

Appendix D: Literature review

Overview

The value and impact of higher education can be measured in many different ways. This appendix synthesizes recent literature related to the value of an undergraduate education nationally and in Virginia to provide context for the results from *Virginia Educated*.

Higher education: Multi-dimensional benefit assessment

Scholars and stakeholders from many backgrounds have considered the value and impact of higher education, in both economic and non-economic terms. Broadly, the value and impact of higher education may be thought of as economic or non-economic, and occurring at the individual or societal levels. The intersection of these two dimensions creates four types of effect pathways of higher education: economic/individual, economic/societal, non-economic/individual, and non-economic/societal.

For example, people with college degrees earn more on average than those without college degrees – this is the college “earnings premium.” Even though the college earnings premium is shrinking due to increasing costs for higher education, some estimates of this earnings premium range from \$765,000 to \$1 million or more over the course of a lifetime for graduates of public institutions in the U.S. This economic benefit of higher education can be an individual benefit for the college graduate, who will be able to afford a higher quality of life or a wider range of opportunities for themselves and their families. This economic benefit can also be an advantage for society, in the form of greater revenues from income and payroll taxes to support public services, healthcare and pension plans, and collective quality of life.

Similarly, a non-economic benefit such as a sense of personal growth or achievement can be felt at the individual level. College graduates – because of their education and experiences at college – may be more assertive, positive or entrepreneurial, which benefits themselves and their families in myriad ways. These same benefits can also accrue to society in the form of more civil and productive interactions in public realms, greater entrepreneurship yielding advances for society, and numerous other ripple effects. See Table D-1.

Table D-1: A Model of Potential Benefits of Higher Education with Selected Examples

	Individual	Societal
Economic	<ul style="list-style-type: none"> • Wages – weekly, biweekly, annual, and lifetime • Fringe benefits associated with employment (e.g., health insurance, paid time off, retirement plan) • Personal net worth – property, savings, other 	<ul style="list-style-type: none"> • Philanthropy – monetary, in-kind • Tax revenues – income, property, other • Relative use of public assistance programs or healthcare resources (e.g., cost savings)
Non-Economic	<ul style="list-style-type: none"> • General knowledge base, specific knowledge base • Perspective-taking • Sense of personal growth or achievement • Career satisfaction, job tenure, professional respect • Education satisfaction • Physical health • Mental health • General well-being; happiness 	<ul style="list-style-type: none"> • Awareness of local, regional, state, national, or global issues • Voting and other forms of political participation • Volunteering, not associated with work • Post-college service (e.g., Peace Corps, military) • More civil, kinder interactions in the public sphere

For an excellent summary of many of these benefits, see Trostel's 2015 study, *It's Not Just the Money: The Benefits of College Education to Individuals and to Society*. The Pew Research Center's 2014 report, *The Rising Cost of Not Going to College*, and SCHEV's *Interim Report: Post-College Taskforce* (2019a) are also helpful resources.

Topic areas covered by other studies

There are extensive literatures in these quadrants which use different types of data to assess the value and impact of higher education in different topic areas. This literature includes the following topic areas:

- Quantitative and qualitative studies of the impact of specific institutions on their local and regional economies
- Extensive inquiries about impacts in specific domains such as physical/mental health or community engagement
- First-destination surveys to assess the first stops for graduates immediately after graduating
- Studies focusing on classroom practices and their relationships to graduate outcomes
- Surveys focused on graduates in specific fields or study or majors
- Surveys about myriad topics conducted by institutions themselves by alumni offices, career services units, institutional effectiveness offices, individual departments, or other internal bodies

- Wage and economic data that can be mined from public domain sources such as the U.S. BLS and the U.S. Census Bureau

The literature contains significant evidence of the positive impacts of an undergraduate credential on employment, wages, health, community engagement, and general well-being. Economic impact studies for individual institutions describe significant benefits to local and regional economies. Yet the literature and the popular press also recognize rising costs, underemployment of graduates, student debt and other potentially negative impacts of higher education. Overall, the consensus is that, even after accounting for these problems, the net value and impact of higher education is positive.

For an excellent summary of many of these benefits, see Trostel's 2015 study, *It's Not Just the Money: The Benefits of College Education to Individuals and to Society*. The Pew Research Center's 2014 report, *The Rising Cost of Not Going to College*, and SCHEV's *Interim Report: Post-College Taskforce* (2019a) are also helpful resources.

Key trends related to the value and impact of higher education

The lifetime return on investment created by higher salaries and wages for college graduates compared to non-graduates continues to exceed the costs of attending college, on average (Carnevale et al., 2019). This “earnings premium” – the difference between average wages for those with and without a college degree in a given labor market area – is a commonly cited benefit of earning a college credential. Over the past four decades, however, costs for higher education in the U.S. – the investment on which personal economic benefits are measured – have risen faster than healthcare costs and inflation (Akers, 2020; de Rugy and Salmon, 2019; Sherman, 2020; Boyington and Kerr, 2020). The earnings premium is shrinking.

Additionally, demographic trends in the U.S. are reducing the number of traditional-age college students (25 years old or younger at the start of college) and this pool is projected to shrink in absolute numbers starting in the mid-2020s (Bransberger et al., 2020).

Who attends college in Virginia?

To situate *Virginia Educated* results, it is useful to know more about undergraduate students who attend the Commonwealth's public institutions of higher education. Table D-2 through Table D-9 present a summary of key demographics for this population for three datapoints within the study period (2007-18; SCHEV, n.d.a, n.d.b, n.d.c, n.d.g). Figures for Fall 2020 are also provided for reference.

Study period demographics, 2007-18: Virginia's public four-year institutions

The data show that, from Fall 2007 to Fall 2017, undergraduate enrollment at Virginia's public baccalaureate colleges and universities rose from 150,578 to 173,763 (an increase of 15.4 percent; SCHEV, n.d.c). Most undergraduates were White non-Hispanic, although percentages

dropped between 2007 and 2017 (63.5 to 54.5 percent). About fifteen percent of undergraduates across time were African-American (15.1 to 15.0). Growth in percentages of Asian/Pacific Islander (7.5 to 9.3), foreign/international (2.4 to 4.0) and Hispanic undergraduates (3.6 to 7.9) occurred.

Additionally, for the 2007 to 2017 timeframe, more than half of the undergraduate students at Virginia's public four-year institutions were women (54.8 to 54.1 percent; SCHEV, n.d.c). Most – 88.1 to 89.1 percent – were 24 years old or younger. Between 80.7 and 81.4 percent were in-state students. The vast majority (87.8 to 89.2 percent) were enrolled full-time. Large counts of in-state undergraduates came from the Northern Virginia, Virginia Beach, and Richmond Metro areas, with Fairfax County well ahead of other localities when measured in raw numbers (e.g., 2.7 times that of second-place Loudoun County in Fall 2017; SCHEV, n.d.g).

In each of the three years summarized below, bachelor's degrees from the Commonwealth's public four-year institutions were most frequently conferred in psychology (SCHEV, n.d.a). Substantive growth in science, technology, engineering, math and health professions (STEM-H) bachelor's degrees also took place between the 2007-08 and 2017-18 academic years (from 8,346 to 13,809; or from 25.9 to 34.1 percent of all bachelor's degrees issued by the state's public baccalaureate institutions; SCHEV, n.d.b). See Table D-2 through Table D-9 for more details.

Table D-2: Race and Ethnicity Characteristics of Undergraduate Students by Fall Headcount Totals at Virginia's Public Four-Year Institutions – 2007, 2012, 2017, and 2020

Indicator	Fall 2007 % of Total	Fall 2012 % of Total	Fall 2017 % of Total	Fall 2020 % of Total
Foreign/International Students	3,638 (2.4%)	4,604 (2.8%)	7,009 (4.0%)	6,114 (3.5%)
African-American or Black Students (Non-Hispanic)	22,693 (15.1%)	25,087 (15.1%)	25,979 (15.0%)	26,791 (15.3%)
American-Indian/Native American Students (Non-Hispanic)	595 (0.4%)	407 (0.2%)	322 (0.2%)	250 (0.1%)
Asian/Pacific Islander Students (Non-Hispanic)	11,296 (7.5%)	13,206 (7.9%)	16,191 (9.3%)	18,395 (10.5%)
Hispanic Students	5,413 (3.6%)	9,546 (5.7%)	13,778 (7.9%)	15,935 (9.1%)
White, Caucasian-American Students (Non-Hispanic)	95,636 (63.5%)	97,396 (58.5%)	94,664 (54.5%)	91,364 (52.3%)
Multi-Race Students (Non-Hispanic)	Not available	5,490 (3.3%)	8,081 (4.7%)	9,230 (5.3%)
Unknown/Unreported Students (Non-Hispanic)	11,307 (7.5%)	10,643 (6.4%)	7,739 (4.5%)	6,761 (3.9%)
Total Undergraduate Students, Virginia's Public Four-Year Institutions	150,578	166,379	173,763	174,840

Source: State Council of Higher Education for Virginia. (n.d.c). E02: Fall headcount enrollment (1992 through current year) [Data set]. https://research.schev.edu/enrollment/E2_Report.asp

Note: 2020 data are italicized because they fall outside the *Virginia Educated* study period.

Table D-3: Gender Characteristics of Undergraduate Students by Fall Headcount Totals at Virginia's Public Four-Year Institutions – 2007, 2012, 2017, and 2020

Indicator	Fall 2007 % of Total	Fall 2012 % of Total	Fall 2017 % of Total	Fall 2020 % of Total
Men	68,025 (45.2%)	76,719 (46.1%)	79,535 (45.8%)	79,128 (45.3%)
Women	82,553 (54.8%)	89,534 (53.8%)	94,066 (54.1%)	95,583 (54.7%)
Unknown/Unreported	Not available	126 (0.08%)	162 (0.09%)	129 (0.07%)
Total Undergraduate Students, Virginia's Public Four-Year Institutions	150,578	166,379	173,763	174,840

Source: State Council of Higher Education for Virginia. (n.d.c). *E02: Fall headcount enrollment (1992 through current year)* [Data set]. https://research.schev.edu//enrollment/E2_Report.asp

Note: 2020 data are italicized because they fall outside the *Virginia Educated* study period.

Table D-4: Age Characteristics of Undergraduate Students by Fall Headcount Totals at Virginia's Public Four-Year Institutions – 2007, 2012, 2017, and 2020

Indicator	Fall 2007 % of Total	Fall 2012 % of Total	Fall 2017 % of Total	Fall 2020 % of Total
24 years and under	132,708 (88.1%)	146,139 (87.8%)	154,856 (89.1%)	157,239 (90.0%)
25 years and above	17,870 (11.9%)	20,240 (12.2%)	18,907 (10.9%)	17,601 (10.1%)
Age unknown	0	0	0	0
Total Undergraduate Students, Virginia's Public Four-Year Institutions	150,578	166,379	173,763	174,840

Source: State Council of Higher Education for Virginia. (n.d.c). *E02: Fall headcount enrollment (1992 through current year)* [Data set]. https://research.schev.edu//enrollment/E2_Report.asp

Note: 2020 data are italicized because they fall outside the *Virginia Educated* study period.

Table D-5: In-State and Out-of-State Characteristics of Undergraduate Students by Fall Headcount Totals at Virginia's Public Four-Year Institutions – 2007, 2012, 2017, and 2020

Indicator	Fall 2007 % of Total	Fall 2012 % of Total	Fall 2017 % of Total	Fall 2020 % of Total
In-State	121,578 (80.7%)	135,833 (81.6%)	141,411 (81.4%)	142,388 (81.4%)
Out-of-State	29,000 (19.3%)	30,546 (18.4%)	32,352 (18.6%)	32,452 (18.6%)
Total Undergraduate Students, Virginia's Public Four-Year Institutions	150,578	166,379	173,763	174,840

Source: State Council of Higher Education for Virginia. (n.d.c). E02: Fall headcount enrollment (1992 through current year) [Data set]. https://research.schev.edu/enrollment/E2_Report.asp

Note: 2020 data are italicized because they fall outside the *Virginia Educated* study period.

