

**APPENDIX C**

**DEMOGRAPHIC AND ECONOMIC  
INFORMATION**

**APPENDIX C  
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## INTRODUCTION

The following demographic and economic information is provided by the Commonwealth of Virginia, its agencies, institutions and authorities (the "Commonwealth"). The data were compiled by the Department of the Treasury and were not independently verified; however, the Department of the Treasury has no reason to believe that such material is not true and correct.

## DEMOGRAPHIC CHARACTERISTICS

### General

The Commonwealth is divided into five distinct geographic regions – The Tidewater region is a coastal plain cut into peninsulas by four large tidal rivers. It includes the Eastern Shore and estuaries of the Chesapeake Bay. The Piedmont Plateau is the largest geographical land of the state, and is characterized by low, rolling hills. The Blue Ridge Mountains, which lie to the west of the Piedmont region, are the main eastern mountain range of the Appalachian Mountains. The Appalachian Ridge and Valley Region stretch from southwest to the northeast along Virginia's western border, and include the Shenandoah Valley. The Appalachian Plateau region lies in the far southwestern portion of Virginia. In Kentucky it is called the Cumberland Plateau. The topography of this region is characterized by rivers, streams, and forests. Approximately one-third of all land in Virginia is used for farming and other agricultural services. This variety of terrain, the location of the Commonwealth on the Atlantic Seaboard at the southern extremity of the northeast population corridor and its close proximity to the nation's capital have had a significant influence on the development of the present economic structure of the Commonwealth.

According to the U.S. Census Bureau, the Commonwealth's 2014 estimated population was 8,326,289 which was 2.6 percent of the United States total. Among the 50 states, it ranked twelfth in population. With 39,594 square miles of land area, its 2014 population density was 210.3 persons per square mile, compared with 90.1 persons per square mile for the United States.

### Population Trends

From 2005 to 2014, Virginia's population increased 10.1 percent versus 7.8 percent for the nation. Population trends since 2005 for the Commonwealth and the United States are shown in the following table:

### POPULATION TREND

		Virginia	United States		
		Increase Over Preceding	Increase Over Preceding		
<u>Year</u>	<u>Population</u>	<u>Year</u>	<u>Population</u>	<u>Year</u>	
2005	7,563,887	-	295,753,151	-	
2006	7,646,996	1.1	298,593,212	1.0	
2007	7,719,749	1.0	301,579,895	1.0	
2008	7,795,424	1.0	304,374,846	0.9	
2009	7,882,590	1.1	307,006,550	0.9	
2010	8,001,024	1.5	308,745,538	0.6	
2011	8,104,384	1.3	311,587,816	0.9	
2012	8,193,422	1.1	313,873,685	0.7	
2013	8,270,345	0.9	316,497,531	0.8	
2014	* 8,326,289	0.7	318,857,056	0.7	

Source: U.S. Bureau of the Census

\* 2014 and 2015 Estimates revised as of August 2015

## AGE DISTRIBUTION OF POPULATION

Compared to the nation, a higher proportion of the Commonwealth's population is in the adult/working ages of 20 through 64. A lower proportion of Virginia's population is comprised of persons ages 65 and older and of persons ages 5 through 19. In 2014 the population of the Commonwealth and of the United States was distributed by age as follows:

### AGE DISTRIBUTION 2014

<u>Age</u>	<u>Virginia</u>	<u>United States</u>
Under 5 years	6.2 %	6.2 %
5 through 19 years	19.0	19.5
20 through 44 years	34.5	33.5
45 through 64 years	26.6	26.2
65 years and older	13.8	14.5
	<hr/> 100.0 %	<hr/> 100.0 %

*Source: U.S. Bureau of the Census Annual Estimates as of June, 2015.*

## GEOGRAPHIC DISTRIBUTION OF POPULATION

Like the nation as a whole, the Commonwealth has a high percentage of its citizens living in urban areas. Virtually all of the Commonwealth's population growth between 1950 and 1970 occurred in these areas. During the 1970s, however, non-metropolitan areas grew at a slightly faster rate than metropolitan areas. Since 1980, this trend has reversed with the metropolitan areas growing at three times the rate of the rest of the Commonwealth. Of the Commonwealth's population, 87 percent reside in ten metropolitan statistical areas.

The largest metropolitan area is the Northern Virginia portion of the Washington-Arlington-Alexandria MSA. This is the fastest growing metropolitan area in the Commonwealth and had a 2014 population of 6,033,737 (including Washington and Maryland's population of 1,933,015). Northern Virginia has long been characterized by the large number of people employed in both civilian and military work with the federal government. It is also one of the nation's leading high-technology centers for computer software and telecommunications.

Spanning Hampton Roads is the Virginia Beach-Norfolk-Newport News MSA, which has large military installations and major port facilities. It had a 2014 population of 1,716,624 and is an important center of manufacturing and tourism. The Richmond MSA is the third largest metropolitan area with a 2014 population of 1,260,029. The Richmond MSA is a leading center of diversified manufacturing activity including chemicals, tobacco, printing, paper, metals and machinery. Richmond is also the capital of the Commonwealth and its financial center, which includes the Fifth District Federal Reserve Bank. The Roanoke MSA is the manufacturing, trade and transportation center for the western part of the Commonwealth. It had a 2014 population of 313,388. Also in the western part of the Commonwealth are the Lynchburg and Kingsport-Bristol-Bristol MSAs, which are both manufacturing centers, and had 2014 populations of 257,835 and 308,079, respectively. The Kingsport-Bristol-Bristol population includes Tennessee portions of the MSA. Located at the foot of the Blue Ridge Mountains is the Charlottesville MSA, a community with a 2014 population of 226,968 and home of the University of Virginia and significant manufacturing industries.

In 2003, the federal Office of Management & Budget recognized three new Virginia MSAs -- Winchester, Harrisonburg and Blacksburg-Christiansburg-Radford. The Winchester MSA is located at the northernmost tip of Virginia and had a 2014 population of 133,403. This fast-growing community has become increasingly attractive for both business and residential development due to its location bordering the Washington-Arlington-Alexandria MSA. With a population of 6,033,737, this region is the home of the George Mason University, Virginia's largest university and is the Commonwealth's largest public research university. The Harrisonburg MSA, a community with a 2014 population of 130,649, is located in western central Virginia. It is a major retail, service and manufacturing center in the Shenandoah Valley. With a 2014 population of 181,605, the Blacksburg-Christiansburg-Radford MSA is located in the New River Valley in southwestern Virginia. The town of Blacksburg is the home of Virginia Polytechnic Institute & State University, Virginia's second largest university and one of the nation's leading research institutions. Population figures for all ten Commonwealth MSAs are shown below:

**METROPOLITAN STATISTICAL AREA  
POPULATION AND PER CAPITA INCOME**

<u>MSA</u>	<u>2014 Population</u>	<u>Per Capita Income***</u>
Blacksburg-Christiansburg-Radford	181,605	\$32,627
Charlottesville	226,968	50,971
Harrisonburg	130,649	33,703
Kingsport-Bristol-Bristol*	308,079	35,912
Lynchburg	257,835	36,237
Richmond	1,260,029	47,083
Roanoke	313,388	41,383
Virginia Beach-Norfolk-Newport News	1,716,624	45,276
Washington-Arlington-Alexandria**	6,033,737	62,975
Winchester	133,403	40,456
	<u>2014 Population</u>	<u>2014 Per Capita Income</u>
Commonwealth of Virginia	8,326,289	\$44,141

Source: U.S. Census Bureau

\*Kingsport-Bristol-Bristol MSA includes part of Tennessee.

