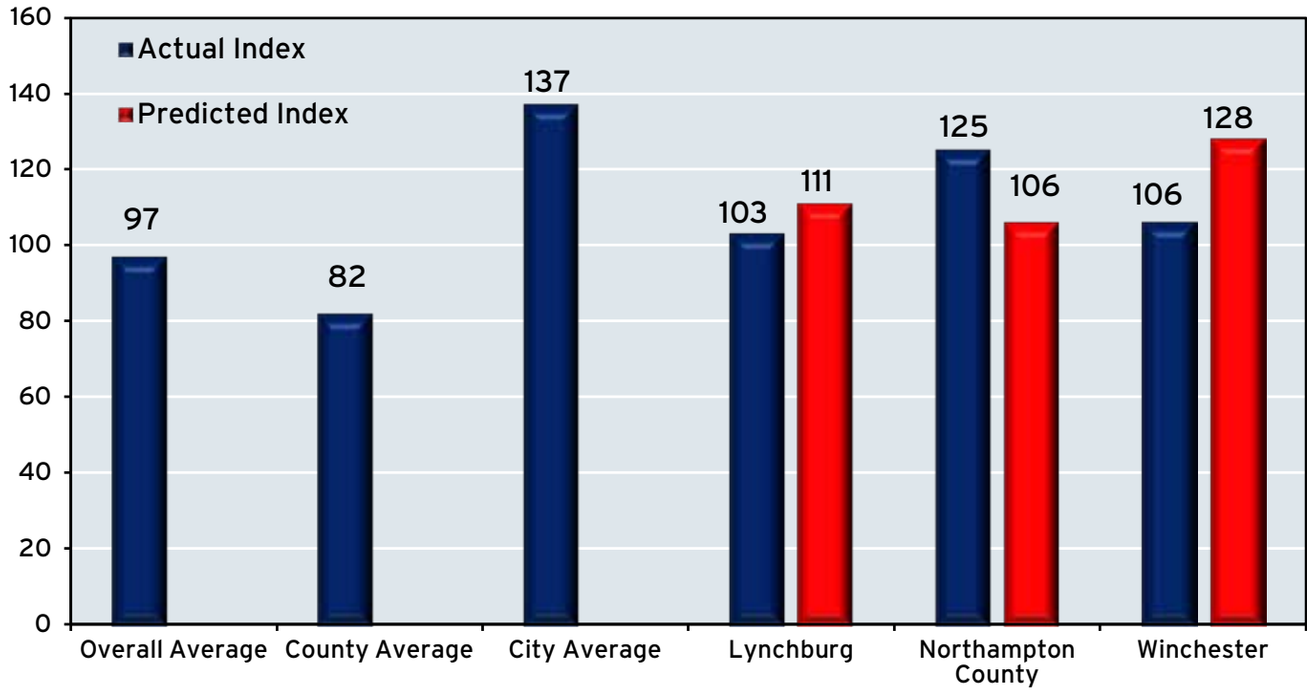
Our predicted index value for all three governmental units, based on their expenditures on financial and administrative activities, assumes they react and behave like the typical Virginia county/city with respect to the 11 influences in our model – population, poverty rate, fiscal stress, etc. Thus, our model tells us that if Lynchburg were "typical," it would have a financial and administrative cost index of 111. In fact, Graph 4 shows Lynchburg's index is only 103.

There are four possible explanations for this disparity. First, the city of Lynchburg simply may be more cost conscious and efficient in its operations than other counties and cities and thus able to get along with fewer administrators and workers. Second, Lynchburg may be offering financial and administrative services of lower quality and/or not offering as much as the typical county or city. Third, our model may not contain explanatory variables that are critical to Lynchburg's situation. Fourth, we could be observing a one-year aberration that will not reoccur in future years. For example, adverse weather and financial events can force counties and cities to reallocate funds to meet unusual circumstances.

We don't know which of these explanations (or perhaps a combination of them) applies in the case of Lynchburg. Nor can we immediately explain why Winchester also "beats" our cost prediction, while Northampton County does the opposite. Those cities and county, however, ought to be interested in discovering why. Indeed, this model can generate similar estimates for all of the 25 public services being examined. **Whether or not counties or cities choose to pursue CMS, they should be interested in examining why their jurisdiction performs better or worse than the typical Virginia governmental unit in the provision of public services. This model provides counties and cities with a means to audit the efficiency of their operations.**

GRAPH 4

ACTUAL VS. PREDICTED EXPENDITURE INDEXES FOR FINANCIAL AND ADMINISTRATIVE ACTIVITIES FOR LYNCHBURG, NORTHAMPTON COUNTY AND WINCHESTER



Source: Center for Economic Analysis and Policy, Old Dominion University

Summing Up Our Findings

We have examined the costs that 95 counties and 39 cities incurred in 2013 as they provided 25 public services to their citizens. The most vital information in that regard is whether economies of scale exist in their provision of a specific service such that consolidating or merging the provision of that service would result in lower per capita costs. With this in mind, we can summarize our findings as follows:

Economies of Scale Exist: CMS Discussions Are Merited

Legislative and City Council Activities

Financial and Administrative Activities

Elections

Commonwealth's Attorney

Courts

Public Libraries

Law Enforcement and Traffic

Inspections

Sanitation and Waste Removal

Maintenance of Buildings and Grounds

Welfare and Social Programs

K-12 Instruction

K-12 Administration

Modest Economies of Scale Exist or Evidence Is Mixed: CMS Possibilities Limited

Parks and Recreation

Environmental Programs

Health

K-12 Food and Non-Instructional Activities

Constant Costs Exist: CMS Discussions Probably Not Merited

Corrections and Detention

Mental Health and Retardation

Diseconomies of Scale Exist: CMS Discussions Not Merited, Though Larger Governmental Units Perhaps Might Investigate Decentralization