Table D-6: Full-Time and Part-Time Characteristics of Undergraduate Students by Fall Headcount Totals at Virginia's Public Four-Year Institutions – 2007, 2012, 2017, and 2020

Indicator	Fall 2007 % of Total	Fall 2012 % of Total	Fall 2017 % of Total	Fall 2020 % of Total
Full-Time	132,136 (87.8%)	147,367 (88.6%)	154,933 (89.2%)	154,710 (88.5%)
Part-Time	18,442 (12.2%)	19,012 (11.4%)	18,830 (10.8%)	20,130 (11.5%)
Total Undergraduate Students, Virginia's Public Four-Year Institutions	150,578	166,379	173,763	174,840

Source: State Council of Higher Education for Virginia. (n.d.c). E02: Fall headcount enrollment (1992 through current year) [Data set]. https://research.schev.edu/enrollment/E2_Report.asp

Note: 2020 data are italicized because they fall outside the *Virginia Educated* study period.

Table D-7: Top Five In-State Localities of Origin Among All Undergraduate Students (All Majors) by Fall Headcount Totals at Virginia's Public Four-Year Institutions – 2007, 2012, 2017, and 2020

Semester and Year	Top Five In-State Localities of Origin, Descending Order
Fall 2007	Fairfax County (n = 21,425) Virginia Beach City (n = 7,692) Chesterfield County (n = 7,003) Prince William County (n = 5,583) Henrico County (n = 5,501)
Fall 2012	Fairfax County (n = 24,838) Virginia Beach City (n = 8,772) Prince William County (n = 7,621) Loudoun County (n = 7,390) Chesterfield County (n = 7,259)
Fall 2017	Fairfax County (n = 27,306) Loudoun County (n = 9,975) Prince William County (n = 9,260) Virginia Beach City (n = 8,310) Chesterfield County (n = 7,364)
Fall 2020	<i>Fairfax County (n = 27,761)</i> <i>Loudoun County (n = 11,846)</i> <i>Prince William County (n = 10,157)</i> <i>Virginia Beach City (n = 8,078)</i> <i>Chesterfield County (n = 7,162)</i>

Source: State Council of Higher Education for Virginia. (n.d.g). *LD10: Enrollment map by locality* [Data set]. https://research.schev.edu/localities/LD10_reportmap.asp

Note: 2020 data are italicized because they fall outside the *Virginia Educated* study period.

Table D-8: Top Five Programs by Number of Bachelor's Degree Completions, Totals at Virginia's Public Four-Year Institutions – 2007-08, 2012-13, 2017-18, and 2019-20

Academic Year	Top Five Programs by Number of Bachelor's Degree Completions, Descending Order
2007-08	Psychology, General (n = 2,347) Business Administration and Management, General (n = 1,671) Biology/Biological Sciences, General (n = 1,522) English Language and Literature, General (n = 1,391) History, General (n = 1,231)
2012-13	Psychology, General (n = 2,829) Biology/Biological Sciences, General (n = 2,128) Business Administration and Management, General (n = 1,459) English Language and Literature, General (n = 1,346) History, General (n = 1,299)
2017-18	Psychology, General (n = 2,644) Biology/Biological Sciences, General (n = 2,185) Liberal Arts and Sciences/Liberal Studies (n = 1,587) Business Administration and Management, General (n = 1,574) Registered Nursing/Registered Nurse (n = 1,230)
2019-20	<i>Psychology, General (n = 2,598)</i> <i>Biology/Biological Sciences, General (n = 2,270)</i> <i>Liberal Arts and Sciences/Liberal Studies (n = 1,773)</i> <i>Business Administration and Management, General (n = 1,518)</i> <i>Registered Nursing/Registered Nurse (n = 1,303)</i>

Source: State Council of Higher Education for Virginia. (n.d.a). *C01A2: Completions, program detail* [Data set]. https://research.schev.edu//Completions/C1Level2_Report.asp

Note: Includes double majors. Figures originate from SCHEV's yearly degrees conferred data.

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Table D-9: STEM-H Bachelor's Degree Totals at Virginia's Public Four-Year Institutions – 2007-08, 2012-13, 2017-18, and 2019-20

Academic Year	STEM-H Bachelor's Degrees	All Other Bachelor's Degrees	Total Bachelor's Degrees	STEM-H Percent of Total
2007-08	8,346	23,856	32,202	25.9%
2012-13	11,182	26,815	37,997	29.4%
2017-18	13,809	26,669	40,478	34.1%
2019-20	14,860	26,467	41,327	36.0%

Source: State Council of Higher Education for Virginia. (n.d.b). *C07: Trends in STEMH degree production* [Data set]. https://research.schev.edu/completions/stem_trends.asp

Note: Includes double majors. Figures originate from SCHEV's yearly degrees conferred data.

2020 data are italicized because they fall outside the *Virginia Educated* study period.

Study period demographics, 2007-18: Virginia's public two-year institutions

Between Fall 2007 and Fall 2017, the Commonwealth's public two-year institutions experienced a small uptick in enrollment – from 168,568 to 169,034 (a change of 0.3 percent; SCHEV, n.d.c). Similar to public four-year colleges and universities, most public two-year undergraduate students were White non-Hispanic, although their percentage declined from one end of the 10-year span to another (67.5 to 55.3 percent). The percentage of African-American students shrank slightly during this time as well (20.0 to 18.6 percent). Conversely, increases were observed among Hispanic (5.1 to 11.0 percent), Asian/Pacific Islander (5.7 to 6.9 percent), and foreign/international undergraduates (1.0 to 2.1 percent).

During this time, women comprised the majority of public two-year undergraduate students – in Fall 2007, 58.6 percent of enrollees were female; in Fall 2017, 56.2 percent were (SCHEV, n.d.c). Although most were 24 years old or younger (61.5 to 71.2 percent), Virginia's public two-year colleges served many more undergraduates ages 25 and above than four-year peer institutions, on both raw number and percentage bases (e.g., Fall 2017, n = 48,727 and 28.8 percent, as compared to four-year figures of n = 18,907 and 10.9 percent). Nearly all public two-year undergraduates had in-state status (94.0 to 95.9 percent) – well above respective rates at four-year institutions (80.7 to 81.4 percent). At both the beginning and end of the *Virginia Educated* study of the *Virginia Educated* study period, about two-thirds of public two-year undergraduates – 67.7 to 67.8 percent – were enrolled part-time. In raw numbers, this was more than six times higher than part-time undergraduate enrollment at the state's public four-year colleges and universities in both Fall 2007 (6.2 times) and Fall 2017 (6.1 times).

Similarly to four-year institutions, most in-state undergraduate students at the Commonwealth's public two-year institutions were from Northern Virginia, Tidewater, and Richmond Metro regions (SCHEV, n.d.g). Fairfax County was consistently responsible for the highest headcount.

For academic years 2007-08, 2012-13, and 2017-18, Liberal Arts and Sciences/Liberal Studies, General Studies, and Registered Nursing/Registered Nurse were among the top five concentrations for public two-year awards (SCHEV, n.d.a). Looking specifically at STEM-H fields, the number of awards issued rose by 2,585 from 2007-08 to 2017-18 (SCHEV, n.d.b). See Table D-10 through Table D-17 for reference.

Table D-10: Race and Ethnicity Characteristics of Undergraduate Students by Fall Headcount Totals at Virginia's Public Two-Year Institutions – 2007, 2012, 2017, and 2020

Indicator	Fall 2007 % of Total	Fall 2012 % of Total	Fall 2017 % of Total	Fall 2020 % of Total
Foreign/International Students	1,756 (1.0%)	2,011 (1.0%)	3,556 (2.1%)	2,530 (1.7%)
African-American or Black Students (Non-Hispanic)	33,701 (20.0%)	42,448 (21.8%)	31,466 (18.6%)	25,813 (16.9%)
American-Indian/Native American Students (Non-Hispanic)	986 (0.6%)	854 (0.4%)	585 (0.3%)	512 (0.3%)
Asian/Pacific Islander Students (Non-Hispanic)	9,625 (5.7%)	11,440 (5.9%)	11,681 (6.9%)	12,265 (8.0%)
Hispanic Students	8,665 (5.1%)	15,609 (8.0%)	18,665 (11.0%)	17,540 (11.5%)
White, Caucasian-American Students (Non-Hispanic)	113,835 (67.5%)	113,551 (58.4%)	93,503 (55.3%)	81,465 (53.2%)
Multi-Race Students (Non-Hispanic)	Not available	5,300 (2.7%)	7,731 (4.6%)	7,683 (5.0%)
Unknown/Unreported Students (Non-Hispanic)	Not available	3,222 (1.7%)	1,847 (1.1%)	5,267 (3.4%)
Total Undergraduate Students, Virginia's Public Two-Year Institutions	168,568	194,435	169,034	153,075

Source: State Council of Higher Education for Virginia. (n.d.c). E02: Fall headcount enrollment (1992 through current year) [Data set]. https://research.schev.edu/enrollment/E2_Report.asp

Note: 2020 data are italicized because they fall outside the *Virginia Educated* study period.

Table D-11: Gender Characteristics of Undergraduate Students by Fall Headcount Totals at Virginia's Public Two-Year Institutions – 2007, 2012, 2017, and 2020

Indicator	Fall 2007 % of Total	Fall 2012 % of Total	Fall 2017 % of Total	Fall 2020 % of Total
Men	69,755 (41.4%)	83,064 (42.7%)	73,750 (43.6%)	62,680 (40.9%)
Women	98,813 (58.6%)	111,227 (57.2%)	94,989 (56.2%)	89,585 (58.5%)
Unknown/Unreported	Not available	144 (0.07%)	295 (0.2%)	810 (0.5%)
Total Undergraduate Students, Virginia's Public Two-Year Institutions	168,568	194,435	169,034	153,075

Source: State Council of Higher Education for Virginia. (n.d.c). E02: Fall headcount enrollment (1992 through current year) [Data set]. https://research.schev.edu//enrollment/E2_Report.asp

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Table D-12: Age Characteristics of Undergraduate Students by Fall Headcount Totals at Virginia's Public Two-Year Institutions – 2007, 2012, 2017, and 2020

Indicator	Fall 2007 % of Total	Fall 2012 % of Total	Fall 2017 % of Total	Fall 2020 % of Total
24 years and under	103,700 (61.5%)	120,926 (62.2%)	120,307 (71.2%)	114,198 (74.6%)
25 years and above	64,868 (38.5%)	73,509 (37.8%)	48,727 (28.8%)	38,877 (25.4%)
Age unknown	0	0	0	0
Total Undergraduate Students, Virginia's Public Two-Year Institutions	168,568	194,435	169,034	153,075

Source: State Council of Higher Education for Virginia. (n.d.c). E02: Fall headcount enrollment (1992 through current year) [Data set]. https://research.schev.edu//enrollment/E2_Report.asp

Note: 2020 data are italicized because they fall outside the *Virginia Educated* study period.

