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2016 State of the Commonwealth Report

James V. Koch

Old Dominion University, jkoch@odu.edu

Vinod Agarwal

Old Dominion University, VAGARWAL@ODU.EDU

Barbara Blake-Gonzalez

Old Dominion University

Terry L. Clower

Old Dominion University

Vicky Curtis

Old Dominion University

See next page for additional authors

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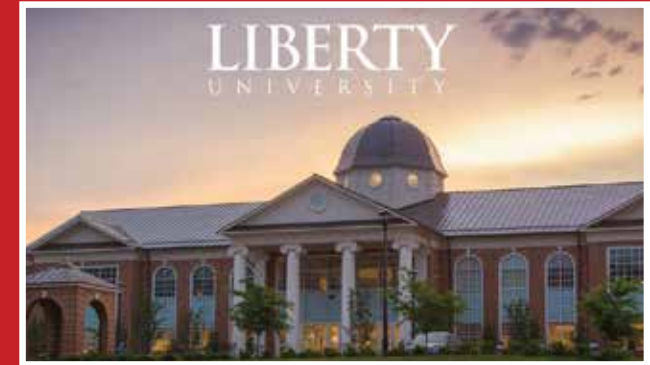
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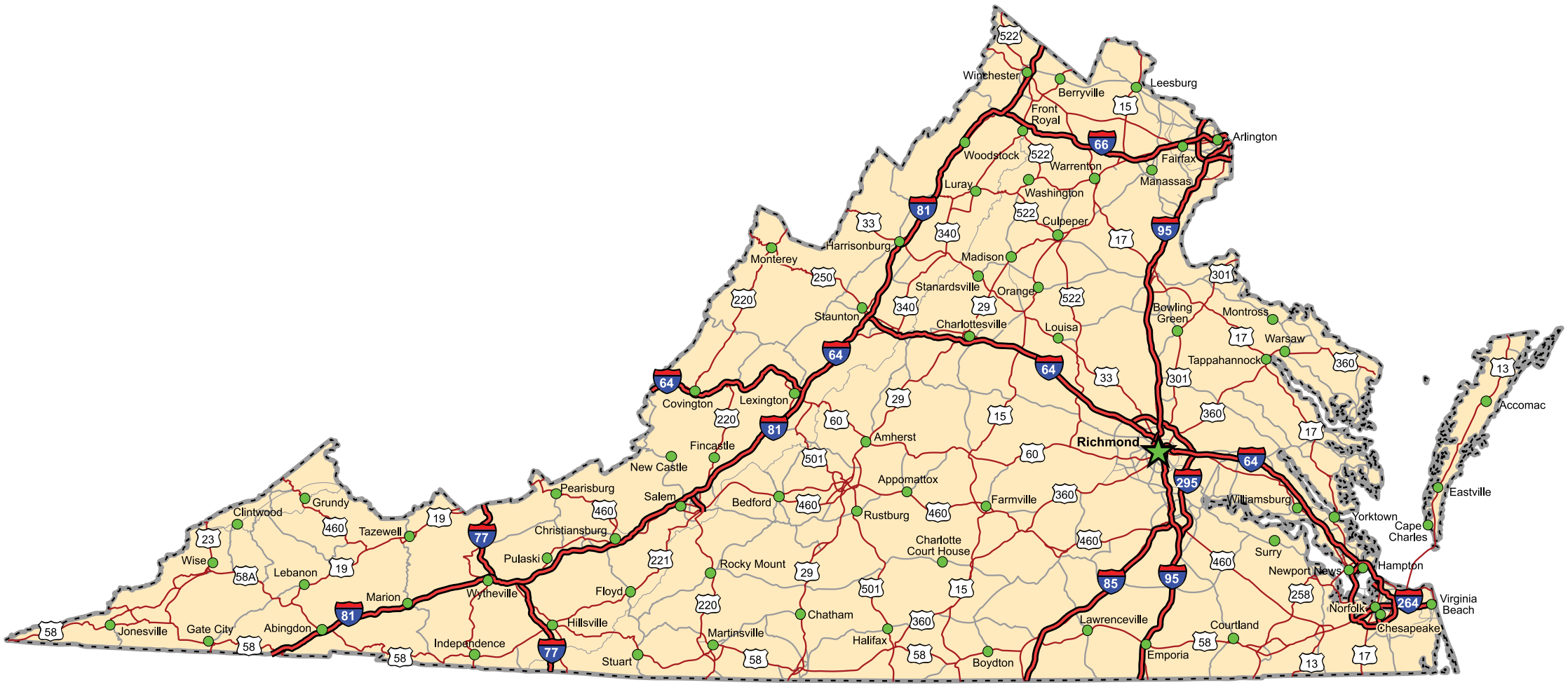
Authors

James V. Koch, Vinod Agarwal, Barbara Blake-Gonzalez, Terry L. Clower, Vicky Curtis, Steve Daniel, Larry "Chip" Filer, Tim Komarek, Feng Lian, Sharon Lomax, Wolfgang Mairinger, Alice McAdory, Robert McNab, Janet Molinaro, Mike Phelps, and Ken Plum



2016 State of the Commonwealth Report

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



Dear Reader:

This is the second State of the Commonwealth Report produced by the Center for Economic Analysis and Policy at Old Dominion University. It is jointly sponsored by ODU's Strome College of Business and the Virginia Chamber of Commerce. 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, Barry DuVal.

The report maintains the goal of stimulating 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 2016 report is divided into eight parts:

The Virginia Economy in Transition: The Commonwealth is experiencing relatively slow economic growth as it gradually transitions from an economy highly dependent upon federal spending to one that still involves a substantial federal presence, but also more value-added private-sector activities, entrepreneurial ventures and participation in international trade.

Northern Virginia: Turning the Corner? NOVA now accounts for 37 percent of all employment in Virginia, but approximately 45 percent of the value of the Commonwealth's economic activity. Recent growth in professional and business services employment suggests that the region may have turned the corner toward a more diverse, private sector-oriented economy.

The Hotel Industry in the Commonwealth: Over the past quarter-century, the hotel industry has become a relatively less important part of the Virginia economy. Occupancy rates have yet to recover to prerecession levels and price-adjusted hotel revenue and revenue per available room in 2015 similarly were below their previous peaks.

Will Robots Take Your Job? A Look at Virginia's Opportunities and Vulnerabilities: A recent study found that 47 percent of all current jobs are susceptible to loss because of automation and the use of artificial intelligence. The key to a worker's job vulnerability relates primarily to whether that worker is engaged in repetitive work that can be replicated by a machine or software using artificial intelligence.

Broadband in Virginia: Vital for Economic Development: Up to 70 percent of the world's internet traffic flows through Northern Virginia, but some areas of the Commonwealth still do not enjoy broadband internet connections. Robust broadband access now is as important as roads, bridges and airports in terms of economic development and population growth.

Stock Car Racing in Virginia: The Sport and the Business: In addition to its nationally prominent Bristol Motor Speedway and Richmond International Speedway, the Commonwealth hosts nine other racetracks, five dirt tracks and eight drag racing strips. While still a very important economic phenomenon, attendance and revenue data suggest that stock car racing has passed its peak of popularity.

The Rise of Single-Earner Households in Virginia: Why It Matters: Forty-seven percent of all households in Virginia now are headed by one or more single individuals and these households include all adult age groups. Nevertheless, our current legal and regulatory structure continues to focus on "Ozzie and Harriet" households.

Liberty University: A Higher Education Phenomenon: Christian-centered Liberty University has a combined on-campus and online enrollment of more than 100,000 students and has accumulated an endowment of \$1.4 billion. The university's long-term aspiration is to be considered in the same breath as Notre Dame is for Roman Catholics and Brigham Young is for Mormons.

The Strome College of Business continues to provide support for this report. George Mason University'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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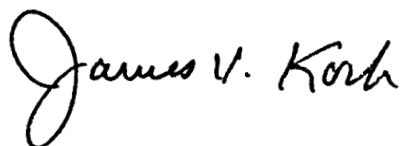
George Dragas Jr.
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Anne B. Shumadine
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The following individuals were instrumental in the writing, editing, design and dissemination of the report:

Vinod Agarwal	Chip Filer	Alice McAdory
Barbara Blake-Gonzalez	Tim Komarek	Robert McNab
Terry L. Clower	Feng Lian	Janet Molinaro
Vicky Curtis	Sharon Lomax	Mike Phelps
Steve Daniel	Wolfgang Mairinger	Ken Plum

The State of the Commonwealth Report is available in PDF form at www.stateofthecommonwealth.com and www.ceapodu.com. Should you have comments or suggestions, please direct them to James V. Koch at jkoch@odu.edu, or Robert McNab at rmenab@odu.edu. Individual copies may be purchased for \$25.

Sincerely,



James V. Koch

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

November 2016

Dear Reader:

The Virginia Chamber Foundation is pleased to present you with the second State of the Commonwealth Report, to once again give a detailed 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.

The annual State of the Commonwealth Report is a key way in which we measure the success of our economic strategies. 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.

This year's report takes an in-depth look at economic trends at a regional and statewide level, and provides a perspective of how we're faring compared with other states around the country. The data in this report will be of particular importance as we launch the effort to update the Virginia Chamber's Blueprint Virginia.

In 2013, we released the first Blueprint Virginia, with ambitious policy goals for advancing Virginia's long-term economic growth. Since that first Blueprint, we have made significant progress implementing those policies, and at the same time, the Chamber has nearly doubled its membership to 25,000 companies around the Commonwealth. Blueprint 2025 will engage a larger, more diverse cross-section of Virginia businesses to establish even more ambitious goals to improve Virginia's business climate.

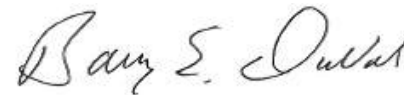
While the conclusions of this independent report are the authors' alone, and do not necessarily reflect those of the Virginia Chamber of Commerce or our members, the State of the Commonwealth Report presents a critically

important benchmark for Virginia's economy. I hope that it will continue to spark candid conversations about the best ways to overcome our challenges, and that those conversations result in 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 levels. This year, we had a 95 percent success rate in implementing Blueprint priorities in the General Assembly. There is much work left to be done.

We hope that the content of this report will help policymakers make informed decisions that will put private-sector businesses on the path to creating more high-wage, high-growth jobs and bring greater prosperity to all Virginians.

Sincerely,



Barry DuVal
President & CEO
Virginia Chamber of Commerce

VA CHAMBER FOUNDATION

WITH SPECIAL THANKS TO OUR 2016 STATE OF THE COMMONWEALTH SPONSORS:



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THE VIRGINIA ECONOMY IN TRANSITION

Times of transition are strenuous, but I love them. We can make our new normal any way we want.

– Kristin Armstrong





The Virginia economy is in transition. It is moving slowly away from an economic base dominated by federal spending, especially defense spending, to one in which value-added private-sector activities, entrepreneurial instincts and international trade will play increasingly large roles. At the same time, it is learning to cope with rapid technological change that often features labor-saving devices that reduce the demand for some kinds of labor, even while they increase the demand for other occupations and specialties.

The transition can be exhilarating. Witness the economic energy of Northern Virginia, which now accounts for approximately 45 percent of the value of the Commonwealth's annual output, or the emergence of biotechnology cores in Richmond and Prince William County.

Yet, transition also can be painful. Witness the gradual decline in importance of mining and textile production in Virginia, or the inability of Hampton Roads almost one decade later to recover all of the jobs the region lost in the Great Recession of 2008.

The transition process has been confounded by economic data sending us contradictory signals about our progress. Virginia's rate of unemployment has been falling (good), but simultaneously the absolute size of our labor force and our labor force participation rate have been falling (not so good).

Consider as well the somewhat discordant economic growth numbers the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce distributed in September 2016. The BEA informed us that its advance estimate of the real (after inflation) rate of growth of the Commonwealth's economy in 2015 was a modest 1.4 percent, even while the rates were a hefty 3.7 percent in Hampton Roads and 3.9 percent in Richmond. Growth in the Washington/Alexandria/Arlington metropolitan area was a tepid 1.3 percent and the rest of the state's metro areas combined for a 1 percent contraction.

These numbers are difficult to interpret. The strong growth in Richmond and Hampton Roads would seem to suggest statewide growth above 1.4 percent, even with the D.C. metro area's growth at only 1.3 percent. The issue is that Northern Virginia (NOVA) accounts for a major share of the Virginia economy, but the NOVA metro area definition includes the District of Columbia and a good part of the District's suburbs in Maryland. However, the Virginia gross domestic product (GDP) estimates would only include the economic activity in Virginia counties and independent cities and not the D.C./Alexandria/Arlington region as a whole.¹

Looking at state compensation data, Northern Virginia accounts for 42 percent, Richmond and Hampton Roads combine for another 35 percent and the remainder of the metro areas in the Commonwealth account for the remaining 23 percent. Using these shares to weight the 2015 metropolitan GDP growth rates suggests a rate of growth around 1.9 percent for the state, close to the number released for 2015 GDP growth. So, as in recent years, Virginia's rate of growth remained low in 2015 largely because growth in Northern Virginia remained weak.

GDP growth is a headline-grabbing calculation, but it is not without some issues. We need to sort out what has been happening across the entire economic landscape in the Commonwealth and its metropolitan areas.

Let's begin with Graph 1, which presents the annual growth rates for real (price-adjusted) GDP for the United States and Virginia since 2007. Whereas the prerecession period (2000-2007) was a time of prosperity for

the Commonwealth, GDP growth in Virginia since the Great Recession has trailed the national growth rate five years in a row.

In both 2012 and 2014, the gap between the national economic growth rate and our state economic growth rate was enormous. 2014 represented an economic low point for the Commonwealth. Virginia GDP growth was effectively zero (0.02 percent), while the nation grew at 2.4 percent. Viewed in this context, the 2016 Q1 real GDP estimate of 1.9 percent for the Commonwealth represents a welcome upward trend. The estimate for Q2 will be released in early December and we are forecasting growth around 1.9 percent again.

How do we explain Virginia's lethargic economic growth after the Great Recession? A slowdown in federal government spending – which accounts for almost 30 percent² of the Commonwealth's GDP – is the major culprit. This spending comes to Virginia in two major forms: expenditures on personnel and contract awards to business firms for construction, supplies and services.

Unfortunately, both the total wages earned by federal government personnel in Virginia and the dollar volume of government contracts awarded to Virginia firms trended downward between 2010 and 2015 (see Table 1). So also did the number of active-duty military personnel in the Commonwealth; we have at least 25,000 fewer active-duty military personnel in Virginia today compared to the turn of the century, and of course we have lost their spending as well.

Transition or not, federal spending continues to be the engine that drives the Virginia economy. Northern Virginia (especially Fairfax County and Arlington), Norfolk, Newport News and Virginia Beach host the lion's share of the defense-related federal spending in the Commonwealth. Federal contracts (both defense and nondefense) were responsible for approximately 14 percent of the real gross state product in FY 2010, but by FY 2015, that share had receded to 11 percent. In dollar terms, this represented a momentous \$10 billion reduction in federal contract activity in Virginia. Federal government contract awards and defense contract awards to firms headquartered in Virginia peaked in FY 2011 and have been declining ever since.³

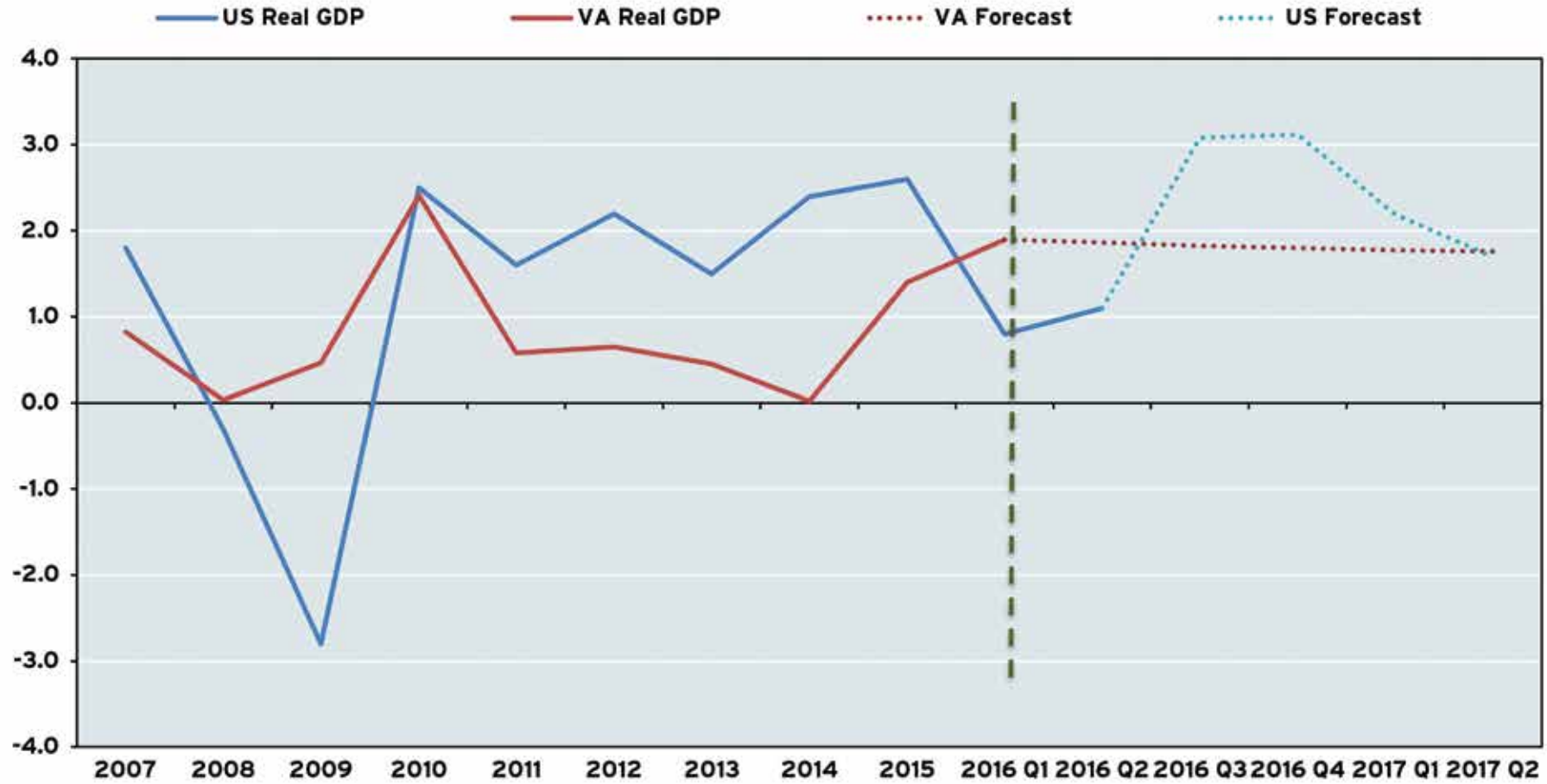
¹ This calculation is nearly identical to the procedure used by the BEA to drill down to metro area GDP estimates. For example, Virginia saw a slowdown in finance, insurance and real estate growth in 2015. The D.C.-Alexandria-Arlington metro has the highest share of compensation in that industry and, therefore, will contract relatively more than Richmond or Hampton Roads. For a full discussion of how metro area GDP is estimated, please see: <http://www.bea.gov/regional/pdf/GDPMetro2015.pdf>.

² So reports the Pew Charitable Trust, "Federal Spending in the States, 2005 to 2014," March 3, 2016, www.pewtrusts.org.

³ The trend is adverse as well. Between FY 2014 and FY 2015, total federal contracts nationally contracted by 1.4 percent, but in Virginia contracted by 6.3 percent.

GRAPH 1

UNITED STATES AND VIRGINIA ACTUAL AND FORECASTED REAL GDP, 2007-2016-Q2



Sources: Bureau of Economic Analysis and the Center for Economic Analysis and Policy at Old Dominion University

TABLE 1

TOTAL CONTRACT AWARDS FROM FEDERAL AGENCIES AND THE DEPARTMENT OF DEFENSE TO FIRMS IN VIRGINIA, FY 2010 TO FY 2015 (BILLIONS OF \$)

	Military Compensation	Total Contract Awards	Defense Contract Awards
FY 2010	\$13.619	\$58.890	\$41.017
FY 2011	\$13.408	\$60,217	\$42.873
FY 2012	\$13.260	\$55.227	\$37.865
FY 2013	\$12.845	\$51.117	\$33.454
FY 2014	\$12.693	\$51.929	\$33.673
FY 2015	\$12.664	\$48.663	\$29.612

Source: usaspending.gov and calculations by the Center for Economic Analysis and Policy at Old Dominion University

Sequestration: A Primer

Sequestration is a previously obscure legal term that first leaped into the public consciousness in 2011. It refers to someone taking legal possession of assets until specific debts have been paid. Since the Budget Control Act (BCA) of 2011, however, the word sequestration most often is used with reference to federal government budget spending caps that are part of the BCA. The original BCA reduced estimated baseline federal spending by a cumulative \$1 trillion between FY 2012 and FY 2021. The reductions were equally split between national defense and nondefense discretionary expenditures.

The BCA also established a Joint Select Committee on Deficit Reduction (JSCDR) with the express intent that it would achieve agreement on an additional deficit reduction package of at least \$1.2 trillion. As an

incentive, if agreement was not reached, the BCA mandated further across-the-board reductions in total discretionary spending of \$1.2 trillion, once again split evenly between national defense and nondefense discretionary expenditures. The BCA also required the president to withhold expenditures to achieve the “sequester level” spending caps in the event spending exceeded these caps. When the JSCDR failed to reach agreement on a deficit reduction package, the president implemented the sequester mechanism as required by the BCA in FY 2013.

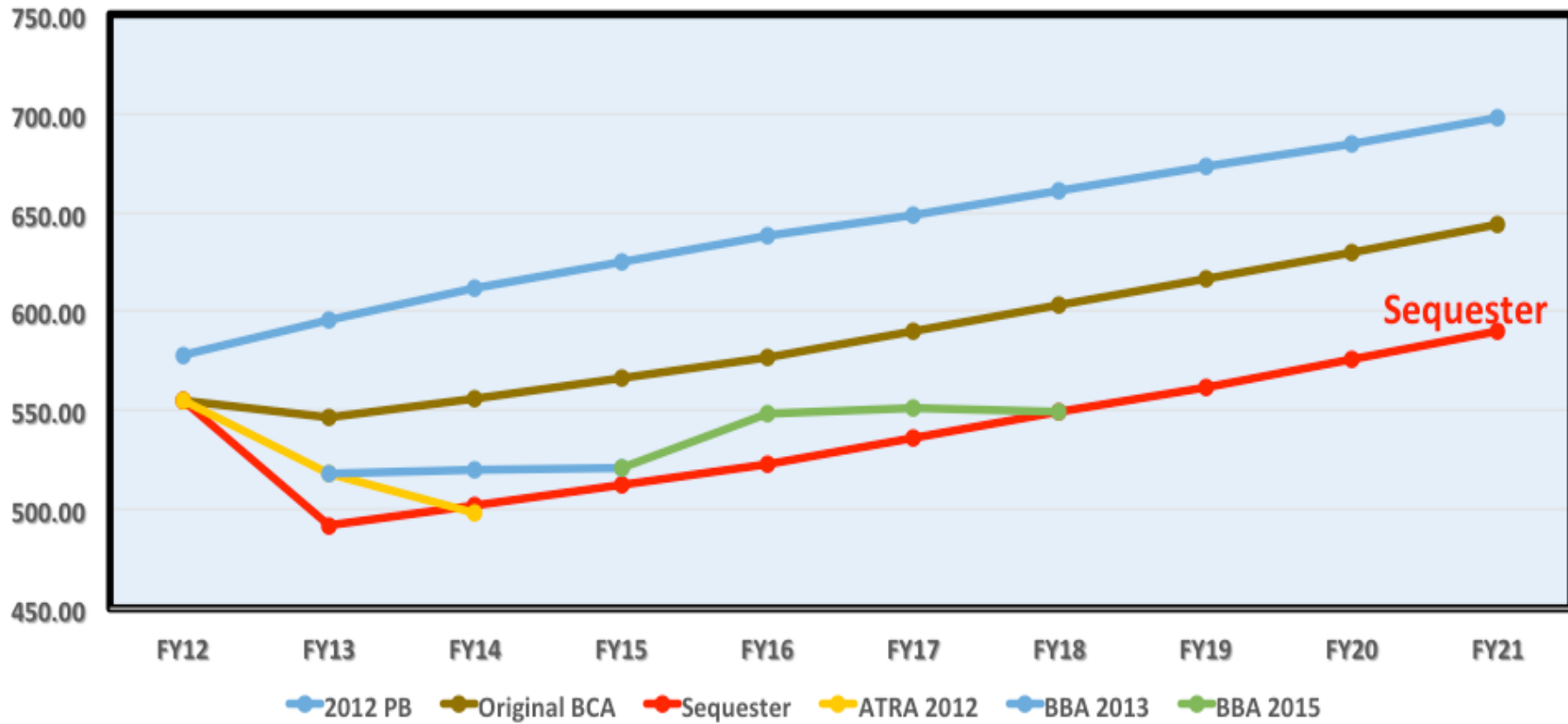
The red line in Graph 2 illustrates the sequester level of federal defense expenditures. The blue line estimates what expenditures would have been without any of the give-and-take just described. The three trapezoids above the red line represent sequestration relief – deals, if you will – that Congress made with the president since 2011 to alter the terms of the BCA. Each of these agreements added some defense spending, but as the graph indicates, each also was accompanied by an expiration date. Thus, the trapezoids did not constitute permanent spending increases.

The BCA caps, even with revisions, have significantly dampened prospects for future increases in defense spending. Even so, Congress has a long-established appetite for increased spending, with Republicans tending to prefer increased defense spending, and Democrats tending to opt for increased spending on nondefense-related social and infrastructure programs. The two parties may hammer out yet another compromise, but this is hardly guaranteed. Further, any deal that might be made will result in only marginal changes in the BCA, rather than a wholesale abandonment of it.

When all is said and done, absent the nation entering a war or major conflict, the overall outlook for defense spending is hardly sanguine. It is defense spending, or lack thereof, that will call much of the economic tune in Virginia over the next few years.

GRAPH 2

FEDERAL DEFENSE BUDGETS WITH AND WITHOUT SEQUESTRATION, FY 2012 TO FY 2021



Source: Congressional Research Service, "Defense: FY 2017 Budget Request, Authorization and Appropriations," April 12, 2016

Sectoral Sources of Economic Growth in Virginia

Data from the Bureau of Economic Analysis suggest that a slowdown in the economic activity in the government sector (federal, state and local) was responsible for shaving 0.6 percent from the 2015 real growth rate of Virginia. Graph 3 provides these GDP contribution data for the government sector as well as for the other major sectors of the economy. Note that manufacturing exercised a negative 2.5 percent influence on the state's growth rate, even while it continues to account for 9 percent of Virginia's GDP.

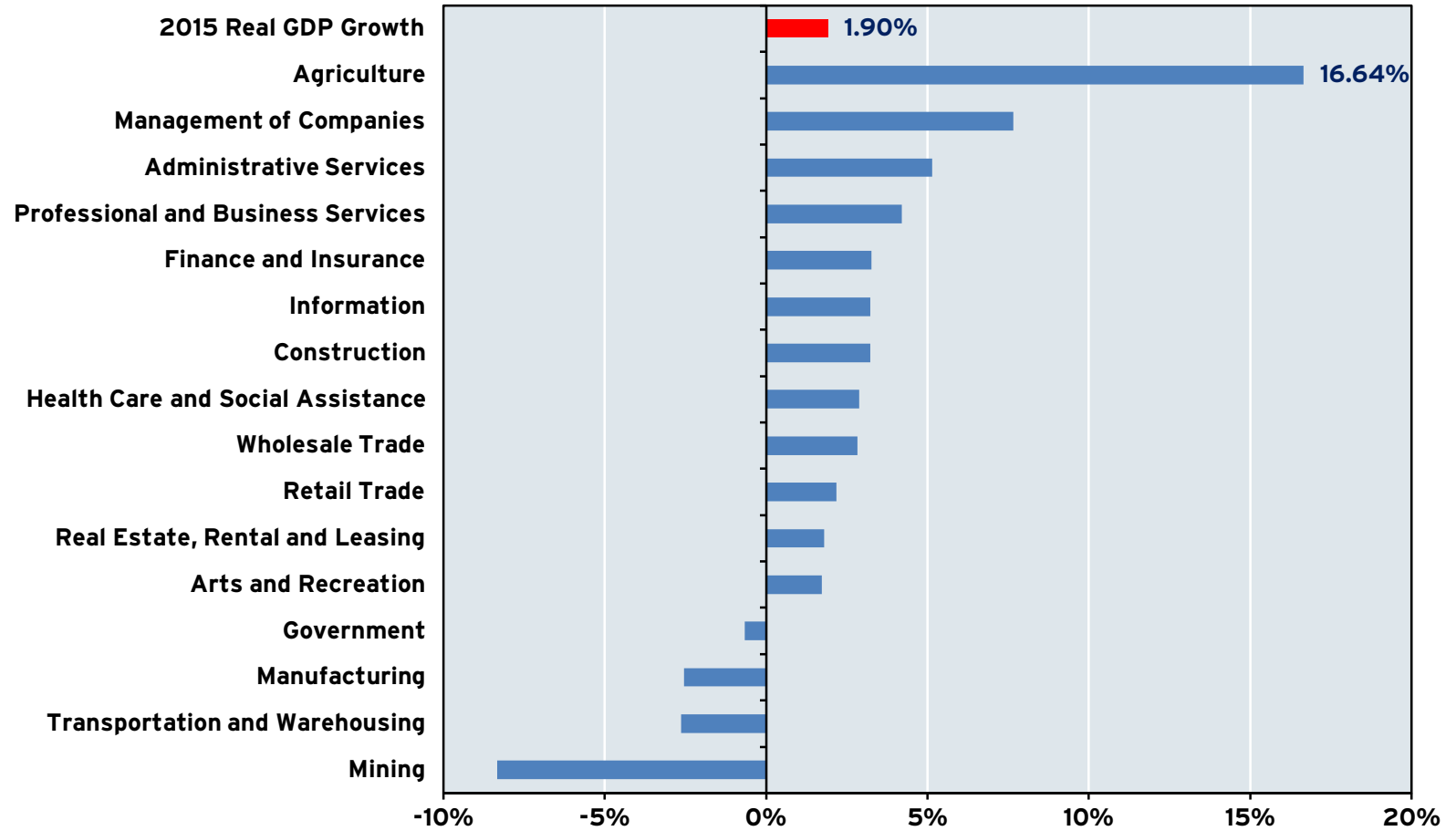
Somewhat surprising in Graph 3 is the strongly positive contribution of agriculture to the Commonwealth's economic growth in 2015. Relatively speaking, agriculture has been declining in importance in Virginia, but its impact on the state's economy in 2015 was considerable. On the other hand, mining continued its long-term decline in importance.

Graph 4 takes a longer-range view (2007-2015) and provides a look at the change in sector contribution to economic growth across the various sectors in the Commonwealth. The information sector and finance and insurance have experienced strong recoveries. Agriculture has experienced a remarkable turnaround during the recovery period. Mining, transportation and warehousing, manufacturing and government all remain negative or slightly positive contributors to growth in 2015. So, it is possible that structural changes have occurred in these industries. These sectors may never recover sufficiently to provide meaningful contributions to growth.



GRAPH 3

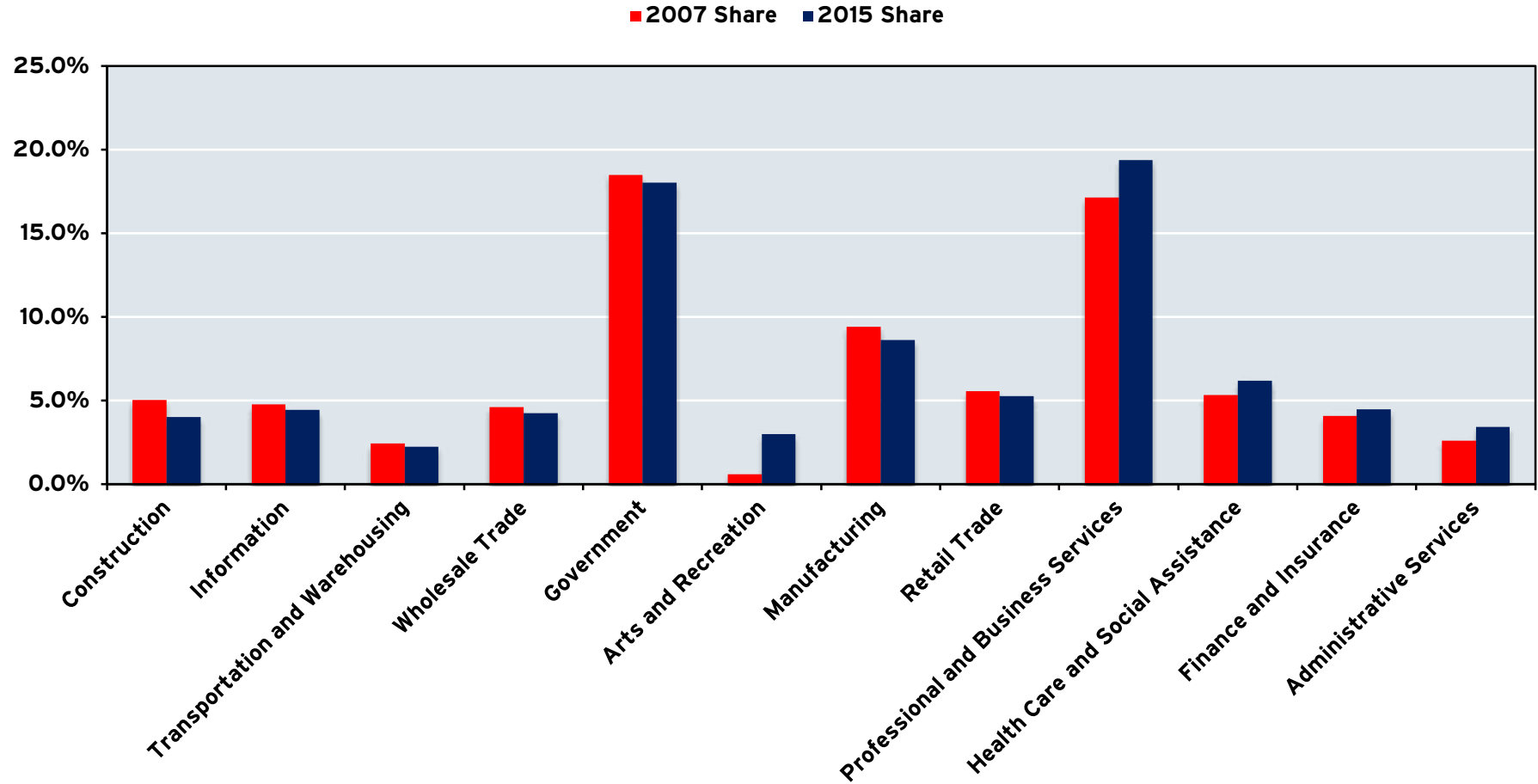
INDUSTRY SECTOR CONTRIBUTIONS TO 2015 REAL GDP GROWTH



Sources: Bureau of Economic Analysis and the Center for Economic Analysis and Policy at Old Dominion University

GRAPH 4

CHANGE IN INDUSTRY SECTOR CONTRIBUTIONS TO POSTRECESSION REAL GDP GROWTH, 2007-2015



Sources: Bureau of Economic Analysis and the Center for Economic Analysis and Policy at Old Dominion University

Virginia's Economy Has Been Diversifying, But...

For years, conversations in the Commonwealth have focused on the need to diversify the state's economy away from such strong reliance upon government activity and toward the private sector. The truth is that the state actually has been doing exactly this for nearly 20 years, albeit not as rapidly as some would prefer. Graph 5 illustrates the share of the Virginia economy that can be attributed to private industry. Private industry's share of real GDP was only 78 percent in 1997, implying that the government was responsible for 22 percent. In 2015, the private-sector share had risen to 82 percent. This increase may not seem large, but it corresponds to \$17 billion in output.

Still, before we congratulate ourselves for our diversification successes, we must recognize that most of the change during this decade can be attributed to congressional spending sequestration. Simply put, it was imposed on us. The federal government has not been spending as much in several areas important to the Virginia economy and it is this decline, rather than exuberant private-sector growth, that is primarily responsible for the increasing relative importance of our private sector.

Virginia now has recorded four straight years in which its real rate of economic growth has been less than 2 percent. Declining federal spending is the primary cause. This leads naturally to a question: Why have the federal government spending cuts been so painful for Virginia, but less so for most of our neighboring states?

The story starts with the Great Recession. Graph 5 illustrates how the recession disrupted what had been a slow, steady increase in private industry's share of GDP. Between 2006 and 2009, government expenditures became a larger share of the Commonwealth's GDP, as was the case during the 2001 recession. Counter-cyclical federal government spending in many cases took the place of private-sector expenditures.

Declining federal spending changed this pattern and put a chill on government spending and contracting in Virginia. This quickly translated

to lower economic growth rates for the Commonwealth. Further, if sequestration continues in a meaningful way, then Virginia is quite likely to continue in the economic doldrums and experience lower than average economic growth rates.

Other states have not felt comparable pain from their contractions in federal spending. The major reason is that their private sectors, relatively speaking, are stronger than those of Virginia. Graph 6 reports the private-sector share of gross state product for South Carolina, North Carolina, Maryland and Florida from 2012 through 2015. In 2015, Florida, at 88 percent, had the largest private-sector share. North Carolina was a close second at 87 percent, followed by South Carolina at 85 percent.

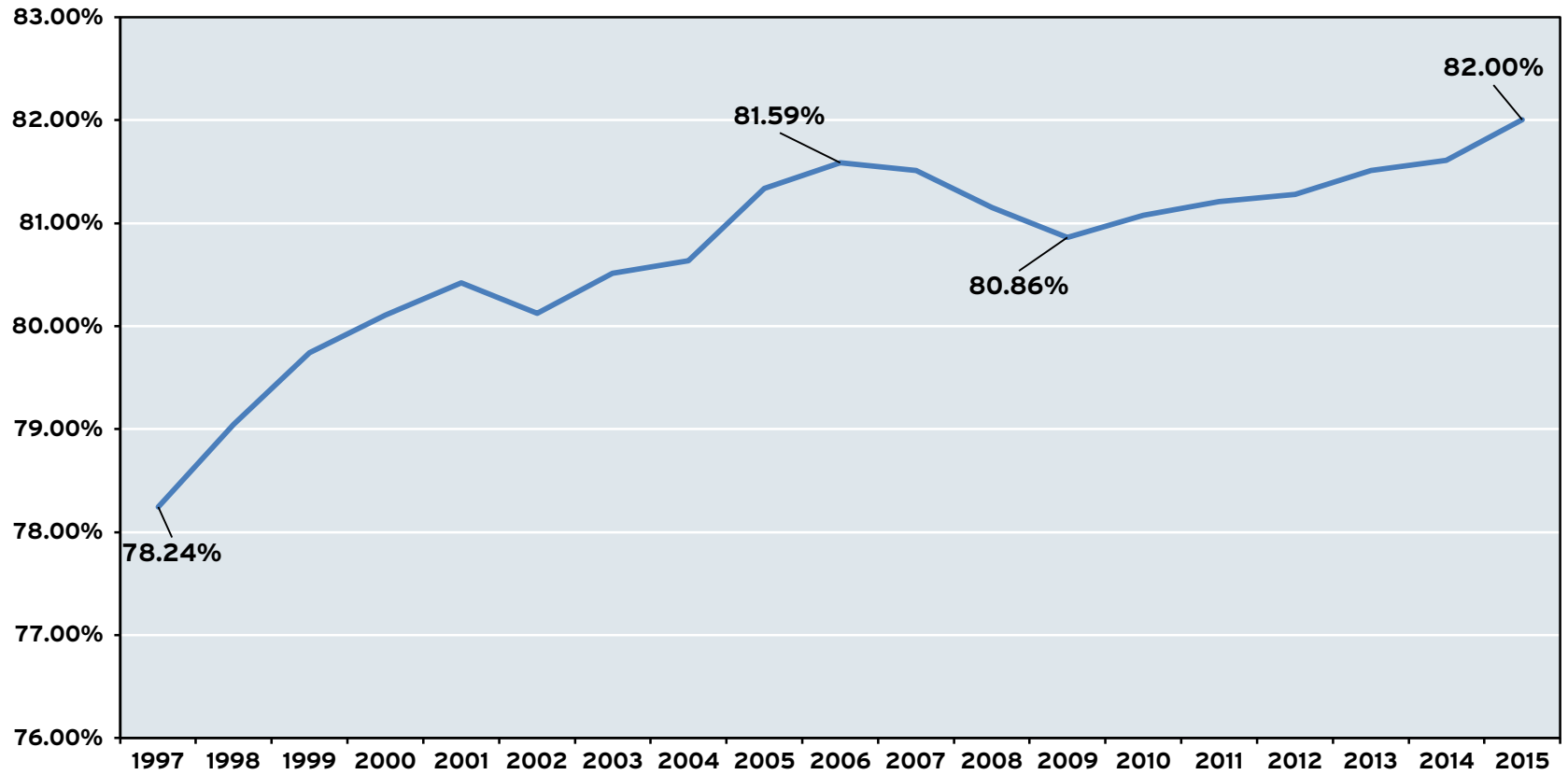
Not only are Florida, North Carolina and South Carolina less dependent upon federal spending than Virginia and Maryland, but also their economies are growing faster. Virginia and Maryland have tended to be "feast or famine" states that boom when federal government spending is rising (witness 2000-2006) and suffer when federal government spending declines (which describes most of this decade). Table 2 summarizes these relationships for the 2012-2015 time period.

	Virginia	Maryland	Florida	North Carolina	South Carolina
2012	0.7%	0.4%	1.8%	-0.3%	0.2%
2013	0.2	-0.1	2.3	1.3	1.1
2014	0	1.6	2.6	2.1	2.5
2015	1.4 (33)	1.5 (29)	3.1 (7)	2.7 (10)	1.9 (18)

Source: Bureau of Economic Analysis

GRAPH 5

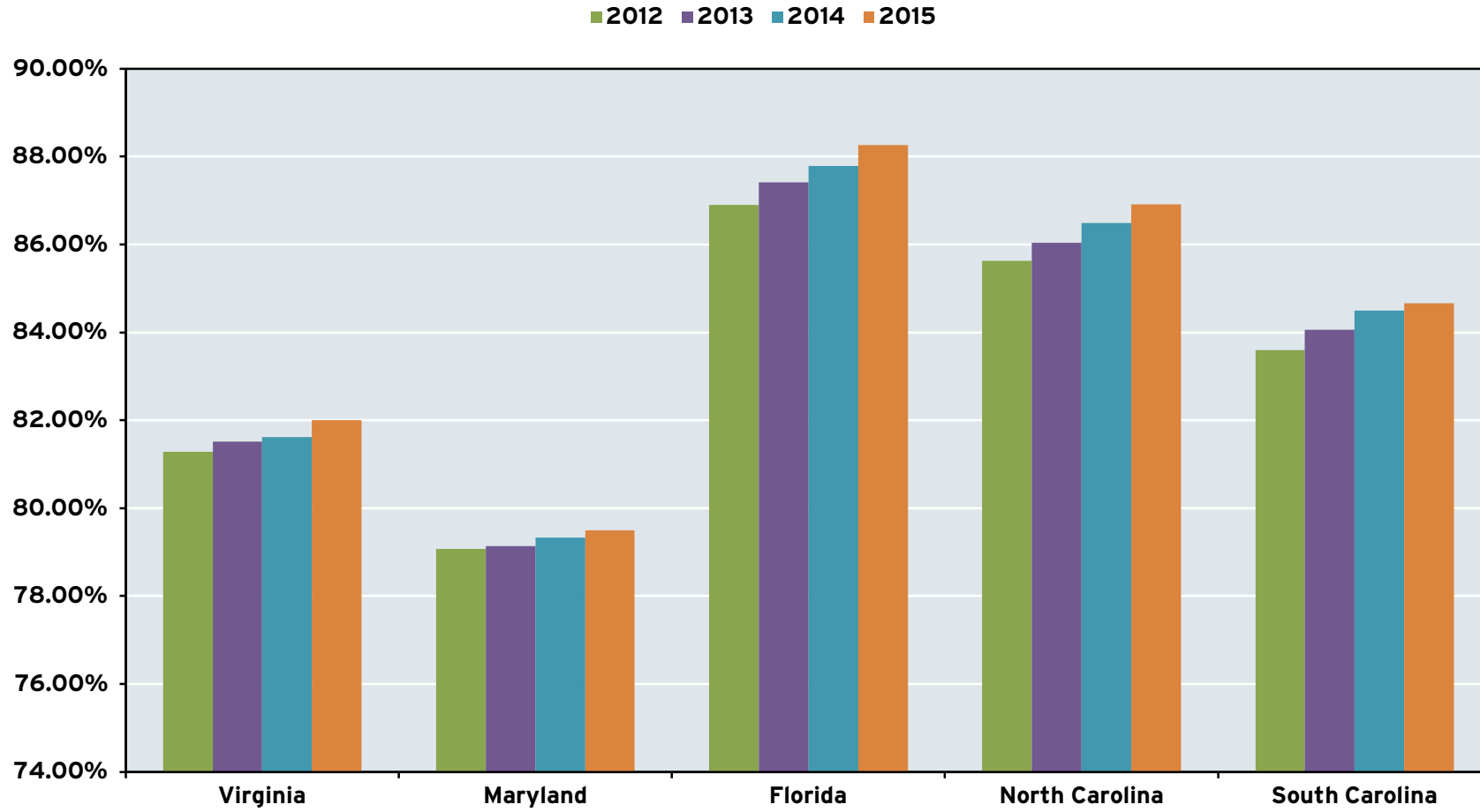
PRIVATE-SECTOR SHARE OF GDP IN VIRGINIA, 1997-2015



Sources: Bureau of Economic Analysis and calculations by the Center for Economic Analysis and Policy at Old Dominion University

GRAPH 6

PRIVATE SHARE OF GDP FOR SELECTED STATES, 2012-2015



Sources: Bureau of Economic Analysis and calculations by the Center for Economic Analysis and Policy at Old Dominion University

Labor Market Conditions

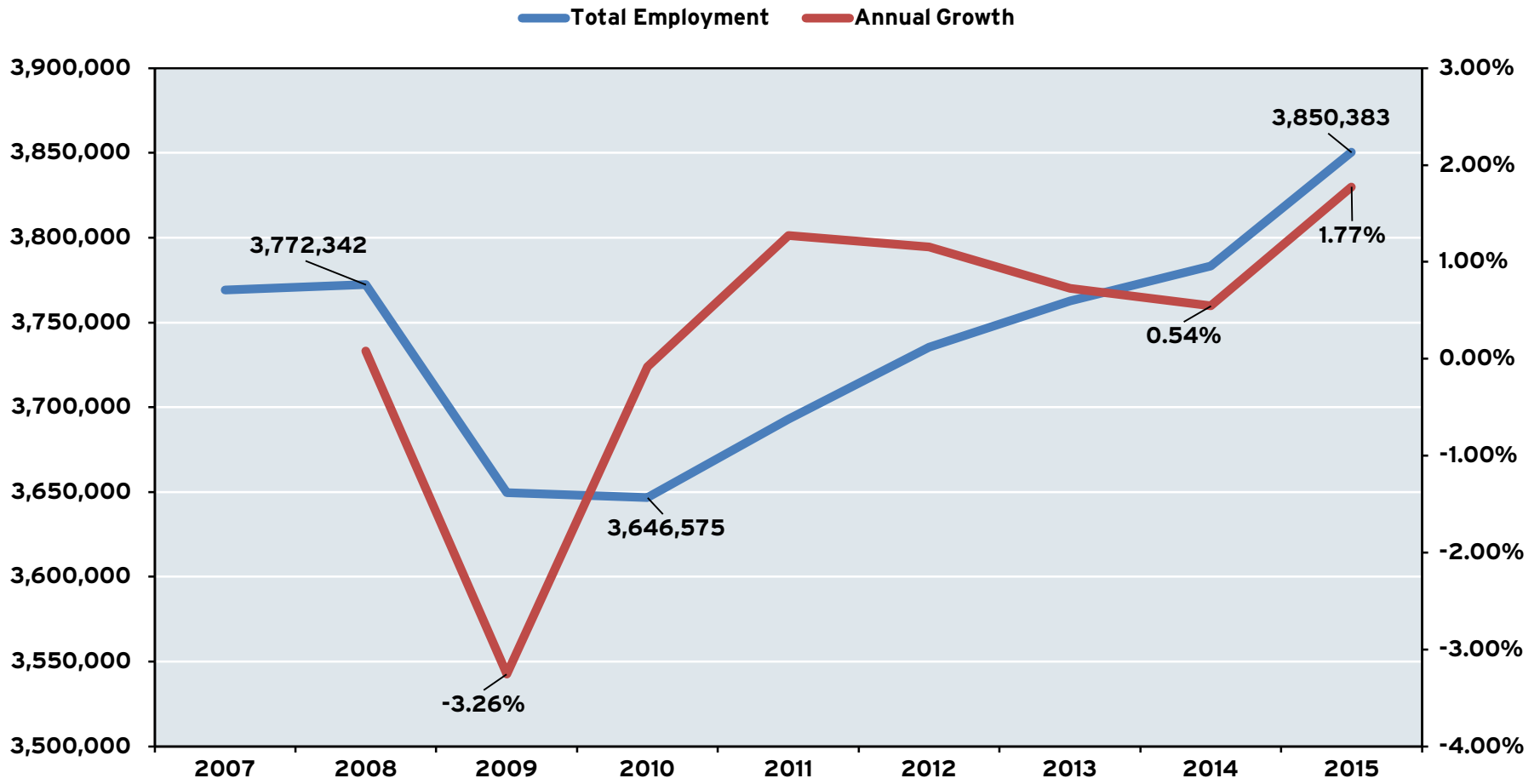
Labor market conditions in Virginia continued to improve during 2015. Total nonfarm payroll employment expanded by 285,600 jobs, or 1.8 percent above the 2014 level (see Graph 7). This marked the highest number of jobs added annually since 2012. The Commonwealth did add jobs in both 2013 and 2014, but at levels that significantly lagged the performance of other states and the United States as a whole. Hence, the Commonwealth's 2015 performance was a clear departure from mediocrity and a positive sign.

Graph 8 presents employment growth for the first seven months of 2016 compared to the same month in 2015. January, February and March were characterized by strong job creation in Virginia. However, since March, job growth in Virginia has decelerated noticeably. July had one of the smallest increases in employment growth in recent history. The data for August were better, but taken as a whole, 2016 job growth has been slower than expected. This was a contributing reason why Gov. Terry McAuliffe reported that the state's tax collections were trailing forecasts and state budgets had to adjust accordingly.



GRAPH 7

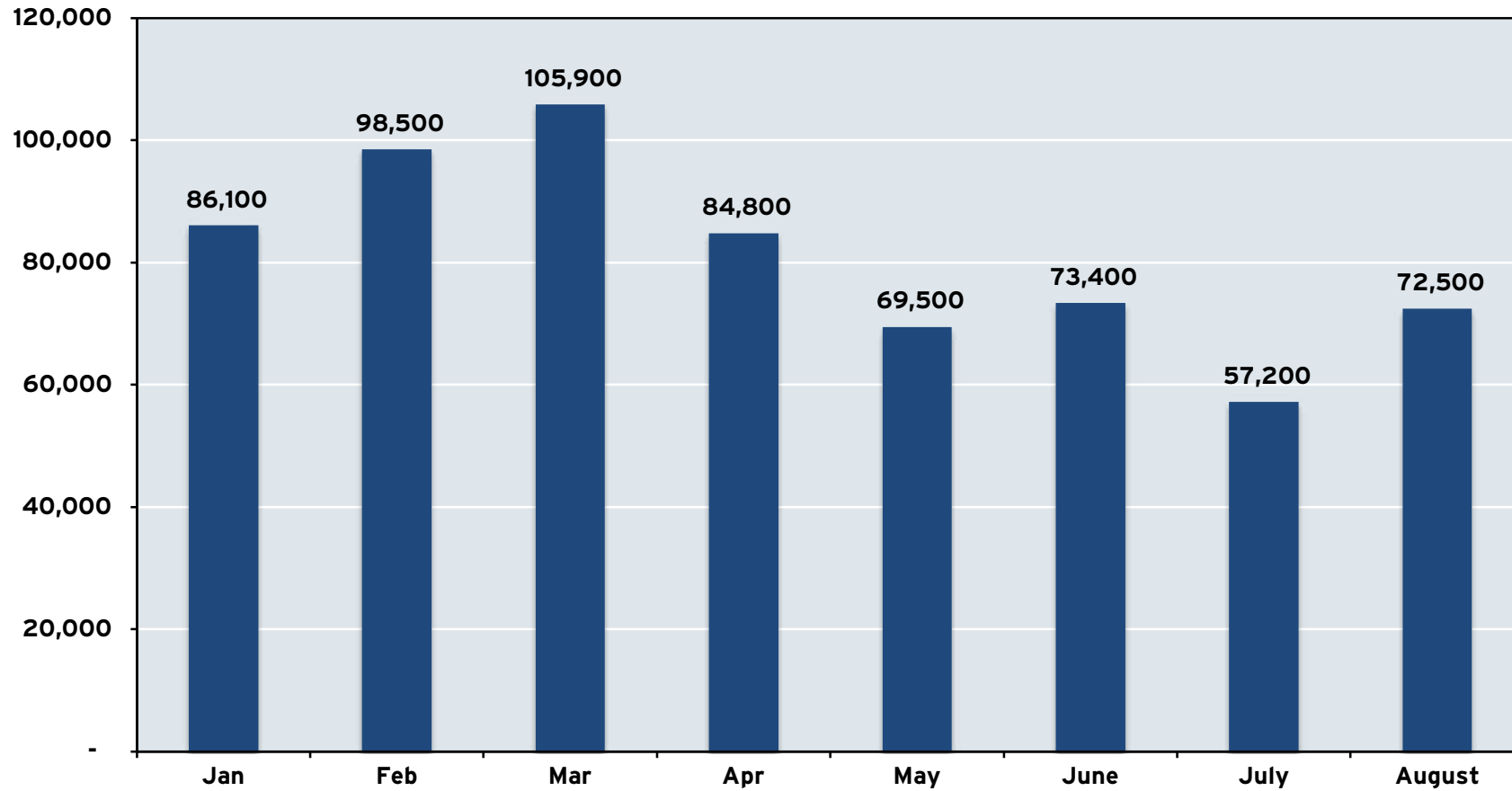
NONFARM PAYROLL EMPLOYMENT (TOTAL AND ANNUAL GROWTH), 2007-2015



Source: Bureau of Labor Statistics

GRAPH 8

TOTAL NONFARM PAYROLL EMPLOYMENT GROWTH - 2016 COMPARED TO SAME MONTH 2015



Source: Bureau of Labor Statistics

THE JOB GROWTH REQUIRED TO REDUCE VIRGINIA'S RATE OF UNEMPLOYMENT

We can agree that the more jobs, the better. However, what constitutes strong job growth versus weak job growth? One way to evaluate job growth in Virginia would be to ask how much job growth would be needed to reduce our unemployment rate by a specific amount. Our July 2016 rate of unemployment was 3.7 percent. What magnitude of job growth is required to reduce this rate to 3 percent by July 2017? The answer: We would need to add a net of 4,858 new jobs each month for another 12 months.

Graph 9 tells us we were falling well short of generating the new jobs required to reduce our state's unemployment rate to 3 percent. March, April and May were well below the 4,858 net jobs goal. However, June, July and August were much improved.

Graph 10 confirms that for many years the rate of unemployment in Virginia was lower than that of the entire country. In July 2016, it was 1.2 percent below the national rate. In general, this has reflected the strength of the Virginia economy over time. Even so, one can expect this gap to narrow and even disappear if the Virginia economy continues to grow at a slower rate than the national economy.

THE AVERAGE WEEKLY WAGES OF VIRGINIA WORKERS

Another important measure of labor market health is the level of wages earned by a typical worker. The good news is that average weekly wages per employee in the Commonwealth have been increasing. **The average weekly wage paid a Virginia worker in 2015 was \$918, a 4 percent increase over 2014. This easily exceeded the 0.8 percent growth in the Consumer Price Index between December 2014 and December 2015, so the real incomes and spending power of workers grew. Indeed, since the end of the Great Recession, the average weekly wage of a Virginia worker has risen 18 percent (from \$779.88 to \$918.41). It appears as if 2016 will continue this trend; wage data through 2016-Q2 show a 2 percent growth over 2015-Q2.**

LABOR FORCE PARTICIPATION

Measured unemployment rates are heavily influenced by labor force participation. This is because unemployment is measured as a percentage of the existing labor force. One is considered to be in the labor force either if one already has a job, or does not have a job but is actively seeking one. Therefore, individuals who have dropped out of the labor market and are no longer seeking employment (for whatever reason) are not counted as members of the labor force. This reduces the size of the denominator when the rate of unemployment is computed and reduces the measured unemployment rate. Paradoxically, this may occur even though the reason the individuals dropped out of the labor force was that they could not find work.

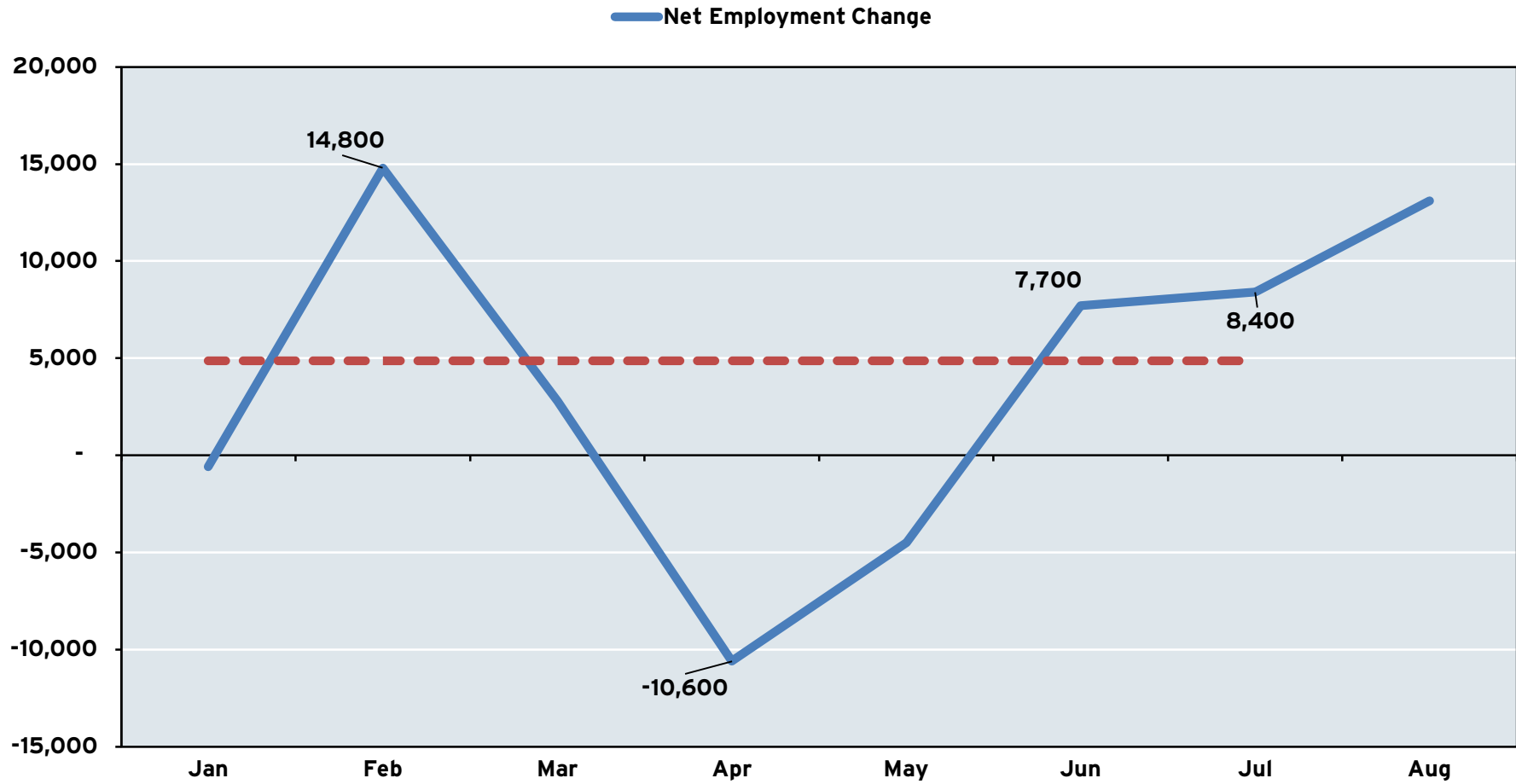
Let's examine recent evidence concerning labor force participation.

Graph 11 shows the increase in the percentage of adults ages 16-64 who were not working in selected locations in Virginia. Virginians have been dropping out of the labor force at alarming rates, so much so that the absolute size of our state's labor force has been declining (see Graph 12).

What has been driving these adverse labor force participation developments? There are five prominent hypotheses that purport to explain why labor force participation has been falling in Virginia as well as nationally. They are complementary explanations because each may have some validity. We will consider each in turn.