Cultural Activities

Community Development

Maintenance of Roads, Bridges and Highways

Fire and Rescue

K-12 Operations and Maintenance

K-12 Pupil Transportation

The evidence presented here plants a new flag: Never before has anyone made a rigorous attempt to estimate cost functions for each of the 25 major public services that Virginia's counties and cities provide. This evidence certainly does not constitute the last word on these matters, but does provide thought-provoking information to which prudent county and city leaders should give attention.[5]

Joint service provision by several governmental units already exists in important areas such as public transportation, water supply, and sanitation and waste removal. There now is ample reason to explore the expansion of this list.

5 Old Dominion University's Center for Economic Analysis and Public Policy has the ability to analyze the cost circumstances of any particular city or county, or any related collection of cities and counties.

DOMESTIC MIGRATION: WHAT MOVES US?

Not all those who wander are lost.

– J.R.R. Tolkien

Charles Tiebout is not a household name in the Commonwealth, but this now deceased economist was a very perceptive observer of human behavior. Almost 70 years ago, he hypothesized that people have the ability to vote with their feet.[1] They can move out of cities and counties whose overall characteristics they find inferior and into areas whose characteristics they deem superior. More often than not, the factors pushing them to do so are economic in nature, but other factors count as well.[2] Tiebout's "I'll leave if I'm not satisfied" insight may seem blindingly obvious today, but until he began to probe the implications of this for the migration of people in and out of metropolitan regions, no one really had provided any reliable empirical evidence on the subject.

Reality is that millions of people move around the United States every year. In 2012, nearly 16.9 million people moved between counties and 7 million of these were long-distance interstate moves.[3] A majority of those individuals changing locations moved into the fastest-growing metropolitan regions of the country, most of which are concentrated in the South and West.[4] Why did they move? Why do Virginians pick up and leave? That is the subject of this chapter.

1 Charles M. Tiebout. (1956). "A Pure Theory of Local Expenditures," *Journal of Political Economy*, 64(4), 416-24.
2 The economist Richard Cebula of Jacksonville University is recognized as the guru of domestic migration studies. Over the space of 40 years, Cebula has authored dozens of empirical studies that have tested aspects of the Tiebout hypothesis.
3 America: A Nation on the Move, December 10, 2012, http://blogs.census.gov/2012/12/10/america-a-nation-on-the-move.
4 Metro Areas in South, Western U.S. Record Largest Population Gains. Source: www.governing.com/blogs/by-the-numbers/census-2012-metro-area-population-estimates.html.

The population of Virginia increased to 8,260,405 from 8,001,024 between 2010 and 2013. Although there were 103,284 births and 60,916 deaths in the Commonwealth in 2013, our net domestic migration – moves made by people already living in the United States – was 3,099.[5] That is, once we take account of births and deaths, and subtract departures of Virginians to other states, a net of only 3,099 individuals other than international immigrants found a new place to live in the Commonwealth.[6]

5 Although in 2013 Virginia international migration was 29,762 and this is an interesting topic for discussion, our focus is on movers between metropolitan areas.

6 The Weldon Cooper Center for Public Service at the University of Virginia recently released a brief report based on Internal Revenue Service data indicating that there was net out-migration from the Commonwealth between 2012 and 2013 (http://statchat.va.org). We rely upon U.S. Census Bureau data in this chapter and focus upon a longer time span - 2010-2013.

TABLE 1

2013 NET MIGRATION NUMBERS: THE TOP 20 STATES

STATE	END OF YEAR 2010 POPULATION	END OF YEAR 2013 POPULATION	POPULATION CHANGE, 2010-2013	2010-2013 NET DOMESTIC MIGRATION
Texas	25,145,561	26,448,193	1,302,632	113,528
Florida	18,801,310	19,552,860	751,550	91,484
North Carolina	9,535,483	9,848,060	312,577	37,240
Colorado	5,029,196	5,268,367	239,171	36,284
South Carolina	4,625,364	4,774,839	149,475	29,324
Arizona	6,392,017	6,626,624	234,607	26,417
Washington	6,724,540	6,971,406	246,866	17,027
North Dakota	672,591	723,393	50,802	16,961
Oklahoma	3,751,351	3,850,568	99,217	14,268
Nevada	2,700,551	2,790,136	89,585	12,854
Tennessee	6,346,105	6,495,978	149,873	12,649
Oregon	3,831,074	3,930,065	98,991	10,215
District of Columbia	601,723	646,449	44,726	6,319
Utah	2,763,885	2,900,872	136,987	5,567
Montana	989,415	1,015,165	25,750	5,467
South Dakota	814,180	844,877	30,697	4,762
Idaho	1,567,582	1,612,136	44,554	4,579
Virginia	***8,001,024***	***8,260,405***	***259,381***	***3,099***
Delaware	897,934	925,749	27,815	3,010
Wyoming	563,626	582,658	19,032	2,616

Source: U.S. Census Bureau Population Estimates Program

Table 1 reports the top 20 states, including the District of Columbia, with the highest domestic net in-migration. Virginia ranks 18th on the list. Although Virginia is in the top 20, a closer examination of the data shows that only the top 12 states actually had hearty domestic migration numbers of greater than 10,000.