Table D-13: In-State and Out-of-State Characteristics of Undergraduate Students by Fall Headcount Totals at Virginia's Public Two-Year Institutions – 2007, 2012, 2017, and 2020

Indicator	Fall 2007 % of Total	Fall 2012 % of Total	Fall 2017 % of Total	Fall 2020 % of Total
In-State	158,500 (94.0%)	185,551 (95.4%)	162,172 (95.9%)	145,268 (94.9%)
Out-of-State	10,068 (6.0%)	8,884 (4.6%)	6,862 (4.1%)	7,807 (5.1%)
Total Undergraduate Students, Virginia's Public Two-Year Institutions	168,568	194,435	169,034	153,075

Source: State Council of Higher Education for Virginia. (n.d.c). E02: Fall headcount enrollment (1992 through current year) [Data set]. https://research.schev.edu/enrollment/E2_Report.asp

Note: 2020 data are italicized because they fall outside the *Virginia Educated* study period.

Table D-14: Full-Time and Part-Time Characteristics of Undergraduate Students by Fall Headcount Totals at Virginia's Public Two-Year Institutions – 2007, 2012, 2017, and 2020

Indicator	Fall 2007 % of Total	Fall 2012 % of Total	Fall 2017 % of Total	Fall 2020 % of Total
Full-Time	54,379 (32.3%)	67,600 (34.8%)	54,355 (32.2%)	47,987 (31.3%)
Part-Time	114,189 (67.7%)	126,835 (65.2%)	114,679 (67.8%)	105,088 (68.7%)
Total Undergraduate Students, Virginia's Public Two-Year Institutions	168,568	194,435	169,034	153,075

Source: State Council of Higher Education for Virginia. (n.d.c). E02: Fall headcount enrollment (1992 through current year) [Data set]. https://research.schev.edu/enrollment/E2_Report.asp

Note: 2020 data are italicized because they fall outside the *Virginia Educated* study period.

Table D-15: Top Five In-State Localities of Origin Among All Undergraduate Students (All Majors) by Fall Headcount Totals at Virginia's Public Two-Year Institutions – 2007, 2012, 2017, and 2020

Semester and Year	Top Five In-State Localities of Origin, Descending Order
Fall 2007	Fairfax County (n = 16,773) Virginia Beach City (n = 10,337) Prince William County (n = 7,051) Chesterfield County (n = 6,605) Chesapeake City (n = 5,292)
Fall 2012	Fairfax County (n = 18,693) Virginia Beach City (n = 10,843) Prince William County (n = 9,137) Chesterfield County (n = 7,975) Chesapeake City (n = 5,942)
Fall 2017	Fairfax County (n = 15,390) Loudoun County (n = 9,921) Prince William County (n = 9,035) Virginia Beach City (n = 8,254) Chesterfield County (n = 7,714)
Fall 2020	<i>Fairfax County (n = 16,525)</i> <i>Loudoun County (n = 11,455)</i> <i>Prince William County (n = 9,974)</i> <i>Chesterfield County (n = 7,173)</i> <i>Virginia Beach City (n = 6,042)</i>

Source: State Council of Higher Education for Virginia. (n.d.g). *LD10: Enrollment map by locality* [Data set]. https://research.schev.edu/localities/LD10_reportmap.asp

Note: 2020 data are italicized because they fall outside the *Virginia Educated* study period.

Table D-16: Top Five Programs by Number of Awards, Totals at Virginia's Public Two-Year Institutions – 2007-08, 2012-13, 2017-18, and 2019-20

Academic Year	Top Five Programs by Number of Awards, Descending Order
2007-08	Mental and Social Health Services and Allied Professionals, Other (n = 3,472) Liberal Arts and Sciences/Liberal Studies (n = 2,321) General Studies (n = 1,353) Business Administration and Management, General (n = 1,335) Registered Nursing/Registered Nurse (n = 1,326)
2012-13	Liberal Arts and Sciences, General Studies and Humanities, Other (n = 5,768) Liberal Arts and Sciences/Liberal Studies (n = 3,389) General Studies (n = 2,179) Social Sciences, General (n = 1,938) Registered Nursing/Registered Nurse (n = 1,867)
2017-18	Liberal Arts and Sciences, General Studies and Humanities, Other (n = 5,654) Liberal Arts and Sciences/Liberal Studies (n = 3,624) General Studies (n = 2,517) Registered Nursing/Registered Nurse (n = 1,764) Social Sciences, General (n = 1,691)
2019-20	<i>Liberal Arts and Sciences, General Studies and Humanities, Other (n = 5,433)</i> <i>Liberal Arts and Sciences/Liberal Studies (n = 3,624)</i> <i>General Studies (n = 2,693)</i> <i>Registered Nursing/Registered Nurse (n = 1,776)</i> <i>Business Administration and Management, General (n = 1,584)</i>

Source: State Council of Higher Education for Virginia. (n.d.a). *C01A2: Completions, program detail* [Data set]. https://research.schev.edu//Completions/C1Level2_Report.asp

Note: Includes double majors. Figures originate from SCHEV's yearly degrees conferred data. Numbers are the sums of: awards of less than one year; awards of at least one year but less than two years; associate degrees; and awards of at least two years but less than four years.

2020 data are italicized because they fall outside the *Virginia Educated* study period.

Table D-17: STEM-H Award Totals at Virginia's Public Two-Year Institutions – 2007-08, 2012-13, 2017-18, and 2019-20

Academic Year	STEM-H Awards	All Other Awards	Total Awards	STEM-H Percent of Total
2007-08	8,012	9,151	17,163	46.7%
2012-13	9,938	21,929	31,867	31.2%
2017-18	10,597	22,149	32,746	32.4%
2019-20	10,067	21,232	31,299	32.2%

Source: State Council of Higher Education for Virginia. (n.d.b). *C07: Trends in STEMH degree production* [Data set]. https://research.schev.edu/completions/stem_trends.asp

Note: Includes double majors. Figures originate from SCHEV's yearly degrees conferred data.

2020 data are italicized because they fall outside the *Virginia Educated* study period.

National cost data

Although an in-depth account of tuition and financial aid dynamics falls outside the scope of the *Virginia Educated* study, we include highlights from this report to provide context to our data. According to *The Condition of Education 2020* report published by the NCES (Hussar et al., 2020), among first-time full-time undergraduate students nationally:

1. The average total cost of attending a four-year public institution was \$24,900 in academic year 2018-19 (Average calculated for a student living on campus and includes tuition, mandatory fees, books, other materials, and room and board. Average uses the minimum in-state/in-district rate and is weighted by the number of Title IV aid recipients).
2. The average total cost of attending a two-year public institution was \$15,400 in academic year 2018-19 (Average calculated for a student living on campus and includes tuition, mandatory fees, books, other materials, and room and board. Average uses the minimum in-state/in-district rate and is weighted by the number of Title IV aid recipients).
3. Average annual tuition and fees have increased at two-year and four-year public institutions (2018-19 dollars).
4. The percentage of students receiving loan aid declined by 5 percent between 2010-11 (51 percent) and 2017-18 (46 percent) at four-year public institutions.
5. The percentage of students receiving loan aid rose by 4 percent from 2010-11 (15 percent) to 2017-18 (19 percent) at two-year public institutions.
6. Average loan amounts were unchanged between 2010-11 and 2017-18 at public four-year colleges and universities (\$7,000), while average loan amounts decreased across the same timespan at public two-year institutions (\$4,800, down from \$5,500; 2018-19 dollars).

7. In 2015-16, the percentage of bachelor's degree holders who ever had loans (66 percent) was more than 20 points higher than certificate holders (45 percent) and associate degree recipients (41 percent).
8. In 2015-16, the average cumulative loan amount for students who had ever had loans was much higher among bachelor's graduates (\$28,600) than certificate holders (\$17,400) and associate degree awardees (\$16,600; 2018-19 dollars).
9. In 2015-16, 14 percent of bachelor's degree recipients had parents who were offered Parent Loans for Undergraduate Students (PLUS) loans. The average Parent PLUS loan amount was \$29,300. These amounts are in addition to student debt burdens. Interest rates for PLUS loans are not subsidized and generally ranged from 6 to 7 percent during the 2010s.
10. Between 2010-11 and 2017-18, the percentage of students provided loan and grant financial aid at four-year public colleges and universities increased slightly from 83 percent to 84 percent; at two-year public institutions, the figure grew by two points, from 74 percent to 76 percent.
1. During the academic year 2017-18, 38 percent of students attending four-year public institutions received federal grants. A similar percentage received state/local grants (38 percent). Fifty percent of these students were awarded institutional grants and 46 percent were awarded institutional loans. At two-year public institutions, the figures were 53 percent for federal grants, 40 percent for state/local grants, 16 percent for institutional grants, and 19 percent for institutional loans.
2. At four-year public institutions for academic year 2017-18, average federal grants to students was \$5,100 and average state/local grants was \$4,300. Institutional grants averaged \$6,200 and institutional loans averaged \$7,000 (2018-19 dollars). At two-year public institutions during the academic year 2017-18, average federal grants to students was \$4,900, average state/local grants was \$2,300, institutional grants was \$2,100, and loans was \$4,800 (2018-19 dollars).

See tables at the end of this appendix for more information.

Virginia cost data

SCHEV regularly summarizes expense data and state-student cost-sharing information related to Virginia's public higher education system. In its report *2020-2021 Tuition and Fees at Virginia State-Supported Colleges and Universities*, SCHEV (2020) found that full-time in-state undergraduate tuition, average room and board, and all required fees averaged \$25,112 at four-year institutions. Total average tuition and mandatory fees within the VCCS summed to \$4,620. Across *all* public colleges and universities – including VCCS and two-year Richard Bland College – the average total for these expenses was \$23,618.

SCHEV (2020) also determined that in-state undergraduate students at Virginia's colleges and universities typically covered 51 percent of educational expenses in 2020-21, with the remaining

49 percent paid for by the state. On a per-capita basis, in-state undergraduate students at Virginia four-year public colleges and universities could expect average total educational costs to reach 46.1 percent of their disposable income in 2020 – down from a high in 2018-19 – but still above many other states (costs reflect tuition, required fees, and room and board). For reference, this datapoint was 39.6 percent in 2009-10. At public two-year institutions, this per-capita calculation was 11.7 percent for 2020-21, while in 2009-10 it was 7.4 percent.

Other findings from SCHEV's report (2020) include:

1. For 2020-21, average full-time in-state undergraduate tuition and mandatory educational and general fees at public four-year institutions (\$9,385) grew by only 1.2 percent against the prior year (\$9,274). Across *all* public colleges and universities, they increased by just 1.1 percent (\$8,905 compared to \$8,807; tuition differentials by year in school and program are not reflected in these figures).
2. Many public colleges and universities in the Commonwealth (11 of 17) chose not to charge more for in-state undergraduate tuition and mandatory educational and general fees in 2020-21.
3. For 2020-21, average full-time, in-state undergraduate tuition and all required fees (mandatory educational and general fees plus mandatory non-educational and general fees) was \$13,902 (a 1.5 percent increase from 2019-20) and ranged from \$4,620 to \$23,628. The average across four-year institutions was \$13,902 (a 1.5 percent increase from 2019-20). Across all public institutions the average was \$13,015 (a 1.4 percent increase from 2019-20). Mandatory non-educational and general fees typically fund student services, such as student health services.
4. In 2020-21, the average room and board expense for full-time, in-state undergraduates at four-year colleges and universities in Virginia was \$11,210, or 1.9 percent higher than 2019-20.
5. Altogether, for 2020-21, average room and board (\$11,210) represented nearly 45 percent of the total average charge (\$25,112) for baccalaureate, full-time, in-state undergraduate students living on campus.
6. Citing IPEDS and the College Board's 2018 and 2019 *Trend in College Pricing* reports, SCHEV revealed that, for 2019-20, at Virginia's *public* institutions:
 - a. Doctoral/research universities had the seventh highest in-state undergraduate tuition and total required fees at public institutions in the nation, at \$15,398. This ranking was expected to hold for 2020-21, with costs increasing slightly to \$15,593. For comparison purposes, Virginia's ranking for this institution type in 2009-10 was 16th; in 2000-01 it was 19th.
 - b. Comprehensive colleges and universities had the third highest in-state undergraduate tuition and total required fees at public institutions in the country – \$12,602. Virginia was projected to retain this ranking for 2020-21, with costs

increasing to \$12,775. For reference, the ranking in 2009-10 was tenth; in 2000-01 it was sixth.