\*\*Washington-Arlington-Alexandria MSA includes part of Washington, DC and Maryland.

\*\*\*Per Capita Income by MSA for 2014 dated as of 2015.

\*\*\*\*Per Capital Income for the Commonwealth dated as of September 2015.

Data for 2015 not yet available.

Distributed throughout Virginia are smaller urban areas, most of which historically have been trade centers for the surrounding areas and continue to be so today. These communities have attracted many of the new manufacturing facilities locating in the Commonwealth in recent years. The remainder of the Commonwealth's population lives in rural areas, including most of the towns and the remaining smaller cities.

## ECONOMIC FACTORS

### Taxable Retail Sales

Over the past ten years, taxable retail sales in Virginia increased by \$18.9 billion, or 24.5 percent. This growth is less than the average rate of inflation for this same period, which was 24.5 percent. The following table illustrates the changes in taxable retail sales for calendar years 2005 through 2014:

<u>Calendar Year</u>	<u>Taxable Retail Sales</u>	<u>% Change</u>
2005	77,290,441,767	-4.9
2006	89,478,625,283	15.8
2007	92,043,248,947	2.9
2008	89,773,478,959	-2.5
2009	85,869,132,300	-4.3
2010	86,420,963,843	0.6
2011	89,070,341,371	3.1
2012	93,335,660,137	4.8
2013	94,597,893,918	1.4
2014	96,203,913,416	1.7

*Source: Department of Taxation as of December 2014.*

### Personal Income

According to the U.S. Department of Commerce, estimated personal income for Virginians in 2014 was over \$414 billion. This results in a Commonwealth per capita income of \$50,345, ranking tenth among states and greater than the national average of \$46,049.

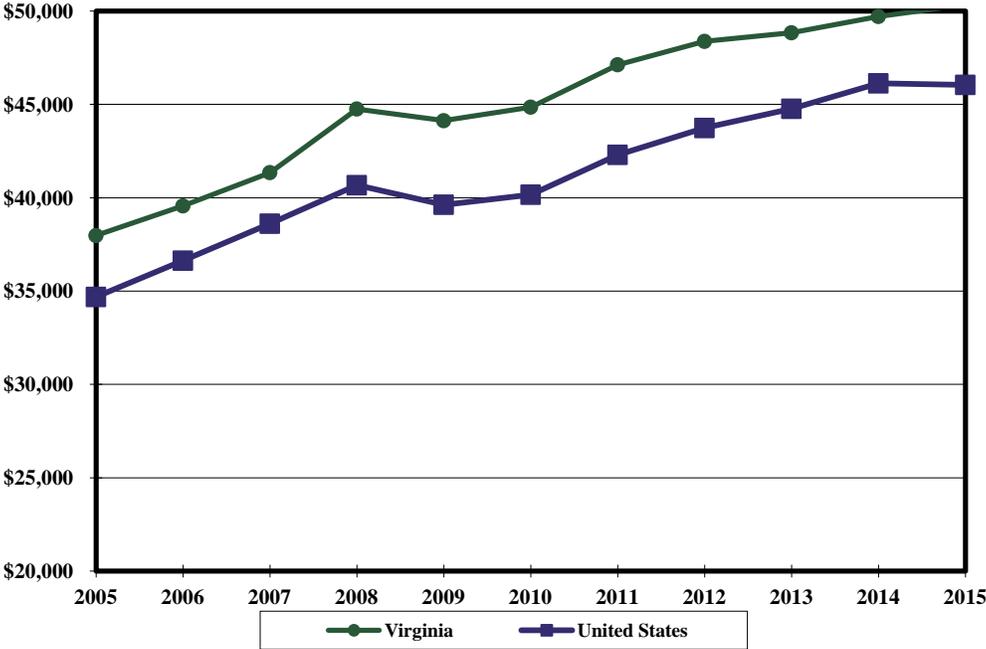
From 2005 to 2014, the Commonwealth's 2.9 percent average annual rate of growth in per capita income was slightly less than the national average rate of growth of 3.1 percent. Virginia and United States per capita personal income are shown in the following table and graph:

#### PERSONAL INCOME TRENDS

<u>Year</u>	<b>Virginia</b>		<b>United States</b>	
	<u>Per Capita Personal Income</u>	<u>Increase Over Preceding Year</u>	<u>Per Capita Personal Income</u>	<u>Increase Over Preceding Year</u>
2005	39,825	5.5	35,888	4.6
2006	42,075	5.6	38,127	6.2
2007	43,921	4.4	39,804	4.4
2008	44,900	2.2	40,873	2.7
2009	44,063	-1.9	39,357	-3.7
2010	44,854	1.8	40,163	2.0
2011	47,126	5.1	42,298	5.3
2012	48,377	2.7	43,735	3.4
2013	48,838	1.0	44,765	2.4
2014	50,345	3.1	46,049	2.9

Source: Bureau of Economic Analysis as of September 2015.

**PERSONAL INCOME TRENDS**



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In 2015, the sources of personal income in the Commonwealth and the comparable sources of personal income for the United States are shown in the following table and pie chart:

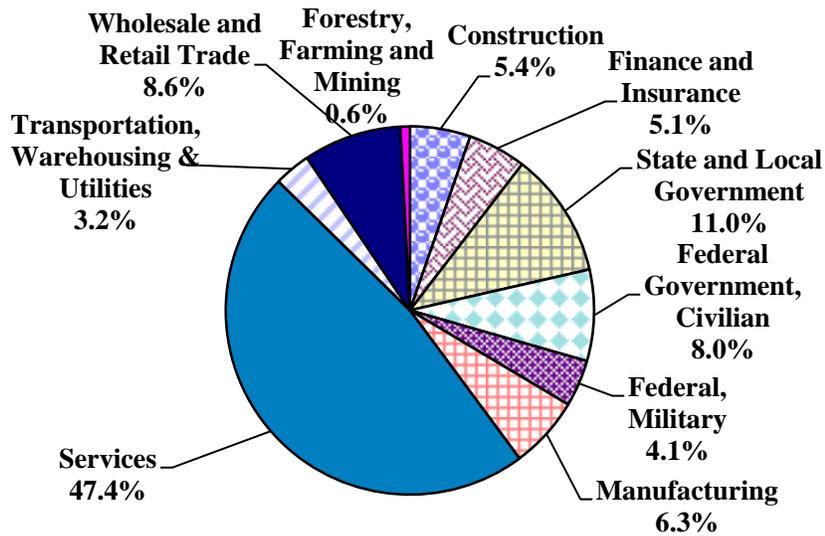
**SOURCES OF PERSONAL INCOME  
2015**

	Virginia (in Millions)	Percentage of Personal Income Before Residence Adjustment	
		Virginia	United States
Forestry, fisheries, related activities and other	\$ 482	0.2 %	0.3 %
Construction	16,688	5.4	5.8
Farming	960	0.3	0.8
Finance and insurance	15,729	5.1	7.1
Government:			
State and local	33,919	11.0	12.4
Federal, civilian	24,764	8.0	2.9
Federal, military	12,581	4.1	1.2
Manufacturing	19,261	6.3	9.5
Mining	1,119	0.4	1.5
Services	145,898	47.4	43.2
Transportation, warehousing & utilities	9,905	3.2	4.2
Wholesale and retail trade	26,362	8.6	11.0
Subtotal	\$ 307,668	100 %	100 %
Contributions for government social insurance	(34,562)		
Plus:			
Dividends, interest and rent	88,100		
Transfer payments	58,884		
Personal income before residence adjustment	\$ 420,090		
Residence adjustment (1)	20,322		
Total Personal Income	\$ 440,412		

- (1) Total personal income is reported by place of residence. However, income by industry is shown by place of work. This adjustment accounts for income earned by Virginia residents who worked outside the Commonwealth, primarily federal government employees who lived in Northern Virginia but worked in Washington, D.C.

Source: Bureau of Economic Analysis estimates for Third Quarter of 2015 as of December 2015.

**DISTRIBUTION OF VIRGINIA NONAGRICULTURAL SOURCES OF GROSS PERSONAL INCOME BY MAJOR INDUSTRY  
2015**



**Residential Construction**

Residential construction was concentrated in three of the state’s ten MSAs. The Virginia portions of the Washington-Arlington-Alexandria MSA, the Virginia Beach-Norfolk-Newport News MSA, and the Richmond MSA accounted for approximately 86 percent of the state total.

**RESIDENTIAL CONSTRUCTION IN VIRGINIA <sup>(1)</sup>**

<b>Year</b>	<b>Value of Construction in Current Dollars (in millions)</b>	<b>Percent Change from Preceding Year</b>	<b>Number of Permits Issued</b>	<b>Percent Change from Preceding Year</b>
2005	9,261	15.0	62,765	0.3
2006	7,267	-21.5	45,360	-27.7
2007	6,330	-12.9	38,319	-15.5
2008	4,107	-35.1	27,704	-27.7
2009	3,197	-22.2	21,455	-22.6
2010	3,311	3.6	21,404	-0.2
2011	3,400	2.7	23,271	8.7
2012	4,027	18.4	27,275	17.2
2013	5,112	27.0	32,777	20.2
2014	4564	-10.7	28,673	-12.52

<sup>(1)</sup> Excludes mobile homes.

Source: University of Virginia, Weldon Cooper Center for Public Service.  
Data for 2015 not yet available.

## Assessed Value of Locally Taxed Property

The Constitution of Virginia provides that real estate, coal and other mineral lands and tangible personal property, except the rolling stock of public service corporations, are reserved for taxation by cities, counties, towns and other local government entities. Shown below is the assessed value of real estate and personal property as determined by the various taxing jurisdictions and the combined value of real estate and personal property for public utilities as determined by the State Corporation Commission. Cities and counties are required by law to assess real estate at 100 percent of market value.

### ASSESSED VALUES OF REAL ESTATE AND TANGIBLE PERSONAL PROPERTY

Tax Year Ended		Public Service	Personal	
31-Dec	Real Estate	Corporation	Property	Total
2004	\$ 617,559,007,920	\$ 27,379,304,201	\$ 61,349,533,127	\$ 706,287,845,248
2005	727,049,755,759	29,539,242,718	66,156,293,731	822,745,292,208
2006	900,079,538,628	28,843,374,447	69,815,543,837	998,738,456,912
2007	982,816,278,651	29,126,367,531	70,911,848,399	1,082,854,494,581
2008	1,023,386,154,546	31,749,628,737	71,398,689,437	1,126,534,472,720
2009	988,853,631,404	34,705,834,232	68,225,665,097	1,091,785,130,733
2010	942,044,609,913	37,137,075,381	70,049,322,677	1,049,231,007,972
2011	949,019,441,456	38,455,832,384	71,600,491,421	1,059,075,765,261
2012	954,082,225,088	40,142,313,094	76,551,011,940	1,070,775,550,122
2013	969,877,013,082	41,415,115,231	73,286,019,303	1,084,578,147,616

Source: Department of Taxation's 2014 Annual Report.

Data for 2014 and 2015 not yet available.

## Employment

As of July 2015, up to 4.2 million residents of the Commonwealth were in the civilian labor force, which includes agricultural and nonagricultural employment, the unemployed, the self-employed and residents who commute to jobs in other states.

Virginia is a right-to-work state with diverse sources of income. In part because of its proximity to Washington DC, Virginia has a larger share of federal and military employees than most states. More than ten percent of Virginia's workers are federal employees or active military. The following table indicates the distribution by category of nonagricultural employment in the Commonwealth and the comparative distribution in the United States.