The Internet site www.governing.com, which focuses on state and local government issues, publishes data concerning the characteristics of those migrating into and out of states. Table 2 reports the characteristics of the typical domestic migrant into Virginia in 2012. One can see, for example, that more than half of domestic migrants into Virginia were college graduates and that almost a quarter had earned graduate or professional degrees. However, their median (50th percentile) age was only 27.4 and their individual median income was less than $27,000. Thus, our in-migrants typically are young, well-educated individuals who have yet to make their fortunes.

Table 3 reveals the geographic sources of Virginia's migrants, both those coming in and those leaving. Neighboring states North Carolina and Maryland contributed more domestic immigrants to the Commonwealth than other states, but California and New York, both of which were experiencing difficult economic conditions at the time of the survey, also generated substantial numbers of immigrants into Virginia. Further, all four of these states host large active-duty military populations and hence are likely to supply many in-migrants to Virginia for that reason as well.

What about domestic migration to and from Virginia's major metropolitan areas? Table 4 reports net migration rates for Virginia's five largest metropolitan areas between 2010 and 2013. It is immediately apparent that Northern Virginia was the big gainer and Hampton Roads the big loser. Presumably, stagnant defense spending had something to do with Hampton Roads' net domestic out-migration. Actual direct defense spending in Hampton Roads declined from $19.51 billion in 2011 to $19.23 billion in 2013 (The State of the Region report for Hampton Roads, 2014).

However, the focus on metropolitan areas in Virginia disguises some interesting changes inside those regions. Table 5 reveals that Loudoun and Prince William counties accounted for about three-quarters of the net domestic immigration into Northern Virginia during this time period.

However, Table 6 tells us that at the same time, Fairfax County was experiencing an out-migration that exceeded 11,600. Meanwhile, inside Hampton Roads, domestic migration into Chesapeake exceeded 3,000, but this trend was outpaced easily by out-migrations exceeding 6,000 each from Norfolk, Portsmouth and Virginia Beach.

TABLE 2

NEW VIRGINIA RESIDENTS: 2012 AMERICAN COMMUNITY SURVEY

VIRGINIA MOVER DEMOGRAPHICS	
Total Out-of-State Movers	312,717
Total Moved from Different State	250,653
Total Moved from Abroad	62,064
Percent Female	49.1%
Percent Male	50.9%
Median Age of Movers from Different State	27.40
Percentage of Movers Under 18	21.6%
Percentage of Movers Age 65+	4.2%
Foreign Born	19.8%
Native	80.2%
Education and Income	
At Least Bachelor's Degree	51.4%
Graduate or Professional Degree	24.1%
At Least Some College	74.7%
Median Income of Domestic Movers	26,589

Source: www.governing.com/gov-data/residents-moving-to-new-state-demographics-population-statistics.html

TABLE 3

STATE-TO-STATE MIGRATION: 2012 AMERICAN COMMUNITY SURVEY

ARRIVING VIRGINIA FROM:	
North Carolina	22,735
Maryland	22,051
California	19,371
Florida	17,773
New York	12,455
LEAVING VIRGINIA FOR:	
North Carolina	27,302
Maryland	22,089
Florida	16,614
California	15,753
Texas	13,231

Source: www.census.gov/hhes/migration/data/acs/state-to-state.html

TABLE 4

2010-2013 DOMESTIC MIGRATION: VIRGINIA'S FIVE LARGEST METROPOLITAN AREAS

METRO AREA	DOMESTIC MIGRATION
Hampton Roads	(18,879)
Lynchburg	1,834
Richmond	10,783
Roanoke	1,004
Northern Virginia	40,900

* Births and deaths not included
Source: www.governing.com/gov-data/census/metro-area-population-migration-estimates-2013-data.html

TABLE 5

2010-2013 DOMESTIC NET MIGRATION: VIRGINIA'S LARGEST RECIPIENTS

METRO AREA	NET DOMESTIC MIGRATION
Loudoun County	17,926
Prince William County	12,764
Chesterfield County	4,065
Richmond	3,986
Arlington County	3,765
Chesapeake	3,067
James City County	2,516
Bedford County	1,194
Roanoke	745

* Births and deaths not included
Source: www.governing.com/gov-data/census/metro-area-population-migration-estimates-2013-data.html

TABLE 6

2010-2013 DOMESTIC NET MIGRATION: VIRGINIA'S LARGEST LOSERS

METRO AREA	NET DOMESTIC MIGRATION
Fairfax County	-11,729
Norfolk	-6,709
Newport News	-6,597
Virginia Beach	-6,248
Hampton	-3,828
Alexandria	-2,688
Petersburg	-987
Hopewell	-780
Roanoke	-314
Sussex County	-236

* Births and deaths not included
Source: www.governing.com/gov-data/census/metro-area-population-migration-estimates-2013-data.html