- c. Associate degree-granting institutions were ranked 18th highest in the U.S. for in-state undergraduate tuition and total required fees at public institutions (\$5,026; this includes VCCS and Richard Bland College). They were projected to move to 20th place in 2020-21, with costs holding flat. For comparison purposes, the ranking in 2009-10 was 29th; in 2000-01 it was 40th.

In terms of making postsecondary education more affordable, SCHEV (2020) determined that receiving an associate degree, then moving to a public four-year institution for a bachelor's degree, could reduce bachelor's degree expenses by an average of \$19,028 for in-state students between 2020-21 and 2021-22, provided degree completion occurs in four years. Other advantages may accrue to persons participating in Virginia's Two-Year College Transfer Grant Program. For instance, some students can receive financial awards for transferring to certain schools (e.g., Old Dominion University, Radford University, Virginia State University) and for concentrating in particular fields of study (e.g., engineering, nursing, teaching). Another noteworthy option is the Commonwealth's Workforce Credential Grant Program, which is available within the state's community colleges and through the Southern Virginia Higher Education Center. This grant helps reduce training costs related to pursuit of specific types of industry credentials.

Other help is available in the form of financial aid. SCHEV (2020) indicated that in 2018-19, undergraduate students at Virginia's public institutions of higher education were awarded approximately \$932 million in financial aid from a variety of sources (e.g., grants and scholarships; federal, state, institutional, and private). It also noted that for 2018-20, state government leaders provided an extra \$44.8 million in need-based aid to undergraduates. Furthermore, SCHEV recognized that institution-specific financial aid resources and strategies continue to influence affordability (SCHEV, 2020).

Moreover, 529 savings accounts appear to play a growing role in planning and paying for college. Virginia has three primary 529 plans – Invest529, Prepaid529, and CollegeAmerica – as well as a scholarship program called SOAR Virginia (Virginia College Savings Plan, 2020). For fiscal year 2020, 8,984 students at 15 Virginia public colleges and universities had Prepaid529 contracts, and payments to institutions under this plan totaled \$120,477,655 (for reference, fiscal year 2017 figures were 9,249 students and \$108,544,887, respectively; the Prepaid529 plan closed to new enrollees in May 2019; Virginia College Savings Plan, 2020, 2017). In fiscal year 2020, 10,837 students attending these same 15 public colleges and universities had Invest529 accounts; payments under their Invest529 accounts reached \$138,408,489 (for comparison, fiscal year 2017 figures were 8,905 students and \$87,002,960, respectively; Virginia College Savings Plan, 2020, 2017).

In fiscal year 2020, 1,090 students at 24 Virginia community colleges – including two-year Richard Bland College – had Prepaid529 contracts, and payments hit \$3,012,148 (for reference, fiscal year 2017 figures were 1,396 students and \$3,928,260, respectively; the Prepaid529 plan closed to new enrollees in May 2019; Virginia College Savings Plan, 2017, 2020). On the Invest529 side, 2,057 students in fiscal year 2020 had accounts, and payments totaled \$6,598,000 (for comparison, fiscal year 2017 figures were 1,364 students and \$4,471,856, respectively; Virginia College Savings Plan, 2017, 2020). Approximately 68 percent of Prepaid529 payments went to in-state public colleges and universities in fiscal year 2020; roughly 34 percent of Invest529 payments ended up helping with public in-state expenses. These numbers were virtually identical in fiscal year 2017, at 67 percent and 33 percent, respectively (Virginia College Savings Plan, 2017, 2020).

When considering affordability, it is similarly critical to acknowledge the net price paid by Virginia's postsecondary students and their families (SCHEV, 2020). This is the cost of attending an institution of higher education, excluding financial aid like grants and scholarships. Net price can fluctuate from one college and university to another, and it is often examined through the lens of student/family income. In Virginia for 2018-19, SCHEV (2020) reported that the total cost of attending a public four-year institution varied from a low of \$23,239 to a high of \$39,221 for full-time in-state students living on campus (inclusive of tuition, mandatory fees, books and other materials, and room and board). However, the 2018-19 average net price for these students from families with income (SCHEV, 2020):

1. From \$0 to \$30,000 ranged from a low of \$4,711 to a high of \$16,768.
 - For reference, the average net price nationally for this income group was \$9,500 at public four-year institutions in 2018-19 dollars (among first-time, full-time in-state undergraduate students receiving Title IV aid; Hussar et al., 2020).
2. Between \$30,001 and \$48,000 ranged from a low of \$4,963 to a high of \$17,529.
 - For comparison, the average net price nationally for this income group was \$11,100 at public four-year institutions in 2018-19 dollars (among first-time, full-time in-state undergraduate students receiving Title IV aid; Hussar et al., 2020).
3. From \$48,001 to \$75,000 ranged from a low of \$9,695 to a high of \$22,134.
 - For reference, the average net price nationally for this income group was \$15,100 at public four-year institutions in 2018-19 dollars (among first-time, full-time in-state undergraduate students receiving Title IV aid; Hussar et al., 2020).
4. Between \$75,001 and \$110,000 ranged from a low of \$11,527 to a high of \$26,569.
 - For comparison, the average net price nationally for this income group was \$19,400 at public four-year institutions in 2018-19 dollars (among first-time, full-time in-state undergraduate students receiving Title IV aid; Hussar et al., 2020).
5. Over \$110,000 ranged from a low of \$16,608 to a high of \$29,877.

- For reference, the average net price nationally for this income group was \$22,300 at public four-year institutions in 2018-19 dollars (among first-time, full-time in-state undergraduate students receiving Title IV aid; Hussar et al., 2020).

Higher education: Economic-employment impacts

Scrutiny of the impact of college education has become more intense in the past decade, especially in light of U.S. housing sector's collapse and the onset of the Great Recession (Strohush & Wanner, 2015; Vuolo et al., 2016). But whichever measure one decides to examine for economic well-being and career attainment, individuals who have graduated from college tend to outperform their peers with lower levels of education (Pew Research Center, 2014).

For example, postsecondary education is an increasingly important factor in determining an individual's earnings (U.S. Department of the Treasury [USDT] & U.S. Department of Education [ED], 2012). Per the 2020 CPS (as cited by the U.S. BLS, 2021), among full-time and salaried workers ages 25 and above, those with associate degrees had median usual weekly earnings of \$930 and an unemployment rate of 7.1 percent in 2020, while bachelor's degree holders saw median weekly earnings totaling \$1,305 and an unemployment rate of 5.5 percent. This was well above high school graduates, whose median weekly earnings were \$781, and whose unemployment rate was 9.0 percent. Other research confirms favorable earnings and employment status differences related to higher education (Pew Research Center, 2014; Vuolo et al., 2016; see also Fishman et al., 2019). They *also* show that demographics like race/ethnicity, gender, and field of study affect outcomes like unemployment rates and wages (Gallup, Inc. & Purdue University, 2014; Fishman et al., 2019).

In 2012, persons with bachelor's degrees earned, on average, \$32,000 more annually than high school graduates who never attended college (Trostel, 2015). Similarly, individuals who had completed an associate degree earned approximately \$12,000 more annually than high school graduates. Based on a Pew Research Center (2014) survey of 2,002 adults and economic data from the U.S. Census Bureau, the gap in inflation-adjusted earnings across educational attainment levels has also increased over the years – young millennial college graduates earn approximately \$17,500 more than those with a high school diploma, while this gap was only \$7,499 for similarly aged individuals in 1965.

Interestingly, the difference may be a function of *both* inflation-adjusted gains for bachelor's degrees, as well declines in value for high school diplomas – two phenomena which can be observed relative to prior generations (e.g., millennials versus baby boomers; Pew Research Center, 2014). It is possible, too, that young adults' relatively higher median adjusted household income (\$89,079 in 2013; \$71,916 in 1979 – both adjusted to 2012 dollars) reflects large-scale contemporary demographic changes – for instance, decisions to avoid/postpone marriage, or to have children later in life or not at all (see also Grawe, 2018, as cited in Barshay, 2018).

In addition to annual earnings estimates, the benefits of higher education can also be evaluated via either long-term or lifetime earnings. Using Growth Curve Modeling to examine earning trajectories, Jaggars and Xu (2016) found that both associate and bachelor's degrees yield moderate to substantial labor market returns – the bulk of these positive returns are due to increases in the earnings growth over time rather than just the immediate increase in earnings levels. Relative to individuals who have completed a high school education or less, those with a sub-baccalaureate education – regardless of level – achieve higher annual and cumulative twenty-year earnings (Kim & Tamborini, 2019).

Tamborini, Kim, and Sakamoto (2015) looked at differences in lifetime earnings by educational attainment using data from the *Survey of Income and Program Participation* matched to longitudinal tax earnings from the Social Security Administration. From their analysis, they found that higher education has a persistent positive effect on lifetime earnings – they identified a gap in estimated lifetime earnings between high school and college graduates of approximately \$1.13 million for men and \$792,000 for women.

Carnevale et al. (2019) at the Georgetown University Center on Education and the Workforce (CEW) used data from the *2019 College Scorecard* to calculate net present value, weighing the cost of college against the potential gains in wages over time, and used these calculations to rank 4,500 institutions. From their analysis, they found that two-year institutions, community colleges, and many certificate programs have the highest return on investment in the short-term (10 years) while colleges that award bachelor's degrees have the highest return in the long-term (40 years). Additionally, they concluded that – in the short-term – public institutions have a higher return on investment than private institutions due to the higher initial investment required for private colleges. A separate CEW report (Carnevale et al., 2020) focusing on graduates with liberal arts degrees concluded that although these graduates lag STEM awardees early in their careers, they make up the difference (on average) by the end of their careers.

Looking at average lifetime earnings based on degree level in the *Virginia Longitudinal Data System* (VLDS), SCHEV (n.d.f) estimates that an individual with a high school diploma is expected to earn \$1.3 million. As degree level earned increases, so too does the estimated lifetime earnings, with an expected lifetime earnings of \$1.7 million for associate degree-holders and \$2.3 million for those with a bachelor's degree.

In summary, research suggests a positive correlation between educational attainment and income (e.g., weekly, annual, lifetime). This relationship may be influenced by demographic factors like gender, race, and ethnicity. Field of study may also play a role.

Although earnings estimates are common gauges of higher education's relationship to employment and economic phenomena, there are other outcome measures to consider. Job searches, for instance, may be easier and comparatively more fruitful for postsecondary graduates, as employers often use degree status as indirect proof of technical abilities, soft-skills,

and goal-oriented capabilities that have workplace consequence and merit higher pay (Vuolo et al., 2016; see also Fishman et al., 2019). People with higher education – particularly bachelor's degrees – may also be less likely to experience job or career disruption, or, if this happens, they may bounce back more quickly (Pew Research Center, 2014; Vuolo et al., 2016). Indeed, as individuals achieve higher levels of education, they are more likely to be employed and for that employment to be full-time (Bailey et al., 2004). A study by the Pew Research Center (2014) found that, on average, millennial high school graduates spend four weeks longer looking for employment than college graduates. College-educated millennials are also significantly more likely to find full-time work compared to their less-educated peers – millennials with a bachelor's degree or higher have an 89 percent chance of working full-time whereas high school-educated millennials have an 82 percent chance (see also Gallup, Inc. & Purdue University, 2014).