GRAPH 9

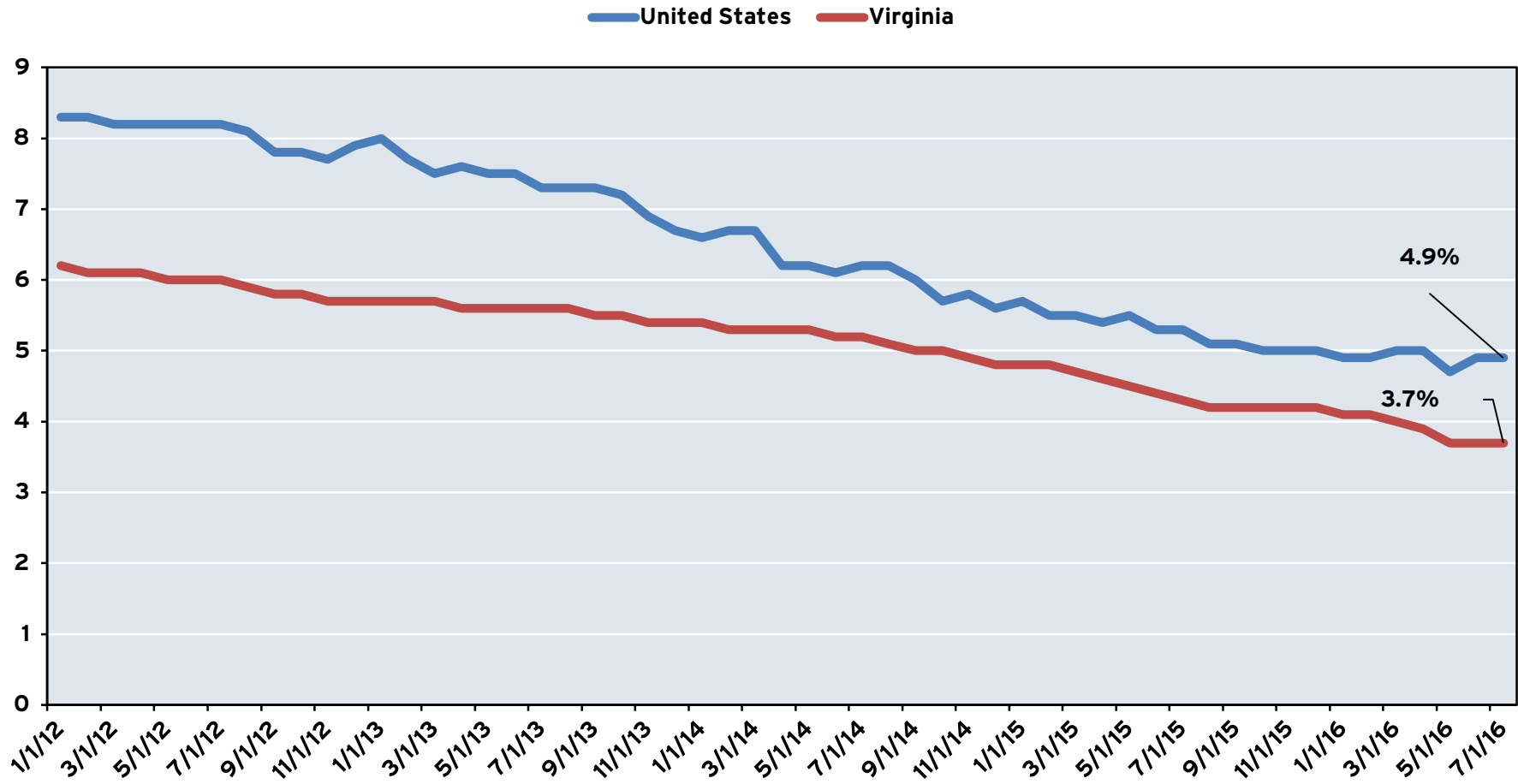
2016 MONTHLY NET EMPLOYMENT CHANGE - TOTAL NONFARM EMPLOYMENT



Sources: Bureau of Labor Statistics and Federal Reserve Bank of Atlanta Jobs Calculator

GRAPH 10

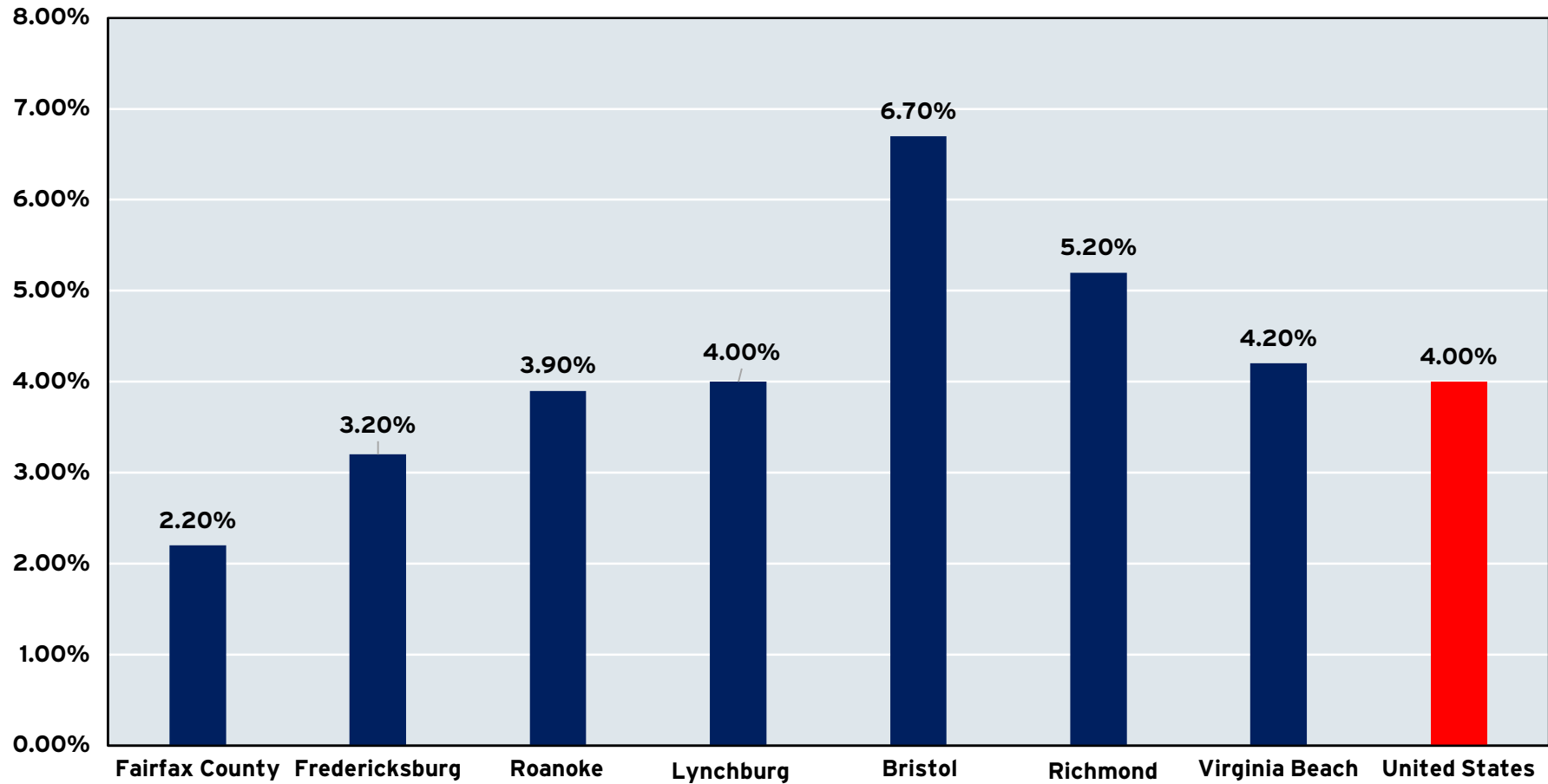
NATIONAL AND VIRGINIA RATES OF UNEMPLOYMENT (U3), 2012-2016



Source: Bureau of Labor Statistics

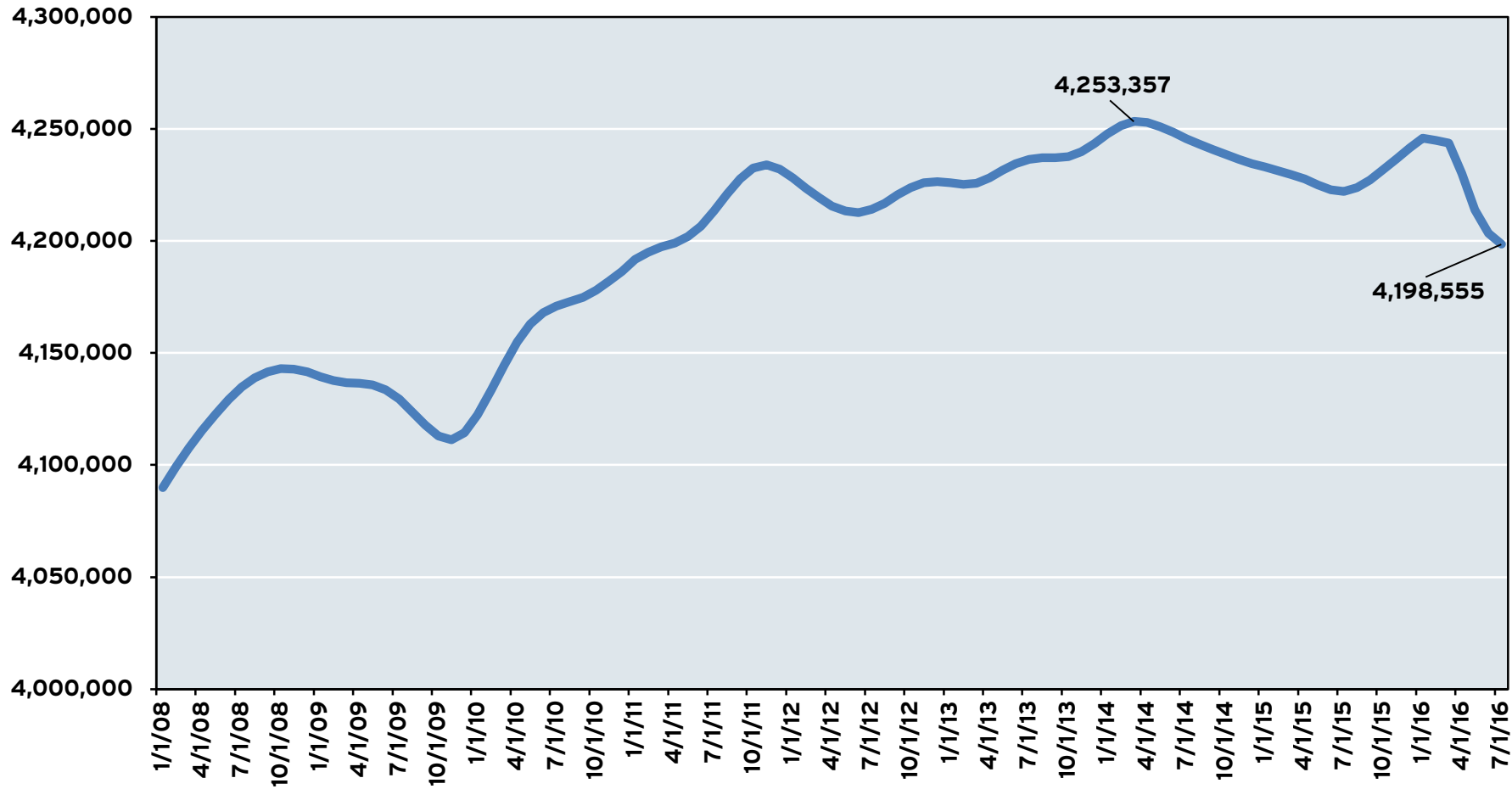
GRAPH 11

PERCENT INCREASE IN ADULTS AGES 16-64 NOT WORKING, 2009-2014



Source: Headwaters Economics, Economic Profile System, www.headwaterseconomic.org

GRAPH 12
SIZE OF THE VIRGINIA LABOR FORCE



Source: Bureau of Labor Statistics

DISCOURAGED WORKERS

This explanation asserts that some people attempt to find a job, but cannot, and get frustrated and drop out of the labor force. The Bureau of Labor Statistics (BLS) calculates a variety of unemployment rates for the United States and individual states that attempt to capture this phenomenon. In addition to the conventional “U3” rate of unemployment that the media publicize, the BLS also computes a “U6” rate that is a broader measure of labor market weakness than the usual U3 unemployment rate. The U6 rate includes employees who are working part time, but would rather work full time, plus discouraged workers who have stopped looking for jobs. Because it is much more inclusive, the U6 rate always exceeds the more common U3 unemployment rate and the gap between the two grows rapidly during times of economic recession, when discouraged workers multiply in number.

Graph 13 reports the U6 unemployment rates for the United States and Virginia between 2003 and 2016. There is little doubt that the discouraged worker effect is real. It is accentuated by what is often labeled “structural unemployment” – jobs are available, but those who are unemployed either are not qualified to fill them, or they are not in the right geographic location to do so. Prospective employees who are not qualified to fill available jobs undoubtedly do get discouraged and some stop looking.

CHANGING DEMOGRAPHY

Our population is aging and as it ages, one might expect an increasing proportion of people to drop out of the labor force because they have ended their useful work lives. Until recently, few argued with this supposition. However, as Graph 14 demonstrates, the labor force participation rates (LFPRs) of more mature individuals have been increasing in recent years. Perhaps more mature people find they cannot afford to retire as quickly. Whatever the reason, a demographic explanation for falling labor force participation rates no longer is persuasive.

GENEROUS SOCIAL SAFETY NET

Some worry that the social safety net has become sufficiently generous that it enables people to avoid having to earn income. This

narrative involves an individual cobbling together some combination of unemployment compensation, Temporary Assistance for Needy Families (TANF), food stamps and the like to eke out an existence.

This explanation reflects a variant of what is termed “moral hazard” – negative behavior that can arise when people know they are insured or otherwise will be supported in a specific situation. Moral hazard is the bane of insurance companies because individuals covered by insurance subsequently often take greater risks.

Is this true for the social safety net? This is not clear. However, we can make two social safety net statements with confidence. First, real per capita safety net expenditures have been increasing in the United States. Second, large differences exist among the states in terms of the social safety net benefits they provide their residents.

With respect to increasing real safety net expenditures, the most rapidly growing social benefit is the Earned Income Tax Credit (EITC). However, it is paid as a supplement only to individuals who already are working, so it does not qualify as a program that discourages work. The second most rapidly growing social safety net expenditure is TANF, and here real per capita expenditures have approximately tripled between 2000 and 2014.⁴ It could be a factor in declining labor force participation rates.

Differences in state social safety net expenditures might cause people in some states to move to more generous states, and some people in those states not to seek work. In 2013, in the most generous state, the average unemployment insurance benefit was \$6,894, whereas it was less than half of this (\$3,335) in the least generous state. Further, with respect to TANF, the proportion of poor families with children who received TANF in 2013 varied from a low of 3 percent to a high of 61 percent among the states.⁵ Clearly, if TANF makes a difference, much would depend upon where one resides.

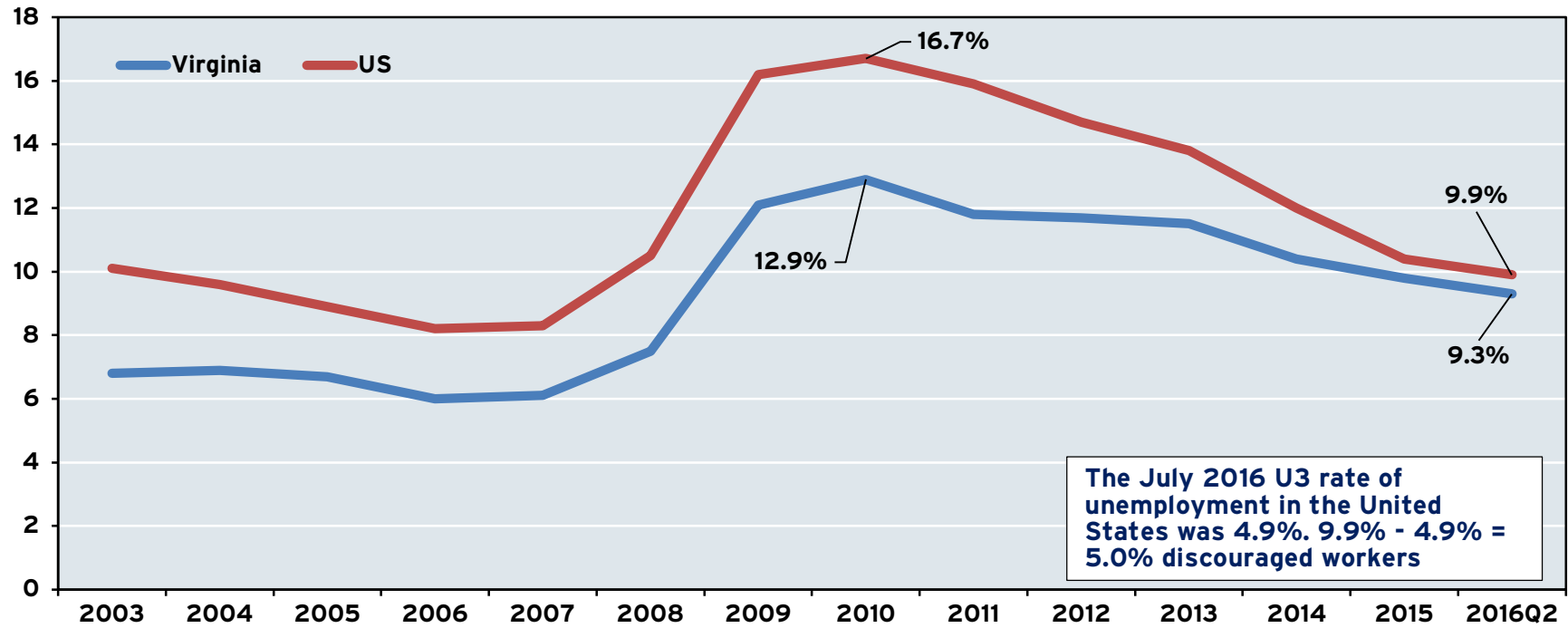
Nevertheless, empirical work suggests that the social safety net hypothesis cannot explain more than 10 to 20 percent of the variations in labor force participation. It is a political hot button explanation that has only limited empirical validity.

⁴ Catherine Rampell, “The Changing Social Safety Net, in Charts,” *The Washington Post* (April 8, 2014), www.washingtonpost.com.

⁵ Sarah Bruch, “Inequalities in Safety Net Programs Across the U.S. States,” Scholars Strategy Network (October 2015), www.scholarsstrategynetwork.org/node/28104.

GRAPH 13

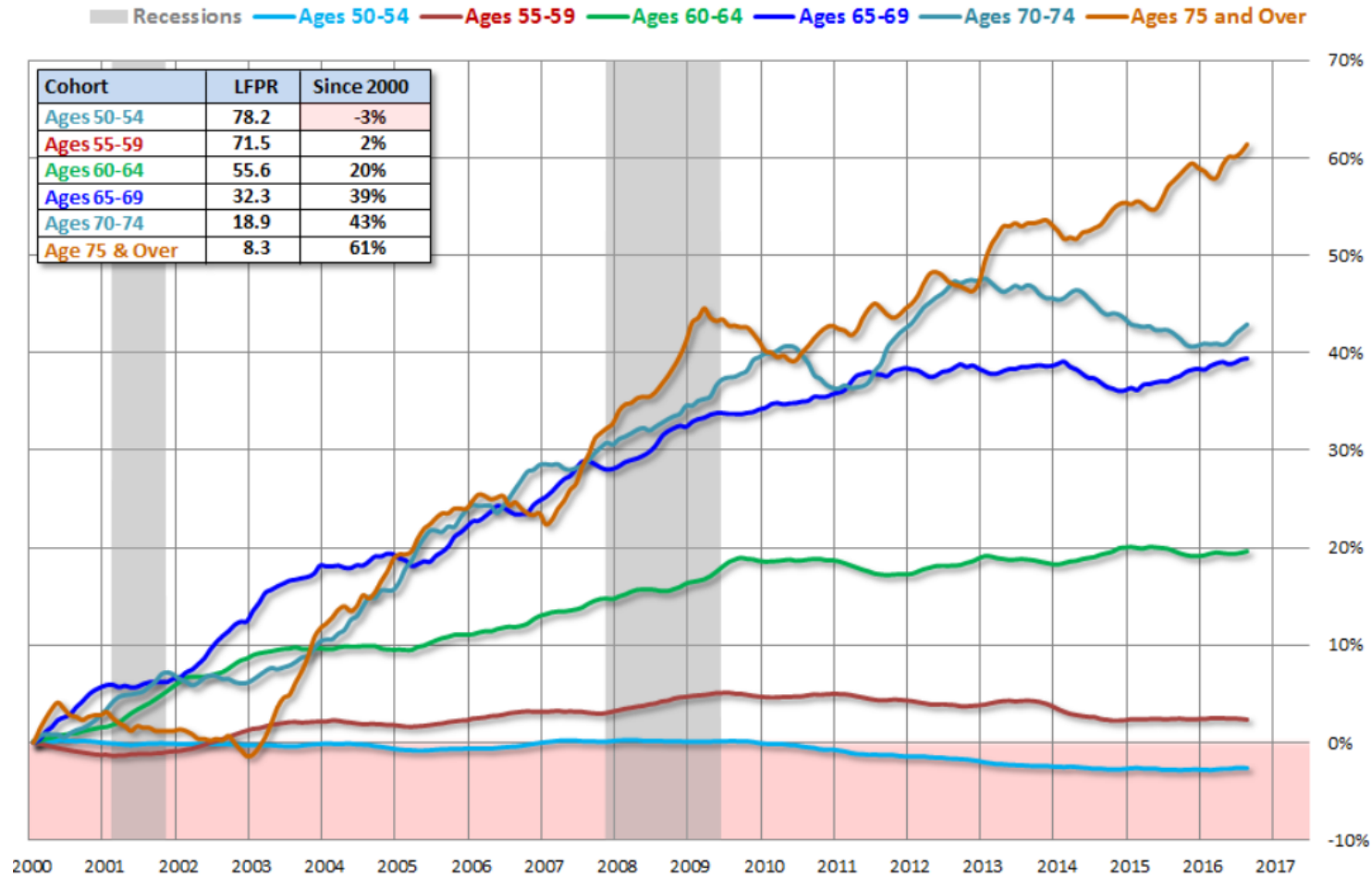
THE U6 UNEMPLOYMENT RATE: VIRGINIA AND UNITED STATES, 2003-2016



Source: Bureau of Labor Statistics

GRAPH 14

LABOR FORCE PARTICIPATION RATES OF MORE MATURE INDIVIDUALS



Source: Doug Short, "Demographic Trends for the 50-and-older Work Force," www.dshort.com (Sept. 7, 2016)

RISING DISABILITY CLAIMS

National Public Radio reported in 2013 that nearly one in every four adults in Hale County, Ala., was receiving a federal disability payment.⁶ In general, an increasing number of adults are successfully claiming disability (see Graph 15). This is true for the United States and also for Virginia. There is little doubt that this has reduced labor force participation, but by itself can explain no more than one-fifth of the recent declines in labor force participation that we have observed.

INCREASED RATES OF COLLEGE ATTENDANCE

Until recently, some of the decline in the labor force participation of younger adults could be attributed to greater proportions of them attending college. This has come to an end, as Graph 16 illustrates. Headcount enrollments have been falling in most segments of higher education, including, especially, public two-year colleges, though by no means at all institutions.

SUMMING UP THE LABOR FORCE PARTICIPATION RATE EVIDENCE

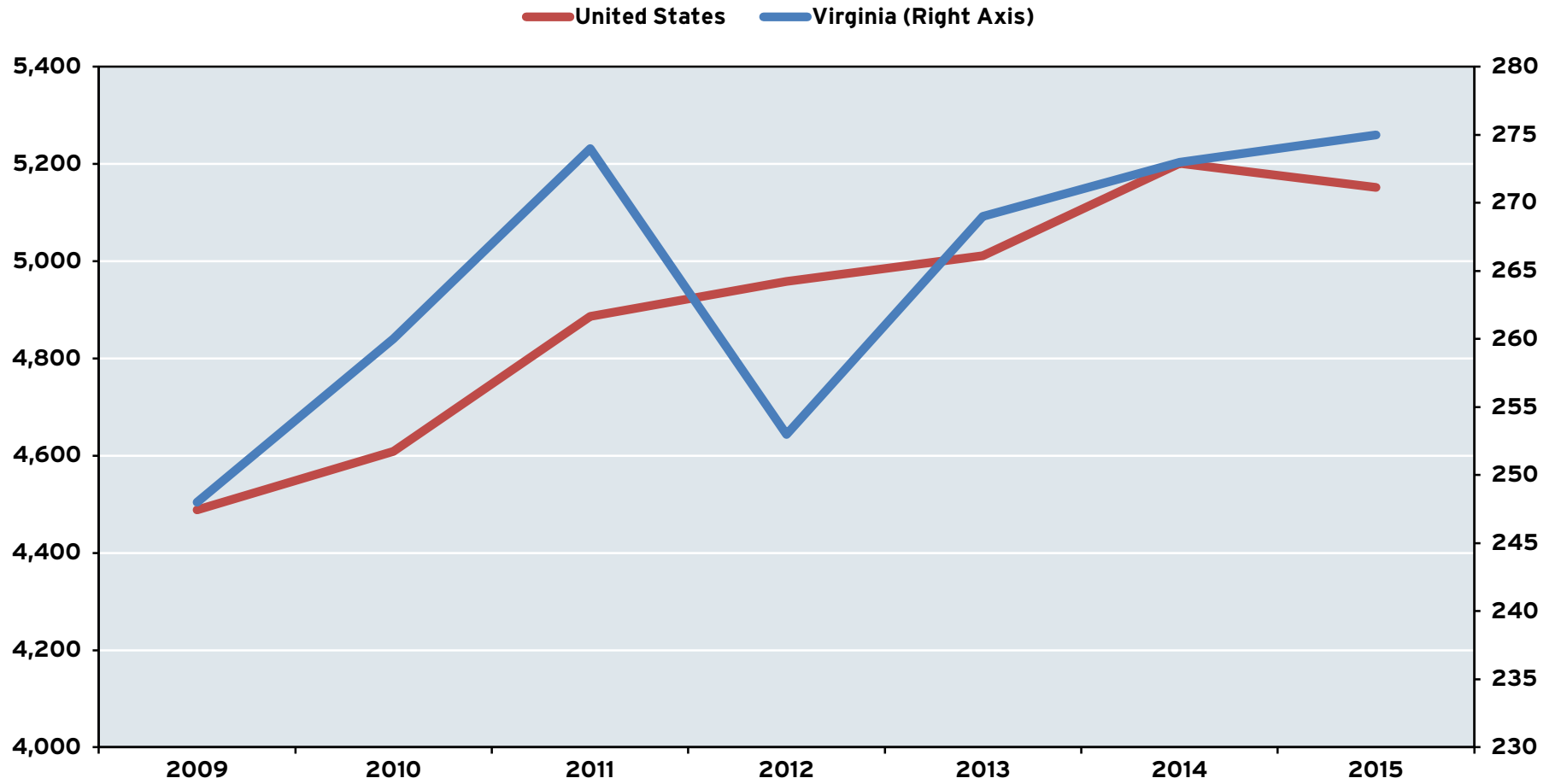
There is no single explanation capable of elucidating the phenomenon of declining labor force participation in the United States or Virginia. Quantitatively, the discouraged worker hypothesis (and related structural unemployment) appears to be the single most important explanation of falling labor force participation, but even after accounting for discouraged workers, one can only explain less than half of the changes we have observed in recent years. For the Commonwealth, there is also some evidence that disability claims are playing an increasing role, but these, too, explain just a portion of the labor force contraction.

Plausibly, we must look for additional explanations that extend beyond the economic realm where declining labor force participation is concerned. Could it be that gradual changes in societal attitudes have occurred such that it now is socially more acceptable for many people not to be in the labor force, or to work only part time? And further, that laborsaving technological change will make such behavior commonplace? We do not have room to explore these possibilities here, but they are intriguing topics worthy of the attention of government at both the state and federal level.

⁶ www.npr.org/2013/03/25/175293860/in-one-alabama-county-nearly-1-in-4-working-age-adults-is-on-disability.

GRAPH 15

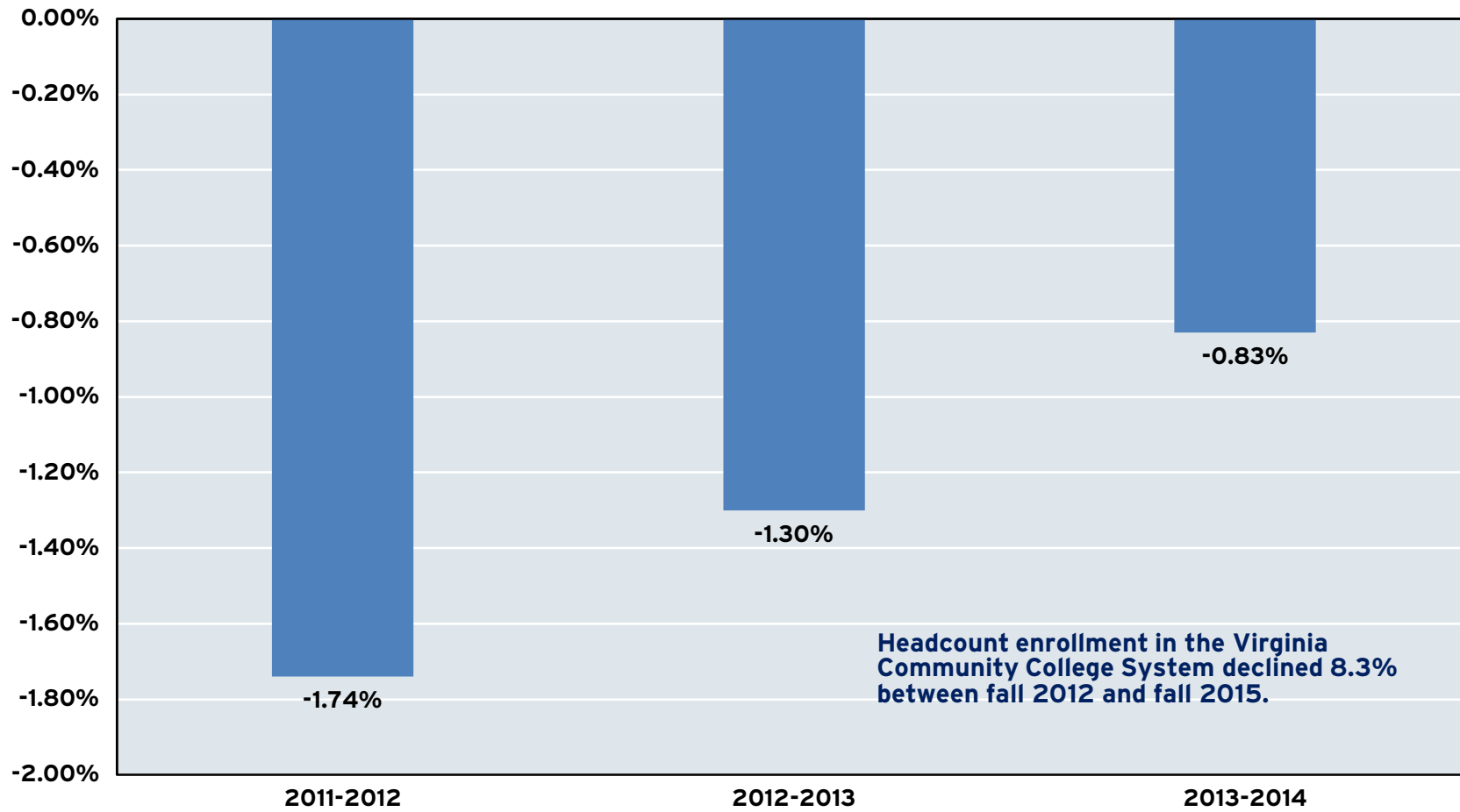
RISING DISABILITY CLAIMS IN THE UNITED STATES AND VIRGINIA (IN THOUSANDS)



Sources: Bureau of Labor Statistics and U.S. Census Bureau, 2009-2015 American Community Survey

GRAPH 16

DECLINING COLLEGE HEADCOUNT ENROLLMENTS IN THE UNITED STATES, 2011-2014



Source: National Center for Educational Statistics, https://nces.ed.gov/programs/digest/d15/tables/dt15_303.25.asp?current=yes

A Side Point: Where Do Net New Jobs Come From?

The employment numbers examined in this chapter all have been “net” levels. At the same time, some firms are shedding jobs, while other firms are adding jobs either through expansion of existing facilities or by the creation of a new firm. The final nonfarm payroll employment numbers that we report in this chapter are net jobs after all of such pluses and minuses have been taken into consideration.

As is true in most states, new job creation in Virginia is largely caused by the expansion of existing firms. About 75 percent of job creation in Virginia comes from the expansion of existing firms.⁷

While the state created 67,000 jobs in 2015, only 20,000 of those were jobs announced by the Virginia Economic Development Partnership.

The Commonwealth's Tax Revenue Shortfall

Gov. McAuliffe announced in August that the Commonwealth was not collecting the volume of tax revenues forecast for the 2016 fiscal year. To the extent that tax revenues are a leading economic indicator, the shortfall tells us that Virginia's economic growth is decelerating. The rather modest Bureau of Economic Analysis gross domestic product growth estimates for Virginia in September 2016 (only 1.9 percent) support this notion.

It might also be true, however, that even though the Commonwealth has been gaining jobs overall, simultaneously it has been shedding high-wage

jobs and replacing them with low-wage jobs. There is some evidence of this in Northern Virginia (see the next chapter). If those who exit the labor force are more mature, then when they leave the labor force they take their higher wages with them, and less-experienced, lower-wage workers are hired in their place.

Of course, one also could easily argue that the forecasts of 2016 tax revenues made sometime in 2015 simply were too high and not properly connected to core economic numbers. Hence, the shortfall is the product of a forecast that was overly optimistic (which is not an uncommon governmental phenomenon).

Drawing upon the governor's Executive Budget Document, which is submitted in December of each year, we can examine the average forecast errors made by those who forecast revenues and tax collections. **One can see in Table 3 that there are several years where U.S. GDP forecasts by Virginia staff exceed the actual growth in GDP. This is especially true in and around the Great Recession. This did not lead to egregious errors, however, in the Commonwealth's revenue forecasts. During the eight-year comparative time span, actual tax revenue collections exceeded those forecast by a fraction of a percent.**

Hence, over the past decade there has been no consistent pattern of overestimation of state tax revenues. That said, the forecasters nonetheless were wide of the mark for FY 2016 and there will be pain inflicted as state agencies are forced to reduce their spending.

⁷ Michael Mazerov and Michael Leachman, “State Job Creation Strategies Often Off Base,” Center on Budget and Policy Priorities, 2016.

TABLE 3**VIRGINIA TAX REVENUE AND U.S. REAL GDP FORECASTS VERSUS ACTUAL, 2006-2015**

Year	Revenue Forecast	Actual Revenues	U.S. Real GDP Growth Forecast	U.S. Real GDP Growth
2016	\$18,308.9	--	2.4%	--
2015	\$16,927.4	\$17,735.6	2.5%	2.6%
2014	\$16,970.9	\$16,411.4	2.1%	2.4%
2013	\$16,416.5	\$16,684.6	1.7%	1.5%
2012	\$15,726.6	\$15,846.7	1.7%	2.2%
2011	\$14,717.4	\$15,040.2	2.2%	1.6%
2010	\$13,921.8	\$14,219.5	0.4%	2.5%
2009	\$15,015.3	\$14,315.1	-0.4%	-2.8%
2008	\$16,087.3	\$15,767.0	2.1%	-0.3%

Sources: Virginia Department of Planning and Budget and Bureau of Economic Analysis

A Look at Virginia's Largest Metropolitan Areas

Uneven economic conditions exist across Virginia's metropolitan regions, continuing a postrecession pattern. Some metropolitan areas are doing well, while others are struggling. In last year's report, the only real metropolitan bright spots in the Commonwealth were the Richmond and Washington, D.C., regions. There are bright spots again this year, but the players are different – Richmond and Hampton Roads.

Table 4 presents real GDP growth rates for eight Virginia metropolitan areas between 2008 and 2015. The 2015 GDP economic growth rate estimates merit additional discussion. They are “advance estimates” that have been generated by the Bureau of Economic Analysis (BEA). The BEA is the same agency that is responsible for the national GDP estimates. Though we are nearly through 2016, the advance estimates released in September 2016 were for 2015, not 2016.

According to the BEA, Richmond and Hampton Roads performed quite well in 2015, growing 3.9 percent and 3.7 percent, respectively. The Washington, D.C., metro area saw positive, but slow economic growth (1.3 percent). Growth in the remainder of the metro areas was flat or down.

The BEA revises the estimates for each year and sometimes their revisions are startlingly large. In 2014, for example, the eventual revisions averaged 1.4 percent in absolute terms – a huge difference when the numbers

themselves are so small. As a consequence, it usually is better to assess metropolitan growth by focusing on longer time periods. The final column in Table 4 does this by computing average real economic growth rates for the time period 2008-2015. This is more informative than a single year's growth rate.

The long-term average growth rate numbers in Table 4 are disheartening. While the United States has averaged about 2 percent real economic growth during this period, only Charlottesville approached 2 percent among Virginia's metro regions. Richmond and Hampton Roads averaged 1.1 percent and 0.7 percent, respectively. This is despite the BEA's estimates that they grew 3.71 percent and 3.89 percent, respectively, in 2015.

We fully expect the BEA to revise downward both the Hampton Roads and Richmond growth estimates – perhaps even cutting them in half. At the same time, it also seems possible that economic growth in Northern Virginia may have been underestimated.

Nonetheless, the overall tenor of the numbers for the eight metropolitan regions is discouraging. **Between 2008 and 2015, four of the eight regions recorded many years of negative economic growth, epitomized by Lynchburg and Roanoke, both of which recorded negative economic growth rates in six of the eight years covered. Clearly, economic progress has not been evenly distributed across the Commonwealth.**

TABLE 4**REAL GDP GROWTH, SELECTED VIRGINIA METRO AREAS, 2008-2015**

	2008	2009	2010	2011	2012	2013	2014	2015	2009-2015 Average
Blacksburg	-7.20%	-3.11%	1.46%	2.97%	7.47%	-3.78%	1.61%	-0.98%	1.20%
Charlottesville	1.24%	-0.19%	3.79%	3.22%	2.69%	0.59%	2.94%	-0.26%	1.90%
Harrisonburg	-4.64%	9.12%	3.34%	-0.91%	-0.53%	-1.38%	0.21%	-2.61%	-0.30%
Lynchburg	-1.06%	-0.45%	1.86%	-1.72%	-1.49%	-0.73%	0.79%	-0.64%	-0.30%
Richmond	0.00%	-0.98%	1.41%	-0.06%	0.91%	0.78%	0.62%	3.89%	1.10%
Roanoke	-0.52%	-1.79%	-1.59%	-1.01%	-0.58%	-0.14%	0.36%	0.80%	-0.30%
Hampton Roads	-0.29%	0.65%	-0.16%	0.66%	0.83%	0.28%	-0.73%	3.71%	0.70%
Wash DC/ NOVA	2.11%	0.02%	3.29%	1.56%	0.25%	-0.55%	0.96%	1.27%	1.00%

Sources: Bureau of Economic Analysis and calculations by the Center for Economic Analysis and Policy at Old Dominion University

Concluding Remarks

If one were to view the Virginia economy as a patient undergoing a physical examination because she hasn't been feeling quite as good as she thinks she should, then as economic doctors we would be forced to conclude that her maladies have proven difficult to diagnose. This is because we are receiving conflicting signals about the Virginia economy. Several indicators suggest economic expansion. Unemployment rates have been steadily falling and are approaching levels not seen since early 2007. Wages have been rising at an average rate of about 2 percent a year during the recovery and 2015 saw exceptional wage growth in excess of 4 percent. Year-to-date numbers for 2016 (through June) show continued growth of 2 percent over year-to-date 2015.

Unfortunately, other indicators of the state's economy are less rosy. Virginia's labor force has been declining in size and its labor force participation rates have been declining as well. The state's labor force in July 2016 was essentially the same size as it was in March 2011 and is in the midst of a downward trend. The reasons for declining labor force participation are not well understood, but one way or another, society ends up having to support prime-working-age individuals who drop out of the labor force.

What does the future hold? It appears that Virginia's economy is decelerating – not a fortuitous development, given that it was not growing very fast when the current slowdown began. This coincides with torpid international economic growth and immediate external economic stimulus does not appear to be on the horizon.

Three of the most important sectors of the economy of the Commonwealth relate to defense spending, tourism and the Port of Virginia. All three have cooled, albeit for different reasons. One of the few economic bright spots is the growth of professional and business services employment in Northern Virginia, which we discuss in the next chapter.

In last year's report, we forecast that 2015 GDP growth would be 1.33 percent, and the Commonwealth recorded an actual growth rate of 1.4

percent. Hence, our model was right on target. At this time last year, we also were forecasting 1.98 percent real economic growth for 2016. The state's 2016-Q1 real growth rate of 1.9 percent (though for only one quarter) is right in line with this forecast.

However, since the beginning of 2016, our model has been suggesting slower growth in each of the remaining quarters of 2016 and through 2017. As a consequence, we have revised our 2016 economic growth forecast for Virginia downward from 1.98 percent to 1.85 percent (Graph 1). We are forecasting national economic growth to pick up in the second part of 2016 and outpace the Commonwealth's growth rate through mid-2017.

Reality in the Commonwealth is that most of the monthly economic data reported in the first half of 2016 have been underwhelming. There is little reason to believe that real GDP growth in 2016 will differ significantly from GDP growth in 2015.

Virginia's economy will grow in 2016, but less than 2 percent. It will not be a memorable year in terms of economic performance. We do forecast modest growth continuing into 2017 in employment, housing prices and average wages, plus continued improvement in the unemployment rate. The problem is that the moderate pace of growth of these indicators will not be sufficient to push the Commonwealth's real GDP growth above 2 percent.

A cause for concern is Virginia's relatively slow growth compared to other states. Our 2015 growth rate of 1.4 percent was a major improvement over 2013 and 2014. Even so, this still placed us only 33rd from the top among the 50 states. Seventeen states recorded GDP growth rates of 2 percent or higher, with California and Oregon posting growth rates in excess of 4 percent.

Our ability to change our future depends substantially on the actions of those we cannot control – the federal government, the Federal Reserve System, the People’s Republic of China, the European Union, etc. Even so, there are positive steps we can take that over time can move us forward at a more rapid rate. These include:

- making patient strategic investments in research and development, particularly in sectors with strong private-sector market demand;
- improving our educational system K through doctorate;
- developing new export-oriented markets for Virginia’s products;
- diversifying our economic structure;
- improving our transportation system;
- making competitive economic development efforts to attract new businesses or assist those that wish to expand; and
- improving our business regulatory climate.

We are not, after all, helpless actors in a play solely directed by others.

NORTHERN VIRGINIA: TURNING THE CORNER?



The Capital Region's economic health greatly influences the Commonwealth of Virginia's economic trajectory.

Northern Virginia is a vital element of both the regional and the state economies. In June 2016, Northern Virginia represented 37 percent of Virginia's employment and 44 percent of the employment in the Washington-Arlington-Alexandria, DC-VA-MD-WV metropolitan statistical area (henceforth, simply the Washington, D.C., metro area).¹ The region has grown tremendously and now is the nation's sixth-largest metropolitan statistical area (MSA).

Even with this growth, the region remains a government town, economically speaking. As noted in last year's State of the Commonwealth Report, the Capital Region and Northern Virginia remain highly dependent on federal employment and spending. This dependence creates both opportunities and challenges. Increased federal employment and procurement spending mitigated some of the worst impacts of the Great Recession of 2008, but reversals in those trends sank economic growth from 2011 through most of 2014.

Job growth, however, returned strongly in 2015 and 2016, occurring at a pace not seen since 2005. Since government spending has

¹ The region includes Washington, D.C.; Calvert, Charles, Frederick, Montgomery and Prince George's County in Maryland; Alexandria, Arlington County, Clarke County, Culpeper County, Fairfax, Fairfax County, Falls Church, Fauquier County, Loudoun County, Manassas, Manassas Park, Prince William County, Rappahannock County, Spotsylvania County, Stafford County, Fredericksburg and Warren County in Virginia; and Jefferson County in West Virginia. When we refer to Northern Virginia, we include the Virginia counties listed above.

been relatively stagnant, this means that nongovernmental sectors of the regional economy have been expanding. This provokes a very important question: Has Northern Virginia turned the corner in its economic evolution and is it becoming a diversified economic center similar to other large metropolitan regions?

In the following pages, we will examine recent trends influencing the Washington, D.C., metro area, with a particular focus on Northern Virginia's economic performance. There are indications that a transformation is underway in both the Washington metro area and Northern Virginia, more specifically. The region's economy is, and will continue to be, highly influenced by the federal government. However, there are signals that the region's crucial professional and business services sector is growing even as federal spending remains flat. This implies economic diversification, a long sought-after, but elusive, regional goal.

The Washington, D.C., Metro Area

In 2015, the Washington, D.C., metro area boasted a \$442 billion economy. Graph 1 shows that since 2001, the region's economy grew relatively faster than the nation during the years prior to the Great Recession and subsequently did not decline as sharply during this recession. However, regional economic growth faltered after the recession and particularly since 2011. Whereas the rest of the country recovered during 2009-2014, economic growth in the Washington metropolitan region was relatively flat. Things changed in late 2014.

Graph 2 illustrates changes in monthly employment compared to the previous year for the entire Washington, D.C., metro area. As was true for many other metropolitan regions, Washington, D.C., lost employment between late 2008 and early 2010. Since then, the rest of the country has experienced a modest but steady recovery, but the Washington, D.C., metro area encountered a second rough stretch in 2013 as the consequences of the Budget Control Act and sequestration manifested

themselves. The region's major economic engine – federal employment and procurement activities – was sputtering.

One can track changes in monthly employment compared to the previous year for the entire Washington, D.C., metro area's federal employment in Graph 3. **Between mid-2011 and 2014, federal employment each month was consistently lower than the comparable month in the previous year. This had, and still has, significant consequences for the region because annual average wages per federal employee approximate \$100,000.** Reduced employment generated fewer dollars to spend and retailers across the region felt this in sales of items ranging from automobiles to pizzas. Even basic health care expenditures were impacted.

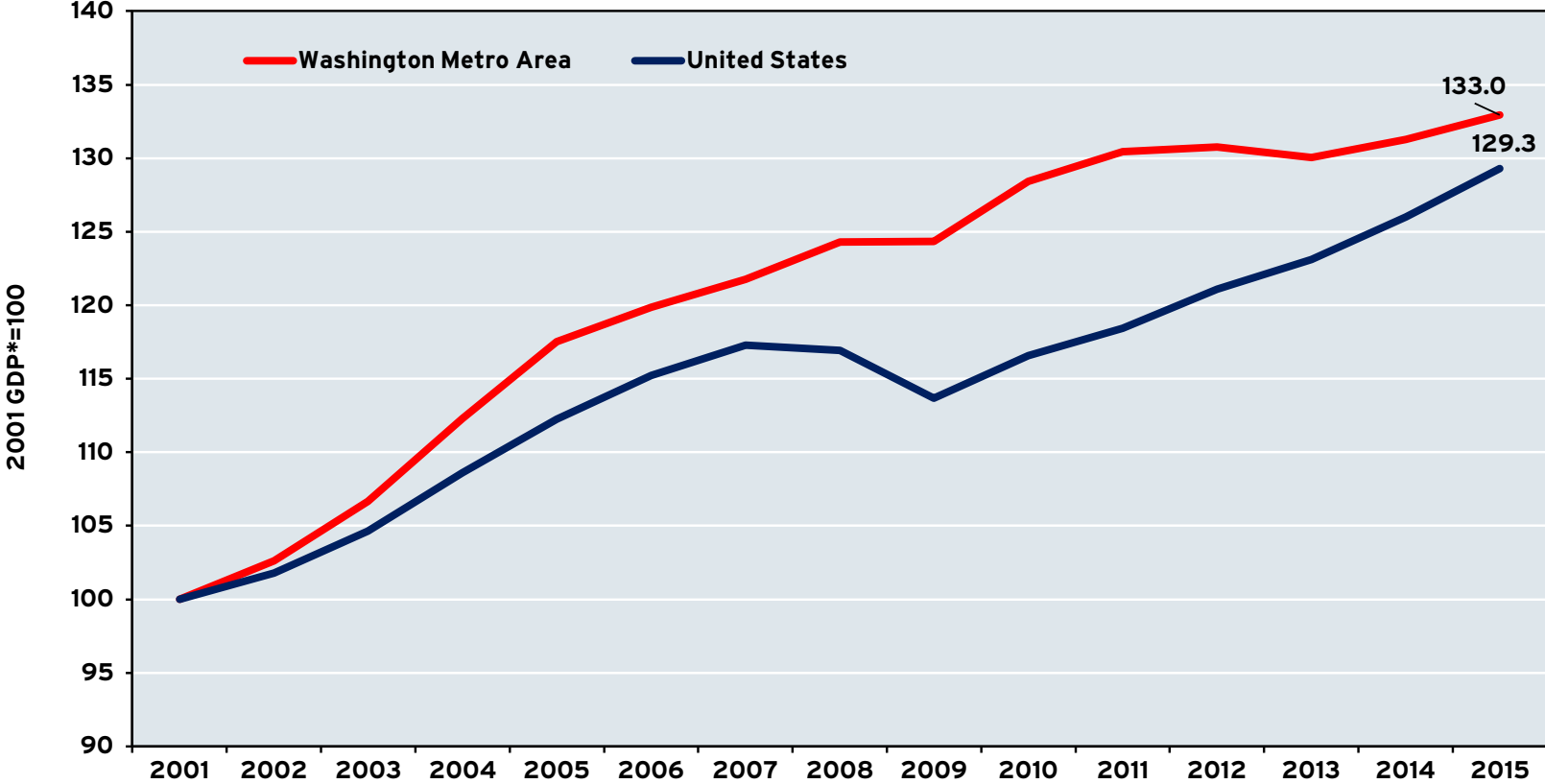
Similarly, cutbacks in federal procurement removed additional spending from the Washington, D.C., metro area. One can see in Graph 4 that the region received approximately \$71 billion in federal procurement spending in 2015. Much of this spending went to the region's professional and business services sector, which constitutes much of the region's economic base. However, federal procurement spending is down significantly from its peak of \$82.5 billion in 2010.

Even so, the region's continued population growth has continued to fuel growth of more locally focused jobs, albeit not jobs that ordinarily pay high wages. As a result, the Washington, D.C., metro area's postrecession economy can be characterized as one in which high-wage jobs often have been traded for jobs that involve more modest earnings.

While the region's job market lagged in 2013 and 2014, its performance was much stronger in 2015 and through the first half of 2016. By June 2016, Washington, D.C., metro area employment had grown to roughly 3.28 million jobs – 81,000 net additional jobs more than the previous year (June 2015 to June 2016). This represents an increase of 2.5 percent. As demonstrated in Graph 5, this growth places the Washington, D.C., metro area in the middle of the pack among large metropolitan regions in the United States. Only Sunbelt cities such as Phoenix, Dallas and Atlanta and West Coast cities such as Los Angeles, San Francisco and Seattle experienced larger growth in employment. Northeastern and Midwestern metropolitan regions such as New York, Boston, Chicago and Minneapolis grew more slowly than the Washington, D.C., metro area.

GRAPH 1

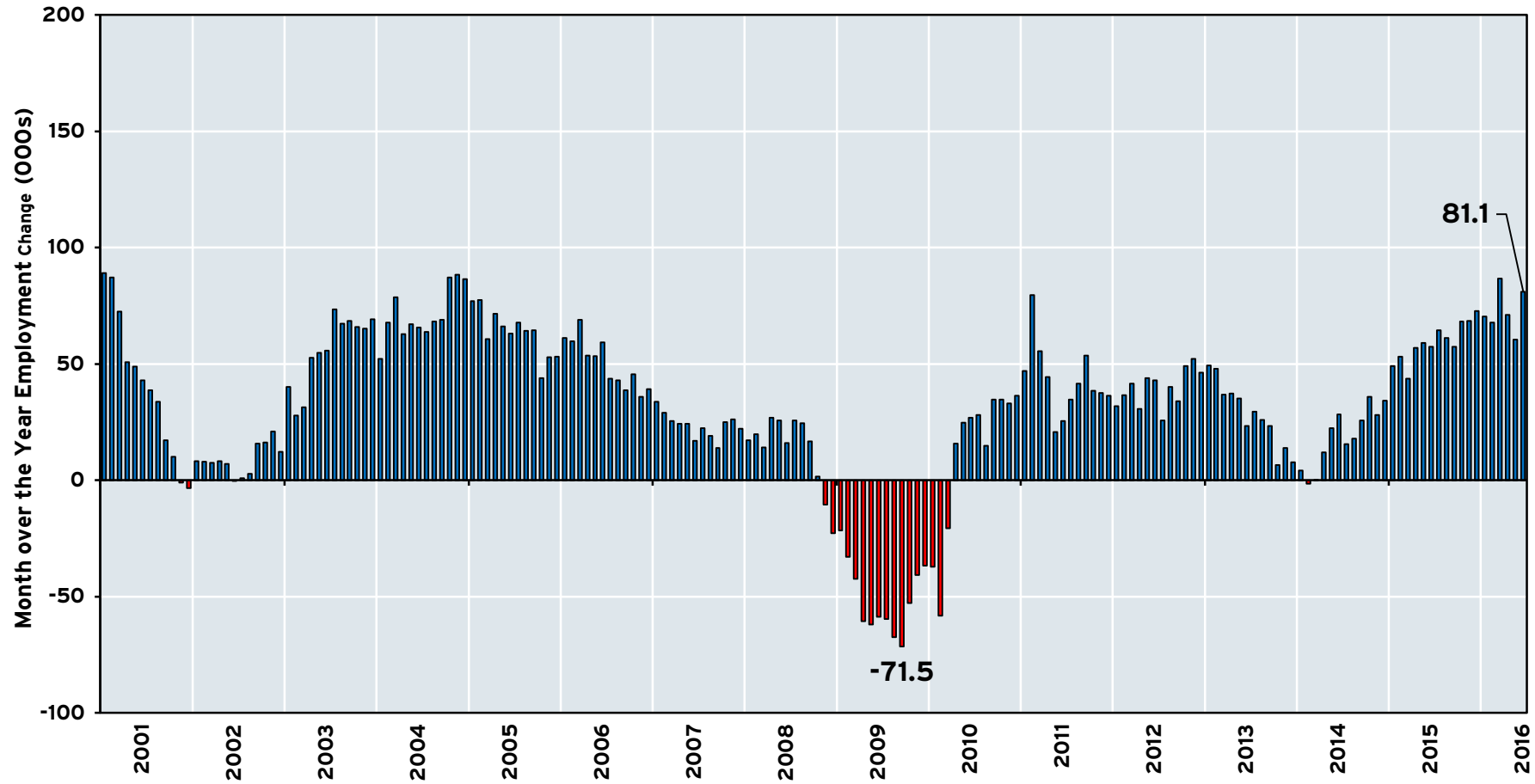
GDP GROWTH IN THE U.S. AND WASHINGTON METRO AREA, 2001-2015



Source: U.S. Bureau of Economic Analysis (*2009 Chained Dollars)

GRAPH 2

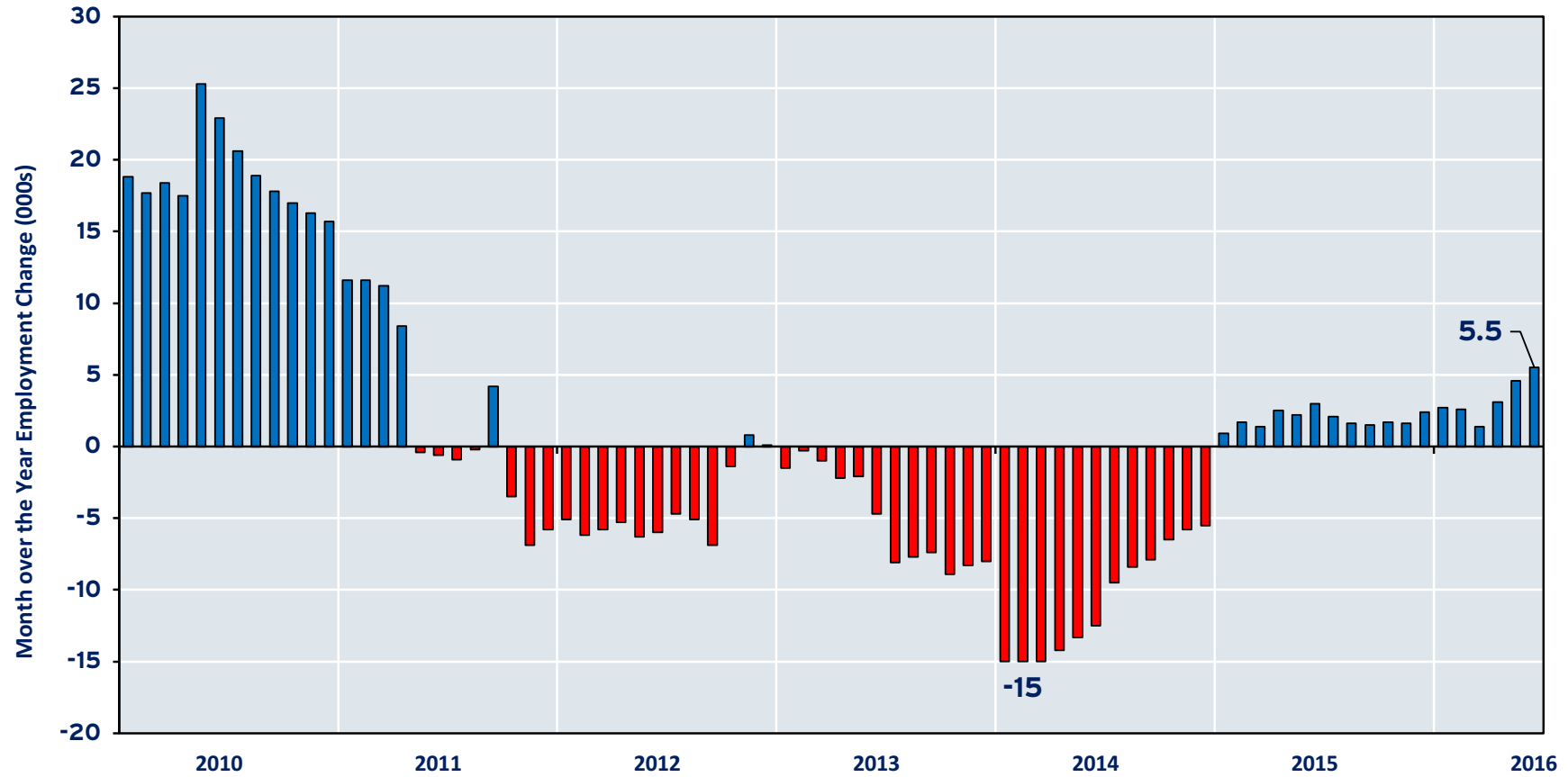
CHANGES IN MONTHLY EMPLOYMENT COMPARED TO THE PREVIOUS YEAR FOR THE WASHINGTON, D.C., METRO AREA, JANUARY 2001 TO JUNE 2016



Source: Bureau of Labor Statistics

GRAPH 3

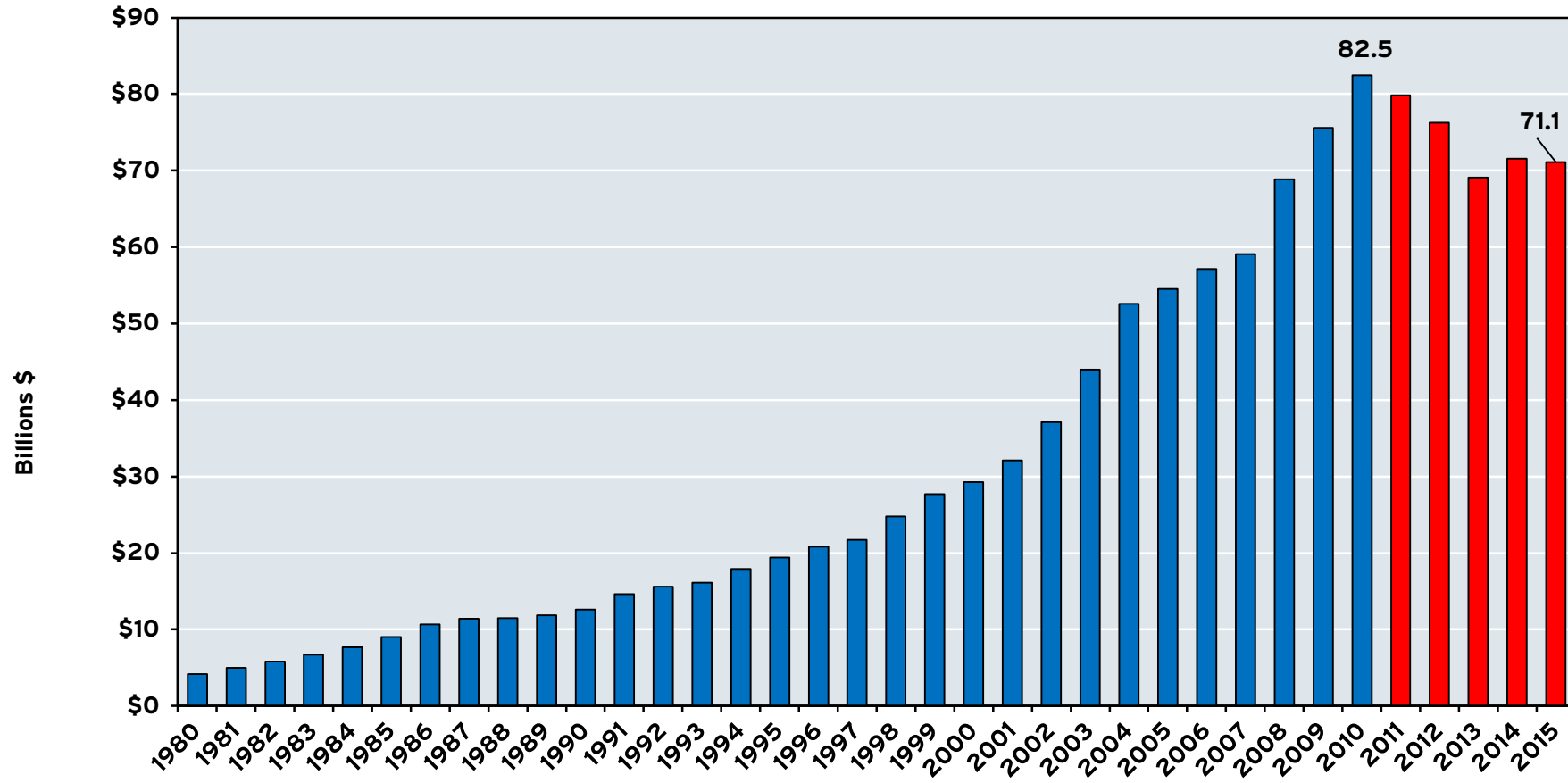
CHANGES IN MONTHLY FEDERAL EMPLOYMENT IN THE WASHINGTON, D.C., METRO AREA COMPARED TO THE PREVIOUS YEAR, JANUARY 2010 TO JUNE 2016



Source: Bureau of Labor Statistics, Current Employment Statistics

GRAPH 4

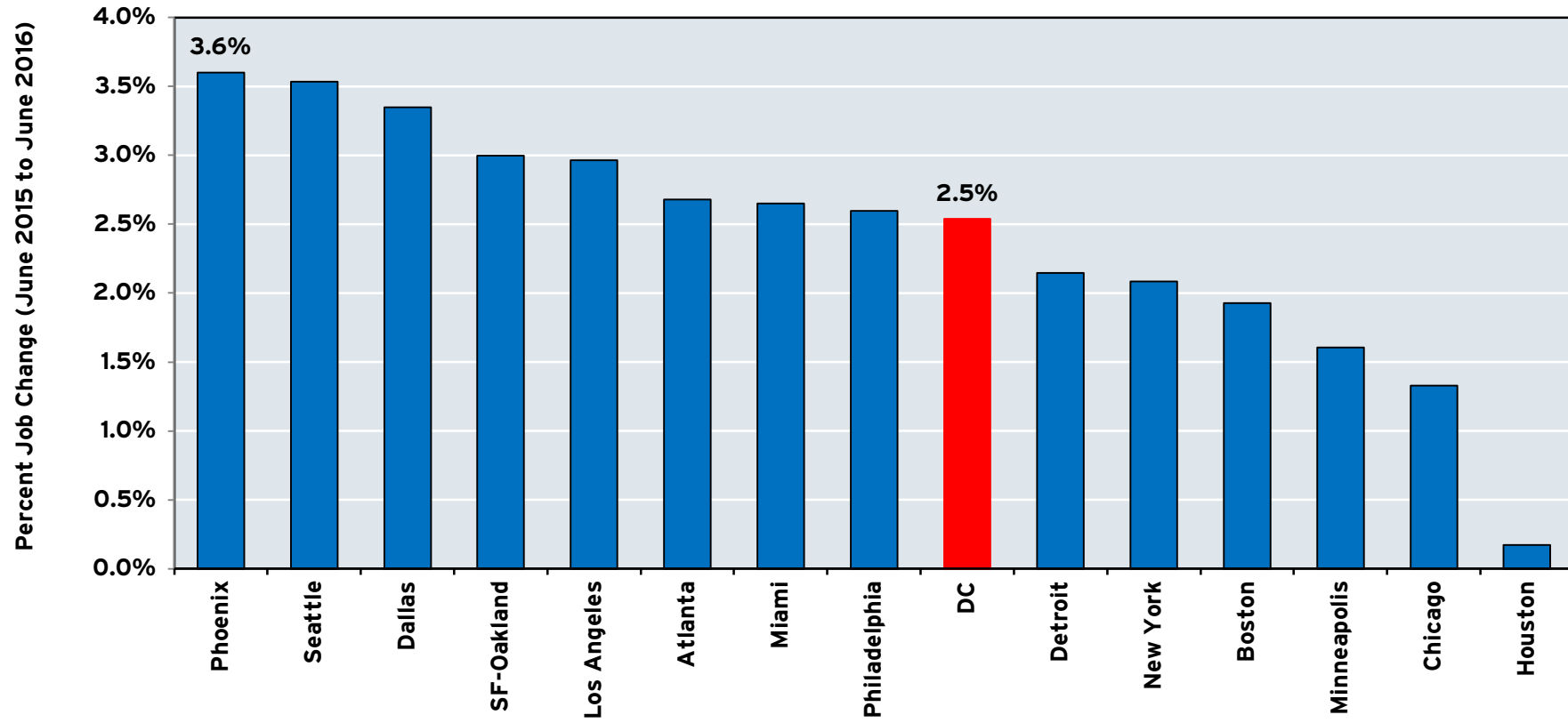
ANNUAL FEDERAL PROCUREMENT IN THE WASHINGTON, D.C., METRO AREA, 1980-2015



Sources: U.S. Census, Consolidated Federal Funds Report and usaspending.gov

GRAPH 5

PERCENT JOB GROWTH IN THE LARGEST U.S. METROPOLITAN REGIONS, JUNE 2015 TO JUNE 2016



Source: Bureau of Labor Statistics, Current Employment Statistics

Northern Virginia

Northern Virginia's economy tends to mirror that of the Washington metro area because it is also driven by federal government employment and procurement. As shown in Graph 6, between late 2013 and early 2014, Northern Virginia lost employment relative to the previous year. Much of this was driven by the reduction of federal employment and procurement mandated by the Budget Control Act and sequestration. Graph 7 shows that Northern Virginia's total level of federal employment has slowly declined over the course of the present decade. Many of these jobs losses occurred between 2013 and 2014.

