

Statewide Economic Analysis Report

Division of Economic Information & Analytics
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Introduction



The Statewide Economic Analysis (SEA) Report is an annual publication that is meant to serve as a resource for policy makers, researchers, employers, job seekers, and workforce development professionals. The data presented in this report draws from multiple sources including the Economic Information & Analytics' (EIA) labor market information and other economic and demographic data, and provides a detailed look at Virginia's economy, such as: its composition; what drives it; and where it's going. It also gives an overview of regional trends within the state by presenting detailed information on local workforce development area (LWDA) labor markets.

Ultimately, this report is part of an ongoing effort to put labor market information into the hands of those who need it to better understand Virginia's rapidly changing labor market, whether it be a workforce development professional analyzing demographic and claims data to estimate local available labor supply or a school administrator using occupational projections estimates to help prepare students for the high-growth, high-wage jobs of the future.

Part I: Statewide Analysis



The Virginia Economy

On the whole, the Virginia economy has improved steadily in recent years. Both the state's unemployment rate and the number of initial claims for unemployment insurance remain at near record-low levels while over-the-year employment growth has been positive for more than five years. But, more than just the quantity of the labor force, its quality has increasingly attracted attention. As technological change transforms the modern workplace, employers gravitate toward states with the workforce that they need to grow their businesses.

Virginia has many highly skilled workers. Compared to most states, its workers possess an elevated level of educational attainment, especially in sought-after STEM disciplines. In recent decades, these workers and the employers that hire them have congregated in Northern Virginia, boosting its household incomes with their well-paying jobs. In that part of Virginia, job growth has come mainly from private sector hiring as the professional and business service industry has supplanted the federal government as the main source of job growth.

Richmond and Hampton Roads, the state's other major metropolitan areas, have also shown positive economic trends during this period. Richmond has seen significant growth in white collar professional services and finance jobs. At the same time, its quality of life and relatively low cost of living are attracting more young, skilled workers resulting in lean housing inventories and rising prices for residential real estate. After suffering through a period of flat defense spending and sequestration, the Hampton Roads metro area anticipates increased budgets for naval ship building and repair, adding to current project backlogs in Newport News. Strong hotel and related tourism spending in Virginia Beach and other areas has also helped to boost that region's economy. Healthcare industry job growth remains robust in these areas and in others throughout the state.

As Virginia's three major metro areas have added residents and jobs, many rural parts of the state face challenges that have held employment growth back. Their relative isolation is one factor but another head wind is demographic change. Employers tend to locate where there are consumers and workers. And, while actual population loss has rarely been severe in rural Virginia, the age of its workforce has risen as Baby Boomers have gotten older with fewer younger workers with the necessary skills remaining to replace them. Over the years, the decline of local industries like coal mining and textile manufacturing has worsened this trend. In contrast to this are areas like parts of central Virginia where there are rural, yet tight, labor markets located outside of urban centers but on major highways that

connect them to the rest of the country. Similarly, the Shenandoah Valley has seen its manufacturing job market tighten as companies utilize its logistical advantages and compete for its skilled workforce. The good news is that labor market conditions have firmed enough throughout Virginia in recent years to improve conditions even in lagging rural and inner city areas. In such places, modest gains may indicate a step toward closing the gaps that exist in labor market strength within the state.

Virginia Snapshot

Table 1 provides a snapshot of the most recent economic data for Virginia, the change over the last five years, and how Virginia compares to the nation. The Commonwealth’s overall story is one of steady growth and a demographically diverse workforce. Between 2012 and 2017, the most recent data available, the Virginia population for the young professional eligible population aged 20 to 34 years had a 4.9 percent increase. There was a very slight increase in the number of adults of middle management working age, with almost 69 percent of the population falling into the prime working years aged between 20 and 74. This portion of the population most likely to be educated, with work experience, and have an established career. Using those metrics as a basis, Virginia can expect to hold the economy steady in the near future. Another thing to consider is that the younger cohort (20 to 34 years old) and the older cohort (55 to 74 years old) are close in size, meaning that as individuals age out of the workforce, there are individuals ready to enter into their positions.

One topic that may prove problematic for Virginia’s age group of 35 to 54 year cohorts is that they are the most likely to enter into positions vacated by the aging population of 55 to 74 years old. In this case, the 35 to 54 year cohort is significantly larger than those aged 55 to 74 years. As the older population group retires, the positions that open up will not be in large enough supply for the younger workers to move into, thus setting the stage for underemployment and discouragement among the workforce in that age group.



Table 1: Virginia's Economic Snapshot, 5-Year Trend

	Subject	Virginia, 2012	Virginia, 2017	US Total, 2017	5-Year Change
Demographics: U.S. Census Bureau, American Community Survey 5-Year Estimates	Total Population	8,014,955	8,365,952	316,027,641	4.4%
	Male	3,933,820 (49.1%)	4,113,988 (49.2%)	154,419,680 (48.9%)	4.6%
	Female	4,081,135 (50.9%)	4,251,964 (50.8%)	161,607,961 (51.1%)	4.2%
	0 to 14 Years	1,522,841 (19.0%)	1,551,624 (18.5%)	61,011,748 (19.3%)	1.9%
	15 to 19 Years	553,032 (6.9%)	547,684 (6.5%)	21,219,050 (6.7%)	-1.0%
	20 to 34 Years	1,667,111 (20.8%)	1,748,663 (20.9%)	66,546,138 (21.1%)	4.9%
	35 to 54 Years	2,316,322 (28.9%)	2,268,236 (27.1%)	837,47,562 (26.5%)	-2.1%
	55 to 74 Years	1,506,812 (18.8%)	1,750,360 (20.9%)	68,250,909 (21.6%)	16.2%
	75 Years and Over	424,793 (5.3%)	481,385 (5.8%)	20,229,000 (6.4%)	13.3%
	Median Age	37.4 Years	38.0 Years	37.8 Years	1.6%
	White	5,575,445 (69.6%)	5,720,209 (68.4%)	234,370,202 (74.2%)	2.6%
	Black or African American	1,561,042 (19.5%)	1,605,447 (19.2%)	40,610,815 (12.9%)	2.8%
	American Indian and Alaska Native	25,205 (0.3%)	22,499 (0.3%)	2,632,102 (0.8%)	-10.7%
	Asian	443,460 (5.5%)	520,119 (6.2%)	17,186,320 (5.4%)	17.3%
	Native Hawaiian and Other Pacific Islander	5,438 (0.1%)	5,469 (0.1%)	570,116 (0.2%)	0.6%
	Some Other Race	184,403 (2.3%)	200,265 (2.4%)	15,553,808 (4.9%)	8.6%
	Two or More Races	219,962 (2.7%)	291,944 (3.5%)	10,081,044 (3.2%)	32.7%
	Percent of persons under 65 with any disability	7.5%*	7.8%	7.3%	4.0%
	Percent of persons under 65 without health insurance	13.8%*	11.4%	10.3%	-17.4%
	Persons 25 and older with a high school diploma or higher	87.1%	89.1%	87.3%	2.3%
	Persons 25 and older with a bachelor's degree or higher	35.0%	37.6%	30.9%	7.4%
Income: U.S. Department of Commerce, Bureau of Economic Analysis 2012 and 2017 Estimates	Real GDP (2009 dollars)	\$446.6 Billion	\$476.3 Billion	\$18.64 Trillion	6.7%
	Real GDP per capita (2009 dollars)	\$54,108	\$55,929	\$56,921	3.4%
	Per capita Personal Income	\$48,717	\$56,952	\$54,420	16.9%
	Per capita Disposable Income	\$42,720	\$49,886	\$48,074	16.8%
Business Demographics:** U.S. Census Bureau, Survey of Business Owners	Number of Firms	638,643	653,193	27,626,360	2.3%
	Men-owned Firms	330,968 (51.8%)	353,012 (54.0%)	14,844,597 (53.7%)	6.7%
	Women-owned Firms	192,033 (30.1%)	236,290 (36.2%)	9,878,397 (35.8%)	23.0%
	Minority-owned Firms	138,256 (21.6%)	185,043 (28.3%)	7,952,386 (28.8%)	33.8%
	Veteran-owned Firms	79,248 (12.4%)	76,434 (11.7%)	2,521,682 (9.1%)	-3.6%

*5-Year estimates not available. U.S. Census Bureau, American Community Survey

**Due to data collection constraints, data is presented for 2007 and 2012

Industrial Landscape

Existing Demand for Major Industry and Occupations

For years the main industries of employment for Virginians have been, and continue to be, health care, professional services, retail, educational services, and accommodation and food services; while the mining, agricultural, utilities, and real estate industries exert the least influence on state employment. **Appendix A** reports the number of establishments, average employment, total wages, and average annual salary for each industry sector (2-digit NAICS level) as reported by the Quarterly Census of Employment and Wages (QCEW) program.

Location quotients (LQs) illustrate that the industrial share of Virginia's economy largely mirrors that of the nation; a quotient of one indicates that the industry's share of Virginia's employment or total wages is equal to the industry's national share.

One noteworthy finding is the extremely low statistic for both the mining and agriculture industries. Current political discourse would suggest that these are two industries with significant decline, particularly in employment. However, with mining in particular, Virginia has been thought of as having a large stake in the industry. This is not without reason, as the Appalachian region – often viewed as the hub of mining activity – runs through the western portion of the Commonwealth.

Mining still accounts for over six percent of all employment in the Southwest Virginia Local Workforce Development Area, as well as 13 percent of the area's total wages. However, this is the only workforce area in the state with a notable mining presence in the local economy, as the industry is either completely absent or accounts for less than one percent of area establishments, employment and wages in all other regions. In fact, even with the large presence in the southwest there is a small overall impact on the state's economy compared to the substantial impact to the region's. This large imbalance creates the low quotient identified here. Were the industry to be more widespread and have a greater impact on the economy, there would be a larger location quotient. While significant, Virginia is likely not the only state with a low quotient for the mining industry.

On the other end, Professional Scientific and Technical Services has an employment LQ of 1.73, and a total wages LQ of 1.85. As was the case with the mining industry, professional services are disproportionately spread out in the Commonwealth, concentrated largely in the Northern Virginia and Alexandria/Arlington workforce areas. However, unlike mining in southwest Virginia, the northern Virginia region and the Professional Scientific and Technical Services industry are very large contributors to the statewide economy. The industry accounts for more than 15 percent of all Virginia Establishments, over 11 percent of employment, and more than 20 percent of total wages. As shown in **Appendix A**, these figures are driven primarily by Computer Systems Design and Related Services, which has a much higher share of Virginia's economy than would be expected given the national trends. Accounting for nearly 45 of the industry's total wages, and more than 37 percent of its employment, computer systems design also boasts the highest calculated average annual salary. The high wages and employment suggests that the industry is in high demand from both the demand and supply side of the workforce.

Appendix B further highlights the current relative importance of the healthcare, accommodation, professional services, retail, and education industries. Looking at the 20-year progression illustrated by the three figures we see how the landscape of Virginia's economy has evolved. For instance, the Manufacturing industry dropped significantly between 1998 and 2008, going from 12 percent of both statewide employment and total wages in 1998 to 7 percent. Though the decline was less substantial in the most recent decade, the industry has continued to decline to approximately 6 percent of both employment and total wages. Similarly, Construction went from a substantial 12 percent of statewide establishments in 1998, to a more modest 8 percent in 2018. Though the establishment share declined by approximately four percent, the industry held onto its share of employment and total wages, seeing each slip slightly from six to five percent during the same period.

Over this same two decades, Professional, Scientific and Technical Services have been increasing. Though the industry's employment share has been relatively modest in its growth, the numbers of establishments and total wages have increased dramatically. Currently, professional services accounts for nearly 20 percent of Virginia's total wages, nearly double where it was in 1998. Examining the changing industrial shares of Virginia's economy is necessary, as

looking at the level of employment and wages alone may not paint the truest picture. For example, it can be said that total wages are generally increasing across the majority of industries and geographies across Virginia; however; in order to assess decline and expansion of specific industries (an issue that will be addressed further in this report), it is important to study the industry change in relation to other industries, as well as within the greater context of the overall state economy.

Turning to occupations, **Table 2** displays the most recent Occupation and Employment Statistics (OES) program data. Office and Administrative Support positions rank undeniably first in terms of employment levels, which underscores the narrative of moving from goods-producing work such as manufacturing, to more white-collar positions in industries such as professional services and health care. Office and Administrative Support positions are concentrated in the professional, education, and retail industries, so it is important to remember that this is not a new trend and has been common knowledge for more than ten years. The average annual growth of only 0.39% for the occupation, further underscores this fact. While mathematically the larger employment numbers may likely drive down the growth rate, it is not necessarily such a simple story particularly as comparably large industries and occupations such as health care and social assistance maintain a substantially larger growth rate.

What the relatively small growth rate of the largest occupation group may forewarn, is that the Virginia economy is reaching capacity¹ for certain positions. As stated previously, the Virginia (and the United States) economy has undergone a change in recent history, moving from a goods to services-based economy. This has been reported on throughout the past several years from nearly every reputable publication and economic think tank. Such a switch occurs, no matter how rapidly, over the span of multiple years if not decades.² What we may be witnessing now, is that the economy has made a full transition to the service industry, and we are currently at a type of equilibrium until the next major industrial shift. This shift may be from one industry to another – such as the transition from retail to health care between 2000 and 2010 – or potentially a shift back to a parity between goods and services that existed only briefly in the late 1990s and early 2000s.



1 From an economic stand point, capacity here refers to the theoretical concept of economic equilibrium, and not an actual capacity for any specific business, industry, or occupation.

2 For a particularly visual example, see the Washington Post info graphic that visualizes employment across the United States growing from Manufacturing in the 1990s, to retail in the 2000s, and now to health care in 2010. View the original article at https://www.washingtonpost.com/blogs/govbeat/wp/2014/09/03/watch-the-u-s-transition-from-a-manufacturing-economy-to-a-service-economy-in-one-gif/?utm_term=.229a8202c41f

Table 2: Overview of Major Occupations, May 2018

Occupation	Employment	Median Salary	Average Annual Growth*	Top Employing Industry (Percent of Occupational Employment)**
Architecture and Engineering	77,210	\$85,717	0.89%	Architectural, Engineering, and Related Services (33.4%)
Arts, Design, Entertainment, Sports, & Media	48,600	\$54,655	1.10%	Advertising, Public Relations and Related Services (3.5%)
Building and Grounds Cleaning & Maintenance	126,180	\$26,205	1.04%	Services to Buildings and Dwellings (39.7%)
Business and Financial Operations	274,770	\$79,287	1.33%	Management, Scientific, and Consulting Services (9.6%)
Community and Social Services	58,510	\$47,381	2.13%	Individual and Family Services (15.3%)
Computer and Mathematical	206,750	\$100,530	1.69%	Computer Systems Design and Related Services (43.5%)
Construction and Extraction	158,230	\$42,506	0.68%	Employment Services (2.6%)
Education, Training, and Library	245,270	\$51,176	1.23%	Child Day Care Services (4.6%)
Farming, Fishing, and Forestry	5,830	\$33,085	0.06%	Confidential
Food Preparation and Serving Related	335,430	\$21,870	1.21%	Child Day Care Services (0.3%)
Healthcare Practitioners and Technical	210,960	\$65,847	1.62%	Offices of Physicians (15.7%)
Healthcare Support	95,490	\$30,436	2.45%	Home Health Care Services (11.5%)
Installation, Maintenance, & Repair	159,140	\$48,599	0.72%	Investigation and Security Services (1.6%)
Legal	35,600	\$88,942	1.04%	Legal Services (37.2%)
Life, Physical, & Social Sciences	32,480	\$77,822	1.13%	Scientific Research and Development Services (14.8%)
Management	173,960	\$128,502	0.93%	Computer Systems Design and Related Services (6.0%)
Office and Administrative Support	541,670	\$35,770	0.39%	Offices of Physicians (3.6%)
Personal Care and Service	126,720	\$23,645	2.42%	Individual and Family Services (16.9%)
Production	181,300	\$35,349	-0.39%	Employment Services (5.7%)
Protective Service	103,270	\$43,853	0.68%	Investigation and Security Services (17.3%)
Sales and Related	397,690	\$27,725	0.40%	Computer Systems Design and Related Services (1.7%)
Transportation and Material Moving	237,820	\$34,074	0.76%	Employment Services (4.5%)
State Total/Average	3,832,840	\$41,741	0.98%	Computer Systems Design and Related Services (3.9%)

Source: Virginia Employment Commission, Occupational Employment and Wage Statistics program

Totals may not sum due to rounding.

*Growth based on 2016-2026 Long-term Occupational Projections, Virginia Employment Commission

**Data based on staffing patterns for Industry and Occupational Projections, Virginia Employment Commission. Data subject to confidentiality agreements.

Virginia's Labor Force

Employment and Unemployment in Virginia³

Table 3 illustrates the continuing story of success in Virginia's labor market. Over the last five years, the Commonwealth has greatly reduced unemployment. We can see employment growing faster than the labor

³ For a thorough analysis of unemployment in the Commonwealth, please refer to the Virginia Employment Commission's Economic Information & Analytics Division publication, "Labor Supply and Demand in Virginia." All versions can be found at <https://virginiaworks.com/publications/labor-supply-demand>

force, which gives reason to believe that many individuals are regaining employment. However, the continuing decline of labor force participation offers a possible explanation to the contrary. Part of the reason for the drop in unemployment is likely due to the amount of workers leaving the labor force altogether. Though this may be a consequence of an aging population, the growth of the younger age cohorts discussed earlier gives us some pause towards that justification.

Table 3: Local Area Unemployment Statistics

(Not Seasonally Adjusted)

Unemployment Statistic	July 2014	July 2019	5-Year Actual Change	5-Year Percent Change
Labor Force	4,297,178	4,480,895	183,717	4.3%
Number of Employed	4,060,461	4,351,984	291,523	7.2%
Number of Unemployed	236,717	128,911	-107,806	-45.5%
Unemployment Rate	5.5%	2.9%	-2.6	-47.3%
Labor Force Participation Rate*	66.4%	65.2%	-1.2	-1.8%

Source: Virginia Employment Commission, Local Area Unemployment Statistics Program.

*Labor Force Participation Rates shown for 2014 and 2019 annual averages, and reflect Virginia Employment Commission calculations
Totals may not add due to rounding.

As **Table 4** examines, unemployment insurance claimants in Virginia are relatively evenly split across most demographics. There are slightly more women than men in unemployment, though the split isn't far from 50 percent, and between the prime working ages of 25 to 64, the four 9-year cohorts have roughly equal shares of the state's unemployment claims. Where we see the largest discrepancy is when looking at educational attainment. Those with less than a Bachelor's degree account for more than 67 percent of the Virginia's unemployment claimants. This is relatively proportionate, as the same group accounts for approximately 72 percent of the state's employed population, as outlined further below.

Table 4: Who are the Unemployed?

Subject	Estimate (Percent)
Total Claimants	23,141
Male	10,786(46.6%)
Female	12,346(53.4%)
Veteran*	2.7(%)
Under 22 Years	223(1.0%)
22 to 24 Years	598(2.6%)
25 to 34 Years	4,719(20.4%)
35 to 44 Years	5,432(23.5%)
45 to 54 Years	5,431(23.5%)
55 to 64 Years	5,212(22.5%)
65 Years and Over	1,526(6.6%)
8 th Grade or Less**	1,319 (4.4%)
Some High School**	1,973 (6.5%)
High School Grad/GED**	10,552 (35.0%)
Some College/2-Year Degree**	6,570 (21.8%)
Bachelor's Degree**	3,826 (12.7%)
Some Graduate School**	529 (1.8%)
Post Graduate Degree**	1,054 (3.5%)
Unknown Educational Attainment**	3,909 (13.0%)

Source: Virginia Employment Commission, Characteristics of the Insured Unemployed – July 2019

*Data from 2018, Annual

**Education data from 2018

Tables 5 and 6 look at unemployment claimants in terms of occupations and industries. The bulk of claimants come from those positions and industries that traditionally have higher rates of turnover. What is of particular note is the spread between the two extremes of the top ten occupations and industries. There is a difference of 923 claimants between the Information and Record Clerks and Other Office and Administrative Support Workers. Even more stark is the 2,516 claimant difference between Administrative and Support Services and Merchant Wholesalers, Durable Goods. These differences underscore the concentration of claimants across industries and occupations. What is promising is that a concentration in a relatively small number of areas suggests that there is not a widespread economic issue. While not a positive indicator of the particular industry or occupation, it does allow for a more focused approach in attempting to identify and alleviate the problem.