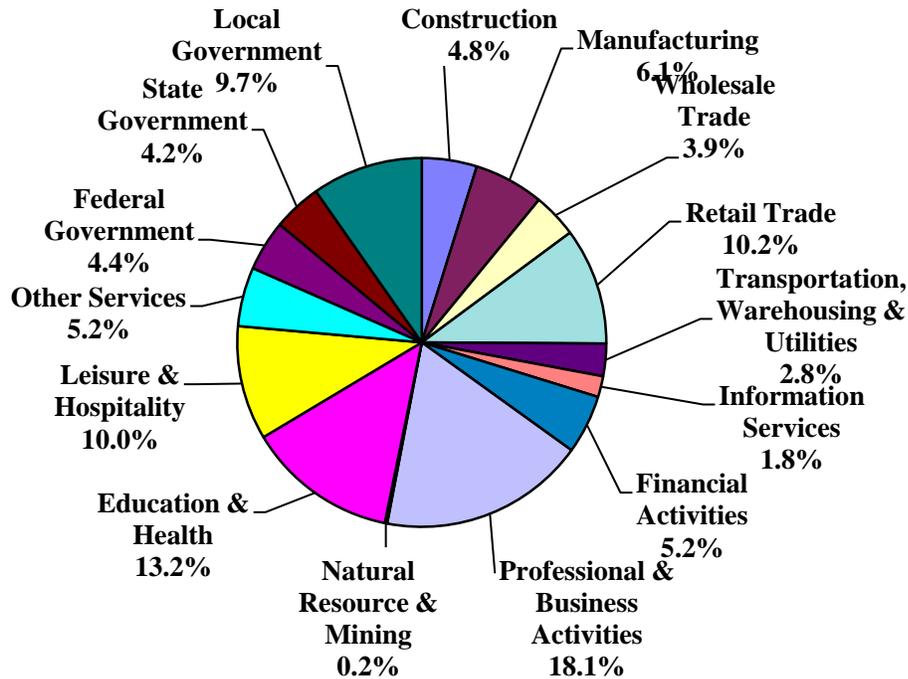
**DISTRIBUTION OF NONAGRICULTURAL EMPLOYMENT  
2015**

	<u>Virginia</u>		<u>United States</u>	
Natural Resource & Mining	0.2	%	0.5	%
Construction	4.8		4.5	
Manufacturing	6.1		8.5	
Wholesale Trade	3.9		4.1	
Retail Trade	10.2		10.8	
Transportation, Warehousing & Utilities	2.8		3.7	
Information Services	1.8		1.9	
Financial Activities	5.2		7.4	
Professional & Business Activities	18.1		13.7	
Education & Health	13.2		15.3	
Leisure & Hospitality	10.0		10.5	
Other Services	5.2		3.9	
Public Administration				
Federal Government	4.4		1.9	
State Government	4.2		3.5	
Local Government	9.7		9.7	
	<hr/>		<hr/>	
	100.0	%	100.0	%

*Source: National Data from The Department of Labor, Bureau of Labor Statistics as of January 2016*

*Virginia Data from The Department of Labor, Bureau of Labor Statistics as of January 2016*

**DISTRIBUTION OF VIRGINIA NONAGRICULTURAL EMPLOYMENT BY MAJOR INDUSTRY  
2015**



## NONAGRICULTURAL EMPLOYMENT TRENDS

	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>% Change</u> <u>2011-2015</u>	
<b>Natural Resource &amp; Mining</b>	9,213	10,900	10,100	9,800	8,100	<b>-12.1</b>	<b>%</b>
<b>Construction</b>	177,832	175,900	177,300	179,900	185,600	<b>4.4</b>	
<b>Manufacturing</b>	231,573	232,100	230,600	231,300	235,400	<b>1.7</b>	
<b>Wholesale Trade</b>	112,928	101,073	111,200	102,880	150,512	<b>33.3</b>	
<b>Retail Trade</b>	414,730	416,923	409,900	424,380	394,276	<b>-4.9</b>	
<b>Transportation &amp; Warehousing, Utilities</b>	109,366	113,704	116,200	115,740	109,612	<b>0.2</b>	
<b>Information Services</b>	74,604	71,800	71,100	68,800	70,500	<b>-5.5</b>	
<b>Financial Activities</b>	174,619	188,200	192,100	196,200	198,600	<b>13.7</b>	
<b>Professional &amp; Business Activities</b>	671,411	678,100	678,200	663,000	695,300	<b>3.6</b>	
<b>Education &amp; Health</b>	451,642	477,900	497,100	513,100	507,600	<b>12.4</b>	
<b>Leisure &amp; Hospitality</b>	344,660	357,500	366,200	374,200	385,100	<b>11.7</b>	
<b>Other Services</b>	132,322	190,400	193,900	197,200	199,200	<b>50.5</b>	
<b>Public Administration</b>							
<b>Federal Government</b>	174,022	174,100	173,600	170,700	170,700	<b>-1.9</b>	
<b>State Government</b>	146,391	158,100	160,000	162,300	163,400	<b>11.6</b>	
<b>Local Government</b>	379,428	380,300	376,400	375,300	374,100	<b>-1.4</b>	
<b>Total</b>	<b>3,604,741</b>	<b>3,727,000</b>	<b>3,763,900</b>	<b>3,784,800</b>	<b>3,848,000</b>	<b>8.0</b>	<b>%</b>

*Source: Virginia Employment Commission dated as of November, 2015.*

The table above shows employment trends in the Commonwealth during the five years from 2011 to 2015. The most significant growth has occurred in the Other Services, Wholesale Trade, Financial Activities, Education & Health, Leisure & Hospitality and State Government sectors, while the largest declines were in the Natural Resources & Mining, Information Services and Retail Trade sectors.

From 2014 to 2015, the largest growth rates occurred in the Wholesale Trade sector which increased by 46.3 percent, from 102,880 in 2014 to 150,512 in 2015. The Professional & Business Activities also showed growth for the year by 4.9 percent, from 663,000 in 2014 to 695,300 in 2015. The Construction and Leisure & Hospitality sectors grew by 3.2 percent and 2.9 percent, respectively. Declines from 2014 to 2015 occurred in Natural Resources & Mining employment, which decreased by 17.3 percent, Retail Trade, which decreased by 7.1 percent, and Transportation & Warehousing Utilities, which decreased by 5.3%.

## Largest Employers

The ten largest private and public sector employers in the Commonwealth, each of which employed 1,000 or more persons, are shown below.

### TOP TEN PRIVATE SECTOR EMPLOYERS 2015

<u>Rank</u>	<u>Name</u>	<u>Industry</u>
1	Wal Mart	General Merchandise Stores
2	Sentara Healthcare	Hospitals
3	Huntington Ingalls/Newport News Shipbuilding	Transportation Equipment Manufacturing
4	Food Lion	Food and Beverage Stores
5	HCA Virginia Health System	Hospitals
6	Inova Fairfax Hospital	Hospitals
7	Capital One Bank	Credit Intermediation and Related Activities
8	Lowe's Home Centers, Inc	Building Material, Garden Equipment and Supplies Dealer
9	Kroger	Food and Beverage Stores
10	Riverside Medical Center	Hospitals

*Source: Virginia Employment Commission Community Profile as of January 2016*

### TOP TEN PUBLIC SECTOR EMPLOYERS 2015

<u>Rank</u>	<u>Name</u>	<u>Industry</u>
1	U.S. Department of Defense	National Security and International Affairs
2	Fairfax County Public Schools	Educational Services
3	U.S. Postal Service	Postal Service
4	County of Fairfax	Executive, Legislative, and Other General Gov't Support
5	U.S. Department of Homeland Defense	Administration of Security
6	Prince William County Schools	Educational Services
7	City of Virginia Beach Schools	Educational Services
8	University of Virginia /Blue Ridge Hospital	Hospitals
9	Loudoun County Schools	Educational Services
10	U.S. Department of Commerce	Administration of Foreign and Domestic Trade

*Source: Virginia Employment Commission Community Profile as of January 2016*

## Unemployment

The Commonwealth is one of 25 states with a Right-to-Work Law and has a record of good labor-management relations. The Commonwealth's favorable business climate is reflected in the relatively small number of strikes and other work stoppages it experiences.