Federal employment in Northern Virginia stabilized at the end of 2014 and, in June 2016, the region was home to 86,400 federal jobs. The Department of Defense (DOD) employs many of these workers at large installations such as the Pentagon and Fort Belvoir. DOD employment in Northern Virginia represents approximately 23.3 percent of the Washington, D.C., metro area's federal workforce and almost half (48 percent) of Virginia's federal workforce.

However, direct federal employment only tells part of the story, as federal contracting also has declined. Many of the firms that contract with the federal government are located in Northern Virginia, particularly in inner suburban locations such as Crystal City and Roslyn, as well as outer suburban locations such as Tysons Corner, Springfield and along the Dulles Corridor.

Nevertheless, Graph 8 reveals that, much like the broader Washington, D.C., metro area, federal procurement spending in Northern Virginia has declined since the beginning of the decade and remained largely flat over the past several years. These reductions in federal spending² became quite noticeable in FY 2013, when firms in Northern Virginia received almost \$4.5 billion less than they had in FY 2012. Federal procurement levels have remained largely flat since that time.

Many of Northern Virginia's government contractors can be found in the professional and business services sector. It is clear that many companies

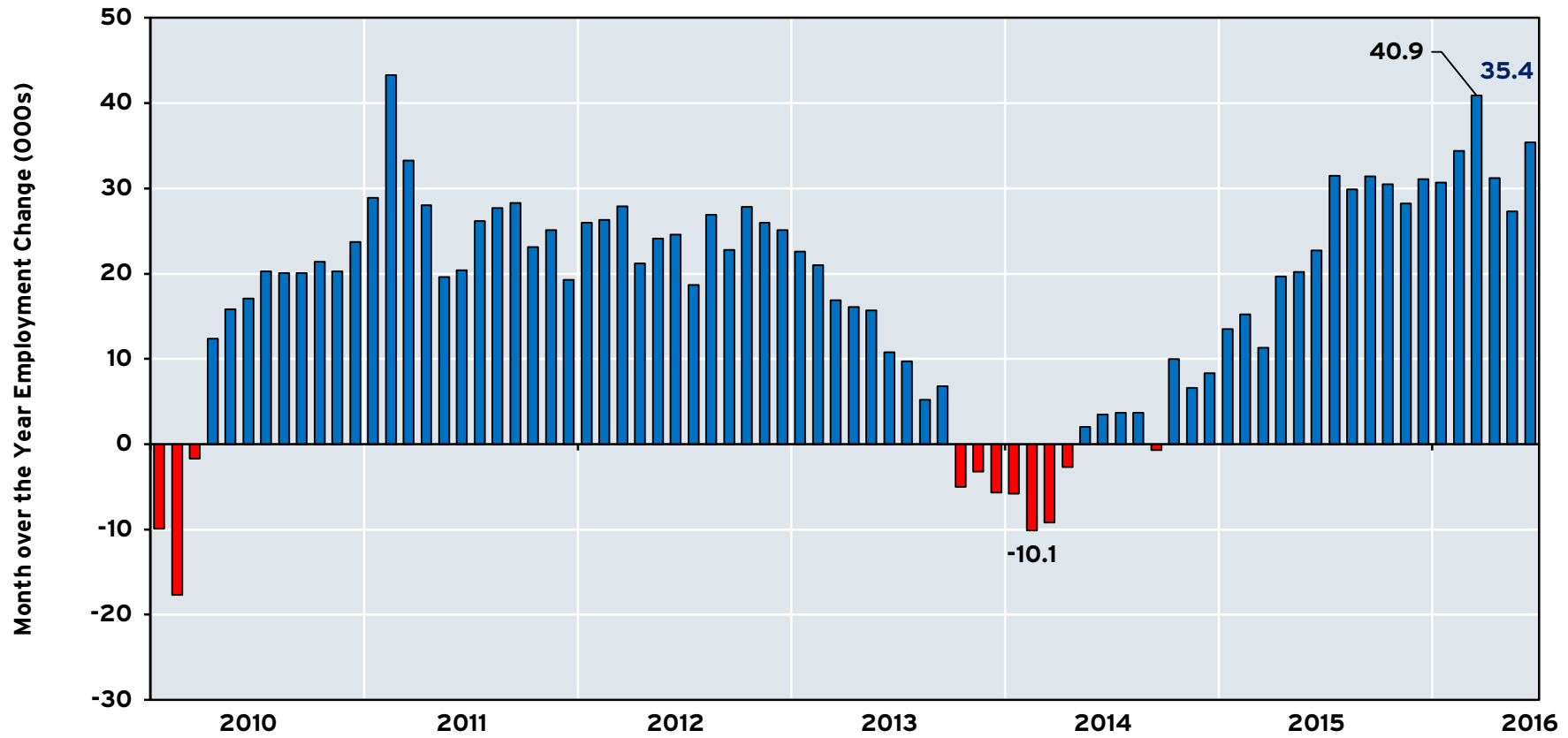
in this sector depend heavily upon government spending and procurement. This sector – which includes key activities such as legal, accounting, consulting and scientific research services, among others – has become a key element of Northern Virginia's economic base. Industries focused upon retail trade and many health care-related industries tend to recycle money within the regional economy and as a result population growth influences their growth patterns. By contrast, many professional and business services bring new money into the economy and therefore drive regional growth.

Even while procurement spending remained relatively flat in FY 2015, employers in some sectors nevertheless continued to create jobs in Northern Virginia. Graph 9 contrasts employment trends in the professional and business services sector and the federal government in Northern Virginia. As the consequences of the Budget Control Act and sequestration took hold in late 2013 and into 2014, both the federal government and professional and business services sectors lost employment relative to the previous year in Northern Virginia. Since the middle of 2014, however, a new pattern has emerged. The professional and business services sector has begun to grow, even though federal employment and procurement remain relatively flat. While it is a bit early to declare that this signals the emergence of a new economic model for Northern Virginia, clearly this is a potentially significant change. It appears that professional and business services companies in Northern Virginia may be diversifying their markets and becoming less reliant on federal spending. If so, it bodes well for the region. While the federal government will always be important to Northern Virginia's regional economy, achieving greater economic diversity will stimulate economic growth and perhaps provide greater economic stability as well.

² By place of performance for the prime recipient transactions.

GRAPH 6

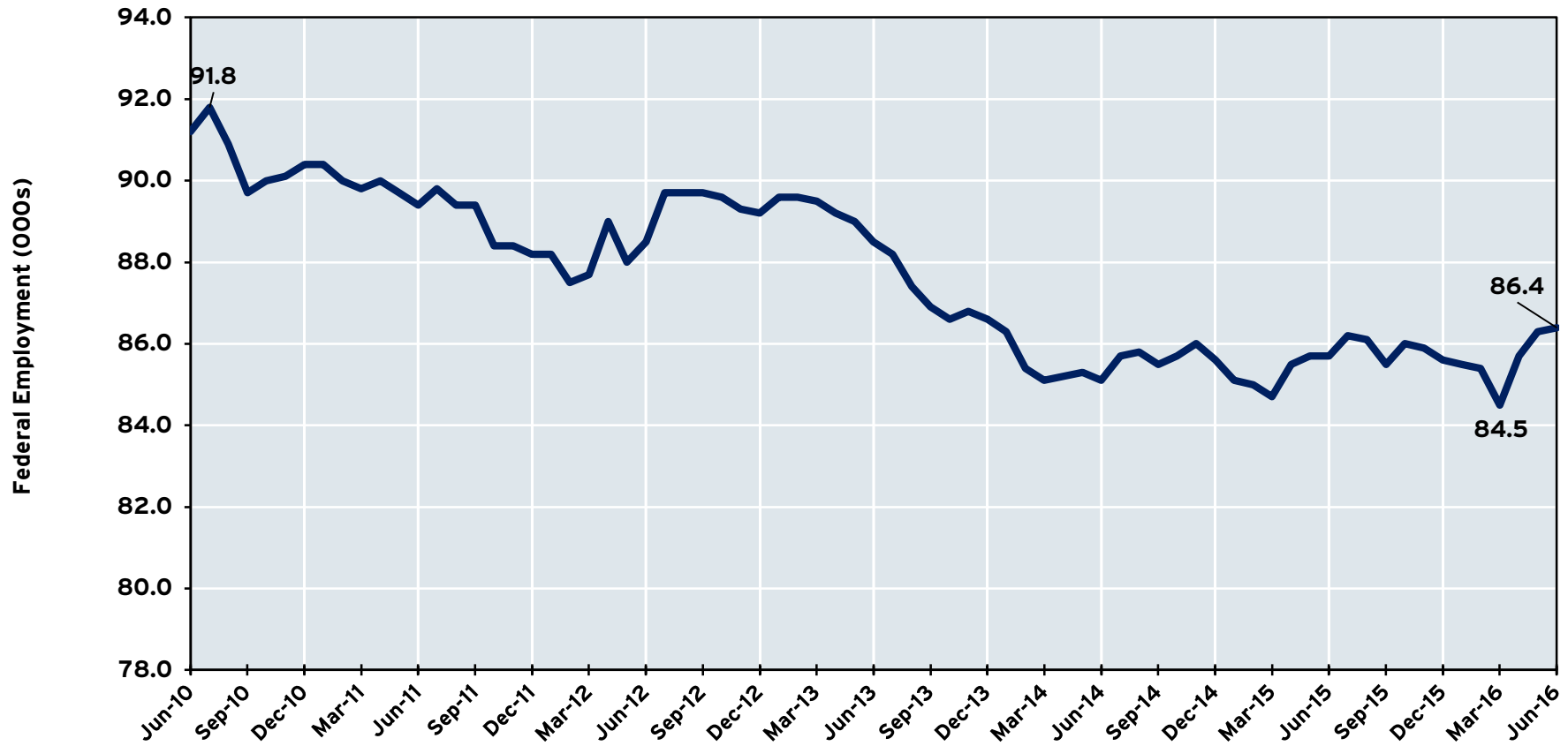
CHANGES IN MONTHLY EMPLOYMENT IN NORTHERN VIRGINIA COMPARED TO THE PREVIOUS YEAR, JANUARY 2010 TO JUNE 2016



Source: Bureau of Labor Statistics, Current Employment Statistics

GRAPH 7

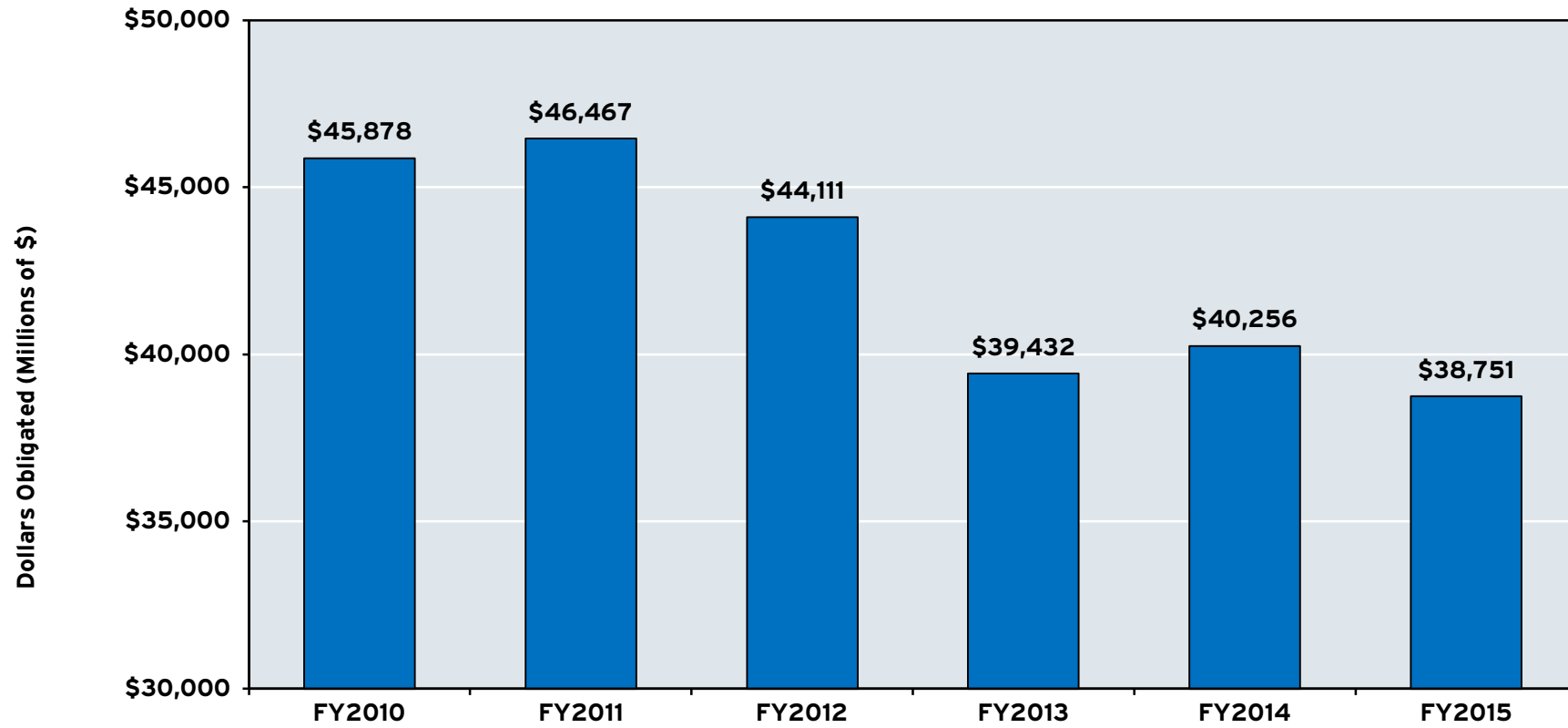
FEDERAL GOVERNMENT EMPLOYMENT IN NORTHERN VIRGINIA, JUNE 2010 TO JUNE 2016



Source: Bureau of Labor Statistics, Current Employment Statistics

GRAPH 8

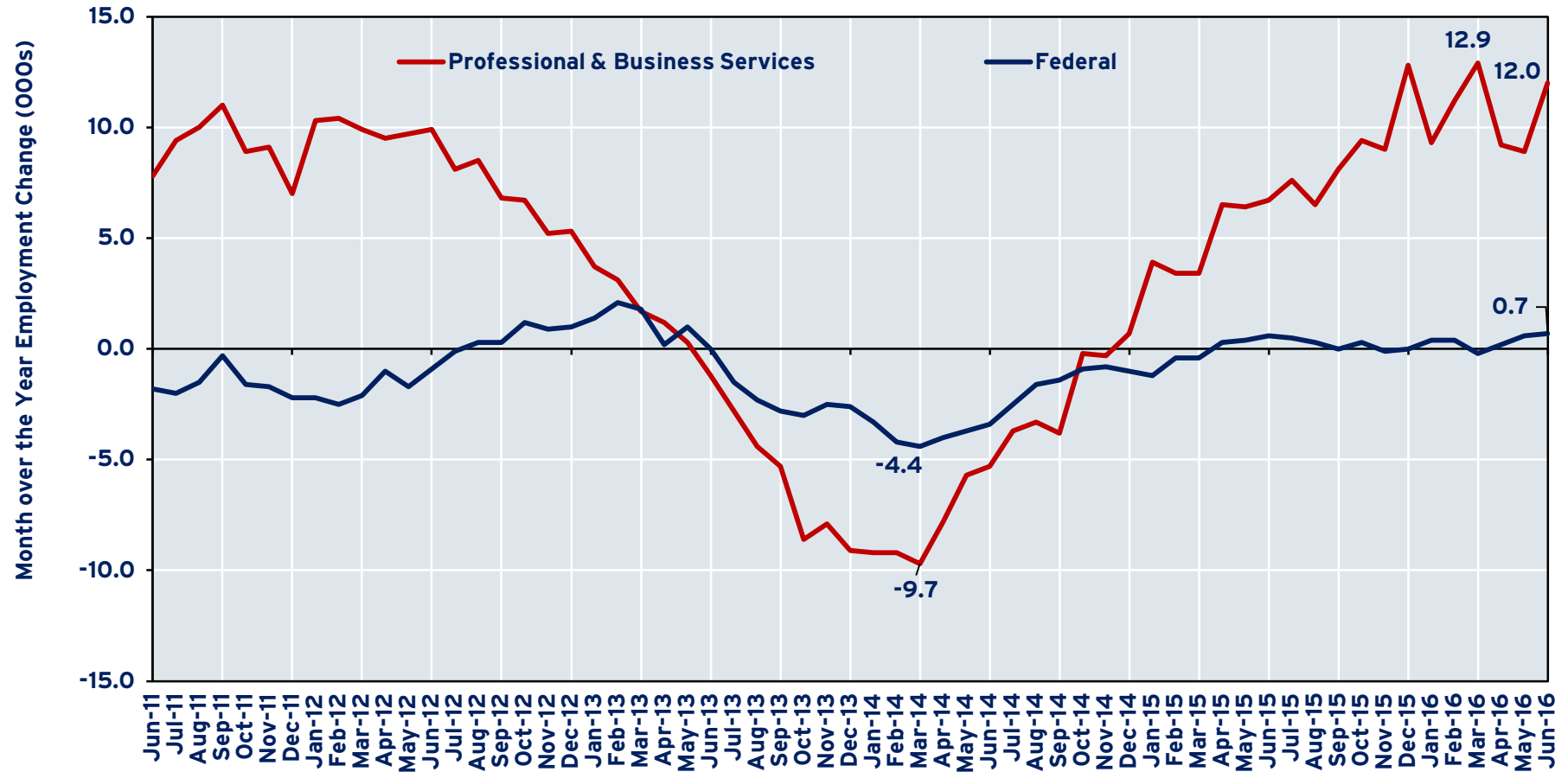
FEDERAL PROCUREMENT IN NORTHERN VIRGINIA, FY 2010 TO FY 2015



Source: usaspending.gov

GRAPH 9

MONTHLY CHANGES IN PROFESSIONAL AND BUSINESS SERVICES EMPLOYMENT AND FEDERAL EMPLOYMENT IN NORTHERN VIRGINIA COMPARED TO THE PREVIOUS YEAR, JUNE 2011 TO JUNE 2016



Source: Bureau of Labor Statistics, Current Employment Statistics

In spite of the economic challenges of the past half-decade, labor markets in Northern Virginia have remained strong relative to the Washington, D.C., metro area and the nation at large. Graph 10 shows that Northern Virginia's unemployment rate has been below 5 percent for almost five years and has been below the unemployment rate for the Washington metro area and the United State every year since 2008. To the extent that the region's private-sector economy can disconnect itself from its reliance on federal spending, the more likely it is that the region's labor markets will remain strong.

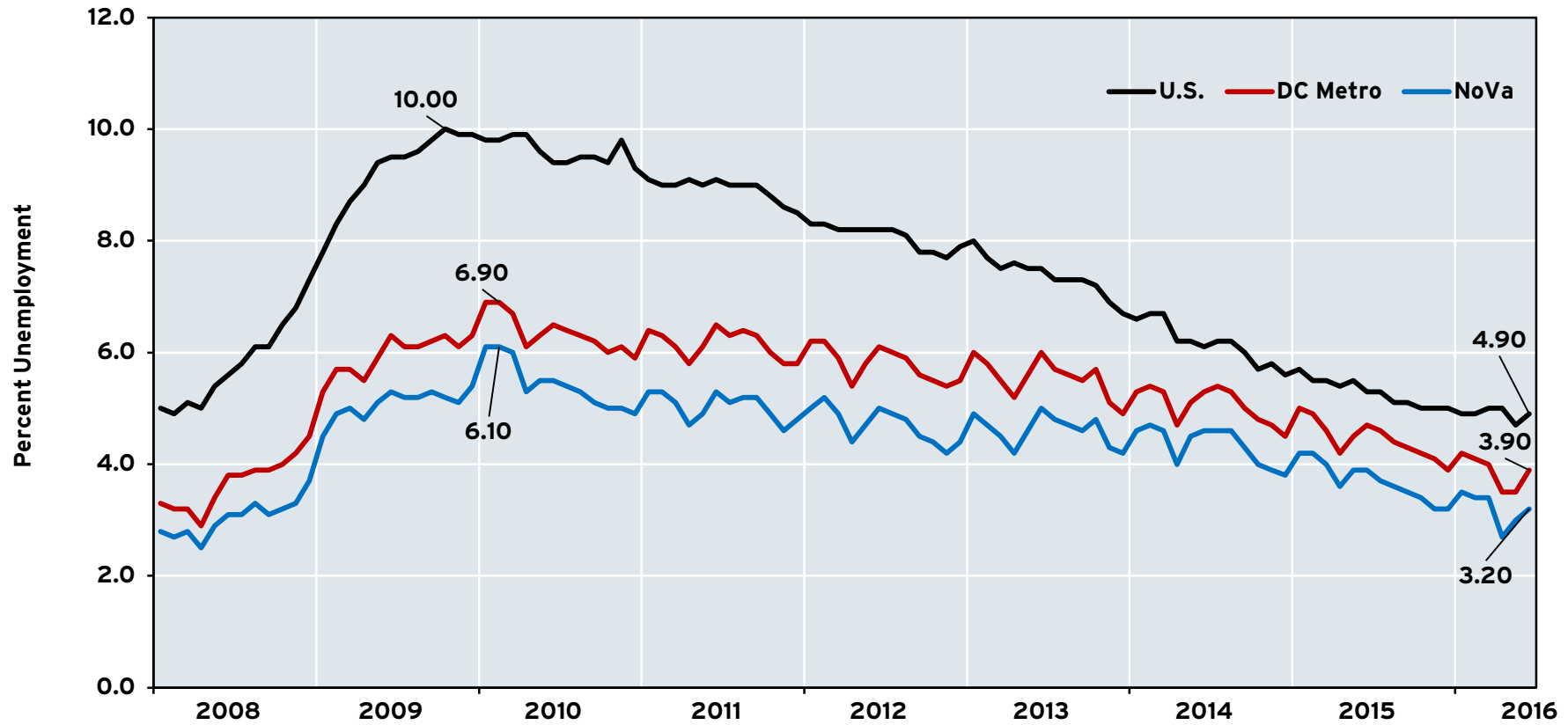
Though 2013 and 2014 were difficult years for the region's professional and business services sector, its recent growth is a reminder that it is one of the region's most important economic drivers. **By itself, professional and business services contributed roughly one-third of the 35,400 net new jobs created in Northern Virginia between June 2015 and June 2016.** However, several other sectors also have been instrumental in growing the regional economy. Graph 11 depicts changes in employment by major sector between June 2015 and June 2016. The leisure and hospitality sector (which includes accommodation and food services, as well as the arts, entertainment and recreation-related industries) added 6,800 net new jobs during this period, or roughly one of the region's every five net new jobs. Other sectors adding substantial employment during this period included education and health services (4,200 net new jobs) and retail trade (5,000 net new jobs).

Several other key sectors saw employment levels remain relatively flat. The information sector and the transportation and utilities sector posted only modest gains, and the financial activities and manufacturing sectors lost employment. The overall government sector remained relatively unchanged between June 2015 and June 2016, as modest net increases in federal employment were offset by similar declines in state and local government employment.



GRAPH 10

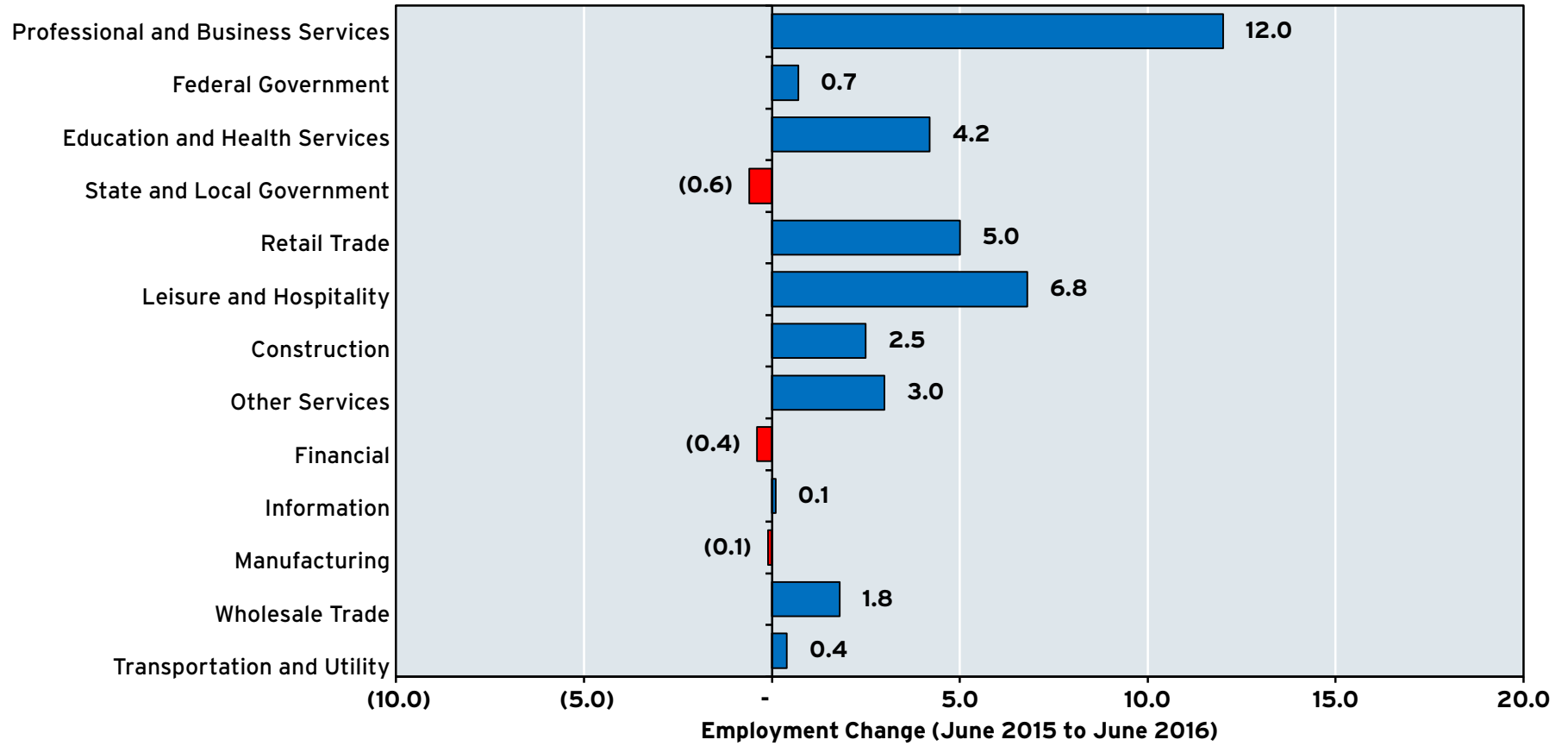
UNEMPLOYMENT RATES: U.S., D.C. METROPOLITAN REGION AND NORTHERN VIRGINIA, JANUARY 2008 TO JUNE 2016



Source: Bureau of Labor Statistics, Current Employment Statistics

GRAPH 11

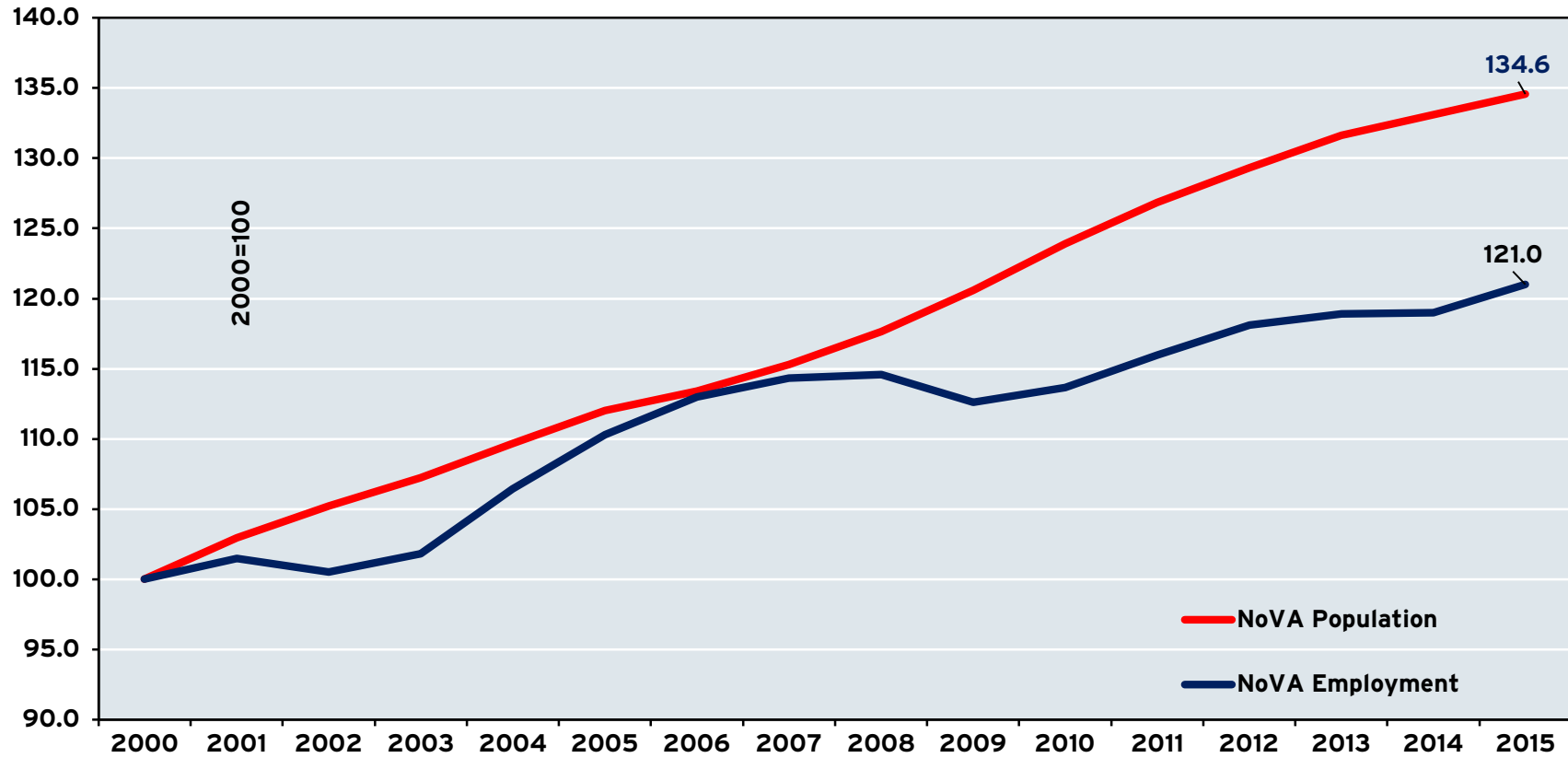
GAINS AND LOSSES IN JOBS BY MAJOR SECTOR IN NORTHERN VIRGINIA, JUNE 2015 TO JUNE 2016



Sources: Bureau of Labor Statistics and Bureau of Economic Analysis

GRAPH 12

POPULATION GROWTH VERSUS EMPLOYMENT GROWTH IN NORTHERN VIRGINIA, 2000-2015



Sources: Bureau of Labor Statistics, Current Employment Statistics, and U.S. Census Bureau

Demographics

Northern Virginia's employment base continues to grow, but not as rapidly as its population. Graph 12 indexes population and employment growth in Northern Virginia since 2000 (2000 = 100). As the region recovered from the early 2000s recession, its pace of employment growth converged with the pace of population growth. The recession, though, set these two variables on different trajectories. Northern Virginia's population now is almost 35 percent greater than it was in 2000, but its nonfarm employment is only 21 percent greater than it was in 2000.

Slow growth in the region's economic base sectors (professional and business services, federal government) over the first part of this decade held consequences for the region's population. Graph 13 illustrates the three primary components of population growth in Northern Virginia between 2010 and 2015 – natural increase (births minus deaths), international migration and domestic migration.

Northern Virginia gained almost 33,000 net new residents over the time period, which turned out to be about half of the Washington, D.C. metro area's total. However, one can see in Graph 13 that actually there was net domestic out-migration from Northern Virginia to other metropolitan areas and states during the 2013-2015 time period. Setting aside births minus deaths and international migration into the region, more people were leaving Northern Virginia for other regions (often in other states) than were coming into the region. Several economic studies has shown that similar flows of people among regions and states are highly sensitive to job creation and job availability. Since Northern Virginia's job creation has trailed its population growth, some residents have departed the region in search of improved job prospects elsewhere. The same studies reveal that the cost of living, especially housing costs, also exercises an influence over domestic migration. "Real," price-adjusted magnitudes count. Not surprisingly, elevated housing costs stimulate out-migration and tend to discourage in-migration. We will have more to say about this shortly.

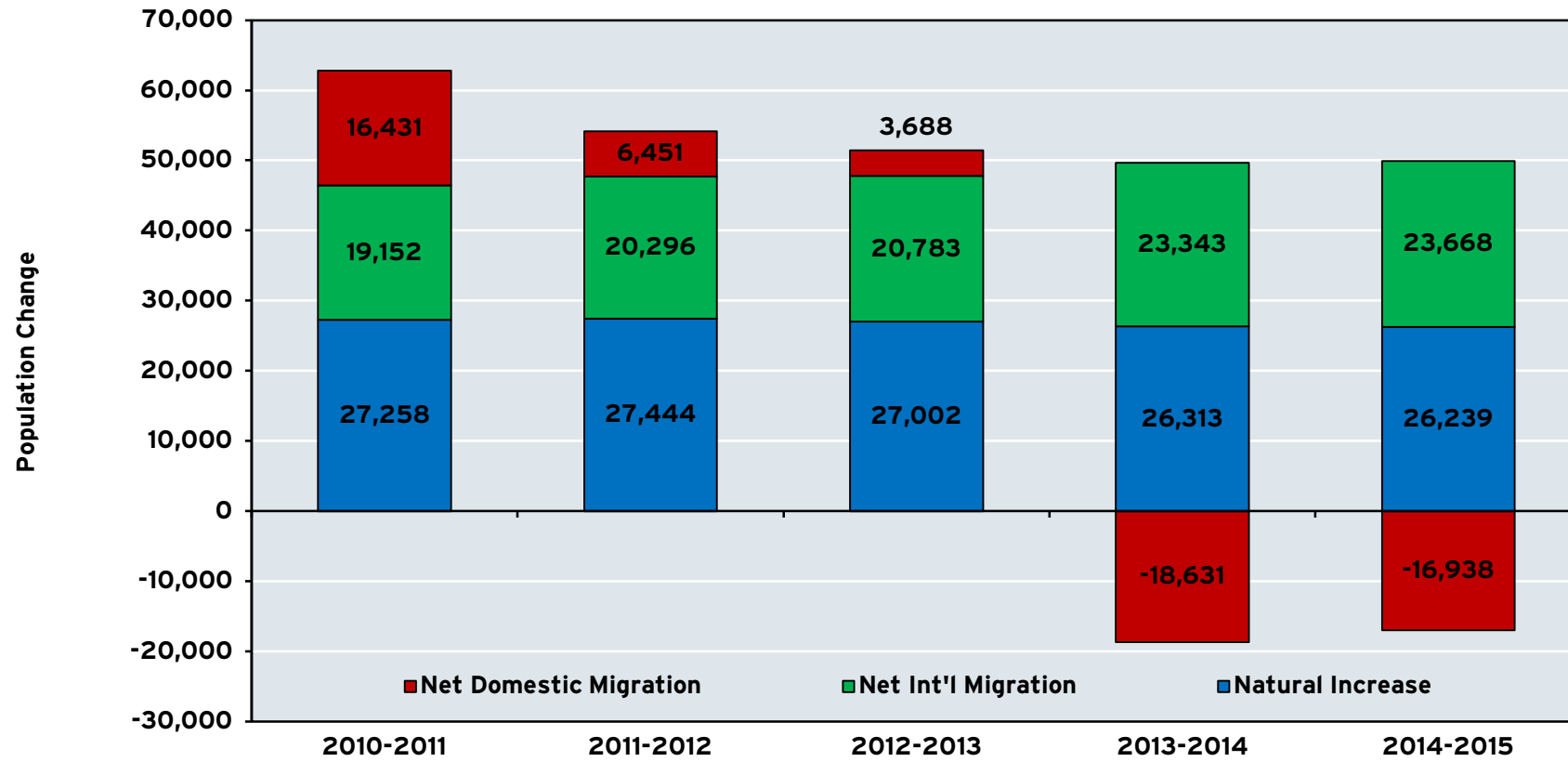
Counteracting the region's domestic outflow of individuals, however, has been a robust and valuable inflow of international immigrants.

International migration has become an increasingly important source of economic stimulus for Northern Virginia, not the least because these new residents tend to be better educated than the region's existing population and many have become entrepreneurs. Of all Northern Virginians who hold an advanced or professional degree, 24 percent are foreign born.



GRAPH 13

ELEMENTS OF POPULATION CHANGE IN NORTHERN VIRGINIA, 2010-2015



Source: U.S. Census Bureau, Population Estimates Program, 2015

Housing

The high cost of living – particularly in the form of relatively high housing costs – influences migratory patterns and can pose real challenges for working families. The Bureau of Economic Analysis (BEA) produces an index known as Regional Price Parities (RPP), which is an overall measurement of cost of living differentials. **The RPP tells us that in 2014, housing in the Washington, D.C., metro area was almost 20 percent more expensive than the nation as a whole.** Housing costs played a major role here – the RPP for rent, for example, revealed a discouraging 70 percent cost differential for the Washington, D.C., metro area relative to the rest of the country.

The region’s economic trends directly influence these housing-related issues. During the first half of the decade, job losses in the federal government and the professional and business services sector, plus the uncertainty created by the government shutdown and sequestration, put a damper on the region’s housing industry. Similarly, tighter lending requirements, higher rents and accumulating student loan debts inhibited and delayed the ability of millennials to enter the housing market.

A commonly used standard concerning housing affordability is that households experience housing-based financial stress when their housing costs exceed 30 percent of their income. The U.S. Census Bureau’s American Community Survey (ACS) provides interesting information in this regard. The ACS reports that during the 2010-2014 period, roughly two-thirds of Northern Virginia households were owners and a third were renters. Table 1 shows that approximately 44 percent of those who were renting and 27 percent of those who were homeowners were cost-burdened because they were paying more than 30 percent of their incomes to meet their housing costs. Almost 20 percent of all renters and 9 percent of homeowners were severely cost-burdened, as they were paying more than 50 percent of their household incomes on housing.

Affordability concerns notwithstanding, the broad trends for housing markets in Northern Virginia are generally 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 after a momentous 44 percent decline between 2006 and 2009. The median sales price of an existing, single-family home was almost \$442,000 in 2015, a figure 3 percent below its previous 2006 peak.

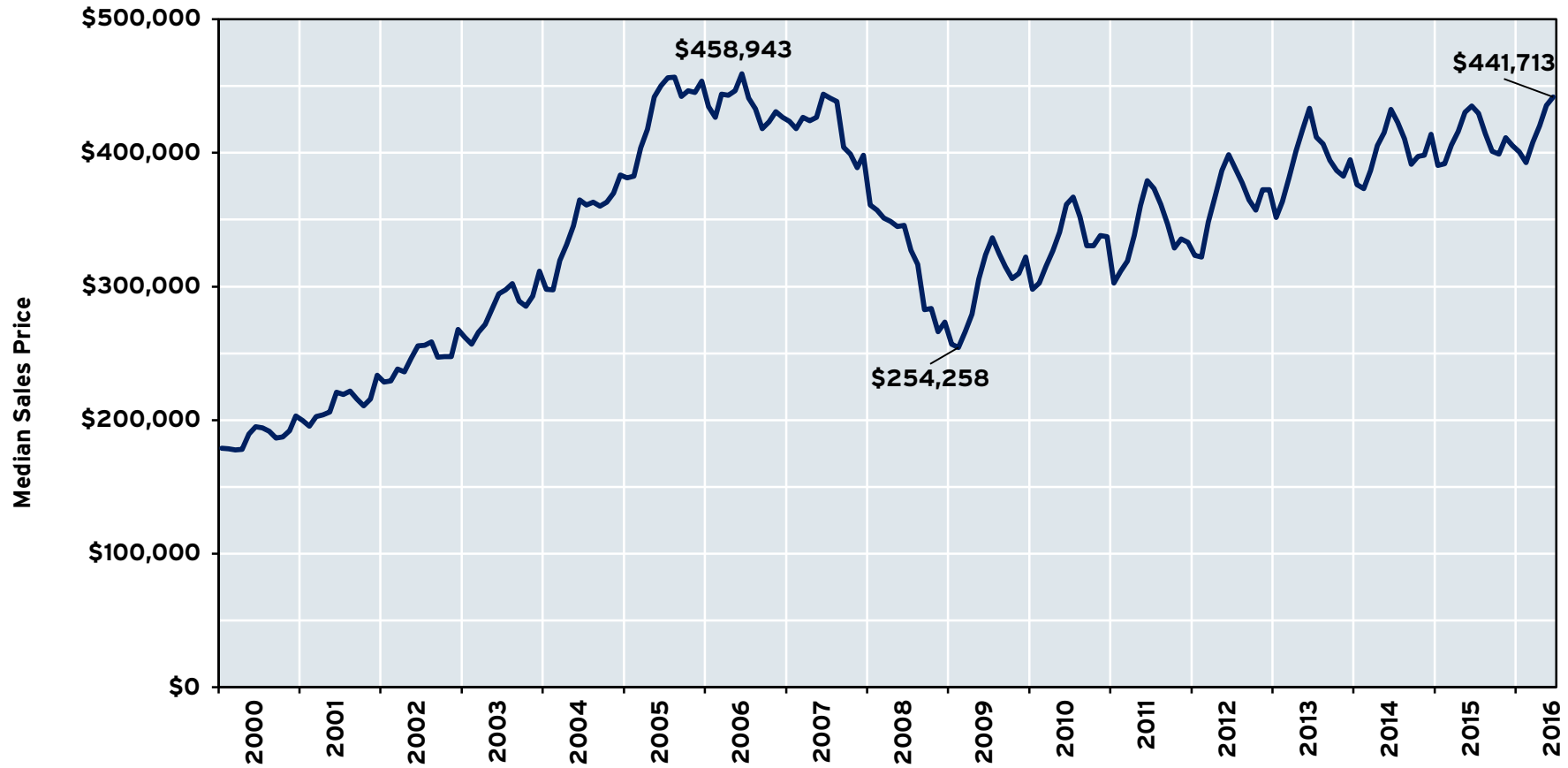
The healing of the market for single-family homes in Northern Virginia has been slow and is by no means complete. The number of active listings in Northern Virginia in 2015 still was only 42 percent of the feverish maximum it hit in 2006.

Percent of Household Income Spent on Housing	Renters	Owners
Less than 10.0 percent	2.6%	13.8%
10.0 to 14.9 percent	8.0%	14.6%
15.0 to 19.9 percent	13.7%	17.3%
20.0 to 24.9 percent	14.7%	15.4%
25.0 to 29.9 percent	12.9%	11.5%
30.0 to 34.9 percent	9.5%	7.6%
35.0 to 39.9 percent	6.6%	4.9%
40.0 to 49.9 percent	8.5%	5.3%
50.0 percent or more	19.5%	9.2%
Not computed	4.0%	0.3%
Housing Cost Burdened (>30% AMI)	44.1%	27.1%
Severe Housing Cost Burdened (>50% AMI)	19.5%	9.2%

Source: U.S. Census Bureau, 2010-2014 American Community Survey where AMI = area median income

GRAPH 14

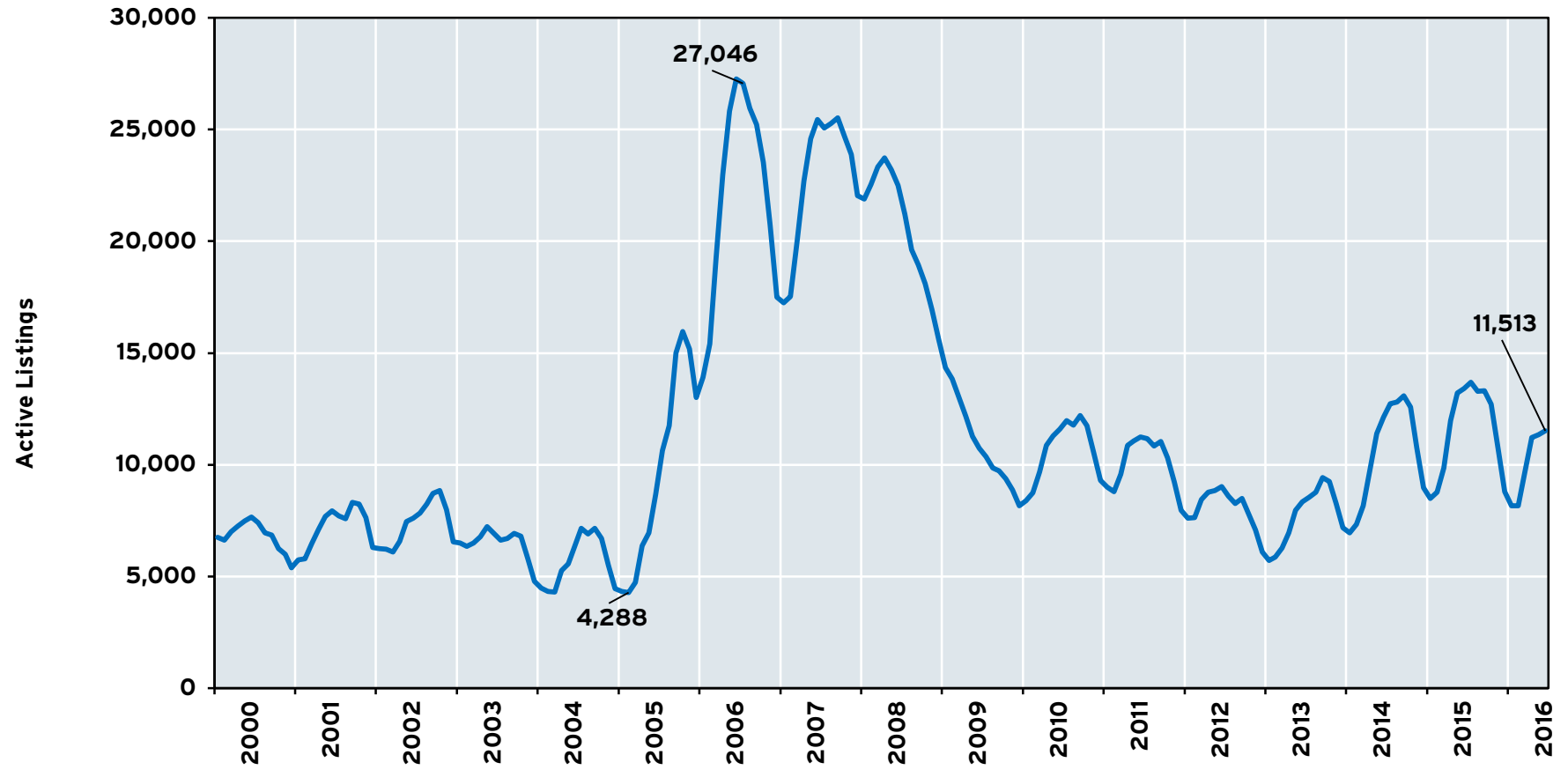
MEDIAN SALES PRICES OF EXISTING HOMES IN NORTHERN VIRGINIA, JANUARY 2000 TO JUNE 2016



Source: Metropolitan Regional Information Systems (MRIS)

GRAPH 15

ACTIVE LISTINGS OF HOMES FOR SALE IN NORTHERN VIRGINIA, JANUARY 2000 TO JUNE 2016



Source: Metropolitan Regional Information Systems (MRIS)

Turning the Corner?

The Washington, D.C., metropolitan area's regional economy rebounded relatively quickly from the Great Recession, in part due to increased federal spending associated with the American Recovery Act, plus other increases in governmental spending. As noted earlier, however, Budget Control Act spending caps and resulting sequestration took billions in annual federal spending out of the Northern Virginia economy.

These cutbacks were most visible in declining employment in the high-value professional and business services sector of the economy. Regional job growth continued modestly through the downturn in federal spending, but was dominated by relatively low-wage jobs in the retail and hospitality sectors. There were some bright signs, however. **Even though federal spending in the region in 2015 dropped by almost \$1.5 billion from the previous year, and Northern Virginia experienced its best overall job growth since before the Great Recession, professional and business services job growth rebounded strongly.**

Job growth numbers for Northern Virginia are not consistent with the recently released estimates of growth in gross regional product, which at less than 1.3 percent would suggest very tepid job growth. It is possible that 2015 productivity in Northern Virginia took a dive, but we are inclined to focus more of our economic assessment of the region's job growth.

Northern Virginia – and the Washington, D.C., metro area more generally – always will be the beneficiary of government spending, especially expenditures related to national defense. Government spending doubtless will grow over time, ensuring that both the overall Washington, D.C., metro area and Northern Virginia also are going to grow at least at a middling pace. **The salient question, however, is whether the region can evolve and become more than a “company town,” in which the quintessential dominant company is the federal government.** In last year's report we presented the choices to be made as a fork in the economic road – continue to rely mostly on government employment and federal spending, or pivot the regional economy to a more diversified market structure. Given the impressive job growth in 2015 that continued

through the first half of 2016, this year we must ask: Has Northern Virginia, and the Washington, D.C. region more broadly, turned an economic corner and now sees a different future?

Recent jobs data, especially in professional and business services, suggest that change is afoot. For this to continue, firms in the region must continue their move beyond their heretofore-dominant business-to-government (B2G) model and instead place greater emphasis on expanding business-to-business (B2B) opportunities. This will not be easy. The low-hanging private-sector fruit in this effort will likely come from cybersecurity, as businesses catch up with historic underspending for these services. Biotechnology that leverages the huge research and development complex of the National Institutes of Health and Johns Hopkins University on the Maryland side of the Potomac also has promise. However, other industries will need to emerge for solid economic diversification to take hold. Exports also offer a significant opportunity, given the relative dearth of export-based industries in Northern Virginia.

In order to transition to a new model, Northern Virginia must be an attractive place for talented workers to live and work. In a knowledge-based economy, human capital, in the form of smart, motivated people, is the ultimate resource. For the past half century, Northern Virginia has played this game well and in the process has attracted large numbers of talented individuals, many of whom are highly educated. Nevertheless, the high cost of living and traffic congestion offer challenges to current and potential residents.

Housing costs present a well-recognized challenge in Northern Virginia, with more than 44 percent of renters and 27 percent of homeowners spending more than 30 percent of their incomes on housing. Regional mobility is an increasing challenge, especially considering the well-publicized challenges facing the Metrorail system. The 2015 Urban Mobility Scorecard, published by the Transportation Institute at Texas A&M, ranks the Washington, D.C., metro area first (worst) among the 15 largest metropolitan areas in the United States in terms of congestion costs per auto commuter, as well as first in terms of yearly delay per auto commuter.³

³ Data in this paragraph come from the 2015 Urban Mobility Scorecard, Texas A&M Transportation Institute, <http://d2dt15nnlpr0r.cloudfront.net/tti.tamu.edu/documents/mobility-scorecard-2015-wappx.pdf>.

Working families face difficult trade-offs between affordability and workplace proximity. The ability of Northern Virginia organizations to retain their workforces will have a direct bearing on future economic competitiveness. But finding the right balance of infrastructure investment, policy choices, including tax policies, and the provision of key public services remains elusive for most jurisdictions. Witness the recent struggles of the Washington Metropolitan Area Transit Authority.

Recent migration data for Northern Virginia deserve attention. For the two most recent years ending in July 2015, the region experienced negative net domestic migration, meaning that more households moved out of Northern Virginia than into Northern Virginia from domestic sources. The losses, which likely reflect some retirement-driven moves, were more than offset by natural population increase and net international migration, but primarily reflect tepid job generation.

Net domestic out-migration may represent the temporary effects of the BCA-driven economic downturn, but bears watching to see if recent job growth reverses this trend. Just as important is the region's continued ability to attract new international migrants. Perhaps different from other areas of the country, the proportion of international immigrants living in the Washington, D.C., metro area that possesses a college degree is almost exactly the same as for the native population. These individuals provide valuable economic thrust to the region. Having a continuing flow of workers with a wide range of skills is an important asset for Northern Virginia employers, especially as regional businesses adapt to global market opportunities.

At the end of the day, it is fair to observe that Northern Virginia is superbly located and is home to some remarkable human capital. The test now is whether the region can deal effectively with the growth that this superb location and remarkable human capital have energized. Northern Virginia has the assets to turn the corner and become a more business-oriented, globally competitive region, but will it happen? Stay tuned.



THE HOTEL INDUSTRY IN THE COMMONWEALTH

Do not forget to show hospitality to strangers.

- Hebrews 12:2



This chapter presents a long-term, 25-year look at the economic performance of the hotel industry in Virginia.¹ How important is the hotel industry to us? The candid answer: not as important as it used to be. **Table 1 reports hotel room revenue as a percentage of total personal income in the United States and Virginia in selected years. It is evident that hotel room revenue as a share of personal income generally declined in these geographic areas between 1991 and 2015.** However, the share of hotel room revenue to personal income bottomed out in the United States in 2009, but continued to fall in Virginia until 2013, when modest recovery began.

Is Airbnb responsible for some of this deterioration? Almost certainly (though data to demonstrate this are scarce). A July 2, 2016, examination of Airbnb's offerings in Virginia Beach revealed that more than 300 properties were available for rent.² However, Table 1 also reveals that the relative decline in importance of the hotel industry began well before Airbnb was founded in 2008. Therefore, current hotel and motel owners are off target when they blame all of their ills on Airbnb.

¹ Not included in our analysis are travelers staying in nonhotel accommodations such as campgrounds, time-shares and private vacation rentals, or those who stay with friends and relatives. Also not included are expenditures that travelers make at businesses, restaurants and places of entertainment.

² www.airbnb.com/s/Virginia-Beach--VA?s_tag=ZclJyHG2.

Why has the hotel industry fared so poorly in Virginia? The short answer is that the Great Recession of 2008 reduced the financial ability of people to travel and stay in hotels. This was compounded several years later by the federal government spending limits that were imposed by the Congressional sequestration agreement (versions of which are still in effect). Both Northern Virginia and Hampton Roads are notably dependent upon federal spending, especially defense spending, and this has had a visibly negative influence on the hotel industry.

TABLE 1

HOTEL REVENUE AS A PROPORTION OF TOTAL PERSONAL INCOME IN THE UNITED STATES AND VIRGINIA, 1991 TO 2015

	U.S.	Virginia
1991	0.887	0.918
2001	0.871	0.881
2007	0.896	0.902
2009	0.765	0.819
2010	0.795	0.820
2013	0.867	0.762
2014	0.904	0.784
2015	0.930	0.807

Sources: Smith Travel Research Trend Report, May 2, 2016; Bureau of Economic Analysis; and the Center for Economic Analysis and Policy at Old Dominion University

Where did we obtain our data? We have three primary sources. Smith Travel Research (STR) data are used for hotel lodging revenue, demand and supply of hotel rooms, as well as associated measures of hotel industry performance. Data on personal income come from the Bureau of Economic Analysis of the U.S. Department of Commerce. Consumer price index (CPI) data come from the Bureau of Labor Statistics of the U.S. Department of Labor. When we convert nominal dollars to “real” dollars, we use 1982-84 as our base.

How Has The Hotel Industry Been Performing Nationally?

We will measure performance using three metrics: (1) total hotel revenue; (2) revenue per available room (REVPAR); and (3) occupancy rates.

(1) Total Hotel Room Revenues in the United States

- Hotel room revenues, unadjusted for inflation, more than tripled from \$44.9 billion in 1991 to \$142.5 billion in 2015, or 217 percent (see Graph 1). However, in real terms, adjusting for inflation, hotel revenues increased by only 82.5 percent during the 25 years.
- Nominal room revenue increased by an average of 4.7 percent per year during this time period, but real room revenue increased by only 2.4 percent per year; prices during this time period increased by an average of 2.2 percent per year.
- **The hotel industry in the United States was severely affected by the Great Recession. Real hotel revenue declined from a peak of \$51.85 billion in 2007 to \$43.09 billion in 2009. It took the industry another four years to recover these revenue losses.** Since then, things have improved noticeably: real, inflation-adjusted hotel room revenues increased from \$52.34 billion in 2013 to \$60.15 billion in 2015, a 14.9 percent increase between 2013 and 2015.

(2) Revenue Per Available Room (REVPAR) in the United States

- Profitability is the best measure of the prosperity of a particular hotel or the hotel industry, but profitability data are not available for the market segments in which we are interested. Next best is the revenue earned by hotels per available room (REVPAR) because it is a measure that incorporates both supply and demand influences.
- REVPAR nationally increased from \$36.10 in 1991 to \$78.62 in 2015 – 117.8 percent. How much of this increase was due to general price inflation? All but 25.1 percent, which is what remains after deflating REVPAR by the Consumer Price Index. This translates to a rather small increase of only 0.9 percent annually. During the Great Recession,

real, inflation-adjusted REVPAR declined from \$31.61 in 2007 to a low of \$24.96 in 2009. It was not until 2015 that real REVPAR had risen to \$33.17 and surpassed its previous 2007 peak (see Graph 2).

(3) Hotel Occupancy Rates in the United States

- The average occupancy rate for hotels in the United States approximated 62 percent between 1991 and 2015. However, occupancy rates declined substantially during the Great Recession – the occupancy rate fell from 63.2 percent in 2006 to only 54.6 percent in 2009. It was not until 2014 that occupancy rates exceeded their 2006 level. The good news for the hotel industry is that the 2015 occupancy rate reached an all-time high – 65.5 percent (see Graph 3).

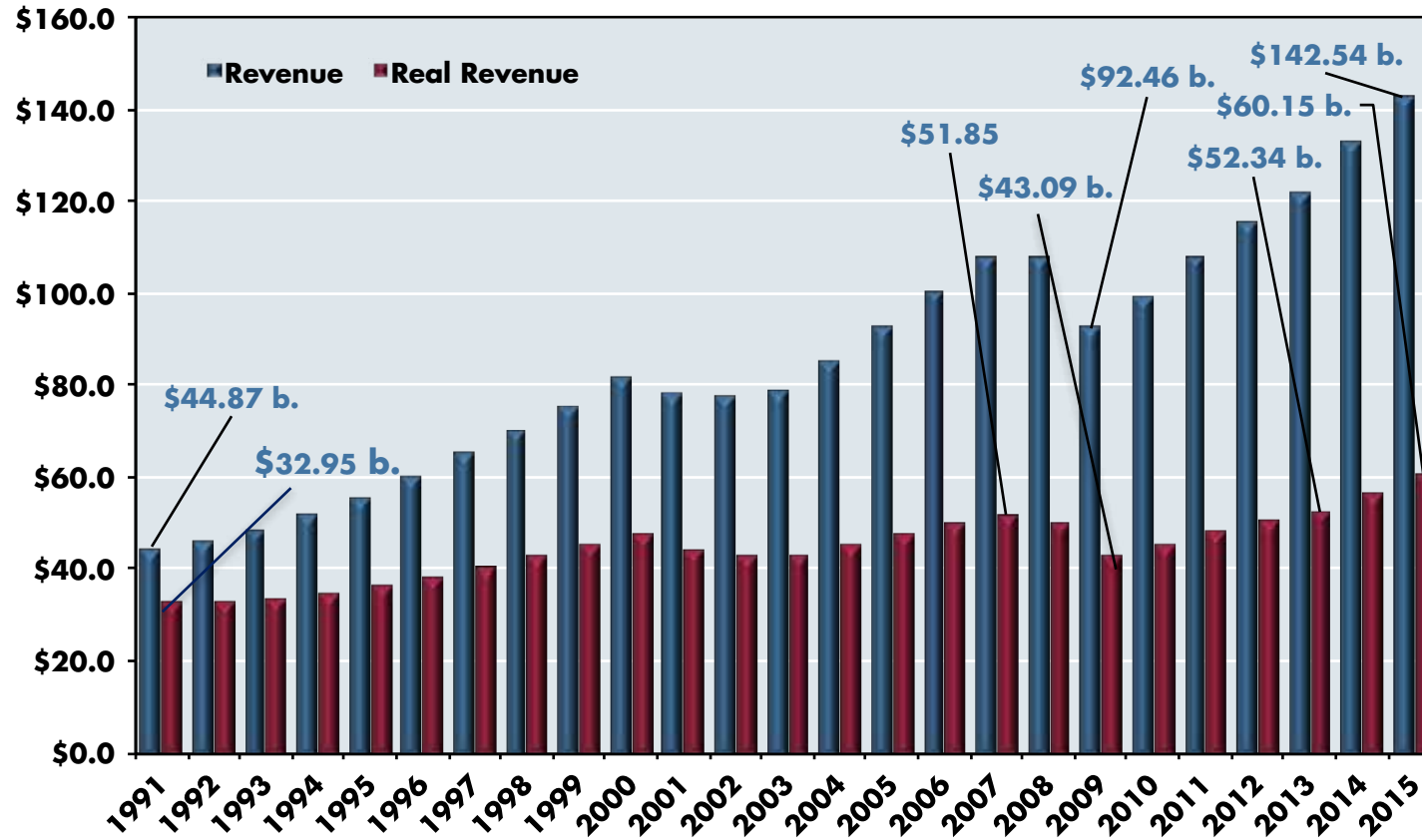
NATIONAL HOTEL INDUSTRY DYNAMICS

- The Great Recession is the major reason why the industry’s performance declined between 2007 and 2009. The demand for hotel rooms began to recover in 2010 and has continued to increase steadily since then.
- The slackening of demand during the Great Recession was compounded by a substantial increase in the supply of hotel rooms. Between 2006 and 2010, the supply of hotel rooms nationally increased by 8.4 percent. Since then, the supply has been fairly stable, increasing by less than 1 percent each year between 2010 and 2014 and by only 1.1 percent in 2015 (see Graph 4).