Table 5: Top 10 Occupations by Number of Claimants, June 2019

Information and Record Clerks	1,496
Other Production Occupations	923
Other Management Occupations	874
Construction Trade Workers	867
Operations Specialties Managers	808
Cooks and Food Preparation Workers	738
Material Moving Workers	730
Business Operations Specialists	695
Secretaries and Administrative Assistants	598
Other Office and Administrative Support Workers	573
TOTAL	8,302

Source: Virginia Employment Commission

Table 6: Top 10 Industries by Number of Claimants, June 2019

Administrative and Support Services	2,927
Professional, Scientific, and Technical Services	2,648
Food Services and Drinking Places	1,964
Social Assistance	996
Specialty Trade Contractors	833
Ambulatory Health Care Services	768
Educational Services	616
Credit Intermediation and Related Activities	545
General Merchandise Stores	475
Merchant Wholesalers, Durable Goods	411
TOTAL	12,183

Source: Virginia Employment Commission

The alternative measures of labor underutilization produced by the Bureau of Labor Statistics (BLS) provides six measures of unemployment, each with varying degrees of exclusivity.⁴ The most recent four-quarter average for the alternative measures of labor underutilization ends with the second quarter of 2019. As evidenced in **Table 7**, most measures stayed the same since the last four-quarter average while U-3 decreased by 0.1 percentage point and U-5 increased by the same amount. The stagnation of the alternative measures could signal that Virginia has reached capacity in terms of employment. Looking at over-the-year changes, all measures are down or the same with U-6 again having the greatest transformation with a 0.8 percentage point decline from the same point last year. See **Figure A** (pg. 15) for a depiction of historical values and trends.

⁴ For a thorough analysis of unemployment in the Commonwealth, please refer to the Virginia Employment Commission's Economic Information & Analytics Division publication, "Labor Supply and Demand in Virginia." All versions can be found at <https://virginiaworks.com/publications/labor-supply-demand>

Table 7: Alternative Measures of Labor Underutilization

Measurement	Virginia's current 4 quarter average (2018:III – 2019:II)	Virginia's previous 4 quarter average (2018:II – 2019:I)	National Data (2018:III – 2019:II)	Virginia's 4 quarter average from previous year (2017:III – 2018:II)
U-1	1.0	1.0	1.4	0.9
U-2	1.2	1.2	1.8	1.2
U-3*	2.9	3.0	3.8	3.3
U-4	3.1	3.1	4.0	3.5
U-5	3.7	3.6	4.7	4.1
U-6	6.4	6.4	7.4	7.2

Source: Bureau of Labor Statistics "Alternative Measures of Labor Underutilization for States"

* Measurement utilized as the "official" unemployment rate, defined as the total number of unemployed reported as a percentage of the civilian labor force

Note: Quarters reflect calendar year and not Virginia's fiscal year. National Data is seasonally adjusted.

Comparing Virginia's underutilization to that of the nation, **Table 7** illustrates that the Commonwealth continues to outperform the national average across every measure as it has since data collection began in 2003. Only 26 other states are currently below the national average in every measure. Furthermore, Virginia has the lowest underutilization rates of all neighboring states in every measure except U-1 and U-6, where the rates are the same in Virginia and Tennessee. Tennessee is the only other state below the nation in all measures, while the District of Columbia and West Virginia are above the national average across all six measures.

In **Table 8** we show the measures of job-seeker discouragement and underemployment. As stated above, U-6 suggests that Virginia currently has adequate labor demand for the current underemployed and discouraged populations. This may be in part due to the change (or lack thereof) in these populations. In the most recent quarter, job-seeker discouragement remained steady at 0.2 percent, while being slightly down over-the-year. Similarly, our measure of underemployment has inched down 0.1 percentage point from last quarter to 3.1 percent, and is down a full 0.3 percentage point over-the-year. The national average behaved similarly, with Virginia slightly outperforming on the measure of discouragement, and remaining at parity with the country for underemployment. See **Figure B** for a historical depiction of job-seeker discouragement and underemployment.

Table 8: Underemployment and Job Seeker Discouragement

Measurement	Virginia's current 4 quarter average (2018:III – 2019:II)	Virginia's previous 4 quarter average (2018:II – 2019:I)	National Data (2018:III – 2019:II)	Virginia's 4 quarter average from previous year (2017:III – 2018:II)
Underemployment	2.7	2.8	2.7	3.1
Job Seeker Discouragement	0.2	0.1	0.2	0.2

Source: Virginia Employment Commission, quarterly Labor Supply and Demand report

Overall, Virginia's measures of labor underutilization have stagnated. This suggests that the labor market is currently at a healthy equilibrium between the supply of and demand for labor. The possibility remains that this may not hold if stagnant wages begin to increase dissatisfaction in the workforce. Such an occurrence could result in an increase in the number of individuals seeking multiple jobs in order to compensate. In the immediate years following the last recession, this number shrank as many were able to return to previously held positions or find new ones. At the same time, business and consumer confidence began to grow which resulted in a higher demand for labor, of which there was adequate supply following a recession. Now that the economy has recovered and the Commonwealth and country are at full employment, individuals are likely to turn their attention from finding an adequate job to finding a better job. It is in this change that the potential lies for labor underutilization to begin ticking back up, particularly with regards to underemployment and job-seeker discouragement.

Figure A: Alternative Measures of Labor Underutilization

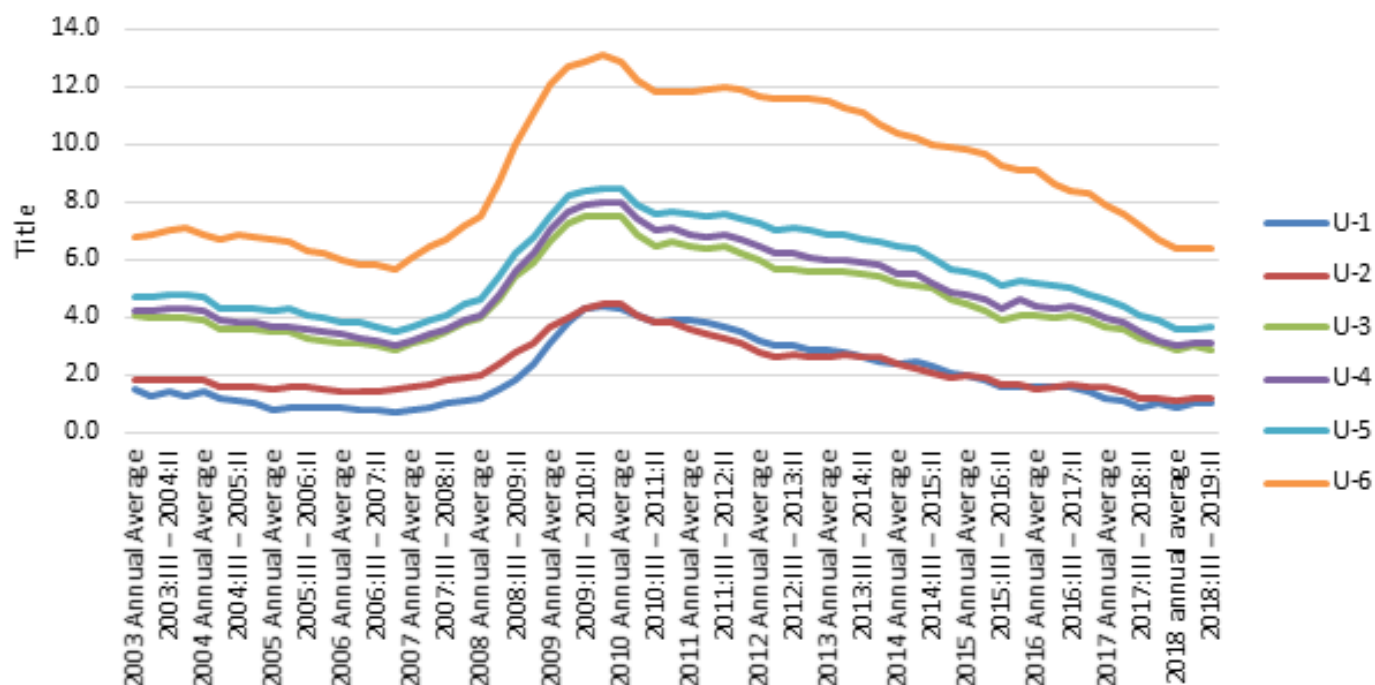


Figure B: Job Seeker Discouragement and Underemployment

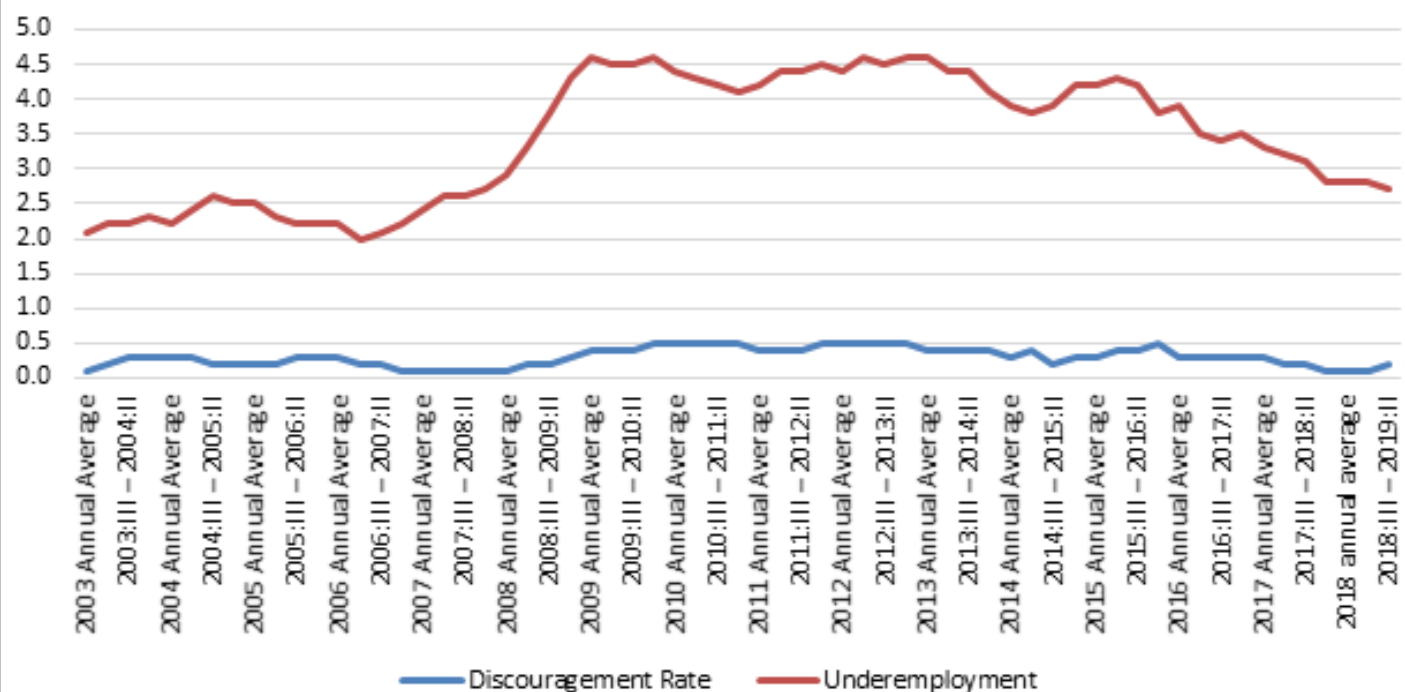


Table 9 builds upon the topic of unemployment by examining the changing poverty rates across the Commonwealth. Unfortunately, many of the populations examined have seen an increase in the percentage living below the poverty level of the last 4 years. However, the smaller changes in groups such as men and women may be more reflective of the growing populations and less so of an increase in poverty rates. This optimistic explanation does little for groups such as those with less than a bachelor's degree, which while having seen a minor decrease in those living below poverty over the 4 years, largely encompasses the impoverished in Virginia. Much of this is likely due to slow wage growth, which has been a concern across the country.

Table 9: Poverty in the Commonwealth

Subject	Population	2012 Estimate		2018 Estimate	
		Population	Percent Below Poverty Level	Population	Percent Below Poverty Level
Age	Under 18 Years	1,822,714	14.6%	1,838,741	14.9%
	18 to 64 Years	4,985,270	10.4%	5,116,003	10.7%
	65 Years and Over	961,144	7.9%	1,161,386	7.4%
Sex	Male	3,777,350	9.8%	3,956,535	10.0%
	Female	3,991,778	12.3%	4,159,595	12.3%
Race	White, not Hispanic or Latino	5,052,767	8.3%	5,569,513	8.9%
	Black or African American	1,484,905	19.4%	1,531,025	19.4%
	American Indian and Alaska Native	23,936	14.5%	21,503	13.0%
	Asian	435,887	8.4%	511,014	7.5%
	Native Hawaiian and other Pacific Islander	5,139	11.4%	5,036	5.3%
	Hispanic or Latino	613,911	15.4%	729,278	15.0%
Educational Attainment	Less than High School	665,399	22.4%	598,937	21.9%
	High School Graduate or GED	1,317,050	10.7%	1,340,690	11.9%
	Some College or Associate's	1,427,312	7.1%	1,520,127	8.2%
	Bachelor's Degree or Higher	1,848,918	2.8%	2,124,765	3.3%

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates

Recent trends of labor force participation by demographic are shown in **Table 10**. This is the most alarming labor market trend, as nearly every demographic and region of the state has seen labor force participation rates decline. Yet, there is a part of the population experiencing great labor force participation. The cohorts of those with largest rate increases are older Virginians. 55 to 64 years went from 65.6% to 67.3%. 65 to 74 years went from 26.3% to 28.2%. And 75 years and older went from 6% to 6.9%. These 3 age cohorts have also largely seen decreases in their unemployment rates.

This would appear to be a byproduct of a widening skills gap in the Virginia workforce. Older individuals are remaining in the workforce longer as well as reentering the labor force. Recent increases in the wages for highly skilled workers, coupled with a widening skills gap, is creating an environment where older workers are more akin to price setters, than price takers.

The fear of an aging workforce, with a weakened retirement plan from the previous recession, remaining in the labor force and not allowing recent college graduates to access those employment opportunities seems to be less of an issue in the Commonwealth, due to the favorable labor market conditions in Northern Virginia, as the labor force participation rates of college graduates continues to increase while unemployment rates for the same group show little movement.

The trend of declining participation is not unique to Virginia, as the overall trend in the nation is one of declining participation rates. This is likely a consequence of the most recent recession. As has been pointed out over the last few years, the most recent recession was so powerful in part because it affected nearly every industry, with health care being one of the few ever-green industries that did not see much impact. As such, workers found it difficult to move into a new position or industry as their original workplace was hurt. This, along with stagnant wages caused a high rate of underemployment as illustrated previously in **Figure B** which in turn creates an exodus from the labor force.

Table 10: Employment Status by Demographic

Subject	2010 Estimate			2017 Estimate		
	Population	Labor Force Participation Rate	Unemployment Rate	Population	Labor Force Participation Rate	Unemployment Rate
16 to 19 Years	451,221	42.1%	22.2%	441,747	38.1%	18.9%
20 to 24 Years	556,592	75.9%	11.6%	585,879	75.6%	11.2%
25 to 44 Years	2,193,280	84.2%	5.1%	2,249,495	84.0%	6.8%
45 to 54 Years	1,185,123	82.5%	4.0%	1,183,551	82.2%	4.1%
55 to 64 Years	900,955	65.6%	3.7%	1,043,147	67.3%	3.6%
65 to 74 Years	514,397	26.3%	3.1%	706,482	28.2%	3.2%
75 Years and Over	414,781	6.0%	3.3%	481,385	6.9%	2.5%
White, not Hispanic or Latino	4,208,192	66.3%	4.7%	4,686,195	65.3%	4.5%
Black or African American	1,179,176	66.6%	10.0%	1,269,048	65.8%	9.0%
American Indian and Alaska Native	19,682	65.5%	9.1%	18,751	65.2%	7.2%
Asian	329,599	71.0%	4.6%	420,320	69.4%	4.2%
Native Hawaiian or Other Pacific Islander	4,547	82.9%	10.6%	4,497	71.2%	6.7%
Hispanic or Latino	406,755	78.1%	7.0%	529,633	76.2%	5.4%
Male	2,390,940	84.4%	5.3%	2,519,927	84.0%	5.1%
Female	2,445,010	74.4%	5.2%	2,559,750	74.8%	5.0%
Less than High School	479,144	61.0%	10.1%	411,815	61.1%	8.8%
High School Graduate or Equivalent	1,074,315	76.4%	6.0%	1,041,545	74.0%	6.0%
Some College or Associate's Degree	1,181,989	81.9%	4.5%	1,263,801	80.2%	4.7%
Bachelor's Degree or Higher	1,543,910	86.4%	2.4%	1,775,737	87.4%	2.6%
With Any Disability	N/A	N/A	N/A	467,954	44.4%	11.9%

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates

Education and Skill Levels of the Virginia Workforce

Virginia is a well-educated state. At both the state and local level, less than three and a half percent of job seekers have below a high school diploma or equivalent. The highest rates of post-bachelor's degree attainment are in the Northern Virginia and Alexandria/Arlington LWDAs, as can be expected after seeing the high wages, employment, and participation rates of the region. **Table 11** shows that more than 42 percent of Virginia's job-seekers have some type

of college degree. For those that do obtain a bachelor's degree or higher, the median income increases drastically, far surpassing the statewide average as shown in **Table 12**.

Table 11: Educational Attainment of Available Candidates

Education Level	Potential Candidates (Percent of Total Candidates)*
Less than High School	2,085 (3.34%)
High School Diploma or Equivalent	23,776 (38.09%)
Vocational School Certificate	3,313 (5.31%)
Associate's Degree	11,045 (17.69%)
Bachelor's Degree	10,503 (16.83%)
Master's Degree	4,552 (7.29%)
Doctorate or Specialized Degree (i.e. MD, DDS)	689 (1.01%)

*Candidates are defined as individuals with an active resume in the Virginia Workforce Connection
Source: Virginia Employment Commission

Table 12: Median Annual Earnings by Educational Attainment

	2010 Estimate	2017 Estimate
Less than High School Graduate	\$21,001	\$23,812
High School Graduate or Equivalent	\$29,064	\$30,460
Some College or Associate's Degree	\$36,137	\$36,790
Bachelor's Degree	\$53,522	\$57,226
Graduate or Professional Degree	\$75,613	\$80,717
Average	\$39,409	\$42,539

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates

Veterans, Children and Individuals with Disabilities: Barriers to Employment in Virginia

Throughout this analysis, we have touched on various aspects relating to individuals with barriers to employment. According to the Workforce Innovation and Opportunity Act, barriers to employment include having a disability, homelessness, low income individuals, individuals with significant cultural barriers, older individuals, individuals who are English language learners, American Indians, Alaska Natives, Native Hawaiians, the long-term unemployed, and others. Unfortunately, substantial data shortcomings exist which prevent a thorough and even analysis of all of these populations. In this section, we highlight available data discussed throughout this analysis, as well as highlighting three key populations; veterans, children, and the homeless.

Due to Virginia's larger than average veteran population, it is worth addressing each of the groups separately. **Table 13** illustrates the changing veteran population since 2009. What jumps out most starkly is the strong decreasing veteran population, even as the non-veteran population continues to rise. Though the exact reason for this may be unknown, one possibility is that individuals that leave the military through any of Virginia's many bases are staying in the Commonwealth at a decreasing rate. Another possibility is that, as the total number of individuals in the U.S. Armed Forces has decreased over time, obviously fewer veterans are created by definition.

As **Table 13** demonstrates, despite its causes, losing veterans from Virginia's potential labor force means losing a very economically valuable resource. Aside from the unquantifiable skills offered by the veteran community, veterans are also more highly educated than the non-veteran population, which as was stated earlier equates to a higher median income. Furthermore, this educated population also has a substantially higher labor force participation rate, and a much lower unemployment rate. All in all, by attracting the veteran population to remain in Virginia, the state economy stands to benefit greatly.