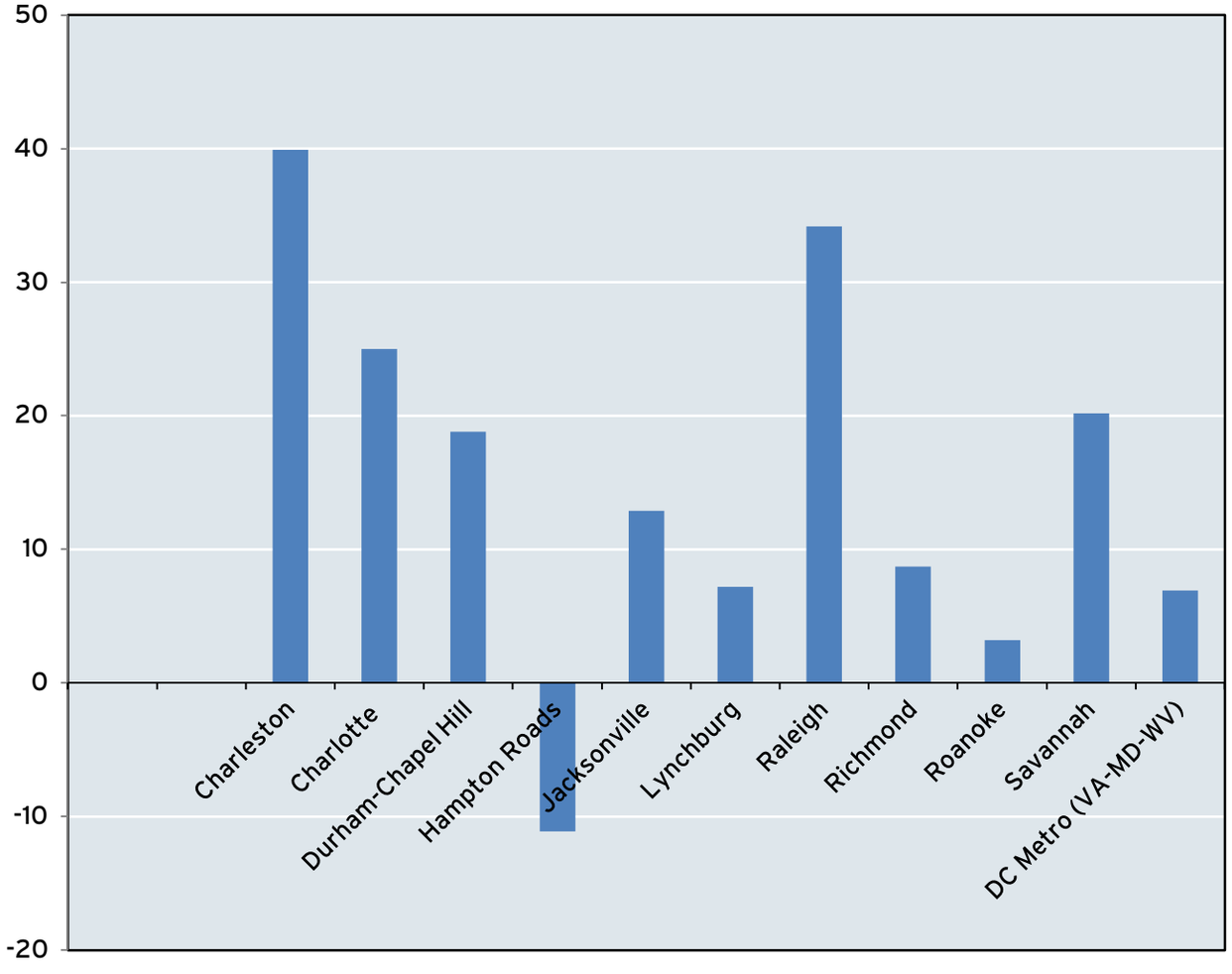
Thus, even inside specific metropolitan areas, some cities and counties are experiencing net immigration, while others are afflicted by out-migration. We will explore the reasons for this in a later section.

Graph 1 presents domestic net migration numbers for several Virginia metropolitan areas, as well as those in comparable Mid-Atlantic states, for the 2010-13 time period. In general, one can see that Virginia's net migration was not as robust as that in major metropolitan regions throughout the South. Hampton Roads is a major reason why this is true. Indeed, there has been net domestic out-migration from Hampton Roads since 2005. Newport News, Norfolk, Virginia Beach, Hampton, York County, Portsmouth, Suffolk, Gloucester County and Poquoson all have experienced net domestic out-migration for at least half a decade. This is despite the fact that the region's unemployment rate typically has been below that of the United States and only a bit higher than that of the Commonwealth. This tells us that even though job availability is an important reason why people decide to migrate, it is not the only reason.

Parts of Abandoned Detroit, Michigan, 2013
Photographers: Yves Manchand and Romain Meffre

GRAPH 1

2010-2013 DOMESTIC MIGRATION RATES PER 1,000 RESIDENTS: VIRGINIA AND COMPARABLE MID-ATLANTIC AREAS



Source: www.governing.com/gov-data/census/metro-area-population-migration-estimates-2013-data.html

Why Do People Migrate? Our Study

Detroit symbolizes a metropolitan region that has been experiencing persistent net domestic out-migration. Between 2010 and 2013 (and after taking account of births, deaths and international immigration), Detroit lost 69,075 residents to other metropolitan regions within the United States. Clearly, net domestic migration patterns tell us something important about the vitality of regional economies.

Accumulated research reveals that the following factors are most important in determining whether or not individuals choose to move, and where they move:

- Job availability
- Income growth
- The quality of a region's amenities – its schools; its cultural life; its proximity to oceans, beaches, rivers and mountains; health care availability and quality; fine and performing arts opportunities; religious preferences; access to collegiate and professional sports teams; the regional "cool" factor; the quality of its infrastructure and transportation
- Cost of living
- Economic freedom – a person's ability to work, invest and operate a business without excessively burdensome rules and laws
- Taxation – though here we must acknowledge that while migrants might be turned off by high levels of taxation, they might be attracted by the services and infrastructure that these taxes finance (including quality schools)
- Climate
- The absolute size of a metropolitan region – once again, some prospective migrants might be attracted by the wealth of possibilities and diversity provided by large metropolitan regions, while others might be turned off by congestion, costs and long commutes.