GRAPH 1

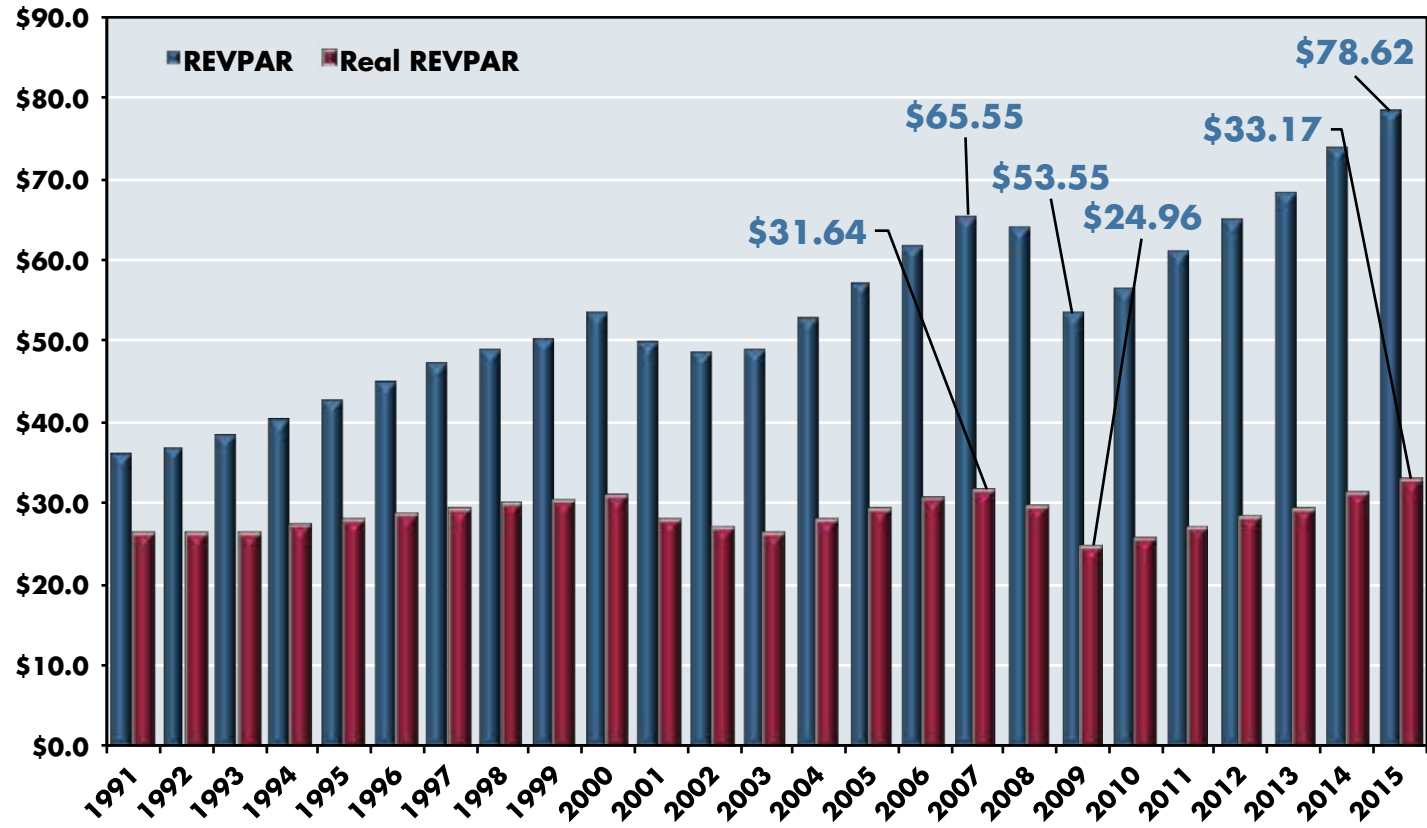
HOTEL REVENUE IN THE UNITED STATES, 1991-2015 (BILLIONS OF \$)



Sources: Smith Travel Research Trend Report, May 2, 2016; Bureau of Labor Statistics; and the Center for Economic Analysis and Policy at Old Dominion University

GRAPH 2

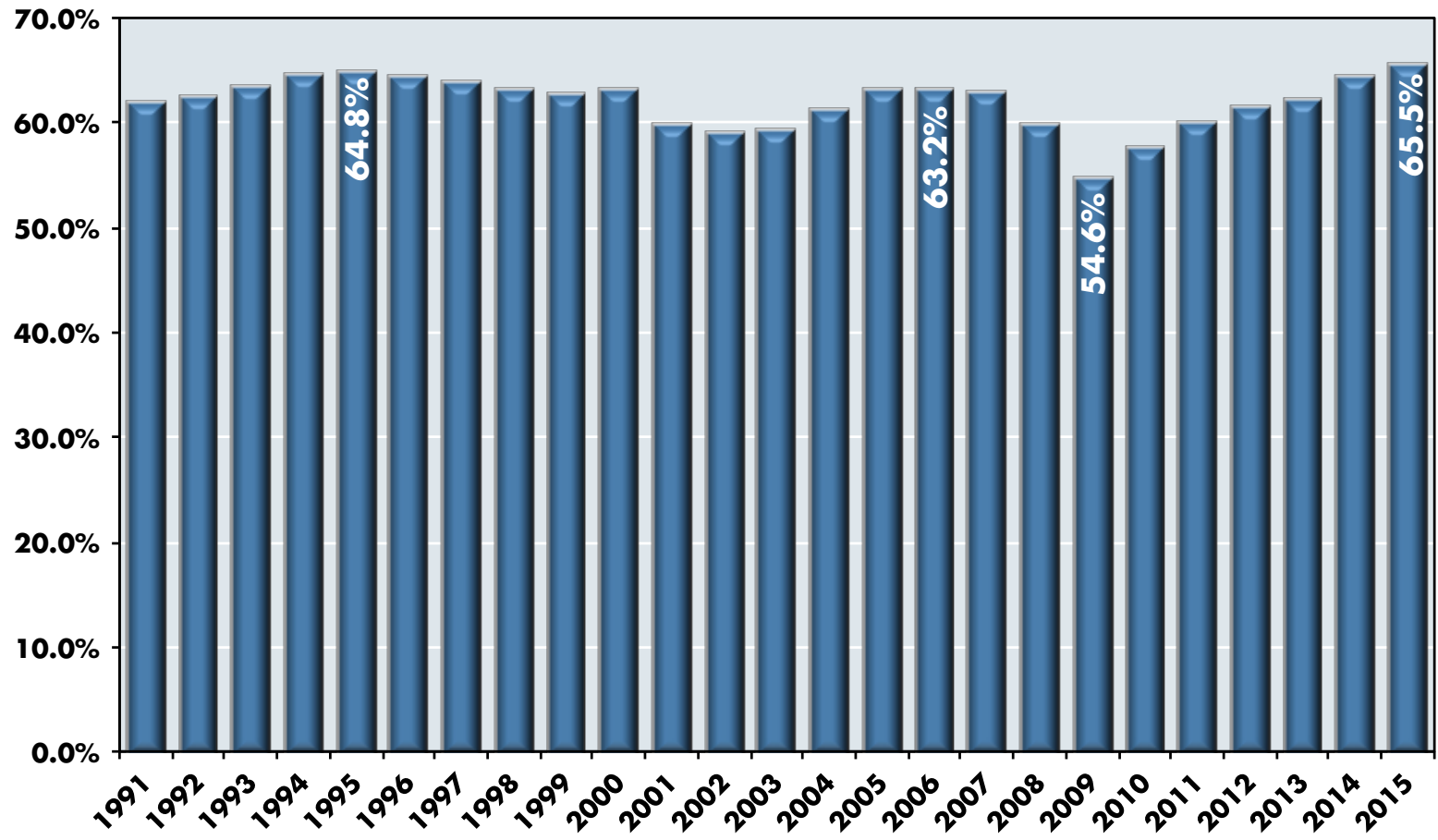
REVENUE PER AVAILABLE ROOM (REVPAR): UNITED STATES, 1991-2015



Sources: Smith Travel Research Trend Report, May 2, 2016; Bureau of Labor Statistics; and the Center for Economic Analysis and Policy at Old Dominion University

GRAPH 3

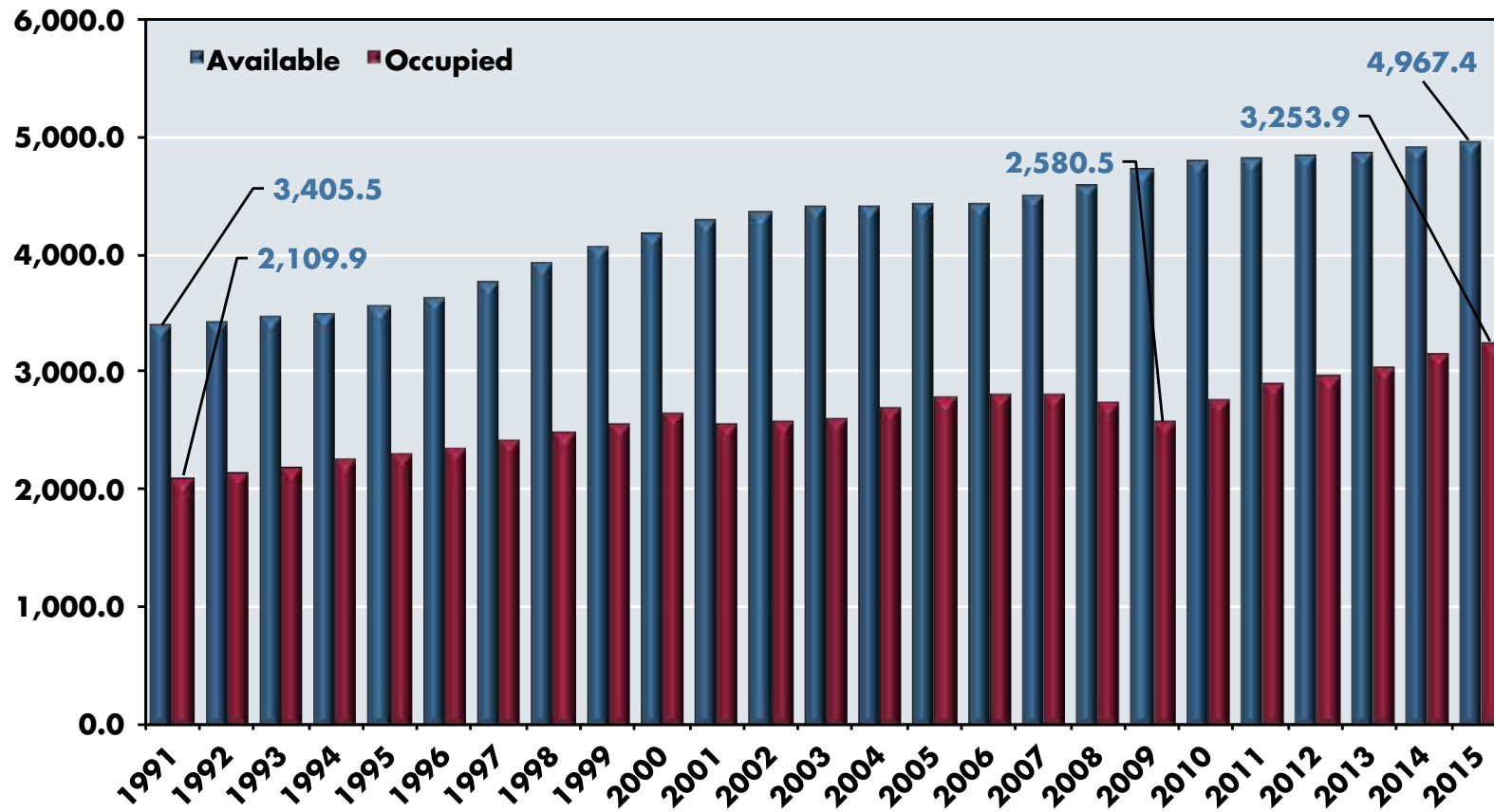
HOTEL OCCUPANCY RATES IN THE UNITED STATES, 1991-2015



Sources: Smith Travel Research Trend Report, May 2, 2016, and the Center for Economic Analysis and Policy at Old Dominion University

GRAPH 4

AVAILABLE HOTEL ROOMS AND ROOMS OCCUPIED IN THE UNITED STATES, 1991-2015



Sources: Smith Travel Research Trend Report, May 2, 2016, and the Center for Economic Analysis and Policy at Old Dominion University

How Has The Hotel Industry Been Performing In Virginia?

(1) Total Hotel Room Revenues in Virginia

- **If total hotel room revenue is the criterion, then over the past 25 years, the performance of the hotel industry in the Commonwealth has been poor compared to the nation as a whole.** Total hotel room revenue in Virginia increased by 185 percent between 1991 and 2015, but this easily trailed the national increase of 217 percent. When adjusted for inflation, hotel room revenues statewide increased by only 63.7 percent during the same time period, once again trailing the national average of 82.5 percent.
- Even though real hotel room revenues increased from \$1.32 billion in 2013 to \$1.49 billion in 2015 (a 12.87 percent gain), they remain slightly lower than the \$1.50 billion peak in 2007 (see Graph 5).

(2) Revenue Per Available Room (REVPAR) in Virginia

- Over the last 25 years, nominal REVPAR in the Commonwealth increased from \$32.18 in 1991 to \$63.99 in 2015, or 98.9 percent. However, real, inflation-adjusted REVPAR increased by only 14.3 percent during the same time period, or only 0.5 percent annually. Further, real REVPAR began to decline in 2007 and continued to fall through 2013. Real REVPAR did increase in 2014 and 2015, but remains well below its 2007 peak of \$29.86 (see Graph 6).

(3) Occupancy Rates in Virginia

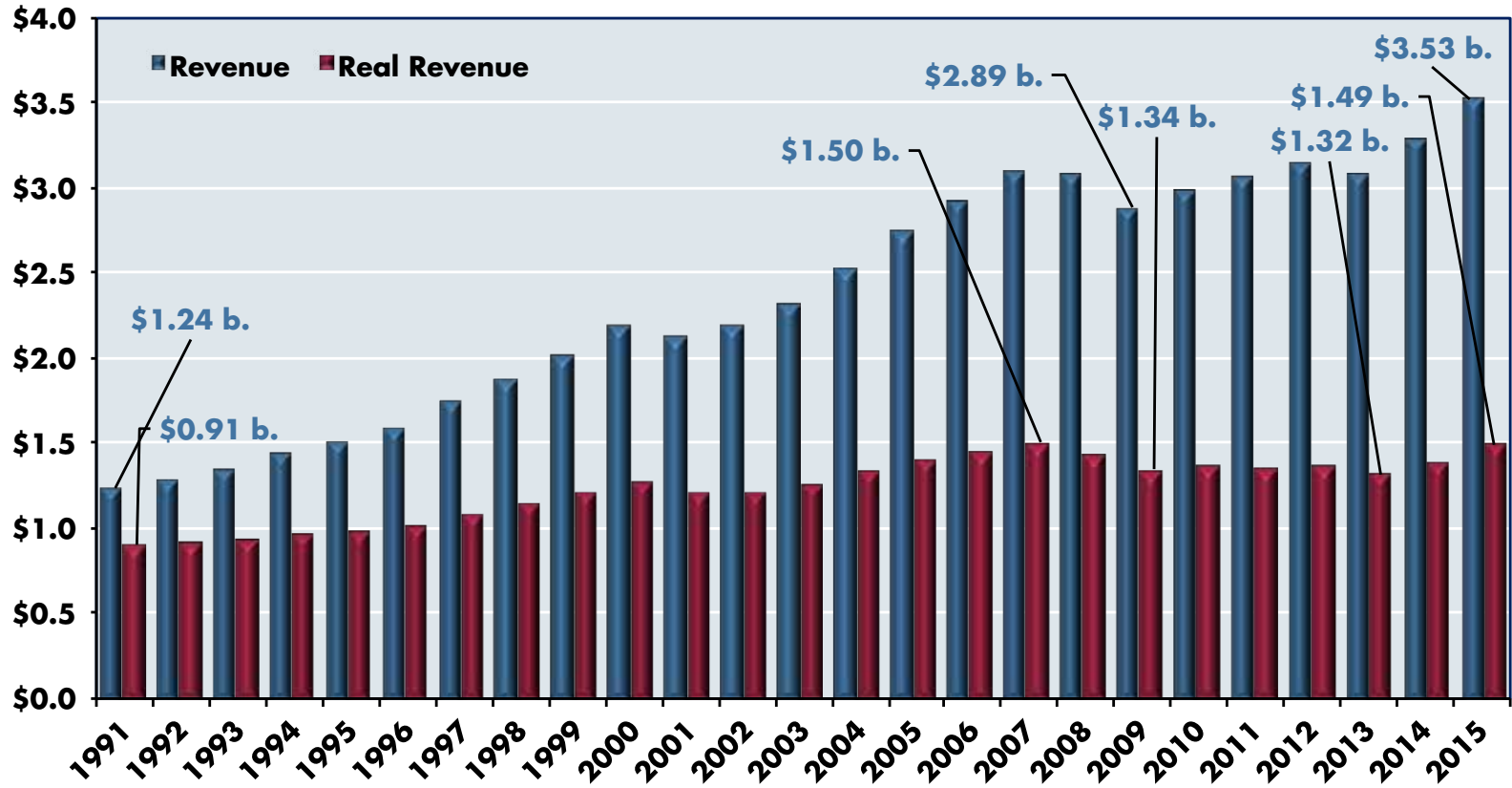
- **The occupancy rate of hotels in Virginia averaged approximately 61 percent between 1991 and 2015 – slightly below that of the nation. The Great Recession hammered Virginia hotels and by 2009 their average occupancy rate had fallen to only 54.5 percent. Since then, occupancy rates generally have trended upward. The 2015 rate was 61.6 percent – still below the highs of 62.61 percent in 2005 and 63.51 percent in 1994 (see Graph 7).**

VIRGINIA HOTEL INDUSTRY DYNAMICS

- **There is little mystery attached to the causes of the underperformance of the hotel industry in Virginia in recent years. The combination of the Great Recession plus federal government budget sequestration constituted powerful blows from which the industry has yet to recover.**
- Further, as was true for the United States, a substantial increase in the supply of hotel rooms in Virginia put an additional damper on industry performance. Even while the demand for hotel rooms was declining between 2006 and 2010, the supply of hotel rooms was increasing by 11.4 percent in Virginia. Since then, that supply has held fairly constant. By the end of 2015, the total supply of hotel rooms in Virginia actually was 0.05 percent below its 2010 level.
- The good news going forward for the Virginia hotel industry is that the hotel room supply/demand imbalance appears to be diminishing (see Graph 8). Nonetheless, happy days are not likely to return until federal spending in the Commonwealth, especially for defense, revives.

GRAPH 5

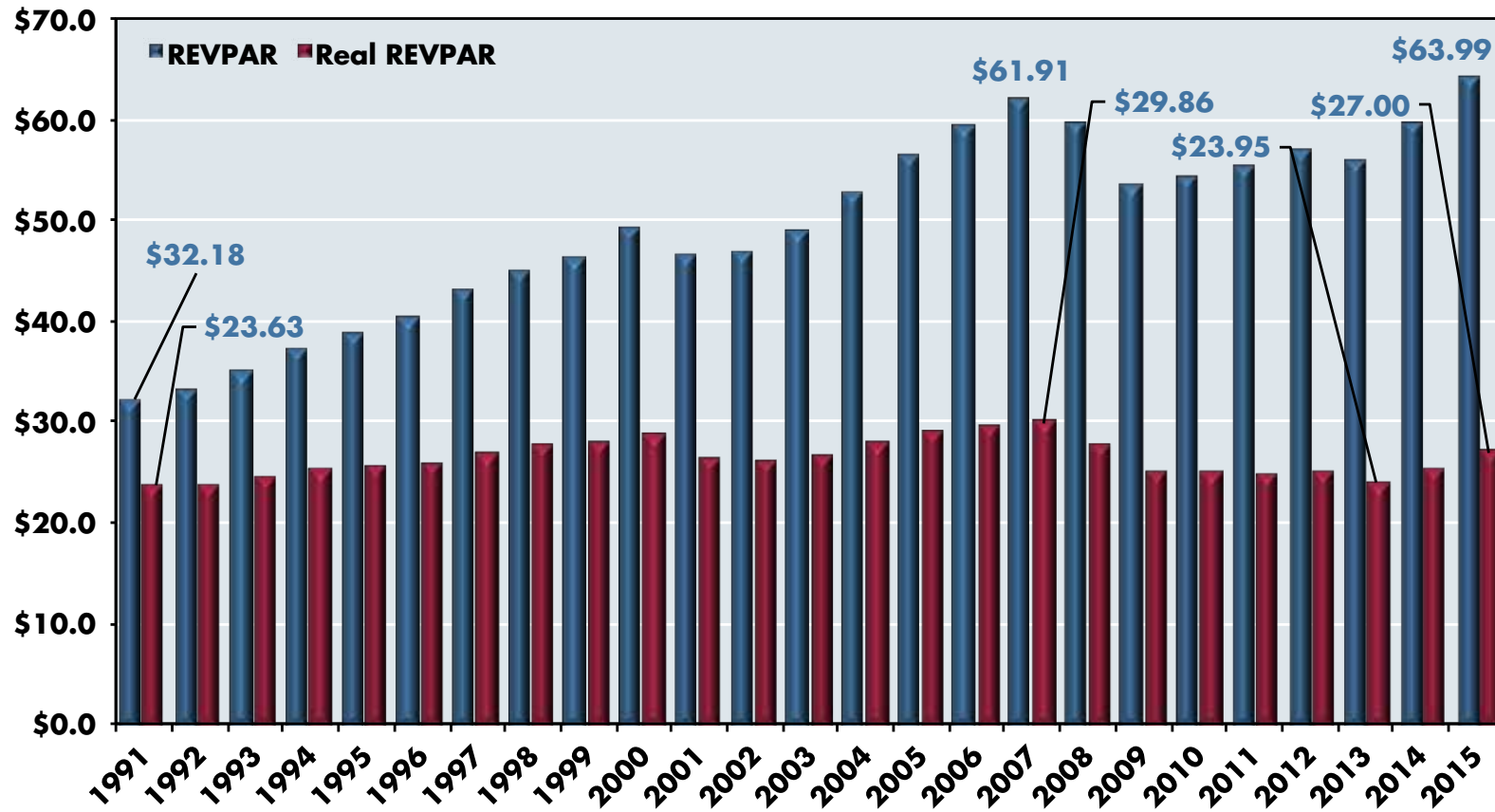
HOTEL REVENUE IN VIRGINIA, 1991-2015 (BILLIONS OF \$)



Sources: Smith Travel Research Trend Report, May 2, 2016; Bureau of Labor Statistics; and the Center for Economic Analysis and Policy at Old Dominion University

GRAPH 6

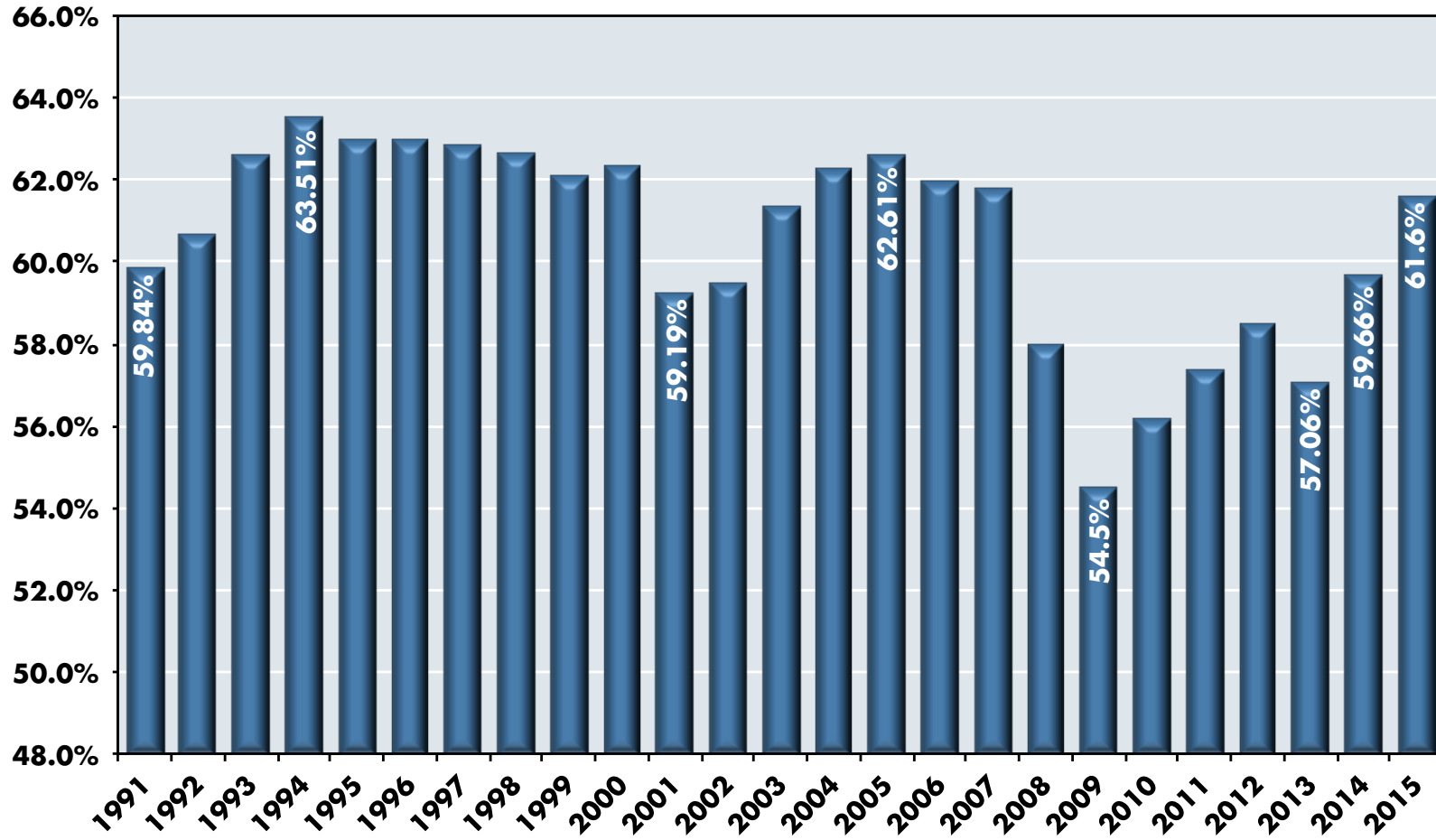
REVENUE PER AVAILABLE ROOM (REVPAR) IN VIRGINIA, 1991-2015



Sources: Smith Travel Research Trend Report, May 2, 2016; Bureau of Labor Statistics; and the Center for Economic Analysis and Policy at Old Dominion University

GRAPH 7

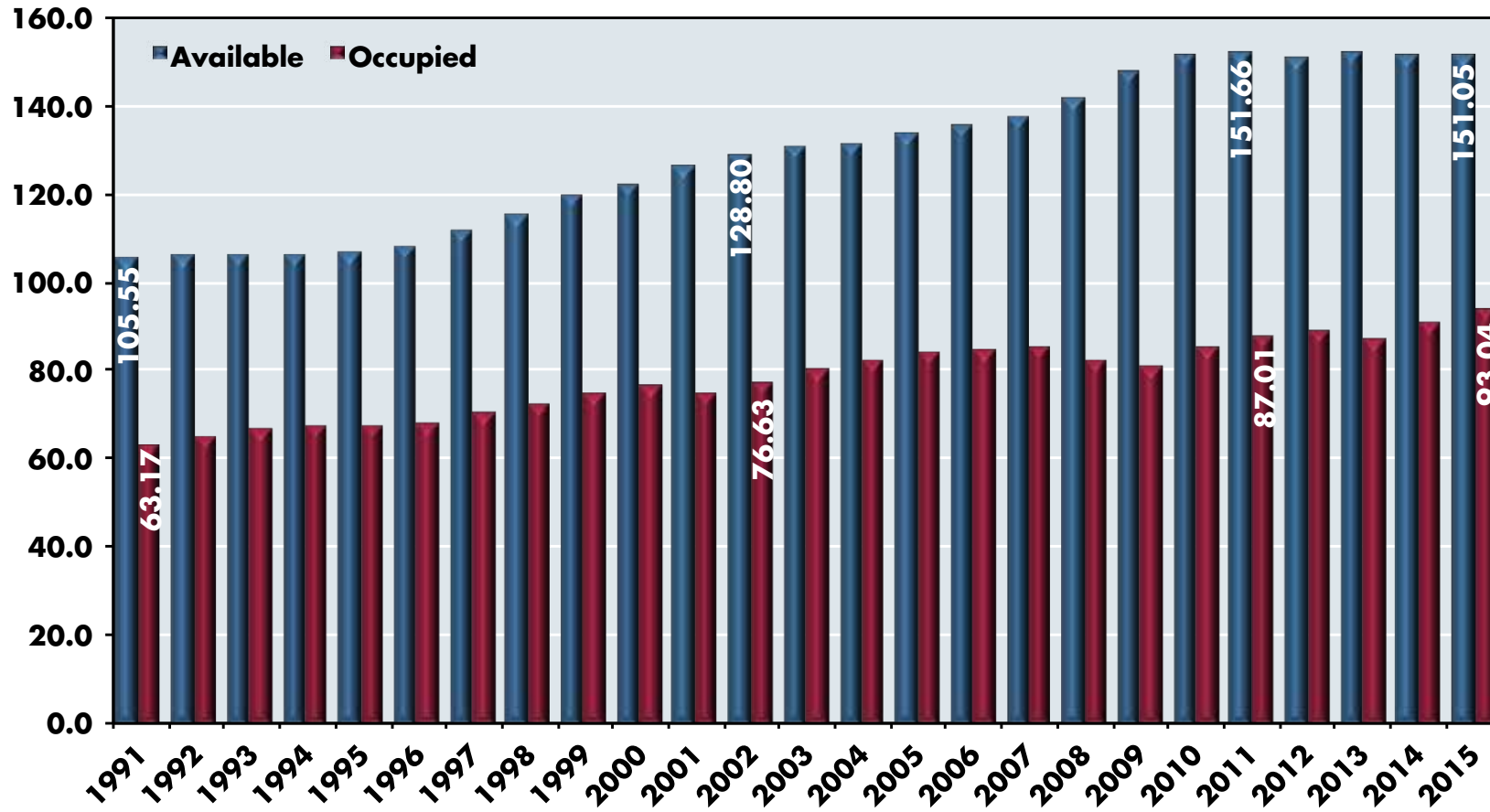
HOTEL OCCUPANCY RATES IN VIRGINIA, 1991-2015



Sources: Smith Travel Research Trend Report, May 2, 2016, and the Center for Economic Analysis and Policy at Old Dominion University

GRAPH 8

AVAILABLE HOTEL ROOMS AND ROOMS OCCUPIED IN VIRGINIA (000S), 1991-2015



Sources: Smith Travel Research Trend Report, May 2, 2016, and the Center for Economic Analysis and Policy at Old Dominion University

How Has The Hotel Industry Been Performing In Selected Virginia Metropolitan Areas?

(1) Total Hotel Room Revenue in Virginia Beach and the Virginia Portion of the Washington, D.C., Metropolitan Region

- If we once again use total hotel room revenue as our criterion, then the performance of the hotel industry in Virginia Beach has roughly matched the performance of the entire state over the past 25 years (see Graph 9). True, nominal total hotel revenue increased from \$120.17 million in 1991 to \$293.43 million in 2015 (144.2 percent). Nevertheless, in real terms, total hotel room revenue declined by a little less than 1 percent during the 25 years. Compare this to the nation's 82.5 percent increase and Virginia's 63.7 percent increase.
- Meanwhile, in the Virginia portion of the Washington, D.C., metropolitan region, nominal hotel revenue rose 235.9 percent to \$1.63 billion in 2015 and real hotel revenues rose 93 percent to \$687.8 million (see Graph 10).

(2) Revenue Per Available Room (REVPAR) in Roanoke and Bristol

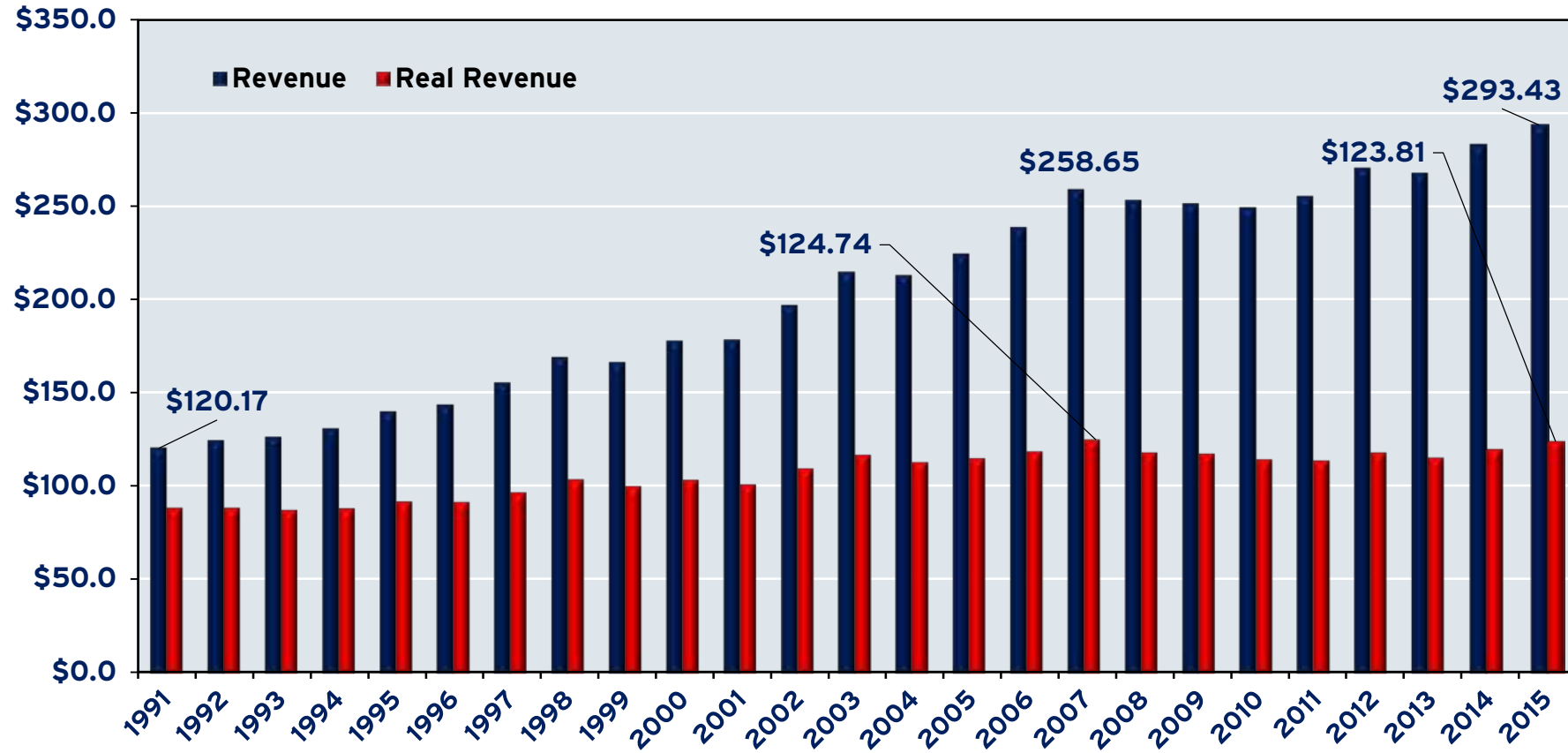
- Where REVPAR is concerned, the Roanoke and Bristol/Kingsport metropolitan areas performed better than Virginia Beach, but not as well as Northern Virginia. Graph 11 reveals that real REVPAR in Roanoke increased by 6.1 percent between 1991 and 2015, while Graph 12 tells us that real REVPAR in the Bristol/Kingsport region increased by 2.3 percent during the intervening 24 years.
- Since REVPAR may be the single best measure of the health of a hotel or motel, the very modest increases in REVPAR that were spread over almost a quarter-century in these two regions underline the reality that, in general, these have not been boom times for hotels in Virginia.

(3) Occupancy Rates in Richmond/Petersburg and Williamsburg

- The occupancy rate for hotels in the Richmond/Petersburg area peaked in 1996 at 63.64 percent, reached a low of 48.23 percent in 2009 and then recovered nicely to 61.94 percent in 2015 (see Graph 13). This occupancy rate roughly matches Virginia's 61.6 percent, but trails the national rate of 65.5 percent. This is further evidence that all is not well in the hotel industry in the Commonwealth.
- The story is even less attractive in the case of Williamsburg where, despite recent recovery, occupancy rates still are about 9 percent below what they were in the mid-1990s. The Historic Triangle (Williamsburg, Jamestown, Yorktown) currently is in the process of repositioning itself and the messages it sends to prospective visitors (see Graph 14).

GRAPH 9

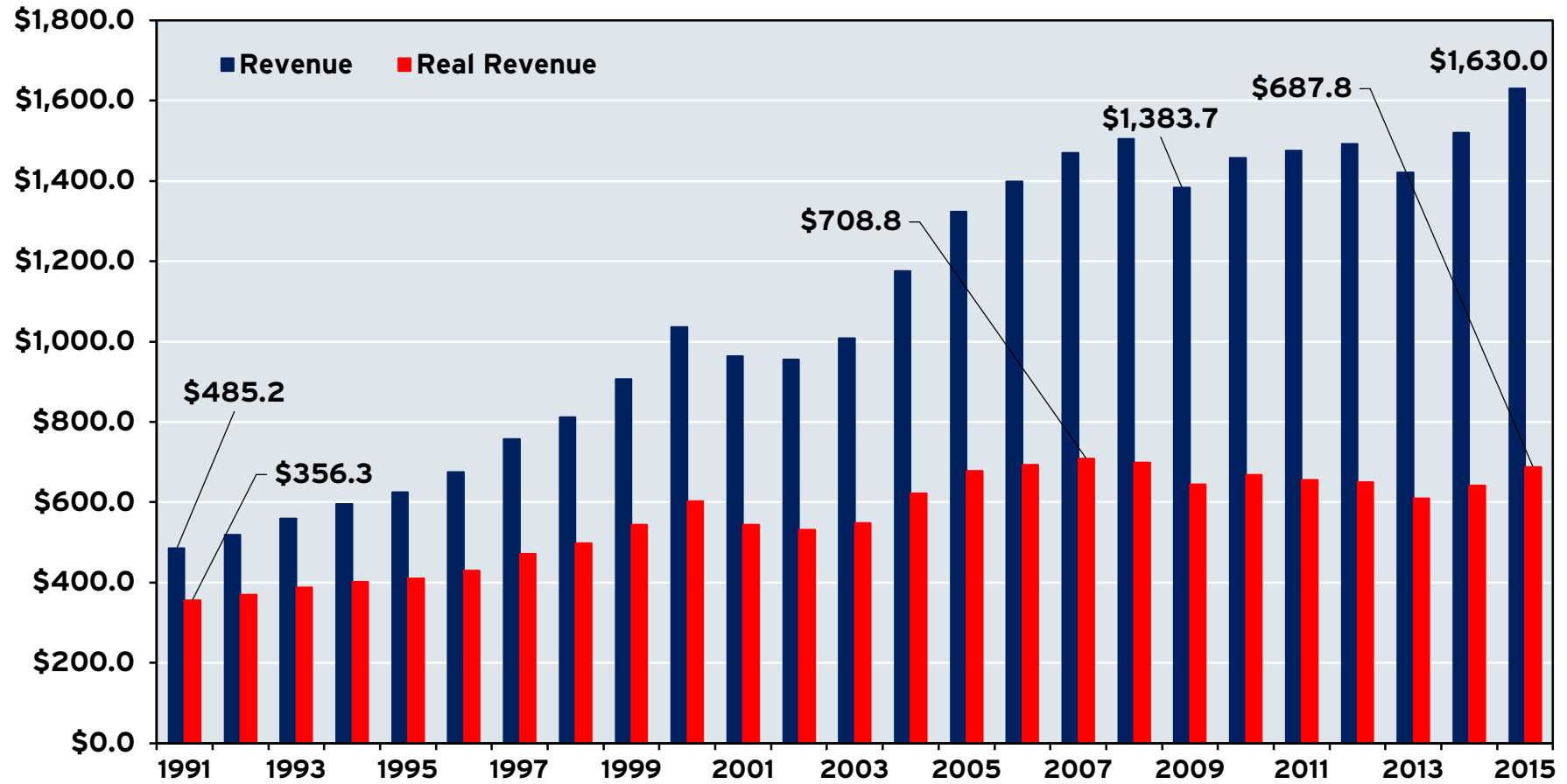
HOTEL REVENUE IN VIRGINIA BEACH, 1991-2015 (MILLIONS OF \$)



Sources: Smith Travel Research Trend Report; Bureau of Labor Statistics; and the Center for Economic Analysis and Policy at Old Dominion University

GRAPH 10

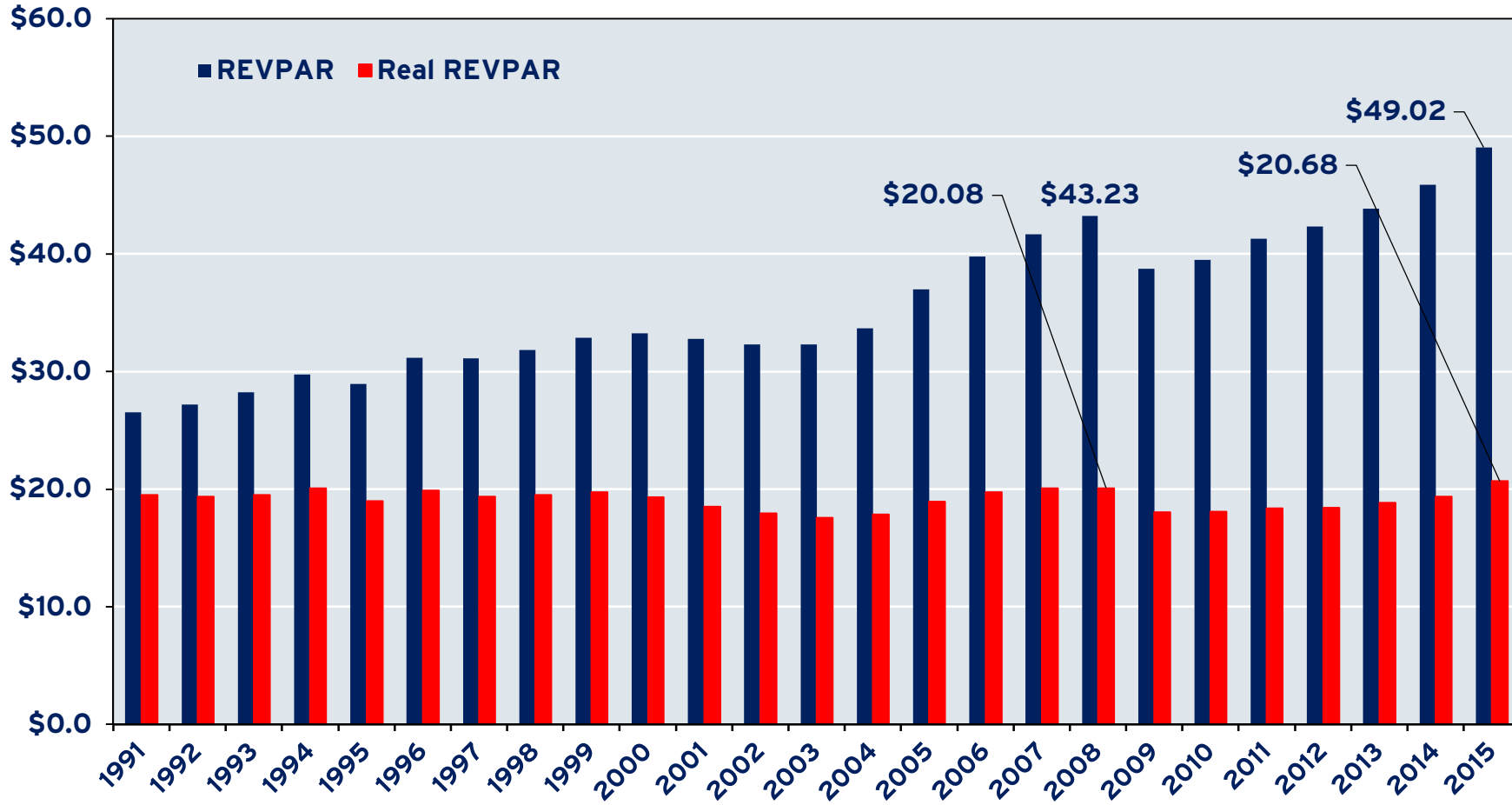
HOTEL REVENUE IN THE VIRGINIA PORTION OF THE WASHINGTON, D.C., METROPOLITAN REGION, 1991-2015 (MILLIONS OF \$)



Sources: Smith Travel Research Trend Report; Bureau of Labor Statistics; and the Center for Economic Analysis and Policy at Old Dominion University

GRAPH 11

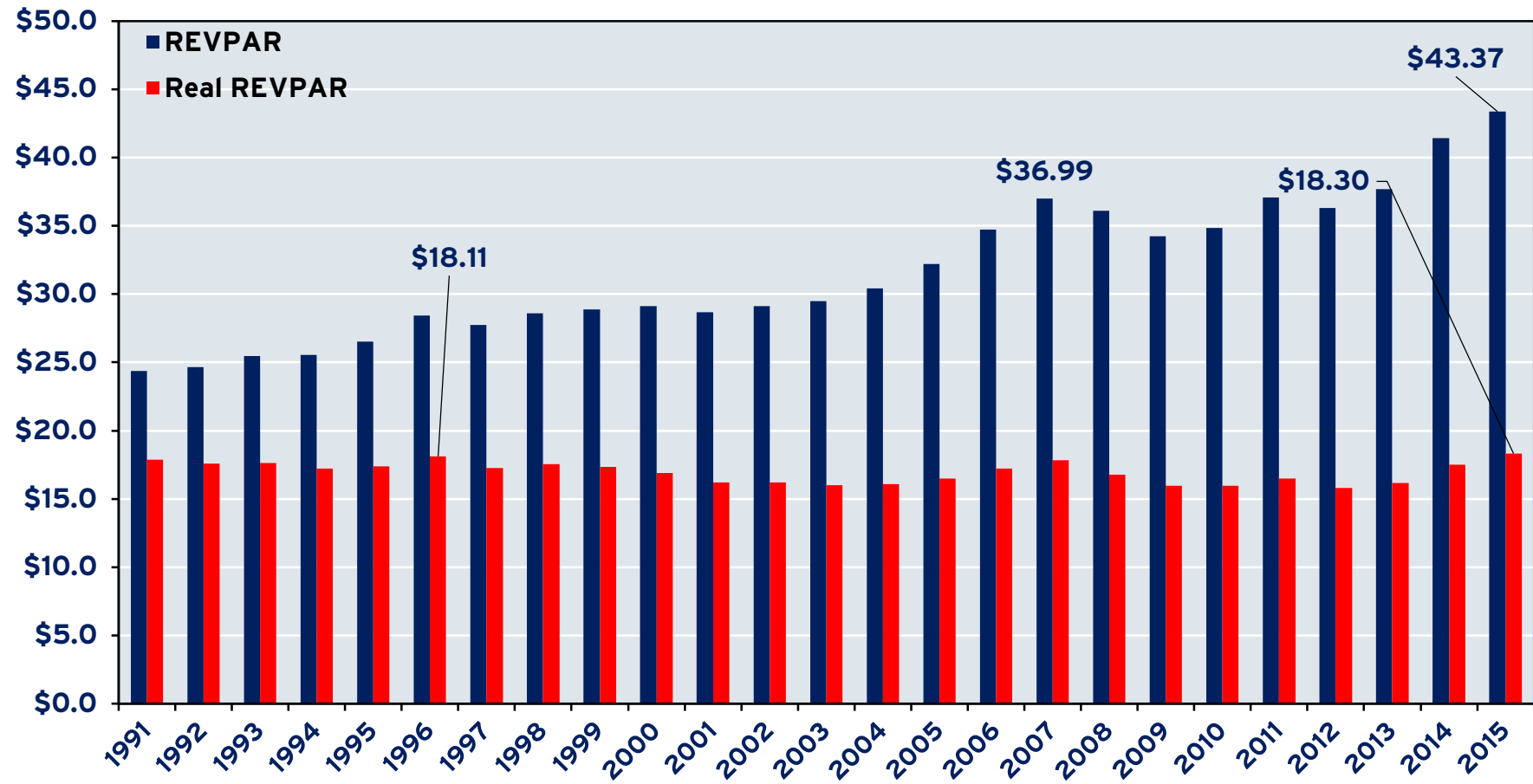
NOMINAL AND REAL REVPAR IN ROANOKE, 1991-2015 (MILLIONS OF \$)



Sources: Smith Travel Research Trend Report; Bureau of Labor Statistics; and the Center for Economic Analysis and Policy at Old Dominion University

GRAPH 12

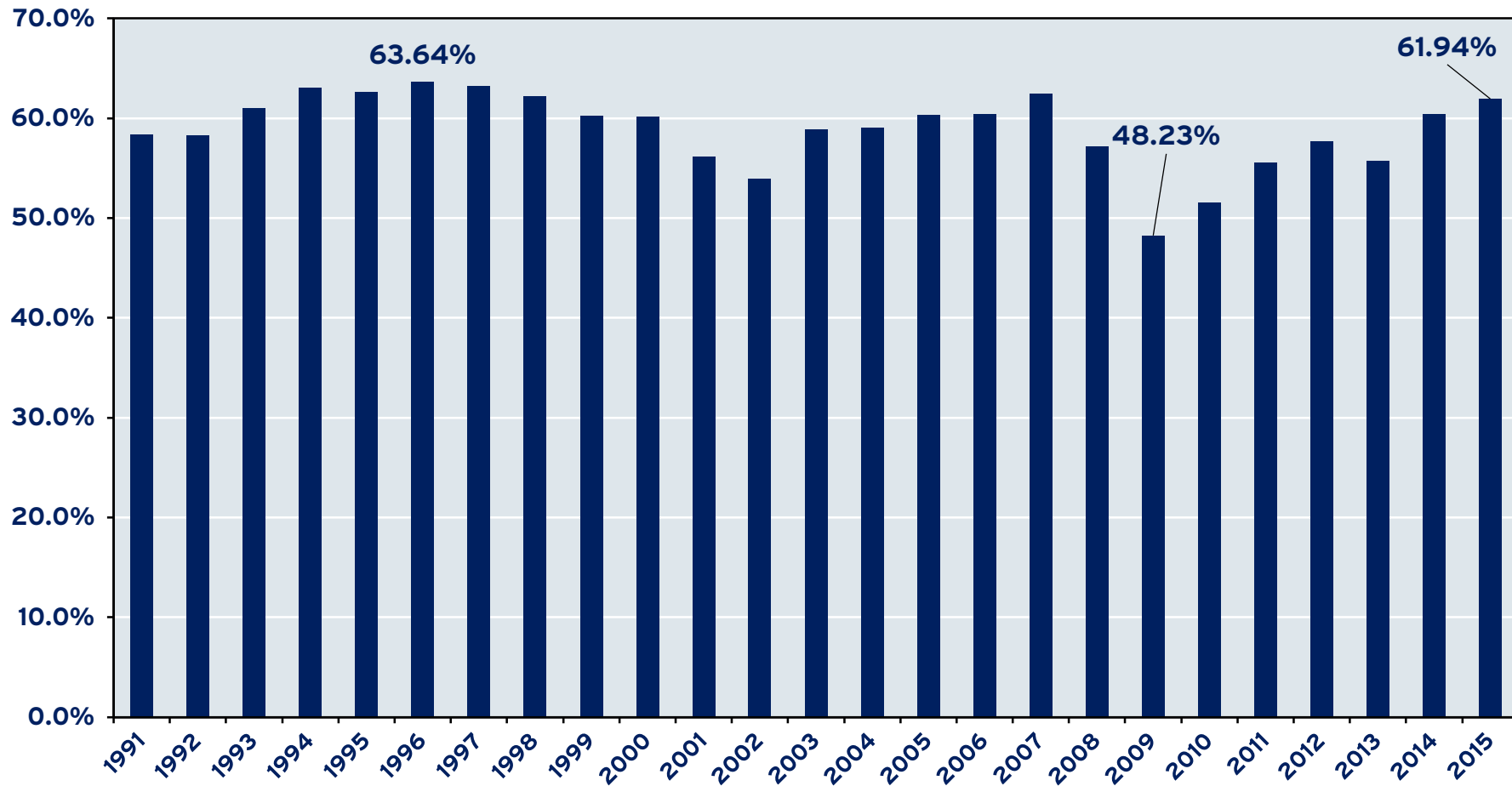
NOMINAL AND REAL REVPAR IN BRISTOL/KINGSPORT, 1991-2015 (MILLIONS OF \$)



Sources: Smith Travel Research Trend Report; Bureau of Labor Statistics; and the Center for Economic Analysis and Policy at Old Dominion University

GRAPH 13

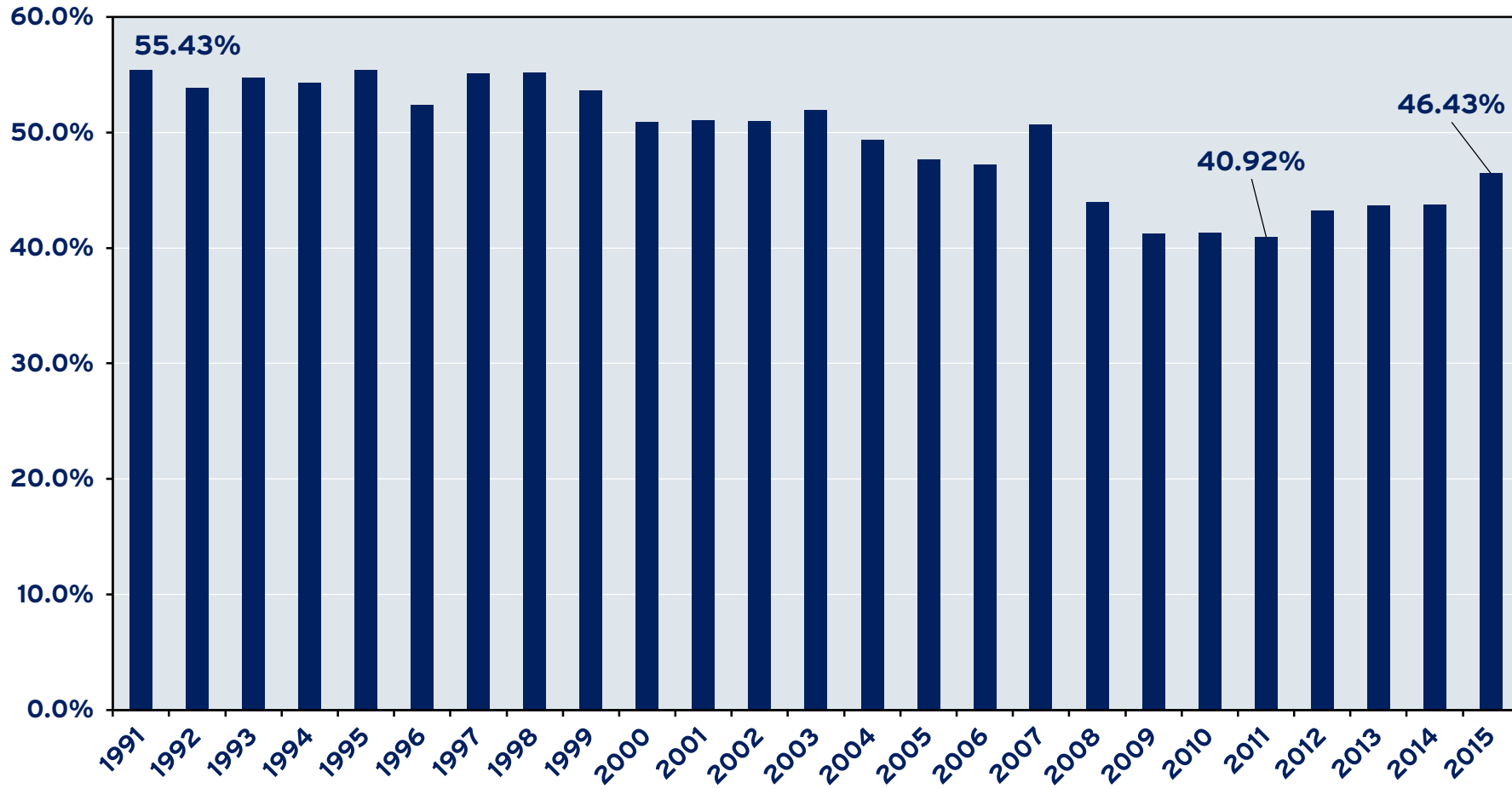
HOTEL OCCUPANCY RATES IN RICHMOND/PETERSBURG, 1991-2015



Sources: Smith Travel Research Trend Report; Bureau of Labor Statistics; and the Center for Economic Analysis and Policy at Old Dominion University

GRAPH 14

HOTEL OCCUPANCY RATES IN WILLIAMSBURG, 1991-2015



Sources: Smith Travel Research Trend Report; Bureau of Labor Statistics; and the Center for Economic Analysis and Policy at Old Dominion University

HOTEL INDUSTRY DYNAMICS IN THE METROPOLITAN REGIONS

- **Each metropolitan area in many ways is a microcosm of the Commonwealth in terms of the causes of its hotel industry distress. The Great Recession and torpid defense spending are the major culprits.** Alas, recent economic growth numbers for Virginia have not been encouraging, and Congressional spending sequestration is likely to continue. This does not bode well for Virginia. However, the Commonwealth does appear to be working its way out of the supply/demand imbalance for hotel rooms that reached its peak in the state in 2009 and 2010. If this trend continues, then it will improve both REVPAR and occupancy rates for hotel rooms throughout the state.
- The overall prosperity of Virginia’s hotel industry is demonstrably sensitive to federal spending levels. Sequestration has had a significant negative impact upon the number of rooms demanded by federal employees and active-duty military personnel. The average daily rate charged by hotels in the Washington, D.C., hotel market in 2015 (\$149.61) was below the comparable 2007 level (\$153.13), and the real average daily rate in 2015 in the Capitol Region remained 14.3 percent below its 2007 level.
- Further, stagnant or contracting travel budgets have caused many federal agencies to substitute remote meetings powered by software such as Skype, Jitsi and Goober instead of face-to-face meetings that require out-of-town travel. In military-intensive Hampton Roads, every single submarket in that region experienced negative real REVPAR between 2007 and 2015. **As a general rule, the greater the distance a metropolitan hotel market is from Washington, D.C., the greater the probability that market did not experience a decline in REVPAR over the 2007-2015 time period.** Bristol, Lynchburg, Roanoke and Staunton all experienced increases in real REVPAR during the same years.
- An interesting trend in some of Virginia’s hotel markets involves a gradual upscale movement in the quality of rooms being supplied and occupied. In brief, more upscale hotel rooms that typically operate under

the aegis of national franchises and are able to command higher prices³ gradually are replacing older, less impressive hotels and motels that have no national connections. In Virginia Beach, total hotel room revenue increased nicely (9.7 percent between 2013 and 2015) even though the city actually supplied fewer hotel rooms. A recent study performed for the city of Virginia Beach, based upon Smith Travel Research data, found that franchised, upscale hotels in the resort city not only charged higher rates, but also had higher occupancy rates than economy hotels. Table 2 presents some of those study results.

TABLE 2

**HOTEL PERFORMANCE BY HOTEL CATEGORY:
VIRGINIA BEACH, 2006 AND 2014**

	2006	2014	Percentage Change
Supply of Upscale Rooms	2,365	3,019	+27.7%
Supply of Economy Rooms	2,698	2,661	-1.4%
Demand for Upscale Rooms	1,590	1,942	+22.1%
Demand for Economy Rooms	1,601	1,531	-4.4%
REVPAR at Upscale Hotels	\$83.5	\$93.0	+11.4%

Source: 2014 Virginia Beach Hotel Supply & Demand Analysis, February 2016, and the Center for Economic Analysis and Policy at Old Dominion University

³ Smith Travel Research data show that the supply of hotel rooms designated as “upscale” (measured by high average daily rates) increased 27.7 percent between 2006 and 2014, while “economy” hotel rooms decreased in number by 1.4 percent. Further, the average occupancy rate at the upscale hotels was 65.1 percent, compared to only 57.2 percent at economy hotels.

Final Thoughts

Can the hotel industry and the overall tourism sector recover their mojo and reverse their decline in relative economic importance in Virginia? This does not seem likely to occur as long as federal financial sequestration restricts federal expenditures overall and defense expenditures in particular.

Once again, it is apparent that the Commonwealth's economic dependence on federal spending is a two-edged sword. Ideally, the Virginia economy of the future will be more diversified and current federal contractors increasingly will find private-sector and international customers for their goods and services. There are encouraging signs that some of this evolution is occurring now in Northern Virginia.


It is easy to editorialize that Virginia's economic base should be more diversified than it is currently. Accomplishing this, however, is hardly an easy task and it is fair to say that no consensus exists among either elected officials or academics as to how to go about this. In the context of this chapter dealing with the hotel industry, it is an issue in need of further study.



WILL ROBOTS TAKE YOUR JOB? A LOOK AT VIRGINIA'S OPPORTUNITIES AND VULNERABILITIES

It's not about the skill level or how much education you have. Really, the primary question is, is the job on some level routine, repetitive and predictable?

– Martin Ford, “Rise of the Robots”
(Basic Books, 2015)



It's not often that a study generated by two Oxford academics creates as much hubbub as did a 2013 examination that focused on which U.S. occupations are at “high risk” of being automated within the next 20 years. Carl Benedikt Frey, an economist, and Michael A. Osborne, an engineer, led the Oxford automation study,¹ which concluded that 47 percent of total employment in 702 occupations in the United States should be considered to be in the “high risk” category relative to the potential of automation to destroy these jobs. “Automation” here refers broadly to the substitution by employers of machines, software-guided processes and artificial intelligence (AI) for workers.

Virtually everyone knows about mechanical dishwashers replacing human dishwashers and one can easily visualize a single giant combine harvester replacing dozens of farmworkers wielding scythes. Less obvious perhaps has been the accelerating automation of the financial services industry, where giants such as Goldman Sachs are using software programs instead of highly paid associates to conduct and write research, make stock trades, summarize relevant news and even communicate with customers. Contemplate also the use of sensors rather than people to pick out microcircuits or even heads of lettuce that are of inferior quality and therefore should be discarded. Or, consider that a computer now can defeat the best human chess player and an AI program developed by Google “learned” on

Data presented in this chapter relate either to the U.S. or Virginia. What about Virginia metropolitan regions such as Richmond and Roanoke? Bureau of Labor Statistics occupational data that focus on mid-sized regions are much more variable than statewide data and, in some cases, simply not available. Presentation of these data might lead to unjustified conclusions. Hence, we do not offer any regional data, though some are available.