Table 13: Virginia's Veteran Population, Recent Trend

Subject	2009		2012		2017	
	Veteran	Non-Veteran	Veteran	Non-Veteran	Veteran	Non-Veteran
Population Estimate (18 Years and Over)	748,345	5,016,318	734,151	5,310,072	688,536	5,700,330
Male	88.8%	41.6%	88.5%	42.1%	86.9%	43.3%
Female	11.2%	58.4%	11.5%	57.9%	13.1%	56.7%
18 to 34 Years	12.1%	33.2%	11.2%	32.7%	11.4%	32.1%
35 to 54 Years	33.9%	39.7%	32.9%	38.4%	31.7%	35.4%
55 to 64 Years	23.3%	13.5%	23%	14.8%	19.8%	16.2%
65 Years and Over	30.7%	13.5%	32.9%	14.1%	37.1%	16.4%
White, not Hispanic or Latino	75%	68.3%	73.6%	66.3%	73.6%	69.5%
Black or African American	19.6%	18.7%	20%	18.6%	20.8%	18.6%
American Indian and Alaska Native	0.4%	0.3%	0.4%	0.3%	0.4%	0.3%
Asian	1.4%	5.4%	1.5%	6.2%	1.9%	6.9%
Native Hawaiian and Other Pacific Islander	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Hispanic or Latino	2.7%	6.2%	3.3%	7.3%	4.7%	8.1%
Less than High School	8.5%	15.5%	7.2%	14.2%	5.6%	11.9%
High School Graduate	25.1%	26.7%	23.4%	25.8%	21.4%	24.8%
Some College or Associate's Degree	32.1%	24.7%	34.1%	25.6%	34.0%	26.1%
Bachelor's Degree or Higher	34.3%	33.1%	35.3%	34.4%	39.0%	37.2%
Labor Force Participation Rate	82.3%	77%	82.1%	77.1%	82.4%	77.2%
Unemployment Rate	3.7%	5.4%	4.8%	7.0%	4.0%	5.6%

Source: U.S. Census Bureau, American Community Survey 5-Year Estimate

Note: Totals may not sum due to rounding

Children are another important group to focus on. As they are not yet a part of the labor force, the under 18 population can often be over-looked in economic analyses. However, as they represent the future of the labor market, it is important to understand as much as possible about the youngest cohort. Furthermore, the better the literacy and poverty rates for children, the better the economy can be assumed to perform now and in the future.

Beginning with the positives, **Table 14** shows that 90 percent of children between the ages of 3 and 17 are enrolled in school. Furthermore, while the population of children in Virginia has increased since 2010, it has done so at a modest pace while also maintaining most proportions across age brackets and demographics. However, the percent of children living below the poverty level, as well as the percent receiving public assistance, has increased dramatically over the last six years. This is particularly true with single-parent households. The highest incidences of poverty and public assistance are found in female-lead households where the husband is not present. The median income is substantially lower than for all other groups, with nearly half of children in these households receiving public assistance, and almost 40 percent being below the poverty level. These two figures have increased over the past seven years, likely a partial result of being the only type of household with stagnant income levels.



Table 14: Children in the Commonwealth

Subject	Total		In Married-Couple Family Household		In Male Head of Household, no wife present		In Female Head of Household, no husband present	
	2010	2017	2010	2017	2010	2017	2010	2017
Children Under 18 Years	1,833,319	1,861,088	1,286,075	1,296,803	111,108	120,307	424,648	423,930
Under 6 Years	33.1%	32.9%	33.9%	33.6%	34.9%	34.5%	30.4%	29.8%
6 to 11 Years	32.7%	33.9%	32.9%	33.8%	29.4%	32%	32.9%	34.5%
12 to 17 Years	34.2%	33.2%	33.2%	32.6%	35.7%	33.5%	36.6%	35.8%
White, not Hispanic or Latino	58.3%	62.6%	65.9%	69.2%	53.5%	61.4%	36.6%	42.6%
Black or African American	21.9%	20.3%	13.5%	12.5%	23.3%	22.4%	47%	42.5%
American Indian and Alaska Native	0.3%	0.2%	0.3%	0.2%	0.7%	0.3%	0.3%	0.4%
Asian	5.3%	6%	6.6%	7.7%	2.5%	2.9%	1.9%	2.0%
Native Hawaiian and other Pacific Islander	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%
Hispanic or Latino	10.1%	13%	9.6%	12.3%	17%	19.1%	9.5%	14.31%
Other Race	3.3%	3.3%	3%	3.1%	6.6%	5.1%	3.3%	3.4%
With any disability	3.6%*	3.8%	3%*	3%	3.1%*	3.8%	5.7%*	6.3%
Foster or other Unrelated to Householder Child	1.6%	1.6%	0.6%	0.5%	4.2%	4.1%	1.2%	1.1%
Foreign Born	3.6%	3.7%	4%	4.1%	4.3%	3.4%	2.2%	2.2%
Enrolled in School**	90%	90%	91%	91%	88%	87%	90%	90%
Median Income for Families with own Children	\$72,558	\$82,307	\$92,072	\$106,567	\$42,867	\$46,474	\$29,000	\$31,570
Public Assistance: Children Living in Households with Supplemental Security Income, Cash Public Assistance Income, or Food Stamp/SNAP benefits	15.5%	20.1%	7.3%	10.6%	19.6%	26.8%	39.1%	45.6%
Income below Poverty Level	13.4%	14.9%	5.3%	6%	16.5%	18.7%	36.8%	38.8%

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates

Note: Totals may not sum due to rounding.

*Disability Status not reported until 2012. 2010 column reflects 2012 data for disability status.

**The percent of children enrolled in school is based on the 3 to 17 years population.

As shown in **Table 15**, Virginia's Homeless population breaks down in similar ways to the national figures. However, a far smaller share of Virginia's homeless population is unsheltered compared to that of the national population (15.3 versus 35.2 percent). This points in part to the efficacy of Virginia's Continuums of Care. Another cause for hope is that Virginia's homeless population accounts for slightly more than one percent of the national homeless population, suggesting that the Commonwealth is performing relatively well in this realm. While the percentage of the homeless population that are veterans is larger than the national share (8.1 versus 6.9 percent), it is entirely plausible that this is in large part due to the larger than average veteran population in Virginia, compared to the rest of the nation.

Table 15: Virginia's Homeless Population, 2018

Subject	National ¹	Virginia
Total Homeless	552,830	5,975 (1.1% of National homeless population)
Continuums of Care ²	398	16 (4% of national CoCs)
Unsheltered Homeless	194,467 (35.2%)	915 (15.3%)
Chronically Homeless ³	96,913 (17.5%)	897 (15.0%)
Veterans	37,878 (6.9%)	485 (8.1%)
Less than 18 Years, Unaccompanied	4,093 (0.7%)	12 (0.2%)
18 to 24 Years, Unaccompanied	32,268 (5.8%)	274 (4.6%)
Parenting Youth ⁴	8,724 (1.6%)	93 (1.6%)
Children of Parenting Youth	11,319 (2.0%)	136 (2.3%)

National Figures are a total of all 50 States

² Continuums of Care (CoC) are local planning bodies responsible for coordinating the full range of homelessness services in a geographic area, which may cover a city, county, metropolitan area, or an entire state.

³ Chronically homeless refers to an individual with a disability who has been continuously homeless for one year or more, or has experienced at least four episodes of homelessness in the last three years where the combined length of time homeless in those occasions is at least 12 months.

⁴ Parenting Youth are people under 25 Years who are the parents or legal guardians of one or more children who are present with or sleeping in the same place as that youth parent, where there is no person over age 24 in the household.

Source: 2018 Annual Homeless Assessment Report to Congress, December 2018, U.S Department of Housing and Urban Development

Table 16 outlines the available statistics for several populations said to have barriers to employment under the Workforce Innovation and Opportunity Act, not detailed elsewhere. One take away is the very low labor force participation rate for individuals with disabilities. As this population includes individuals with any disability, one



conclusion may be that not enough is currently being done to create a workplace that is welcoming and adaptable to the disabled population. Another notable figure is the extremely low educational attainment for individuals below the poverty line, which further underscores the importance of education in the Commonwealth, as education is seen as the best way to escape poverty.

Table 16: Individuals with Barriers to Employment

Subject	Virginia Population	Labor Force Participation Rate ¹	High School Graduate or Higher
Population	8,365,952	65.2%	88.6%
Individuals Living Below the Poverty Line	11.1%	50.8%	23.6%
Individuals with Less than a High School Degree (or equivalent)	11.4%	60.9%	-
American Indians and Alaska Natives	1.0%	64.4%	85.2%
Native Hawaiian and Other Pacifica Islanders	0.2%	70.5%	91.1%
Individuals with Disabilities	11.3%	43.9%	-
65 Years and Over	13.8%	17.6% ¹	81.0%
Ex-Offenders ²	12,463	-	-
Individuals that speak a language other than English at home ³	15.5%	-	81.5%
TANF Recipients ⁴	0.5%	-	-
Single Parent Households ⁵	32.6%	-	-

Participation Rates are available for 65 to 74 Years (28.2%) and 75 Years and Over (6.9%). The statistic shown is the average of these two populations, which are similar in size.

² Statistic represents offenders released by the Virginia Department of Corrections in calendar year 2016. Source: Judicial Mapping Project, FY 2017 Report, Virginia Department of Corrections

³ There are various definitions and statistics for those whom are non-native English speakers. According to the U.S. Department of Education, National Center for Education Statistics' "Local Education Agency Universe Survey," 7.7% of Virginia's public school students were English language Learners in the 2014-15 school year.

⁴ Calendar Year 2016 average from TANF Caseload Data 2016, Office of Administration for Children and Families, January 2017. Percent is TANF recipients as a share of total Virginia population.

⁵ Population includes male householders, no wife present and female householders, no husband present. Both household types with own children under 18 years. Percent is total of these populations of all households with own children under 18 years.

Source: U.S. Census Bureau, American Community Survey 2016 5-Year Estimates, unless otherwise noted

Note: All Population figures are a percent of the total state population unless otherwise noted.

Note: Due to data limitations, all statistics are not available for all populations

Statewide Gap Analysis and Emerging Demand

Emerging and Declining Industries and Occupations

Table 17 ranks the top 20 minor group⁵ occupations according to projected employment growth. A quarter of the top growing occupations are specific to the Health Care and Social Assistance industry. Indeed a previous section illustrated the growing prominence of the industry, which began around the time of the Affordable Care Act. Other



occupations such as Food and Beverage Serving Workers, Information and Record Clerks, and Postsecondary Teachers are strongly represented in the other top industries of the state. Some occupations that are particularly noteworthy are Construction Trade Workers and Motor Vehicle Operator occupations, which are also among the top growing occupations, which suggest a need to address areas outside of the obvious white collar positions.

⁵ Minor group is a designation given to the more detailed SOC code occupations below the broadest 2-digit level. There are 97 minor group occupations.

Table 17: Top 20 Growing Detailed Occupations by Employment Change

Occupation	2016 Estimated Employment	2026 Employment Forecast	Forecasted Employment Change	Average Annual Growth
Other Personal Care and Services Workers	98,007	132,308	34,301	3.05%
Other Healthcare Support	36,577	46,482	9,905	2.43%
Nursing, Psychiatric, and Home Health Aides	51,803	65,767	13,964	2.42%
Counselors, Social Workers, and Other Community and Social Services Specialists	54,645	67,566	12,921	2.15%
Health Diagnosing and Treating Practitioners	128,157	151,488	23,331	1.69%
Postsecondary Teachers	40,621	47,681	7,060	1.62%
Health Technologists and Technicians	78,657	91,713	13,056	1.55%
Other Teachers and Instructors	47,474	54,269	6,795	1.35%
Food and Beverage Serving Workers	193,334	220,963	27,629	1.34%
Business Operations Specialists	195,904	223,642	27,738	1.33%
Financial Specialists	89,828	102,459	12,631	1.32%
Primary, Secondary, and Special Education School Teachers	106,844	118,926	12,082	1.08%
Cooks and Food Preparation Workers	75,645	83,901	8,256	1.04%
Building Cleaning and Pest Control Workers	101,553	112,029	10,476	0.99%
Information and Record Clerks	148,000	161,246	13,246	0.86%
Material Moving Workers	96,930	105,340	8,410	0.84%
Other Management	128,236	138,393	10,157	0.77%
Motor Vehicle Operators	111,086	118,633	7,547	0.66%
Construction Trades Workers	136,636	145,784	9,148	0.65%
Material Recording, Scheduling, Dispatching and Distributing Workers	105,233	112,110	6,877	0.64%

Source: Virginia Employment Commission, Long-Term Occupational Projections

Table 18 provides a ranking of the declining occupations in the Commonwealth. What is promising is that there are only eight declining minor group occupations, with most being a relatively minor decline. All in all, the occupations represented here are unsurprising.

Table 18: Declining Detailed Occupations by Employment Change

Occupation	2016 Estimated Employment	2026 Employment Forecast	Forecasted Employment Loss	Average Annual Decline
Communications Equipment Operators	1,573	1,287	-286	-1.99%
Assemblers and Fabricators	27,726	24,022	-3,704	-1.42%
Textile, Apparel, and Furnishings Workers	17,290	15,969	-1,321	-0.79%
Secretaries and Administrative Assistants	65,522	62,138	-3,384	-0.53%
Plant and System Operators	6,920	6,699	-221	-0.32%
Metal Workers and Plastic Workers	29,834	28,990	-844	-0.29%
Other Production	51,053	49,909	-1,144	-0.23%
Extraction Workers	3,062	3,022	-40	-0.13%

Source: Virginia Employment Commission, Long-Term Occupational Projections

Turning the focus from occupations to industries in **Table 19** health care, professional services, and accommodation and food services are once again well represented among the fastest growing industries. Other emerging industries of note are Specialty Trade Contractors, Heavy and Civil Engineering Construction, and Warehousing and Storage. **Table 20** illustrates the top declining industries, with various types of manufacturing being among the most vulnerable.



Service providing industries, such as health care and education, provide jobs and growing wages in the most populous areas of the state, and their growth can be fruitful for the Commonwealth’s economy. What is particularly troubling is that the Manufacturing industry, which accounts for over a quarter million workers, is not represented in either the occupations or industries that are emerging in Virginia. While there is nothing wrong with the economy shifting from goods-producing to service based, it can pose problems with transferable skill gaps between industries. If those industries and associated occupations continue to decline, focus will need to shift on addressing these gaps, an issue which will be returned to in the latter portion of this analysis.

Table 19: Top 20 Growing Industries (3 Digit NAICS) by Forecasted Employment Growth

Industry	2016 Estimated Employment	2026 Employment Forecast	Forecasted Employment Growth	Average Annual Growth
Social Assistance	76,976	111,690	34,714	3.79%
Ambulatory Health Care Services	172,218	229,922	57,704	2.93%
Warehousing and Storage	27,053	33,554	6,501	2.18%
Nursing and Residential Care Facilities	75,558	91,604	16,046	1.94%
Professional, Scientific and Tech Services	409,398	482,019	72,621	1.65%
Religious, Grantmaking, Civic, Professional, and Similar Organizations	47,180	55,367	8,187	1.61%
Amusement, Gambling, and Recreation Industries	42,335	49,247	6,912	1.52%
Heavy and Civil Engineering Construction	29,277	33,345	4,068	1.31%
Food Services and Drinking Places	295,040	331,412	36,372	1.17%
Administrative and Support Services	220,721	247,029	26,308	1.13%
Educational Services	354,347	395,780	41,433	1.11%
Food and Beverage Stores	78,878	86,576	7,698	0.94%
Personal and Laundry Services	43,754	48,034	4,280	0.94%
Construction of buildings	39,263	43,010	3,747	0.92%
Credit Intermediation and Related Activities	71,082	76,358	5,276	0.72%
Motor Vehicle and Parts Dealers	55,059	58,899	3,840	0.68%
General Merchandise Stores	88,488	94,437	5,949	0.65%
Specialty Trade Contractors	118,843	126,554	7,711	0.63%
Management of Companies and Enterprises	72,910	77,096	4,186	0.56%
Hospitals	116,477	121,164	4,687	0.40%

Source: Virginia Employment Commission, Long-Term Industry Projections

Table 20: Top 20 Declining Industries (3 Digit NAICS) by Forecasted Employment Loss

Industry	2016 Estimated Employment	2026 Employment Forecast	Forecasted Employment Loss	Average Annual Decline
Textile Mills	3,726	2,946	-780	-2.32%
Textile Product Mills	3,165	2,546	-619	-2.15%
Primary Metal Manufacturing	3,922	3,252	-670	-1.86%
Printing and Related Support Activities	10,025	8,382	-1,643	-1.77%
Computer and Electronic Product Manufacturing	11,280	9,535	-1,745	-1.67%
Chemical Manufacturing	14,208	12,142	-2,066	-1.56%
Clothing and Clothing Accessories Stores	32,533	27,992	-4,541	-1.49%
Mining (Except Oil and Gas)	4,798	4,151	-647	-1.44%
Electronics and Appliance Stores	12,915	11,185	-1,730	-1.43%
Broadcasting (Except Internet)	7,889	6,972	-917	-1.23%
Plastics and Rubber Products Manufacturing	16,285	14,549	-1,736	-1.12%
Nonmetallic Mineral Product Manufacturing	8,838	7,939	-899	-1.07%
Telecommunications	24,489	22,059	-2,430	-1.04%
Paper Manufacturing	7,870	7,207	-663	-0.88%
Electrical Equipment, Appliance, and Component Manufacturing	7,931	7,379	-552	-0.72%
Private Households	11,024	10,323	-701	-0.65%
Machinery Manufacturing	14,780	14,015	-765	-0.53%
Publishing Industries (Except Internet)	14,197	13,520	-677	-0.49%
Fabricated Metal Product Manufacturing	18,039	17,465	-574	-0.32%
Merchant Wholesalers, Nondurable Goods	32,987	32,104	-883	-0.27%

Source: Virginia Employment Commission, Long-Term Industry Projections

Appendix C outlines the top occupations, skill requirements and certification/license requirements for each major industry. As the data is pulled from online job orders via the Virginia Workforce Connection, it represents the self-identified needs of employers. The industries explored are the 2-digit super sectors, thus representing a wide array of more detailed industries and occupations. As such, the primary requirements are customer service, problem solving, and similar skills apply to myriad positions. The same is true for the certifications, with CPR; Commercial Drivers License; and Basic Life Support occurring across multiple industries. Other in-demand certifications include Certified Public Accountant and GIAC certification for more technological based industries. Please note that as not every job order lists necessary skills or certifications, results will be skewed towards those that have included those categories listed.

Appendix D builds on the needs of employers, focusing on the occupations with the most openings. Many of the skills are similar to those requested by industry, but with a heavy emphasis on computer skills. The same goes for the most requested certifications, with computer-specific certifications such as CompTIA certification appearing in five of the top ten occupations. The lack of available candidates that specify an interest in these occupations with the highest need does look worrisome. In fact, only Customer Service Representatives has an adequate number of candidates, with the number of candidates greater than the number of opening.

In Table 21 we explore the nebulous topic of a skills gap from another point of view. As mentioned previously, many of the desirable skills sought after by employers are “soft skills” that are difficult to measure and train. To recap, these include customer service, problem solving, flexibility, and time management. However, the table below focuses on

the labor gap that exists in various forms. For instance, in each of the top five occupations according to job openings, there is less than one candidate per opening. A positive consequence of this is that it creates a potentially favorable situation to unemployed individuals looking for work. In opposition to that fact is that this also points to the equally real possibility that job seekers in Virginia are not interested in the available opportunities, or at least not as a first choice.

One particularly troubling gap shown in Table 21 is the high proportion of experienced candidates to openings requiring said experience. At 86 candidates per opening, (from a previous rate of 59) the idea of underemployment and subsequent worker discouragement becomes more understandable. A lasting effect of the last recession, and the move to a less physically demanding service-based economy, which allows for individuals to keep working later in life, is that individuals that may face hardships such as a layoff later in their career face an economy that is not ready to meet them at their optimum level. Without addressing this shortcoming, it is unlikely to see underemployment decline, which in turn creates a potentially more contentious labor force that is less likely to find benefit in participating in the labor market. Such a story is further supported by the declining labor force participation addressed previously.

Table 21: Supply and Demand in Virginia

	Subject	Job Openings	Potential Candidates	Potential Candidates per Job Opening
	Statewide Total	199,036	62,620	0.31
Top 5 Occupations by Job Openings	Registered Nurses	6,420	250	0.04
	Computer Occupations	4,574	1,154	0.25
	Computer Programmers	3,293	134	0.04
	Computer User Support Specialists	3,213	628	0.20
	First-Line Supervisors of Food Preparation and Serving Workers	3,014	183	0.06
	Combined Food Preparation and Serving Workers, Including Fast Food	2,562	469	0.18
Educational Attainment	High School Diploma or Equivalent	12,718	23,808	1.87
	Vocational School Certificate	215	3,311	15.40
	Associate's Degree	2,055	11,077	5.39
	Bachelor's Degree	18,205	10,512	0.58
	Post-Graduate Degree	1,015	4,579	4.51
Work Experience	Less than 1 Year	1,155	2,472	2.14
	1 to 2 Years	176,338	1,390	0.08
	2 to 5 Years	8,541	3,434	0.40
	5 to 10 Years	3,457	5,148	1.49
	More than 10 Years	580	50,176	86.51

Source: Virginia Employment Commission. Jobs are online advertised jobs. Candidates are individuals with active resumes in the Virginia Workforce Connection.