Job security also tends to be greater for college graduates. In recent instances of market volatility – for example, the economic downtown of the early 2000s – bachelor's and associate degree recipients (not including vocational and technical awardees) seemed to have some protection. They lost fewer hours of work per week than persons whose education included little to no postsecondary activity (Vuolo et al., 2016). They also more frequently participated in occupations less susceptible to recession instability (e.g., teaching, nursing, law enforcement). Other researchers have found that, among Americans who acquire a bachelor's degree, the frequency of receiving workers' compensation for job-connected injuries is 2.4 times lower than for high school graduates (Trostel, 2015).

In general, higher levels of educational attainment have also been associated with a higher likelihood of various employment-associated benefits. In 2012, Americans with a bachelor's degree were significantly more likely to have health insurance and a retirement plan through employment. Further, retirement income is 2.4 times higher with a bachelor's degree. The Pew Research Center (2014) found that millennials with only a high school education are less likely to be employed in a unionized setting and less likely to work for employers who offer a pension or retirement plan.

Educational attainment is also an important factor in intergenerational mobility – the ability for children to move, independent of their parent(s)' economic status, into different levels on the economic ladder (USDT & ED, 2012). For individuals born into the lowest income quintile, there is a 45 percent chance of remaining in the bottom quintile as adults whereas this improves to less than a 20 percent chance with the completion of a college degree. With a college degree, these individuals also have approximately a 20 percent chance of rising into one of the higher income quintiles.

Along with the aforementioned benefits, higher education has also been associated with increased job satisfaction. When surveying employed college graduates in their 20s to 30s, 53 percent say that they are very satisfied at work, whereas only 37 percent of similarly-aged

individuals with a high school diploma or less answer that they are satisfied at work (Pew Research Center, 2014). College graduates are also more likely to conceptualize their jobs as careers or preparation for careers, while their less-educated peers are approximately three times as likely to say that their current employment is just a job to get them by. Additionally, comparatively more postsecondary graduates describe their education as very helpful to their employment, and they tend to believe they have the know-how and tools to move up in the working world.

The 2014 Gallup, Inc. and Purdue University Index report *Great Jobs, Great Lives* examines some of these points especially closely and connects them back to college experiences. Their study of tens of thousands of mostly bachelor's degree graduates revealed that workplace engagement and general well-being were higher among degree holders who had certain kinds of histories in college, such as participating in experiential learning opportunities, having mentors or otherwise good relationships with faculty, being involved in extracurriculars, and/or graduating in no more than four years.

Furthermore, according to Pew (2014), bachelor's degree recipients are also typically inclined (89 percent) to say that their education has been or will be financially worthwhile – notably, there is a positive relationship between this perception and family income, loan payoff status, and presence of graduate/professional awards. About 3 in 4 (76 percent) two-year degree holders say their education has been or will be a positive investment.

In summary, studies suggest that educational attainment generally has positive impacts on measures like job satisfaction, episodes of unemployment, and receipt of employment-associated benefits like health insurance and retirement. Other benefits may include career orientation, perception of workplace self-efficacy, and intergenerational economic mobility. Some of these phenomena may, in turn, connect back to time spent in higher education settings.

Beyond the individual level, colleges and universities also “plug in” directly to their economic ecosystems and broader human resource pipelines. Community colleges, for example, have been the focus of workforce development policies due to their advantageous abilities to align programs to the needs of environments around them (American Association of State Colleges and Universities [AASCU], 2021). Related to this, higher education can play an important role in workforce development in rural regions, in particular, through the growth of Career Pathways and In-Demand Industry certification programs in community colleges. These can provide curriculum integrated with industry-specific technical training to develop job skills in targeted industries (University of Virginia et al., 2008).

Recently, even more focus has been placed on utilizing postsecondary education for workforce development, particularly in light of high unemployment rates due to the COVID-19 pandemic (AASCU, 2021). By communicating with industry, higher education can better understand workforce demands – both current and future – and formulate offerings to confer the necessary

skills and knowledge to students (University of Virginia et al., 2018). Within Virginia itself, examples of state-level workforce development initiatives include the New Economy Workforce Credential Grant program administered by SCHEV and the Department of Labor and Industry's registered apprenticeship program.

Higher education likewise has an impact on country-level economic growth. When examining data across all 50 U.S. states and the U.S. capital from the Bureau of Economic Analysis, as well as data on higher education from IPEDS, Tyndorf and Martin (2018) found that investment in community college and university graduation led to an increase in Gross Domestic Product (GDP). Community colleges have short-term and medium-term impacts on economic growth due to the shorter duration of their programs, whereas bachelor's degrees typically have a short-term negative impact by taking students out of the workforce during their education followed by a positive impact upon completion. By increasing university graduations by 10 percent, the U.S. economy could see a growth of 2.2 percent and 1.0 percent in the medium- and long-term, respectively.

With all of these advantages in mind, it is important to note that the economically-positive nature of higher education is not unlimited, nor is it unconditional. Some college graduates – especially newer, younger alumni – can experience higher unemployment rates than other college graduates (Abel & Dietz, 2014). They may also be more likely than older graduates to end up in jobs not generally requiring a bachelor's degree. Researchers have also shown that college-educated millennials have performed worse on some economic measures than their counterparts in baby boomer, Generation X, and/or Generation Z cohorts. These metrics include time spent job-hunting, participation in employer-sponsored pensions or other retirement options, overall net worth, likelihood of using loans to finance education, field-of-study/employment congruence, and proportion at or near the poverty line (Pew Research Center, 2014).

Other scholars have concluded that although graduating college has historically been a net favorable economic exercise – as compared to graduating only from high school – in recent years the distinction has become less clear. This is due, in part, to rising tuition and the opportunity costs of attending college, such as lost wages while enrolled (Strohush & Wanner, 2015). Some analysts have estimated that roughly 13 percent of college graduates might have been better served by not attending college. This may not be an unreasonable projection, they suggest, considering the percentage of graduates who have trouble paying back their student loans (see also Fishman et al., 2019). At the same time, researchers recognize the intangible positives attached to college, which can be difficult to monetize and yet help propel thousands of people to matriculate every year (Strohush & Wanner, 2015).

Higher education: Underemployment impacts

Underemployment refers to a job that is “substandard” in some way (Feldman, 1996; Fogg & Harrington, 2011). McKee-Ryan & Harvey (2011) identified 19 definitions and constructs of underemployment across disciplines (e.g., economics, sociology, and management). Two

dimensions of underemployment are of particular interest: (a) when individuals are involuntarily employed part-time (“hours underemployment”) and (b) when individuals have a higher level of formal education than their current job requires (more precisely defined as malemployment). Both forms of underemployment generally have negative career effects on individuals (McKee-Ryan & Harvey, 2011). Alternatively, underemployment can be calculated by asking individuals whether they feel overqualified for their current job (“self-reported underemployment”).

The U.S. BLS suggests “no official government statistics are available on the total number of persons who might be viewed as underemployed,” (2015, Labor Force Statistics from the CPS, Frequently Asked Questions, Question 11). But the BLS *does* track the number of involuntarily part-time workers (individuals who work less than 35 hours but want to work more) in its Labor Underutilization measure (U-6). However, this measure can underestimate the current rate of underemployment. The Center for Law and Social Policy (CLASP) expands this definition by including any part-time worker that wants to work more hours and estimates that hours underemployment ranged from 8-11 percent in 2016 (double the U-6 measure; (Golden & Kim, 2020). Importantly, higher education may buffer against the effects of hours unemployment during economic slowdowns. During the Great Recession, for example, bachelor’s and associate degree graduates experienced lesser reduction in hours than individuals without a degree (Vuolo et al., 2016).

Malemployment is another type of underemployment (Moret, 2016) when individuals have a higher level of education than their current position requires (sometimes referred to as overqualification; More & Rosenbloom, 2021). Research typically focuses on individuals that hold a bachelor’s degree but do not hold a college-level job. Malemployment rates are increasing over time (and are highest after a recession), are higher among recent graduates, and vary across majors, gender, and race/ethnicity (Abel & Dietz, 2015; Burning Glass Technologies & Strada Institute, 2018). Moret (2016) estimates that 40.5 percent of individuals were malemployed from 2010-12. Abel and Dietz (2014) estimate malemployment rates ranged from 34 to 47 percent from 1990-2015 and that it was higher for recent college graduates (ages: 22-27 years).

In summary, 8 to 11 percent may be underemployed due to working fewer hours than desired. Between 34 and 47 percent of U.S. graduates may be malemployed.

Underemployment has important consequences on individual’s career (Verbruggen et al., 2015). In general, there is an inverse relationship between underemployment and job satisfaction (McKee-Ryan & Harvey, 2011). In a survey of 2,002 U.S. adults, 38 percent of adults reported feeling overqualified for their jobs across levels of education (Pew Research Center, 2014). There is some limited evidence that underemployed workers will underperform and have higher rates of turnover (Maynard et al., 2006). Reviews suggest there are negative effects on mental well-being (Erdogan & Bauer, 2021). Underemployment results in negative long-term financial consequences. For instance, the expected average salary for an underemployed worker was estimated to be \$37,330 compared to \$47,470 for a fully employed worker. College graduates

who are underemployed their first job are more likely to stay underemployed 10 years later (Burning Glass Technologies & Strada Institute, 2018).

STEM majors are less likely to be underemployed (about 30 percent) and are less likely to still be underemployed within 5-10 years. Within STEM fields, biology majors and psychology majors are the most likely to be underemployed (Sigelman et al., 2018). Non-STEM fields with the lowest rates of underemployment include communication and foreign language occupations. Women have higher rates of underemployment than men. White and Asian rates of malemployment are similar, around 28-29 percent, while Black and Hispanic graduates have higher rates of malemployment (37 percent and 40 percent). There are also differences in self-reported underemployment between races and income levels. Blacks were more likely to report feeling they were overqualified for their jobs than Whites and Hispanics (53 percent versus 36 percent and 39 percent, respectively; Pew Research Center, 2014). Additionally, 45 percent of adults making less than \$50,000 annually reported feeling overqualified for their job, compared to 33 percent of adults making more than \$50,000 (Pew Research Center, 2014).

In summary, underemployment varies by major, gender, and race. Underemployment appears to have immediate and long-lasting negative impacts on individuals.

Higher education: Geographic mobility impacts

Geographic mobility refers to when a person moves and changes local labor markets, housing markets, or both. Geographic mobility can be examined across spatial scales (e.g., between Census regions, between states, and between counties). Geographic mobility is thought to reduce economic inequities between regions and states (Ganong & Shoag, 2015). At the individual level, greater geographic mobility can increase career success and wages, especially in young adults. However, interstate geographic mobility – wherein individuals migrate from one U.S. state to another – has been declining since the 1980s (Molloy et al., 2017). Proposed reasons for this decline include an aging population, opportunities for remote work, and changes in the labor market (Molloy et al., 2017).

Most moves happen within the same state. Annually From 1980 to 2010, 1.5 percent of the population moved from one Census region to another (Northeast, Midwest, South and West) and 1.3 percent moved between states within the same region each year (Molloy et al., 2011). In general, young, college-educated adults (ages 20-35) are thought to be the most mobile (Basker, 2002; Kodrzycki, 2001; Molloy et al., 2011). There is evidence that college-educated adults (especially couples) are more likely to move to areas in states with stronger economies (Y. Chen & Rosenthal, 2008). Migration is most likely to occur within five years of college graduation. Using data from the *National Longitudinal Survey of Youth* (NLSY), Kodrycki (2001) found that 30 percent of college graduates moved within a year of graduation. Moret (2016) found that rates of interstate migration increase with age and with level of education. Interstate movers with

higher levels of degree attainment were more likely to move for job-related reasons. For bachelor's degrees, 2.6 percent of graduates reported an interstate move from 2010-12.