¹ Carl Benedikt Frey and Michael A. Osborne, “The Future of Employment: How Susceptible Are Jobs to Automation?” Oxford Martin School, Sept. 17, 2013. www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf.

its own how to beat the reigning world champion at Go, the exceedingly complex 2,500-year-old strategy game.

An increasing number of McDonald's restaurants now have computer screens that take your order – rendering unnecessary some of the workers formerly behind the counter. No minimum-wage law applies to the computer screens. In the realm of higher education, the advent of new distance-learning tools and the rise of “MOOCs” (massive open online courses) are disrupting the centuries-old “sage on the stage” model that emphasizes professors lecturing to groups of more or less interested students arrayed in front of them.

Highest on the risk list are occupations that include telemarketers, tax preparers, library technicians, etchers and engravers, and bank tellers. Frey and Osborne argue that up to 87 percent of jobs in the accommodation and food services sector are at risk, as are up to 54 percent of jobs in finance and insurance. Lowest on their risk list are occupations such as elementary school teachers, doctors and dentists, nurses, many health care workers, plumbers, theatrical makeup artists and foresters.

The Common Denominator

What determines whether the jobs of workers in some occupations (say, secretaries and legal researchers) are at high risk, while the jobs of workers in other occupations (nurses and plumbers) are not? **The key is not necessarily the level of education required for each job, though this may play a role. Instead, the overriding deciding factor is the extent to which jobs require creative and social intelligence, perception, interpretation and the ability to manipulate as opposed to being dominated by repetitive, routine tasks capable of being learned by machines fueled by artificial intelligence.**

Some analysts believe that Frey and Osborne's estimates are substantially too high. A 2016 Organization for Economic Cooperation and Development (OECD) study takes issue with their methodology and argues that it isn't all workers in an occupation that are at risk, but rather specific jobs within occupations. Thus, some workers at financial firms can readily be supplanted by trading algorithms incorporated into software, while others cannot be replaced because of their personal relationships with specific firms and customers. The OECD study concludes that only 9 percent of all jobs are at risk because of automation (Melanie Arntz, Terry Gregory and Ulrich Zierahn, “The Risk of Automation for Jobs in OECD Countries,” www.oecd-ilibrary.org, May 2016). A July 2016 study produced by McKinsey analysts Michael Chui, James Manyika and Mehdi Miremadi (“Where Machines Could Replace Humans – and Where They Can't (Yet),” www.mckinsey.com/business-functions/business-technology/our-insights/where-machines-could-replace-humans-and-where-they-cant-yet?cid=other-eml-alt-mkq-mck-oth-1607), concluded that 60 percent of all occupations in the United States could see 30 percent or more of their work activities being automated.

Note that job recovery in the United States (and Virginia) from the Great Recession of 2008 has been built upon relatively low-skill service jobs that pay relatively low wages. It is often these jobs that Frey and Osborne argue are most at risk because of automation. The reason is that they involve repetitive tasks that can be programmed into a machine or computer. Further, the machine frequently can complete those tasks with a higher level of quality and do so at a lower per-unit cost than their human counterpart. Think about the computer screen that is taking the place of behind-the-counter personnel at Panera Bread.

The reality is that computerization of jobs no longer is confined to traditional assembly-line, mass-production industries. However, it also is true that some manual labor tasks require physical adaptability and flexibility in approach. Hence, workers doing these tasks are more resistant to automation than those in other jobs that often require more education, but nevertheless can be imitated by “smart” machines.

It is the exercise of reasoning, judgment and creative abilities plus the application of social interaction skills that most frequently cause a job to fall into the low automation risk category rather than high risk. One does not need a bachelor’s degree to become an electrician or a plumber (both low-risk occupations). Nevertheless, electricians, automobile mechanics and plumbers must be able to assess, interpret, adjust, reason and create when inserted into unpredictable situations. “You never know what kinds of wiring and connections you’re going to find in an old house,” a veteran electrician told us. Some variant of this observation, however, might be applied to nurses, engineers and multimedia artists. On-the-job experience often assumes great value in such positions because it provides workers with a set of proficiencies that enables them to exercise sound judgment in situations that seldom are repetitive.

On the other hand, the tasks confronting a telephone operator, shipping clerk or Las Vegas gaming employee tend to be repetitive and frequently can be replaced by a smart machine. True, these jobs usually require less formal education than those in low-risk occupations. However, it is not education per se that makes the difference here, but rather the presence or absence of repetitive tasks, reasoning and creativity.

The principle is straightforward: Repetitive, predictable tasks are susceptible to machine learning and the application of artificial intelligence. Thus, college professors, despite their Ph.Ds., may indeed find some of their number being replaced by learner-driven technology that is capable of doing what they do, but at a reduced cost. Ironically, the learner-driven technologies with access to abundant data and feedback may actually be more sensitive than the typical college professor is to the peculiar geographic locations, job and family situations, and learning preferences of individual students.

Contrast college professors to elementary school teachers, very few of whom hold a doctorate. These teachers cannot be replaced by a machine because of their need to exercise judgment, interpret what is going on in their sometimes unpredictable classrooms, develop individually focused plans of action on the fly, and use their social skills to deal with impressionable and sometimes delicate young people. Elementary school teachers are among the least at-risk workers in society today.

What The Studies Say (And Do Not Say)

Neither Frey and Osborne, nor the OECD or McKinsey Global Institute, are rigid determinists. They speak in terms of probabilities (“susceptibilities”) rather than certainties. The future they paint is a plausible one, yet not one that is inevitable. Why? Because technological change and changing prices may alter the world they have addressed. Consider the following situations.

- Think of a new machine that is capable of performing many of the tasks of a software engineer; however, this machine is prohibitively expensive and hence what is feasible is not economic.
- Further, even when a machine is capable of performing a task inexpensively, there may be a visible gap between the machine doing that task inexpensively and doing it well. Consider automated checkout lines at supermarkets and automated check-in lines at airports. Intelligent

machine innovations such as these reduce supplier costs, but clearly can be the source of customer frustration and delays.

- The use of “big data” has the potential to diminish the need for human judgment and interpretation that currently cause some jobs to be resistant to automation. A range of cognitive tasks could be susceptible to machine learning and recognition if their development is based upon large data sets that are capable of recognizing patterns and therefore can capture the key aspects of human choice and behavior. Just as big data enable Amazon to suggest books that customers might like based on their internet behavior, these data sets also might inform activities ranging from selling automobiles, houses and tickets to serving legal clients and responding to calls for law enforcement.
- None of the studies directly addresses the distinction that some economists currently make between “tradable” versus “non-tradable” goods. Tradable goods are those that are sold internationally in competitive markets, for example, cellphones. In tradable markets, automobile workers in one country (say, the U.S.) can lose their jobs to automobile workers in another country (say, China) because of international competition. By contrast, goods and services in non-tradable markets are not subject to international competition. A hairstylist in Harrisonburg isn’t in competition with a hairstylist in Beijing. Even so, things can change. Consider that tax preparation used to be a predominantly local industry – relatively few customers went outside of their hometowns to get their tax returns completed. However, because of automation, a tax preparer in Danville now can lose her job to tax preparers in New York City or Beijing who are using software and internet connections that enable them to prepare tax returns for residents in Southwest Virginia. The point is easily understood: Automation converts some goods and services from tradable to non-tradable and this can result in the loss or shuffling of jobs. This trend is likely to continue as software driven by artificial intelligence makes it possible for items such as tax forms to be completed anywhere.
- Frey and Osborne point out that many of the people who will lose their jobs as a result of automation are among those in society least able to cope with such disruptions due to background, education and lack of

mobility. It seems likely, therefore, that the impact of automation will be felt unevenly across income classes.

- The analysts do not directly discuss current proposals, such as a \$15 per hour minimum wage, but economic analysis predicts that such a law would provide an additional incentive for employers to accelerate the adoption of laborsaving automation. The salient questions are whether the nature of their production processes, their specific collective bargaining agreements and the law actually give them the flexibility to do so. The answers clearly differ across industries and even inside industries.

None of the analysts should be regarded as champions of the world they foresee. They are impartial reporters of the facts as they view them. Still, they note that the demise of high-risk jobs will increase unemployment at least in the short run and likely increase economic inequality as well unless society provides financial incentives and invests in job retraining programs designed to ease the flow of people from the high-risk occupations where jobs are being lost, to low-risk occupations where the number of jobs is increasing. Of course, this may be easier said than done. How does one teach creative and social skills, how to interpret and make judgments, and how to adjust to the unexpected to people who may have lower than average intellectual abilities and who for decades have been performing repetitive tasks? How does one convince an unemployed steelworker with a family and a mortgage that he or she should move from West Virginia to Texas? Frey and Osborne are straightforward: “For workers to win the race, however, they will have to acquire creative and social skills.” This is important advice, given that McKinsey suggested in 2013 that sophisticated algorithms could substitute for approximately 140 million full-time knowledge workers worldwide.²

² McKinsey Global Institute, “Disruptive Technologies: Advances That Will Transform Life, Business and the Global Economy.”

The National Picture

For the United States as a whole, Frey and Osborne estimate that 47 percent of all nonfarm jobs fall into their “high risk” category in terms of being eliminated because of automation. In April 2016, this would have translated to 67.64 million nonfarm jobs – a staggering number.³ However, even if Frey and Osborne’s estimates are precisely on the mark, it does not follow that these losses will occur immediately. Multiple decades sometimes are required for industries to adjust to new realities. Witness the slow deterioration of output levels and jobs in the coal, textile and tobacco industries in Virginia.

Graph 1 reports the five broad occupational categories that Frey and Osborne estimated have the greatest vulnerability to job losses because of technological change, plus the five broad occupations with the least susceptibility.

The McKinsey study approaches the job vulnerability question through a somewhat different lens by focusing on 2,000 different work activities in more than 800 occupations. Similar to the OECD, McKinsey argues that individual occupations are distinctive in requiring a variety of different work activities, which might include physical movement, processing data, interacting with customers and the like. These work activities have varying potential for automation. The McKinsey study provides estimates of the portion of time during each workweek that a typical worker spends on each specific work activity. Graph 2 reports the estimates of the percentage of time during a typical workweek that workers in the United States spend on various work activities. From left to right, these range from the work activities least susceptible to automation (such as managing others) to those most susceptible to automation (predictable physical work).

Miles Brundage of Slate asks an interesting question: In the future, will “made by humans” become a phrase equivalent to “organic” or “fair trade”? www.slate.com (Sept. 27, 2013)

³ This is a seasonally adjusted number and includes government employees.

Where physical work is concerned, it is the predictability of the motions involved with that work that is the key to the susceptibility of a particular occupation to automation. McKinsey concluded that 78 percent of jobs involving predictable physical work (welding, food preparation and packaging of products) are prone to be automated, whereas only 25 percent of jobs involving less predictable physical work (construction, forestry and raising outdoor animals) are vulnerable. Using the same analysis, McKinsey concluded that 47 percent of a retail salesperson’s activities have the technical potential to be automated, but fully 86 percent of the jobs of the retail sector’s bookkeepers, accountants and auditing clerks are in jeopardy. McKinsey reported these estimates in detail in a 2015 study.⁴ The consulting group concluded that 45 percent of all work activities could be automated using already available technologies, but only 5 percent of all occupations (the Frey and Osborne focus indicator).

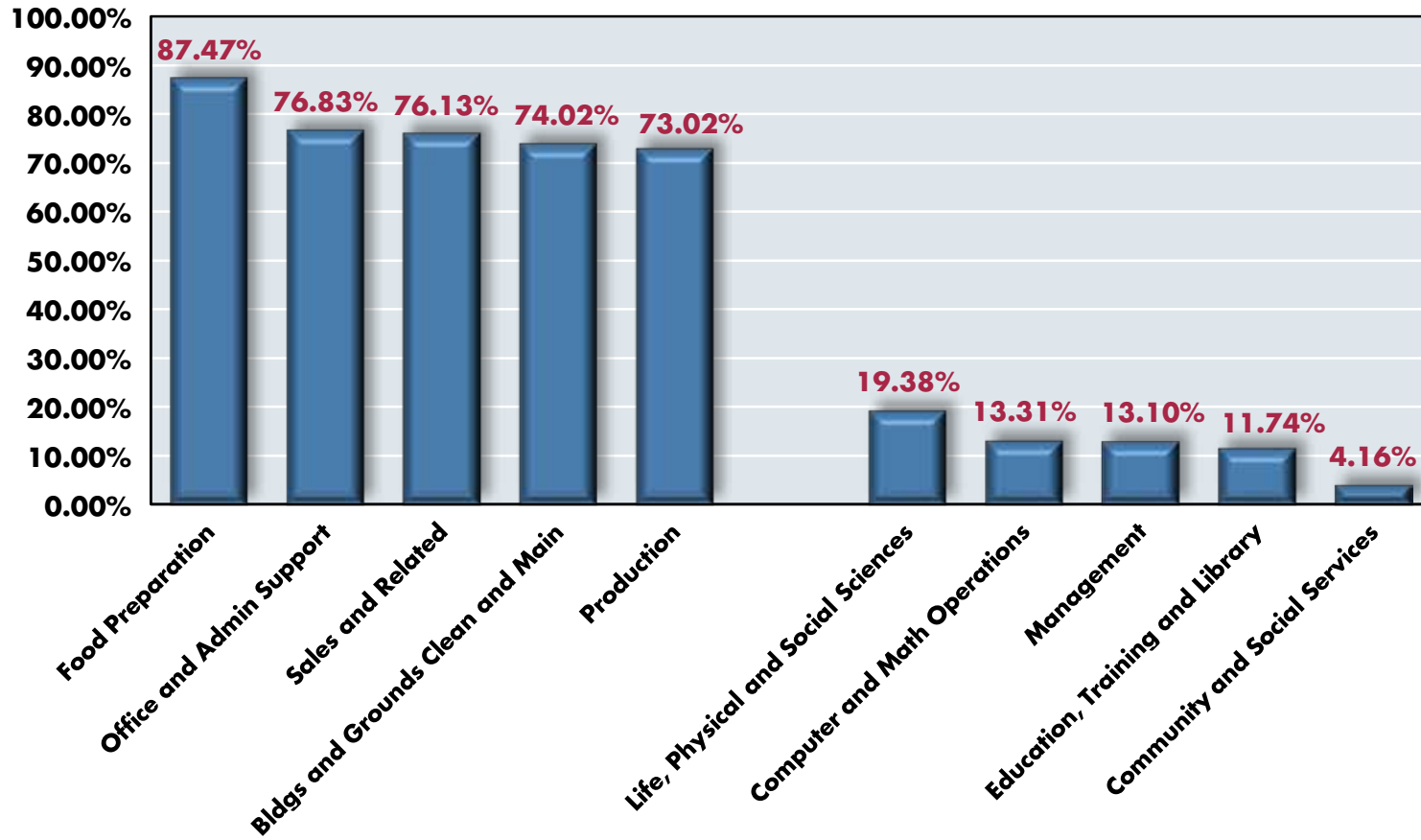
The McKinsey analysts also estimated that more than 20 percent of a typical CEO’s working time could be automated using currently available technologies. The analysts concluded that several lower-paid occupations, such as health aides, landscapers and maintenance workers, faced fewer risks associated with automation because the work of the individuals in these occupations could not easily be replaced by a machine or replicated by means of AI.

The consulting group found that the amount of workers’ average hourly wages explained only 19 percent of the variability in their automation susceptibility. That is, it was the characteristics of specific work tasks rather than the monetary value of that work that was the most important determinant of whether or not those work tasks were vulnerable to automation. High salaries did not guarantee reduced susceptibility to automation. Indeed, the opposite may be true – high salaries increase the incentive for employers to seek ways to automate.

⁴ Michael Chui, James Manyika and Mehdi Miremadi, “Four Fundamentals of Workplace Automation,” www.mckinsey.com/business-functions/business-technology/our-insights/four-fundamentals-of-workplace-automation (November 2015).

GRAPH 1

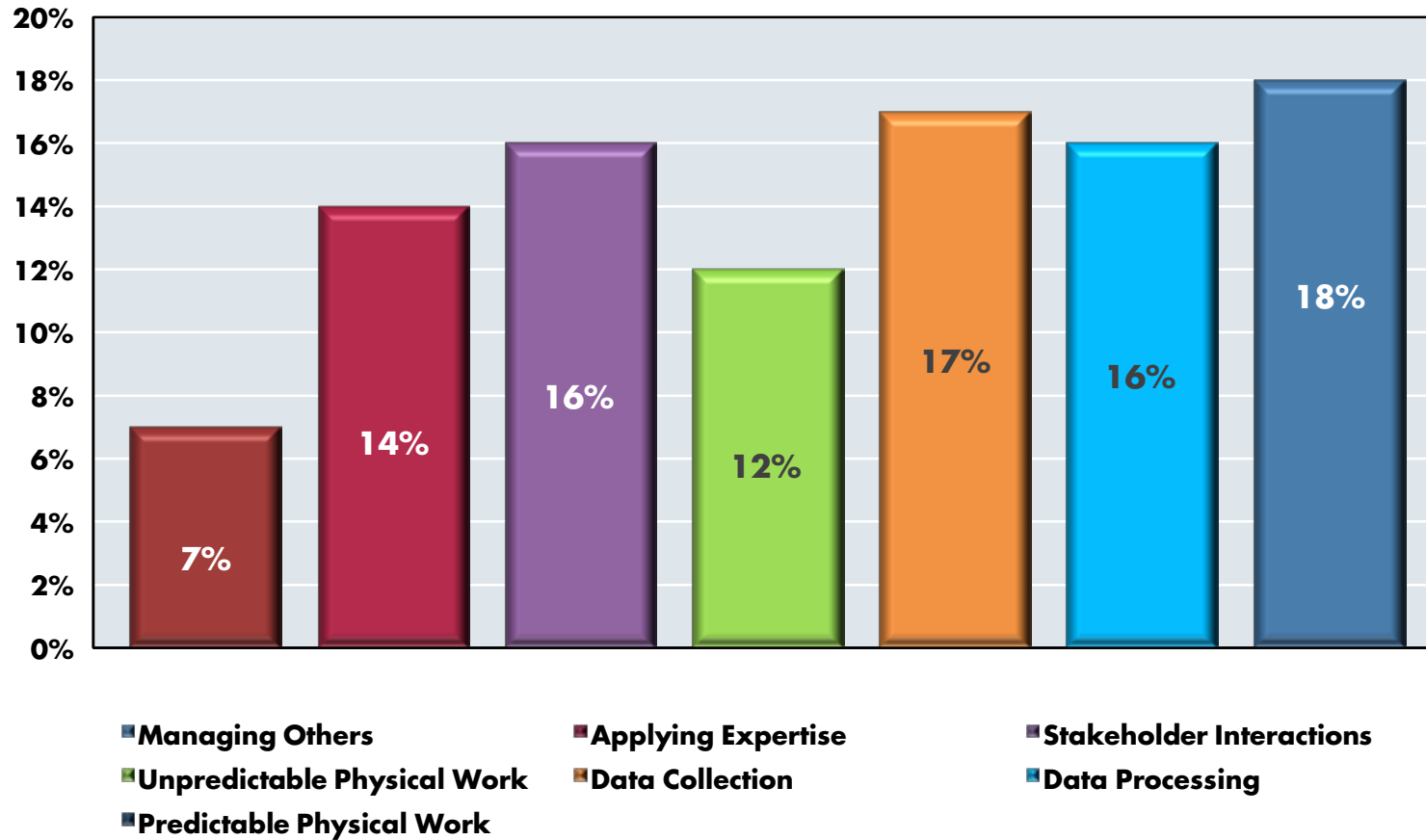
**THE BROAD OCCUPATIONS MOST (LEAST) SUSCEPTIBLE TO AUTOMATION:
PERCENT OF JOBS IN FREY AND OSBORNE'S "HIGH RISK" CATEGORY**



Source: Carl Benedikt Frey and Michael A. Osborne, "The Future of Employment: How Susceptible Are Jobs to Computerisation?" Oxford University Martin School, Sept. 17, 2013

GRAPH 2

PERCENT OF TIME SPENT IN VARIOUS WORK ACTIVITIES IN ALL U.S. OCCUPATIONS, 2014



Source: Michael Chui, James Manyika and Mehdi Miremadi ("Where Machines Could Replace Humans - and Where They Can't (Yet)," www.mckinsey.com/business-functions/business-technology/our-insights/where-machines-could-replace-humans-and-where-they-cant-yet?cid=other-eml-alt-mkq-mck-oth-1607), July 2016

The Virginia Picture

Frey and Osborne examined 702 specific occupations as defined by the Bureau of Labor Statistics and ultimately assigned a probability to each occupation that is their estimate of the susceptibility of the jobs in that occupation to disappearing because of automation. Let's begin our analysis by applying their technique to 22 broad occupational labor force segments in Virginia. Table 1 supplies these data, which apply to 3,682,470 Virginia nonfarm workers in 2015 in the Commonwealth.

It is evident in Table 1 that Frey and Osborne's methodology suggests that 1,877,540 jobs in Virginia are susceptible to automation whereby a machine, software or artificial intelligence replaces the worker. This is 51 percent of all Virginia jobs (compared to the national average of 47 percent) and these jobs account for \$70.56 billion in annual wages. Note that Virginia's total employment roster is slightly more vulnerable to technological change than is true for the United States. This implies that Virginia's workforce has a lower percentage of workers performing nonrepetitive tasks that require judgment and on-the-job flexibility.

That one's job is susceptible to being lost to technological change does not mean that this actually will occur. Not all employers choose to automate, or to do it in the same ways. Further, some work tasks that appear to be highly repetitive sometimes turn out not to be so at crucial decision points in the work process and therefore resist "pattern recognition" – the application of artificial intelligence in a manner that adequately imitates what a human being would do in a specific situation. A manufacturing robot, for example, might be superb at detecting minute differences in the size and weight of items being produced, but nevertheless be unable to detect emerging differences in smell or color. Human participation and intervention still are required in some situations.

Frey and Osborne are not inerrant savants who can see around corners and neither are we. They note that "making predictions about technological progress is notoriously difficult" and acknowledge that some occupations will experience future tumult from automation that they currently do not predict. For example, one should not read the numbers in Table 1 to mean that it is a certainty that more than 278,000 jobs relating

to food preparation absolutely are going to be lost in Virginia. Additionally, as noted previously, even if these job losses do occur, decades may be required for this to happen.

In general, we can see in Table 1 that there is a tendency for the negative job impacts of technological change to land most heavily on the least-educated members of the labor force – but only if their jobs involve the repetitive, absence of judgment characteristics mentioned previously. The key to surviving automation is not worker education, per se, but instead job characteristics involving varied tasks that require workers to make judgment calls, on occasion to use their intuition and in some cases to work together as a team.

Note that if the OECD study referenced earlier is correct, then the number of Virginia jobs at risk is not 1,877,540, but rather only 327,822 – still a large number, but one that would be much more manageable. The OECD critique of Frey and Osborne's work focuses on the variability in the occupational circumstances and conditions the OECD believes exist inside the 702 occupations that Frey and Osborne analyze. This variability, the OECD argues, means that it often is inappropriate to include all jobs in an occupation in a category labeled "at risk."

No doubt some variability in job activities and requirements does exist inside conventionally labeled occupations; however, 702 distinct occupations is a large number and separate analysis of each occupation at this level of detail likely picks up considerable heterogeneity in worker tasks. Nonetheless, the OECD analysis underlines that the most expansive estimates of the impact of automation on jobs should be inspected carefully and probably deflated. Further, even if 47 percent of all jobs in the United States are at risk because of automation, it does not follow that the loss of these jobs would occur immediately. Decades might be required for such an adjustment to occur. The slow, downward employment evolution of the automobile, coal and steel industries in the United States illustrates the often-gradual nature of occupational and industrial change.

TABLE 1

FREY AND OSBORNE'S SUSCEPTIBILITY TO AUTOMATION TECHNIQUE APPLIED TO 22 BROAD JOB CLASSIFICATIONS: VIRGINIA, 2015

BROAD OCCUPATIONAL GROUP	VIRGINIA TOTAL EMPLOYMENT	AVERAGE HOURLY WAGE	AVERAGE ANNUAL INCOME	TOTAL VIRGINIA ANNUAL WAGES	PERCENT JOBS AT RISK	TOTAL JOBS AT RISK	TOTAL ANNUAL WAGES AT RISK
Management Occupations	166,610	\$ 61.79	\$ 128,530	\$ 21,414,383,300	13.10%	21,826	\$ 2,606,680,168
Business and Financial Operations Occupations	251,780	\$ 39.24	\$ 81,620	\$ 20,550,283,600	43.37%	109,197	\$ 8,561,241,991
Computer and Mathematical Occupations	195,140	\$ 46.52	\$ 96,750	\$ 18,879,795,000	13.31%	25,973	\$ 2,020,223,511
Architecture and Engineering Occupations	73,790	\$ 41.31	\$ 85,930	\$ 6,340,774,700	21.15%	15,607	\$ 985,125,516
Life, Physical and Social Science Occupations	31,160	\$ 39.76	\$ 82,700	\$ 2,576,932,000	19.38%	6,039	\$ 414,754,154
Community and Social Service Occupations	50,870	\$ 22.91	\$ 47,660	\$ 2,424,464,200	4.16%	2,116	\$ 86,907,634
Legal Occupations	36,050	\$ 49.75	\$ 103,480	\$ 3,730,454,000	27.53%	9,925	\$ 565,249,295
Education, Training and Library Occupations	237,250	\$ 25.93	\$ 53,930	\$ 12,794,892,500	11.74%	27,853	\$ 1,051,500,158
Arts, Design, Entertainment, Sports and Media Occupations	48,510	\$ 27.51	\$ 57,220	\$ 2,775,742,200	17.85%	8,659	\$ 531,050,098
Healthcare Practitioners and Technical Occupations	198,840	\$ 36.24	\$ 75,390	\$ 14,990,547,600	14.30%	28,434	\$ 1,366,670,286
Healthcare Support Occupations	85,840	\$ 14.00	\$ 29,120	\$ 2,499,660,800	23.70%	20,344	\$ 625,569,235
Protective Service Occupations	99,650	\$ 21.41	\$ 44,530	\$ 4,437,414,500	44.31%	44,155	\$ 1,604,686,868
Food Preparation and Serving Related Occupations	318,730	\$ 11.00	\$ 22,870	\$ 7,289,355,100	87.47%	278,793	\$ 6,239,845,855

TABLE 1

FREY AND OSBORNE'S SUSCEPTIBILITY TO AUTOMATION TECHNIQUE APPLIED TO 22 BROAD JOB CLASSIFICATIONS: VIRGINIA, 2015

BROAD OCCUPATIONAL GROUP	VIRGINIA TOTAL EMPLOYMENT	AVERAGE HOURLY WAGE	AVERAGE ANNUAL INCOME	TOTAL VIRGINIA ANNUAL WAGES	PERCENT JOBS AT RISK	TOTAL JOBS AT RISK	TOTAL ANNUAL WAGES AT RISK
Building and Grounds Cleaning and Maintenance Occupations	124,970	\$ 12.21	\$ 25,400	\$ 3,174,238,000	74.02%	92,503	\$ 2,369,839,041
Personal Care and Service Occupations	119,900	\$ 12.47	\$ 25,930	\$ 3,109,007,000	41.06%	49,231	\$ 1,057,000,959
Sales and Related Occupations	392,330	\$ 18.61	\$ 38,710	\$ 15,187,094,300	76.13%	298,681	\$ 9,298,746,336
Office and Administrative Support Occupations	549,560	\$ 17.58	\$ 36,570	\$ 20,097,409,200	76.83%	422,227	\$ 14,749,877,695
Farming, Fishing and Forestry Occupations	6,380	\$ 15.77	\$ 32,800	\$ 209,264,000	41.54%	2,650	\$ 100,689,765
Construction and Extraction Occupations	156,160	\$ 20.36	\$ 42,360	\$ 6,614,937,600	61.58%	96,163	\$ 3,743,489,693
Installation, Maintenance and Repair Occupations	144,650	\$ 22.65	\$ 47,110	\$ 6,814,461,500	56.94%	82,364	\$ 3,649,015,736
Production Occupations	171,550	\$ 17.51	\$ 36,420	\$ 6,247,851,000	73.82%	126,638	\$ 4,328,941,847
Transportation and Material Moving Occupations	222,750	\$ 17.41	\$ 36,220	\$ 8,068,005,000	63.05%	108,162	\$ 4,606,862,311
Totals	3,682,470			\$ 190,226,967,100	50.99%	1,877,540	\$ 70,563,968,152

Source: May 2015 Occupational Employment Statistics (OES) data are available from the Bureau of Labor Statistics, www.bls.gov/oes/tables.htm. The May 2015 area level estimates are the first OES estimates to use the 2010 metropolitan statistical area definitions.

Is Technological Change (And Job Churning) Speeding Up?

Is the job-churning process identified by Frey and Osborne going to accelerate? That is the trillion-dollar question. It's true that nearly everywhere we look, there is evidence of technological change: self-driving automobiles and intelligent tractors, smartphones with amazing capabilities, potent new drugs, cloud computing, disease-resistant crops, medical therapies tailored to a specific individual's genetic makeup. The list of technological changes is impressively long and some argue that this lends credence to futurist Ray Kurzweil's 2001 prediction: "We won't experience 100 years of progress in the 21st century – it will be more like 20,000 years of progress (at today's rate)."⁵ The implication is that technological change is going to cut a wide swath through global labor forces in the coming decades.

Perhaps, but there are others who point out that for all of the marvelous technological innovations that have occurred in recent years, actual productivity increases have been disappointingly small. As George Mason University economist Tyler Cowen put it, "Silicon Valley has not saved us from a productivity slowdown" (*The New York Times*, March 4, 2016). The fundamental economics is simple: If technological innovations do not lead to significant increases in productivity, then this seriously diminishes their lure. Why invest in equipment, software enhancements or AI unless such investments are really going to make a difference?

Graph 3 reports the average annual growth in labor productivity (literally, output per worker hour) in the United States over the past 20 years. One can see that since 2009, labor productivity growth has stalled and now is clearly on a lower trend line than it was in the previous decade. This

⁵ <http://www.kurzweilai.net/the-law-of-accelerating-returns>. Kurzweil and others speak of "singularity," a situation in which technological change has become so rapid and so profound that it disrupts, perhaps even destroys, human life as we know it. In this view, technological change is a double-edged sword that simultaneously generates benefits, such as longer life spans and reduced physical drudgery, even while it introduces significant new dangers that range from the obvious (nuclear bombs) to less-obvious AI innovations and nanobots that are controlled by unscrupulous forces, perhaps even other, nonhuman AI software.

reduces the incentive for decision makers to invest in new technologies that hold little promise of improving the firm's bottom line.

Economic data leave little doubt that there has been a slowdown in productivity growth that actually dates back to about 1970. Some label this "secular stagnation," but whatever its label, it has afflicted nearly all mature Western economies that have not been sitting on substantial oil deposits. Some highly reputable analysts, such as Northwestern University's Robert Gordon, argue that recent decades have been characterized by a dearth of truly consequential, cost-reducing, production-increasing innovations ("The Rise and Fall of American Growth," Princeton University Press, 2015).

Nevertheless, even if productivity were not declining, reality is that a significant proportion of recent innovations have been *labor-saving* in nature – apparent advances that cause firms and organizations to substitute machines and AI for people. Consider that in 2015, the United States produced 21.3 percent more manufactured output, but accomplished this with 16 percent fewer workers than in 2001.⁶ Further, this and similar episodes of automation often generate ripples of change throughout the economy. As self-driving cars and trucks move into the mainstream, the jobs of mechanics, insurance agents, car salespersons and repair shop workers will be disrupted, and some of them no doubt will lose their jobs.

In the long run, society as a whole emerges better off and enjoys a higher standard of living when such developments occur because these innovations free up workers who subsequently can be employed doing other things. Remember that in 1800, approximately 90 percent of the labor force in the United States was involved in agriculture. Today, less than 2 percent of our labor force is so occupied, but that 2 percent is marvelously productive. The remaining 98 percent of the labor force is employed doing other things that have resulted in dramatic growth in our standard of living.⁷

The short-run story, however, can be painfully different. Workers displaced by technological innovations lose their jobs and subsequently

⁶ Old Dominion University calculations based upon U.S. Department of Commerce data and the North American Industry Classification System (NAICS).

⁷ In the jargon of economics, such innovations push out society's production possibilities curve and make it possible for society to improve its standard of living.

may find it difficult to obtain new employment. In some cases, this is because they are not qualified for the jobs that are available – they are the proverbial square pegs attempting to fit into round holes. Jobs exist for welders, but steelworkers who have lost their jobs are not trained to weld.

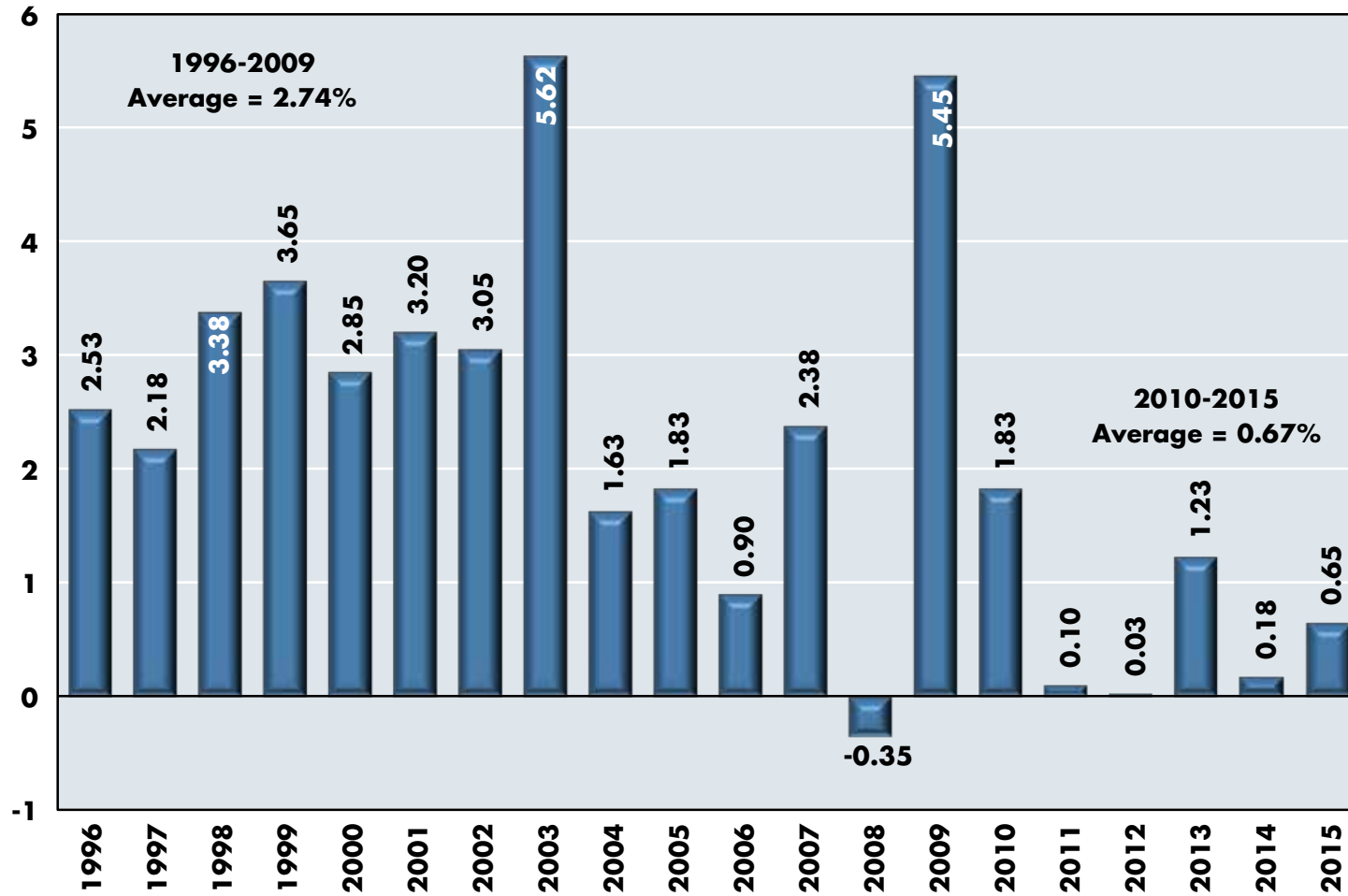
It is these “susceptible” individuals/workers whose circumstances are highlighted by Frey and Osborne. Not only may some of them lose their jobs, but also their spell of unemployment could turn out to be disappointingly long because they are not qualified to fill available job openings. They also could be both emotionally and geographically immobile. Or, the economy could be in the midst of recession and employers simply don’t need additional workers. Whatever the reason, they are the “at risk” employees in today’s economy.

While we sometimes hear alarmist rhetoric about job-destroying new technologies, the available data do not really support this interpretation. Graph 4 reports the absolute number of job layoffs and discharges by month in the United States between 2000 and 2016. Immediately visible is the upward spike in layoffs and discharges produced by the Great Recession. Other than this, since 2011, monthly levels of layoffs and discharges in the United States now are lower than they were at the turn of the century. It’s not clear that changes in technology, whether accelerating or not, have resulted in huge numbers of displaced workers who have lost their jobs to machines, software or AI.



GRAPH 3

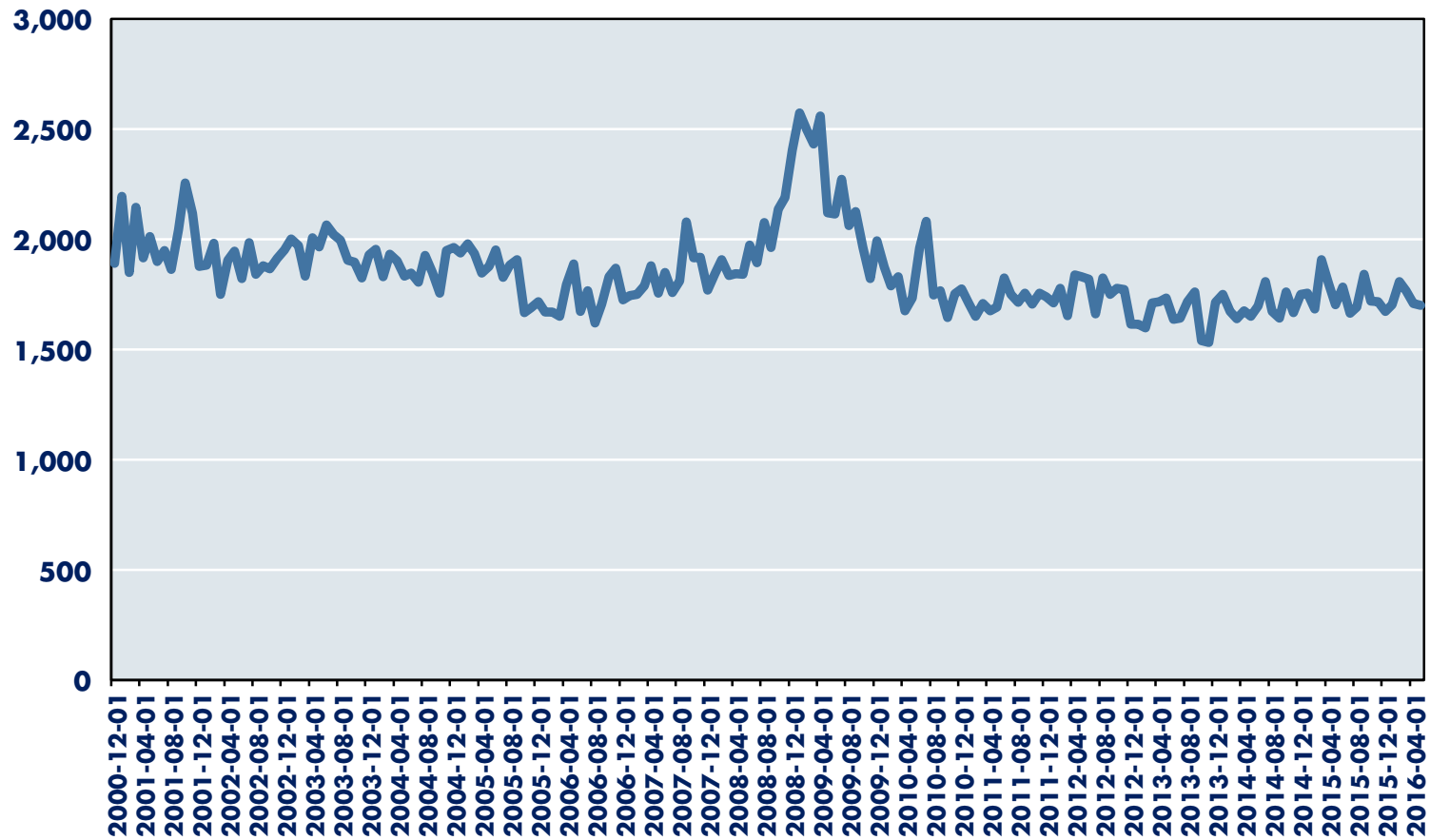
ANNUAL PERCENT GROWTH IN LABOR PRODUCTIVITY (OUTPUT PER HOUR) IN THE UNITED STATES, 1996-2015



Source: Bureau of Labor Statistics, Series ID PRS85006092

GRAPH 4

NUMBER OF JOB LAYOFFS AND DISCHARGES BY MONTH: UNITED STATES, 2000-2016



Source: FRED database, <https://research.stlouisfed.org/fred2/series/JTSLDL>. Data are seasonally adjusted.

Implications

When technological change occurs, it often results in some workers losing their jobs and increased levels of economic inequality. Predictably, labor unions and worker advocates (some political) often resist such adjustments and demand that generous benefits be paid to those affected and that extensive job retraining programs and educational alternatives be offered at very low personal cost to each displaced worker. Similar arguments are made when freely flowing international trade causes workers to lose their jobs. One can make a credible equity case for supplying such benefits and programs to displaced workers even though the available economic evidence discourages the notion that there are conspicuous skill shortages (even in STEM-related occupations)⁸ in American labor markets and the rates of return realized by governments that finance job retraining programs often are mediocre.

A dynamic, growing economy requires willingness on the part of firms and organizations (including governments) to accept and implement cost-effective new methods of production and service. **In response, wise public policies in this arena should focus on “riding the wave” of technological change rather than encouraging resistance movements that are destined to prove futile. Astutely constructed public-private partnerships between governments and firms have the potential to develop programs designed to compensate and redirect job losers, who in many cases are relatively innocent victims of dynamic economic forces well beyond their control.**

Three classes of programs commend themselves. These involve increasing the skills, flexibility and mobility of the workforce. With respect to skills, policy focus should be upon proficiencies that count in modern labor markets. This is not the same thing as generating massive numbers of additional bachelor’s degree holders, or STEM-degree holders, though many elected officials make this a high priority. To the surprise of many casual observers, there is relatively little rigorous economic evidence available that a significant shortage of job candidates exists in STEM-related occupations. Examples of skills currently in demand

include computer coding, welding and a wide variety of tasks associated with health care. The recent emphasis on “credentialing” may provide a means for individuals to upgrade their qualifications and abilities without committing themselves to entire academic degree programs.

With respect to flexibility, wherever possible, education and training should emphasize suppleness in thinking and approach, rather than rote memory. As Fareed Zakaria of *The Washington Post* (March 26, 2015) put it so succinctly, “Critical thinking is, in the end, the only way to protect American jobs.” Occupational shortages come and go, often in unpredictable sequences. Workers now stay with the same employer for a median of only 4.6 years.⁹ The days of virtually guaranteed, steady employment with the same firm are all but gone. Like it or not, flexibility on the part of both employers and employees is the key to success.

With respect to mobility, wise public policy will reduce barriers that discourage people from moving geographically and/or telecommuting to jobs that may be located thousands of miles away.

Relatively little in this domain will occur either easily or without controversy; witness recent discussions surrounding disrupters Uber and Lyft. What the available empirical evidence does tell us, however, is that the current range of public policies is insufficient to deal with the occupational ferment that Frey and Osborne have identified. We are forewarned.


⁸ See Peter H. Cappelli, “Skills Gaps, Skill Shortages, and Skill Mismatches: Evidence and Arguments for the United States,” *Industrial and Labor Relations Review*, 68 (March 2015), 251-90.

⁹ Bureau of Labor Statistics, www.bls.gov/news.release/pdf/tenure.pdf.

BROADBAND IN VIRGINIA: VITAL FOR ECONOMIC DEVELOPMENT

Broadband service connects businesses and individuals to the global marketplace. It has flattened the world by allowing businesses to communicate and collaborate in ways never before possible.

– Matt McQuade, “The Importance of Broadband to Economic Development,” Site Selection magazine, 2011



Up to 70 percent of the world's internet traffic flows through Northern Virginia. Tysons Corner became the home to MAE-East, one of the earliest internet exchanges and one of the building blocks of what would become the backbone of the internet. Firms such as Amazon Web Services, whose customers reputedly handle one-third of all daily internet messages, are located there. Northern Virginia and especially Loudoun County are dotted with internet data centers that underpin cloud computing.¹ Movers and shakers such as CACI and VeriSign inhabit this internet hothouse.

The internet by itself now generates an estimated 5 percent of the gross domestic product (GDP) of the United States and has been responsible for 21 percent of recent economic growth in mature world economies.² Broadband access and speeds – two keys to accessing the power of the internet – have become essential foundation stones for local and state economic development.

There is abundant empirical evidence available to support these conclusions. A 2006 econometric study of U.S. regions done at MIT found that the presence of broadband internet connections added 1.0 percent to 1.4 percent to the rate of growth of employment and 0.5 percent to 1.2 percent to the rate of establishment of new businesses. A 2007

¹ For a fascinating history of how the internet developed in Northern Virginia, see Paul Ceruzzi, *Internet Alley: High Technology in Tysons Corner, 1945-2005* (Cambridge: MIT Press, 2008).

² James Manyika and Charles Roxburgh, "The Great Transformer: The Impact of the internet on Economic Growth and Prosperity," McKinsey Global Institute, 2011.

Brookings Institution study found that every 1 percent increase in broadband penetration in a state increased that state's employment by 0.2 percent to 0.3 percent annually.³ A study published in *Telecommunications Policy* (December 2014), authored by Brian Whitacre et al., examined economic growth in rural areas of the United States between 2001 and 2010. The conclusion: "high levels of broadband adoption in rural areas positively (and potentially casually) impacted income growth between 2001 and 2010, and negatively influenced unemployment growth."

The potential of broadband internet connections to increase productivity and/or reduce costs is astonishingly great – up to \$2.5 trillion in a single decade in health care and \$11.6 trillion in global manufacturing if the “internet of things” is exploited. Industries with less dynamic reputations are not exempt: municipal energy and service provision entities could lower their costs by \$757 billion in a decade.⁴ (All of these estimates are viewed from 2015.)

Broadband currently is defined by the Federal Communications Commission (FCC) as representing internet speeds equal to 25 megabits per second (Mbps) for downloads and 3 Mbps for uploads. The definition of broadband, however, is much less important than the reality that high-speed internet access has become a critical element of economic development and has reshaped how we live our lives.

For Virginia, the good news is that broadband access and speed have increased dramatically over the last decade. Nevertheless, access is not evenly distributed across the Commonwealth, with urban households being more likely to have access to broadband and broadband-related services than rural households. Another divide exists along income lines, which in turn implies the existence of racial and ethnic differentials. It will suffice for us to note that the urban/rural, rich/poor and racial/ethnic dichotomies present challenges to policymakers. Should high-speed broadband access be viewed in the same fashion as telephone service – something that

should be made available to virtually every household, even if cross-subsidies are required to achieve this?

The FCC and the Virginia Office of Telework Promotion and Broadband Assistance both classify broadband access as “critical infrastructure.” Understanding what broadband is, how it is delivered and how it can be utilized is essential to any policymaking and hence we will shift our attention to some internet and broadband basics.

What Is Broadband?

Simply put, “broadband” refers to methods of transmitting data on the internet at higher than usual speeds. To be sure, it always has meant internet speeds that are faster than traditional dial-up access via a telephone landline.

Internet speed, however, is a relative concept that is constantly evolving. Internet download and upload speeds are measured in terms of megabits per second, or Mbps in shorthand.⁵ In 1988, broadband meant speeds greater than 1.5 to 2 Mbps downstream – rather pokey when compared to the 2010 FCC definition of 4 Mbps downstream and 1 Mbps upstream, or the FCC's 2015 benchmark of 25 Mbps/3 Mbps. Even this latest benchmark is a subject of contention, with some members of the FCC arguing for a definition of 100 Mbps downstream. We'll stick with the 25 Mbps/3 Mbps definition until it is revised.⁶

In Virginia, as throughout the country, broadband delivery can occur by utilizing a range of technologies, including cable, fiber optic wire, digital subscriber lines, satellites and wireless. One can see in Table 1 that fiber optic use in Virginia exceeds the U.S. average. Other forms of transmission are close to this average, suggesting that broadband providers continue to leverage multiple means of broadband delivery.

³ Robert Crandall, William Lehr and Robert Litan, “The Effects of Broadband on Output and Employment: A Cross-Sectional Analysis of U.S. Data,” *Issues in Economic Policy* (July 2007), www.brookings.edu.

⁴ Adam Thierer and Andrea O'Sullivan, “Projecting the Growth and Economic Impact of the Internet of Things,” Mercatus Center, George Mason University, 2015.

⁵ Mbps is not, however, the same as MBps, which refers to megabytes per second and is used when one is measuring the size of files.

⁶ Those interested in greater detail on these or related issues are advised to read “The Role of State and Local Governments in Broadband Deployment,” Southern Legislative Conference of the Council of State Governments, April 2016.

TABLE 1
BROADBAND DELIVERY METHODS:
VIRGINIA AND THE UNITED STATES

Technology	PERCENT OF POPULATION	
	Virginia	Nationwide
DSL	83.9%	90.0%
Fiber	47.8%	25.4%
Cable	79.5%	88.8%
Wireless	99.2%	99.4%
Other	0.0%	0.0%

Source: Federal Communications Commission, National Broadband Map, June 2014

per 100 inhabitants in the United States. This may seem to be a large number, but the U.S. nevertheless clearly trailed Finland's 138 and Japan's 130 in the United Nations/Organization for Economic Cooperation and Development 2015 rankings.⁷

TABLE 2
TOP GLOBAL AVERAGE PEAK CONNECTION SPEEDS

1 Singapore	135.70
2 Hong Kong	105.20
3 South Korea	95.30
4 Macao	83.10
5 Japan	82.90
6 Indonesia	79.80
7 Mongolia	78.90
8 Taiwan	78.81
9 Qatar	77.80
10 Romania	73.60
Global Average	32.50

Source: Akamai, "Q4 2015 State of the Internet Report"

Broadband Connection Speeds And Penetration: International Comparisons

The United States has made significant advances in the deployment of broadband in the last two decades and typically leads the Americas in terms of connection speeds. Nevertheless, in fourth quarter 2015, the United States did not even rank among the top 10 countries in the world in terms of its average peak connection speed, which was 61.5 Mbps (see Table 2). Singapore's average peak connection speed of 135.7 Mbps dwarfs that of the United States.

The internet may have been founded in the United States, but the U.S. now lags several other developed countries in terms of broadband penetration. Broadband penetration averages 111 broadband subscriptions

⁷ www.oecd.org/sti/ict/broadband

Broadband In Virginia

With 53 percent of households having adopted at least 25 Mbps/3 Mbps internet speeds, Virginia boasts the fifth-highest rate of broadband adoption among the states (see Table 3). Virginia’s adoption rate is well above the U.S. average of 37 percent and almost 3.5 times that of North Carolina.

The Commonwealth ranks among the top 10 states in terms of its average peak internet connectivity speed, which is 77.5 Mbps (see Table 4). If it were a nation, Virginia would rank 10th in the world in terms of internet speed and well above the global average peak connectivity of 32.5 Mbps.

Rank	State	Percent at Least 25 Mbps/3 Mbps
1	Massachusetts	68%
2	Maryland	59%
3	New Jersey	58%
4	New Hampshire	56%
5	Virginia	53%
6	Colorado	52%
7	Washington	52%
8	Vermont	51%
9	Oregon	49%
10	Pennsylvania	46%

Source: 2016 Broadcast Progress Report, Federal Communications Commission, www.fcc.gov

Quarter and Year	Average Peak Connection Speed Mbps	National Rank
Q4, 2012	37.0	9
Q4, 2013	59.2	2
Q4, 2014	73.5	2
Q4, 2015	77.5	6

Source: Akamai, "State of the Internet Reports," 2012-2015

THE URBAN-RURAL DIVIDE

Virginia mirrors the United States with regard to having an urban-rural divide in internet access and speeds. The gap between urban and rural areas in Virginia represents a public policy challenge because reality is that it reflects economic circumstances. Urban areas can better afford to deploy high-speed internet connections, not only because of greater wealth, but also because providers there usually can realize cost economies of scale when their customer base is concentrated together and easy to reach. It is much more expensive per customer to provide broadband access in rural areas than in urban areas.

As Table 5 discloses, in 2015, 11 percent of Virginians lacked access to “fixed advanced telecommunications capability,” a federal statutory term that is slightly more inclusive than broadband.⁸ However, the 11 percent number disguised the fact that only 3 percent of Virginians residing in urban areas lacked broadband access, while it was 38 percent in rural areas. The bottom line is that approximately 900,000 residents of the Commonwealth currently lack high-speed access to the internet.

Virginia’s Center for Innovative Technology (CIT) recently provided a more up-to-date analysis. Graph 1 discloses that the CIT found 29 percent of those Virginians living in rural areas lacked access to

⁸ Note, however, that BroadbandNow (www.broadbandnow.com/Virginia) says that 16 percent of Virginians lack broadband coverage that provides them with at least 25 Mbps speeds downloading and 3 Mbps speeds uploading.

broadband services at any speed, while 47 percent did not have access at the 25 Mbps/3 Mbps threshold. On the other hand, 96 percent of those living in urban areas had access to broadband at the 25 Mbps/3 Mbps threshold or faster. Separately, www.broadbandnow.com/Virginia reports that 11 of Virginia’s largest 54 cities and towns now have 100 percent broadband coverage of their households. All of these 11 cities and towns are located in Northern Virginia.

Figure 1 provides a geographic view of broadband access in the Commonwealth. The Urban Crescent of Hampton Roads, Richmond and Northern Virginia benefits from 95-plus percent household broadband access, while a few other larger cities and college towns exhibit 80-plus percent household broadband access possibilities. Still, if one ignores population and considers only geographic areas, a majority of the surface area of the Commonwealth has fewer than 70 percent of households that have the ability to access the internet via high-speed connections.

Having broadband access, however, does not necessarily mean that this access is truly high speed. Figure 2 shows the percentages of households in each county that have access to the internet at various download speeds. As one might expect, higher-speed broadband penetration follows major urban corridors and interstates, but even then the pattern is surprisingly spotty. Literally, neighbors can find themselves dealing with different internet providers and therefore experience very different download speeds. One can see that circumstances frequently differ from one county or city to the next.

In May 2016, Gov. Terry McAuliffe announced a statewide initiative (RUOnline VA?) to identify and reduce the urban/rural broadband divide in Virginia. It is coupled with 2016 legislation that will make it easier to place broadband and telecommunications infrastructure in the rights-of-way of state-maintained roads throughout the Commonwealth. This will reduce the expense involved in serving rural customers.

**TABLE 5
VIRGINIANS WITHOUT ACCESS TO FIXED ADVANCED
TELECOMMUNICATION CAPABILITY, 2015**

	Population Without Access	Percent of Population	Urban Population Without Access	Percent of Population	Rural Population Without Access	Percent of Population
United States	31,353,263	10%	9,001,161	3%	22,352,102	38%
Virginia	925,477	11%	186,349	3%	739,128	38%

Source: Federal Communications Commission 2016 Broadband Progress Report

THE INCOME AND EDUCATIONAL DIVIDE

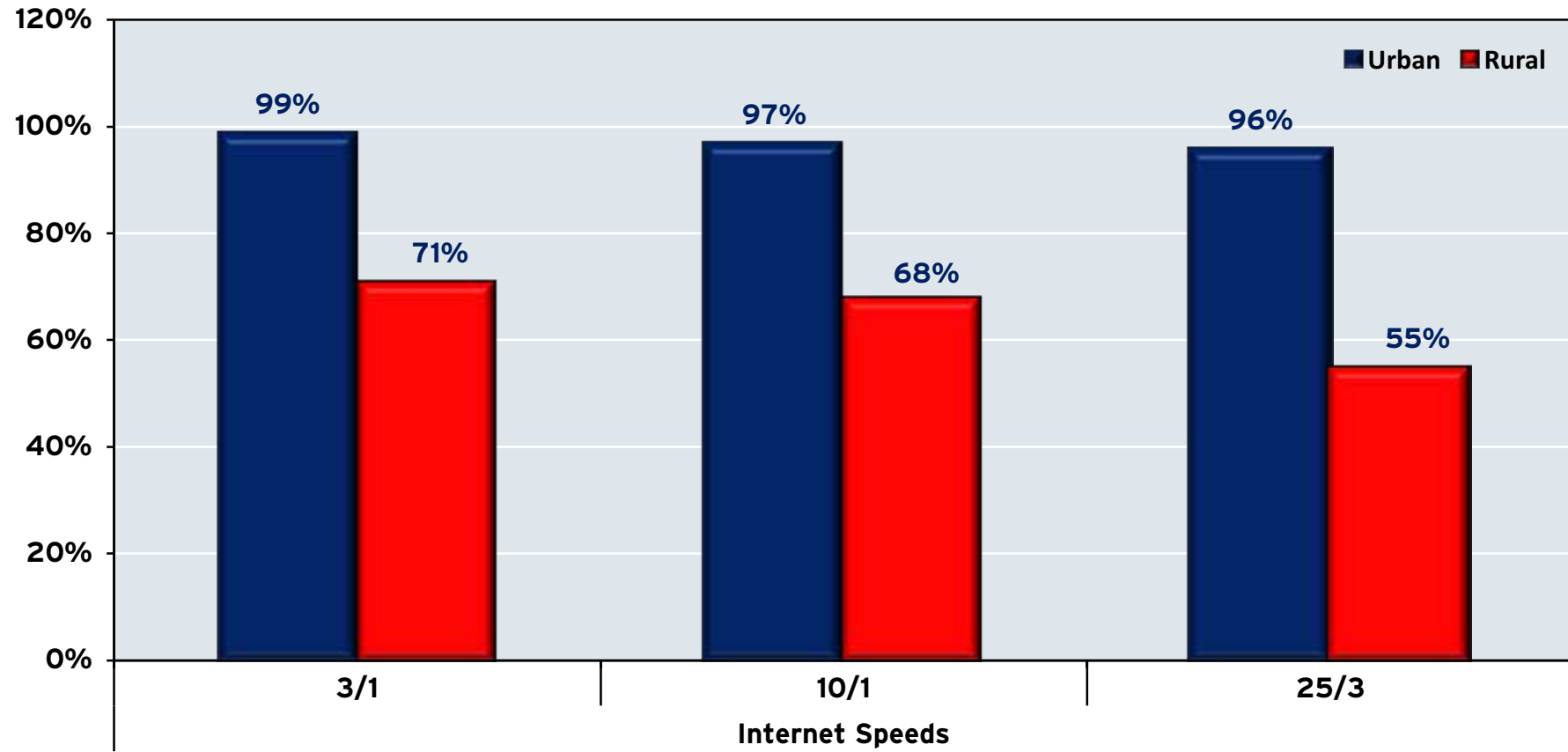
The Brookings Institution issued a report in December 2015 that focused on broadband adoption rates in the United States as a whole.⁹ Brookings concluded: “Multiple factors – including higher levels of income, educational attainment and telecommuting – all have a positive and significant effect on broadband adoption rates.” Graph 2, which is derived from Brookings data, drives home these points. There were observable links between income, age, education and employment and broadband adoption in 2014.

Table 6, also derived from Brookings data, reveals that the same general relationships held within the five largest Virginia metropolitan areas in 2014. One cannot help but be struck by the very low broadband adoption rates of non-Hispanic blacks and Hispanics. This has profoundly negative social and economic consequences and renders these individuals not only less employable, but also less informed, less able to communicate and less able to access many forms of entertainment. We will have more to say about this in a following section.

⁹ www.brookings.edu/research/reports2/2015/12/07-broadband-adoption-rates-metropolitan-areas-tomerkane.

GRAPH 1

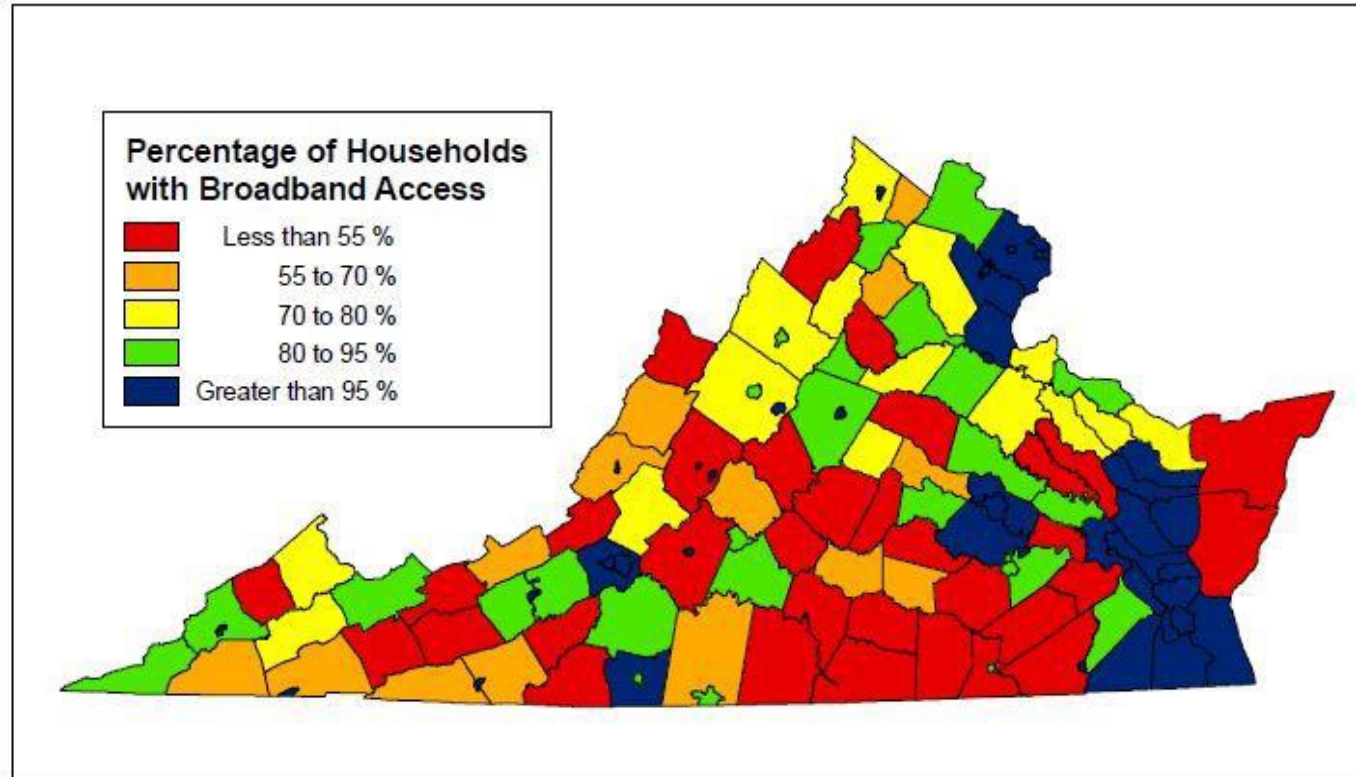
HOUSEHOLD PERCENT ACCESS TO BROADBAND IN VIRGINIA: URBAN VS. RURAL AREAS, 2015



Sources: Center for Innovative Technology, Virginia Tech and Virginia Geographic Information Network: "Broadband Activities in the Commonwealth: An Annual Status Report," October 2015

FIGURE 1

PERCENTAGE OF HOUSEHOLDS WITH BROADBAND ACCESS IN VIRGINIA COUNTIES, 2015



Percentage of Households with Broadband Access

The FCC definition of broadband access is a download speed faster than 25 Megabits per second and an upload speed faster than 3 Megabits per second

The representations contained herein are for informational purposes only. Best efforts are undertaken to ensure the correctness of this information, however, all warranties regarding the accuracy of the map and any representations or inferences derived there from are hereby expressly disclaimed.