Note: Both job and candidate information is self-reported by businesses and job-seekers as of August 2019

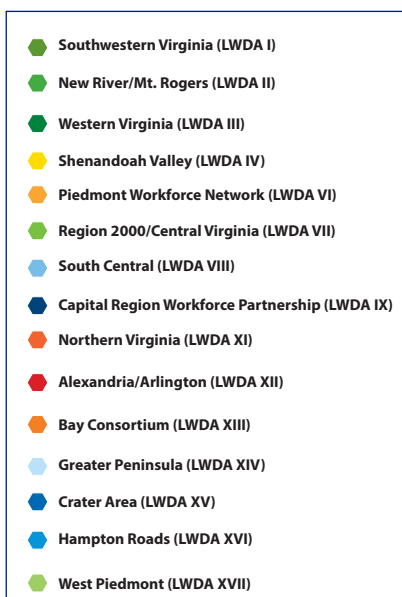
Part II: Substate Analysis



Overview of Local Economies

While the state economy overall has undergone drastic improvements in the post-recession years, the same cannot be said when viewed at the regional level. This section of the report focuses on the Local Workforce Development Area (LWDA) sub-state level. Broken up into 15 areas, each LWDA offers an opportunity to go deeper into some of the topics addressed in the previous section, allowing for more patterns to emerge. It is worth noting that at the sub-state level, less data is readily available. Moreover, the data that is kept is often accessible at a later date than that of state level data. As a result, data presented does not mirror that provided in the first section of the report.

Tables 22 and 23 provide an overview of each of the LWDAs, and their share of the overall state economy. Much of the economy is driven by Northern Virginia and the suburbs of Washington DC, Hampton Roads, and the Capital Region. Together these four areas account for more than half of all employers in the state, over 60 percent of total employment, and over 60 percent of total wages. While this may not be too disproportionate given that the areas also comprise around 55 percent of the state's population, it creates an increased difficulty in equal service to every region in the state. As a result, many people seek out the stronger regions of the state to live and work in, creating a cycle that prevents many regions from growing to the level that the statewide economic outlook would suggest. In fact, areas in the southwestern portion of the state have seen employment and wages decline over the last five years.



Local Workforce Development Areas (LWDAs)

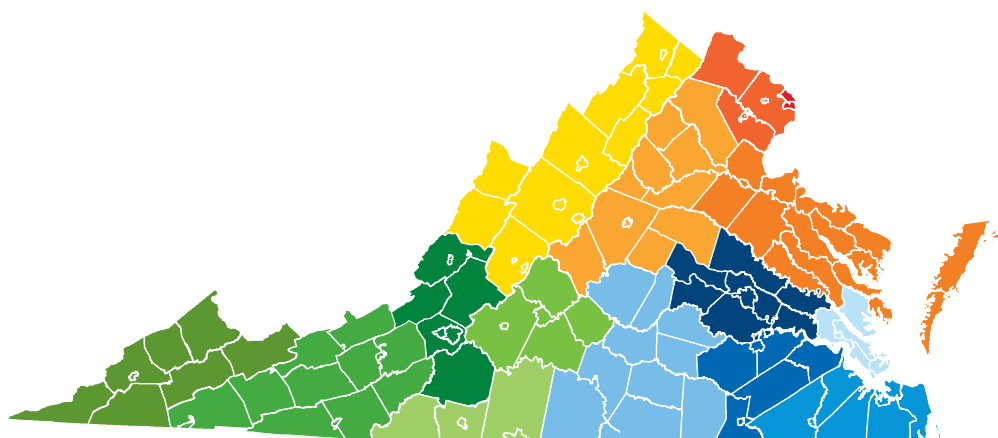


Table 22: Regional Labor Market Snapshot

Workforce Area	Composition	Population	Total Commuters	Net Commuters (In-commuters minus Out-commuters)	Number of People that Live and Work in the Area	Total Number of Unemployment Insurance Claimants	Number of Employers (Share of State Total)	Percent of Population 18 and over with at least a College Degree	Turnover Rate*
I Southwestern Virginia	7 Counties 1 City	208,150	43,902	-10,994	45,129	511	4,641 (1.7%)	19%	0.080
II New River/ Mt. Rogers	10 Counties 3 Cities	371,832	84,052	1,916	100,358	1,170	9,649 (3.5%)	29%	0.083
III Western Virginia	5 Counties 3 Cities	330,918	91,921	22,049	109,949	923	10,026 (3.7%)	32%	0.082
IV Shenandoah Valley	10 Counties 6 Cities	508,933	138,852	-30,038	154,421	1,290	855 (0.3%)	28%	0.082
VI Piedmont Workforce Network	10 Counties 1 City	400,766	129,703	-22,971	102,200	890	106 (0.0%)	38%	0.080
VII Central VA	4 Counties 1 City	252,634	64,488	-7,928	68,869	870	644 (0.2%)	30%	0.086
VIII South Central	10 Counties	191,011	56,020	-23,158	36,485	610	5,553 (2.0%)	21%	0.082
IX Capital Region Workforce Partnership	7 Counties 1 City	1,002,696	257,745	56,953	389,568	3,829	772 (0.3%)	40%	0.083
XI Northern Virginia	3 Counties 3 Cities	1,883,030	673,899	-21,199	593,008	3,652	723 (0.3%)	56%	0.083
XII Alexandria/ Arlington	1 County 1 City	347,593	329,361	50,861	47,760	524	196 (0.1%)	70%	0.079
XIII Bay Consortium	15 Counties 1 City	477,723	169,066	-71,936	93,900	1,314	469 (0.2%)	33%	0.086
XIV Greater Peninsula	3 Counties 4 Cities	513,704	145,838	11,042	140,572	1,788	969 (0.4%)	37%	0.088
XV Crater Area	5 Counties 4 Cities	173,463	77,367	-10,179	28,496	929	108 (0.0%)	21%	0.094
XVI Hampton Roads	2 Counties 6 Cities	1,145,548	204,950	-3,474	374,373	4,017	29,421 (10.8%)	35%	0.084
XVII West Piedmont	3 Counties 2 Cities	193,023	48,568	-6,486	48,128	788	137 (0.1%)	23%	0.089
Virginia Statewide	96 Counties 37 Cities	8,001,024	677,606	-65,542	3,252,279	24,439	272,818	40%	0.082

Source: Virginia Employment Commission, Community Profiles

*Turnover Rate taken from U.S. Census Bureau's Local Employment Dynamics, and reflect First Quarter 2018 Averages

Table 23: Trends of State and Local Economies

Region	2014 Establishments	2019 Establishments (Share of State Total)	5-Year Trend	2014 Employment	2019 Employment (Share of State Total)	5-Year Trend	2014 Wages	2019 Wages (Share of State Total)	5-Year Trend
I Southwestern Virginia	4,697	4,641 (2%)	-2.7%	58,514	55,147 (1%)	-5.8%	\$523,061,721	\$518,370,129 (1%)	-0.9%
II New River/ Mt. Rogers	8,965	9,649 (4%)	7.6%	135,749	139,066 (4%)	2.4%	\$1,217,036,473	\$1,357,124,150 (2%)	11.5%
III Western Virginia	9,009	10,026 (4%)	11.3%	155,067	158,251 (4%)	2.1%	\$1,577,054,919	\$1,772,623,521 (3%)	12.4%
IV Shenandoah Valley	13,243	14,855 (5%)	12.2%	206,718	222,916 (6%)	7.8%	\$1,944,299,677	\$2,372,164,566 (4%)	22.0%
VI Piedmont Workforce Network	12,287	14,106 (5%)	14.8%	153,774	169,950 (4%)	10.5%	\$1,717,681,987	\$2,211,698,892 (4%)	28.8%
VII Central VA	6,585	7,644 (3%)	16.1%	96,354	99,520 (3%)	3.3%	\$962,127,153	\$1,092,555,308 (2%)	13.6%
VIII South Central	4,692	5,553 (2%)	18.4%	52,670	54,428 (1%)	3.3%	\$419,952,995	\$483,984,708 (1%)	15.2%
IX Capital Region Workforce Partnership	29,985	34,772 (13%)	16.0%	517,324	566,509 (15%)	9.5%	\$6,999,388,214	\$8,342,809,058 (14%)	19.2%
XI Northern Virginia	55,979	62,723 (23%)	12.0%	889,548	970,206 (25%)	9.1%	\$16,157,186,245	\$20,053,887,043 (34%)	24.1%
XII Alexandria/ Arlington	14,361	15,196 (6%)	5.8%	256,171	269,768 (7%)	5.3%	\$5,196,836,853	\$6,352,981,897 (11%)	22.2%
XIII Bay Consortium	11,621	13,469 (5%)	15.9%	152,432	164,924 (4%)	8.2%	\$1,620,263,983	\$1,900,799,463 (3%)	17.3%
XIV Greater Peninsula	10,987	11,969 (4%)	8.9%	220,715	229,730 (6%)	4.1%	\$2,467,159,500	\$2,798,016,461 (5%)	13.4%
XV Crater Area	3,656	4,180 (2%)	14.3%	67,206	68,506 (2%)	1.9%	\$687,898,048	\$778,313,858 (1%)	13.1%
XVI Hampton Roads	26,557	29,421 (11%)	10.8%	482,672	511,151 (13%)	5.9%	\$5,301,841,490	\$6,151,428,862 (10%)	16.0%
XVII West Piedmont	5,340	6,137 (2%)	14.9%	66,947	66,834 (2%)	-0.2%	\$518,683,105	\$588,564,050 (1%)	13.5%
Virginia, Statewide	231,803	272,818	17.7%	3,591,595	3,877,641	8.0%	\$49,035,613,746	\$59,790,727,949	21.9%

Source: Virginia Employment Commission, Quarterly Census of Employers and Wages Program. First quarter data utilized.

Industrial Landscape/ Current Demand

Looking first at the top five occupations of each region in Appendix E, we see that Office and Administrative Support positions are the top employer in each workforce area except for three where it ranks second instead. The rest of the top five are largely the same, with only the ranking changing. One difference that does stand out is the prominence of Computer and Mathematical positions in the Northern Virginia and the Alexandria/Arlington workforce regions.

Table 24 displays the largest industry in each workforce area according to each QCEW metric. What is interesting is that this table illustrates the strength of the Northern Virginia LWDA. Looking at the number of establishments and total wages, Professional, Scientific, and Technical Services is the top industry in both Northern Virginia, and a close second to Health Care in the Commonwealth as a whole. However, it is interesting to note that the industry is not ranked first in any other LWDA for those categories, other than employment Alexandria/Arlington. While it makes sense from an economic standpoint that the state would be focused around the most populous and wealthy regions, there is a large underlying consequence. Due to the size and economic might of Northern Virginia along with the Capital and Hampton Roads regions, also known as Virginia's population crescent, other regions of the state are often left out of conversations regarding the state economy. What we see from the data provided in this section is that such an omission may prove to be harmful to some regions of the state. However, it is important not to understate the reality of economic disparity between regional economies.



Table 24: Largest Industry in Local Workforce Development Area

LWDA Region	Number of Establishments (Percent of LWDA Total)	Average Employment (Percent of LWDA Total)	Total Wage (Percent of LWDA Total)	Highest Average Weekly Wage
I Southwestern Virginia	Health Care & Social Assistance (27.2%)	Health Care & Social Assistance (16.4%)	Health Care & Social Assistance (16.1%)	Utilities (\$1,687)
II New River/Mt. Rogers	Health Care & Social Assistance (24.4%)	Manufacturing (18.7%)	Manufacturing (25.4%)	Mgmt. of Companies & Enterprises (\$1,337)
III Western Virginia	Health Care & Social Assistance (18.1%)	Health Care & Social Assistance (18.4%)	Health Care & Social Assistance (20.2%)	Mgmt. of Companies & Enterprises (\$1,583)
IV Shenandoah Valley	Health Care & Social Assistance (20.1%)	Manufacturing (15.0%)	Manufacturing (19.8%)	Mgmt. of Companies & Enterprises (\$1,617)
VI Piedmont Workforce Network	Health Care & Social Assistance (20.3%)	Health Care & Social Assistance (16.4%)	Educational Services (18.7%)	Utilities (\$2,572)
VII Region 2000/Central VA	Health Care & Social Assistance (19.5%)	Health Care & Social Assistance (17%)	Manufacturing (22.5%)	Finance & Insurance (\$1,529)
VIII South Central	Health Care & Social Assistance (31.6%)	Health Care & Social Assistance (19.1%)	Health Care & Social Assistance (19.5%)	Utilities (\$2,147)
IX Capital Region Workforce Partnership	Health Care & Social Assistance (19.3 %)	Health Care & Social Assistance (14.8%)	Finance & Insurance (15.6%)	Mgmt. of Companies & Enterprises (\$2,800)
XI Northern Virginia	Prof., Scientific, & Tech. Services (24.9%)	Prof., Scientific, & Tech. Services (20.2%)	Prof., Scientific, & Tech. Services (31.7%)	Mgmt. of Companies & Enterprises (\$4,326)
XII Alexandria/Arlington	Other Services (24.7%)	Prof., Scientific, & Tech. Services (23.4%)	Prof., Scientific, & Tech. Services (30.9%)	Utilities (\$7,638)
XIII Bay Consortium	Health Care & Social Assistance (20.8%)	Health Care & Social Assistance (13.3%)	Public Administration (18.4%)	Utilities (\$1,702)
XIV Greater Peninsula	Health Care & Social Assistance (15.8%)	Health Care & Social Assistance (14.4%)	Manufacturing (21.4%)	Mgmt. of Companies & Enterprises (\$2,488)
XV Crater Area	Health Care & Social Assistance (22.3%)	Health Care & Social Assistance (17.8%)	Health Care & Social Assistance (16.3%)	Utilities (\$2,565)
XVI Hampton Roads	Health Care & Social Assistance (17.3%)	Health Care & Social Assistance (14.6%)	Health Care & Social Assistance (14.5%)	Mgmt. of Companies & Enterprises (\$1,821)
XVII West Piedmont	Health Care & Social Assistance (40.3%)	Manufacturing (17.8%)	Manufacturing (24.4%)	Mgmt. of Companies & Enterprises (\$1,679)
State	Health Care & Social Assistance (16.4%)	Health Care & Social Assistance (13.1%)	Prof., Scientific, & Tech. Services (20.2%)	Mgmt. of Companies & Enterprises (\$3,062)

Source: Virginia Employment Commission, Quarterly Census of Employment and Wages, First Quarter 2019

Local Labor Force Statistics

Table 25 illustrates the continuing story of strong success in four of the LWDA's, and the consequential positive statistics at the state level. Also, it shows the evidence of struggles in other regions of the state. Though the unemployment rate has been steadily decreasing statewide since the end of the Great Recession, the majority of LWDA's (8 out of 15) has an unemployment rate above the state average. Both the Western Virginia and the Capital Region are at the statewide rate. The highest unemployment rates are in the same regions as last year, which includes Southwest Virginia, the Crater Area, and West Piedmont, all of which have been struggling since the decline of the manufacturing and other traditional goods-producing industries.

Table 25: Local Area Unemployment Statistics, Second Quarter 2019

(Not Seasonally Adjusted)

LWDA Region	Labor Force	Employed	Unemployed	Unemployment Rate
I Southwestern Virginia	71,198	68,318	2,880	4.0%
II New River/Mt. Rogers	179,571	174,027	5,544	3.1%
III Western Virginia	167,835	163,134	4,701	2.8%
IV Shenandoah Valley	272,508	265,232	7,276	2.7%
VI Piedmont Workforce Network	225,897	220,169	5,728	2.5%
VII Region 2000/Central VA	124,012	120,019	3,992	3.2%
VIII South Central	80,286	77,335	2,951	3.7%
IX Capital Region Workforce Partnership	590,764	574,239	16,525	2.8%
XI Northern Virginia	1,162,893	1,135,762	27,131	2.3%
XII Alexandria/Arlington	257,108	252,037	5,071	2.0%
XIII Bay Consortium	256,253	248,638	7,615	3.0%
XIV Greater Peninsula	258,327	250,114	8,213	3.2%
XV Crater Area	75,299	72,381	2,919	3.9%
XVI Hampton Roads	594,163	576,508	17,654	3.0%
XVII West Piedmont	86,196	82,850	3,346	3.9%
State	4,402,310	4,280,762	121,548	2.8%

Source: Virginia Employment Commission, Local Area Unemployment Statistics Program
Totals may not add due to rounding.

Appendix F: provides a breakdown of each area's labor force participation rate by county. As alluded to previously, Virginia largely follows the trend of the nation, with participation rates declining over the last five years in every LWDA. In fact, only about a quarter of counties and independent cities have seen their participation rates increase. This is somewhat counterfactual to the increasing employment figures presented monthly at both the state and federal levels. While it is true that employment is up and unemployment continues to fall across nearly every region of the state, this largely follows growing population trends. As with the alternative measures of labor underutilization addressed previously, analyzing participation rates allows us to gain a better understanding of the labor market.

Independent of employment figures, participation rates reflect the amount of working age individuals that are either working or actively seeking employment. What a declining participation rate reflects is fewer individuals even looking for work that would otherwise be expected to. Without an explanation such as a new and substantial economic downturn, or a massive catastrophe or population shift increasing the number of individuals with barriers to employment, declining participation rates signal a potential conflict in the future based on a few possible causes.

One cause of declining participation is that the population is growing so rapidly, employers cannot keep up with the supply of labor and individuals have given up their search. Another explanation may be that the Great Recession, though over in terms of industry employment and economic growth, had deeper labor market consequences that we are only now beginning to understand. Or, with increasing talk of a coming recession and trade wars people are not confident in their economic future. Whichever the case may be, declining participation rates are indicative of an unidentified barrier to economic prosperity.

Regional Gap Analysis and Emerging Demand

As with the previous discussion regarding the current leading industries and occupations, the fastest growing across the workforce areas are largely the same as the state and in relation to one another. Appendix G illustrates the top growing occupations for each LWDA, while Appendix H addresses the emerging industries. Unsurprisingly, the Northern Virginia Alexandria/Arlington LWDA's look like outliers in their demand, skewing towards more technical and professional occupations. The dominance of the health care industry, as well as service industries such as retail and accommodation hold reign as the top occupations everywhere else in the state.

Appendix I and J further illustrate the gaps between labor supply and demand at the sub-state level, by examining the discrepancies between candidates seeking employment and the available jobs being offered. The trend that emerges is that although there are more job opportunities than candidates at the state level, regionally, the demand is not being met. Candidates tend to be over-educated and over-experienced for the positions that need to be filled, which further underscores the underemployment phenomenon discussed in the previous section. For example, in the Alexandria/Arlington and Northern Virginia Areas 16 percent or more of job candidates have a Master's degree or higher, while one percent or less of the job openings require that level of educational attainment.

On a positive note, 13 of the 15 workforce areas have less than one unemployed person per job opening, suggesting that there is a greater demand for workers than currently exists. However, this good news for unemployment figures has potentially negative consequences for businesses that are seeking to fill positions. Employers are likely to be forced into making a decision between increasing wages to attract new hires, or potentially slowing growth and output. This cyclical paradox between workers finding gainful employment and employers filling positions while maintaining profits and growth is indeed one of the most difficult aspects of economics in practice. Full employment leaves little flexibility for alterations.

One argument that could be made regarding the supply and demand data presented here is that it is based on individuals and employers registering and searching for positions or workers in the Virginia Workforce Connection. Moreover, employee profiles and job orders must be filled out accurately and completely to obtain the information provided here. While this does likely mean that our data represent only a subset of jobs and job-seekers, this is a reliable sample as it is distributed across the state and relatively representative of the populations. Another reason to use this data as a reliable source is that it represents individuals and employers actively looking to fill vacant positions. In other words, it is less theoretical than other supply and demand analyses.



Glossary of Terms

Civilian Labor Force: All persons classified as employed or unemployed. Civilian meaning not living in institutions such as correctional facilities, long-term care hospitals, and nursing homes, and not on active duty in the Armed Forces

Discouraged Workers: Persons not in the labor force who want and are available for a job and who have looked for work sometime in the past 12 months (or since the end of their last job if they held one within the past 12 months), but who are not currently looking because they believe there are no jobs available or there are none for which they would qualify

Employed: Persons 16 years and older in the civilian non-institutional population who, during the reference week, (a) did any work at all (at least 1 hour) as paid employees; worked in their own business, profession, or on their own farm, or worked 15 hours or more as unpaid workers in an enterprise operated by a member of the family; and (b) all those who were not working but who had jobs or businesses from which they were temporarily absent because of vacation, illness, bad weather, childcare problems, maternity/paternity leave, labor-management dispute, job training, or other family or personal reasons, whether or not they were paid for the time off or were seeking other jobs. Each employed person is counted only once, even if they hold more than one job.

Involuntary Part-Time Workers: Persons who are available and want to work full-time, but accept part-time work for economic reasons.

Job Losers: Unemployed persons who involuntarily lost their last job or who had completed a temporary job. This includes persons who were on temporary layoff expecting to return to work, as well as persons not on temporary layoff. Those not on temporary layoff include permanent job losers and persons whose temporary jobs had ended.

Job-seeker Discouragement: A measurement of would-be job-seeker discouragement, calculated as the difference between alternative measures **U-4** and **U-3**. While the actual figure is somewhat artificial and difficult to interpret on its own, the overall trend gives an idea of perceptions about the labor market.