The Commonwealth is one of the least unionized of the more industrialized states. Three major reasons for this situation are the Right-to-Work Law; the importance of manufacturing industries such as textiles, apparel, electric and electronic equipment and lumber which are not highly unionized in the Commonwealth; and the importance of federal civilian and military employment. Typically the percentage of nonagricultural employees belonging to unions in the Commonwealth has been approximately half the U.S. average.

In the year 2015, Virginia had modest job growth in the seven metropolitan statistical areas (MSAs) reported on by the Virginia Employment Commission. Those areas include Blacksburg-Christiansburg-Radford, Charlottesville, Harrisonburg, Northern Virginia, Richmond, Virginia Beach-Norfolk-Newport News and Winchester. Northern Virginia, the state's largest MSA experienced the largest absolute job gain, with an increase of 23,000 jobs while Blacksburg-Christiansburg experienced the largest percentage increases of 2.1%.

The following table shows the size of the Commonwealth's total civilian labor force from 2005 through 2015, the percentage unemployed during this period and the comparable national unemployment rate.

### UNEMPLOYMENT TRENDS

<u>Year</u>	<u>Virginia's Civilian Labor Force</u>	<u>Unemployment in Virginia</u>	<u>Unemployment in United States</u>
2005	3,921,799	3.50	5.10
2006	3,983,717	3.00	4.60
2007	4,048,996	3.00	4.60
2008	4,188,397	4.00	5.80
2009	4,179,810	6.80	9.30
2010	4,185,321	6.90	9.60
2011	4,347,644	6.10	8.50
2012	4,209,532	5.90	7.90
2013	4,240,111	5.50	7.40
2014	4,238,540	4.50	5.60
2015*	4,222,819	4.20	5.00

\* 2015 Virginia's Civilian Labor Force as of November 2015 from Virginia Labor Market Information.

\* 2015 Unemployment in Virginia as of November 2015 from United States Department of Labor Bureau of Labor Statistics.

\* 2015 Unemployment in United States as of November 2015 from Virginia Labor Market Information.

## Other Economic Factors <sup>1</sup>

*Utilities:* Over the last decade, Virginia opened the door to electric utility deregulation. However, the competition had not materialized. Therefore, the Virginia General Assembly enacted "re-regulation legislation" which has re-established retail rate regulation. The legislation permits choice for large commercial and industrial customers with demands exceeding 5 megawatts (MW). The measure provides flexible and innovative forms of ratemaking that could provide incentives for utility operational efficiencies and for generation plant construction. The legislation also creates incentives for the development of renewable energy resources and for energy efficiency and conservation programs.

Virginia's electric rates remain very competitive. In 2015, the average cost per unit of electricity for the industrial sector is 6.77 cents in Virginia, compared to 7.13 cents for the nation. More than 4,300 megawatts of additional electric generating power planned or under construction statewide.

Adequate electric power is available throughout the Commonwealth through the investor-owned utilities of Dominion Virginia Power (Dominion) and Appalachian Power (APCO), 12 electric cooperatives that distribute power in rural districts, and 16 municipalities that have their own distribution systems with power purchased primarily from the previously mentioned companies. The electric utilities serving the Commonwealth are interconnected with neighboring utilities, both within and outside of the Commonwealth, for reliability of service.

Dominion's 1,329-megawatt Warren County Power Station entered into commercial operation December 2014. In 2016, the 1,360-megawatt Brunswick Power Station in Brunswick County is scheduled to come on line.

Dominion's \$1.8 billion clean-coal power station in Wise County, Virginia became operational in July, 2012. The 668-megawatt coal-fired power plant, also known as the Virginia City Hybrid Energy Center, uses advanced technology designed to reduce emissions and protect the environment.

Virginia is served by eight regulated natural gas utility companies which provide an extensive network of underground pipes and other gas facilities. In 2014, Virginia's industrial sector accounted for nearly 33 percent of natural gas consumption in the state. Virginia's natural gas suppliers specialize in serving industrial customers and provide expert advice in engineering, construction and inspection.

With few exceptions, municipalities and several highly urbanized counties own their own waterworks systems. In some instances, the system of a municipality serves nearby communities and suburban areas. Most subdivision systems are privately owned and operated. Some federal installations and many industrial plants have their own water supplies. Larger municipalities usually depend on surface water or surface water supplemented by groundwater. There are approximately 2,700 public community water supplies in Virginia, serving approximately 87 percent of the state's population. Virginia has more than 50,000 miles of freshwater streams producing greater than 25 billion gallons per day of freshwater flow.

All cities, many towns, and some counties have their own sewage collection systems. Existing or planned facilities provide wastewater treatment which meets or will meet established water quality standards.

*Transportation:* The state's central location on the East Coast is within a one day (10-hour) drive of 43% of the U.S. population. As the nation's third largest state-maintained transportation network, Virginia's highway system includes more than 70,000 miles of primary and secondary roads and six major north-south and east-west interstate routes. The Commonwealth is within easy reach of the nation's leading industrial and distribution centers. For example, Richmond is only 330 miles from New York City to the north, 450 miles from Detroit to the west, and 500 miles from Atlanta to the south. Two of the nation's largest Class I railroads operate in Virginia. CSX Corporation Railroad has offices in Richmond, and Norfolk Southern Corporation is

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<sup>1</sup> Information contained in this section was compiled from various Virginia state agencies and entities, including the Virginia Economic Development Partnership.

headquartered in Norfolk. Both have extensive infrastructure throughout the Commonwealth. Eight shortline railroads also provide freight rail service. Nearly 3,400 miles of railway (excluding trackage rights) traverse the state.

Norfolk Southern Corporation's Heartland Corridor double-stack rail project is a \$290 million public-private partnership that offers efficient routing between the Port of Virginia and the Midwest markets. Cargo can now be transported via double-stack rail with next morning service to Columbus, Ohio and second-morning service to Chicago, Illinois while existing rail lines can handle increasing container volumes.

Norfolk Southern's Crescent Corridor Project will improve the existing 2,500-mile rail network enabling it to handle more freight traffic. The Crescent Corridor traverses 13 states from Louisiana to New Jersey and touches 26 percent of the nation's population and 26 percent of the nation's manufacturing output. This \$3 billion project is expected to be fully operational in 2020. To increase rail capacity on the Crescent's route through Virginia, Norfolk Southern is planning \$47.1 million in track and signal upgrades through 2016. With 30 new lanes now open connecting to the Crescent Corridor, Norfolk Southern's high capacity intermodal routes are truck competitive, fuel efficient and dependable.