Now let us consider the results of our study of the net domestic migration rates in and out of 358 U.S. metropolitan regions between 2010 and 2013. This sample included eight Virginia metropolitan areas: Hampton Roads, Lynchburg, Northern Virginia, Richmond, Roanoke, Blacksburg, Charlottesville and Winchester. We focus on the factors listed above as possible determinants of these net domestic migration rates, which we measure as the net immigration of individuals in or out of a region per 1,000 residents, between 2010 and 2013.

All of our data came from U.S. government sources, such as the Bureau of Labor Statistics and the United States Census; from private organizations, such as the Council for Community and Economic Research (C2ER); or from well-known amenity assessments, such as "Cities Ranked & Rated" or "Places Rated Almanac."

AMENITY RATINGS

Let's take a moment to look at the amenity ratings of Virginia metropolitan areas before we look at the overall results.

A micro-industry now exists that compares the attributes of one metropolitan area to another. "Places Rated Almanac" (David Savageau, 2007) ranks every metropolitan area in the country on nine separate variables, while Bert Sperling and Peter Sander (2004) rank all metropolitan areas according to 10 criteria in "Cities Ranked & Rated." Popular publications ranging from Money magazine (2014) to The Economist (2014) annually rank metropolitan areas in terms of their overall attractiveness to job seekers, retirees and even slackers. See Table 7 for Money magazine's "Best Places to Live 2014." Reston was the only Virginia city to make the list, claiming a No. 10 ranking. In 2014, Richmond, Newport News and Norfolk made the list of Sperling and Forbes magazine's "Top Opportunity Cities." These noted cities supposedly offer "the freedom to pursue a dream that is more difficult, if not impossible, to realize in other places."[7]

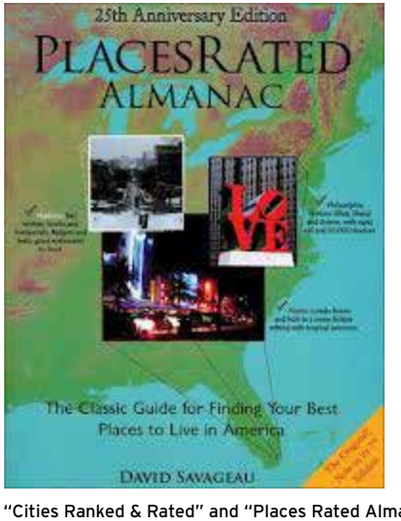
7 "Top 97 Opportunity Cities For 2014," www.bestplaces.net/docs/studies/top_97_opportunity_cities.

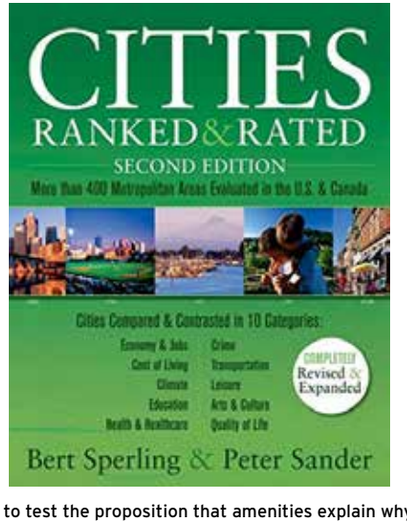
TABLE 7

MONEY MAGAZINE'S BEST PLACES TO LIVE 2014: THE TOP 10 CITIES

RANK	CITY, STATE	POPULATION	CENSUS REGION	PROJECTED JOB GROWTH	AVERAGE PROPERTY TAXES
1	McKinney, TX	140,864	South	13.1%	$5,142
2	Maple Grove, MN	63,395	Midwest	6.5%	$3,562
3	Carmel, IN	83,897	Midwest	17.1%	$3,317
4	Castle Rock, CO	51,871	West	11.5%	$2,214
5	Kirkland, WA	84,786	West	4.5%	$4,655
6	Columbia & Ellicott City, MD	172,745	South	8.7%	$4,830
7	Clarkstown, NY	85,613	Northeast	5.6%	$10,054
8	Ames, IA	60,489	Midwest	0.6%	$2,363
9	Rochester Hills, MI	71,128	Midwest	4.3%	$3,401
10	***Reston, VA***	***61,177***	***South***	***1.8%***	***$4,619***

Source: http://time.com/money/3312309





Our study used "Cities Ranked & Rated" and "Places Rated Almanac" rankings to test the proposition that amenities explain why we move.

Predictably, metropolitan areas crow when they fare well in any ranking, however obscure. For better or worse, the rankings attract national attention and contribute to the public image of the states in which the cities are located. Nevertheless, it is legitimate to ask: Do these rankings reflect real-world differences among metropolitan areas such that they subsequently influence factors such as domestic migration? That is, do publications like "Places Rated Almanac" or "Cities Ranked & Rated" actually capture anything of importance where domestic migration is concerned?

Our Results

Our statistical study assumes that the eight factors noted previously capture the primary reasons why people choose to leave one metropolitan region for another. Economic variables are the most powerful explanatory variables, followed by measures of economic freedom, amenities and public services.