States typically seek to retain college graduates – college graduates earn more and thus pay more state taxes, and they are less likely to receive public assistance (Trostel, 2010). Furthermore, greater education level in cities is linked to higher wages and economic growth (Moretti, 2004). Related to this, studies have focused on understanding why young, educated adults may want to stay in a particular location (“pull factors”) versus why they may want to leave (“push factors”). In general, ties to the community, as well as social and career connections may aid retention of students. When controlling for demographic variables, personality may also influence migration, as individuals with higher family centrality, concern for social acceptance, and religious service attendance are less likely to migrate (Frieze et al., 2006). Undergraduate field of study may also affect decisions to move across states. In one study, communication graduates were the most likely to complete an interstate move (3.7 percent per year), while education graduates were the least likely to complete an interstate move (1.7 percent per year; Moret, 2016). Regional differences in import and export of college graduates exist, too. For example, from 2010-12, the Great Lakes region exported approximately 38,200 bachelor's graduates (a 14 percent loss), while Texas gained 16 percent additional bachelor's graduates.

There is some limited evidence that merit-based aid from higher education institutions results in greater degree attainment in that state (Zhang & Ness, 2010). However, greater enrollment does not necessarily result in greater in-state post-college retention. In a literature review, Sjoquist and Winters (2014) found that merit-based aid increased state retention by 2.8 percentage points in adults ages 24-30, although in another study they reported that there was considerable variation among states (Sjoquist & Winters, 2013).

In summary, geographic mobility may be subject to many conditions, such as: age, education level and area of concentration, elapsed time since graduation, personality, family/social ties, and community connections. Some regional inflow-outflow traffic may be observed.

Higher education: Student loan impacts

The cost of higher education (tuition and fees) continues to rise more rapidly than the rate of inflation. As both federal and state funding for higher education have decreased, students increasingly rely on student loans to pay for higher education. Student loans thus serve as a bridge to enable students without funds to finance their education and alleviate educational inequalities (Bleemer et al., 2021). However, student debt is a “double-edged sword,” as it carries risks and may constrain future life choices (Dwyer et al., 2012, p. 1136). Loans consume later income that could otherwise be invested or saved and expose young adults credit risks if they are unable to repay their loans. While the college income and wealth premiums remain positive, they have declined in recent years (Meschede et al., 2017) and vary across professions and demographics (Emmons et al., 2019; Perna, 2003).

The likelihood of accruing debt – and amount owed – depends on several factors including social-economic status, academic performance, and school choice (Elliott & Nam, 2013; Houle, 2014). Students who attend private and for-profit institutions generally acquire a greater amount of debt. In general, minority students accrue more debt than majority students, and higher-income students accrue less debt. Middle class students are more likely to take on higher debt, as they are not eligible for federal grants but cannot afford tuition cost (referred to as the “middle-income squeeze,” Houle, 2014, p. 66). Students who began their four-year degree at a community college accrue on average 10 percent lower debt than students who only attend a four-year institution (González Canché, 2020).

In 2020, the Federal Student Loan Portfolio reports that a little more than one million Virginians owed \$41 billion in federal student loan debt (Schak et al. 2020; SCHEV, 2021a). The Institute for College Access and Success indicates that, across both public and private non-profit institutions, those in the Virginia 2019 graduating class who borrowed had an average education debt of \$30,574 (the national average was \$29,300). Those average debt figures exclude private and informal loans. Virginia ranks eighteenth-highest in the nation (Schak et al. 2020). In 2019, 56 percent of Virginians graduated with education debt (Virginia ranks 27th; Schak et al. 2020).

Virginia’s public and private-not-for profit institutions report student loan debt to SCHEV. However, the analysis provided here refers to student undergraduate loans only (federal, private, institutional, excluding PLUS loans). This data does not include loans accrued outside of Virginia or not processed by the institution. Many institutions report the indebtedness of only first-time in college students, but SCHEV’s data includes transfer students. Because transfer students may have accrued debt outside of Virginia, the mean and median debt may be lower than those reported by individual colleges and universities. The following data were compiled using SCHEV’s dataset *EOM06: Median Graduate Debt, 10 Year Trends* (looking at years 2009-19; n.d.e):

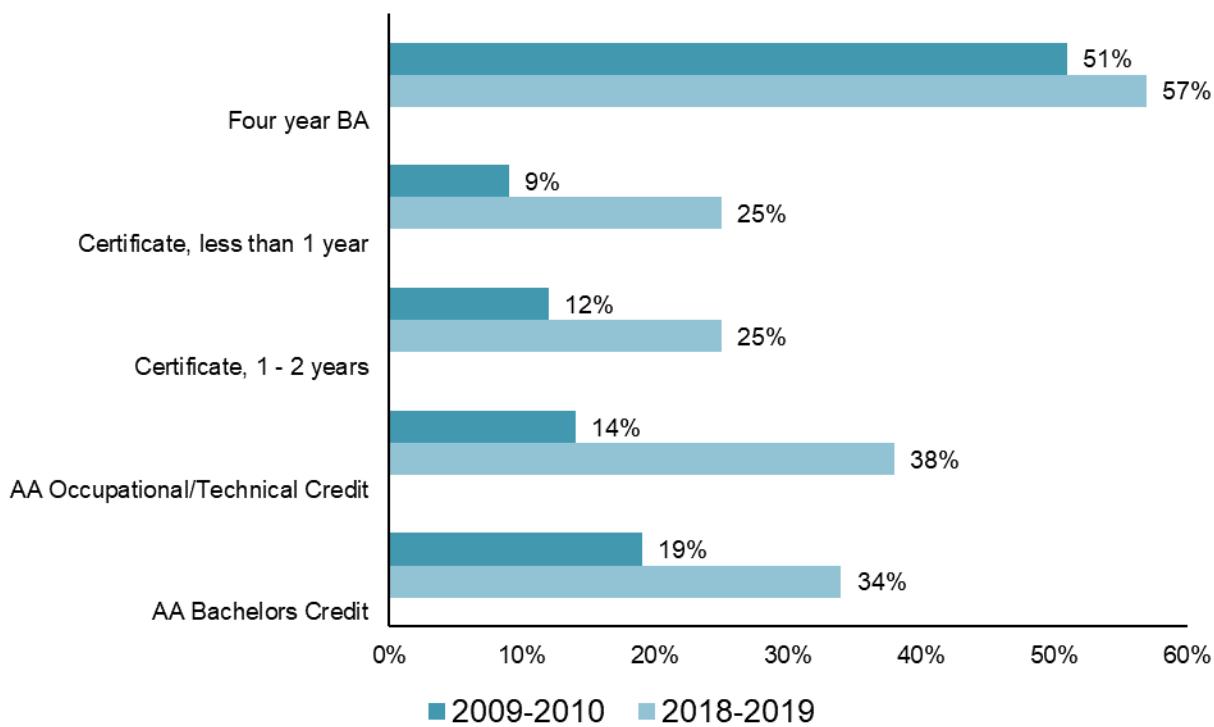
- From 2009 to 2019, among Virginia public institutions only, the percentage of graduates with a four-year bachelor’s degree with education debt increased from 51 to 57, with the mean debt growing by 31.8 percent from \$22,494 (median: \$20,089) to \$29,638 (median: \$25,765).
- For the Commonwealth’s public institutions only, the percentage of graduates with an associate degree (bachelor credit) with education debt rose from 19 to 34 between 2009 and 2019. The mean debt per student jumped by 44.3 percent from \$9,033 (median: \$6,913) to \$13,031 (median: \$10,144).
- Among Virginia’s public institutions only, the percentage of graduates with an associate degree (occupational/technical credit) with education debt increased from 14 to 38, and the mean debt per student grew by 72.2 percent from \$10,961 (median: \$8,500) to \$18,873 (median: \$14,847).
- For the state’s public institutions only, the percentage of graduates with certificates (less than 1 year) with education debt increased from 9 to 25, and the

mean debt per student climbed by 57.4 percent from \$10,322 (median: \$7,396) to \$16,251 (median: \$12,101).

- Among Virginia's public institutions only, the percentage of graduates with certificates (1-2 years) with education debt increased from 12 to 25, and the mean debt per student grew by 54.8 percent from \$8,911 (median: \$7,002) to \$13,790 (median: \$10,500).

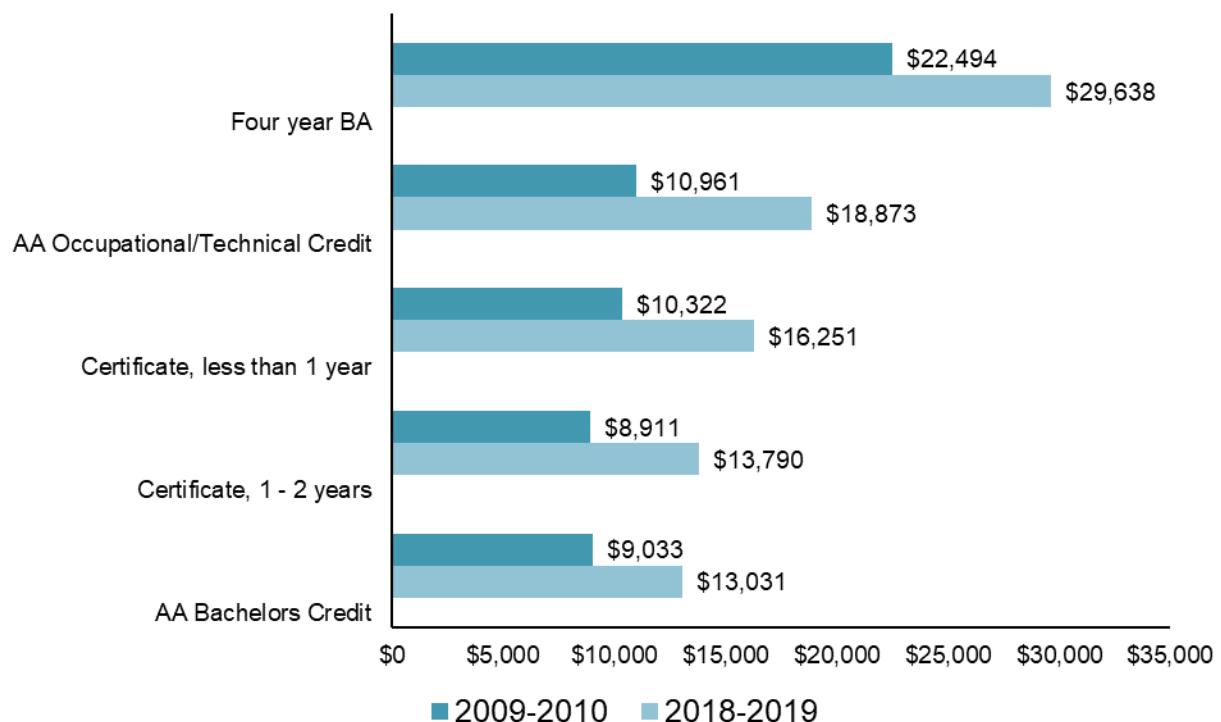
Of note, Virginians can submit complaints and receive assistance about their student loans through SCHEV's Student Loan Advocate program. As of October 2019, the office reported aiding more than 300 unique cases relating to student loans (SCHEV, 2021a). The top concern for graduates was eligibility for the Public Service Loan Forgiveness Program (PSLF).