Mapping and Spatial Alteration provided by:

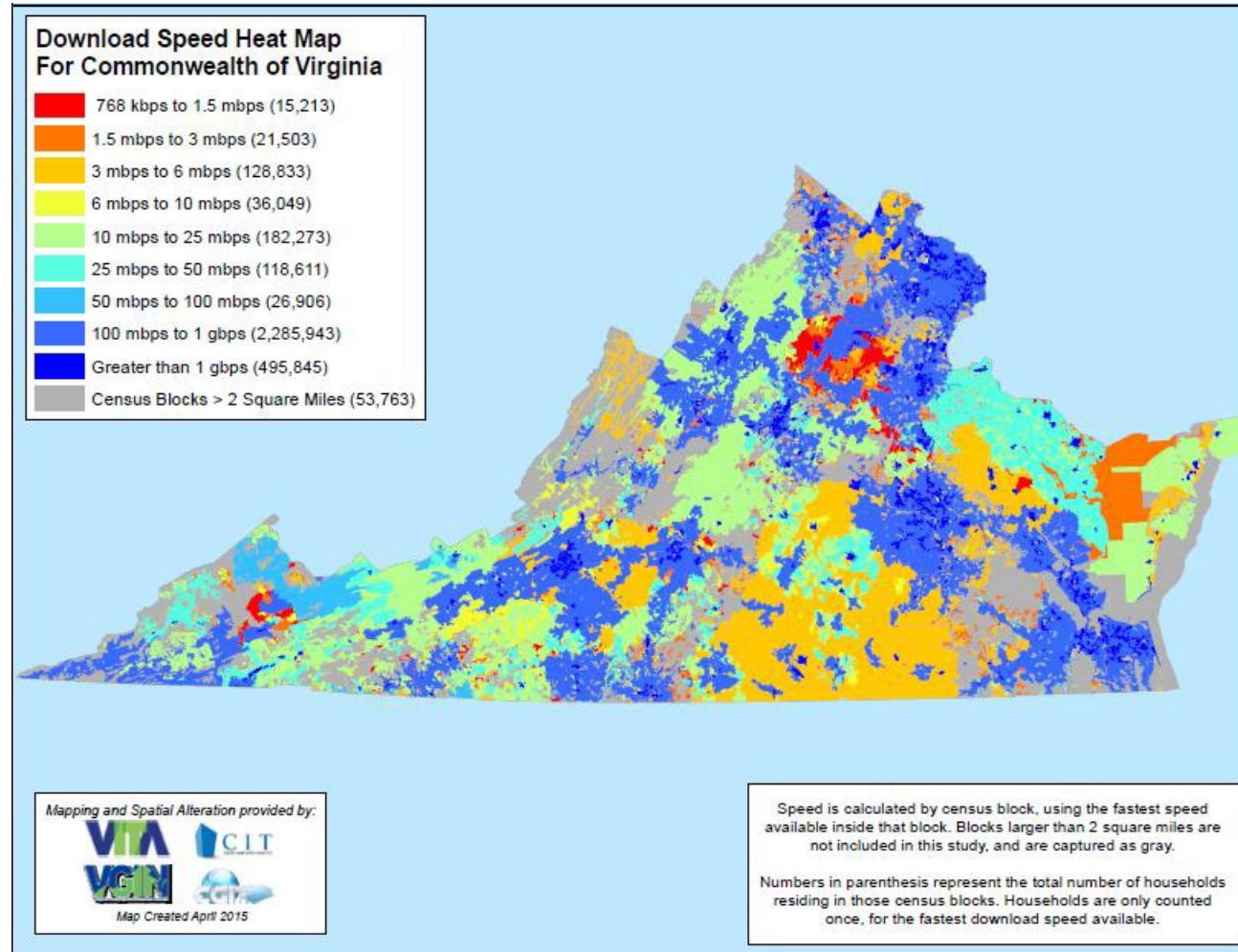


Map Created January 2015

The Virginia Center for Innovative Technology (CIT) and its partners neither assure nor accept any liability for the accuracy of the data. Those relying upon this information assume the risk of loss exclusively for any inaccuracy. All errors and omissions brought to the attention of the CIT will be promptly corrected.

FIGURE 2

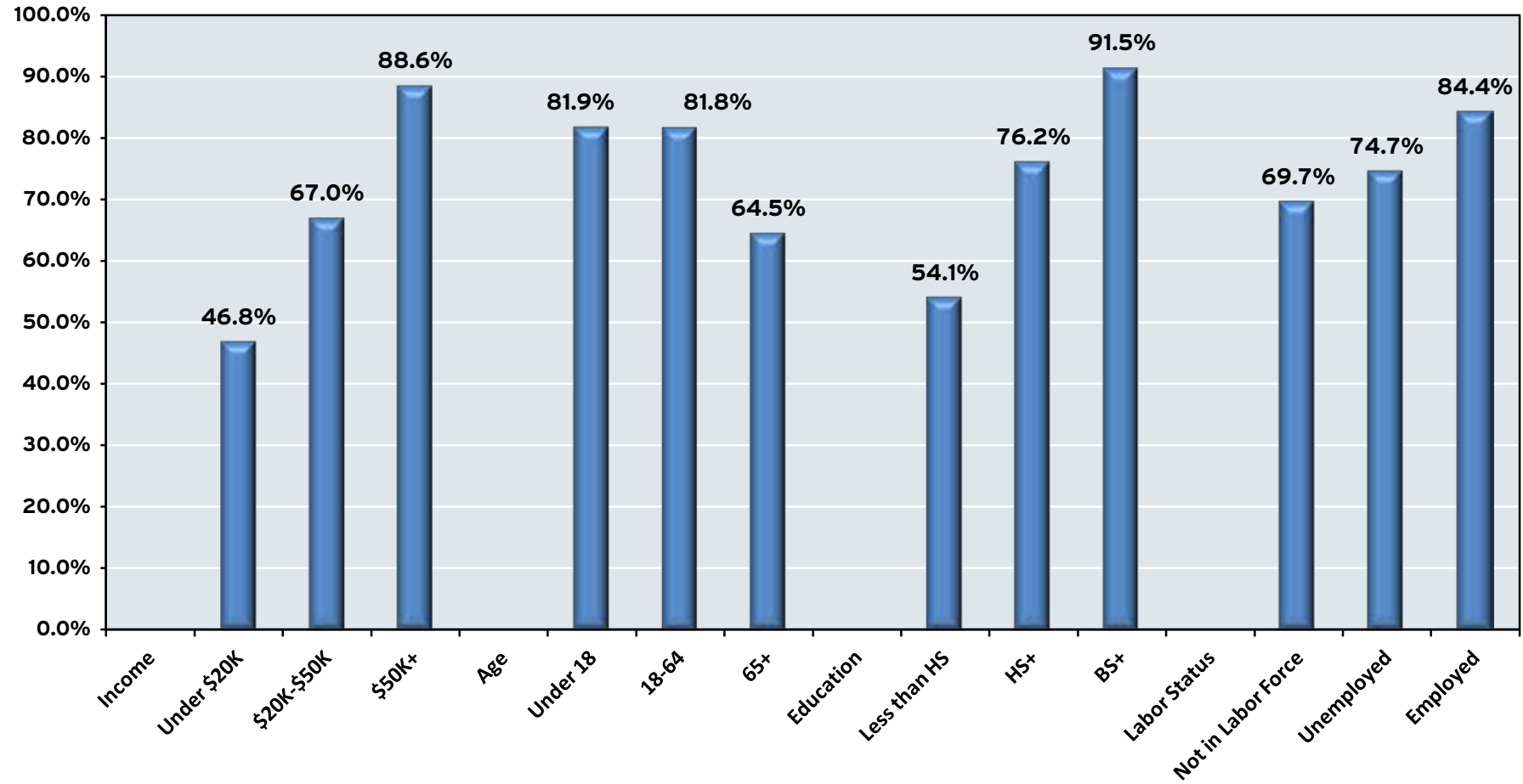
INTERNET DOWNLOAD SPEEDS BY GEOGRAPHIC AREA OF VIRGINIA, 2015



Source: Virginia's Center for Innovative Technology

GRAPH 2

INTERNET ADOPTION CHARACTERISTICS: UNITED STATES, 2014



Source: www.brookings.edu/research/reports2/2015/12/07-broadband-adoption-rates-metropolitan-areas-tomer-kane

TABLE 6

INTERNET ADOPTION CHARACTERISTICS: VIRGINIA, 2014

Metro Area	Percent HHs Broadband	Percent HHs \$50K+	Percent Work at Home	Percent 25 Yrs+ with HS+	Percent 65+ Years	Percent Tech/Ed Workers	Average Mbps Download Speed	Percent Urban	Percent Non-Hispanic Black	Percent Hispanic
Lynchburg	64.3%	47.8%	3.4%	87.3%	15.4%	20.3%	18.6%	48.4%	17.2%	2.3%
Richmond	77.4%	59.3%	4.2%	88.4%	11.9%	25.1%	32.5%	80.7%	29.8%	5.4%
Roanoke	68.3%	52.1%	3.2%	88.5%	15.7%	19.1%	25.9%	68.1%	12.5%	3.4%
Wash DC	84.7%	74.1%	5.1%	90.2%	10.0%	39.9%	33.6%	92.4%	25.0%	14.4%
Va. Beach	78.9%	57.6%	3.1%	90.2%	11.3%	23.9%	32.4%	90.3%	30.2%	5.8%

Source: www.brookings.edu/research/reports2/2015/12/07-broadband-adoption-rates-metropolitan-areas-tomer-kane

Virginia’s Center For Innovative Technology Leads The Way

In 2006, Gov. Tim Kaine established an Office of Telework Promotion and Broadband Assistance within the Office of the Secretary of Technology. This guaranteed that high-speed broadband internet access would become and remain a high priority for the Commonwealth. The secretariat actively promotes high-speed internet access via advocacy, administering funded programs such as those involving big data, promoting cybersecurity awareness and solutions, sponsoring workshops, and supporting eight regional technology councils and a broadband advisory council, etc. Among the councils, the Northern Virginia Technology Council is particularly

active and sponsors 150 or more networking and educational events annually.

The Commonwealth’s Center for Innovative Technology, a part of the technology secretariat, is specially tasked with promoting the spread and use of broadband in Virginia. It undertakes a wide variety of activities to pursue its portfolio, including producing useful maps that readily show the areas of the Commonwealth that have broadband coverage and the speeds associated with that coverage; promoting and assessing the use of information technology in health provision; assisting localities in mobilizing their resources to expand the reach of broadband in their regions; and assessing the economic impact of its broadband initiatives. Shortly, we will examine several of those initiatives.

The costly nature of broadband developments in rural areas and the relatively modest expected financial returns from such developments have

deterred many private firms from investing in broadband developments outside of urban areas. “Too many regulations and too expensive” was the concise evaluation of a senior executive of a large telecommunications firm when asked why that firm did not undertake more projects in rural areas.

Firms such as Comcast, Cox, DIRECTV, Time Warner, Verizon, Virginia Broadband, Windstream and XFINITY typically have focused on serving urban areas and have not been the recipients of National Telecommunications Information Agency (NTIA) funding.

CITIES AND REGIONS MOBILIZE

Virginia’s Center for Innovative Technology has been the driving organizational element in the deployment of broadband in rural Virginia. The CIT utilizes its expertise to orchestrate projects that nearly always have multiple sources of funding and involve a variety of governmental units and organizations. In general, the extension of broadband to rural areas of the Commonwealth has involved extensive federal funding from multiple agencies, but most often via the U.S. Department of Agriculture or the NTIA’s Broadband USA program, which has awarded more than \$200 million in 13 grants to Virginia entities in the past several years. The recipients have included the CIT itself, the Mid-Atlantic Broadband Communities Corp. and the Bristol Virginia Utilities Authority. We will look at the latter two in greater detail.

The Mid-Atlantic Broadband Communities Corp. (MBC) has been operating an open-access, fiber optic network in Southside Virginia since 2004. MBC’s creation was in partial response to the demise of the furniture, textiles and tobacco industries in Southside Virginia. This was one of the reasons the venture was able to receive more than \$36 million in funding from the Virginia Tobacco Commission to enable it to get off the ground.

Already by 2006, MBC had laid 600 route miles of new fiber, connecting 20 counties and four cities in a network that included all major business, industrial and technology concentrations in the region. In 2012, MBC ended its cooperative governance structure and became a 501(c)(4) not-for-profit corporation. The MBC network now spans 1,800 route miles.

MBC asserts that it is responsible for 1,100 incremental jobs and \$2.1 billion of private-sector investment in Southside Virginia (www.mbc-va.com/history). Private-sector investments have included data centers, call centers/operations centers, advanced manufacturing, research and development, and biotech industries. Most recently, MBC played a critical role in securing the expansion of a Microsoft data center project for Southside Virginia that will involve \$346.7 million in private-sector investment and 90 attractive additional jobs. MBC participates in the Mid-Atlantic Research Infrastructure Alliance (MARIA), a membership that enables it to offer internet connections up to four terabits per second in selected instances.

The Bristol Virginia Utilities Authority (BVU) operates within a narrowly crafted segment of Virginia law that classifies broadband services as private business ventures, and this is why providers such as Comcast, Cox and Verizon inhabit this business space. No municipality classified as a “city” in Virginia currently has fewer than 12 alternate internet providers, according to www.broadbandnow.com/Virginia, and overall there are 133 different broadband providers in Virginia.

Even so, Code of Virginia sections §56-265.4:4 and §56-484.7:1 allow municipal electric utilities to become certified municipal local exchange carriers and to offer communications services that their systems are capable of supporting (cable television services are an exception), provided that they do not charge rates lower than incumbents, they do not subsidize services, and they impute private-sector costs into their rates. These restrictions clearly are attractive to private-sector broadband vendors because they effectively insulate them from price competition and price-cutting.

Because the Code of Virginia requirements and other Commonwealth regulations are so limiting, this has effectively discouraged local governments from entering the broadband business. There are some exceptions. A particularly interesting one involves the city of Bristol, which years ago used its municipal utility system as an umbrella to offer broadband services. Subsequently, Bristol was grandfathered when more restrictive regulations went into effect in 2002.

A BVU residential customer is able to purchase 250 Mbps download speed and 30 Mbps upload speed plus four email accounts and an IP address for \$99.95 per month. These internet speeds are not blazing, but exceed those of most of rural and Southwest Virginia.

BVU provides electricity, water, wastewater and fiber-optic telecommunications and information services to the city of Bristol, Washington County and the town of Abingdon. BVU OptiNet is a nonprofit division of BVU that began in 2001 to provide telecommunications services to approximately 12,500 customers in Southwest Virginia.¹⁰ BVU generally is acknowledged to be the first municipal utility in the United States to deploy an all-fiber network offering video, voice and data services.¹¹

The utility received a federal award of \$22.7 million that it combined with money from the Tobacco Indemnification Commission, the Virginia Department of Transportation and the Cumberland Peak Co. This enabled BVU to field 339 miles of fiber optic access to 5,600 residences, 220 businesses and 95 percent of all K-12 schools in an eight-county region of Southwest Virginia.¹²

BVU recently became newsworthy for less attractive reasons because it is alleged to have developed what the *Roanoke Times* labeled a “culture of corruption, entitlement and greed.”¹³ According to the *Times*, “the utility was rife with self-dealing, extortion, tax evasion and fraud” and this resulted in nine convictions and/or guilty pleas. While shattering, these conspicuous malfeasances did not alter the fact that BVU was the first of its kind in terms of a utility providing broadband access.

¹⁰ *The Bristol Herald Courier* reported on Feb. 5, 2016, that OptiNet, which generated \$23 million in revenues in 2014-15, was up for sale. The reasons for this are not yet clear.

¹¹ Bristol's program was challenged in the courts. In *City of Bristol, VA v. Earley* (145 F.Supp.2d 741, 745 W.D. Va. 2001), the court held that the City had authority to provide telecommunications services. However, in *Marcus Cable Associates, LLC v. City of Bristol* (237 F.Supp.2d 675, 678-79, W.D. Va. 2002), the same court held that the City did not have authority to provide cable television service. According to the court, the critical difference was that Virginia's statute authorizing localities to establish “public utilities” applies to telecommunications services, but not to cable television.

¹² Approximately 40 percent of eligible residences later subscribed to broadband. This underlines a persistent reality – the fact that broadband is available does not mean that it will be used.

¹³ Dan Casey, “Bristol Virginia Utilities Shows Culture of Corruption, Entitlement and Greed,” *Roanoke Times* (May 6, 2016), www.roanoke.com.

EDUCATIONAL INITIATIVES

Virginia's research universities have enjoyed higher internet speeds for some time via Internet2. They are members of the nonprofit Mid-Atlantic Research Infrastructure Alliance (MARIA), which provides campus connections up to 100 gigabits per second (Gbps), an almost unheard of speed only a few years ago. Translating this capability into research productivity and increased research funding, however, remains a challenge.

At the K-12 level, the Commonwealth's Department of Education not only is interested in connectivity – 94 percent of school divisions have a fiber optic connection – and connection speeds – 46 percent of school divisions have 100 kilobits per second (Kbps) speeds or better – but also in the prices school divisions pay for their internet access. Action seems merited in this area because only 5 percent of Virginia school divisions meet the NTIA's national goal of paying no more than \$3 per Mbps for internet access (<http://stateofthestates.educationsuperhighway.org>).

Some public broadband ventures compete with private-sector broadband providers and this provokes understandable tension. An example in point involves the Roanoke Valley Broadband Authority, which operates a fiber optic network in Roanoke, Salem, and surrounding Roanoke and Botetourt counties. The authority asked the Roanoke County Board of Supervisors to provide \$3.4 million in public funding for an expansion of the project – a notion that the Virginia Cable Telecommunications Association found wanting. The project previously had received \$6.2 million in bonding authority from the Virginia Resources Authority. As of this writing, the issue is not yet settled. (See Carmen Forman in the *Roanoke Times*, May 12, 2016.)

Final Thoughts

Much of the modern development and maturation of the internet has taken place in Northern Virginia. Even so, more than half of our state's geographic area currently does not meet the 25 Mbps download speed/ 3 Mbps upload speed standard that is commonly used today to delineate what constitutes a genuine broadband connection.

Many in Virginia do not yet seem to understand that broadband internet connections have assumed an importance that rivals that of roads, bridges and highways. In a nutshell, broadband internet connections have become an essential part of our economic infrastructure. Economic success or failure in an increasingly wide range of ventures now depends upon one's ability to utilize the internet effectively and to harness the potential of broadband connections.

Is it now time to consider broadband internet connections in the same fashion we do telephone connectivity? Since 1985, the Federal Communications Commission's Lifeline Program has subsidized telephone carriers so that they can provide telephone connectivity in geographic areas where otherwise it would be entirely uneconomic to do so. The FCC did so because it concluded that telephone connectivity was fundamental not only for economic development, but also for citizenship and meaningful interpersonal relationships. On March 31, 2016, the FCC formally extended this policy to include discounted broadband internet coverage. It will take time and funds to implement this change, but it seems likely to reduce the rich/poor broadband gap that is apparent in Graph 2 for the United States and Table 6 for Virginia.

It is in the best interests of Virginia to diminish the urban/rural, rich/poor and white/black differentials that currently exist in broadband coverage in the Commonwealth. An important economic reason is that such gaps reduce the quality of the labor force to which employers have access even while it diminishes their ability to access information, utilize modern technologies and sell to customers. It is not a good thing, for example, for only 29.8 percent of African-Americans in Richmond to have broadband access, while 77.4 percent of the overall Richmond population enjoys that status. The already large income and

educational gaps that exist between the races will only become larger if the two groups have dramatically different levels of access to the internet tools that have become essential to economic prosperity.

Much the same conclusion would be reached if we were to focus on the urban/rural divide in broadband coverage that continues to persist in Virginia. Such disparities are a recipe for rising economic inequality and future distress.

Is state government the best available vehicle to address these challenges? Probably so – because there are many economic and social “spillover” effects generated by broadband internet deployment that no single individual or firm can take into account. These span the economic activity of schools, health care institutions, law enforcement, entertainment, the provision of governmental services, etc. Further, broadband access has stealthily become a vital part of our societal infrastructure and now occupies a role similar to that of roads, highways and bridges, for which the Commonwealth provides major funding.

Mark well that this does not mean Virginia itself should get into the business of supplying broadband infrastructure, or that it should become a broadband supplier that competes with private firms. **Nevertheless, it is appropriate for state government to provide its organizational talents and to supply partial funding for broadband activity even while it ensures coverage, seeks to minimize disparities and monitors quality levels. These are proper roles for government to assume because broadband benefits and costs spill over to virtually every citizen, whether or not they are aware that it is happening.**

STOCK CAR RACING IN VIRGINIA: THE SPORT AND THE BUSINESS



Virtually every popular sport that captures the public imagination boasts multiple levels of competition. In baseball, for example, competition ranges from sandlots and Little League on up to the minor leagues and Major League Baseball. Car racing is much the same. From the dirt tracks and drag strips to the short tracks and NASCAR, it is a sport enjoyed by many people as spectators and participants, in many different settings. It has evolved into a very big business.

For some, car racing is recreational. For others, it is a spectator sport. For still others, it is a money-making business. Some people golf regularly or join a bowling league, while others enjoy tuning their cars and racing them. For many, this is an experience that simply is fun, yet for others it leads to a career or a business. People make significant investments in horses for racing or dogs for showing, while others make truly significant financial investments in race cars.

NASCAR, the National Association for Stock Car Auto Racing, is the most prominent organizer of stock car racing. It sanctions 1,500 races annually at 100 tracks in almost 40 states. NASCAR exceeds both golf and tennis in terms of the number of its fans and television viewers, and live audiences can exceed 200,000. Although in recent years attendance has trended downward, NASCAR still asserts that it sponsors a majority of the most-attended single-day sporting events in the world.¹

¹ "NASCAR," Wikipedia (accessed May 19, 2016).

Professional race car drivers such as Jimmie Johnson, Kevin Harvick and Kyle Busch earn substantial amounts of money and are recognized by their fans on television and the national scene. Hendrick Motorsports, a NASCAR racing team, was worth \$375 million in 2015, according to Forbes magazine (Feb. 16, 2016).

For every famous team and driver, however, there are dozens who work semi-anonymously on their own cars, drive them in races and are racing heroes only to their families and the people in their communities. Car racing is a way of life for some people – a part of their culture, an opportunity for fun and relaxation.

These are among the reasons why car racing has become a big business that involves thousands of Virginians, highly attended sports events, hundreds of millions of dollars of economic impact, expensive high-technology vehicles, franchises, sponsorships, prize money and elaborate facilities. All of this is in addition to the teenager who “soups up” his car and enjoys drag racing and the demolition derbies that occur on dirt tracks around the Commonwealth.

It's not easy to assemble reliable information on car racing in Virginia because public records in the sport are limited and many of the participants come and go from year to year. NASCAR, for example, is a family-owned and operated firm. Thus, anecdotal information assumes larger than usual importance.

Car Racing In Virginia Traces Its Beginnings To Virginia Beach

Virginia Tech professor of landscape architecture Brian Katen, who has done an exhaustive study of the beginnings of racing in Virginia, reports that car racing in the Commonwealth got its start on the beach at Virginia Beach in 1904. That was the plan, at least. Alas, neither the weather nor the tides cooperated that day, and so the race was moved to the Norfolk fairgrounds. This started a trend of having races at fairgrounds.

“Since colonial times, race day – horse racing – was always a part of the fair. These horse tracks became car tracks,” Katen explained (Susan Trulove, “Life in the fast lane enriches Virginia’s landscape: Culture of racing a significant part of past and present,” Research Magazine, Virginia Tech, fall 2004).

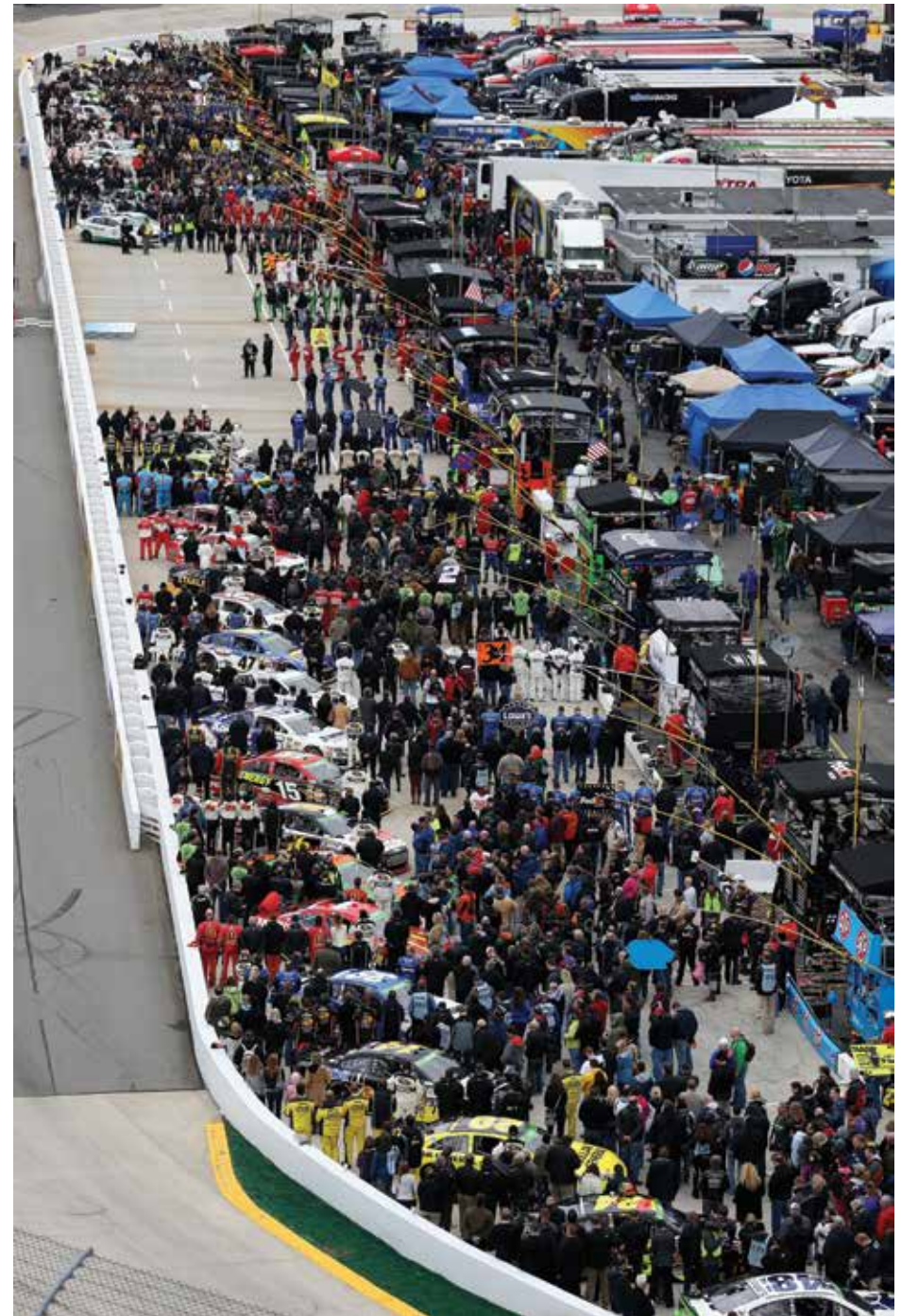
Katen’s research unearthed 110 car race tracks in Virginia, though not all were ever operational at the same time. From the fairgrounds to baseball fields to oval tracks in a farm field, car racing would become very popular and a part of life in many rural communities, especially in Southwest Virginia.

Early race cars were open-wheeled vehicles. After World War II, there was a move to what became known as stock car racing – featuring cars that race around oval tracks at speeds up to and exceeding 200 mph. Southwest Virginia Speedway, built near Marion in 1947, was the first designed for stock cars. Currently, there are at least 11 hard-surface stock car tracks in Virginia plus a half-dozen dirt tracks.

A dozen or more distinct classes of stock car racing exist (for example, “true” stock car racing, which is limited to street vehicles that can be purchased by the general public). For each class, rules exist that are designed to produce races between cars with near-identical specifications. Fudging the specification rules, of course, always has been a temptation for drivers and teams.

The story that stock car racing began in the era of Prohibition is a mixture of myth and truth. The legend is that young men, particularly in the South, used souped-up regular cars to ferry illegal moonshine and outrun federal revenuers. Undoubtedly this occurred during Prohibition and was the basis for movies such as "Thunder Road" (1958). The tradition was embellished (and satirized) subsequently by Burt Reynolds in movies such as "Smokey and the Bandit" (1977) and "The Cannonball Run" (1981). Even so, to the extent this occurred, it only supplemented the natural desire of many car owners to maximize the performance of their vehicles.

The foremost historian of race cars and tracks in Virginia is Brian Katen, an associate professor in the School of Architecture + Design at Virginia Tech. His contributions include "Racing's Roots in the Virginia Landscape," in "Horsehide, Pigskin, Oval Tracks and Apple Pie: Essays on Sports and American Culture," Dr. James A. Vlasich, ed., McFarland and Co., 2006; "The Roots of Oval Track Racing in Virginia," in "Car Crazy: Racing and Rodding in Southwest Virginia," Art Museum of Western Virginia, Roanoke, Va., in collaboration with the Blue Ridge Institute and Museum of Ferrum College, 2004, and "Richmond's Oval Track History," in "Capital Car Crazy; Racing and Rodding Around Richmond," Exhibit Catalogue, Virginia Historical Society, Richmond, Va., Blue Ridge Institute and Museum of Ferrum College, 2005.



Race Car Tracks In Virginia

Table 1 lists the major stock car raceways with hard surfaces in Virginia. Dirt tracks and drag racing tracks are listed separately. Figure 1 locates the tracks within the Commonwealth. While concentrated in less

urbanized areas, it is apparent that virtually every area of Virginia hosts a stock car race track.

TABLE 1

RACE CAR TRACKS IN VIRGINIA, 2015

Bristol Motor Speedway - Located on the Tennessee side of the city of Bristol, which straddles the Virginia and Tennessee border. Shape: High-banked oval. Surface: Concrete. Length: .533 miles. Called the "world's fastest half mile." It is counted as a Virginia track in Figure 1.
Dominion Raceway - Thornburg. Multipurpose race and entertainment facility. Shape: Oval. Road course and drag strip to open soon. Surface: Asphalt. Length: .4 mile. Seats: 3,500. New in 2016.
Langley Speedway - Hampton. Shape: Semi-banked oval. Surface: Asphalt. Length: .396 mile.
Lonesome Pine Raceway - Coeburn. Shape: Oval. Surface: Asphalt. Length: .375 mile.
Martinsville Speedway - Ridgeway. Shape: Paperclip. Surface: Asphalt. Length: .526 mile. Voted one of the most popular tracks by fans.
Motor Mile Speedway - Radford. Shape: High-banked oval. Surface: Asphalt. Length: .416 mile.
Richmond International Raceway - Shape: "D"-shaped oval. Surface: concrete. Length: .75 mile. Seats: 70,000.
Shenandoah Speedway - Shenandoah. Shape: Oval. Surface: Asphalt. Length: .375 mile.
South Boston Speedway - South Boston. Shape: Semi-banked oval. Surface: Asphalt. Length: .4 mile.
Southside Speedway - Midlothian. Shape: Oval. Surface: Asphalt. Length: .33 mile. Called "toughest short track in South."
VIRginia International Raceway - Alton (near Danville). Shape: Road course, oval and drag strip. Surface: Asphalt. Length: 2.25 miles. Named one of the top six courses in North America by Car and Driver magazine.
Among the more active dirt oval tracks are Eastside Speedway , Waynesboro; Natural Bridge Speedway , Natural Bridge; Virginia Motor Speedway , Jamaica; Winchester Speedway , Winchester; and Wythe Raceway , Rural Retreat.
Drag racing strips in Virginia include Colonial Beach Dragway , Colonial Beach; Eastside Speedway , Waynesboro; Elk Creek Dragway , Elk Creek; New London Dragway , Lynchburg; Newton Dragway , Newton; Richmond Dragway , Richmond; Sumerduck Dragway , Culpeper; and Virginia Motorsports Park , Petersburg.

Source: Virginia Delegate Kenneth Plum

FIGURE 1

LOCATION OF STOCK CAR TRACKS IN VIRGINIA

RACE TRACKS

- 1. Bristol Motor Speedway - Bristol, VA/TN
- 2. Dominion Raceway - Thornburg
- 3. Langley Speedway - Hampton
- 4. Lonesome Pine Raceway - Coeburn
- 5. Martinsville Speedway - Ridgeway
- 6. Motor Mile Speedway - Radford
- 7. Richmond International Raceway - Henrico County
- 8. Shenandoah Speedway - Shenandoah
- 9. South Boston Speedway - South Boston
- 10. Southside Speedway - Midlothian
- 11. Virginia International Raceway - Alton

DIRT OVAL TRACKS

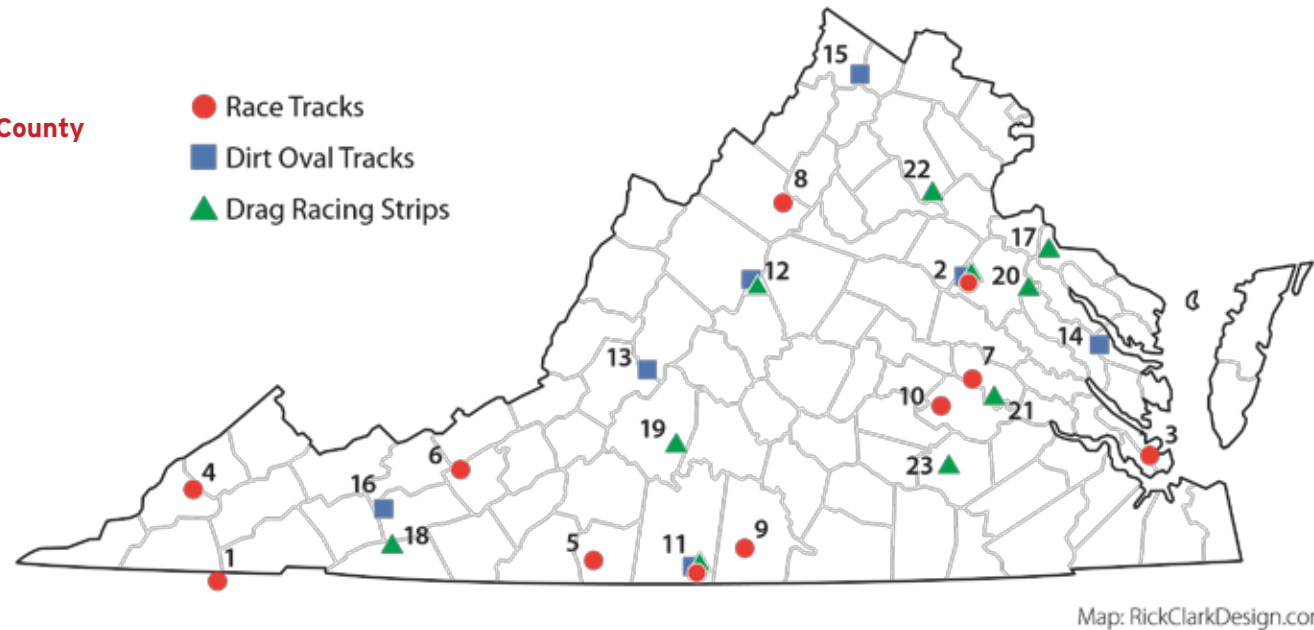
- 12. Eastside Speedway - Waynesboro
- 13. Natural Bridge Speedway - Natural Bridge
- 14. Virginia Motor Speedway - Jamaica
- 15. Winchester Speedway - Winchester
- 16. Wythe Raceway - Rural Retreat

DRAG RACING STRIPS

- 17. Colonial Beach Dragway - Colonial Beach
- 18. Elk Creek Dragway - Elk Creek
- 19. New London Dragway - Lynchburg
- 20. Newton Dragway - Newton
- 21. Richmond Dragway - Richmond
- 22. Sumerduck Dragway - Culpeper
- 23. Virginia Motorsports Park - Petersburg

Source: Virginia Delegate Kenneth Plum

Racing Facilities in Virginia



Virginia Recognizes The Economic Potential Of Stock Car Racing

In 2003, Gov. Mark R. Warner announced the Virginia Motorsports Initiative to “promote and support motorsports activities in Virginia as a means for economic development.” According to Warner, the purpose of the project was:

Virginia has a strong cluster of racing venues and motorsports businesses. Our new initiative will build on these exciting assets to promote the growth of the motorsports industry and racing venues. Our aim is to attract and grow in Virginia a dynamic motorsports industry that sees the Commonwealth as the preferred location for engine builders, component makers, race car teams, and other businesses in the fast growing motor sports world (press release from the Governor’s Office, Aug. 13, 2003).

Warner’s announcement also revealed that \$250,000 would be made available in low-interest loans to help finance the move of new motorsports businesses to Virginia, \$100,000 in workforce funds to train new workers and \$250,000 in incentive funds from the Virginia Tobacco Commission to attract related new businesses. Educational and workforce programs in motorsports were to be developed. A private-sector Virginia Motorsports Coalition was organized.

A commending resolution passed by the House of Delegates and the Senate (HJR 451) in March 2004 was equally as optimistic in praising the motorsports industry in the Commonwealth “for its positive contributions to tourism and economic development.” The resolution noted that Virginia had 37 racetracks, from the best tracks in the competition to local dirt tracks and drag strips. It further noted that “attendance figures from Martinsville Speedway, Richmond International Raceway, South Boston Speedway, Virginia International Raceway and Virginia Motorsports Park show almost two million visitors in 2002 with an economic impact of \$11.7 million in state and local sales taxes and other tax revenues.”

A posting on the internet blog Bacon’s Rebellion (June 19, 2005) proclaimed: “Virginia has what it takes to be a contender in motor sports. A little help from the state could jump-start local development of this fast-growing industry.” The column went on to explain that “several states are trying to position themselves as the location for more motorsport businesses. None of these efforts has taken a clear lead yet, and Virginia should work to position itself as the industrial capital of motor sports.”

NASCAR And Other Stock Car Sanctioning Groups

Sanctioning bodies in stock car racing are organizations that establish uniform rules and safety standards for the races for which they coordinate the scheduling and promotion. Rules include detailed and elaborate specifications for the racing cars and trucks that are permitted to enter various kinds of races. Rules that drivers must follow are also specified. There are three major stock car-sanctioning bodies nationally and each sanctions some races in Virginia.

Virginia is home to two of the tracks where major NASCAR races are held: Richmond International Raceway and Martinsville Speedway. Another major NASCAR site, Bristol Motor Speedway, is located on the Tennessee side of the divided city of Bristol, Va./Tenn., but is counted as a Virginia track in Table 1 and in Figure 1.

The **National Association for Stock Car Auto Racing (NASCAR)** was founded in 1948 as a family-owned and operated business venture that sanctioned and governed multiple auto-racing sports events. There was no central organization or rules until Bill France Sr. of Daytona Beach, Fla., organized a meeting of racing team owners, which led to the formation of a sanctioning body that would become NASCAR.

As a family-controlled business, NASCAR is not publicly traded on the stock market. However, its major sanctioning body, **International Speedway Corp. (ISC)**, is publicly traded on the NASDAQ. Declining attendance and revenues during the Great Recession of 2008 pushed down the price of ISC stock from a high of \$53.20 per share on Feb. 1, 2007, to

less than \$19 per share two years later. It currently trades at about \$32 per share and has paid dividends to its shareholders for 43 consecutive years (<https://finance.yahoo.com>).

ISC owns and operates 13 motor speedways, including Richmond International Raceway and Martinsville Speedway. Its total revenues for the first quarter of 2016 were approximately \$142.6 million, up about 5 percent compared to the previous year. Its market cap is approximately \$1.5 billion.

The second major owner of NASCAR tracks, **Speedway Motorsports Inc.**, is publicly traded on the New York Stock Exchange. The company owns eight raceways including Bristol Motor Speedway. The price of a share of Speedway Motorsports fell from a high of approximately \$40 in 2007 to only about \$12 per share in 2009. It currently trades at approximately \$17 per share, but recently has experienced falling revenues. Its market cap is about \$700 million. (The third owner of large national race venues, **Dover Motorsports**, owns two raceways including the Indianapolis Motor Speedway, but none in Virginia.)

The aforementioned stock market data are relevant because they reflect a slowdown that has afflicted stock car racing nationally over the past decade. The Great Recession is partially, though not totally, responsible for this. In any case, as Graph 1 reports, attendance at NASCAR events has been declining. Rather than increasing their attendance capacities, several race tracks have reduced their size, including Martinsville and Richmond (see Table 2). Bristol, however, remains an immense facility that apparently will be the largest in the United States by year's end.

Richmond International Raceway boasted a 33-race sellout streak that lasted 16 years, from 1992 to 2008 – while its seating capacity rose from 59,368 to 112,029 with a waiting list of thousands who wanted tickets. Since 2008, however, the raceway has not sold out and the seating capacity currently is being reduced to 60,000 (Richmond Times-Dispatch, Jan. 5, 2016).

The Great Recession of 2008 accelerated what had been a very gradual decline in interest in stock car racing. NASCAR's average ticket price of \$92, when combined with the associated costs of getting to the track and

staying nearby for a couple of days, proved to be a major impediment to NASCAR attendance when the country's unemployment rate peaked at 10 percent.

In addition, many prime NASCAR races were televised and some NASCAR fans simply decided to stay home.

Underpinning these economic motives has been an erosion in fan interest. Graph 2 illustrates the gradual decline in interest in NASCAR nationally. This has been matched by declining television ratings as well.

NASCAR Race Series

Sprint Cup Series* - Cars weigh 3,450 pounds, engines produce about 850 horsepower and 9,000 RPM, and cars can reach speeds above 180 mph at some tracks. Richmond International, Martinsville and Bristol hold races in this series.

Xfinity Series* - Cars weigh 3,400 pounds, engines produce about 650 horsepower and 8,200 RPM, and cars can reach speeds around 175 mph at some tracks. Richmond International and Bristol host races in this series.

Camping World Truck Series* - Pickup trucks with high-performance engines that produce about 750 horsepower. Trucks may go as fast as 180 mph on some tracks. Martinsville and Bristol have races in this series.

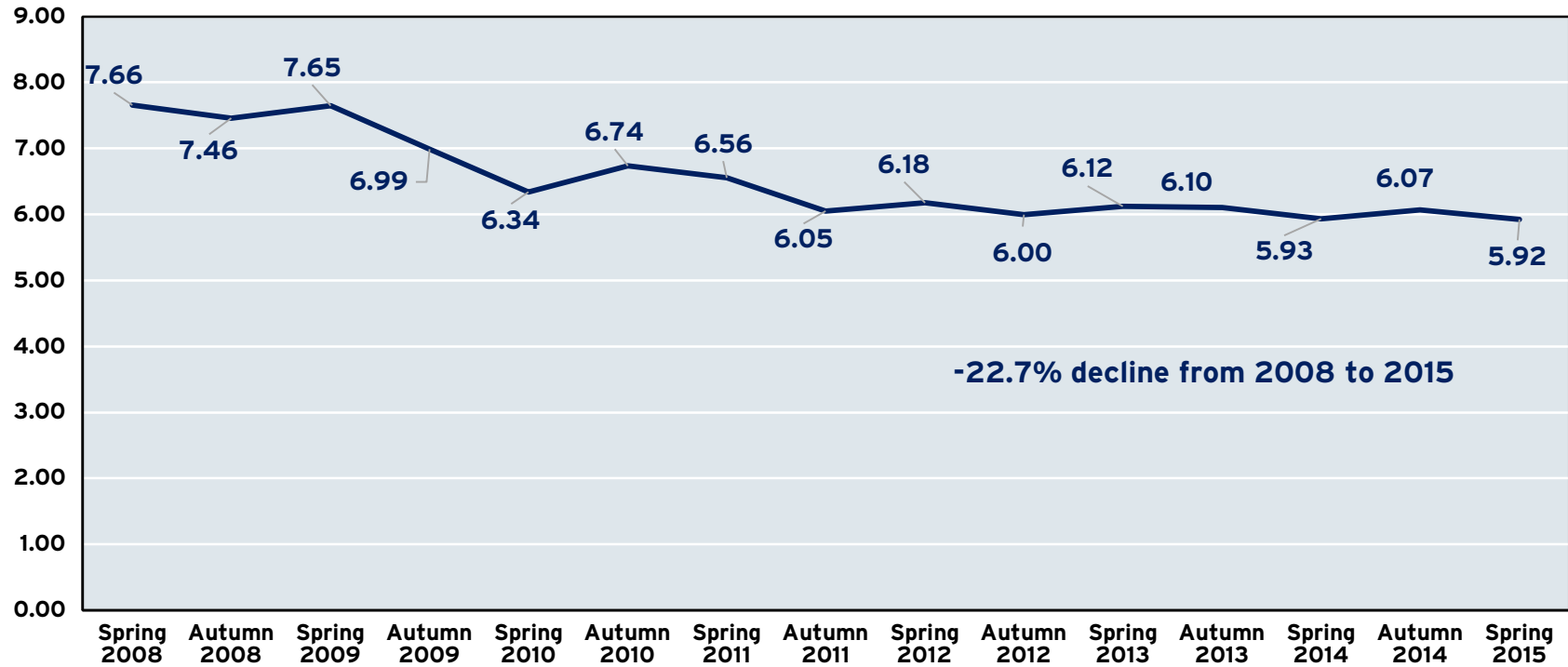
K&N Pro Series - Divided between east and west. Cars produce 625 horsepower at 8,000 RPM. Considered developmental races before drivers progress to national races. Bristol, VIR and Dominion host these races.

Whelen All-American Series - Short-track races. More than 10,000 drivers compete through a point system that results in track-, state- and national-level champions. Four tracks in Virginia host races in this series.

*NASCAR national races

GRAPH 1

ATTENDANCE AT NASCAR EVENTS IN THE PRECEDING 12 MONTHS, 2008 TO 2015 (IN MILLIONS)



Source: Nielsen Scarborough, www.statista.com

TABLE 2

NASCAR SPRINT CUP RACE TRACKS PERMANENT SEATING CAPACITY - 2015

Rank and Track	Capacity	Background*
1 - Daytona International Speedway	147,000	Seating being reduced to 101,000
2 - Bristol Motor Speedway	146,000	Will take over No. 1 spot in 2016
3 - Texas Motor Speedway	137,000	No change
4 - Las Vegas Motor Speedway	123,000	Previously was 131,000
5 - Kentucky Speedway	107,000	No change
6 - Dover International Speedway	96,000	Had been as high as 135,000
7 - Charlotte Motor Speedway	89,000	Had been as high as 156,000
8 - New Hampshire Motor Speedway	88,000	Previously was 96,000
9 - Talladega Superspeedway	78,000	Had been as high as 143,000
10 - Kansas Speedway	74,000	Previously was 80,000
11 - Atlanta Motor Speedway	71,000	Had been as high as 124,000
12 - Michigan International Speedway	71,000	Had been as high as 137,243
13 - Richmond International Raceway	71,000	Had been as high as 110,000. Is being reduced to 60,000.
14 - Auto Club Speedway	68,000	Had been as high as 92,000
15 - Darlington Raceway	58,000	Had been as high as 65,000
16 - Chicagoland Speedway	55,500	Had been as high as 73,000
17 - Martinsville Speedway	55,000	Previously was 63,000
18 - Phoenix International Raceway	51,000	Previously was 76,812
19 - Sonoma Raceway	47,000	No change
20 - Homestead-Miami Speedway	46,000	Had been as high as 63,000
21 - Watkins Glen International	33,000	Previously was 35,000

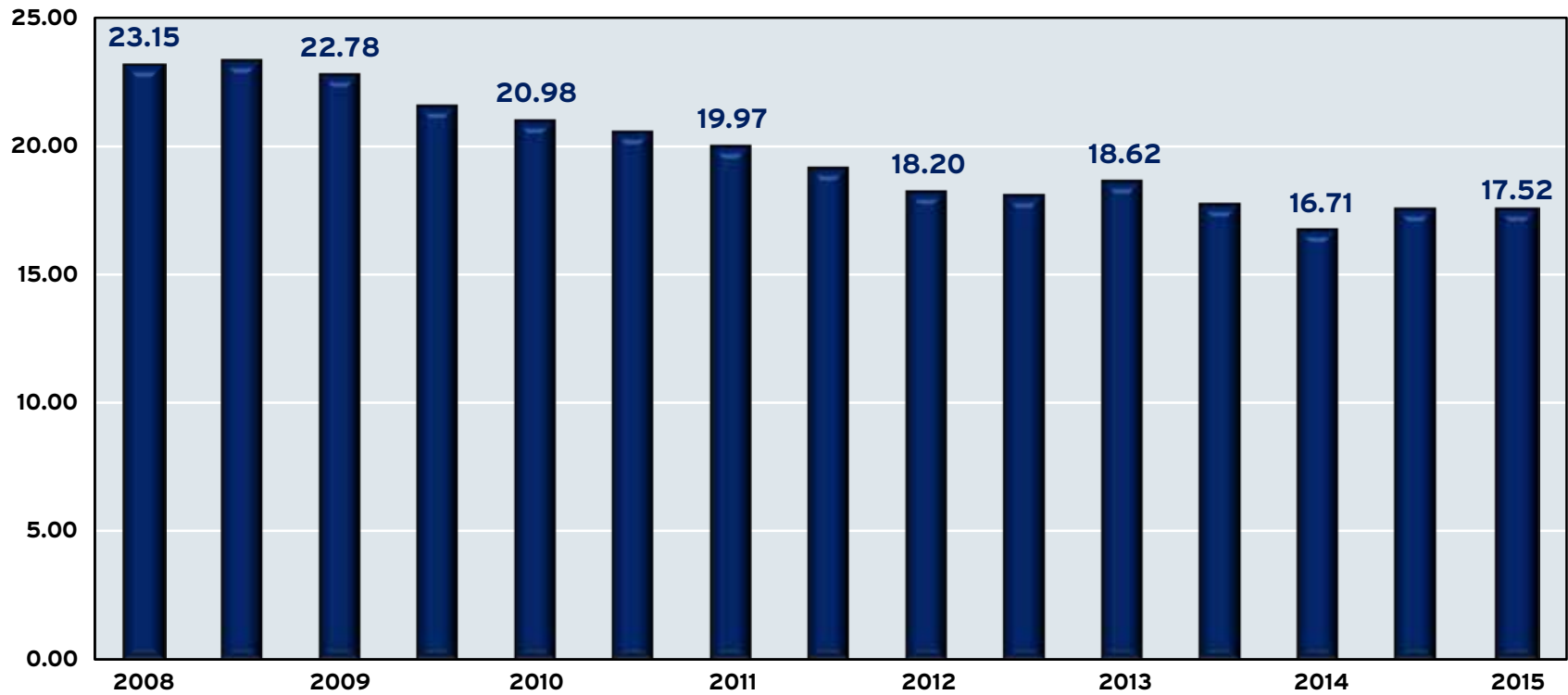
* "Had been as high as" indicates that seating capacity was reduced more than once.

Source: Adapted from NBC Report, March 10, 2015

NASCAR's fan base is 63 percent male, 98 percent white, 91 percent ages 35 or older, and twice as likely as the typical American to live in rural areas of the South and Midwest. <http://brandongaille.com/52-fantastic-nascar-demographics>

GRAPH 2

NUMBER OF PEOPLE INTERESTED IN NASCAR IN THE UNITED STATES, 2008-2015 (IN MILLIONS)



Source: Nielsen Scarborough, www.statista.com

NASCAR Changes Its Business Model

NASCAR has not been sitting idly while these changes in its market position have been occurring. In February 2016, it announced a drastic overhaul of its business model. It is shifting from an independent-contractor alliance of racing teams with sponsors to a franchise-like system that is intended to provide value and financial stability to team owners. Under the old system, car owners as independent contractors were responsible for all the financial obligations of each race, while depending on sponsorships to pay the bills. The Great Recession exposed the vulnerabilities of this business model, as several teams went broke because they could not obtain sufficient financial support, which in turn reflected flagging attendance.

Under the new model, the franchises (or “charters,” as NASCAR now terms them) will have economic value that can be bought and sold within the rules of NASCAR. The new model is designed to smooth out team financial performance. A charter has a life of nine years and can be bought and sold, much like a taxicab medallion or liquor license. Economically speaking, this model may indeed moderate the ups and downs in racing team financial performance; however, it does not deal directly with the elephant in the room – the ebbing of attendance and interest in NASCAR.

NASCAR also attempted to address the issue of flagging interest in its events by changing the manner in which it determined its season champion. In 2004, NASCAR erased the system whereby all races during a season counted the same in determining its champion and replaced it with a new structure whereby, with 10 races to go, all point advantages were erased for the top 10 drivers, who then would compete for the championship. The goal was, in the fashion of Major League Baseball and the National Basketball Association, to maintain fan interest by increasing the number of competitors who realistically could win its championship.

In 2011, NASCAR tinkered with the system whereby it awarded points reflecting the finishes of its drivers in races. In 2014, it changed its championship format to a 16-driver field that would be whittled down

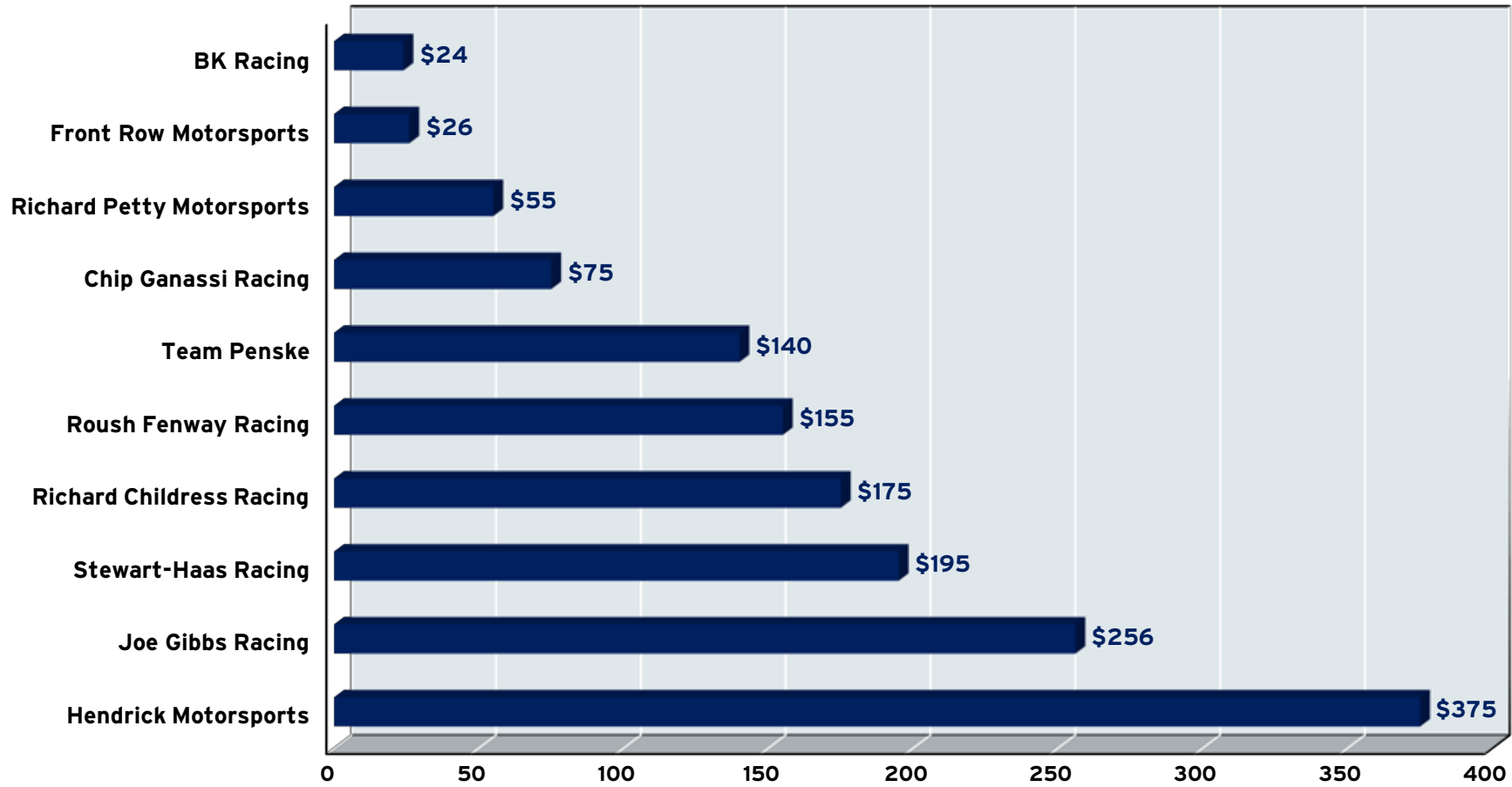
through a set of races until there would be only four drivers remaining, who would compete in a final race. These changes ensure that long-term, steady racing performance over the length of the NASCAR season would not be the major determinant of NASCAR’s champion. A driver could endure a series of subpar finishes and still end up being crowned the champion if he/she performed well at the crucial times late in the racing season. This was viewed as a means to maintain the interest of a larger number of fans of specific NASCAR racing teams. Now, in 2016, it is not clear that it yet has had this effect.

NASCAR Racing Teams

In 2016, in response to a variety of complaints from the owners of its racing teams, NASCAR issued 36 charters to 17 teams. Charter teams now are guaranteed entry into each of the season’s 36 NASCAR races that generate ranking points for drivers; the remaining four spots will be filled by noncharter teams that qualify. According to Forbes magazine (Feb. 17, 2016), the charters are worth \$5 million to \$10 million each. Forbes estimated in the same article that the top 10 teams were worth an average \$148 million, up 6 percent from the previous year (see Graph 3). In aggregate, the teams generated nearly \$1 billion in revenues in 2015.

GRAPH 3

VALUE OF MAJOR NASCAR RACING TEAMS IN 2016 (IN MILLIONS OF U.S. DOLLARS)



Source: Forbes, www.statista.com

Joe Gibbs Racing is headed by former Washington Redskins football coach Joe Gibbs, who lived in Virginia while he was coaching the Redskins. His son J.D. Gibbs attended the College of William & Mary and played football there before going into racing. Their team, which includes four cars and drivers, is one of the most successful in the country today. The team is second only in value and revenue to Hendrick Motorsports and is celebrating its 25th anniversary this year.

According to Forbes magazine, 13 NASCAR drivers made more than \$10 million in 2015 from salaries, bonuses, personal endorsements and their share of winnings and licensing. Collectively, they made \$198 million (Forbes, Feb. 17, 2016).

NASCAR's latest television deal with Fox and NBC, which runs through 2024, is worth a reported \$8 billion, of which sum the tracks receive approximately 65 percent. The shift described earlier to a charter system among the teams will bring stability for the racing teams. Some analysts have concluded that the big companies that control NASCAR may see a reduction in revenue but an increase in profit. Clearly, experience across the industry varies.

NASCAR remains a popular, profitable sport even while it is in the midst of a disturbing period of declining interest in its product. One should not make too much of this because the value of most NASCAR racing teams has increased and NASCAR itself, while privately held, is widely viewed as a quite profitable firm with a “moat” (barrier to entry) of considerable magnitude. Thus, it would not be easy for any challenger to dent NASCAR’s carefully constructed market position.

Rick Hendrick, the owner of Hendrick Motorsports, grew up near South Hill, Va., and as a teenager built engines and drag raced in the area. After attending North Carolina State University, he settled in North Carolina, where he started Hendrick Motorsports. Headquartered in Concord, it has 600 employees. Since 1986, his teams have won at least one cup-level race each season. In addition, Hendrick is chairman of the board of Hendrick Automotive Group, which generated \$7.55 billion in revenue in 2014 after selling 184,000 vehicles and servicing more than 2.3 million cars and trucks at dealerships throughout the country.

Other Stock Car-Sanctioning Groups

There are two additional groups that sanction racing in Virginia, but they are birds of a different feather. The **International Motor Contest Association (IMCA)** is the oldest active car racing-sanctioning body, having organized in 1915. Its races primarily focus on modified cars with open wheels. The IMCA-sanctioned Virginia Sprint Series is held at Eastside, Natural Bridge and Shenandoah speedways.

The other, **INEX**, is the third-largest short track-sanctioning body and holds races in Virginia at Southside Speedway and Dominion Raceway. Races for INEX, which stands for inexpensive racing, include legend cars, bandoleros, thunder roadsters and legends dirt-modified racing cars. INEX has sanctioned more than 30,000 races since its founding in 1995.

Beyond NASCAR races, there are dozens of other races that utilize local racing talent. For some people, the local tracks provide a way to break into the big business of racing or to pursue a hobby interest in rebuilding cars and engines. For others, limitations on funding keep them local. One of the enduring and endearing features of stock car racing on the local level, often on dirt tracks, is the manner in which “the boy next door” – and sometimes now “the girl next door” – attract followers who faithfully follow them, root for them and grant them mini-hero status, albeit sometimes within a fairly defined segment of society.

Racing attendance figures are not available for local dirt tracks, many of which are highly informal in their organization, and there is no association that collects such numbers from them. We received not a single response to our written requests for attendance and other information, probably because many of these tracks operate on a cash basis and have tax reasons for not supplying such information. Our telephone interviews with personnel at these tracks revealed that many have only a single full-time staff member. However, there was general agreement among them that their race attendance has fallen. Half-filled seats have replaced full houses with people sitting on blankets because no seats were available.

Each class of racing cars features rigid specifications imposed by the sanctioning body for the race or by the race track. All vehicles within a type must adhere to weight, horsepower, size, etc., in order to create a racing competition among vehicles that are otherwise equal.

Bandolero - Miniature stock cars. Speeds about 50 mph. Drivers as young as 8.

Legends - Open-wheel, 5/8th scale replicas of automobile coupes from the 1930s style, enclosed racer. 140 horsepower motorcycle engine. For short, paved oval tracks. Dirt-modified model also available.

Thunder Roadster - Open cockpit, open wheel, purpose-built racers look like race cars from the 1950s. 122 horsepower. Race on road, asphalt or dirt.

Sprint car - Purpose-built, open-wheel race car with or without wings for short-oval dirt or paved tracks. V-8 engine with about 1,000 horsepower. Can reach speeds to 160 mph.