Virginia is served by 14 commercial airports (including those just across the state line at Bluefield, West Virginia; Blountville, Tennessee; Greensboro and Raleigh-Durham, North Carolina; and Baltimore, Maryland). Scheduled commercial airline service is provided to over 135 non-stop destinations around the world. Two of the nation's largest airports, Dulles International and Ronald Reagan Washington National Airports offer daily international non-stop flights to approximately 50 destinations. The commercial airports are supplemented by 57 general aviation airports licensed for public use throughout the Commonwealth. Washington Dulles International has been one of the fastest growing airports in the country. Ronald Reagan Washington National Airport located in Arlington, historically has been one of the world's busiest airports.

*Virginia Commercial Space Flight Authority:* The Commonwealth, through the Virginia Commercial Space Flight Authority (VCSFA) and in partnership with NASA, has invested heavily in the development of the Mid Atlantic Regional Spaceport (MARS) at Wallops Island, Virginia. The Commonwealth has invested over \$80 million in state funds that were used for the construction of the new Pad OA to support Orbital Science Corporation's contract with NASA for eight resupply missions to the International Space Station (ISS). With NASA turning to the commercial aerospace industry to conduct many of its mission critical activities, the Commonwealth is uniquely situated to serve a vital role in the future of our nation's space program. MARS, with its strategic location, serves not only as a valuable asset to the U.S. space program, but also as crucial link in Virginia's job creation and economic development efforts.

*Port Facilities:* The Port of Virginia is largely responsible for the Commonwealth's strong ties with international commerce. At 50 feet, the Port of Virginia offers the deepest shipping channels on the U.S. East Coast, and is serviced by more than 30 international steamship lines. Norfolk Southern and CSX offer on-dock, double stack intermodal service to key inland markets in the Midwest, Ohio Valley and Southeast.

Norfolk International Terminals (NIT) located in Hampton Roads Harbor on 567 acres along the Elizabeth and Lafayette Rivers, is the Port of Virginia's largest terminal, and has fourteen of the biggest, most efficient cranes in the world. The main channel leading to the terminal is 50 feet deep and the Virginia Port Authority (VPA) has the authorization to dredge to 55 feet when needed. Slightly down the river from NIT is the second largest terminal, Portsmouth Marine Terminal (PMT). PMT has 3,540 feet of wharf, 3 berths, and 6 cranes, and has direct access to both CSX and Norfolk Southern railways, and will soon connect to the Commonwealth Railway, a 19-mile short line. Located in Newport News, Virginia, the Newport News Marine Terminal (NNMT) provides 42,720 feet of direct cargo loading on and off ships to and from the CSX break-bulk rail service, and 3,480 feet of total pier space serviced by four cranes, covered storage, container storage, and accessibility from 3 major Virginia roadways. In 2010, the VPA executed a 20-year lease with Virginia International Gateway (VIG), formerly APM Terminals North America. The lease allows VPA to assume operations at the VIG facility in Portsmouth, Virginia. The 576 acre terminal is recognized as the most technologically advanced marine cargo facility in the Americas, and provides on-site rail with links to Norfolk Southern and CSX. VIG has a current capacity of over one million twenty-foot equivalent units (TEUs) annually, with room for further expansion.

The Virginia Inland Port (VIP) in Front Royal is the second smallest of the port facilities. The intermodal facility is serviced by Norfolk Southern, and accessible via Interstates 66 and 81. VIP provides access to markets in Washington, DC, Maryland, Delaware, West Virginia, Ohio, Pennsylvania, and New York. In 2011, the VPA entered into a five year lease with the Port of Richmond. The Richmond facility allows for barge service between the NIT and APM terminals in Hampton Roads and Richmond, and serves waterborne, rail and truck shippers in the Mid-Atlantic States.

In 2012, the Port of Virginia and the U.S. Army Corps of Engineers signed a partnership agreement for the Craney Island Eastward Expansion project. This dual-purpose project will extend the life of Craney Island as a dredged material management area and also provide land for the construction of a new marine terminal. The eastward expansion is currently under construction.

*Ports of Entry:* Five Port of Entry facilities and one Service Port facility also serve businesses: Front Royal, New River Valley Airport in Dublin, Norfolk-Newport News (Service Port), Richmond-Petersburg, Tri-Cities near Bristol in Northeast Tennessee and Washington-Dulles in Northern Virginia.

*Telecommunications:* Virginia is one of the most connected states in the nation with access to a robust fiber network that matches or exceeds virtually every domestic market and most major financial centers around the world. The Commonwealth hosts prominent commercial internet exchange points, and 70 percent of the world's internet traffic passes through the Metropolitan Area Exchange East located in Ashburn, Virginia. The Richmond area has been connected to Ashburn with "dark fiber" opening opportunities along the I-95 corridor. In Southern and Southwest Virginia, the benefits of a 1,500+ mile advanced fiber-optic broadband network connects more than 100 certified GigaParks.

Customers in the Commonwealth have access to a full range of high quality, technologically advanced communication services. Virtually all major cities and towns are linked by fiber-optic lines crisscrossing the Commonwealth, which, in turn, are tied into recently constructed national fiber optic networks.

Since 2006, the Mid-Atlantic Broadband Cooperative (MBC), nationally renowned as a model for rural economic development, has provided world-class fiber-optic backbone network infrastructure to Southern Virginia. This cable network provides opportunities for the region to connect directly with major Tier 1 peering and carrier collocation centers. MBC owns and operates more than 1,800 miles of advanced, open-access fiber network that reaches 100% of the business, industrial, and technology parks in the region. Backed by grants from the U.S. Department of Commerce and the Virginia Tobacco Commission, MBC continues to grow and expand.

Efforts are underway to further expand and enhance Southwest Virginia's technological capabilities. Grants from the Tobacco Commission and the Virginia Coalfield Economic Development Authority will enable electronic upgrades as well as last mile connections.

The Bristol Virginia Utilities (BVU) Authority is a public utility company in Southwest Virginia that expanded its broadband infrastructure 900 miles into eight neighboring counties. That network – called OptiNet and CPC OptiNet in four of the counties – now provides fiber-optic speeds of up to 1 Gbps (gigabit per second) to customers in the city of Bristol and the counties of Bland, Buchanan, Dickenson, Russell, Smyth, Tazewell, Washington and Wythe, positioning Southwest Virginia for unprecedented economic growth. Monetary grant awards of nearly \$40 million from the Virginia Tobacco Commission since 2003 have helped to fund the existing 900-mile OptiNet infrastructure. As recently as July 2010, the Virginia Tobacco Commission continued its support of OptiNet by providing another \$5 million, facilitating acquisition of a Recovery Act grant of \$22 million from the National Telecommunications and Information Administration. The monies go toward construction of 388 miles of middle-mile fiber into seven of OptiNet's rural counties. This project paves the way for eventual fiber-to-the-home connectivity across Southwest Virginia.