Figure D-1: Percent of Graduates with Education Debt, Virginia's Public Institutions of Higher Education, 2009-10 to 2018-19, by Degree Type

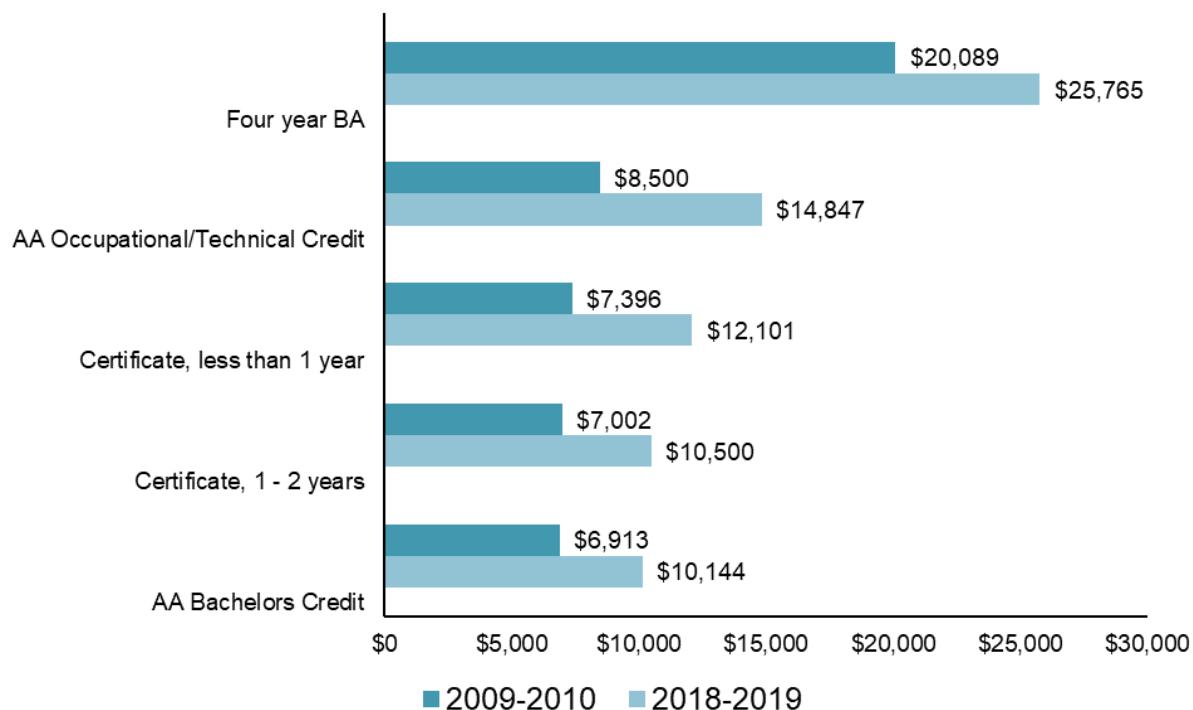


Source: State Council of Higher Education for Virginia. (n.d.e). *EOM06: Median graduate debt, 10 year Trends* [Data set]. https://research.schev.edu//studentdebt/DebtProfile_SL021.asp

Figure D-2: Mean Education Debt at Virginia's Public Institutions of Higher Education, 2009-10 to 2018-19, by Degree Type

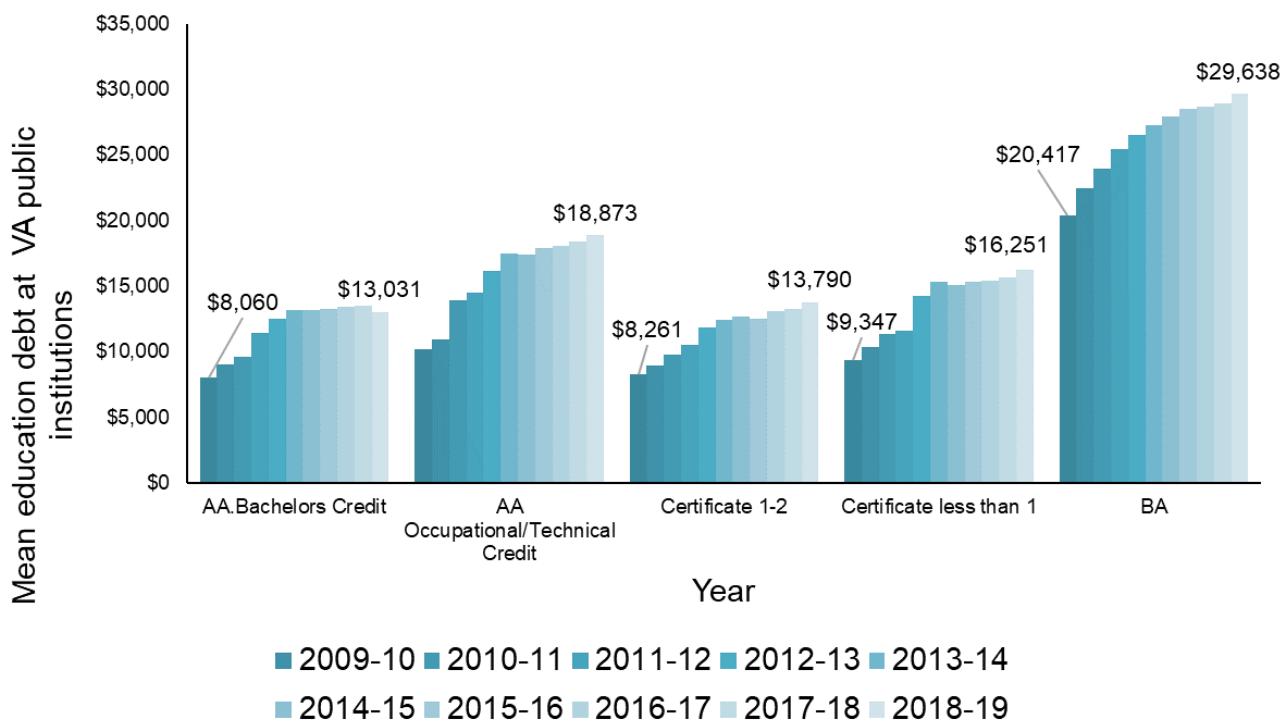


Source: State Council of Higher Education for Virginia. (n.d.e). *EOM06: Median graduate debt, 10 year Trends* [Data set]. https://research.schev.edu//studentdebt/DebtProfile_SL021.asp

Figure D-3: Median Education Debt at Virginia's Public Institutions of Higher Education, 2009-10 to 2018-19, by Degree Type

Source: State Council of Higher Education for Virginia. (n.d.e). *EOM06: Median graduate debt, 10 year Trends* [Data set]. https://research.schev.edu//studentdebt/DebtProfile_SL021.asp

Figure D-4: Mean Education Debt at Virginia's Public Institutions of Higher Education, 2009-10 to 2018-19, by Degree Type and Individual Year



Source: State Council of Higher Education for Virginia. (n.d.e). *EOM06: Median graduate debt, 10 year Trends* [Data set]. https://research.schev.edu/studentdebt/DebtProfile_SL021.asp

Nationally and in Virginia, a greater percentage of Black students accrue student loan debt. Across the United States in 2016, 85 percent of Black students with a bachelor's degree graduated with debt compared to 69 percent of White students (Schak et al. 2020). Nationally, the average debt for bachelor's recipients with loans for Black students was \$34,000 compared to \$30,100 for White students. SCHEV data indicates that for students attending public institutions pursuing a four-year bachelor's degree from 2014-19, 54.2 percent of majority students borrow versus 64.8 percent of students of color. The average debt from 2014-19 for majority students attending public institutions pursuing a four-year bachelor's degree was \$28,419 compared to \$29,282 for students of color (SCHEV, n.d.d).

In summary, the proportion of students with student loan debt and the amount of debt per student continues to increase. But, Virginia remains relatively affordable compared to other states. Black students continue to have a higher debt burden nationally and in Virginia.

In summary, there is some evidence that the college income and earnings premium is positive, but it is decreasing. In addition, student debt appears to influence behavior in college, as well as degree attainment.

While in college, there is some evidence that student loan debt may lower the likelihood of degree attainment, especially high levels of debt. Dwyer et al. (2012) found that educational debt greater than \$10,000 in 2007 dollars (\$12,775 adjusted for inflation) reduces the likelihood of graduation, especially for lower income students. Community college students with student loan debt had lower persistence than those without student loan debt (Dowd & Coury, 2006). Student loan debt can also influence behavior and choice of major, as students with debt may spend less time actively engaged on campus (Quadlin & Rudel, 2015).

For students who complete their degree, there is evidence that student loan debt results in more financial strain, which in turn increases job search strain, and reduces likelihood of finding full-time employment (Froidevaux et al., 2020). Student debt can also influence career choice, as students with greater debt are more likely to pursue higher paying careers (Rothstein & Rouse, 2011). However, there is no evidence that student debt influences enrollment in graduate school (R. Chen & Bahr, 2020). Student loan debt can have negative effects when individuals are unable to repay them – this can result in loan default or delinquency, both of which can influence credit scores (Elliott & Nam, 2013).

Even if student loan debt does not result in default or delinquency, it may have negative impacts on individuals. Several studies find that student loan debt delays the transition to adulthood, by delaying family formation (Velez et al., 2019), especially for women (Addo, 2014; Nau et al., 2015). It reduces home ownership (Houle & Berger, 2015; Mountain et al., 2020; Scott & Bloom, 2021). However, some researchers found that student debt did not influence the risk of boomeranging (the phenomenon when young adults return home after attaining residential independence; Houle & Warner, 2017).

In general, student loan debt is negatively associated with financial wellness and behavior, although the field is relatively new (Bartholomae & Fox, 2021). There is evidence that student loan debt has undesirable effects on overall health and well-being after college (Jones, 2019; A.G.T.T. Tran et al., 2018). In low- and moderate-income households, persons with student loan debt are more likely to experience financial hardships, and this relationship was stronger in borrowers not making payments (Despard et al., 2016). In a survey of 30,000 college graduates, Gallup, Inc. and Purdue University (2014) found that graduates with higher student loan debt (\$20,000 - \$40,000) were less likely to report thriving in multiple areas of well-being than students with no student loan debt. Specifically, 25 percent of graduates with loan debt above \$50,000 were thriving financially, compared to 40 percent of those with no student debt.

The negative effects of debt are not equal across demographics. Several studies show that Black students tend to borrow more, are more likely to drop out of college, and are more likely to default on loans (Addo et al., 2016; Houle, 2014; Jackson & Reynolds, 2013). Even when controlling for social-economic status, in low-and moderate-income populations, Black students are more likely to be more indebted than White students (Grinstein-Weiss et al., 2016). Racial disparity in student debt can persist into adulthood (Houle & Addo, 2019).

Table D-18: Impacts of Student Debt

	Negative	Positive
Individual	<ul style="list-style-type: none"> • High debt burden can negatively influence mental health • Delays entry into adulthood (home ownership, marriage) 	<ul style="list-style-type: none"> • Income and wealth premium remain positive
Societal	<ul style="list-style-type: none"> • Can contribute to racial inequities • May reduce rates of home ownership 	<ul style="list-style-type: none"> • Reduce educational inequalities by allowing more students to fund education

Higher education: Community engagement impacts

Although the financial costs and benefits of educational attainment are popular topics of interest, other important factors are also associated with higher levels of education. In addition to financial gains, individuals who are more educated frequently report higher community engagement, some forms of which include volunteerism, charitability, civic participation, and voting or other manifestations of political participation (Berinsky & Lenz, 2011; Trostel, 2015).