Marginally Attached Workers: Persons not in the labor force who want and are available for work, and who have looked for a job sometime in the prior 12 months (or since the end of their last job if they held one within the past 12 months), but were not counted as unemployed because they had not searched for work in the 4 weeks preceding the survey. Discouraged workers are a subset of the marginally attached.

Marginally Attached Workers Plus Civilian Labor Force: Measure of the “Full” labor force, often used when calculating alternative measures of underutilization in order to include discouraged workers

NAICS: The North American Industry Classification System, or “NAICS,” is a system developed by Mexico, Canada, and the United States to provide a consistent framework of industrial statistics used by policy analysts, academics, and researchers. NAICS are given for all economic activity and go from the 2-digit NAICS sector, and down to the more detailed three, four, five, and six-digit industry sub-sectors. For example, the Construction Industry (23), can be broken down further to Construction of Buildings (236), Heavy and Civil Engineering Construction (237), and Specialty Trade Contractors (238). Construction of Buildings can then be divided into nonresidential (2362) versus residential (2361) construction. From here, Nonresidential construction can be broken down further into Commercial and Institutional (23622) versus Industrial (23621) Building Construction.

Underemployment: A measurement of the underemployment rate, calculated as the difference between alternative measures **U-6** and **U-5**. This essentially looks at the widest possible definition of unemployment and the labor force, and separates out those that, while employed, feel that they are not in a position which suits their needs and abilities.

Unemployed: Persons aged 16 years and older who had no employment during the reference week, were available for work, except for temporary illness, and had made specific efforts to find employment sometime during the 4-week period ending the reference week. Persons who were waiting to be recalled to a job from which they had been laid off need not have been looking for work to be classified as unemployed.

U-1: Persons unemployed 15 weeks or longer, as a percent of the civilian labor force

U-2: Job losers and persons who completed temporary jobs, as a percent of the civilian labor force

U-3: Total unemployed, as a percent of the civilian labor force (this is the definition used for the official unemployment rate)

U-4: Total unemployed, plus discouraged workers, as a percent of the civilian labor force, plus discouraged workers

U-5: Total unemployed, plus discouraged workers, plus all other marginally attached workers, as a percent of the civilian labor force, plus all marginally attached workers

U-6: Total unemployed, plus all marginally attached workers, plus total employed part-time for economic reasons, as a percent of the civilian labor force plus all marginally attached workers

Appendix

Appendix A

Existing Demand and Industry Sector Overview, First Quarter 2018

Industry	Industry Sub-Sector	2014 Employment and Wages (in Millions of Dollars)	2019 Employment and Wages (in Millions of Dollars)	5-Year Change	2014 Location Quotients	2018 Location Quotients	Average Annual Growth Rate*	Top Occupation by Employment
Accommodation and Food Services		Employment: 309,224 Wages: \$1,298.7	Employment: 343,969 Wages: \$1,714.0	Employment: 11.2% Wages: 32.0%	Employment: 0.96 Wages: 0.87	Employment: 0.95 Wages: 0.86	1.04%	Combined Food Preparation and Serving Workers
Administrative, Support and Waste Management		Employment: 208,283 Wages: \$1,989.3	Employment: 241,509 Wages: \$2,691.2	Employment: 16.0% Wages: 35.3%	Employment: 0.94 Wages: 0.96	Employment: 0.99 Wages: 1.03	1.13%	Janitors and Cleaners
Agriculture, Forestry, Fishing and Hunting		Employment: 10,835 Wages: \$77.4	Employment: 11,587 Wages: \$101.6	Employment: 6.9% Wages: 31.2%	Employment: 0.37 Wages: 0.36	Employment: 0.40 Wages: 0.39	0.14%	Farmworkers and Laborers, Crop, Nursery, & Greenhouse
Arts, Entertainment and Recreation		Employment: 54,868 Wages: \$361.7	Employment: 62,676 Wages: \$414.2	Employment: 14.2% Wages: 14.5%	Employment: 0.88 Wages: 0.62	Employment: 0.88 Wages: 0.60	1.36%	Amusement and Recreation Attendants
Construction		Employment: 179,484 Wages: \$2,123.9	Employment: 205,517 Wages: \$2,966.4	Employment: 14.5% Wages: 39.7%	Employment: 1.09 Wages: 0.96	Employment: 1.02 Wages: 0.93	0.80%	Construction Laborers
Educational Services		Employment: 360,631 Wages: \$3,747.8	Employment: 370,466 Wages: \$4,284.4	Employment: 2.7% Wages: 14.3%	Employment: 0.85 Wages: 0.73	Employment: 0.84 Wages: 0.71	1.11%	Teacher Assistants
Finance and Insurance		Employment: 129,631 Wages: \$3,305.0	Employment: 141,084 Wages: \$4,385.7	Employment: 8.8% Wages: 32.7%	Employment: 0.86 Wages: 0.72	Employment: 0.88 Wages: 0.77	0.80%	Customer Service Representatives
Health Care and Social Assistance		Employment: 454,840 Wages: \$5,093.1	Employment: 506,355 Wages: \$6,277.3	Employment: 11.3% Wages: 23.2%	Employment: 0.85 Wages: 0.83	Employment: 0.84 Wages: 0.83	2.31%	Registered Nurses
Information		Employment: 76,582 Wages: \$1,967.9	Employment: 72,327 Wages: \$2,166.8	Employment: -5.6% Wages: 10.1%	Employment: 0.98 Wages: 0.95	Employment: 0.89 Wages: 0.78	-0.15%	Customer Service Representatives
	Broadcasting	Employment: 7,757 Wages: \$121.5	Employment: 7,459 Wages: \$139.5	Employment: -3.8% Wages: 14.8%	Employment: 1.04 Wages: 0.81	Employment: 1.06 Wages: 0.73	-1.23%	Producers and Directors
	Data Processing, Hosting, and Related Service	Employment: 11,364 Wages: \$324.5	Employment: 13,454 Wages: \$436.3	Employment: 18.4% Wages: 34.5%	Employment: 1.50 Wages: 1.64	Employment: 1.24 Wages: 1.17	0.53%	Computer User Support Specialists
	Motion Picture and Sound Recording Industries	Employment: 4,827 Wages: \$34.5	Employment: 5,525 Wages: \$44.1	Employment: 14.5% Wages: 27.9%	Employment: 0.46 Wages: 0.20	Employment: 0.54 Wages: 0.25	0.50%	Ushers, Lobby Attendants, and Ticket Takers
	Other Information Services	Employment: 8,421 Wages: \$162.6	Employment: 10,045 Wages: \$212.3	Employment: 19.3% Wages: 30.6%	Employment: 0.66 Wages: 0.44	Employment: 0.58 Wages: 0.31	4.00%	Sales Representatives, Services, All Other
	Publishing Industries	Employment: 16,090 Wages: \$350.8	Employment: 13,962 Wages: \$435.8	Employment: -13.2% Wages: 24.2%	Employment: 0.82 Wages: 0.67	Employment: 0.70 Wages: 0.56	-0.49%	Editors
	Telecommunications	Employment: 28,122 Wages: \$974.0	Employment: 21,883 Wages: \$898.7	Employment: -22.2% Wages: -7.7%	Employment: 1.23 Wages: 1.56	Employment: 1.19 Wages: 1.54	-1.04%	Sales Representative, Services, All Other

Industry	Industry Sub-Sector	2014 Employment and Wages (in Millions of Dollars)	2019 Employment and Wages (in Millions of Dollars)	5-Year Change	2014 Location Quotients	2018 Location Quotients	Average Annual Growth Rate*	Top Occupation by Employment
Management of companies and Enterprises		Employment: 73,500 Wages: \$2,529.7	Employment: 78,510 Wages: \$3,125.6	Employment: 6.8% Wages: 23.6%	Employment: 1.29 Wages: 1.23	Employment: 1.21 Wages: 1.23	0.56%	Accountants and Auditors
Manufacturing		Employment: 239,198 Wages: \$3,538.9	Employment: 252,687 Wages: \$3,995.2	Employment: 5.6% Wages: 12.9%	Employment: 0.71 Wages: 0.62	Employment: 0.71 Wages: 0.61	-0.59%	Team Assemblers
Mining, Quarrying and Oil & Gas Extraction		Employment: 7,740 Wages: \$135.3	Employment: 5,944 Wages: \$118.9	Employment: -23.2% Wages: -12.2%	Employment: 0.33 Wages: 0.22	Employment: 0.33 Wages: 0.23	-1.00%	Operating Engineers & Equipment Operators
Other Services		Employment: 130,936 Wages: \$1,298.9	Employment: 140,373 Wages: \$1,598.0	Employment: 7.2% Wages: 23.0%	Employment: 1.16 Wages: 1.33	Employment: 1.21 Wages: 1.33	1.06%	Hairdressers, Hairstylists, and Cosmetologists
	Personal and Laundry Services	Employment: 40,873 Wages: \$242.5	Employment: 45,224 Wages: \$308.2	Employment: 10.6% Wages: 27.1%	Employment: 1.13 Wages: 1.10	Employment: 1.13 Wages: 1.10	0.94%	Hairdressers, Hairstylists, and Cosmetologists
	Private Households	Employment: 10,601 Wages: \$60.9	Employment: 10,467 Wages: \$70.8	Employment: -1.3% Wages: 17.5%	Employment: 1.40 Wages: 1.38	Employment: 2.25 Wages: 1.93	-0.65%	Maids and Housekeeping Cleaners
	Religious, Grant-making, Civic, Professional, and Similar	Employment: 45,174 Wages: \$633.3	Employment: 48,570 Wages: \$782.9	Employment: 7.5% Wages: 23.6%	Employment: 1.27 Wages: 1.73	Employment: 1.30 Wages: 1.73	1.61%	Office Clerks, General
	Repair and Maintenance	Employment: 34,288 Wages: \$362.8	Employment: 36,112 Wages: \$436.0	Employment: 5.3% Wages: 20.2%	Employment: 1.02 Wages: 1.05	Employment: 0.99 Wages: 1.00	0.96%	Automotive Service Technicians & Mechanics
Professional, Scientific and Technical Services		Employment: 397,997 Wages: \$9,709.9	Employment: 439,049 Wages: \$12,098.4	Employment: 10.3% Wages: 24.6%	Employment: 1.74 Wages: 1.91	Employment: 1.73 Wages: 1.85	1.65%	Management Analysts
	Accounting, Tax Prep., Bookkeeping, and Payroll Services	Employment: 37,750 Wages: \$669.5	Employment: 39,868 Wages: \$827.9	Employment: 5.6% Wages: 23.6%	Employment: 1.36 Wages: 1.56	Employment: 1.42 Wages: 1.56	1.52%	Accountants and Auditors
	Advertising, Public Relations, and Related	Employment: 12,019 Wages: \$172.7	Employment: 11,310 Wages: \$195.7	Employment: -5.9% Wages: 13.3%	Employment: 0.94 Wages: 0.72	Employment: 0.86 Wages: 0.70	0.85%	Mail Clerks and Machine Operators
	Architectural Engineering and Related	Employment: 58,591 Wages: \$1,361.8	Employment: 62,599 Wages: \$1,647.0	Employment: 6.8% Wages: 20.9%	Employment: 1.44 Wages: 1.54	Employment: 1.44 Wages: 1.53	0.84%	Civil Engineers
	Computer Systems Design and Related	Employment: 144,807 Wages: \$4,219.3	Employment: 166,569 Wages: \$5,431.8	Employment: 15.0% Wages: 28.7%	Employment: 3.01 Wages: 3.12	Employment: 2.94 Wages: 2.98	1.92%	Software Developers, Applications
	Legal Services	Employment: 25,545 Wages: \$472.1	Employment: 25,210 Wages: \$543.7	Employment: -1.3% Wages: 15.2%	Employment: 0.85 Wages: 0.77	Employment: 0.83 Wages: 0.75	0.27%	Paralegals and Legal Assistants
	Management, Scientific, and Technical Consulting	Employment: 71,920 Wages: \$1,860.6	Employment: 80,504 Wages: \$2,241.0	Employment: 11.9% Wages: 20.4%	Employment: 2.20 Wages: 2.59	Employment: 2.02 Wages: 2.31	2.13%	Management Analysts
	Other Professional, Scientific, and Technical Services	Employment: 20,425 Wages: \$246.3	Employment: 27,465 Wages: \$429.5	Employment: 34.5% Wages: 74.4%	Employment: 1.24 Wages: 1.28	Employment: 1.35 Wages: 1.44	2.52%	Veterinary Assistants & Lab Animal Caretakers
	Scientific Research and Development Services	Employment: 24,867 Wages: \$680.3	Employment: 23,376 Wages: \$747.9	Employment: -6.0% Wages: 9.9%	Employment: 1.41 Wages: 1.25	Employment: 1.20 Wages: 0.99	1.13%	Software Developers, Systems Software
	Specialized Design Services	Employment: 2,073 Wages: \$27.1	Employment: 2,148 Wages: \$34.0	Employment: 3.6% Wages: 25.6%	Employment: 0.63 Wages: 0.55	Employment: 0.55 Wages: 0.51	0.57%	Graphic Designers

Industry	Industry Sub-Sector	2014 Employment and Wages (in Millions of Dollars)	2019 Employment and Wages (in Millions of Dollars)	5-Year Change	2014 Location Quotients	2018 Location Quotients	Average Annual Growth Rate*	Top Occupation by Employment
Public Administration		Employment: 241,408 Wages: \$4,436.2	Employment: 250,957 Wages: \$4,835.0	Employment: 4.0% Wages: 9.0%	N/A	N/A	-0.02%	Correctional Officers and Jailers
	Admin. Of Economic Programs	Employment: 31,877 Wages: \$666.4	Employment: 31,413 Wages: \$650.6	Employment: -1.5% Wages: -2.4%	N/A	N/A	N/A	N/A
	Admin. Of Environmental Programs	Employment: 9,069 Wages: \$147.5	Employment: 7,949 Wages: \$154.2	Employment: -12.3% Wages: 4.6%	N/A	N/A	N/A	N/A
	Admin. of Housing Programs, and Urban Planning	Employment: 3,693 Wages: \$48.0	Employment: 3,619 Wages: \$57.0	Employment: -2.0% Wages: 18.8%	N/A	N/A	N/A	N/A
	Admin. Of Human Resource Programs	Employment: 15,915 Wages: \$218.6	Employment: 16,461 Wages: \$247.5	Employment: 3.4% Wages: 13.2%	N/A	N/A	N/A	N/A
	Executive, Legislative, Other General Government	Employment: 33,591 Wages: \$407.3	Employment: 35,434 Wages: \$476.5	Employment: 5.5% Wages: 17.0%	N/A	N/A	N/A	N/A
	Justice, Public Order, and Safety Activities	Employment: 79,617 Wages: \$1,234.8	Employment: 82,824 Wages: \$1,379.0	Employment: 4.0% Wages: 11.7%	N/A	N/A	N/A	N/A
	National Security and International Affairs	Employment: 65,540 Wages: \$1,663.2	Employment: 71,232 Wages: \$1,807.9	Employment: 8.7% Wages: 8.7%	N/A	N/A	N/A	N/A
	Space Research and Technology	Employment: 2,106 Wages: \$50.5	Employment: 2,025 Wages: \$62.3	Employment: -3.8% Wages: 23.4%	N/A	N/A	N/A	N/A
Real Estate and Rental & Leasing		Employment: 50,417 Wages: \$628.8	Employment: 55,335 Wages: \$838.1	Employment: 9.8% Wages: 33.3%	Employment: 0.94 Wages: 0.88	Employment: 0.92 Wages: 0.87	0.47%	Maintenance and Repair Workers, General
Retail Trade		Employment: 411,633 Wages: \$2,729.5	Employment: 408,039 Wages: \$3,118.8	Employment: -0.9% Wages: 14.3%	Employment: 1.01 Wages: 0.92	Employment: 0.98 Wages: 0.88	0.41%	Retail Salespersons
Transportation and Warehousing		Employment: 122,717 Wages: \$1,565.6	Employment: 146,532 Wages: \$1,992.9	Employment: 19.4% Wages: 27.3%	Employment: 0.86 Wages: 0.82	Employment: 0.85 Wages: 0.81	1.07%	Heavy & Tractor-Trailer Truck Drivers
Utilities		Employment: 18,360 Wages: \$434.7	Employment: 18,503 Wages: \$507.6	Employment: 0.8% Wages: 16.8%	Employment: 0.72 Wages: 0.73	Employment: 0.73 Wages: 0.75	0.06%	Electrical Power-Line Installers and Repairers
Wholesale Trade		Employment: 109,707 Wages: \$2,025.9	Employment: 108,759 Wages: \$2,367.4	Employment: -0.9% Wages: 16.9%	Employment: 0.71 Wages: 0.72	Employment: 0.70 Wages: 0.73	0.20%	Sales Representatives
Total		Employment: 3,591,595 Wages: \$49,035.6	Employment: 3,877,641 Wages: \$59,790.7	Employment: 8.0% Wages: 21.9%	N/A	N/A	0.98%	N/A

Source: Virginia Employment Commission, Quarterly Census of Employment

Source: Quarterly Census of Employment and Wages Location Quotient Calculator, Bureau of Labor Statistics

*Growth based on 2016-2026 Long-Term Industry Projections, Virginia Employment Commission

Note: Totals may not add due to rounding.

Note: Employment and wage data represents data from the first quarter of the year, while location quotients are for the final quarter of the year due to data availability

Appendix B

Industrial Shares of the Statewide Economy Over 30 Years

Industry	2018			2008			1998		
	Share of Establishments	Share of Employment	Share of Total Wages	Share of Establishments	Share of Employment	Share of Total Wages	Share of Establishments	Share of Employment	Share of Total Wages
Accommodation & Food Services	6%	9%	3%	7%	8%	3%	6%	7%	3%
Administrative and Support & Waste Management	5%	6%	5%	5%	6%	4%	5%	6%	4%
Agriculture, Forestry, Fishing & Hunting	1%	<1%	<1%	1%	<1%	<1%	1%	<1%	<1%
Arts, Entertainment & Recreation	1%	1%	1%	1%	1%	1%	1%	1%	1%
Construction	8%	5%	5%	12%	6%	6%	12%	6%	6%
Educational Services	1%	2%	1%	1%	1%	2%	1%	1%	1%
Finance & Insurance	4%	4%	6%	5%	3%	5%	5%	3%	5%
Health Care & Social Assistance	14%	11%	10%	9%	10%	9%	7%	8%	7%
Information	2%	2%	3%	2%	2%	4%	2%	3%	6%
Management of Companies & Enterprises	1%	2%	4%	1%	2%	4%	1%	2%	4%
Manufacturing	2%	6%	6%	3%	7%	7%	3%	12%	12%
Mining, Quarrying, and Oil & Gas Extraction	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Other Services (Except Public Administration)	13%	4%	3%	10%	4%	3%	13%	4%	3%
Professional, Scientific & Technical Services	15%	11%	20%	15%	10%	19%	12%	7%	12%
Public Administration	1%	6%	9%	2%	6%	9%	2%	6%	8%
Real Estate and Rental & Leasing	4%	1%	1%	4%	2%	1%	4%	2%	1%
Retail Trade	9%	11%	5%	12%	11%	6%	15%	12%	7%
Transportation & Warehousing	2%	3%	3%	2%	3%	2%	3%	3%	3%
Utilities	<1%	<1%	1%	<1%	<1%	1%	<1%	<1%	1%
Wholesale Trade	4%	3%	4%	6%	3%	4%	6%	3%	5%

Source: Virginia Employment Commission, Quarterly Census of Employment and Wages, Annual