Job availability, which we measure by the rate of job growth in a metropolitan region, is the most important magnet that enables one metropolitan area to attract domestic migrants from other metropolitan areas. This is hardly a surprise, though the rate of income growth in metropolitan areas, per se, was not an important determinant of net domestic migration rates. The lesson is this: What is important to potential migrants is that jobs are available; the compensation level of those jobs is not equally important.

We calculate that a 10 percent increase in employment growth stimulates a 7.7-person increase in the net domestic migration. In an energy-boom metropolitan area such as Midland, Texas (where employment increased 26 percent between 2000 and 2010), this translated to a 23.1 percent increase in that area's domestic migration rate between 2010 and 2013.

Economic freedom is not easy to define, but refers in general to the ability of an individual to choose how he or she will work, invest, create and run a business with a minimum of interference from government at any level. Economist Dean Stansel has become well known for developing an "index of economic freedom" for U.S. metropolitan areas. His index, which varies between 0 and 10, takes into account 10 different factors, including the relative size of government in each metropolitan area, the extent of taxation and takings, and labor market freedom.

Table 9 provides Stansel's economic freedom index (EFI) estimates for the Commonwealth's major metropolitan areas. Virginia performs well in terms of economic freedom in Stansel's eyes. Richmond leads the pack with a national ranking of 20, and all major Virginia metropolitan areas rank in the upper half of the national distribution.

Consider an economic freedom example. Stansel estimated Cincinnati's EFI to be 5.98 in 2013, which was slightly below the 6.54 average for the 358 metropolitan areas we examine in this study. An increase in Cincinnati's EFI to 6.98 (a +1.00 increase) would move its -8.2 net domestic migration rate per 1,000 residents to -3.83.

TABLE 8

THE MAJOR DETERMINANTS OF NET MIGRATION RATES: 358 METROPOLITAN AREAS, 2010-2013

JOB AVAILABILITY
ECONOMIC FREEDOM
DEGREE OF UNIONIZATION
AMENITIES
PUBLIC SERVICES

Source: Old Dominion University Center for Economic Analysis and Policy

TABLE 9

VIRGINIA METROPOLITAN AREAS AND STANSEL'S ECONOMIC FREEDOM INDEX (EFI)

NATIONAL RANK	METRO AREA	EFI
20	Richmond	7.90
31	Winchester	7.82
32	Lynchburg	7.81
33	Roanoke	7.80
81	Hampton Roads	7.43
122	NoVa/DC Metro	7.12
	National Average = 6.54	

Source: Dean Stansel (2013), "An Economic Freedom Index for U.S. Metropolitan Areas," Journal of Regional Analysis and Policy, 43(1), 3-20

DEGREE OF UNIONIZATION OF THE LABOR FORCE

One aspect of economic freedom that merits a closer look is the degree of unionization of the labor force. Virginia, after all, is a right-to-work state and workers in the Commonwealth may not be required to join a union as a condition of employment. Table 10 compares Virginia's rate of worker unionization (4.9 percent) to neighboring states and the United States. Notably, Maryland is not a right-to-work state.

Our results indicate that domestic migrants may view heavily unionized labor markets as ones that are more stratified and less accessible to them. While those who are not business owners may prefer the higher wages and benefits that may be associated with jobs that carry union membership, those are to no avail if they cannot access those jobs. From the standpoint of business owners and entrepreneurs, unionization is much less attractive because it often restricts their ability to pay, reward and penalize their employees as they might wish.

We calculate that a 5 percent increase in the unionization of an area's workforce in a metropolitan area with a domestic migration rate of 10 per 1,000 residents (close to the national average) would cause that rate to decline to 6.2. In fact, economic growth rates are lower in those states that are heavily unionized; however, it is important to note that economic growth rates reflect many factors in addition to the extent of labor market unionization.

THE COST OF LIVING

How influential is the cost of living to those considering a move? As Graph 2 reveals, the estimated cost of living in New York City (Manhattan) is 85.5 percent higher than the corresponding cost of living in Campbell County/Lynchburg. A 39.9 percent cost-of-living index differential exists between the District of Columbia and Campbell County/Lynchburg. Does this make a difference insofar as domestic migration is concerned?

To be sure, most among us prefer to pay lower prices rather than higher prices for the things we purchase. The problem is that higher prices usually go hand-in-hand with higher incomes and increased job opportunities, while lower prices often mean the reverse.

Our research indicates that the cost of living, per se, is not a major determinant of domestic migration. Migrants will endure higher living costs (or bad weather, for that matter) if jobs are available.