UCAR (U Can Afford Racing) - Features front-wheel drive cars that have been slightly modified and fitted with safety measures, such as a roll cage, racing seat, etc., and are run at short tracks. Cars such as Ford Escorts or Probes, Chevy Cavaliers, Dodge Daytonas, Honda Preludes, Toyota Tercels and even Geo Storms are often used.

Stock Car - Originally stock car meant automobiles that had not been modified from the factory. True stock car racing continues with a designation "street stock," "pure stock" or "hobby stock." Other stock cars, such as in NASCAR, are production-based automobiles that may superficially resemble production-based cars but are really purpose-built racing machines.

The Economic Impact Of Stock Car Racing

Economic impact studies by and large tend to overestimate the actual economic impact of the enterprises and organizations they evaluate because they typically ignore the role of "displaced expenditures." For example, when a resident of Fairfax County spends \$250 at Fair Oaks Mall in Fairfax, if this reduces expenditures elsewhere in Fairfax County by \$250, then the net economic impact of this expenditure is zero insofar as the county and the Commonwealth of Virginia are concerned. A practitioner may ignore the displaced expenditures and report a large economic impact in any given situation, but that does not mean such a report is valid.

However, stock racing is a bird of a different color because it typically attracts people from other regions and other states who spend money that does not represent expenditures displaced from other jurisdictions immediately around the track. Further, racing fans who flock to venues such as Bristol, Martinsville and Richmond often spend several days and patronize hotels, restaurants, bars, stores of all kinds, gasoline stations, rental car agencies, airlines, etc. The point is simple – the economic impact of stock car racing is very different from the findings of the run-of-the-mill studies that (inaccurately) attribute economic impact to actions that represent nothing more than displaced expenditures.

An economic impact study conducted by Washington Economics Group of the Richmond International Raceway in 2009 found that the track generates over a half million dollars in economic activity each year, including \$36 million in additional state tax revenues (see Table 3). A total of 6,102 jobs were directly attributed to the RIR, while another 1,663 "induced and indirect" jobs were generated as well by the expenditures of the raceway's employees and the expenditures of its suppliers.

TABLE 3

RECURRING ECONOMIC IMPACTS GENERATED BY RICHMOND INTERNATIONAL RACEWAY

Economic Impacts	Direct	Indirect/Induced	Total Impact
Employment Jobs	6,102	1,663	7,765
Labor Income (\$ Mil.)	\$126	\$60	\$186
Gross State Product (Value-added \$ Mil.)	\$177	\$109	\$286
Federal Tax Revenue (\$ Mil.)			\$48.50
State & Local Tax Revenues (\$ Mil.)			\$36.20
Total Economic Impact (\$ Mil.)	\$303	\$169	\$557

Source: Washington Economics Group Inc., November 2008

A somewhat similar economic study by the Washington Economics Group of the Martinsville Speedway in 2009 found the total economic impact of the track to be \$170 million a year statewide. The study attributed 3,000 full-time jobs in Virginia to the Martinsville Speedway (The New York Times, “A Longtime Racing Town Shifts Its Focus,” March 3, 2009). In a region that has seen more than its share of economic challenges, these are big numbers.

To build on this development, Virginia issued more than \$8 million in bonds to build a 30,000-square-foot instructional facility at Patrick Henry Community College for motorsports-related jobs. Further, a four-year bachelor’s degree program leading to a minor in motorsports engineering was established at New College Institute through a partnership with Old Dominion University.

The lesson that we should take from these studies is that stock car racing, especially when connected to NASCAR, has a large economic impact because these races often attract attendees from other regions and states. In this regard, economic impact studies of stock racing differ significantly from the dozens of economic impact studies that report largely bogus

economic impact numbers, which fail to take into account displaced expenditures that would have been made anyway.

Competitors To The South

Reference has been made several times in this chapter to auto racing activity in North Carolina. The truth is that the Charlotte metropolitan region has become the unchallenged hub of stock car racing in the United States. The success in North Carolina has no doubt affected the possibilities for future growth in the industry in the Commonwealth. Within a hundred-mile radius of Charlotte, there are no fewer than 36 significant motorsports industry-related activities that include a major race track, the base of operation of the most successful racing teams in the country, several engine and auto manufacturing facilities, two wind tunnels for race car testing, the nation’s only NASCAR-endorsed training program for race technicians, a Center for Motorsports Automotive Research, government incentives for racing teams and more.

Motorsports tax incentives in North Carolina include a refund of half the sales tax paid in the state on tangible property that is part of a professional motorsport vehicle, a refund on aviation fuel taxes when airplanes are used to travel to motorsports events and a refund of sales tax paid on service contracts related to racing activities. For the three years – 2012, 2013 and 2014 – North Carolina paid out in tax refunds to motorsports teams or sanctioning bodies and professional motorsports teams nearly \$8 million in refunds. Of that amount, 60 percent went to the five wealthiest racing teams with the highest levels of revenue in the United States. Refunds that were due to expire in 2016 have been extended for four more years despite the current challenges the state faces in trying to balance its budget. The state’s policy is clearly not simply to attract racing teams but to give them incentives to stay in North Carolina.

Despite North Carolina’s success in building a motorsports hub in the Charlotte area, there was one effort that has not paid off. A NASCAR Hall of Fame was built in Charlotte in 2009 with \$137 million in municipal bonds. It was expected to attract 800,000 visitors in the first year and

400,000 each year thereafter. Thus far, the attendance has averaged 175,000 per year and the facility has yet to break even.

Interesting Developments

None of Virginia's major stock car race tracks has avoided the national trend of declining attendance. However, Bristol Motor Speedway neatly found another way to profit from its facilities by hosting "the biggest football game ever" on Sept. 10, 2016. The Hokies of Virginia Tech met the Tennessee Volunteers in a matchup of rivals on a football field marked off on the infield of the raceway oval. The raceway is about a two-hour drive from each campus. The "Battle at Bristol" set an NCAA football attendance record, as 156,990 fans watched the game in person. Each school potentially earned \$4.5 million for the game. This example has inspired other race tracks, like Daytona, to consider doing the same thing.

Activity at **VIRginia International Raceway (VIR)** shows great promise for motorsport activities in the Commonwealth. VIR is located in Alton, 12 miles east of Danville and just north of the North Carolina line. Since 1957, there has been racing on the property that is now VIR, with the exception of 1974 to 2000. With the investment of Connie Nyholm and Harvey Siegel, the track was reopened in 2000 under a concept of a "Motorsport Resort" that features a unique combination of race track, luxury lodging, dining, spa, skeet shooting, pistol and rifle range, karting, hiking and mountain bike trails, and more. With the retirement of Siegel in 2013, Nyholm became one of the only female majority owners of a race track in the country.

The raceway is considered a showplace for racing. It has five world-class road course configurations, ranging from 1.1 miles to 4.1 miles, with up to 130-foot elevation change. The late actor Paul Newman, who raced in amateur and professional competition from 1972 to 2007, was quoted as saying, "If there's a heaven on earth, it's VIR" (www.virnow.com). VIR's annual Hyperfest claims to be the largest automotive event on the East Coast, with about a dozen different kinds of races in an "automotive amusement park of asphalt, dirt, mud, grass and air." Car and Driver

magazine recognizes its road courses as one of the six best in North America. It has a drivers' club.

Also at VIR is the Virginia Motorsport Technology Park (VMTP) that on a greatly reduced scale attempts to replicate the supporting industries of racing one sees in the Charlotte region. "VMTP offers occupants a strategic advantage over their competitors – a premium location adjacent to Virginia International Raceway's world-class road courses for on-track testing and close proximity to other race support and research and development. VIR industrial park tenants lead the way in motorsports innovation, research, and development." Already in the park, Virginia Tech Transportation Institute operates the Global Center for Automotive Performance Simulation and the National Tire Research Center. The National Tire Research Co. is an affiliated company of Virginia Tech that provides testing of race tires for Goodyear specific to a particular track. Other tenants offer vintage car preparation, driver training and race engineering. Old Dominion University has a drivetrain lab and chassis dynamometer in the park.

Dominion Raceway in Spotsylvania County, which opened in April 2016, describes itself as "a new model for motorsports facilities and entertainment venues." The complex that is nearing completion in 2016 is located on I-95 between Washington, D.C., and Richmond. When completed, the complex will include a 2 mile road course, a 4/10th mile paved NASCAR oval, and a 1/8th mile drag strip. In addition to the race tracks, the complex includes a 36,600-square-foot building for meetings, entertainment and hospitality with a full-service kitchen and bar. Not only will fans be able to watch races, but also they will be able to join a Drivers Club to participate in races themselves. Space will be available for meetings and events. The goal clearly is to offer a range of experiences that build upon and augment stock car racing.

Racing College of Virginia, a partnership between Old Dominion University and Patrick Henry Community College, offers training to people who wish to enter the motorsports field. The program is a 2+1+2-year A.A.S. to B.S. program, where students can receive an Applied Associate of Science degree from PHCC followed by one-year leveling courses and two years to complete their B.S. degree in mechanical engineering

technology with a minor in motorsports. Students from the program do not necessarily become drivers of race cars, but instead the designers, engineers and technologists who build and enhance racing cars.

Final Thoughts

Stock car racing is highly visible in some parts of the Commonwealth and virtually invisible in others. Despite the considerable economic impact of large NASCAR races that easily attract more than 100,000 fans, there has been a tendency among some to pooh-pooh the sport as somehow not being in the same category as sports staples such as football and basketball. In fact, the economic impact of NASCAR races in Virginia (counting Bristol) appears to be larger than the economic impact of all intercollegiate athletic contests in the state combined. This is because the college contests typically involve significant displacement of expenditures that would have occurred in any case somewhere in Virginia.

This noted, attendance at most stock car racing events has been declining gradually in Virginia as well as nationally. Surveys suggest a decline in interest in the sport and this has been matched by declines in previously healthy television ratings. If this trend continues through the remainder of this decade, then it will have visibly negative economic effects on the communities that have relied upon stock car racing as an economic engine.

THE RISE OF SINGLE- EARNER HOUSEHOLDS IN VIRGINIA: WHY IT MATTERS

It is far better to be alone, than to be in bad company.

– George Washington



What once was typical – perhaps stereotypical – concerning American households no longer holds true. The family model epitomized by Ozzie and Harriet of television fame and their two children¹ certainly hasn't disappeared, but the two-parent family cum children has become less common. In 1940, 90 percent of U.S. households consisted of families that included two or more persons who were related to each other by virtue of birth, marriage or adoption. The vast majority of those families were married couples with children. However, by 2010, that household number had dropped to 66 percent.

In 2014, an estimated 117,707,000 households existed in the United States (Economagic, 2016). Of these, 55 million were headed by unmarried adults, including more than 573,000 headed by same-sex individuals. Thus, 47 percent of all households now are headed by one or more single individuals and 27.41 percent by only one individual. These numbers should not come as a surprise because at least 107 million unmarried individuals now exist nationally. Single-person households have become the second-most common household type – behind married couples without children.² Table 1 summarizes these and related household data for the United States and Virginia.

¹ For trivia buffs, "The Adventures of Ozzie and Harriet" (starring the real-life Nelson family) aired on ABC-TV from 1952 to 1966. Ozzie and Harriet had two sons, David and Ricky. Ricky went on to achieve fame as a singer and actor.

² America's Families and Living Arrangements: 2014, Table A2. Source: <https://www.census.gov/hhes/families/data/cps2014A.html>. See also Rani Mola, "One in Four American Households Is One Person Living Alone," *The Wall Street Journal* (Aug. 12, 2014).

A Closer Look At Single-Person Households

Single-person households can usefully be divided into three categories: (1) post-high school and post-college young people who are out on their own; (2) single-parent households, typically headed by women; and (3) older, unmarried individuals, who now constitute 36 percent of all single households.³

We'll begin our analysis with a look at the institution of marriage, whose decline is responsible for a considerable proportion of the increase in single households. We'll see that significant differences exist in marriage rates across educational, racial, religious and economic lines. We'll also focus on a rapidly growing segment of single-person households – often young, post-high school Americans, but increasingly including more people who simply have decided to live on their own – as well as older, more mature individuals who may once have been married, but now are living on their own.

Not surprisingly, social policies that are framed in the context of Ozzie and Harriet types of family structures tend to favor those who live in such circumstances. The federal and Virginia income tax systems both contain numerous preferences that assign benefits to conventional families. These include exemptions for family members, reduced tax rates, subsidized mortgages, deductions for expenditures on education and the like. TurboTax, the largest vendor of tax preparation software, puts it simply: “Families can frequently save more on their taxes than a single person.”⁴

TurboTax's advice may be wise, but the real world increasingly is not configured in the classic Ozzie and Harriet family fashion. Single women now outnumber married women in the United States and Great Britain. Households led by one or more single individuals have become much more common, and more than 40 percent of all new births in the United States now are associated with an unmarried mother. These changes have consequences, which we will explore.

³ Contrary to the expectations of some, this number actually has been declining because men are living longer and this has diminished the number of widows.

⁴ <https://turbotax.intuit.com/tax-tools/tax-tips/Family/Tax-Exemptions-and-Deductions-for-Families/INF12053.html>.



TABLE 1

UNITED STATES AND VIRGINIA HOUSEHOLDS, 2010-2014

HOUSEHOLDS BY TYPE	UNITED STATES		VIRGINIA	
	ESTIMATE	PERCENT	ESTIMATE	PERCENT
Total households	116,211,092	-	3,041,710	-
Family households	76,958,064	66.2%	2,047,106	67.3%
With own children under 18 years	33,917,911	29.2%	901,736	29.6%
Married-couple family	56,270,862	48.4%	1,542,174	50.7%
With own children under 18 years	22,823,632	19.6%	636,122	20.9%
Male householder, no wife present, family	5,543,754	4.8%	129,210	4.2%
With own children under 18 years	2,662,944	2.3%	60,515	2.0%
Female householder, no husband present, family	15,143,448	13.0%	375,722	12.4%
With own children under 18 years	8,431,335	7.3%	205,099	6.7%
Nonfamily households	39,253,028	33.8%	994,604	32.7%
Householder living alone	32,036,772	27.6%	806,539	26.5%
65 years and over	11,569,876	10.0%	277,453	9.1%
Households with one or more people under 18 years	37,895,810	32.6%	1,002,599	33.0%
Households with one or more people 65 years and over	30,294,116	26.1%	753,703	24.8%
Average household size	2.63	-	2.61	-
Average family size	3.23	-	3.16	-
RELATIONSHIP				
Population in households	306,058,480	-	7,943,875	-
Householder	116,211,092	38.0%	3,041,710	38.3%
Spouse	56,242,970	18.4%	1,542,172	19.4%
Child	93,459,419	30.5%	2,350,171	29.6%
Other relatives	22,147,046	7.2%	539,092	6.8%
Nonrelatives	17,997,953	5.9%	470,730	5.9%
Unmarried partner	6,958,557	2.3%	155,680	2.0%

TABLE 1

UNITED STATES AND VIRGINIA HOUSEHOLDS, 2010-2014

HOUSEHOLDS BY TYPE	UNITED STATES		VIRGINIA	
	ESTIMATE	PERCENT	ESTIMATE	PERCENT
MARITAL STATUS				
Males, 15 years and over	123,281,364	-	3,232,491	-
Never married	44,100,702	35.8%	1,117,524	34.6%
Now married, except separated	61,902,351	50.2%	1,690,501	52.3%
Separated	2,254,810	1.8%	70,983	2.2%
Widowed	3,166,898	2.6%	76,370	2.4%
Divorced	11,856,603	9.6%	277,113	8.6%
Females, 15 years and over	129,692,771	-	3,404,862	-
Never married	38,239,034	29.5%	971,569	28.5%
Now married, except separated	60,570,863	46.7%	1,654,929	48.6%
Separated	3,231,201	2.5%	94,983	2.8%
Widowed	11,878,014	9.2%	295,544	8.7%
Divorced	15,773,659	12.2%	387,837	11.4%

Source: U.S. Census 2010-2014 American Community Survey 5-Year Estimates, http://factfinder.census.gov/bkmk/table/1.0/en/ACS/14_5YR/S1101

Marriage Trends

Changing social attitudes, delayed marriage, elevated rates of cohabitation and widening marital divides between demographic groups have fueled a dramatic rise in the proportion of Americans who are single. According to the U.S. Census' America's Families and Living Arrangements survey, 45 percent of U.S. residents 18 and older were unmarried in 2014 – 53 percent of women and 47 percent of men. A 2014 Pew Research Center study noted that the number of American marriages fell from a high of 72 percent of all adults age 18 or older in 1960 to 50.5 percent in 2012. Only 20 percent of Americans now get married before the age of 30.⁵

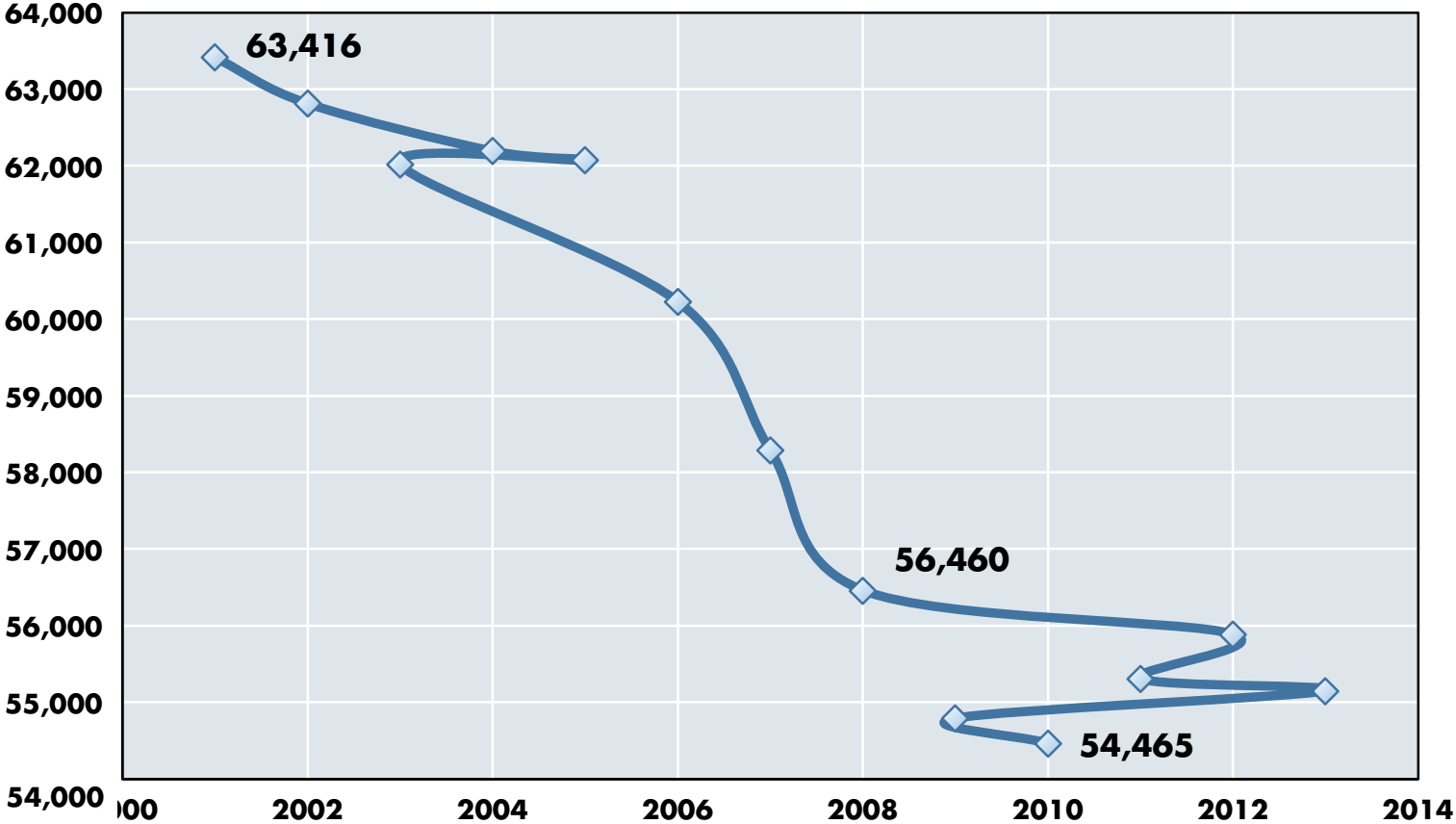
⁵ <http://www.pewresearch.org/fact-tank/2014/02/06/new-census-data-show-more-americans-are-tying-the-knot-but-mostly-its-the-college-educated>.

Simone de Beauvoir, the French writer, activist and feminist, once bemoaned that all women either were “married, or have been, or plan to be, or suffer from not being.”⁶ Things have changed. Graph 1 illustrates the decline in marriage rates in the Commonwealth of Virginia between 2001 and 2013. According to the 2014 America's Families and Living Arrangements survey, **unmarried women now outnumber married women in Virginia and the United States, and there are 88 unmarried men for every 100 unmarried women.** The median age of women at their first marriage is 27, while it is 29 for men.

⁶ *The Second Sex, Vols. I and II* (Paris: Gallimard, 1949).

GRAPH 1

TOTAL NUMBER OF RECORDED MARRIAGES: VIRGINIA, 2001-2013



Source: Virginia Department of Health, www.vdh.virginia.gov/healthstats/stats.htm

Couples in Virginia typically now wait longer to marry and are more likely to cohabit before they do marry. **According to the Pew Research Center's 2010 report, "The Decline of Marriage and Rise of New Families," 15 times the number of couples today live together outside of marriage than in 1960 and almost half of today's cohabiting households include children. In the first decade of this century, 88 percent of children fathered by men under age 20 were "nonmarital," that is, outside of marriage. Fully 41 percent of all births in 2010 were nonmarital (Centers for Disease Control and Prevention, 2015).**

According to the National Center for Health Statistics (2013), nearly half of women ages 15-44 have cohabited with a partner before marriage in households without children. In 2014, 39 percent of opposite-sex, unmarried-partner couples lived at the time with at least one biological child of either partner. Why are we observing these changes?

- An expanding number of women no longer feel either that they must be married, or that they will miss their chance to do so if they don't commit when young. Rebecca Traister's "All the Single Ladies" (Simon and Schuster, 2009) dissected this environment and its consequences.
- Among people 25 years or older, 40.6 percent of women have earned a college degree, whereas only 36 percent of men have done so (U.S. Census, "Women in the Labor Force," 2014). A large cadre of women now exists that is composed of women capable of forging independent economic paths in society.
- Elevated rates of unemployment among young men ages 16-24 have increased the fear of some that making a long-term financial commitment via marriage is one they will not be able to keep. For example, in February 2016, when the overall rate of unemployment was 4.9 percent, it was 10.1 percent for all individuals ages 16-24 and 13 percent for men in the same age group (Bureau of Labor Statistics, 2016).
- Though bad economic times may discourage marriage, simultaneously they may encourage couples to cohabit in hopes of reducing their expenses. The notion that two together can live less expensively than two

separately long has had legal acceptance and there is some empirical evidence in favor of it (Bureau of Labor Statistics, 2015).

- The increasing prevalence of divorce has elevated the concern of some about how potentially disruptive and expensive divorce can be. Approximately 40 percent of all first marriages end in divorce, 60 percent of second marriages and 73 percent of third marriages. A divorce initially costs an average of \$15,500, but subsequent costs over the years frequently dwarf this number.⁷ The solution to avoiding these expenses? Don't get married.
- There has been increased social acceptance of what was once regarded as "living in sin." When a Vatican Council (this one in 2014) openly debates the theology and practicalities of this issue, it is a sign that times have changed, for better or worse. The social attitudes behind Nathaniel Hawthorne's "The Scarlet Letter" no longer guide substantial segments of American society.
- The feeling among some is that getting married in difficult economic times is irresponsible. The most persuasive evidence of this phenomenon is seen in countries after they have been defeated in a war and occupied (for example, Germany and Japan after World War II), but also is evident when countries dive into recession or economic depression.

⁷ See www.divorcestatistics.org for information on divorce frequency and www.nolo.com for information on the cost of divorce.

THE DISTINCTIVE SITUATIONS OF AFRICAN-AMERICANS

Despite an increase in cohabitation, many Virginians eventually marry. However, the rate at which they do so increasingly reflects factors of race, education, and religious and economic status. Low rates of marriage are a social consequence associated with low educational attainment. Marriage rates among the non-college-educated population have fallen sharply in the last few decades among all demographic groups, but most severely among African-Americans. There is general agreement that the reasons for this include imbalances of the number of men and women available for marriage, high rates of unemployment for both men and women that deter marriage, pain from less than successful past relationships, fears of being abandoned, high rates of imprisonment for African-American men, and concerns about readiness for marriage. Table 2 presents the U.S. Census 2014 African-American demographic profile. One can see that large proportions of African-American men and women 15 years and older have never been married – 48 percent of women and 51.4 percent of men.

It is not easy to disentangle the separate impacts of race, education and class on marriage because, for example, African-Americans tend not to be as well educated as the typical Asian or white individual of the same age and gender, and educational attainment clearly affects marriage rates. Graph 2 shows the high school graduation gaps in Virginia that exist between Asian, white, African-American and Hispanic students.

TABLE 2
AFRICAN-AMERICAN POPULATION PROFILE:
UNITED STATES, 2014

POPULATION AND HOUSEHOLDS BY TYPE	
Total population	40,379,066
Male	47.7%
Female	52.3%
Households	14,334,528
Family households	61.6%
With own children under 18 years	30.0%
Married-couple family	27.0%
With own children under 18 years	11.1%
Female householder, no husband present, family	28.4%
With own children under 18 years	16.0%
Nonfamily households	38.4%
Male householder	17.4%
Living alone	14.6%
Not living alone	2.8%
Female householder	21.1%
Living alone	18.9%
Not living alone	2.2%
MARITAL STATUS	
Population 15 years and over	31,735,327
Now married, except separated	28.8%
Widowed	5.7%
Divorced	11.9%
Separated	4.0%
Never married	49.6%

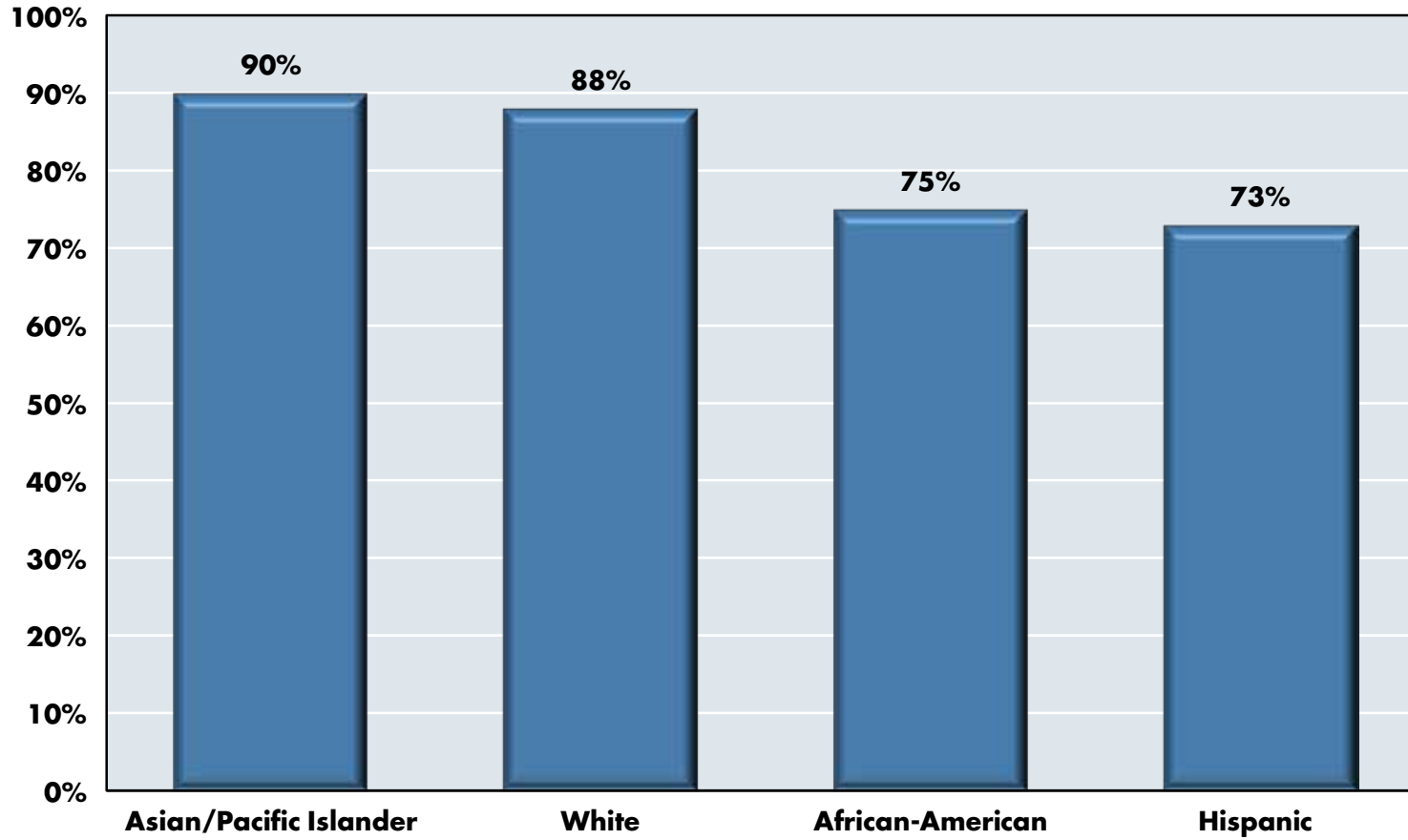
TABLE 2
AFRICAN-AMERICAN POPULATION PROFILE:
UNITED STATES, 2014

POPULATION AND HOUSEHOLDS BY TYPE	
Male 15 years and over	14,880,533
Now married, except separated	32.4%
Widowed	2.6%
Divorced	10.2%
Separated	3.5%
Never married	51.4%
Female 15 years and over	16,854,794
Now married, except separated	25.7%
Widowed	8.4%
Divorced	13.4%
Separated	4.5%
Never married	48.0%
EDUCATIONAL ATTAINMENT	
Less than high school diploma	15.6%
High school graduate (includes equivalency)	31.6%
Some college or associate degree	33.1%
Bachelor's degree	12.4%
Graduate or professional degree	7.3%
<small>Source: U.S. Census Bureau, 2014 American Community Survey 1-Year Estimates *Respondents identified as black or African-American only</small>	



GRAPH 2

STATE GRADUATION RATES BY RACE/ETHNICITY: PUBLIC HIGH SCHOOLS IN VIRGINIA, 2011-2012



Source: National Center for Education Statistics

THE EDUCATION/MARRIAGE LINK

The Pew Research Center reported in 2014 that 24 percent of men with a high school education had never married, as compared to 14 percent of men with advanced degrees. The National Center for Education Statistics (NCES) 2015 report titled “Disparities in Educational Outcomes Among Male Youth” noted that the percentage of males ages 25-29 who had completed a bachelor’s or higher degree was significantly higher for Asians (55 percent) and for whites (37 percent) than for those of two or more races (29 percent), blacks (17 percent) or Hispanics (13 percent). One might be tempted to say, “Well, that’s none of our business,” but these disparities partially drive many different adverse phenomena that range from underweight babies and stunted preschool development to higher unemployment rates and elevated risks of imprisonment. Either society recognizes and deals with these challenges when they arise, or we pay for them later.

Table 3 illustrates the differences in marriage demographics among women. Women with less than a high school education are not getting married. There also is a post-marriage effect. Regardless of race, women with lower levels of education are more likely to get divorced.⁸ Alas, divorce not only is an expensive proposition for those involved, but also frequently leads to one-parent homes, higher rates of unemployment, a much higher risk of living in poverty, lower educational attainment and a greater likelihood of both parents and children ending up in prison or the courts. It is an understandable, though unattractive, situation.

TABLE 3

SELECTED UNITED STATES MARRIAGE DEMOGRAPHICS, 2011

Characteristics	Percent of Married Couples
Age of Wife	
15 to 24 years	3%
25 to 34 years	17%
35 to 44 years	21%
45 to 54 years	24%
55 years and older	36%
Race/Ethnicity of Wife	
White alone, non-Hispanic	74%
Black alone, non-Hispanic	7%
Latina	12%
Other	7%
Education Level of Wife	
Less than high school	10%
High school graduate	29%
Some college	27%
Bachelor’s degree or more	34%

Source: Current Population Survey, U.S. Census Bureau

A 2013 brouhaha at Princeton University focused on the statistical circumstances that confront many women, especially those who have earned college degrees. One-third of never-married women 25 or older have earned either a bachelor’s or an advanced degree, compared with only one-quarter of never-married men of the same age. In what was to become a famous letter to The Daily Princetonian, alumna Susan Patton sparked controversy when she advised Princeton women who wanted to marry to “find a husband on campus before you graduate.” She asserted that it is only during college when unmarried females will be around a high concentration of educated single males. She maintained that after college, “you will meet men who are your intellectual equal – just not that many of them.” Implicitly, she advised the women at Princeton to strike while the figurative iron was hot.

⁸ Jamie M. Lewis and Rose M. Kreider, Remarriage in the United States, Bureau of the Census, March 2015, www.census.gov/content/dam/Census/library/publications/2015/acs/acs-30.pdf.

THE PARADOX OF ASSORTATIVE MATING

Which brings us to a brief discussion of “assortative mating,” a term economists use to describe individuals who choose to marry someone who has achieved a level of educational attainment similar to their own. This phenomenon has important implications for social and economic mobility. Education is a strong predictor of future earnings. It also influences intergenerational mobility and usually opens paths to a wider set of alternatives and increased incomes. Nevertheless, if assortative mating results in college graduates marrying each other, then additional education likely will be an engine that causes income inequality to increase rather than decrease.

There is little mystery attached to this relationship. Households supported by the earnings of two college-educated individuals are much more likely to be economically prosperous, avoid divorce and unemployment, and subsequently raise stable families that boast high-achieving children who follow in their footsteps. Paradoxically, though higher education traditionally has been viewed as a vehicle for diminishing economic inequality, assortative mating acts to diminish or even reverse this outcome. When Ivy League graduates marry each other, the financial results differ from those we typically observe when two community college graduates marry each other. Because an Ivy League education (or even an education at a flagship state university) increasingly is not within the financial capabilities of many families unless they incur substantial debt, the current higher education system in the United States no longer can be counted upon to diminish economic inequality. Paradoxically, it may contribute further to it, especially where single-parent families with modest incomes are concerned.

SINGLE-PARENT HOUSEHOLDS HAVE TRIPLED IN NUMBER SINCE 1960

Even though birth rates for women ages 18-24 have reached historic lows in the United States, single-parent families have more than tripled as a share of American households since 1960. However, there are distinct differences between racial groups when it comes to marriage. The share of never-married adults has gone up for all major

racial and ethnic groups, including Hispanics and Asian-Americans in the United States, but as noted in Table 2, the number of never-married African-Americans has increased dramatically. Among black adults ages 25 and older, the share of those who never have been married quadrupled over the past half century – rising from 9 percent in 1960 to 36 percent in 2012.

Virginia as a state has the 10th-largest population of African-Americans in the United States – constituting 19.2 percent of the Commonwealth’s population. The median age at first marriage for black women Virginians is 30, the highest for all racial groups. According to the Pew Research Center’s Social & Demographic Trends project (2014), for every 51 employed, never-married young black men between the ages of 25 and 34, there are 100 never-married black women. The marriage market is not flooded with younger black men.

African-Americans were significantly more likely than whites to “place a high priority on a spouse or partner with a steady job.”⁹ Age, education and income are major factors in the stability of all marriages, but the evidence suggests those factors affect African-American couples more than others.

A significant proportion of young African-American women appear to have decided either that they wish to remain single, or that they must remain single. Hence, they have increased their focus on their own professional lives by pursuing education and a subsequent career. Several single African-American women to whom we spoke echoed these sentiments. *“I have spent many years working hard in my career to be successful. My profession is more important to me than marriage”* (the words of a 28-year-old African-American single woman in Richmond). Helping and perhaps even living with multigenerational family members often is cited as being more important than marriage. *“I know that my daughter needs me and I am willing to put her needs before my needs. I am not willing to sacrifice my time with her for any relationship right now,”* observed a single mother from Newport News.

⁹ Wendy Wang and Kim Parker, Record Share of Americans Have Never Married: As Values, Economics and Gender Patterns Change. Washington, D.C.: Pew Research Center’s Social & Demographic Trends project, September 2014.

Table 4 reveals which Virginia communities have the highest percentages of single-parent households. The communities with the highest single-parent rates typically also exhibit among the lowest per capita and household incomes in the Commonwealth. The precursor to this status for a large proportion of single-parent households often was an unplanned, nonmarital birth. Marriage may be faltering in Virginia, but sex and procreation are not.

Table 5 reports the number of nonmarital births by Virginia location in 2014. There is an important and unavoidable connection between the data reported in Tables 4 and 5. For many Virginians, an unplanned, out-of-wedlock birth either is the beginning of their descent into poverty, or it firmly places an exclamation point on their already perilous economic situation.

Graph 3 provides further detail on the relationships among economic status, householder status and children. The median income of a woman householder without a spouse present was \$36,151 in 2014. A typical single black woman with children under 18, however, had a median income of only \$25,767. Being a single woman is not easy; being a single black woman with children dramatically raises the chance that such a household will live in poverty. Note that single-parent households headed by men have median incomes that are more than \$17,000 higher than those headed by women.

We cannot explore in detail the negative ramifications of these realities for the young people in those families and their future lives. It will suffice to note that such circumstances generate costs for society at large. These costs eventually come home to roost in the form of lower productivity, higher incidences of antisocial behavior, crime and substance abuse, and almost inevitably, the higher taxes that are required to deal with such. The proverbial free lunch does not exist in this environment.

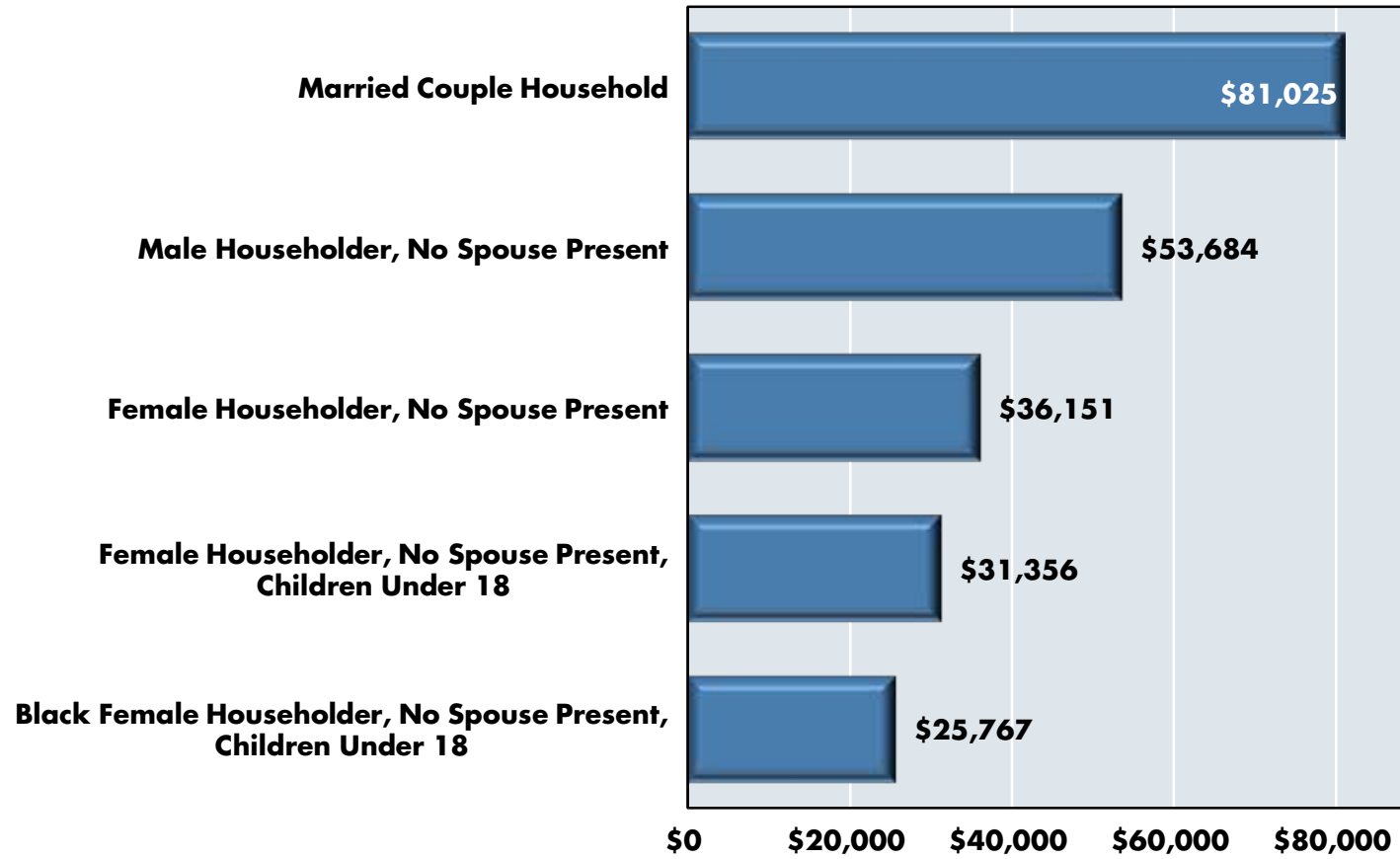
TABLE 4
VIRGINIA COMMUNITIES WITH THE HIGHEST PERCENTAGES OF SINGLE-PARENT HOUSEHOLDS

Locality	Number of Single-Parent Households	Number of Households	Percent Single-Parent Household
Petersburg	4,630	6,619	70%
Hopewell	3,488	5,402	65%
Richmond	24,368	38,139	64%
Danville	5,567	9,176	61%
Emporia	758	1,246	61%
Martinsville	1,742	3,028	58%
Lancaster County	1,007	1,767	57%
Portsmouth	12,580	22,359	56%
Galax	844	1,546	55%
Roanoke	11,502	21,077	55%
Norfolk	25,821	49,788	52%
Franklin	1,053	2,090	50%

Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates, <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>

GRAPH 3

MEDIAN INCOMES FOR VARIOUS TYPES OF HOUSEHOLDS: UNITED STATES, 2014



Source: U.S. Census, Income and Poverty in the U.S., 2014, www.census.gov/hhes/www/cpstables/032015/hhinc/hinc04_000.htm

TABLE 5

NUMBER OF NONMARITAL LIVE BIRTHS IN VIRGINIA, 2014

PLANNING DISTRICT AND CITY OR COUNTY	TOTAL RESIDENT NONMARITAL LIVE BIRTHS							
	NUMBER OF NONMARITAL BIRTHS				PERCENT			
	TOTAL	WHITE	BLACK	OTHER	TOTAL	WHITE	BLACK	OTHER
Planning District 8	7,413	2,873	1,741	2,799	21.5	14.6	41.1	26.6
Arlington County	492	206	89	197	15.5	9.5	41.4	24.7
Fairfax County	3,013	946	568	1,499	20.5	12.2	37.3	27.8
Loudoun County	789	344	116	329	15.6	11.3	32.0	20.0
Prince William County	2,019	911	628	480	29.3	23.5	44.5	29.9
Alexandria	646	219	271	156	22.7	12.4	49.3	29.3
Fairfax	109	41	13	55	15.1	10.2	28.9	19.9
Falls Church	23	8	5	10	8.7	4.3	41.7	15.9
Manassas	316	194	51	71	41.5	40.5	46.8	40.8
Manassas Park	6	4	-	2	28.6	30.8	-	33.3
Planning District 20	6,069	2,000	3,528	541	38.0	22.3	66.7	31.4
Isle Of Wight County	139	75	61	3	37.4	27.0	74.4	25.0
Southampton County	57	23	32	2	40.1	24.5	74.4	40.0
Chesapeake	1,057	398	578	81	35.1	21.6	64.2	29.9
Franklin	100	16	83	1	63.3	30.8	83.0	16.7
Norfolk	1,657	349	1,157	151	45.8	22.0	71.4	36.6
Portsmouth	822	171	624	27	55.7	29.5	75.7	37.0
Suffolk	401	109	286	6	36.7	18.0	64.9	12.5
Virginia Beach	1,836	859	707	270	30.2	22.0	55.2	30.2
Planning District 15	4,907	1,726	2,741	440	39.7	24.1	72.6	30.7
Charles City County	36	8	22	6	57.1	26.7	81.5	100.0
Chesterfield County	1,297	624	515	158	34.5	25.0	58.9	40.2
Goochland County	58	38	20	-	31.4	24.1	83.3	-
Hanover County	249	190	52	7	26.6	23.3	65.0	17.1
Henrico County	1,394	512	775	107	34.3	22.9	68.3	15.4
New Kent County	61	37	18	6	31.8	22.8	78.3	85.7
Powhatan County	61	50	9	2	25.8	22.8	75.0	40.0

TABLE 5

NUMBER OF NONMARITAL LIVE BIRTHS IN VIRGINIA, 2014

PLANNING DISTRICT AND CITY OR COUNTY	TOTAL RESIDENT NONMARITAL LIVE BIRTHS							
	NUMBER OF NONMARITAL BIRTHS				PERCENT			
	TOTAL	WHITE	BLACK	OTHER	TOTAL	WHITE	BLACK	OTHER
Richmond	1,751	267	1,330	154	60.0	25.8	83.2	54.6
Planning District 21	2,565	717	1,564	284	41.4	23.4	66.5	36.6
James City County	200	91	69	40	27.4	17.4	61.1	43.5
York County	151	80	55	16	21.4	15.4	54.5	18.4
Hampton	817	204	551	62	46.3	27.9	64.5	34.1
Newport News	1,339	306	872	161	47.7	26.3	69.4	41.5
Poquoson	24	23	1	-	24.7	25.8	100.0	-
Williamsburg	34	13	16	5	39.1	31.7	61.5	25.0

Source: Virginia Department of Health, Division of Health Statistics www.vdh.virginia.gov/healthstats/documents/2010/pdfs/NonMaritalBirths14.pdf

WHAT ABOUT CAMPAIGNS TO PROMOTE MARRIAGE?

Reality is that the current distribution of governmental tax incentives typically skews in favor of traditional Ozzie and Harriet types of families. For example, a husband and a wife who file a joint tax return usually pay lower taxes than if they each filed separate returns. Shouldn't incentives such as this promote marriage? Perhaps they do, but they are costly and have not been sufficient to reverse the societal trend away from marriage.

With respect to the promotion of marriage, we face difficult (and expensive) choices. Should we increase marriage incentives significantly, hoping that this will cause more couples to choose marriage, or instead turn our attention to improving the lot of the burgeoning number of single-parent families? Where should we spend our dollars?

Economist Eduardo Porter and others have argued *The New York Times*, March 22, 2016) that marriage per se isn't the key to the economic progress of lower-income, single-adult families. Instead, what is important is to diminish or eliminate the impoverished state of such families. This

involves improving their often-inadequate housing situations, enhancing their access to education and training, and supplying sex education and contraception options that will delay motherhood. The latter proposal recognizes that 6 out of 10 children born to single mothers under the age of 30 are unplanned (according to Brookings Institution economist Isabel Sawhill).¹⁰

Porter and others argue that the federal Healthy Marriage Initiative begun in 2001 has expended \$600 million on a variety of initiatives, but there is little to show for its efforts. While not quite ready to punt on the issue of increasing the rate of marriage, Porter, Sawhill and others believe that emphasis on increasing the rate of marriage actually does not really address the root causes of why single-parent families exist, or what we must do to improve their lot. Hence, they advocate programs that prospectively will improve the economic conditions of single-parent families rather than pro-marriage initiatives. This, they believe, is a cost-effective approach because it avoids numerous costs that governments, organizations and individuals must bear when single-parent families live in or close to poverty.

¹⁰ Isabel V. Sawhill, *Generation Unbound* (Washington, D.C.: Brookings Institution, 2014).

Young And Single

The Pew Research Center, relying upon U.S. Census data, reports that millennials – those young adult Americans ages 18-34 – now constitute the largest age group in the American workforce. This group numbers 75.4 million, surpassing the 74.9 million baby boomers ages 51-69. Millennials often are single and choose to delay marriage for a variety of reasons, including economics, education and personal preferences.

Today's younger generation exhibits much lower rates of marriage than their parents and grandparents. In 2013, only 1 in 10 young adult females (ages 18-34) lived with a spouse – down considerably from 1 in 4 in 1989. Economic times have been challenging for these individuals. **Their labor force participation rates (the percentage of these individuals who either are employed, or actively seeking a job) declined to only 65 percent in 2012. This means that an astonishing 35 percent of the individuals in this cohort neither were employed, nor looking for a job. Somehow, however, they have found a way to survive – variously cobbling together diverse combinations of living at home or with friends to reduce expenses; receiving unemployment compensation, disability and other entitlement payments; undertaking part-time and off-ledger employment; and getting involved with illegal activities.**

In 2013, 58 percent of young adult men and 51 percent of young adult women ages 18-24 were living with their parents. Scarce job opportunities and student educational debt have plagued this generation of single Americans. In 2012, 66 percent of all recent graduates of public colleges and 75 percent of all recent graduates of nonprofit independent colleges had student loan debt (Institute for College Access & Success, March 2014).

Nearly all of the millennials in Virginia with whom we spoke commented on the adverse impact that difficult labor markets were having upon their lives and personal choices. Consider a 27-year-old white male who chose to live at home initially after college because of what he reported to be a lack of suitable employment opportunities. After graduating from a Virginia public university in 2011, he worked part time for four years before finally securing a full-time position with benefits in 2015. *“After months*

and months of searching for a full-time job, I was depressed from being rejected over and over again. After graduating with a business degree and a concentration in finance, I would have never guessed that my national job market search would have been so grim. I was shocked by the number of mid-career and even senior-level people applying for the jobs that I was applying for. These positions advertised low salaries too. I was stuck in a part-time position for four years still searching all the while until it finally turned into a full-time job.” This young man continues to stay with his baby boomer dad and helps pay a share of the monthly mortgage in addition to saving money to purchase his own home one day.

If you are a millennial who neither is employed, nor in education or training, then you are a “NEET.” NEETs constitute a major proportion of those who have dropped out of the labor force and in so doing reduced the labor force participation rate. There were 10.2 million NEETs ages 16-29 in the United States in 2015. There are more female than male NEETS, and two-thirds of all NEETs have a high school education or less. African-Americans and Hispanics comprise the largest share of this subgroup (see Table 6 for a complete breakdown), which has been increasing in relative size.

Virginians have not been immune from the student debt crisis. More than 1 million borrowers in the Commonwealth were estimated to owe more than \$30 billion in student loans in 2015. This has predictable consequences. They cannot afford to purchase automobiles, homes or major household items.

TABLE 6

"NEETS" IN THE UNITED STATES, 2014

Characteristics	Number (in 1000s)	Percent of All NEETS	Percent of Total Subgroup
Male	4,300	42.6%	14.4%
Female	5,900	57.4%	19.5%
16-19	2,200	21.7%	13.3%
20-24	3,800	37.6%	17.5%
25-29	4,200	40.7%	19.1%
Race/Ethnicity			
White	7,000	69.1%	15.8%
Black	2,000	19.7%	22.2%
Hispanic	2,500	24.5%	19.5%
Asian	500	5.0%	14.2%
Other	600	6.2%	20.9%
Education Level			
Less than High School	2,700	26.7%	-
High School Graduate	4,100	40.0%	-
Some College	1,700	16.9%	-
Associate Degree	500	5.1%	-
Bachelor's Degree or More	1,100	11.2%	-

Source: Pew Research Center Analysis of the Bureau of Labor Statistics data, <http://pewrsr.ch/1PUPwJ4>

Aging Alone

Between 1915 and 2013, the proportion of single-person households in the United States jumped from 6 percent to 28 percent of all households. Women accounted for 54 percent of this group. The most rapidly growing segment of this population is individuals 65 or older, who now make up 36 percent of all single households. According to the Virginia Division for the Aging, the number of Virginians 85 and older will increase five times faster than the state's total population growth between now and 2025.

Interestingly, many of these more mature, unmarried Americans do not identify with the word "single" because they are widowed or have acquired partners.

Uncertain future economic prospects have contributed to rising retirement ages. This has resulted in rising proportions of more mature individuals remaining in the labor force. Graph 4 tells us even though labor force participation rates generally have been gradually declining for age groups of both genders, people 65 and older form an exception. Increasingly, one sees some of them in action behind the counters at fast food restaurants and big-box chain stores.

State and local governments that do not have mandatory retirement ages also are finding that their employees are delaying their retirements. Graph 5 illustrates this trend within the Commonwealth.

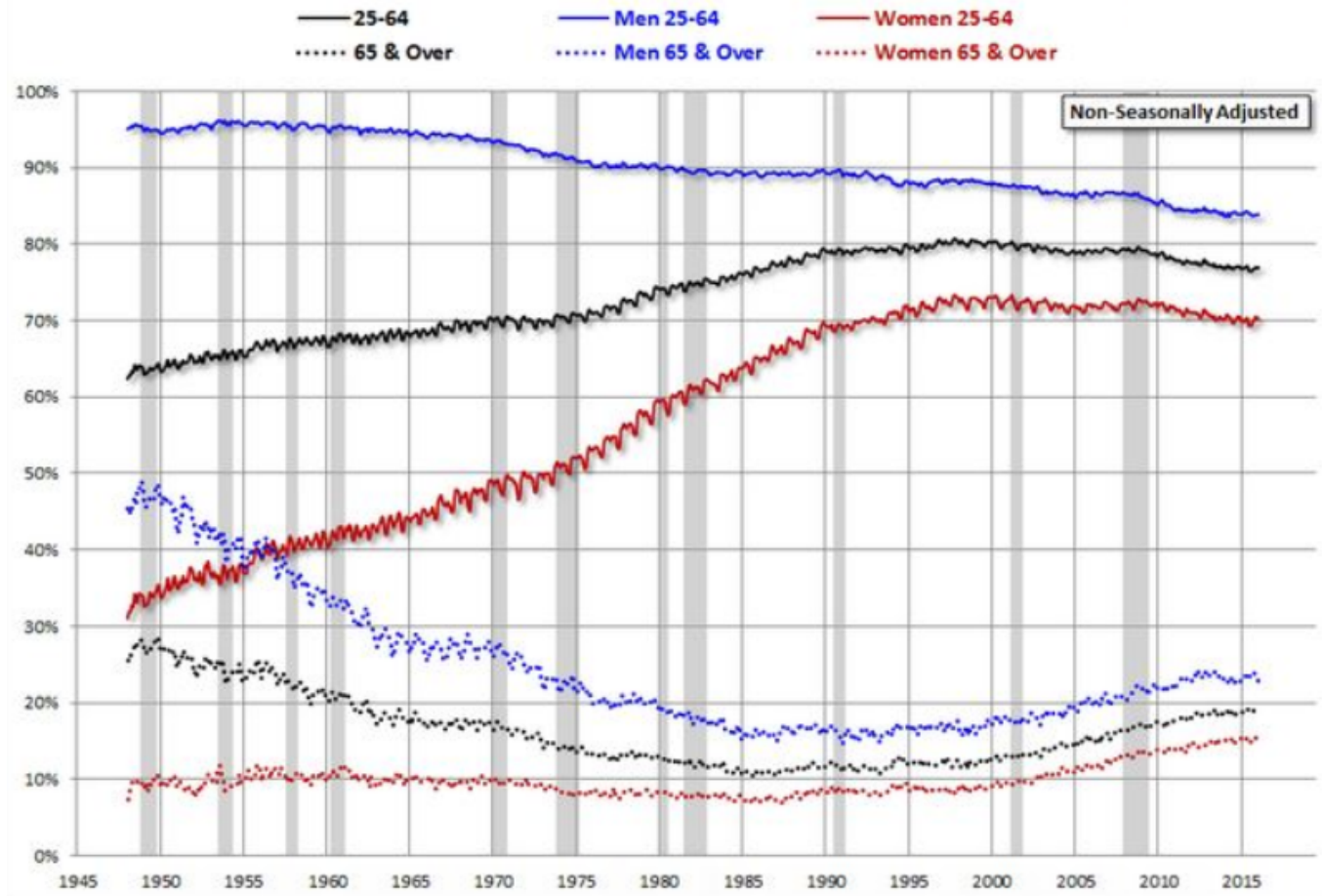
Why do seniors end up living alone? The reasons are wide-ranging and include increased rates of divorce, longer life spans and delayed marriages. Graphs 6 and 7 illustrate the marital status of American seniors (by gender) living alone in 2010. A century ago, more than 70 percent of the elderly lived with family members. Currently, fewer than 20 percent live with relatives. Improved health and financial status have made it feasible for older people without a spouse to live alone rather than with relatives or in assisted living. Almost three times as many women as men, however, now live alone because they are widowed. Quite simply, women live longer than men, making single men what one widow termed a "hot commodity" in many residences that cater to seniors.

One should not ignore the immense implications of these trends for Virginia. Increasing proportions of Virginians are becoming both old and single. One way or another, they must be cared for and supported by their families, charitable and religious organizations and the government. Almost inevitably, this implies that increasing proportions of Virginia state government expenditures are going to be expended on the (single) elderly. The nub of the economic challenges is this: A declining proportion of working-age Virginians will be asked to support their fellow retired citizens for increasingly long periods of time.



GRAPH 4

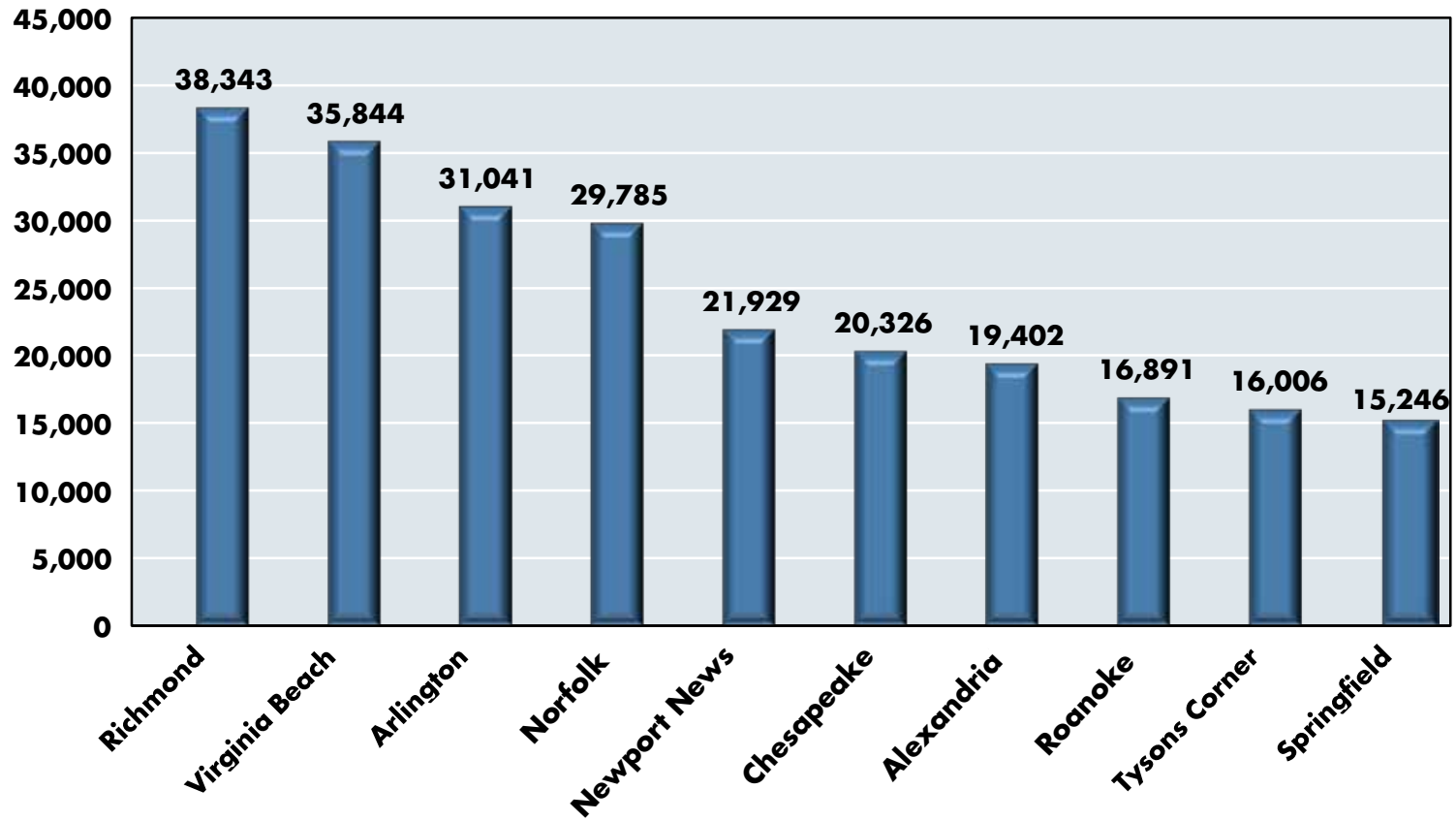
LABOR FORCE PARTICIPATION RATES FOR INDIVIDUALS OF VARIOUS AGES, 1945-2015 (RECESSIONS IN GRAY)



Source: www.short.com. With permission.