Appendix C

Employer Needs by 2-Digit NAICS Industry

Industry	Quick Facts	Top 5 Occupations (Estimated Employment based on 2016 projections)	Top Advertised Skills	Top Advertised Certifications
Accommodation and Food Services	<ul style="list-style-type: none"> • 7.3% of VA Jobs • 14,606 Openings • 20,857 Employers • \$9.50 Average Hourly Wage • Top advertised Tool or Technology: Workstations 	<ol style="list-style-type: none"> 1. Combined food Preparation and Serving Workers (74,873) 2. Waiters and Waitresses (66,326) 3. Cooks, Restaurant (31,780) 4. First-Line Supervisors of Food Preparation and Serving Workers (21,258) 5. Cashiers (14,522) 	<ol style="list-style-type: none"> 1. Customer Service 2. Positive Attitude 3. Food Preparation 4. Cash Handling 5. Honesty 	<ol style="list-style-type: none"> 1. ServeSafe 2. CPR 3. Certified Public Accountant 4. Commission of Dietetic Registration 5. Commercial Drivers License
Administrative Support and Waste Management	<ul style="list-style-type: none"> • 5.0% of VA Jobs • 10,022 Openings • 11,496 Employers • \$20.40 Average Hourly Wage • Top advertised Tool or Technology: MS Office 	<ol style="list-style-type: none"> 1. Janitors and Cleaners (32,804) 2. Security Guards (22,030) 3. Landscaping and Grounds-keeping Workers (18,361) 4. Customer Service representatives (10,958) 5. Laborers and Freight, Stock, and Material Movers (8,781) 	<ol style="list-style-type: none"> 1. Customer Service 2. Attention to Detail 3. Problem Solving 4. Interpersonal Skills 5. Risk Management 	<ol style="list-style-type: none"> 1. CPR 2. Registered Nurse 3. Commercial Drivers License 4. Basic Life Support 5. Advanced Cardiac Life Support
Agriculture, Forestry, Fishing and Hunting	<ul style="list-style-type: none"> • 0.5% of VA Jobs • 105 Openings • 1,547 Employers • \$16.60 Average Hourly Wage • Top advertised Tool or Technology: Motor Vehicles 	<ol style="list-style-type: none"> 1. Farmworkers and Laborers (26,160) 2. Agricultural Equipment Operators (2,593) 3. First-Line Supervisors of Farming, Fishing and Forestry Workers (1,363) 4. Logging Equipment Operators (1,131) 5. Farmworkers, farm, ranch, and aquacultural animals (950) 	<ol style="list-style-type: none"> 1. Customer Service 2. Attention to Detail 3. Watering 4. Cold Calling 5. Time Management 	<ol style="list-style-type: none"> 1. Commercial Drivers License
Arts, Entertainment and Recreation	<ul style="list-style-type: none"> • 0.9% of VA Jobs • 1,758 Openings • 6,058 Employers • \$11.48 Average Hourly Wage • Top advertised Tool or Technology: Saws 	<ol style="list-style-type: none"> 1. Amusement and Recreation Attendants (4,515) 2. Cashiers (1,857) 3. Waiters and Waitresses (1,812) 4. Receptionist and Information Clerks (1,544) 5. Lifeguards, Ski Patrol, and Other Recreational Protective Service (1,515) 	<ol style="list-style-type: none"> 1. Customer Services 2. Positive Attitude 3. Attention to Detail 4. Positive Work Ethic 5. Ability to Empathize 	<ol style="list-style-type: none"> 1. CPR 2. First Aid 3. American Sports and Fitness Association Cert. 4. American Red Cross Water Safety 5. Aerobics and Fitness Association of America

Industry	Quick Facts	Top 5 Occupations (Estimated Employment based on 2016 projections)	Top Advertised Skills	Top Advertised Certifications
Construction	<ul style="list-style-type: none"> • 1.1% of VA Jobs • 2,099 Openings • 23,243 Employers • \$27.15 Average Hourly Wage • Top advertised Tool or Technology: LadderMS Office 	<ol style="list-style-type: none"> 1. Construction Laborers (17,063) 2. Supervisors of Construction and Extraction Workers (14,101) 3. Carpenters (14,073) 4. Electricians (10,715) 5. Plumbers, Pipefitters, and Steamfitters (8,855) 	<ul style="list-style-type: none"> • 1. Customer Service • 2. Problem Solving 3. Attention to Detail 4. Work Independently • 5. Self Motivated 	<ul style="list-style-type: none"> • 1. Commercial Drivers License • 2. CPR 3. Board of Certified Safety Professionals 4. National Society of Professional Engineers • 5. Hillstone Network
Educational Services	<ul style="list-style-type: none"> • 4.3% of VA Jobs • 8,466 Openings • 7,820 Employers • \$23.20 Average Hourly Wage • Top advertised Tool or Technology: MS Office 	<ol style="list-style-type: none"> 1. Teacher Assistants (24,496) 2. Bus Drivers (12,906) 3. Janitors and Cleaners (11,414) 4. Office Clerks (10,176) 5. Combined Food Preparation and Serving Workers (8,961) 	<ol style="list-style-type: none"> 1. Customer Service 2. Work Independently 3. Attention to Detail 4. Interpersonal Skills 5. Organizational Skills 	<ol style="list-style-type: none"> 1. CPR 2. Basic Life Support 3. Registered Nurse 4. First Aid Cert. 5. Commercial Drivers License
Finance and Insurance	<ul style="list-style-type: none"> • 2.3% of VA Jobs • 4,444 Openings • 14,868 Employers • \$42.33 Average Hourly Wage • Top advertised Tool or Technology: MS Office 	<ol style="list-style-type: none"> 1. Customer Service Representatives (12,824) 2. Tellers (11,231) 3. Insurance Sales Agents (9,851) 4. First-Line Supervisors of Office and Administrative Support Workers (6,131) 5. Loan Interviewers and Clerks (5,343) 	<ol style="list-style-type: none"> 1. Problem Solving 2. Customer Service 3. Decision Making 4. Risk Management 5. Time Management 	<ol style="list-style-type: none"> 1. FINRA Financial Securities Professionals 2. Certified Public Accountant 3. ISC Certifications 4. American Institute for Chartered Property Casualty Underwriters 5. Information Systems Audit and Control Association Certification
Health Care and Social Assistance	<ul style="list-style-type: none"> • 10.9% of VA Jobs • 21,640 Openings • 38,752 Employers • \$24.08 Average Hourly Wage • Top advertised Tool or Technology: MS Office 	<ol style="list-style-type: none"> 1. Registered Nurses (54,344) 2. Nursing Assistants (34,695) 3. Licensed Practical and Licensed Vocational Nurses (18,337) 4. Receptionists and Information Clerks (15,099) 5. Medical Assistants (11,577) 	<ol style="list-style-type: none"> 1. Customer Service 2. Problem Solving 3. Decision Making 4. Attention to Detail 5. Interpersonal Skills 	<ol style="list-style-type: none"> 1. CPR 2. Registered Nurse 3. Certified Nursing Assistant 4. Advanced Cardiac Life Support 5. Basic Life Support

Industry	Quick Facts	Top 5 Occupations (Estimated Employment based on 2016 projections)	Top Advertised Skills	Top Advertised Certifications
Information	<ul style="list-style-type: none"> • 1.6% of VA Jobs • 3,253 Openings • 6,724 Employers • \$43.50 Average Hourly Wage • Top advertised Tool or Technology: Linux 	<ol style="list-style-type: none"> 1. Customer Service Representatives (4,210) 2. Sales Representatives (3,850) 3. Telecommunications Line Installers and Repairers (3,229) 4. Software Developers, Applications (2,762) 5. Computer User Support Specialists (2,335) 	<ol style="list-style-type: none"> 1. Developing New Business 2. Problem Solving 3. Interpersonal Skills 4. Customer Service 5. Negotiate Pricing 	<ol style="list-style-type: none"> 1. Certified Public Accountant 2. ISC Certification 3. Project Management Institute 4. CompTIA 5. GIAC IT Security Admin
Management of Companies and Enterprises	<ul style="list-style-type: none"> • 8.6% of VA Jobs • 1,707 Openings • 313 Employers • \$50.20 Average Hourly Wage • Top advertised Tool or Technology: MS Office 	<ol style="list-style-type: none"> 1. Accountants and Auditors (3,725) 2. General Operations Managers (2,675) 3. Bookkeeping, Accounting, and Auditing Clerks (2,454) 4. Management Analysts (2,369) 5. Financial Managers (2,360) 	<ol style="list-style-type: none"> 1. Customer Service 2. Flexibility 3. Problem Solving 4. Vacuuming 5. Preventive Maintenance 	<ol style="list-style-type: none"> 1. Registered Nurse 2. Advanced Cardiac Life Support 3. CPR 4. Basic Life Support 5. Pediatric Advanced Life Support
Manufacturing	<ul style="list-style-type: none"> • 4.8% of VA Jobs • 9,607 Openings • 7,778 Employers • \$28.08 Average Hourly Wage • Top advertised Tool or Technology: MS Office 	<ol style="list-style-type: none"> 1. Team Assemblers (11,822) 2. First-Line Supervisors of Production and Operating Workers (9,001) 3. Laborers and Freight, Stock, and Material Movers (6,896) 4. Inspectors, Testers, Sorters, Samplers, and Weighers (6,702) 5. Machinists (5,096) 	<ol style="list-style-type: none"> 1. Decision Making 2. Problem Solving 3. Customer Service 4. Interpersonal Skills 5. Work Independently 	<ol style="list-style-type: none"> 1. CompTIA 2. ISC Certification 3. Cisco Certified Network Associate 4. Scaled Agile Certification 5. Commercial Drivers License
Mining, Quarrying, and Oil and Gas Extraction	<ul style="list-style-type: none"> • 0.08% of VA Jobs • 163 Openings • 305 Employers • \$34.50 Average Hourly Wage • Top advertised Tool or Technology: Motor Vehicles 	<ol style="list-style-type: none"> 1. Operating Engineers and Other Construction Equip. Operators (758) 2. Mine Cutting and Channeling Machine Operators (679) 3. Continuous Mining Machine Operators (632) 4. Helpers- extraction Workers (202) 5. Mobile heavy Equipment Mechanics (183) 	<ol style="list-style-type: none"> 1. Critical Thinking 2. Welding 3. Flexibility 4. Problem Solving 5. Organizational Skills 	<ol style="list-style-type: none"> 1. Commercial Drivers License 2. American Society for Nondestructive Testing 3. Project Management Institute 4. ESCO Group- Employment Ready 5. Certified Public Accountant

Industry	Quick Facts	Top 5 Occupations (Estimated Employment based on 2016 projections)	Top Advertised Skills	Top Advertised Certifications
Other Services (Except Public Administration)	<ul style="list-style-type: none"> • 1.2% of VA Jobs • 2,317 Openings • 41,319 Employers • \$20.20 Average Hourly Wage • Top advertised Tool or Technology: MS Office 	<ol style="list-style-type: none"> 1. Hairdressers, Hairstylists, and Cosmetologists (9,368) 2. Automotive Service Technicians and Mechanics (7,170) 3. Office Clerks (5,187) 4. Cleaners of Vehicles and Equipment (4,945) 5. Childcare Workers (4,897) 	<ol style="list-style-type: none"> 1. Customer Service 2. Attention to Detail 3. Problem Solving 4. Organizational Skills 5. Positive Attitude 	<ol style="list-style-type: none"> 1. Certified Nursing Assistant 2. CPR 3. American Red Cross First Aid 4. Registered Nurse 5. Commercial Drivers License
Professional, Scientific and Technical Services	<ul style="list-style-type: none"> • 20.8% of VA Jobs • 41,439 Openings • 29,777 Employers • \$47.98 Average Hourly Wage • Top advertised Tool or Technology: MS Office 	<ol style="list-style-type: none"> 1. Management Analysts (27,472) 2. Software Developers, Applications (23,439) 3. Accountants and Auditors (18,825) 4. Software Developers, Systems Software (18,326) 5. Computer Systems Analysts (17,153) 	<ol style="list-style-type: none"> 1. Flexibility 2. Problem Solving 3. Work Independently 4. Customer Service 5. Interpersonal Skills 	<ol style="list-style-type: none"> 1. ISC Certification 2. CompTIA 3. Cisco Certified Network Associate 4. GIAC IT Security Administration Certification 5. Certified public Accountant
Public Administration	<ul style="list-style-type: none"> • 2.1% of VA Jobs • 4,127 Openings • 9,367 Employers • \$37.70 Average Hourly Wage • Top advertised Tool or Technology: MS Office 	<ol style="list-style-type: none"> 1. Correctional Officers and Jailers (6,834) 2. Highway Maintenance Workers (2,959) 3. Office and Administrative Support Workers (2,184) 4. Probation Officers and Correctional Treatment Specialists (2,007) 5. Office Clerks (1,943) 	<ol style="list-style-type: none"> 1. Customer Service 2. Work Independently 3. Problem Solving 4. Interpersonal Skills 5. Decision Making 	<ol style="list-style-type: none"> 1. CPR 2. Commercial Drivers License 3. First Aid 4. Registered Nurse 5. CompTIA
Real Estate and Rental and Leasing	<ul style="list-style-type: none"> • 0.8% of VA Jobs • 1,618 Openings • 14,781 Employers • \$26.08 Average Hourly Wage • Top advertised Tool or Technology: MS Office 	<ol style="list-style-type: none"> 1. Maintenance and Repair Workers (7,554) 2. Office Clerks (3,296) 3. Property, Real Estate, and Community Association Mgrs. (1,739) 4. Real Estate Brokers (1,622) 5. Secretaries and Administrative Assistants (1,614) 	<ol style="list-style-type: none"> 1. Customer Service 2. Attention to Detail 3. Time Management 4. Flexibility 5. Verbal Communication 	<ol style="list-style-type: none"> 1. Commercial Drivers License 2. National Apartment Association 3. Certified Nursing Assistant 4. Community Association Mgrs, International Cert. Board 5. Community Associations Institute
Retail Trade	<ul style="list-style-type: none"> • 8.2% of VA Jobs • 16,310 Openings • 38,619 Employers • \$14.33 Average Hourly Wage • Top advertised Tool or Technology: Cash Register 	<ol style="list-style-type: none"> 1. Retail Salespersons (109,799) 2. Cashiers (85,675) 3. Stock Clerks and Order Fillers (40,032) 4. First-Line Supervisors of Retail Sales Workers (27,868) 5. Automotive Service Technicians and Mechanics (10,725) 	<ol style="list-style-type: none"> 1. Customer Service 2. Willingness to Learn 3. Attention to Detail 4. Inventory Management 5. Positive Attitude 	<ol style="list-style-type: none"> 1. Avaya 2. National Registry of Food Safety Professionals 3. Commercial Drivers License 4. Pharmacy Technician Board 5. ASE Parts Specialist

Industry	Quick Facts	Top 5 Occupations (Estimated Employment based on 2016 projections)	Top Advertised Skills	Top Advertised Certifications
Transportation	<ul style="list-style-type: none"> • 1.2% of VA Jobs • 2,355 Openings • 5,714 Employers • \$25.45 Average Hourly Wage • Top advertised Tool or Technology: MS Office 	<ol style="list-style-type: none"> 1. Heavy and Tractor-Trailer Truck Drivers (22,261) 2. Laborers and Freight, Stock, and Material Movers (16,175) 3. Light Truck or Delivery Services Drivers (6,641) 4. Industrial Truck and Tractor Operators (5,110) 5. Flight Attendants (4,080) 	<ol style="list-style-type: none"> 1. Customer Service 2. Work Independently 3. Problem Solving 4. Verbal Communication Skills 5. T Positive Attitude 	<ol style="list-style-type: none"> 1. Commercial Drivers License 2. Project Management Institute 3. Toyota Certification 4. Society for Human Resource Management 5. Human Resource Certification Institute
Utilities	<ul style="list-style-type: none"> • 0.1% of VA Jobs • 286 Openings • 417 Employers • \$42.40 Average Hourly Wage • Top advertised Tool or Technology: MS Office 	<ol style="list-style-type: none"> 1. Electrical Power-Line Installers and Repairers (1,645) 2. Electrical Engineers (603) 3. Electrical and Electronics Repairers, Powerhouse, Substation, and Relay (564) 4. Customer Service Representatives (467) 5. Control and Valve Installers and Repairers (404) 	<ol style="list-style-type: none"> 1. Customer Service 2. Decision Making 3. Problem Solving 4. Interpersonal Skills 5. Self Motivated 	<ol style="list-style-type: none"> 1. Commercial Drivers License 2. National Society of Professional Engineers 3. Center for Security and Emergency Management 4. Project Management Institute 5. Certified Public Accountant
Wholesale Trade	<ul style="list-style-type: none"> • 1.3% of VA Jobs • 2,657 Openings • 7,533 Employers • \$39.33 Average Hourly Wage • Top advertised Tool or Technology: MS Office 	<ol style="list-style-type: none"> 1. Sales Reps, Wholesale and Manufacturing (19,774) 2. Laborers and Freight, Stock, and Material Movers, Hand (6,007) 3. Customer Service Representatives (4,220) 4. Heavy and Tractor-Trailer Truck Drivers (4,188) 5. Stock Clerks and Order Fillers (4,172) 	<ol style="list-style-type: none"> 1. Customer Service 2. Problem Solving 3. Interpersonal Skills 4. Work Independently 5. Attention to Detail 	<ol style="list-style-type: none"> 1. Commercial Drivers License 2. Certified Public Accountant 3. CompTIA 4. America's Health Insurance Plans 5. Human Resource Certification Institute

Source: Virginia Employment Commission, Industry Profile. Skills, Certifications, and technologies based on employer self-identification in the Virginia Workforce Connection. Please note that as many job orders do not list these categories, data may skew towards those that do.

Appendix D

Employer Needs for Top Occupations by Current Openings

Occupation	Job Openings, ¹ Available Candidates ² and Average Advertised Annual wage ³	Top Employer Advertised Skills	Top Employer Advertised Certifications	Employer Advertised Education ⁴ and Experience
Registered Nurses	<ul style="list-style-type: none"> • 6,420 Openings • 250 Candidates • \$67,990 Average Wage 	<ul style="list-style-type: none"> • Critical Thinking • Decision Making • Customer Service • Problem Solving • Attention to Detail 	<ul style="list-style-type: none"> • Registered Nurse • Advanced Cardiac Life Support • CPR • Basic Life Support • Pediatric Advanced Life Support 	<ul style="list-style-type: none"> • Associate's Degree (or other 2- year degree) • 1 year to 2 years experience
Computer Occupations, All Other	<ul style="list-style-type: none"> • 4,574 Openings • 1,154 Candidates • \$104,680 Average Wage 	<ul style="list-style-type: none"> • Problem Solving • Flexibility • System Design • Risk Management • Work Independently 	<ul style="list-style-type: none"> • ISC • CompTIA • Scaled Agile • Cisco Associate • GIAC Security 	<ul style="list-style-type: none"> • Bachelor's Degree • 4 to 6 years experience
Computer Programmers	<ul style="list-style-type: none"> • 3,293 Openings • 134 Candidates • \$95,520 Average Wage 	<ul style="list-style-type: none"> • Developing web based applications • Problem Solving • Flexibility • Software Development • Agile software development 	<ul style="list-style-type: none"> • CompTIA • ISC • Scrum Alliance • Cisco Associate • GIAC Security 	<ul style="list-style-type: none"> • Bachelor's Degree • 6 months to 1 year experience
Computer User Support Specialists	<ul style="list-style-type: none"> • 3,213 Openings • 628 Candidates • \$55,960 Average Wage 	<ul style="list-style-type: none"> • Customer Service • Problem Solving • Work Independently • Conflict Management • Attention to Detail 	<ul style="list-style-type: none"> • CompTIA • Cisco Associate • ISC • GIAC Security • American Rental Association 	<ul style="list-style-type: none"> • Bachelor's Degree • 2 to 4 years experience
Retail Salesperson	<ul style="list-style-type: none"> • 3,132 Openings • 758 Candidates • \$26,120 Average Wage 	<ul style="list-style-type: none"> • Customer Service • Honesty • Cash Handling • Stock Merchandise • Verbal Communication Skills 	<ul style="list-style-type: none"> • None Widely Requested 	<ul style="list-style-type: none"> • High School Diploma or Equivalent • Entry Level

Occupation	Job Openings, ¹ Available Candidates ² and Average Advertised Annual wage ³	Top Employer Advertised Skills	Top Employer Advertised Certifications	Employer Advertised Education ⁴ and Experience
First-Line Supervisors of Food Preparation and Serving Workers	<ul style="list-style-type: none"> • 3,014 Openings • 183 Candidates • \$35,900 Average Wage 	<ul style="list-style-type: none"> • Customer Service • Inventory Management • Restaurant Management • Cash Handling • Food Preparation 	<ul style="list-style-type: none"> • None Widely Requested 	<ul style="list-style-type: none"> • High School Diploma or Equivalent • Entry Level
Combined Food Preparation and Serving Workers, Including Fast Foo	<ul style="list-style-type: none"> • 3,014 Openings • 183 Candidates • \$35,900 Average Wage 	<ul style="list-style-type: none"> • Customer Service • Positive Attitude • Greeting Customers • Provide Clear Directions • Honesty 	<ul style="list-style-type: none"> • None Widely Requested 	<ul style="list-style-type: none"> • High School Diploma or Equivalent • Entry Level
Customer Service Representatives	<ul style="list-style-type: none"> • 2,374 Openings • 4,370 Candidates • \$34,390 Average Wage 	<ul style="list-style-type: none"> • Customer Service • Problem Solving • Answer Questions • Attention to Detail • Answer Phone Calls 	<ul style="list-style-type: none"> • None Widely Requested 	<ul style="list-style-type: none"> • High School Diploma or Equivalent • 1 year to 2 years experience
Network and Computer Systems Administrators	<ul style="list-style-type: none"> • 2,022 Openings • 293 Candidates • \$94,380 Average Wage 	<ul style="list-style-type: none"> • Problem Solving • Customer Service • Conflict Management • Decision Making • Work Independently 	<ul style="list-style-type: none"> • Cisco Associate Certifications • CompTIA • ISC • Red Hat • Juniper Networks 	<ul style="list-style-type: none"> • Bachelor's Degree • 6 to 8 years experience
Software Developers, Applications	<ul style="list-style-type: none"> • 1,906 Openings • 199 Candidates • \$111,010 Average Wage 	<ul style="list-style-type: none"> • Problem Solving • Developing Web Based Applications • Software Development Experience • Develop Software • Work Independently 	<ul style="list-style-type: none"> • ISC • GIAC Security • Cisco Associate • CompTIA • CyberArk 	<ul style="list-style-type: none"> • Bachelor's Degree • 4 to 6 years experience

Monthly Job Count for August 2019. Job openings include all online postings, after de-duplication efforts.