TABLE 10

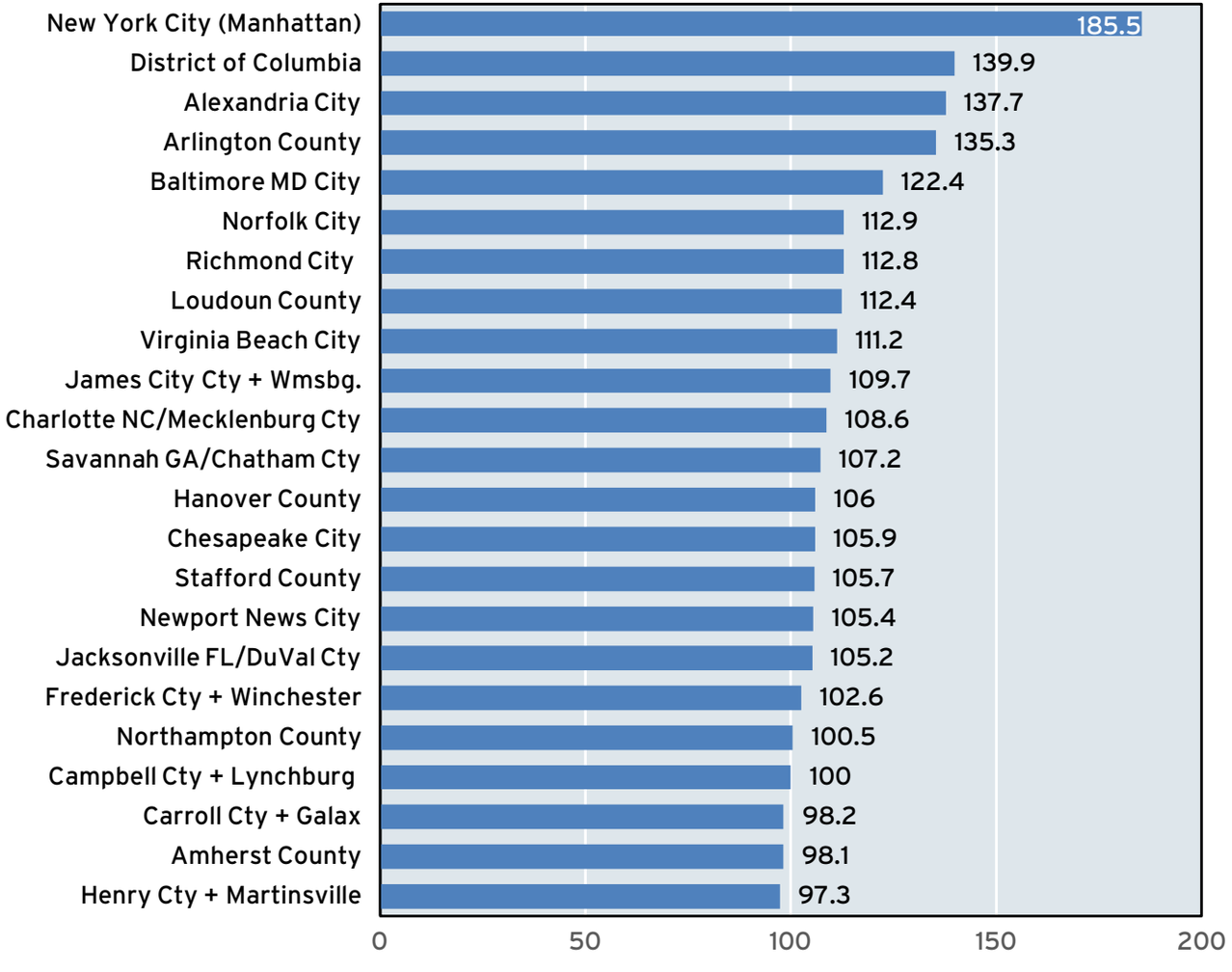
UNION AFFILIATION OF EMPLOYED WAGE AND SALARY WORKERS: SELECTED MID-ATLANTIC STATES, 2014 ANNUAL AVERAGES (000S)

STATE	2013			2014		
	TOTAL EMPLOYED	REPRESENTED BY UNIONS*	PERCENT OF EMPLOYED	TOTAL EMPLOYED	REPRESENTED BY UNIONS*	PERCENT OF EMPLOYED
District of Columbia	308	34	11%	325	35	10.7%
Georgia	3,958	248	6.3%	3,926	193	4.9%
Maryland	2,665	349	13.1%	2,612	347	13.3%
North Carolina	3,879	184	4.8%	3,936	126	3.2%
South Carolina	1,855	86	4.7%	1,884	61	3.2%
Virginia	3,601	229	6.4%	3,665	228	6.2%
						National Average =11.1%

Source: www.bls.gov/news.release/union2.t05.htm, January 2015
* Data refer to both union members and workers who report no union affiliation, but whose jobs are covered by a union or an employee association contract.

GRAPH 2

COMPARING METROPOLITAN COST-OF-LIVING INDEXES, 2013



Source: Council for Community and Economic Research (C2ER), www.c2er.org

INCOME INEQUALITY

There is much discussion today about income inequality; political candidates of all stripes usually pledge to diminish it. Domestic migrants, however, tend to see things through a different prism. Our results reveal that holding other things constant, metropolitan areas with higher levels of income inequality tend to attract more in-migration, while areas with less inequality tend to have negative net domestic migration rates.

Why so? Because income inequality often is a marker for a dynamic economic situation in which many opportunities exist and it is possible for one to vault quickly upward from lower economic status. Potential migrants, it seems, are more attracted by the real or imagined opportunity to do well than they are repelled by what many may see as the unfairness or inequity attached to unequally distributed incomes.

The most common statistic used to measure income inequality is the Gini Coefficient, which varies between 0 (everyone has the same income) and 1.00 (only one person has all the income). Table 11 reports Gini Coefficients for a variety of jurisdictions. Of all the cities and counties included in Table 11, incomes are more unequally distributed in the New York City metropolitan region. Incomes are most equally distributed in Virginia Beach, Harrisonburg and Roanoke.

A 1-point increase in a metropolitan area's Gini Coefficient increases the typical region's net domestic migration rate by 1.2 per 1,000 citizens – not a huge amount, but statistically significant.