Citizens is a regional full service communications provider offering land-line telephone, VoIP, IPTV Video, web and e-mail hosting, DSL, and FTTP (Fiber to the Premises: Business Ethernet and FTTH, Fiber to the Home), serving 7 counties in

Southwest Virginia. In addition, Citizens operates a 248 mile regional open access fiber network in 6 Virginia counties including 8 industrial parks.

*Research and Development:* The Commonwealth is home to many internationally recognized research and development (R&D) facilities. Federally funded R&D facilities, coupled with the research from Virginia universities, provide Virginia businesses access to leading researchers and technologies. Virginia is home to hundreds of private sector R&D operations, 11 federally funded R&D Centers, and 23 Federal Laboratory Consortium Laboratories such as the Homeland Security Institute, NASA Langley Research Center, and the Thomas Jefferson National Accelerator Facility. Unique university research parks across the state offer private companies' opportunities for co-location and cooperative relationships with Virginia universities, federal labs and other research consortia.

The Virginia BioTechnology Park in downtown Richmond is home to over 60 life science companies, research institutes and state/federal labs, employing over 2,400 scientists, engineers and researchers. The Park features nine buildings on a 34-acre campus. Members include early and mid-stage companies; multinational pharmaceutical, environmental and consumer product companies; national healthcare organizations managing the nation's solid organ transplant program and a number of international companies.

The National Institute of Aerospace (NIA) is a non-profit research and graduate education institute headquartered in Hampton, Virginia, near NASA's Langley Research Center. NIA's mission is to conduct leading-edge aerospace and atmospheric research, develop new technologies for the nation and help inspire the next generation of scientists and engineers. NIA was formed in 2002 by a consortium of research universities to ensure a national capability to support NASA's mission by expanding collaboration with academia and leveraging expertise inside and outside NASA. NIA performs research in a broad range of disciplines including space exploration, systems engineering, nanoscale materials science, flight systems, aerodynamics, air traffic management, aviation safety, planetary and space science, and global climate change.

SRI Shenandoah Valley in Harrisonburg, Virginia focuses on health and biomedical research and drug discovery and development with the ultimate goal of bringing new therapies and diagnostics to market. As part of SRI Biosciences, the research complements capabilities at other SRI locations, including SRI's Menlo Park, California headquarters. SRI's state-of-the-art 40,000-square-foot research facility is located on a 25-acre campus in the Innovation Village at Rockingham. The facility provides a convenient base for collaboration with academia, entrepreneurs, government, industry, and investors in Virginia and the greater Washington, D.C. area. SRI moved into its Shenandoah Valley laboratory facility in 2009 and further expanded in 2011 and 2013 to accommodate growth in its R&D programs. Scientific research at SRI Shenandoah Valley focuses on prevention, detection and treatment of diseases. Activities span basic research in emerging infectious disease, metabolic disease and proteomics; applied research in therapeutics including drugs, biologics, and vaccines; and personalized medicine through the development of companion diagnostics and biomarkers.

The Commonwealth Center for Advanced Manufacturing (CCAM) located in a state-of-the-art research facility in Prince George County, Virginia, is an applied research center that bridges the gap between fundamental research typically performed at universities and product development routinely performed by companies. CCAM provides production-ready advanced manufacturing solutions to member companies across the globe. Members guide the research, leveraging talent and resources within CCAM and at Virginia's top universities, through a collaborative model that enables them to pool R&D efforts to increase efficiencies. Results can then be applied directly to the factory floor, turning ideas into profit faster and more affordable than ever before.

Following the successful model of the Commonwealth Center for Advanced Manufacturing, the Commonwealth Center for Advanced Logistics Systems (CCALS) was established in 2013, also in Prince George County, Virginia. This public-private alliance focuses on solving logistics challenges and bringing solutions to market more quickly by partnering Virginia's leading universities and logistics companies. Founding members include Longwood University, University of Virginia, Virginia Commonwealth University, Virginia State University, Logistics Management Resources, and LMI.

*New and Expanding Companies:* In June 2015, Elephant Insurance announced the expansion of its U.S. headquarters in Henrico County. With this expansion, the company will invest \$2 million and create 1,173 new jobs.

In November 2015, Microsoft announced the fourth expansion of its data center in Mecklenburg County. This expansion will create 42 new jobs, and involve over \$402 million in investment by the company. With this expansion, Microsoft will have invested \$1.74 billion in Mecklenburg County since 2010.

Navy Federal Credit Union announced in March 2015 that it will invest \$114.6 million to expand its headquarters in Fairfax County. This expansion is expected to create 600 new jobs. Navy Federal Credit Union is a valued employer that supports over 5,000 jobs in the Commonwealth.

German grocer Lidl announced in June 2015 that it had chosen Arlington County as the site of its U.S. headquarters. The company will invest over \$77 million and create over 500 new jobs. The company also announced \$125 million in investment to construct a distribution center in Spotsylvania County and create 200 new jobs.

In July 2015, Richmond-based Hardywood Craft Brewery announced that it will be investing over \$28 million to construct a 60,000-square-foot brewery in Goochland County. This brewery is expected to create 56 new jobs and is yet another example of the Commonwealth's growing craft brewing industry.

Shandong Tranlin Paper Co., a leading manufacturer and research and development center for straw-based pulp and paper products, announced in June 2014 the creation of its first U.S. operation. Locating in the James River Industrial Center in Chesterfield County, it will invest more than \$2 billion and add 2,000 jobs by 2020. This project represents the largest Chinese greenfield development project in the U.S. and the largest Chinese economic development project in Virginia history.

In November 2014, Lindenburg Industry announced a \$113 million investment to bring 349 new skilled manufacturing jobs to the Town of Appomattox. The project will revitalize a vacant facility and manufacture industrial environmental control components used in clean air emissions. This project is the first new company announcement in Appomattox County in 15 years, and the largest since Thomasville Furniture in 1972.

*Business Climate:* Virginia is headquarters to 35 Fortune 1000 companies and is ranked highly in three of the most comprehensive and impartial independent studies evaluating America's top states for business: Forbes.com, Pollina Corporate Real Estate; and CNBC.