² Candidate Count is individuals with active resumes in the Virginia Workforce Connection that specify a preference for a given occupation as of September 15, 2019.

³ Not all positions advertised include wage information.

⁴ Not all positions advertised include education requirements

Source: Virginia Employment Commission, Occupation Profiles. Skills, Certifications, and Technologies are self-reported by employers in the Virginia Workforce Connection.

Appendix E

Top 5 Major Occupations by Employment for each Local Workforce Development Area, May 2018

Workforce Area	Occupation	Employment	Median Annual Salary	Average Annual Growth*
LWDA I – Southwestern Virginia	Office and Administrative Support	8,970	\$27,158	0.48%
	Sales and Related	5,200	\$22,273	0.17%
	Education, Training, and Library	4,650	\$41,784	1.09%
	Healthcare Practitioners and Technical	4,520	\$47,224	1.69%
	Food Preparation and Serving Related	4,350	\$19,463	0.92%
LWDA II – New River/ Mt. Rogers	Production Operations	18,530	\$35,074	-0.72%
	Office and Administrative Support	18,330	\$29,490	0.48%
	Sales and Related	15,180	\$24,088	0.37%
	Food Preparation and Serving Related	12,900	\$20,194	1.15%
	Education and Library	11,840	\$48,686	1.35%
LWDA III – Western Virginia	Office and Administrative Support	25,810	\$32,645	0.32%
	Sales and Related	15,410	\$28,589	0.33%
	Food Preparation and Serving Related	13,900	\$20,177	1.08%
	Production	13,220	\$34,814	-0.49%
	Transportation and Material Moving	13,120	\$31,994	0.85%
LWDA IV – Shenandoah Valley	Office and Administrative Support	30,160	\$32,878	0.39%
	Food Preparation and Serving Related	24,840	\$21,478	1.36%
	Sales and Related	22,640	\$26,011	0.32%
	Production	22,190	\$35,538	-0.53%
	Transportation and Material Moving	20,270	\$34,695	0.90%
LWDA VI – Piedmont Workforce Network	Office and Administrative Support	23,570	\$35,861	0.47%
	Food Preparation and Serving Related	17,220	\$23,999	1.37%
	Education, Training, and Library	17,130	\$53,786	1.41%
	Sales and Related	16,550	\$28,639	0.56%
	Healthcare Practitioners and Technical	12,410	\$67,141	1.45%
LWDA VII – Central Virginia	Office and Administrative Support	15,240	\$30,126	0.26%
	Sales and Related	10,650	\$23,895	0.31%
	Production	10,310	\$34,956	-0.73%
	Food Preparation and Serving Related	9,090	\$19,928	1.21%
	Transportation and Material Moving	7,830	\$30,307	0.38%
LWDA VIII – South Central Virginia	Office and Administrative Support	7,670	\$31,144	0.23%
	Education, Training, and Library	4,740	\$46,854	1.06%
	Transportation and Material Moving	4,720	\$33,760	0.80%
	Sales and Related	4,680	\$25,747	0.22%
	Production	3,980	\$32,279	-0.81%
LWDA IX – Capital Region Workforce Partnership	Office and Administrative Support	90,480	\$36,521	0.39%
	Sales and Related	61,180	\$27,492	0.41%
	Business and Financial Operations	43,520	\$71,064	1.17%
	Food Preparation and Serving Related	43,340	\$21,140	1.34%
	Transportation and Material Moving	38,620	\$32,547	0.86%

Workforce Area	Occupation	Employment	Median Annual Salary	Average Annual Growth*
LWDA XI – Northern Virginia	Office and Administrative Support	129,820	\$40,553	N/A**
	Computer and Mathematical	107,610	\$109,839	N/A**
	Sales and Related	105,990	\$31,679	N/A**
	Business and Financial Operations	94,850	\$90,779	N/A**
	Food Preparation and Serving Related	72,700	\$24,444	N/A**
LWDA XII – Alexandria/Arlington	Business and Financial Operations	38,420	\$93,778	N/A**
	Office and Administrative Support	31,710	\$43,593	N/A**
	Food Preparation and Serving Related	25,900	\$23,814	N/A**
	Computer and Mathematical	25,410	\$112,270	N/A**
	Management Occupations	24,110	\$151,139	N/A**
LWDA XIII – Bay Consortium	Office and Administrative Support	23,260	\$35,428	0.64%
	Sales and Related	18,050	\$26,323	0.60%
	Food Preparation and Serving Related	17,370	\$22,068	1.42%
	Education, Training, and Library	13,460	\$44,266	1.32%
	Transportation and Material Moving	10,680	\$33,233	0.86%
LWDA XIV – Greater Peninsula	Office and Administrative Support	32,860	\$34,109	0.28%
	Food Preparation and Serving Related	26,530	\$21,068	1.11%
	Sales and Related	25,990	\$23,798	0.24%
	Education, Training, and Library	15,330	\$47,469	1.12%
	Construction and Extraction Operations	13,540	\$49,499	0.18%
LWDA XV – Crater Area	Food Preparation and Serving Related	9,660	\$20,055	1.12%
	Office and Administrative Support	9,600	\$33,143	0.40%
	Sales and Related	7,530	\$23,404	0.07%
	Transportation and Material Moving	7,170	\$34,955	1.05%
	Production	5,160	\$36,112	-0.47%
LWDA XVI – Hampton Roads	Office and Administrative Support	79,540	\$34,038	0.35%
	Sales and Related	54,050	\$25,103	0.30%
	Food Preparation and Serving Related	46,750	\$20,635	1.15%
	Transportation and Material Moving	37,680	\$35,286	0.76%
	Healthcare Practitioners and Technical	31,770	\$63,219	1.78%
LWDA XVII – West Piedmont	Office and Administrative Support	10,160	\$28,722	0.45%
	Production	9,080	\$32,667	-0.71%
	Sales and Related	8,970	\$21,418	0.20%
	Food Preparation and Serving Related	6,850	\$20,745	1.12%
	Transportation and Material Moving	5,410	\$29,715	0.36%

Source: Virginia Employment Commission, Occupational Employment and Wage Rates Program

*Growth based on 2016-2026 Long-term Occupational Projections, Virginia Employment Commission.

**Long-Term Occupational Projections are not available for Alexandria/Arlington and Northern Virginia LWDAs individually

Appendix F

Labor Force Participation Rates and Trends by Locality

Area	2011 (Percent)	2017 (Percent)	Change
Virginia	67.1	66.1	-1.0
Southwestern Virginia (LWDA I)	48.8	48.6	-0.2
Buchanan County	40.3	38.3	-2.0
Dickenson County	44.0	39.1	-4.9
Lee County	44.5	42.1	-2.4
Norton City	60.9	58.5	-2.4
Russell County	50.2	47.2	-3.0
Scott County	51.6	58.6	-3.0
Tazewell County	50.4	59.9	-0.5
Wise County	48.2	45.3	-2.9
New River/Mt. Rogers (LWDA II)	55.9	55.4	-0.5
Bland County	48.7	49.2	0.5
Bristol City	55.1	55.7	0.6
Carroll County	56.7	55.7	-1.0
Floyd County	62.9	59.6	-3.3
Galax City	52.9	54.9	2.0
Giles County	57.5	57.5	0.0
Grayson County	52.7	52.8	0.1
Montgomery County	59.7	58.5	-1.2
Pulaski County	57.0	57.6	0.6
Radford City	51.1	51.4	0.3
Smyth County	53.5	52.8	-0.7
Washington County	58.2	56.3	-1.9
Wythe County	61.0	58.1	-2.9
Western Virginia (LWDA III)	60.0	54.5	-5.5
Alleghany County	58.3	50.4	-7.9
Botetourt County	65.7	61.1	-4.6
Covington City	53.6	51.4	-2.2
Craig County	62.3	54.9	-7.4
Shenandoah Valley (LWDA IV)	60.2	59.1	-1.1
Augusta County	60.0	59.4	-0.6
Bath County	64.4	63.7	-0.7
Buena Vista City	61.6	56.0	-5.6
Clarke County	66.5	62.3	-4.2
Frederick County	68.3	66.9	-1.4
Harrisonburg City	52.6	60.9	8.3

Area	2011 (Percent)	2017 (Percent)	Change
Highland County	54.3	46.8	-7.5
Lexington City	35.1	37.5	2.4
Page County	60.3	59.3	-1.0
Rockbridge County	55.9	57.0	1.1
Rockingham County	65.1	64.6	-0.5
Shenandoah County	62.1	61.5	-0.6
Staunton City	60.4	61.0	0.6
Warren County	68.3	63.9	-4.4
Waynesboro City	61.2	61.2	0.0
Winchester City	66.3	63.9	-2.4
Piedmont Workforce Network (LWDA VI)	62.9	62.3	-0.6
Albemarle County	61.9	61.4	-0.5
Charlottesville City	60.2	63.9	3.7
Culpeper County	64.3	64.6	0.3
Fauquier County	70.2	67.2	-3.0
Fluvanna County	61.9	59.9	-2.0
Greene County	67.6	65.9	-1.7
Louisa County	63.7	62.4	-1.3
Madison County	63.5	60.9	-2.6
Nelson County	59.2	59.8	0.6
Orange County	60.3	60.2	-0.1
Rappahannock County	59.6	59.2	-0.4
Region 2000/Central VA (LWDA VII)	61.4	59.1	-2.3
Amherst County	62.3	58.3	-4.0
Appomattox County	60.6	57.3	-3.3
Bedford County	63.8	60.6	-3.2
Bedford City	60.5	N/A	N/A
Campbell County	62.3	60.5	-1.8
Lynchburg City	58.7	58.6	-0.1
South Central (LWDA VIII)	52.0	53.6	1.6
Amelia County	57.4	61.6	4.2
Brunswick County	47.9	49.0	1.1
Buckingham County	40.5	50.6	10.1
Charlotte County	56.0	53.5	-2.5
Cumberland County	60.0	64.2	4.2
Halifax County	53.7	63.2	-0.5
Lunenburg County	47.5	48.2	0.7
Mecklenburg County	50.2	52.0	1.8

Area	2011 (Percent)	2017 (Percent)	Change
Nottoway County	57.2	46.1	-11.1
Prince Edward County	50.0	48.0	-2.0
Capital Region Workforce Partnership (LWDA IX)	65.0	64.0	-1.0
Charles City County	60.6	59.4	-1.2
Chesterfield County	69.7	69.2	-0.5
Goochland County	56.0	59.1	3.1
Hanover County	68.8	68.0	-0.8
Henrico County	70.5	69.8	-0.7
New Kent County	69.7	64.6	-5.1
Powhatan County	56.0	56.4	-0.6
Richmond City	68.8	65.2	0.2
Northern Virginia (LWDA XI)	69.3	73.6	3.1
Fairfax City	69.7	70.7	1.7
Fairfax County	57.0	72.0	-1.9
Falls Church City	65.0	75.4	-0.7
Loudoun County	74.5	76.1	-1.3
Manassas City	69.0	75.2	1.7
Manassas Park City	73.9	72.5	-3.7
Prince William County	76.1	73.3	-2.4
Alexandria/Arlington (LWDA XII)	74.9	78.4	3.5
Alexandria City	73.5	78.4	-0.4
Arlington County	76.2	78.3	-1.4
Hampton Roads (LWDA XVI)	65.6	65.0	-0.6
Chesapeake City	69.6	65.9	-3.7
Franklin City	56.2	63.2	7.0
Isle of Wright County	66.3	64.5	-1.8
Norfolk City	70.4	68.6	-1.8
Portsmouth City	65.4	65.3	-0.1
Southampton County	57.6	55.2	-2.4
Suffolk City	67.2	66.7	-0.5
Virginia Beach City	71.7	70.7	-1.0
West Piedmont (LWDA XVII)	56.1	55.1	-1.0
Danville City	56.6	55.9	-0.7
Henry County	56.9	52.7	-4.2
Martinsville City	53.5	56.5	3.0
Patrick County	53.5	52.0	-1.5
Pittsylvania County	60.0	58.3	-1.7

Source: Virginia Employment Commission

Appendix G

Top 5 Growing Minor Group Occupations by Employment Growth

Workforce Area	Occupation	2016 Estimated Employment	2026 Employment Forecast	Forecasted Employment Change	Average Annual Growth
LWDA I – Southwestern Virginia	Personal Care and Service Occupations	1,734	2,505	771	3.76%
	Healthcare Practitioners and Technical Occupations	4,486	5,246	760	1.57%
	Other Personal Care and Service Workers	1,276	1,979	703	4.53%
	Personal Care Aides	1,008	1,687	679	5.38%
	Education, Training, and Library Occupations	4,460	4,945	485	1.03%
LWDA II – New River/ Mt. Rogers	Personal Care and Service Occupations	5,196	7,062	1,866	3.12%
	Education, Training, and Library Occupations	12,840	14,571	1,731	1.27%
	Other Personal Care and Service Workers	3,433	5,042	1,609	3.94%
	Food Preparation and Serving Related Occupations	13,516	15,064	1,548	1.09%
	Personal Care Aides	2,087	3,579	1,492	5.66%
LWDA III – Western Virginia	Healthcare Practitioners and Technical Occupations	13,047	14,833	1,786	1.29%
	Food Preparation and Serving Related Occupations	13,754	15,233	1,479	1.02%
	Healthcare Support Occupations	5,643	7,021	1,378	2.20%
	Personal Care and Service Occupations	5,539	6,906	1,367	2.22%
	Health Diagnosing and Treating Practitioners	8,434	9,565	1,131	1.26%
LWDA IV – Shenandoah Valley	Food Preparation and Serving Related Occupations	20,844	23,674	2,830	1.28%
	Personal Care and Service Occupations	9,383	12,131	2,748	2.60%
	Other Personal Care and Service Workers	5,942	8,276	2,334	3.37%
	Education, Training, and Library Occupations	15,246	17,372	2,126	1.31%
	Personal Care Aides	2,629	4,619	1,990	5.94%
LWDA VI – Piedmont Workforce Network	Personal Care and Service Occupations	8,058	10,646	2,588	2.82%
	Other Personal Care and Service Workers	5,764	8,053	2,289	3.41%
	Education, Training, and Library Occupations	15,173	17,316	2,143	1.32%
	Food Preparation and Serving Related Occupations	15,282	17,382	2,100	1.29%
	Personal Care Aides	2,919	4,876	1,957	5.36%
LWDA VII – Central Virginia	Personal Care and Service Occupations	4,416	5,815	1,399	2.79%
	Other Personal Care and Service Workers	3,170	4,422	1,252	3.39%
	Personal Care Aides	1,623	2,713	1,090	5.37%
	Food Preparation and Serving Related Occupations	8,976	10,059	1,083	1.14%
	Healthcare Practitioners and Technical Occupations	6,564	7,583	1,019	1.45%
LWDA VIII – South Central Virginia	Personal Care and Service Occupations	2,694	4,016	1,322	4.10%
	Other Personal Care and Service Workers	2,192	3,425	1,233	4.61%
	Personal Care Aides	1,727	2,913	1,186	5.47%
	Healthcare Practitioners and Technical Occupations	3,510	4,045	535	1.42%
	Education, Training, and Library Occupations	4,930	5,455	525	1.01%

Workforce Area	Occupation	2016 Estimated Employment	2026 Employment Forecast	Forecasted Employment Change	Average Annual Growth
LWDA IX – Capital Region Workforce Partnership	Personal Care and Service Occupations	22,909	29,277	6,368	2.48%
	Healthcare Practitioners and Technical Occupations	36,461	42,713	6,252	1.59%
	Food Preparation and Serving Related Occupations	45,794	51,911	6,117	1.26%
	Business and Financial Operations Occupations	45,268	50,545	5,277	1.10%
	Other Personal Care and Service Workers	13,877	18,808	4,931	3.09%
Combined LWDA XI and XII– Northern Virginia and Alexandria/Arlington*	Computer and Mathematical Occupations	120,271	146,327	26,056	1.97%
	Business and Financial Operations Occupations	135,145	158,917	23,772	1.63%
	Computer Occupations	113,814	137,393	23,579	1.89%
	Business Operations Specialists	94,177	111,043	16,866	1.65%
	Food Preparation and Serving Related Occupations	100,674	115,212	14,538	1.35%
LWDA XIII – Bay Consortium	Personal Care and Service Occupations	8,355	11,104	2,749	2.88%
	Other Personal Care and Service Workers	5,752	8,139	2,387	3.54%
	Food Preparation and Serving Related Occupations	16,753	19,125	2,372	1.33%
	Personal Care Aides	3,152	5,204	2,052	5.23%
	Education, Training, and Library Occupations	13,501	15,286	1,785	1.24%
LWDA XIV – Greater Peninsula	Food Preparation and Serving Related Occupations	22,883	25,417	2,534	1.05%
	Healthcare Practitioners and Technical Occupations	13,269	15,313	2,044	1.44%
	Personal Care and Service Occupations	8,960	10,916	1,956	1.99%
	Food and Beverage Serving Workers	12,877	14,460	1,583	1.16%
	Education, Training, and Library Occupations	13,922	15,487	1,565	1.07%
LWDA XV – Crater Area	Personal Care and Service Occupations	3,118	4,236	1,118	3.11%
	Other Personal Care and Service Workers	2,312	3,296	984	3.62%
	Personal Care Aides	1,286	2,180	894	5.53%
	Food Preparation and Serving Related Occupations	6,645	7,389	744	1.06%
	Healthcare Practitioners and Technical Occupations	4,850	5,574	724	1.40%
LWDA XVI – Hampton Roads	Food Preparation and Serving Related Occupations	49,867	55,619	5,752	1.09%
	Healthcare Practitioners and Technical Occupations	32,049	37,746	5,697	1.64%
	Personal Care and Service Occupations	20,082	25,471	5,389	2.40%
	Healthcare Support Occupations	16,494	21,585	5,091	2.72%
	Other Personal Care and Service Workers	12,513	16,953	4,440	3.08%
LWDA XVII – West Piedmont	Personal Care and Service Occupations	3,971	5,800	1,829	3.88%
	Other Personal Care and Service Workers	3,336	5,086	1,750	4.34%
	Personal Care Aides	2,520	4,225	1,705	5.40%
	Food Preparation and Serving Related Occupations	5,576	6,202	626	1.07%
	Healthcare Support Occupations	2,424	3,031	607	2.25%

Source: Virginia Employment Commission, Long-Term Occupational Projections

Note: Occupations based on 2016 data, and estimated through 2026

*Long-Term Occupational Projections are not available for Alexandria/Arlington and Northern Virginia LWDAs individually

Appendix H

Top 5 Growing Industries (3 Digit NAICS) by Forecasted Employment Growth

Workforce Area	Occupation	2016 Estimated Employment	2026 Employment Forecast	Forecasted Employment Change	Average Annual Growth
LWDA I – Southwestern Virginia	Personal Care Aides	1,008	1,687	679	5.38%
	Home Health Aides	280	459	179	5.15%
	Other Personal Care and Service Workers	1,276	1,979	703	4.53%
	Taxi Drivers and Chauffeurs	157	233	76	4.05%
	Personal Care and Service Occupations	1,734	2,505	771	3.76%
LWDA II – New River/ Mt. Rogers	Personal Care Aides	2,087	3,579	1,492	5.66%
	Other Personal Care and Service Workers	3,433	5,042	1,609	3.94%
	Personal Care and Service Occupations	5,196	7,062	1,866	3.12%
	Occupational Therapy and Physical Therapist Assistants and A	197	262	65	2.89%
	Software Developers, Applications	369	485	116	2.77%
LWDA III – Western Virginia	Personal Care Aides	1,308	2,112	804	4.98%
	Home Health Aides	577	889	312	4.46%
	Other Personal Care and Service Workers	3,342	4,397	1,055	2.78%
	Animal Care and Service Workers	249	323	74	2.63%
	Software Developers, Applications	313	402	89	2.53%
LWDA IV – Shenandoah Valley	Personal Care Aides	2,629	4,619	1,990	5.94%
	Home Health Aides	827	1,227	400	4.05%
	Other Personal Care and Service Workers	5,942	8,276	2,334	3.37%
	Software Developers, Applications	454	622	168	3.20%
	Physical Therapists	486	645	159	2.87%
LWDA VI – Piedmont Workforce Network	Personal Care Aides	2,919	4,876	1,957	5.36%
	Other Personal Care and Service Workers	5,764	8,053	2,289	3.41%
	Occupational Therapy and Physical Therapist Assistants and A	135	179	44	2.86%
	Personal Care and Service Occupations	8,058	10,646	2,588	2.82%
	Home Health Aides	290	381	91	2.76%
LWDA VII – Central Virginia	Personal Care Aides	1,623	2,713	1,090	5.37%
	Home Health Aides	234	350	116	4.14%
	Other Personal Care and Service Workers	3,170	4,422	1,252	3.39%
	Occupational Therapy and Physical Therapist Assistants and A	194	266	72	3.21%
	Mental Health and Substance Abuse Social Workers	266	360	94	3.07%
LWDA VIII – South Central Virginia	Personal Care Aides	1,727	2,913	1,186	5.47%
	Other Personal Care and Service Workers	2,192	3,425	1,233	4.61%
	Personal Care and Service Occupations	2,694	4,016	1,322	4.10%
	Home Health Aides	309	460	151	4.08%
	Social and Human Service Assistants	229	325	96	3.57%