TABLE 11

2005-2009 GINI COEFFICIENTS FOR VARIOUS JURISDICTIONS

METROPOLITAN AREA	GINI COEFFICIENT, 2005-2009
New York/New Jersey	.502
Charleston, SC	.494
Wilmington, NC	.485
Savannah, GA/Chatham County	.478
Blacksburg, VA	.467
Charlottesville, VA	.466
Baltimore, MD	.445
Charlotte, NC/Mecklenburg County	.464
Jacksonville, FL	.446
Richmond, VA	.437
Raleigh, NC/Wake County	.434
Washington DC/Northern Virginia	.433
Virginia Beach, VA	.421
Harrisonburg, VA	.414
Roanoke, VA	.402

Sources: www.census.gov/prod/2011pubs/acs-16.pdf, Table 4 for cities and regions above 1 million; http://factfinder2/census.gov, Table 19083 for all others

GOVERNMENT SPENDING

Excessively high taxes can be anathema to economic growth. As a consequence, the citizens of some jurisdictions have voted to restrict the growth of government expenditures. Nevertheless, when revenues raised are used to provide services and infrastructure that stimulate economic activity, they can generate jobs that attract immigrants. Two public goods that domestic migrants usually value are education and transportation infrastructure. When tax revenues are utilized efficiently to achieve quality in these arenas, this makes many people happy. Domestic migrants are no exception. We calculate that a 1 percent increase in government revenues as a proportion of total income elicits a 1.67-person increase in a typical region's net domestic migration rate per 1,000 individuals, holding everything constant. Why? We believe it is because government expenditures act as a rough proxy for educational quality, public safety, parks and other public-sector amenities that domestic migrants value. Domestic movers may subscribe to the old adage, "You get what you pay for."

CLIMATE

Even the most casual observer of population movements in the United States has noticed that many people have been leaving Northern "snow belt" states for warmer locales in the South. Thus, *prima facie*, it appears as if climate must be important. However, we did not find this to be true once we controlled for other factors such as jobs, unionization and amenities. This is consistent with several current domestic migration trends, for example, individuals moving to North Dakota and Montana to take jobs connected to energy as well as a much larger flow of people into the Pacific Northwest and job-generating cities such as Portland and Seattle.

Moderate winters and temperate summers are attractive to some domestic migrants, especially those of retirement age. Nevertheless, the impact of climate on domestic migration is small once one has taken into account other factors, such as the availability of jobs.

METROPOLITAN AREA SIZE

Do domestic migrants consider the raw size of metropolitan areas when they make their relocation decisions? Not according to our regression analysis. This does not mean that domestic migrants are just as likely to move to Carlock, Ill. (population 552), as they are to the Chicago metropolitan area (population 9,474,211). It does mean, however, that multiple characteristics associated with metropolitan area size, and variables such as commuting times, crime rates and school quality, apparently play a role in migrants' decision making.

Other things being equal, however, the size of a region, like climate, is not a major determinant of domestic migration moves.

Final Thoughts

With a few exceptions, Virginia's net domestic migration numbers have been lackluster in recent years. After accounting for births, deaths and international immigration into Virginia, the Commonwealth has not been attracting large numbers of domestic migrants from other states. Our analysis of net domestic migration patterns exposes the major reason for this – stagnant job growth in the Commonwealth. Between 2005 and 2014, total employment in Virginia grew by only about 2 percent. By comparison, national employment increased by about 2.9 percent during the same period.[8]

Virginia's flaccid net domestic migration rates in recent years visibly reflect the impact that the slowing growth rate of federal expenditures has had on the Commonwealth. True, we avoided the worst economic blows that sequestration might have inflicted upon us, but we remain critically sensitive to federal expenditures in general and defense expenditures in particular. The regional economies of Northern Virginia and Hampton Roads, which together account for about 60 percent of the dollar value of the Commonwealth's economic activity, are federal-spending thermometers. Both have seen much better times.

Domestic migrants are interested in many things, but especially job availability. Growing economies attract domestic migrants. We have come up short in this regard, particularly in Hampton Roads, and therefore have fallen well behind many other Southern and Western states in terms of domestic in-migration.

Compounding our federal expenditure problem, Virginia has been only a marginal participant in the fracking energy revolution that has rocketed many metropolitan economies forward. Our major energy entrant, the coal industry, has been contracting rather than expanding.

Reality is that Virginia has relatively little control over federal expenditures and cannot magically alter where oil deposits are located. We do, however, have the ability to exploit what we have termed in this chapter "economic freedom" and we do have the wherewithal to provide the public services (including education and infrastructure) that domestic migrants prefer. **If there is a lesson here, it is that breaking down barriers to economic activity, supplemented by critical investments in public services and infrastructure, is the most important key to attracting the domestic migrants who contribute to the production of long-term economic growth.** It should come as no surprise that ensuring that economic actors are not burdened by excessive regulations and providing good schools and infrastructure are winning strategies.

Interestingly, those who reside on the right side of the political spectrum tend to applaud the notion that economic freedom is important to economic growth, but often are less enthusiastic about extensive investments in education and infrastructure. Those with more progressive political instincts frequently are the opposite – they strongly support investments in education and infrastructure, but find it hard to resist the temptation to regulate economic activity and narrow individual economic options. Our research, based upon 358 metropolitan areas, strongly suggests that both groups would be well advised to listen a bit more to each other and adopt some of each other's ideas. The goal should be to develop a bipartisan program that will extract the parts of each agenda that now have been shown to influence where people wish to live and work. Charles Tiebout was right – people do vote with their feet.

8 *Report to the Governor and the General Assembly of Virginia. Review of State Spending: 2014 Update.* December 2014. Source: http://jlarc.virginia. gov/reports/Rpt462.pdf.

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Dulles International Airport
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