GRAPH 5

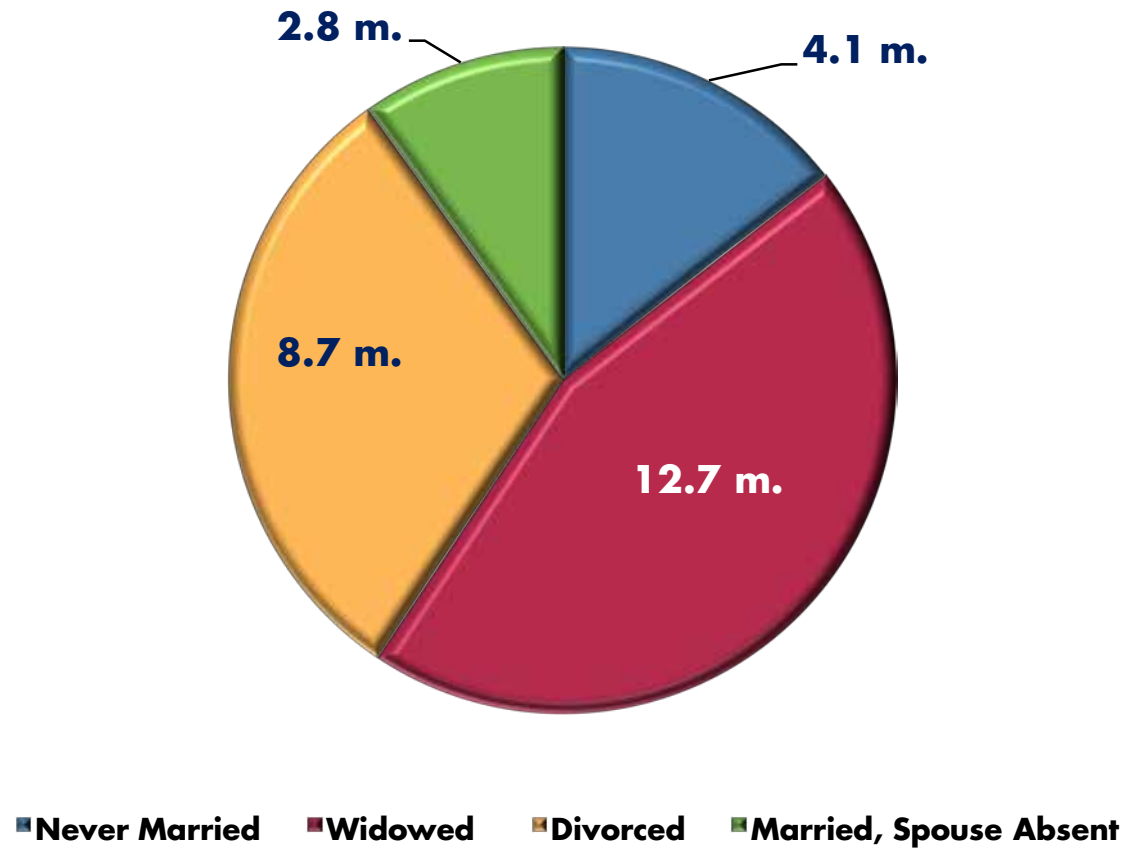
TOP 10 COMMUNITIES FOR VIRGINIA WORKERS WHO WERE 55 OR OLDER, 2014



Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics Beginning of Quarter Employment, 2nd Quarter of 2002-2014), <http://onthemap.ces.census.gov>

GRAPH 6

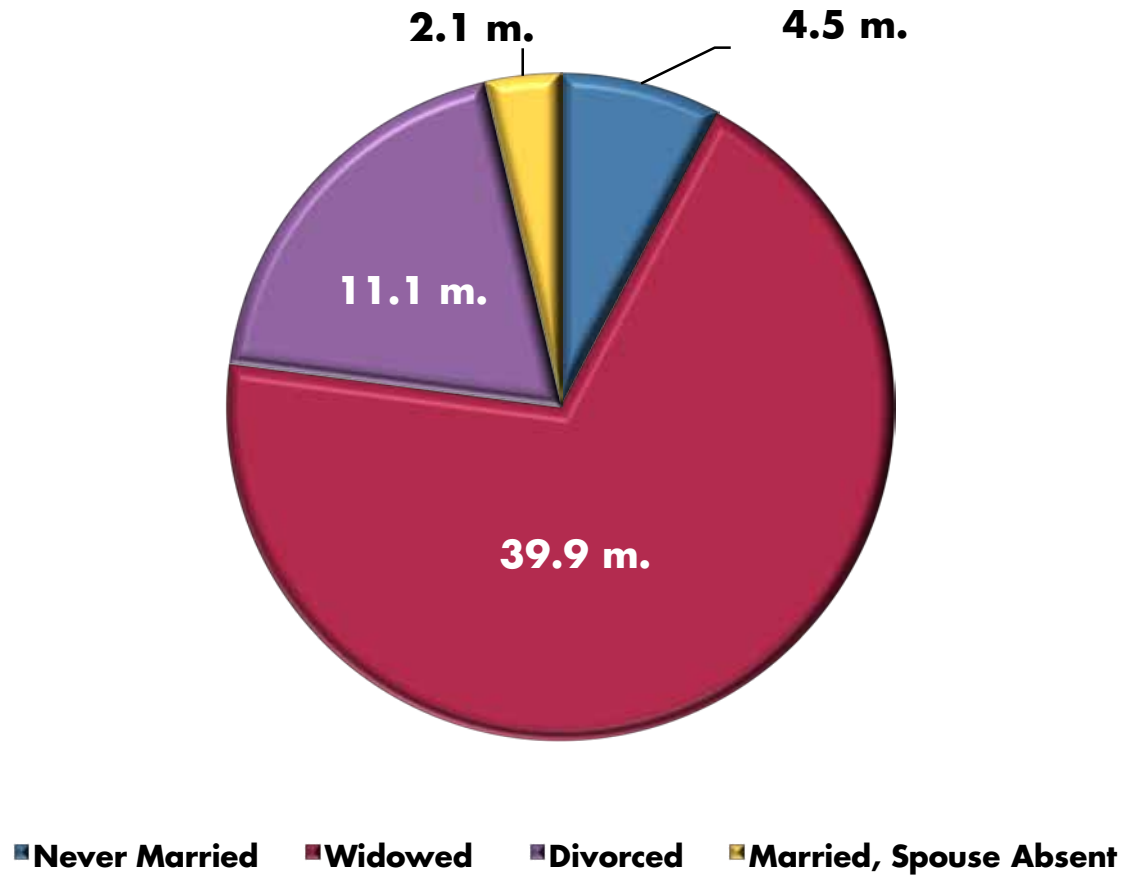
NUMBER OF MALE SINGLES IN THE UNITED STATES OVER THE AGE OF 65 AND THEIR MARITAL STATUS, 2010 (IN MILLIONS)



Source: U.S. Census Bureau, P23-212, 65+ in the United States: 2010, U.S. Government Printing Office, Washington, D.C., Report Issued June 2014, www.census.gov/content/dam/Census/library/publications/2014/demo/p23-212.pdf
*Married, Spouse Absent indicates that the male was in the household but the spouse was not, likely due to prolonged hospitalization, living with relatives, etc.

GRAPH 7

NUMBER OF FEMALE SINGLES IN THE UNITED STATES OVER THE AGE OF 65 AND THEIR MARITAL STATUS, 2010 (MILLIONS)



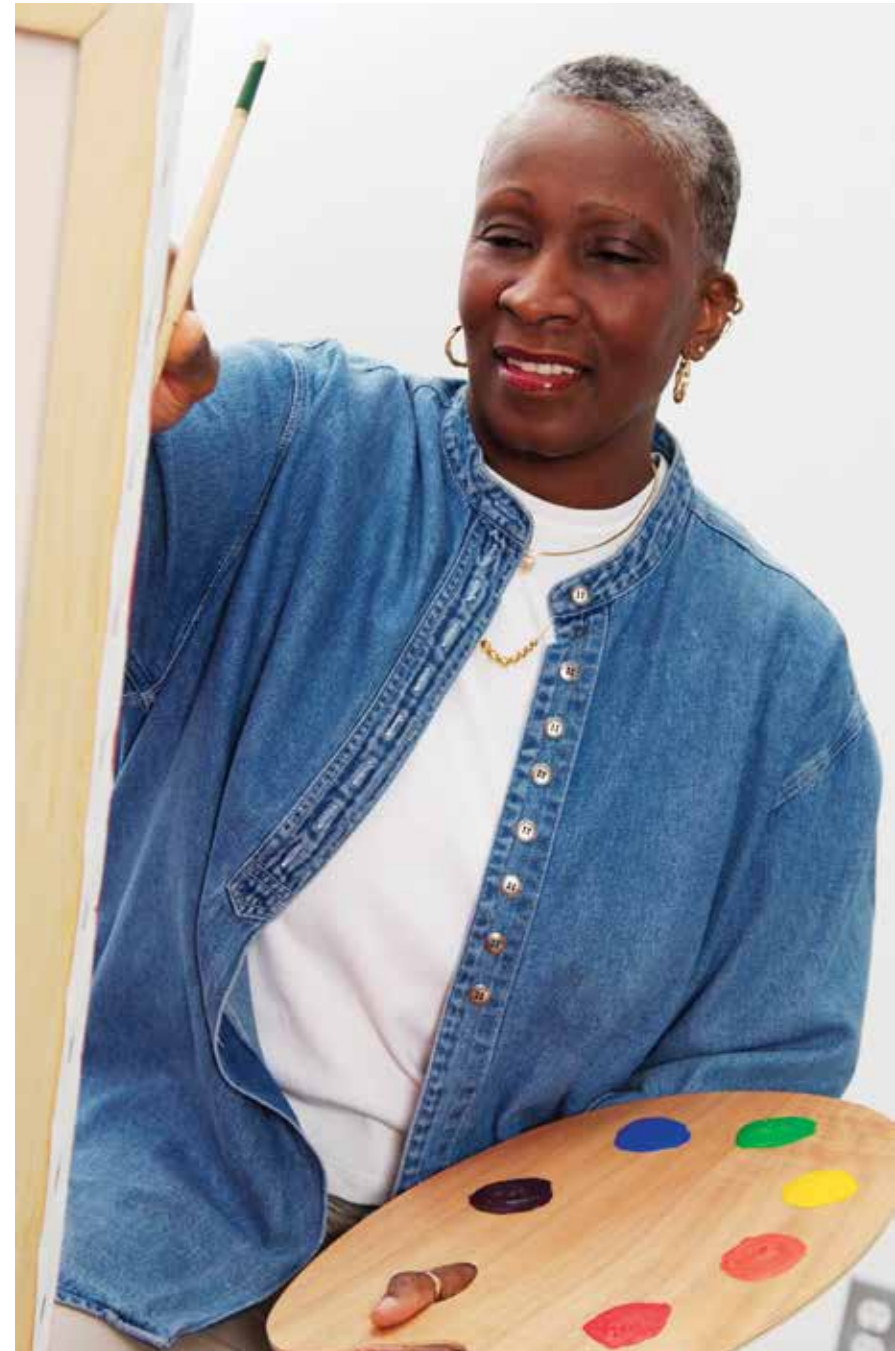
Source: U.S. Census Bureau, P23-212, 65+ in the United States: 2010, U.S. Government Printing Office, Washington, D.C., Report Issued June 2014, www.census.gov/content/dam/Census/library/publications/2014/demo/p23-212.pdf
*Married, Spouse Absent indicates that the female was in the household but the spouse was not, likely due to prolonged hospitalization, living with relatives, etc.

Final Thoughts

Because of the politically charged nature of immigration, the changing ethnic and racial composition of the U.S. population has gained more attention than the changing marital status of the same population. Nevertheless, the rapid growth of the proportion of single-individual households (or single-family households) in our population literally is demanding attention. For young adults and single-parent households, delayed marriage (or no marriage at all) has been a fact of life for several decades. Divorce has become increasingly common. Policies designed to encourage the formation of two-parent households have been less than successful.

At the other end of the spectrum, longer life spans have noticeably increased both the proportion of elderly people in our population and the proportion of single individuals as well.

Hence, we now live in what might be termed the “Age of the Single.” Many of our taxation and social policies have been developed with a conventional model in mind – the “Ozzie and Harriet” model with two heterosexual parents and children. Reality is that this paradigm no longer accurately depicts the diversity of household styles we observe today. If there is a moral to our story, it almost surely is that this situation is going to require significant changes in the policies of both the federal and state governments, along with those of private-sector and nonprofit agencies.



LIBERTY UNIVERSITY: A HIGHER EDUCATION PHENOMENON

Liberty University is nothing less than a marvel. There are few stories like it in the entire history of higher education. They are teaching lessons to my institutions on a daily basis.

– A senior higher education association official based in Washington, D.C.



Despite enrolling about three times as many headcount students as the next largest university in Virginia, Liberty University remains a mystery to many Virginians. Even those who know something of Liberty often think of it in terms of its genesis as Lynchburg Baptist College in 1971. They do not picture it as an institution that this year enrolled more than 100,000 students, or one that boasts an endowment of \$1.093 billion. Nor do they visualize Liberty's 7,000-acre campus, which features 357 buildings, \$956 million of ongoing or planned construction, and accredited law and osteopathic medicine schools.

Liberty's burst into prominence has many roots, but realistically can be dated to the appointment of Jerry Falwell Jr. as its president in 2007.¹ Since then, its enrollment has grown 184 percent and includes approximately 95,000 online and almost 15,000 residential students (see Graph 1). Falwell's vision for Liberty is surprising to those not familiar either with him or the university's history. He forthrightly asserts that Liberty's goal is to become the Evangelical Protestant equivalent of the University of Notre Dame for Roman Catholics and Brigham Young University for Mormons. This means having an academically selective student body; nationally ranked academic programs in virtually every major academic discipline;

¹ President Falwell earned a B.A. degree in religious studies from Liberty University in 1984 and a J.D. from the University of Virginia School of Law in 1987.

Division I athletic teams, including a nationally prominent football team that competes successfully against some of the NCAA's best; an inviting residential campus with state-of-the-art facilities; a campus atmosphere and ethic that promote high levels of student participation; and an endowment that rivals the best independent institutions and will buffer Liberty from future vicissitudes in the higher education marketplace.

The university is planning for the day when its current prominence in online education will dissipate due to increased competition from other institutions and new technologies. If and when that day arrives, Falwell wants Liberty to fit securely into the niche of a medium-sized, selective, well-endowed, high-quality Christian academic community that graduates Christ-centered students and supports research, public service and exploration that support these students and others connected to the university.

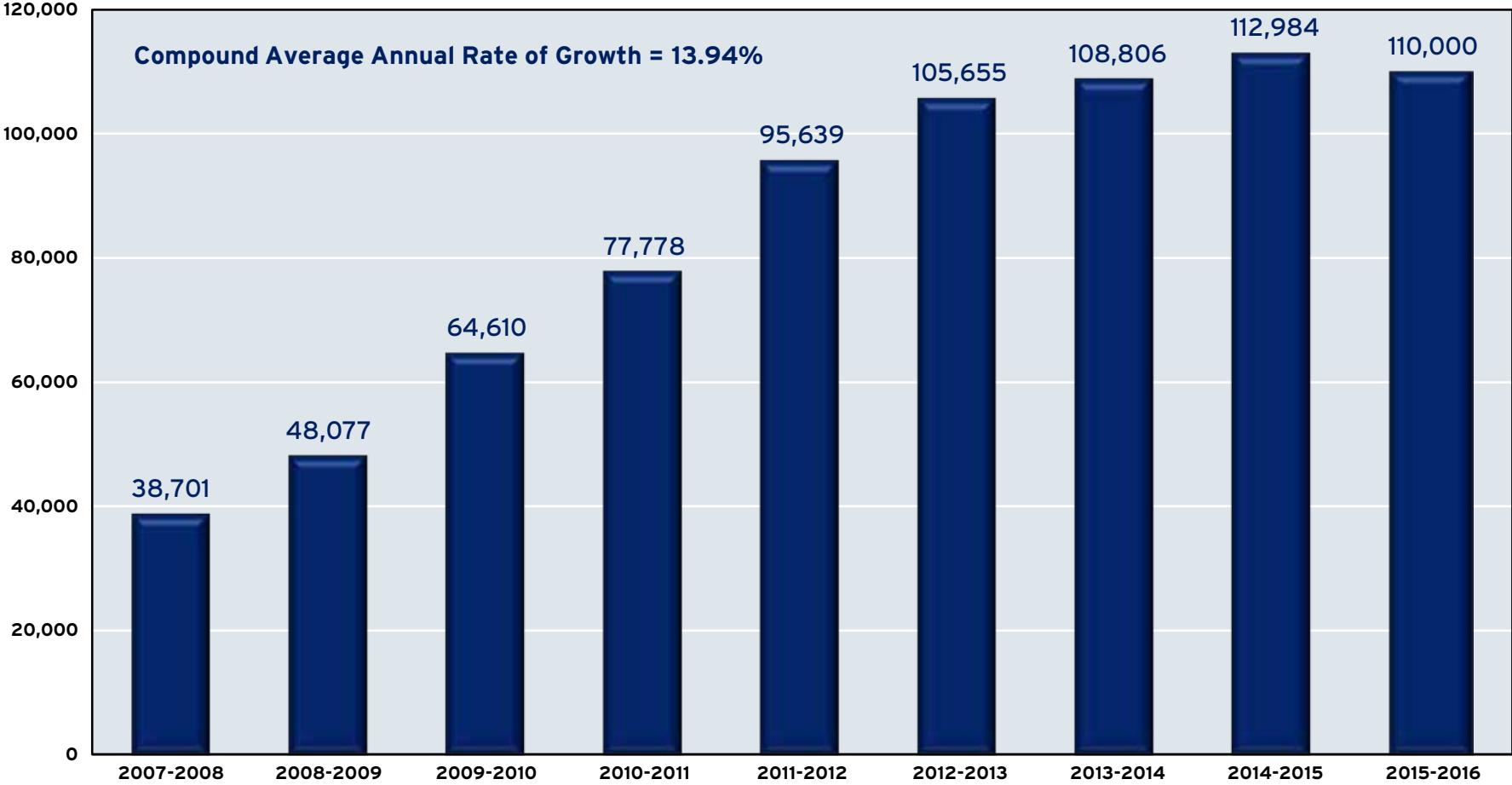
Even so, Falwell forthrightly states, "We're not a church, we're not a business, we're a university." He makes a firm distinction between Liberty and a class of institutions he refers to as Bible colleges. In this category, he includes schools such as Florida's Pensacola Christian College, Ohio's Cedarville University, Oklahoma's Oral Roberts University and South Carolina's Bob Jones University. He points out that these institutions have more limited missions than Liberty and impose much stricter belief and behavioral requirements on their students and faculty than does Liberty. Thus, he would position Liberty somewhere in the middle of a higher education religious/moral continuum that might have Cedarville, Oral Roberts and Bob Jones at one end and essentially secular public universities at the other end.

As Graph 2 reveals, in terms of student curricular choices, Liberty is not just a Bible college. In 2014-15, almost one in every five students earned a degree in business, almost 14 percent in psychology and 11.3 percent in education. Philosophy and religious studies plus theology and religious education together accounted for only slightly less than one in five degrees granted by the university. Liberty also offers a small, but growing set of engineering programs that are accredited by the Accrediting Body for Engineering and Technology (ABET).



GRAPH 1

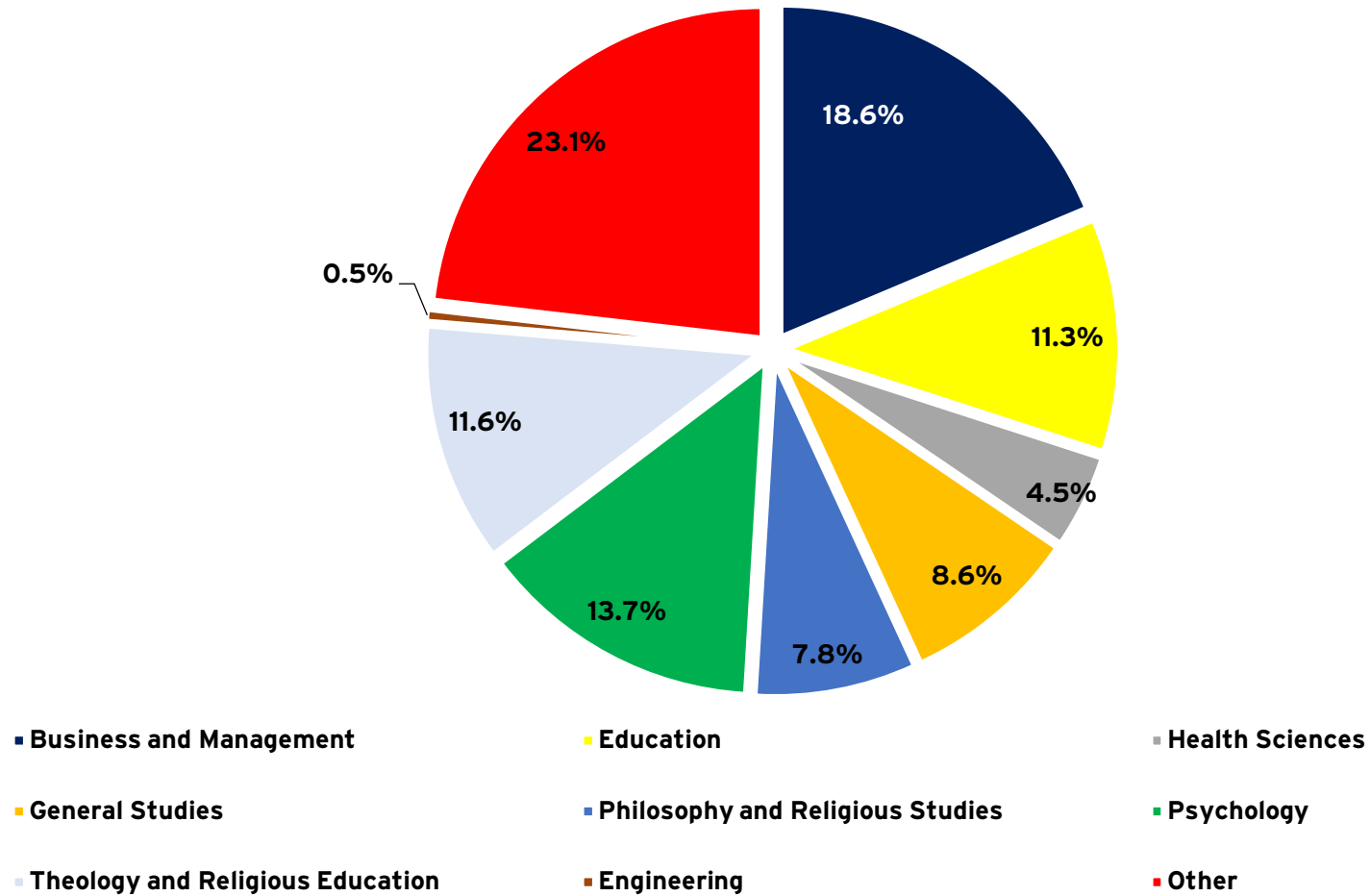
LIBERTY UNIVERSITY ENROLLMENT, 2007-08 TO 2015-16



Source: Liberty University

GRAPH 2

DEGREES GRANTED (ASSOCIATE, BACHELOR'S, MASTER'S, DOCTORAL) BY LIBERTY UNIVERSITY, 2014-15



Source: National Center for Education Statistics, <http://nces.ed.gov/collegenavigator>

A Bit Of History

Lynchburg Baptist College opened its doors to 154 students in 1971 after Rev. Jerry Falwell Sr. persuaded his Thomas Road Baptist Church congregation in Lynchburg to establish a college based on Christian values. This college would have the express purpose of educating students to “go out in all walks of life to impact this world for God.”

From the very beginning, Falwell made it clear that the intention was not to be strictly a Bible college such as Pensacola Christian College, but rather a world-class institution with all of the amenities of a secular university. It is he who first enunciated the goal of developing an institution that would be the academic equivalent of Notre Dame and Brigham Young.

After Falwell’s death in 2007, his son Jerry Falwell Jr. was appointed by the university’s Board of Trustees to be president of the institution. Falwell is an impressive individual who clearly is passionate about Liberty and very knowledgeable about every aspect of its operations. Interestingly, while his administrative style sometimes involves going around the administrative hierarchy that he himself has carefully developed, he has not acquired the reputation of being a micromanager because he is results oriented and continues to focus on strategic issues.

A friendly and charismatic individual, Falwell is refreshingly open and informative when answering questions about Liberty, and this attitude has carried over to those who report to him. Liberty is eager to tell its story, which it believes is a good one, yet one not necessarily well understood.

In 1980, the university initially gained accreditation from the Southern Association of Colleges and Schools (SACS), widely reputed to be the most demanding of all the regional accrediting agencies. Currently, Liberty is classified as a Level I institution, acknowledging the breadth of its offerings from the associate degree level through the doctorate. The university endured a lengthy and sometimes frustrating process as it moved to satisfy SACS requirements. It would be fair to say that for some period of time, SACS apparently remained unconvinced that Liberty could offer its online programs at a level of quality that would merit

accreditation. This process appears to have reflected SACS’ own leisurely, gradual evolution toward acceptance of the broader use of technology as a major supportive element in the teaching-learning process, concerns about faculty quality and library resources, and some doubts that Liberty had the financial resources to support a large online operation. It will suffice to observe that had Liberty sought accreditation for its online offerings from a different regional accrediting body, approval probably would have been forthcoming more rapidly.

Initially, Liberty offered distance learning courses to students via videotapes that were sent to students. Between 2003 and 2005, the university changed its platform for delivery to Blackboard, a well-known learning management system (LMS), and began to use high-speed internet to deliver academic content completely online. Falwell candidly notes that Liberty’s faculty initially did not support online education proposals and programs – a circumstance common at other institutions. After receiving some resistance from faculty, several associate deans for online education were appointed to move the online projects forward despite faculty opposition.

An important and not to be ignored key to gaining faculty cooperation and muting faculty disapproval was the nontenured status of all faculty at Liberty, excepting those in the law school. Faculty members at Liberty are appointed on one-year contracts. Tenure is not granted. Thus, at the end of the day, the choice for faculty was simple: either help the university move forward in the area of distance education, or find another job at a different institution. In discussing the absence of tenure at Liberty, Falwell opines that although there was a philosophical basis to the university’s decision not to grant tenure to faculty, “This also was a sound business decision.”

Today, the National Center for Education Statistics

Liberty University does grant tenure to faculty in its School of Law. Without that provision, the American Bar Association likely would not have granted accreditation to the Liberty Law School. Liberty has successfully resisted the blandishments of accrediting agencies in all other disciplines.

(NCES) reports that 85 percent of Liberty’s undergraduate students and 97 percent of its graduate students take at least one course online. The average age of online students is 36.6 – making them older than is true for most other large online education providers.

The university seems content to serve online students within the borders of the United States. When asked about expansion to other countries, senior Liberty staff said there were no plans to do so. They state that the university would find it difficult to deal with the financial, legal and lingual differences that would develop if students in other countries were served. Further, it would be difficult for faculty to serve and occasionally meet with online students in other countries. While this is not a completely persuasive explanation, it underlines the extent to which Liberty is a goal-oriented institution that focuses upon the pursuit of well-identified and widely accepted goals. Thus, when the university develops a new program (it currently offers more than 500 majors and options), or begins to address a new market, it is unified and confident that its current structure, resources and procedures augur for success. While Liberty has taken some huge risks over time (such as plunging into online learning), it is judicious about assuming unnecessary additional risks. The university believes it knows what works and proceeds along that path. It is difficult to quarrel with the results.

The Liberty University Student Body

Liberty University’s leadership team is data oriented. They study the successes and failures of competitor institutions and use this knowledge to adjust and improve their own efforts. Who are Liberty’s competitors in terms of its residential student body? Not the institutions that some might guess. In 2015, the top three schools to which students who eventually enrolled at Liberty also sent their SAT and ACT scores were James Madison University, George Mason University and Virginia Tech. Interestingly, only two religious institutions were included among the top 20 competitors, which essentially is a list of large state universities in Virginia and neighboring states such as North Carolina.

Very few institutions of higher education simultaneously grow in size and quality. Liberty has found the way to do so. Even while it has burgeoned in size, the quality of students attending classes on its home campus in Lynchburg has increased. The mean high school grade point average of its entering freshman class in fall 2015 was 3.46, up from 3.25 in 2009. During the same period, the mean SAT score of the entering freshman class climbed from 1009 to 1063.

Consistent with the goal of establishing Liberty as a selective, high-quality institution that will be mentioned in the same breath as Notre Dame or Brigham Young, the university is committed to continued increases in student quality. In fall 2015, it enrolled 35 National Merit Scholarship winners and has developed an active scholarship program designed to attract highly talented students.

The university’s marketing efforts now focus primarily on the quality of incoming students rather than the quantity of students. Liberty, after all, does not lack for headcount students.

The University’s Pricing And Financial Aid Model

Based upon survey responses, Liberty believes that the two most significant factors in students choosing the university as their online education provider are its competitive prices and its Christian orientation. **A survey revealed that 83 percent of the university’s online students have a faith-based, religious connection to the university and chose Liberty because it is faith-based.** Most often these faith-based students come from an Evangelical Protestant background, but they also include both individuals from other Protestant denominations and Roman Catholics for whom God is an important part of their lives. This spurs them to choose an education provider that, among other things, they feel will treat them equitably in an online educational universe where promises sometimes are made to be broken.

Liberty’s strategy with respect to the cost of attending the university is simple – it seeks to be much less expensive than the typical independent institution and within striking distance of its major state university competitors. Table 1 reveals that this has resulted in a parsimonious 0.7 percent total increase in undergraduate tuition and fees between 2012-13 and 2015-16 and only an 11.5 percent total increase in the annual cost of undergraduate residential attendance over the same time period.

TABLE 1

UNDERGRADUATE TUITION AND FEES AND NET PRICE AT LIBERTY UNIVERSITY, 2012-13 TO 2015-16

	2012-13	2013-14	2014-15	2015-16
Undergraduate Tuition and Fees	\$19,968	\$18,274	\$21,000	\$20,109
Total On-Campus Expenses	\$32,018	\$33,238	\$34,000	\$35,809
Undergraduate Net Price After Financial Aid	\$23,191	\$23,367	N.A.	N.A.

Source: National Center for Education Statistics, <http://nces.ed.gov/collegenavigator/?q=Liberty+University&s=VA&id=232557>

Over time, Liberty has become more cost competitive with institutions both in the public and independent sectors of higher education. What counts in this regard is the net price that students pay after their receipt of financial aid. Graph 3 illustrates that where in-state residential students are concerned, Liberty remains more expensive in net terms than its major public-sector competitors, but compares favorably with regard to out-of-state students. Within the realm of independent institutions, Liberty is highly competitive in terms of its net price.

Liberty’s online courses are considerably less expensive – typically \$1,365 per three-hour course for a part-time student. Hence, one could take 10 online courses (a full year’s load for an undergraduate student that usually would lead to graduation in four years) for a total price of \$13,650, well below the approximate \$20,000 sticker price that full-time residential students pay for tuition.

Liberty University’s price for online instruction is \$390 per credit hour or \$1,170 per typical three-hour course for full-time students and \$455 per credit hour, or \$1,365 per course, for part-time students. Old Dominion University, the largest four-year public provider of distance learning in Virginia, charges \$325 per credit hour, or \$975 per online course (\$1,065 for out-of-state students). Southern New Hampshire University, one of the largest national online providers, charges \$960 per undergraduate course and \$1,881 per graduate course.

An important key to Liberty’s facility for attracting tens of thousands of students is the ability of those students to receive federal student financial aid. The Washington Post (July 15, 2015) reported that in the late 1990s, Liberty students received less than \$20 million in total federal student financial aid, but by 2015, this had grown to \$800 million. This aid included both grants and loans and was awarded to needy students who qualified under federal financial aid standards.

Much of the federal financial aid goes to graduate students. The same Washington Post article also revealed that such graduate aid amounted to more than \$351 million in the 2013-14 academic year.

An important reason why such a high percentage (96 percent) of Liberty students receive financial aid is that the university itself provides substantial financial support to its students. In 2015-16, this amounted to \$235 million.

Federal financial aid to Liberty students accelerated after 2009, when the American Recovery and Reinvestment Act increased Pell Grant funding by \$15 billion nationally. National Center for Education Statistics (NCES) data reveal that in 2013-14, 23,465 undergraduate students at Liberty received \$85.59 million in Pell Grant assistance – an average of \$3,648 per student recipient – very similar to the average grant received by recipients at other institutions. Federal student loans to 31,298 undergraduate students added \$8,030 per student to this total. Approximately 50 percent of the university’s undergraduate students received a Pell Grant and almost two-thirds received a federal student loan.

These data underline that the Liberty student body by and large is not one composed of individuals who are well heeled financially. Measured student financial need is great. NCES reports that in 2014-15, 96 percent of Liberty's first-time freshmen received some sort of institutional financial aid. This means that access to federal student aid is absolutely essential – both to the students (and their families) and to the university. It is accurate to say that the U.S. government has financed a non-negligible portion of Liberty's expansion. Though indirect, there has been a rich flow of funds from American taxpayers to the university's financial bottom line.

We hasten to note that Liberty is hardly the Lone Ranger in this regard; similar circumstances exist for many other institutions of higher education. Federal student financial aid is a vitally important indirect source of institutional financial sustenance at virtually all levels of higher education.

Even though Liberty students typically incur substantial federal loan debt during their time at the university, their default rate on federal loans (8.5 percent for the most recent student cohort) was well below the national average (11.8 percent), as well as less than that for student borrowers from public institutions (11.7 percent) and the Virginia average (8.7 percent).²

Discussions with Liberty personnel revealed that they believe they face what economists term a “price elastic” demand for the university's educational services. This means that Liberty's students are rather price sensitive. What is important in this regard is the university's relative price – how this price compares to those at other institutions. In this regard, Liberty's modest recent price increases have improved its cost competitiveness.

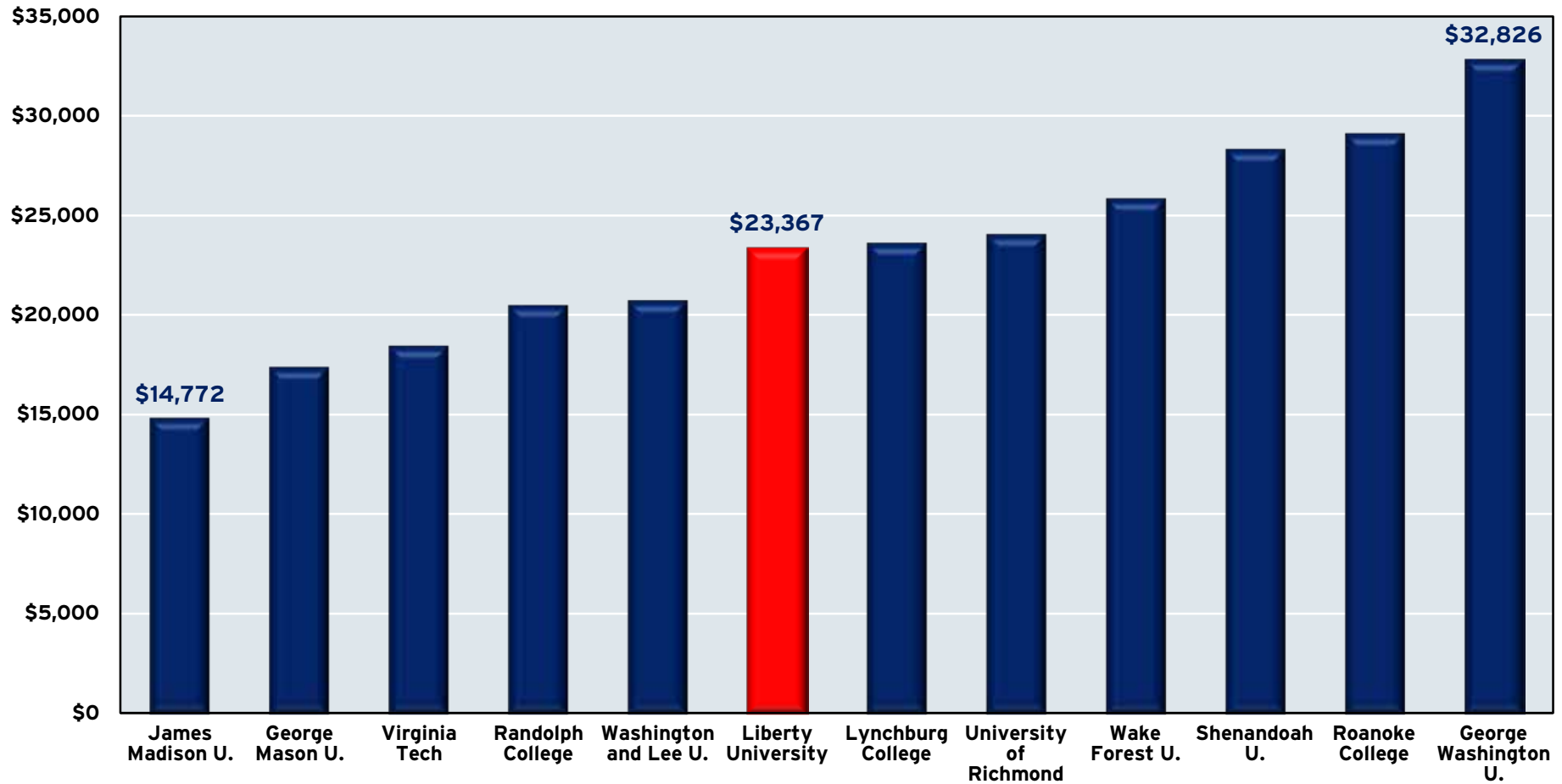
In the final analysis, four major factors underpin the university's skyrocketing enrollment: (1) its cost competitiveness; (2) the ability of its student body to receive federal financial aid support; (3) its religious and moral attractiveness to many students; and (4) the quality of its educational product. These factors work together and are mutually reinforcing.

² <http://nces.ed.gov/collegenavigator>



GRAPH 3

NET FIRST-TIME UNDERGRADUATE COST OF ATTENDANCE AFTER FINANCIAL AID: SELECTED INSTITUTIONS, 2013-14



Source: College Navigator, National Center for Education Statistics

Academic Programs

Liberty University offers a somewhat astonishing 547 programs of study that range from undergraduate and graduate certificate programs to the doctoral level. Included among these are 355 residential and 267 online programs, with some programs available both on campus and online. In addition to typical degree programs, Liberty offers a variety of vocationally oriented associate degrees, including those that prepare students to be airline flight attendants and aviation maintenance technicians. In 2013, the university opened a College of Osteopathic Medicine.

Liberty's offerings also include some Spanish language degree programs via online classes, an online program via homeschooling, an Online Academy, a dual-enrollment program for high school students wanting to earn college credit while still in high school, and a free American History Orientation course on the massive open online course (MOOC) platform.

Liberty frequently has allowed innovative faculty and staff to “try things out” (the words of a staff member) to see what works. The university’s organizational structure and traditions have proven to be more conducive to rapid deployment of innovations than typically has been the case at older, more traditional institutions.

Faculty, Students And Expectations

FACULTY

Liberty University employs more than 2,500 faculty members, of whom more than 1,700 are full time. This results in a combined residential undergraduate, graduate and online student/faculty ratio of 18:1. Eighty percent of the faculty members (including those who teach online) hold a terminal degree in their discipline. The quality of the credentials of Liberty's faculty was an important factor in SACS' decision to extend accreditation to the university, including its extensive online programs. Many online institutions struggle to appoint credentialed faculty who truly are committed to their online teaching activities. This is an area where

Liberty appears to excel, not the least because its faculty subscribe to a common vision and set of Christian beliefs. These serve as mortar that binds together the institution and its faculty.

At this point in its history, Liberty is not a research-intensive institution. Teaching and counseling students is considered to be the most important activity of faculty members. **Some professors do generate significant scholarly productivity, but this is not their primary task. As a consequence, it remains to be seen if Liberty will be able to crack the upper reaches of national university rankings (and those within individual academic disciplines). For better or worse, the coin of the realm in academic rankings is a considerable cohort of faculty members who consistently publish in top-flight refereed outlets, garner externally funded research grants and obtain external consultancies. The waves generated by the scholarship of faculty remain far more important in prestige contests than their teaching abilities.**

A primary reason that current academic ranking systems typically assign little or no importance to the quality of teaching and learning is because that quality would be difficult to measure, even if there were agreement on how to define it. Instead, the ranking systems that identify the Notre Dames and Brigham Youngs of the world focus on institutional financial characteristics, the quality of facilities, the measured quality of the student body, faculty salaries, subsequent student employment and incomes, and faculty scholarly accomplishments. Liberty's current institutional model enables it to address most of these criteria, but would appear to fall short where faculty scholarly productivity, funded research and faculty external reputation are concerned. Many (perhaps most) citizens would applaud Liberty for its emphasis on teaching and serving students rather than on research, some of which might be considered to have marginal value to society. Nonetheless, that is not how the ranking and prestige game is played.

All those who accept a faculty position at Liberty must sign a doctrinal statement that affirms both their belief in God and in Jesus Christ as their savior. This may deter some people from competing for faculty positions at the university, but does lend cohesion and principle to the faculty members who ultimately are appointed. Faculty members are not required to attend worship services or to do anything visibly religious beyond professing their beliefs via the doctrinal statement.

Liberty does not report its faculty salaries to the American Association of University Professors (AAUP). Graph 4 lists the average faculty salaries by rank as reported by American School Search for 2015-16. It should be noted that American School Search, an online resource for prospective students and their parents, reports faculty salaries generally ranging higher than those transmitted to the AAUP. Thus, more attention should be given to Liberty's relative positioning with respect to other institutions than to the absolute salary levels. Graph 5 provides data for specific institutions. Except for James Madison University, Liberty is not paying its full professors as much as its large state university competitors.

Are these faculty salary deficits problematic for Liberty? Not necessarily. The institution does not appear to have difficulty attracting and retaining qualified faculty and nearly all of its academic programs have attained the highest possible disciplinary accreditations. However, should Liberty decide to invest more heavily in doctoral programs and research, then the differentials identified in Graphs 2 and 3 would become highly relevant, as would the absence of longer-term faculty contracts or tenure, and the university's strong institutional commitment to teaching.

Since February 2016, Liberty has been designated a Carnegie Doctoral University R3, which is indicative of "modest research activity." Previously, it was considered to be a master's degree-level institution. Ours is not to advocate changes in the university's mission, but rather to point out that further evolution in the area of doctoral programs will bring with it a set of challenges that presumptively might alter the nature of the institution as it currently stands.

STUDENTS

Liberty University's student body is racially and ethnically less diverse than the overall roster of college students in the United States. Fifteen percent of Liberty undergraduates are African-Americans, 2 percent Hispanic and 1 percent Asian. Fifty-nine percent are women. Residential or online, students are not required to sign a doctrinal statement similar to faculty, but instead must acknowledge and follow the behavioral precepts outlined in the university's codes of conduct. These include adherence to ethical academic principles and standards of personal behavior. For residential students, there is a dress code and more specific

rules that ban certain media, such as X-rated movies. All students "are asked to display mature Christian behavior in social interaction," including at athletic events. When students conspicuously fail to meet the standards found in the "Liberty Way," they are not automatically expelled, but instead are taken under counseling. President Falwell believes that peer pressure often turns out to be the most effective way to inspire desired changes in behavior.

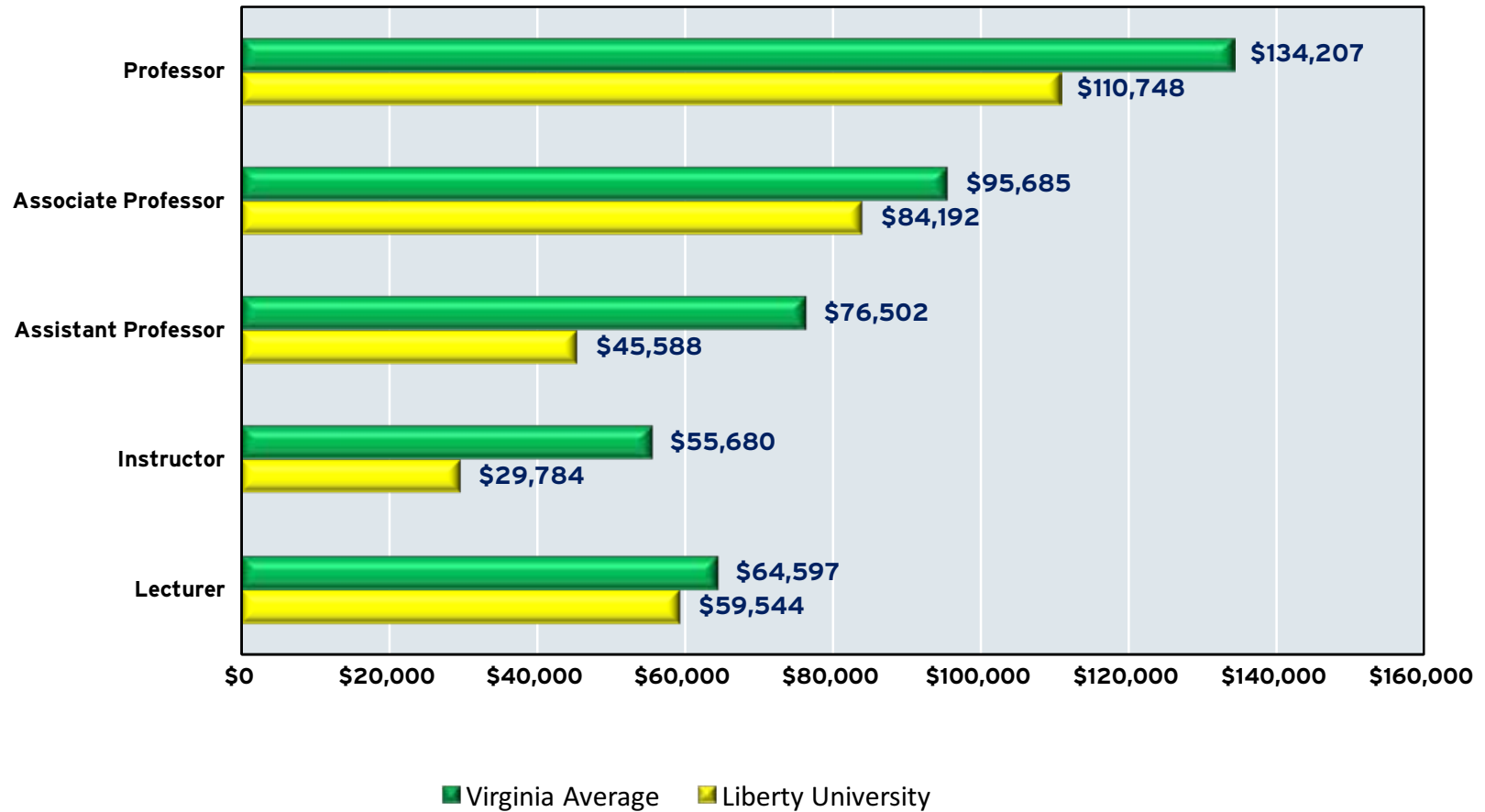
All unmarried Liberty students who attend classes on the Lynchburg campus and are under age 21 are required to live on campus. There are spiritual coaches and prayer groups within the residence halls. All residential students and students who commute to the home campus are required to attend convocations on Monday, Wednesday and Friday during the academic year. The subject matter often is religious, but convocations also include addresses on a wide variety of economic, social and political topics by an absolutely impressive list of elected officials, candidates for office and people successful in their fields. Virtually every major presidential candidate comes to Lynchburg to be seen and heard, including Sen. Bernie Sanders in September 2015 and Donald Trump in January 2016. Sanders' appearance was notable because Liberty traditionally has tipped strongly in the direction of the Republican Party. Indeed, Falwell endorsed Trump for president. (The university does not endorse candidates.)

Student behavioral requirements are less stringent in the case of online students (who in any case typically are much older than on-campus students) and the university makes no attempt to monitor the personal behavior of its off-the-main-campus students. Nevertheless, the Liberty University Online codes of honor leave no doubt what the purpose of the institution is: "... man's ultimate purpose is to glorify God" and, "The Academy exists to help each student realize his full potential by guiding him in developing spiritually and morally."

Available evidence suggests that student satisfaction with Liberty is rather high. The retention rate for resident undergraduate students from year to year hit 85.3 percent in 2015-16, a number that most colleges and universities would covet. Fall to spring undergraduate retention in spring 2016 was 94.2 percent, a historical high for the university.

GRAPH 4

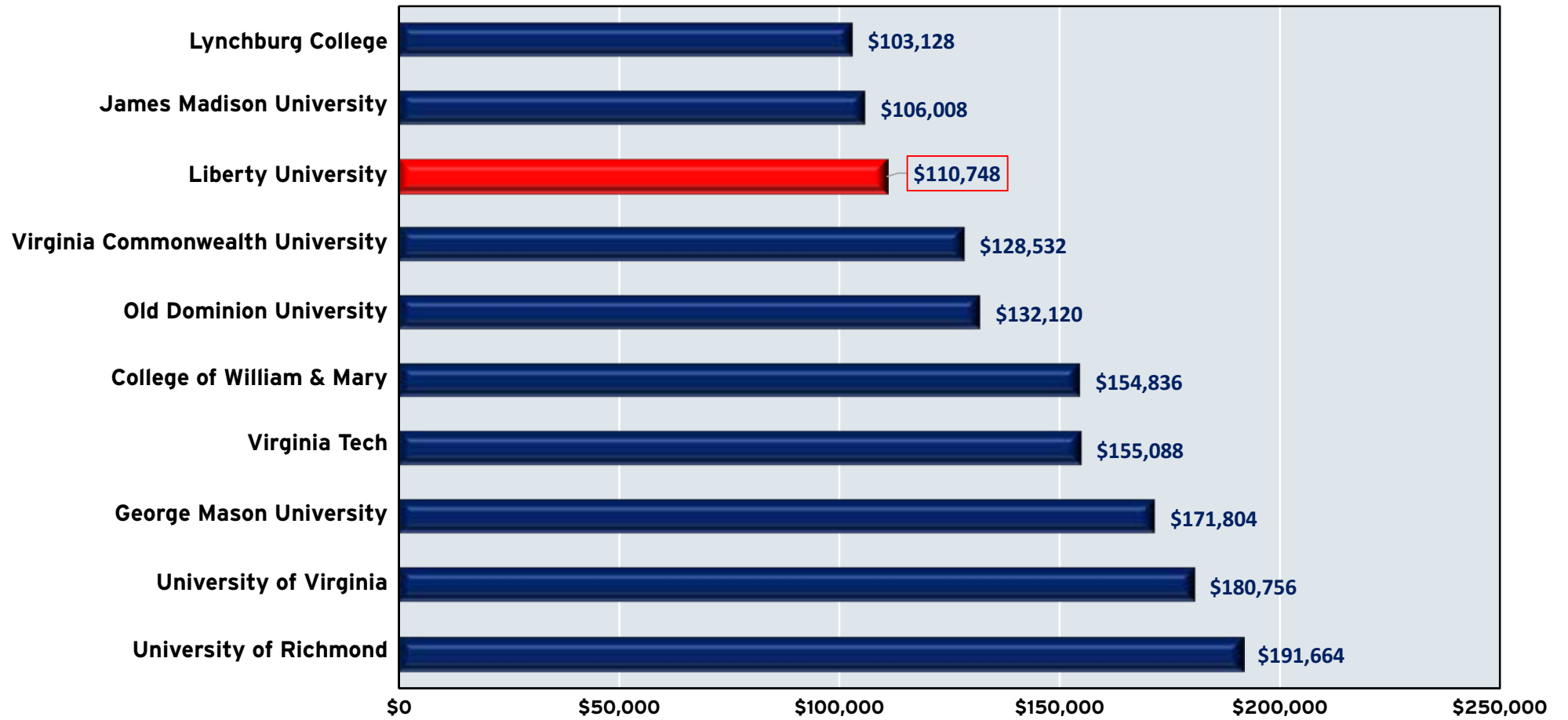
AVERAGE FACULTY SALARIES BY RANK, LIBERTY UNIVERSITY AND VIRGINIA AVERAGE, 2015-16



Source: American School Search, www.american-school-search.com

GRAPH 5

AVERAGE FULL PROFESSOR SALARIES AT SELECTED VIRGINIA INSTITUTIONS, 2015-16



Source: American School Search, www.american-school-search.com

Intercollegiate Athletics

An important part of the Liberty University dream is that the institution will field nationally successful Division I intercollegiate athletic teams in every major sport. This vision certainly includes football, where the Flames anticipate being invited to join the NCAA's Division I Football Bowl Series (FBS) Division. This would involve Liberty leaving the Big South Conference and likely competing as an independent for some period of time. It also implies expansion of the university's Williams Stadium, which though renovated in 2010, has a seating capacity of only 19,200. Already under construction is an indoor football practice facility that will have a major positive impact on the university's ability to recruit quality football players.

Liberty opened its 2016 football season with a game at Virginia Tech and also played on the road at Southern Methodist University. This was not accidental scheduling – a big-time, highly visible, successful football team is an important part of Liberty's self-image for its future. Notably, in the university's boardroom, one can find on a wall a copy of a 2012 letter to Falwell from Father Theodore M. Hesburgh, the well-known president emeritus of the University of Notre Dame. Hesburgh, who knows more than a little bit about playing top-flight football outside a major conference as well as using football success to promote a university, commented that Liberty was on “the trajectory to success.”

Measures Of Financial Success

It is one thing to increase enrollment via expansive new programs; it is quite another to do so in a financially sound, profitable manner. Graph 6 reveals that Liberty University's revenues in 2016 were 15 times as high as they were in 2000.

One of the most remarkable aspects of Liberty's ascent has been its simultaneous ability to grow its revenues and to control its costs. Graph 7, which reports the university's net financial assets, demonstrates that its business model has been implemented in a very successful fashion. **Since 2007, when Falwell assumed leadership, the university's net financial assets (endowment plus retained earnings) have increased in value from \$150,756,140 to \$1,811,000,000 – a 1,101 percent increase. Liberty's net asset growth primarily reflects retained earnings generated by its productive business model.**

The 2016 value of the university's endowment is a healthy \$1.093 billion. While Liberty has received some gifts that have added to its endowment, the predominant source of endowment growth has been the institution's positive annual cash flows. The two primary purposes of the endowment are to sustain the university into perpetuity and to provide scholarship aid to students.

The salient point, however, is this: In addition to attractive, well-regarded, accredited academic programs, Liberty has developed a very successful business model that generates impressively large cash flows. These cash flows emanate primarily from the institution's online offerings. As such, they are subject to the vagaries of a rapidly evolving higher education marketplace.

New online competitors have been appearing across the spectrum – some that undercut Liberty in price, others that cream skim the upper portions of the market and still others that roughly imitate many of the things Liberty is doing. The online education market space is becoming crowded

and beckoning constantly are new technologies, innovative methods of delivery and new software packages that purport to enhance learning.

All of this makes Liberty's future in the online education arena somewhat uncertain, a reality that occupies an important part of Falwell's thinking as he contemplates the university's future. He believes that Liberty's online enrollments, which declined a bit in 2015-16, gradually will recede to much lower levels. Hence, he seeks to prepare Liberty for the day when it will be a well-

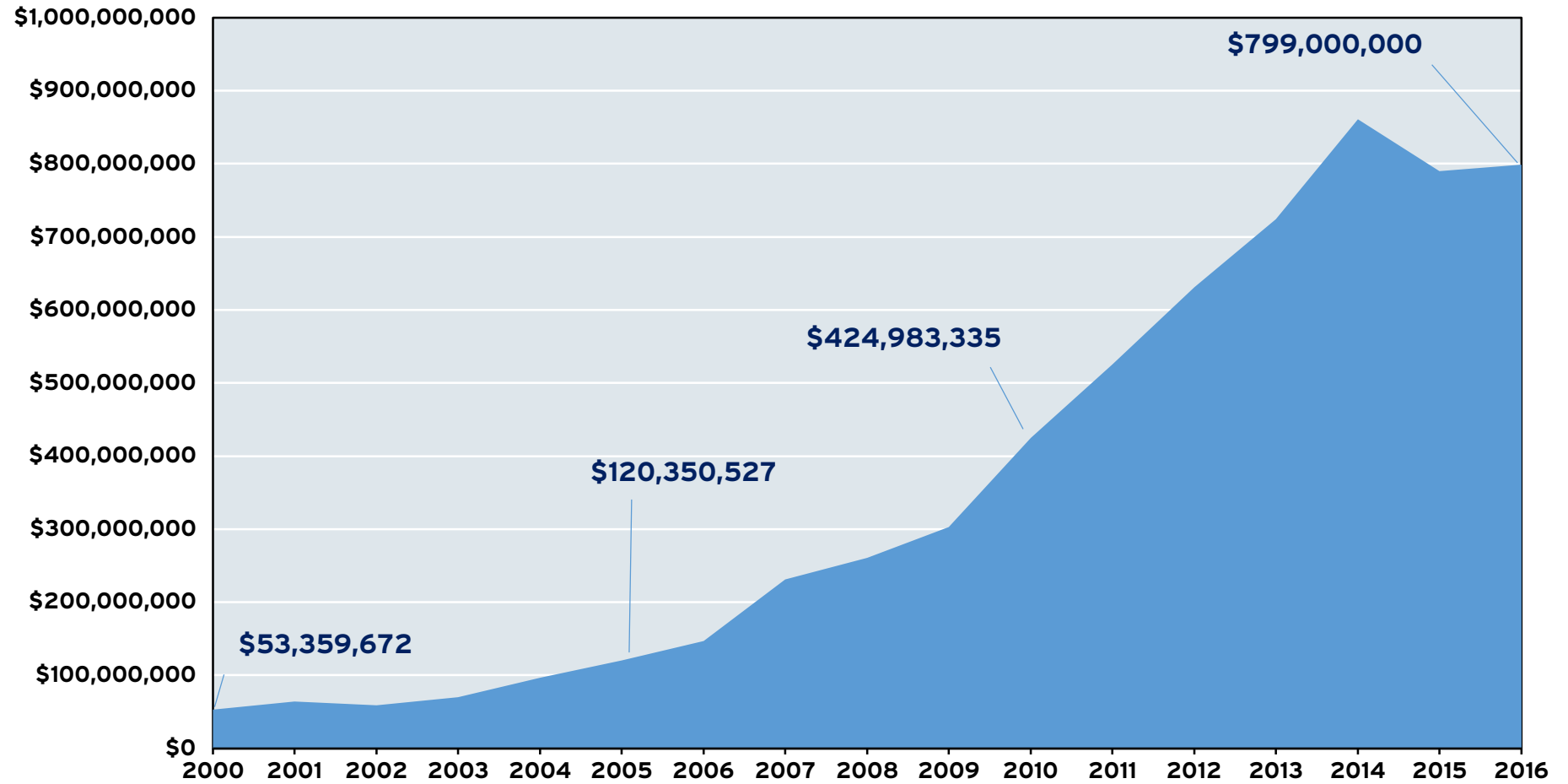
endowed, high-quality institution with 15,000 residential students and considerably fewer online offerings. And, yes, spoken about in the same breath as Notre Dame and Brigham Young.

Falwell wants to have an endowment of \$3 billion or more when that day arrives. If the university can maintain its current annual cash flows, it could achieve this goal by 2022. This prognosis, however, presumes a great degree of stability in the online education marketplace that may not be merited. Hence, 2025 or later may be a less risky projection.



GRAPH 6

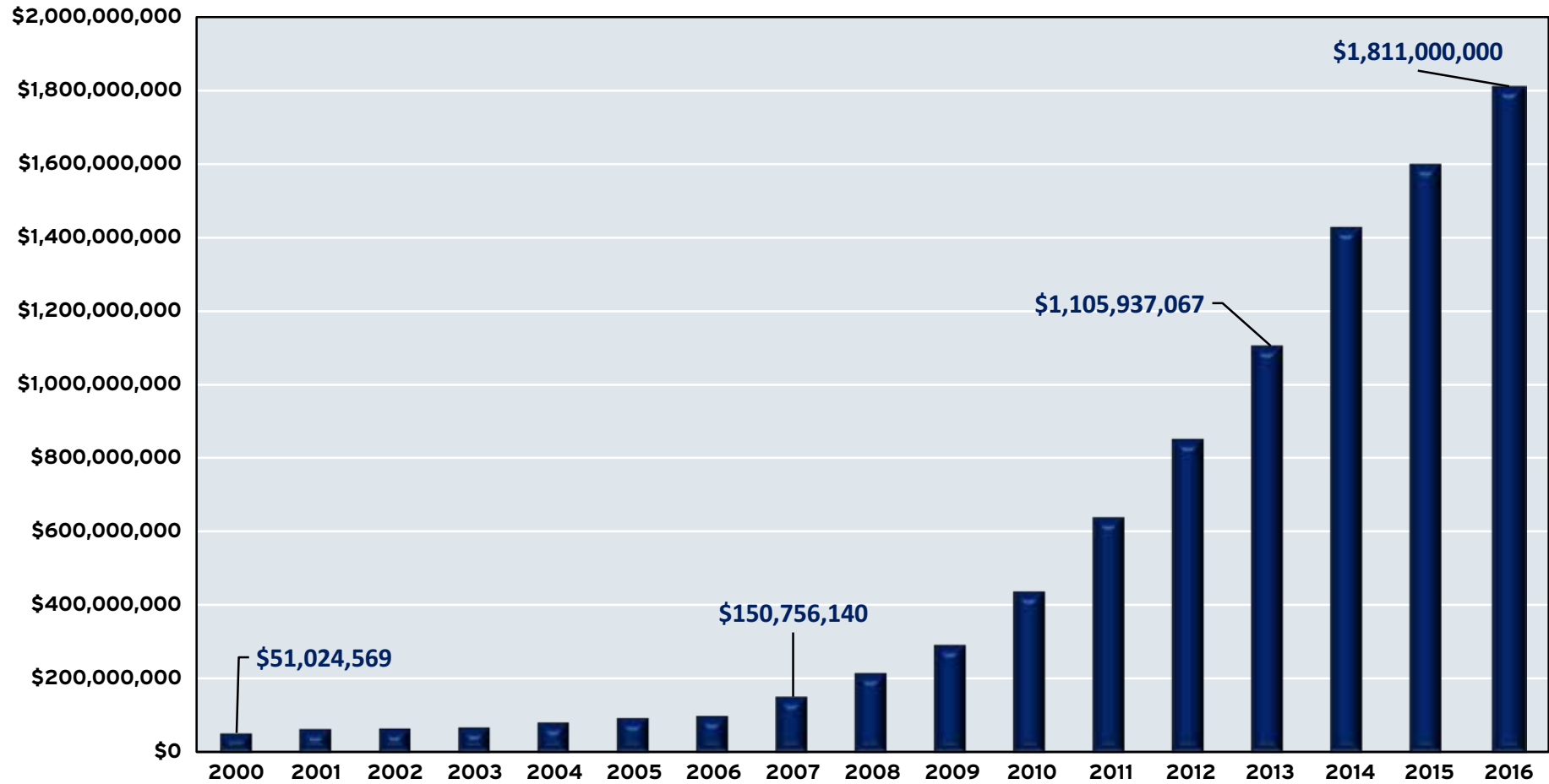
LIBERTY UNIVERSITY'S ANNUAL REVENUES, 2000-2016



Source: Liberty University

GRAPH 7

THE VALUE OF LIBERTY UNIVERSITY'S NET FINANCIAL ASSETS, 2000-2016



Source: Liberty University

The Lynchburg Connection

The Lynchburg metro area boasts more than 250,000 residents. Liberty University, with approximately 8,800 employees, is the largest employer in the region, followed by Centra Health with approximately 6,500 employees. Liberty has become Lynchburg's most important economic engine. A 2014 economic impact study of the university performed by Mangum Economics asserted that one of every five jobs in the city of Lynchburg is due to Liberty, which generated \$1.1 billion in local economic activity and \$9.2 million in additional tax revenues for the city.³

The university's relationships with the city of Lynchburg are friendly and cooperative, but perhaps this was not always so. In recent years, it has been virtually impossible for anyone in Lynchburg not to understand that Liberty has been providing badly needed economic energy to an otherwise somewhat torpid local economy. This has encouraged elected officials and government employees to treat the university's requests with greater dispatch and concern. This is a story common to many cities that host a rapidly growing college or university.

Liberty recently found an additional way to stimulate the local economy when it purchased 75 percent of the nearby River Ridge Mall. New restaurants, retail stores and entertainment venues are planned, with some possibly incorporated in an open-air concept. The mall represents part of a deliberate diversification of Liberty's investment portfolio and represents its third investment in a local shopping center.

Final Thoughts

The analysis in this chapter has not touched on the Moral Majority, conservative politics, lawsuits against the Affordable Care Act, guns on campus or any of the other hot-button issues that some people associate with Liberty University. Instead, the focus has been upon the institution as an academic and economic phenomenon. One should not allow what one observer termed "the issues" to divert one's attention from the amazing transformation that has occurred at Liberty in recent years.

President Falwell clearly notes, "From the beginning, our goal was not to create another Bible college. Our vision is to create academic excellence, world-class facilities, NCAA Division I athletics and abundant student activities, and to provide all of this within a distinctively Christian environment." A fair reading of the evidence leads one to observe that Liberty is well along the path to achieving those goals.

There is more work to be done before the university can reach its goals, and no doubt it will be challenged significantly by the rapidly changing higher education environment. Nevertheless, few institutions have demonstrated more ability to assess higher education trends and the emerging needs of students. Thus far, and without question, it has been an impressive ride.

³ www.newsadvance.com/news/local/study-lu-has-billion-in-local-economy-impact/article_eb414992-8fbd-11e4-b121-176903d07d6e



Cover: Clockwise from left
United States Air Force
Liberty University
Martinsville Speedway
Virginia Department of Transportation

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