Workforce Area	Occupation	2016 Estimated Employment	2026 Employment Forecast	Forecasted Employment Change	Average Annual Growth
LWDA IX – Capital Region Workforce Partnership	Personal Care Aides	1,286	2,180	894	5.53%
	Home Health Aides	302	451	149	4.12%
	Other Personal Care and Service Workers	2,312	3,296	984	3.62%
	Personal Care and Service Occupations	3,118	4,236	1,118	3.11%
	Occupational Therapy and Physical Therapist Assistants	76	100	24	2.78%
Combined LWDA XI and XII– Northern Virginia and Alexandria/Arlington*	Personal Care Aides	9,135	14,474	5,339	4.77%
	Home Health Aides	2,864	4,405	1,541	4.44%
	Occupational Therapy and Physical Therapist Assistants and A	941	1,309	368	3.36%
	Software Developers, Applications	22,133	30,305	8,172	3.19%
	Physical Therapists	1,834	2,468	634	3.01%
LWDA XIII – Bay Consortium	Personal Care Aides	3,152	5,204	2,052	5.23%
	Occupational Therapy and Physical Therapist Assistants and A	281	430	149	4.38%
	Home Health Aides	464	669	205	3.74%
	Other Personal Care and Service Workers	5,752	8,139	2,387	3.54%
	Physical Therapists	289	399	110	3.28%
LWDA XIV – Greater Peninsula	Personal Care Aides	2,232	3,348	1,116	4.17%
	Mental Health and Substance Abuse Social Workers	467	644	177	3.27%
	Occupational Therapy and Physical Therapist Assistants	399	546	147	3.19%
	Software Developers, Applications	917	1,179	262	2.54%
	Other Personal Care and Service Workers	5,007	6,431	1,424	2.53%
LWDA XV – Crater Area	Personal Care Aides	1,286	2,180	894	5.53%
	Home Health Aides	302	451	149	4.12%
	Other Personal Care and Service Workers	2,312	3,296	984	3.62%
	Personal Care and Service Occupations	3,118	4,236	1,118	3.11%
	Occupational Therapy and Physical Therapist Assistants	76	100	24	2.78%
LWDA XVI – Hampton Roads	Personal Care Aides	5,682	9,400	3,718	5.25%
	Home Health Aides	3,589	5,476	1,887	4.35%
	Phlebotomists	893	1,268	375	3.58%
	Mental Health and Substance Abuse Social Workers	528	716	188	3.09%
	Other Personal Care and Service Workers	12,513	16,953	4,440	3.08%
LWDA XVII – West Piedmont	Personal Care Aides	2,520	4,225	1,705	5.40%
	Other Personal Care and Service Workers	3,336	5,086	1,750	4.34%
	Personal Care and Service Occupations	3,971	5,800	1,829	3.88%
	Home Health Aides	382	537	155	3.47%
	Occupational Therapy and Physical Therapist Assistants	161	217	56	3.03%

Source: Virginia Employment Commission, Long-Term Industry Projections

Note: Industries based on 2016 data, and estimated through 2026

*Long-Term Industry Projections are not available for Alexandria/Arlington and Northern Virginia LWDAs individually

Appendix I

Regional Education Gap

Local Workforce Development Area	Education Level	Job Openings (Percent of Total Openings)*	Potential Candidates (Percent of Total Candidates)
LWDA I – Southwest Virginia	No Minimum Required	80 (4.96%)	0 (N/A)
	High School Diploma or Equivalent	162 (10.04%)	4,463 (34.82%)
	Vocational School Certificate	1 (0.06%)	652 (5.09%)
	Associate's Degree	11 (0.68%)	2,211 (17.25%)
	Bachelor's Degree	37 (2.29%)	2,380 (18.57%)
	Master's Degree	9 (0.56%)	1,201 (9.37%)
	Doctorate Degree	12 (0.74%)	161 (1.26%)
LWDA II – New River/Mt. Rogers	No Minimum Required	307 (5.50%)	0 (N/A)
	High School Diploma or Equivalent	484 (8.68%)	6,175 (37.33%)
	Vocational School Certificate	12 (0.22%)	841 (5.08%)
	Associate's Degree	45 (0.81%)	2,879 (17.40%)
	Bachelor's Degree	171 (3.07%)	2,828 (17.09%)
	Master's Degree	35 (0.63%)	1,329 (8.03%)
	Doctorate Degree	29 (0.52%)	176 (1.06%)
LWDA III – Western Virginia	No Minimum Required	222 (3.09%)	0 (N/A)
	High School Diploma or Equivalent	699 (9.72%)	5,600 (36.03%)
	Vocational School Certificate	11 (0.15%)	826 (5.31%)
	Associate's Degree	123 (1.71%)	2,783 (17.90%)
	Bachelor's Degree	277 (3.85%)	2,767 (17.80%)
	Master's Degree	20 (0.28%)	1,337 (8.60%)
	Doctorate Degree	9 (0.13%)	174 (1.12%)
LWDA IV – Shenandoah Valley	No Minimum Required	386 (4.50%)	0 (N/A)
	High School Diploma or Equivalent	825 (9.61%)	5,449 (34.92%)
	Vocational School Certificate	30 (0.35%)	871 (5.58%)
	Associate's Degree	75 (0.87%)	2,560 (16.40%)
	Bachelor's Degree	274 (3.19%)	3,017 (19.33%)
	Master's Degree	53 (0.62%)	1,535 (9.84%)
	Doctorate Degree	12 (0.14%)	196 (1.26%)
LWDA VI – Piedmont Workforce Network	No Minimum Required	178 (1.78%)	0 (N/A)
	High School Diploma or Equivalent	951 (9.49%)	5,142 (30.50%)
	Vocational School Certificate	14 (0.14%)	887 (5.26%)
	Associate's Degree	218 (2.18%)	2,812 (16.68%)
	Bachelor's Degree	878 (8.76%)	3,819 (22.65%)
	Master's Degree	112 (1.12%)	1,921 (11.40%)
	Doctorate Degree	102 (1.05%)	236 (1.40%)
LWDA VII – Central Virginia	No Minimum Required	55 (1.49%)	0 (N/A)
	High School Diploma or Equivalent	248 (6.71%)	5,125 (35.23%)
	Vocational School Certificate	8 (0.22%)	785 (5.40%)
	Associate's Degree	23 (0.62%)	2,552 (17.54%)
	Bachelor's Degree	100 (2.70%)	2,724 (18.72%)
	Master's Degree	7 (0.19%)	1,341 (9.22%)
	Doctorate Degree	5 (0.14%)	172 (1.18%)
LWDA VIII – South Central Virginia	No Minimum Required	70 (3.53%)	0 (N/A)
	High School Diploma or Equivalent	198 (9.98%)	5,428 (35.28%)
	Vocational School Certificate	6 (0.30%)	812 (5.28%)
	Associate's Degree	26 (1.31%)	2,626 (17.07%)
	Bachelor's Degree	59 (2.98%)	2,897 (18.83%)
	Master's Degree	12 (0.61%)	1,420 (9.23%)
	Doctorate Degree	4 (0.20%)	184 (1.20%)

Local Workforce Development Area	Education Level	Job Openings (Percent of Total Openings)*	Potential Candidates (Percent of Total Candidates)
LWDA IX – Capital Region	No Minimum Required	364 (1.41%)	0 (N/A)
	High School Diploma or Equivalent	1,540 (5.98%)	6,568 (32.87%)
	Vocational School Certificate	25 (0.10%)	1,078 (5.40%)
	Associate's Degree	189 (0.73%)	3,556 (17.80%)
	Bachelor's Degree	1,292 (5.02%)	4,153 (20.78%)
	Master's Degree	80 (0.31%)	1,959 (9.80%)
	Doctorate Degree	8 (0.03%)	223 (1.12%)
LWDA XI – Northern Virginia	No Minimum Required	3,079 (4.03%)	0 (N/A)
	High School Diploma or Equivalent	3,705 (4.85%)	4,659 (25.53%)
	Vocational School Certificate	43 (0.06%)	864 (4.74%)
	Associate's Degree	918 (1.20%)	3,055 (16.74%)
	Bachelor's Degree	10,063 (13.18%)	4,782 (26.21%)
	Master's Degree	334 (0.44%)	2,623 (14.38%)
	Doctorate Degree	71 (0.09%)	289 (1.58%)
LWDA XII - Alexandria/Arlington	No Minimum Required	693 (3.33%)	0 (N/A)
	High School Diploma or Equivalent	911 (4.38%)	3,735 (25.60%)
	Vocational School Certificate	12 (0.06%)	695 (4.76%)
	Associate's Degree	192 (0.92%)	2,378 (16.30%)
	Bachelor's Degree	3,502 (16.84%)	3,743 (25.66%)
	Master's Degree	172 (0.83%)	2,191 (15.02%)
	Doctorate Degree	42 (0.20%)	254 (1.74%)
LWDA XIII – Bay Consortium	No Minimum Required	187 (2.58%)	0 (N/A)
	High School Diploma or Equivalent	517 (7.12%)	5,891 (30.42%)
	Vocational School Certificate	14 (0.19%)	1,025 (5.29%)
	Associate's Degree	27 (0.37%)	3,289 (16.99%)
	Bachelor's Degree	452 (6.23%)	4,292 (22.17%)
	Master's Degree	33 (0.45%)	2,222 (11.48%)
	Doctorate Degree	4 (0.06%)	248 (1.28%)
LWDA XIV – Greater Peninsula	No Minimum Required	302 (3.19%)	0 (N/A)
	High School Diploma or Equivalent	866 (9.15%)	5,629 (31.89%)
	Vocational School Certificate	25 (0.26%)	1,036 (5.87%)
	Associate's Degree	145 (1.53%)	3,367 (19.07%)
	Bachelor's Degree	594 (6.28%)	3,546 (20.06%)
	Master's Degree	96 (1.01%)	1,734 (9.82%)
	Doctorate Degree	8 (0.08%)	205 (1.16%)
LWDA XV – Crater Area	No Minimum Required	82 (2.71%)	0 (N/A)
	High School Diploma or Equivalent	303 (10.01%)	5,608 (34.53%)
	Vocational School Certificate	7 (0.23%)	894 (5.50%)
	Associate's Degree	47 (1.55%)	2,832 (17.44%)
	Bachelor's Degree	121 (4.00%)	3,129 (19.27%)
	Master's Degree	13 (0.43%)	1,545 (9.51%)
	Doctorate Degree	0 (N/A)	181 (1.11%)
LWDA XVI – Hampton Roads	No Minimum Required	622 (3.11%)	0 (N/A)
	High School Diploma or Equivalent	1,524 (7.61%)	6,096 (31.51%)
	Vocational School Certificate	19 (0.09%)	1,115 (5.76%)
	Associate's Degree	176 (0.88%)	3,757 (19.42%)
	Bachelor's Degree	1,103 (5.51%)	3,853 (19.92%)
	Master's Degree	57 (0.28%)	1,819 (9.40%)
	Doctorate Degree	16 (0.08%)	211 (1.09%)
LWDA XVII – West Piedmont	No Minimum Required	170 (6.32%)	0 (N/A)
	High School Diploma or Equivalent	286 (10.63%)	5,692 (37.40%)
	Vocational School Certificate	18 (0.67%)	796 (5.23%)
	Associate's Degree	18 (0.67%)	2,686 (17.65%)
	Bachelor's Degree	70 (2.60%)	2,583 (16.97%)
	Master's Degree	14 (0.52%)	1,261 (8.29%)
	Doctorate Degree	2 (0.07%)	167 (1.10%)

*Not all job postings list an educational requirement

Source: Virginia Employment Commission. Area Labor Market Profiles, August 2019

Appendix J

Table 34: Regional Supply and Demand

Region	Candidates Per Job	Unemployed Per Job	Candidates Per Job of Top 5 Advertised Occupation Groups	Candidates Per job by Work Experience*
LWDA I - Southwestern VA	7.95	1.88	<ul style="list-style-type: none"> • First-Line Supervisor of Food Preparation and Serving Workers (0.31) • Combined Food Preparation and Serving Workers, Including Fast Food (0.78) • Physicians and Surgeons (N/A) • Retail Salespersons (2.02) • Registered Nurses (1.22) 	<ul style="list-style-type: none"> • Less Than 1 Year (15.40) • 1 to 2 Years (0.32) • 2 to 5 Years (51.63) • 5 to 10 Years (943.50) • More than 10 Years (8,438)
LWDA II – New River/ Mt. Rogers	2.97	0.74	<ul style="list-style-type: none"> • Registered Nurses (0.32) • Combined Food Preparation and Serving Workers, Including Fast Food (0.46) • First-Line Supervisor of Food Preparation and Serving Workers (0.25) • Physicians and Surgeons (N/A) • Retail Salespersons (1.08) 	<ul style="list-style-type: none"> • Less Than 1 Year (13.04) • 1 to 2 Years (0.11) • 2 to 5 Years (14.83) • 5 to 10 Years (186.82) • More than 10 Years (11,687)
LWDA III – Western VA	2.16	0.45	<ul style="list-style-type: none"> • Registered Nurses (0.12) • Physicians and Surgeons (0.02) • Customer Service Representatives (5.76) • Combined Food Preparation and Serving Workers, Including Fast Food (0.57) • First-Line Supervisor of Food Preparation and Serving Workers (0.24) 	<ul style="list-style-type: none"> • Less Than 1 Year (14.61) • 1 to 2 Years (0.078) • 2 to 5 Years (6.89) • 5 to 10 Years (77.48) • More than 10 Years (3,652)
LWDA IV – Shenandoah Valley	1.82	0.58	<ul style="list-style-type: none"> • Registered Nurses (0.17) • First-Line Supervisor of Food Preparation and Serving Workers (0.22) • Retail Salespersons (0.65) • Customer Service Representatives (5.25) • Nursing Assistants (1.13) 	<ul style="list-style-type: none"> • Less Than 1 Year (8.29) • 1 to 2 Years (0.07) • 2 to 5 Years (7.02) • 5 to 10 Years (19.16) • More than 10 Years (11,00)
LWDA VI – Piedmont Workforce Network	1.68	0.40	<ul style="list-style-type: none"> • Registered Nurses (0.09) • Social Science Research Assistants (0.04) • Retail Salespersons (0.90) • Licensed Practical and Licensed Vocational Nurses (0.29) • First-Line Supervisor of Food Preparation and Serving Workers (0.37) 	<ul style="list-style-type: none"> • Less Than 1 Year (8.62) • 1 to 2 Years (0.05) • 2 to 5 Years (3.63) • 5 to 10 Years (21.77) • More than 10 Years (1,771)

Region	Candidates Per Job	Unemployed Per Job	Candidates Per Job of Top 5 Advertised Occupation Groups	Candidates Per job by Work Experience*
LWDA VII – Central VA	3.94	0.81	<ul style="list-style-type: none"> Registered Nurses (0.31) Combined Food Preparation and Serving Workers (0.71) First-Line Supervisor of Food Preparation and Serving Workers (0.37) Retail Salespersons (1.86) Customer Service Representatives (15.28) 	<ul style="list-style-type: none"> Less Than 1 Year (47.71) 1 to 2 Years (0.13) 2 to 5 Years (24.45) 5 to 10 Years (144.31) More than 10 Years (2,032)
LWDA VIII – South Central VA	7.77	0.98	<ul style="list-style-type: none"> Registered Nurses (0.49) First-Line Supervisor of Food Preparation and Serving Workers (0.72) Licensed Practical and Licensed Vocational Nurses (0.93) Speech- Language Pathologists (N/A) Occupational Therapists (N/A) 	<ul style="list-style-type: none"> Less Than 1 Year (36.54) 1 to 2 Years (0.27) 2 to 5 Years (43.20) 5 to 10 Years (1,903) More than 10 Years (No Openings)
LWDA IX – Capital Region	0.78	0.40	<ul style="list-style-type: none"> Registered Nurses (0.06) First-Line Supervisor of Food Preparation and Serving Workers (0.10) Retail Salespersons (0.43) Customer Service Representatives (3.68) Combined Food Preparation and Serving Workers (0.26) 	<ul style="list-style-type: none"> Less Than 1 Year (11.04) 1 to 2 Years (0.02) 2 to 5 Years (2.21) 5 to 10 Years (17.98) More than 10 Years (781.11)
LWDA XI – Northern VA	0.24	0.23	<ul style="list-style-type: none"> Computer Occupations (0.24) Computer User Support Specialists (0.12) Computer Programmers (0.03) Registered Nurses (0.05) Software Developers (0.09) 	<ul style="list-style-type: none"> Less Than 1 Year (5.33) 1 to 2 Years (<0.10) 2 to 5 Years (0.30) 5 to 10 Years (0.96) More than 10 Years (35.40)
LWDA XII – Alexandria/Arlington	0.70	0.15	<ul style="list-style-type: none"> Computer Occupations (0.80) Computer User Support Specialists (0.40) Computer Programmers (0.10) Registered Nurses (0.14) Management Analysts (0.48) 	<ul style="list-style-type: none"> Less Than 1 Year (4.39) 1 to 2 Years (0.03) 2 to 5 Years (0.87) 5 to 10 Years (2.52) More than 10 Years (88.63)

Region	Candidates Per Job	Unemployed Per Job	Candidates Per Job of Top 5 Advertised Occupation Groups	Candidates Per job by Work Experience*
LWDA XIII– Bay Consortium	2.67	0.70	<ul style="list-style-type: none"> Registered Nurses (0.35) Retail Salespersons (0.95) First-Line Supervisor of Food Preparation and Serving Workers (0.25) Computer Occupations (3.06) Customer Service Representatives (8.01) 	<ul style="list-style-type: none"> Less Than 1 Year (17.00) 1 to 2 Years (0.07) 2 to 5 Years (5.69) 5 to 10 Years (25.92) More than 10 Years (909.38)
LWDA XIV – Greater Peninsula	1.87	0.55	<ul style="list-style-type: none"> Registered Nurses (0.24) Retail Salespersons (0.64) First-Line Supervisor of Food Preparation and Serving Workers (0.18) Combined Food Preparation and Serving Workers (0.68) Customer Service Representatives (10.13) 	<ul style="list-style-type: none"> Less Than 1 Year (24.70) 1 to 2 Years (0.06) 2 to 5 Years (4.97) 5 to 10 Years (23.22) More than 10 Years (1,429)
LWDA XV – Crater Area	5.37	0.61	<ul style="list-style-type: none"> Registered Nurses (0.27) First-Line Supervisor of Food Preparation and Serving Workers (0.38) Combined Food Preparation and Serving Workers (1.57) Retail Salespersons (2.40) Cashiers (7.96) 	<ul style="list-style-type: none"> Less Than 1 Year (28.19) 1 to 2 Years (0.18) 2 to 5 Years (19.25) 5 to 10 Years (100.74) More than 10 Years (2,337)
LWDA XVI – Hampton Roads	0.97	0.58	<ul style="list-style-type: none"> Registered Nurses (0.17) Retail Salespersons (0.45) First-Line Supervisor of Food Preparation and Serving Workers (0.14) Combined Food Preparation and Serving Workers (0.34) Customer Service Representatives (4.69) 	<ul style="list-style-type: none"> Less Than 1 Year (9.11) 1 to 2 Years (0.03) 2 to 5 Years (2.49) 5 to 10 Years (10.93) More than 10 Years (544.23)
LWDA XVII – West Piedmont	5.66	0.90	<ul style="list-style-type: none"> Registered Nurses (0.34) First-Line Supervisor of Food Preparation and Serving Workers (0.37) Combined Food Preparation and Serving Workers (1.35) Retail Salespersons (2.05) Physicians and Surgeons (N/A) 	<ul style="list-style-type: none"> Less Than 1 Year (11.91) 1 to 2 Years (0.23) 2 to 5 Years (24.56) 5 to 10 Years (405.80) More than 10 Years (No Openings)

Source: Virginia Employment Commission, Area Labor Market Profiles. Candidate and Job data based on posts in the Virginia Workforce Connection as of August 2019.

*Not all job postings list a work experience requirement.