Virginia ranked seventh in the country in Forbes.com's 2015 *Best States for Business* study. Virginia took the top spot in 2006, 2007, 2008, 2009, and 2013 and ranked second overall in 2010, 2011, and 2012. The review examines multiple objective measurements, including business cost, regulatory climate, quality of the workforce, and economic growth. Forbes.com is the official Internet site of the Forbes family of business publications. According to Forbes.com 2015 study, the Commonwealth ranked No. 1 in the Regulatory Environment category because of its strong incentive offerings and business-friendly government policies, ranked No. 2 for labor supply, and for the second year in a row received a No. 5 ranking for quality of life.

In 2015, Pollina Corporate Real Estate, a full-service brokerage and consulting firm representing corporations in real estate matters on a national and international basis, ranked Virginia as America's fourth most business-friendly state in their annual independent study titled, *Pollina Corporate Top 10 Pro-Business States 2015*. The study evaluates and ranks states based on 32 factors including taxes, human resources, right-to-work legislation, energy costs, infrastructure spending, worker compensation legislation, jobs lost or gained, economic incentive programs and state economic development efforts. According to the most recent study, Virginia excels in offering low operating costs, a pro-business environment, access to global markets, and a skilled educated workforce to businesses. The Commonwealth ranked first in the Pollina study in 2007, 2009, 2010, and 2011 while ranking second in 2006 and 2012; third in 2008, and fourth in 2013.

Virginia was ranked twelfth in CNBC's *America's Top States for Business 2015*. All 50 states are ranked on 60 measures of competitiveness, using input from business groups, economic development experts, companies, and the states

themselves. The network separates those measures into 10 broad categories: cost of doing business, workforce, quality of life, economy, infrastructure, technology and innovation, education, business friendliness, access to capital, and cost of living. Since the rankings began, Virginia has claimed the number one spot in 2007, 2009, and 2011 while receiving second in 2008 and 2010. In the 2015 study, the Commonwealth was also ranked third in business friendliness, sixth in education, and sixth in workforce.

*Education:* The Constitution of Virginia vests the supervision of public elementary and secondary schools in local school boards. The State Board of Education is, however, required to prescribe standards of quality and has prescribed minimum competency tests for high school graduation.

Virginia's public schools are financed through a combination of state, local and federal funds. The private sector also contributes through partnerships with schools and school divisions. The apportionment of the state funds for public education is the responsibility of the General Assembly, through the Appropriations Act. General fund appropriations serve as the mainstay of state support for the commonwealth's public schools, augmented by retail sales and use tax revenues, state lottery proceeds, and other sources. Historically, state funding for public education represents about one-third of the state general fund budget.

Counties, cities and towns comprising school divisions also support public education by providing the locality's share to maintain an educational program meeting the commonwealth's Standards of Quality.

While public education is primarily a state and local responsibility, the federal government provides assistance to state and local education agencies in support of specific federal initiatives and mandates.

In the 2015-16 academic year, an estimated 393,545 students were enrolled in the Commonwealth's 39 public colleges, community colleges and universities. Of these students, an estimated 179,065 attended 23 community colleges on 40 campuses within the Virginia Community College System. A total of 1,284,680 students attended public elementary and secondary schools. The following table illustrates enrollment levels for all educational levels for the last 10 academic years.

**ENROLLMENT FOR PUBLIC AND PRIVATE INSTITUTIONS OF HIGHER EDUCATION  
AND PUBLIC PRIMARY AND SECONDARY SCHOOLS**

<u>Academic Year</u>	<u>Higher Education</u>			<u>Public Primary and Secondary</u>
	<u>Public</u>	<u>Private</u>	<u>Total</u>	
2006-07	357,857	70,785	428,642	1,220,440
2007-08	370,598	79,073	449,671	1,230,857
2008-09	383,459	86,959	470,418	1,235,064
2009-10	401,352	100,514	501,866	1,244,873
2010-11	409,277	110,495	519,772	1,251,949
2011-12	413,019	122,275	535,294	1,258,520
2012-13	409,069	123,144	532,213	1,264,880
2013-14	403,975	125,343	529,318	1,273,211
2014-15	398,689	135,591	534,280	1,279,773
2015-16	393,545	135,121	528,666	1,284,680

*Source: State Council for Higher Education in Virginia, Virginia Department of Education.*

*Natural Resources:* Virginia's five physiographic provinces are underlain by rocks of different ages, kinds, and character. Consequently, the state has a wide variety of mineral resources. Today, the value of mineral production in Virginia is nearly \$3.7 billion. In terms of value, the most important commodity is bituminous coal. Seven counties in the Appalachian

Plateau region constitute the Southwest Virginia Coal Field. According to *Virginia Economic Indicators* published by the Virginia Employment Commission (Vol. 43, No. 4), the mining industry is expected to follow energy markets. It is predicted that utilities will use less coal due to the conversion of old coal-fired power plants to natural gas.

Virginia's forests provide more than \$17.5 billion in annual economic benefits to the Commonwealth, and the forest industry provides employment for more than 103,000 Virginians. In addition, the nearly 16 million acres of forestland provide citizens environmental benefits, such as water quality and air quality, habitat for wildlife and plants, recreational opportunities and aesthetic beauty.

Virginia's geographic location contributes to the success of its seafood industry. The Virginia seafood industry is one of the oldest industries in the United States and largest seafood production state on the East Coast. In addition, Virginia is the nation's third largest producer of marine products with total landings of over \$388 million pounds in 2014. Its ports are rarely, if ever, closed in the winter. Its catch is widely diversified, preventing dependence on any one species. Among the 50 commercially valuable seafood species harvested from some 620,000 acres of water are sea scallops, clams, oysters, blue crabs, summer flounder, striped bass, croaker and spot. The Virginia Institute of Marine Science has reported the annual economic impact of Virginia's seafood industry to be over \$500 million.

*Agriculture:* The agricultural industry has an economic impact of \$52 billion annually and provides nearly 311,000 jobs in the Commonwealth. The industries of agriculture and forestry together have a total economic impact of almost \$70 billion. Every job in agriculture and forestry supports 1.6 jobs elsewhere in the Virginia economy.

Production agriculture employs nearly 55,000 farmers and workers in Virginia and generates approximately \$3.3 billion in total output. Value-added industries, those that depend on farm commodities, employ an additional 67,000 workers. When the employment and value-added impact of agriculture and forestry are considered together, they make up 8.1 percent of the state's local gross domestic product.

*Tourism:* Another of Virginia's most important economic assets is the travel and tourism industry. Tourism's economic contribution to Virginia in 2014 increased to 22.4 billion, a 4.1 percent increase over 2013. Approximately 216,900 Virginia jobs were directly supported by travel spending in 2014, including employment in such travel-related businesses as lodging establishments, restaurants, museums, amusement parks, retail stores and gasoline service stations. Tourism is also a significant source of government revenues and was responsible for \$2.9 billion in combined state and local tax revenues in 2014, up 4.7 percent from 2013.