First, higher educational attainment is associated with higher volunteerism (Newell, 2014; Trostel, 2015). Based on data from the 2012 *Volunteer Supplement* of the CPS, Americans with bachelor's degrees as their highest degree earned, on average, are 2.3 times more likely to volunteer than those with only a high school credential – the proportion of individuals who volunteer continues to increase with the level of educational attainment (Trostel, 2015). The proportion of individuals who report volunteering increased from around 17.4 percent of high school graduates with no college to 28.0 percent for those with some college but without a degree – this gap continues to widen even further to 40.3 percent of those with a bachelor's degree but no advanced degrees and to 48.5 percent of those with graduate degrees. Similarly, in a study comparing high school graduates, associate degree holders, and bachelor's degree holders with data from the 2008 CPS, 11 percent of high school graduates report volunteering compared to 16 percent of those with associate degrees and 28 percent of those who had completed a bachelor's degree (Newell, 2014). Using regression analyses, Newell (2014) finds that those with higher educational attainment are significantly more likely to engage in volunteerism, even when controlling for race, gender, citizenship status, and family income.

In addition to volunteerism, individuals with higher educational attainment are more likely to report charitability (Trostel, 2015). Data from the 2012 *Consumer Expenditure Survey* shows that as education levels rise, cash donations made to charities, religious organizations, and educational institutions increase. Average cash contributions for the total of all three categories jump from \$385 for individuals with only a high school diploma to \$616 for those who

completed some college but without a degree – average totals increase as education levels continue to grow, climbing to \$2,355 for individuals with advanced degrees.

Higher education is also associated with increased civic participation through engagement with community organizations like neighborhood watch groups, religious institutions, or local PTAs (Trostel, 2015). In the 2011 *Civic Engagement Supplement* of the CPS, 19.6 percent of individuals with only a high school diploma engaged with some kind of community organization, whereas 40.2 percent of those with associate degrees and 48.5 percent of those with bachelor's degrees reported engagement. Although the overall proportion of individuals was lower in the 2008 CPS data, the same pattern emerged when considering education and civic engagement – 3 percent, 4 percent, and 6 percent of high school graduates, associate degree holders, and bachelor's degree holders respectively reported participation in any community organization (Newell, 2014). These differences were statistically significant in regression analyses with controls for several background characteristics.

In a 2012 survey of 2,253 adults conducted via telephone interviews by the Pew Research Center, individuals with higher levels of education – specifically college attendees or graduates – were more likely than those with lower education levels to participate in online or offline civic activities (Smith, 2013). Those with higher education more often tended to: (1) work with fellow citizens to solve community problems, (2) attend a political meeting, (3) be an active member of a politically-oriented group, (4) attend a political rally or speech, (5) sign a petition, (6) work or volunteer for a political party or candidate, and (7) contact a government official.

Lastly, higher educational attainment is associated with increased voting and other forms of political participation (Newell, 2014; Trostel, 2015). The 2011 *Civic Engagement Supplement* of the CPS also contains data for several measures of political participation including voting, boycotting or buying products for social or political reasons, contacting public officials, and discussing politics (Trostel, 2015). The data shows that more educated individuals voted more frequently in both local and national elections – for the 2012 national election, 62.0 percent of high school graduates voted while the proportion of voters was 77.7 percent for associate degree holders and 85.4 percent for bachelor's degree holders. This same pattern was also apparent in the 2011 data for boycotting or buying products for social or political reasons, contacting public officials, and discussing politics.

Rosenbaum (2021) found further evidence for the connection between educational attainment and voting behaviors drawing from data collected in the *National Longitudinal Study of Adolescent to Adult Health* (Add Health). Using a sample of 1,212 voting-age two-year college students, the results indicated that individuals who earn a bachelor's degree or higher were significantly more likely to have voted in the 2000 presidential election. Hansen and Tyner (2019) examine this tendency for more educated individuals to vote in higher proportions than those with less education by looking at data from the American National Election Studies' (ANES) 2016 *Time Series Study* and the 2016 *Cooperative Congressional Election Study*.

(CCES). They found that as educational attainment increases, the likelihood of an individual considering voting to be a civic duty increases. The researchers theorize that institutions of higher education are settings that instill norms surrounding voting by encouraging voting behavior. This theory is supported by survey data from community college students and administrators – Kisker, Weintraub, and Newell (2016) discovered that academic and extracurricular behaviors and institutional intentionality towards civic engagement all positively contributed to community college students' civic behaviors, capacity, agency, and knowledge.

Longitudinal data from the *Wabash National Study of Liberal Arts Education* also lends support for the ability of universities to cultivate student's civic commitments – engagement in peer education and membership in a religious congregation or group during college both had a significant positive influence on students' attitudes towards the importance of promoting racial understanding, volunteering, and influencing political structures (Trolian & Barnhardt, 2017).

In summary, research indicates that additional education may be associated with higher rates of volunteering, charitable giving, participation in community organizations, voting, and various forms of political involvement. Experiences in higher education may influence civic behaviors.

Community colleges, in particular, are particular targets of interest regarding the development of civic engagement – for instance, The Democracy Commitment is a national initiative that provides “a platform for the development and expansion of civic engagement in community colleges,” (Kisker, Newell, & Weintraub, 2016, p. 104). Data from a pilot examination by The Democracy Commitment indicates that community college students are fairly engaged in political or civic activities, with 51 percent of respondents discussing politics regularly and 47 percent voting in a local, state, or federal election since entering college. Analysis of the data shows that above-average proportions of full-time faculty and the incorporation of civic engagement into professional development programs and/or faculty tenure/advancement procedures are associated with higher levels of civic knowledge and agency among community college students. Civic knowledge and student's ability to answer civic questions correctly were also positively associated with an institution's intentionality towards civic engagement (i.e., civic engagement is mentioned in the institution's mission or strategic plan).

Education attainment and community engagement behaviors: Virginia metrics

To further assess the possible relationship between educational attainment and community-oriented behaviors, it is useful to consider data from the CPS' *Volunteering and Civic Life Supplement* (U.S. Census Bureau, 2019). Examining this material provides context, too, for *Virginia Educated* results.

(Note: CPS supplement data is provided for high school education, some college education, baccalaureate education, and beyond; because so many *Virginia Educated* respondents pursued

supplemental education, survey data by highest degree attained/in progress are likewise reported. CPS and *Virginia Educated* data reflect the application of weights.)

Although there are some variations in the 2019 data, in general, higher percentages of Virginia residents with postsecondary education belonged to civic organizations in the 12 months prior to their CPS supplement participation (e.g., 25.4 percent of high school graduates/GED holders; 34.3 percent of academic associate degree graduates; 37.4 percent of bachelor's degree recipients; 42.1 percent of master's degree recipients; U.S. Census Bureau). The same positive pattern appears to hold among *Virginia Educated* respondents – even though high school baselines were not available, the percentages of participants reporting civic organization membership grew with highest education level attained/pursued (e.g., 23 percent of academic associate degree awardees; 29 percent of bachelor's degree holders; 39 percent of master's degree recipients; figures among first professional and terminal degree graduates are even higher). See Table D-19 and Figure D-5 for details.

In a similar way, 2019 CPS suggests that postsecondary graduates living in Virginia were more inclined to buy or boycott products or services related to political values or business practices, as compared to persons whose education stopped at high school (e.g., 9.2 percent of high school graduates; 17.6 percent of academic associate degree recipients; 17.2 percent of bachelor's degree holders; 29.4 percent of master's degree graduates; the timeframe was also 12 months out; U.S. Census Bureau). Attendance at local public meetings in the prior year was less clear, however. In the *Virginia Educated* survey, supporting or avoiding a business for political/social reasons and attending community meetings were part of a grouped answer choice – therefore the behaviors could not be analyzed separately. They were also presented with a longer time horizon – since completing undergraduate education. However, increasing levels of education among *Virginia Educated* respondents appear to be positively correlated with these and other kinds of activities (e.g., 40 percent of academic associate degree graduates; 59 percent of bachelor's degree recipients; 68 percent of master's degree awardees; as before, datapoints are even higher among first professional and terminal degree holders). See Table D-20, Table D-21 and Figure D-6.

When considering voting behavior, the 2019 CPS *Volunteering and Civic Life Supplement* reveals that higher percentages of persons with advanced education living in Virginia voted in local elections in the preceding 12 months (e.g., 41.6 percent of high school diploma/GED holders; 61 percent of academic associate degree awardees; 56.3 percent of bachelor's degree graduates; 67.2 percent of master's degree recipients; U.S. Census Bureau). The closest comparable *Virginia Educated* question asked about the same behavior, but since finishing undergraduate education. Generally speaking, the same trend holds – the farther along the education continuum, the higher the percentage of respondents reporting voting in the most recent local elections (e.g., 61 percent of academic associate degree graduates; 69 percent of bachelor's degree awardees; 76 percent of master's degree holders; results were mixed for first professional and terminal degree graduates). See Table D-22 and Figure D-7.

CPS supplement data also seem to indicate a positive relationship between Virginia residents' education attainment and their charitable contributions. For example, in 2019, the percentage of participants who had made monetary or in-kind donations to non-political organizations in the prior 12 months varied from 46.9 percent of high school/GED graduates, to 56.9 percent of academic associate degree graduates, to 73.6 percent of bachelor's degree holders, to 81.8 percent of master's degree awardees (some wobbles in the data were observed; U.S. Census Bureau). A parallel phenomenon occurs with *Virginia Educated* results – 59 percent of academic associate degree recipients, 68 percent of bachelor's degree graduates, and 76 percent of master's degree holders reported making donations to non-profit, civic, tax-exempt, or charitable organizations in the past 12 months. Some small additional growth can be seen among first professional and terminal degree recipients as well. See Table D-23 and Figure D-8.

Regarding political donations, CPS supplement data point to the possibility of a positive connection to educational achievement among people living in Virginia. In 2019, 6.5 percent of high school/GED graduates, 13.0 percent of bachelor's degree awardees, and 16.5 percent of master's degree recipients had made monetary or in-kind donations to a political organization, party, or campaign in the preceding 12 months (U.S. Census Bureau). *Virginia Educated* results seem to follow a comparable arc, although the closest question was more expansive than in the CPS supplement: for instance, 16.0 percent of academic associate degree holders, 28 percent of bachelor's degree graduates, and 35 percent of master's degree graduates had donated money to – or volunteered for – a political candidate, campaign, or advocacy organization since completing their undergraduate education. Percentages were higher among respondents with professional or terminal degrees. See Table D-24 and Figure D-9 for reference.

In addition, CPS supplement data indicate a potential correlation between education and volunteer status in the Commonwealth. In 2019, the percentage of participants who had volunteered for organizations or associations in the prior 12 months ranged from 23.7 percent among high school/GED graduates, to 36.6 percent of academic associate degree holders, to 47.9 percent of bachelor's degree graduates, to 51.5 percent of master's degree recipients (U.S. Census Bureau). The same general trend was present regarding respondents doing something positive for their neighborhoods or communities in the preceding year (16.7, 20.6, 28.1, and 34.2 percent, respectively; some dips occurred). A volunteer frequency pattern by education attainment – assessed either via CPS or *Virginia Educated* – is more difficult to ascertain. However, it appears that the percentage of *Virginia Educated* respondents who *did not volunteer at all* in the 12 months prior shrank as education level rose (e.g., 54 percent of academic associate degree graduates; 50 percent of bachelor's degree graduates; 43 percent of master's degree holders; figures were lower for first professional and terminal degree awardees as well). It is possible, too, that COVID-19 affected volunteerism for the time period considered in the survey. See Table D-25, Table D-26, Figure D-10 and Table D-27 for additional details.

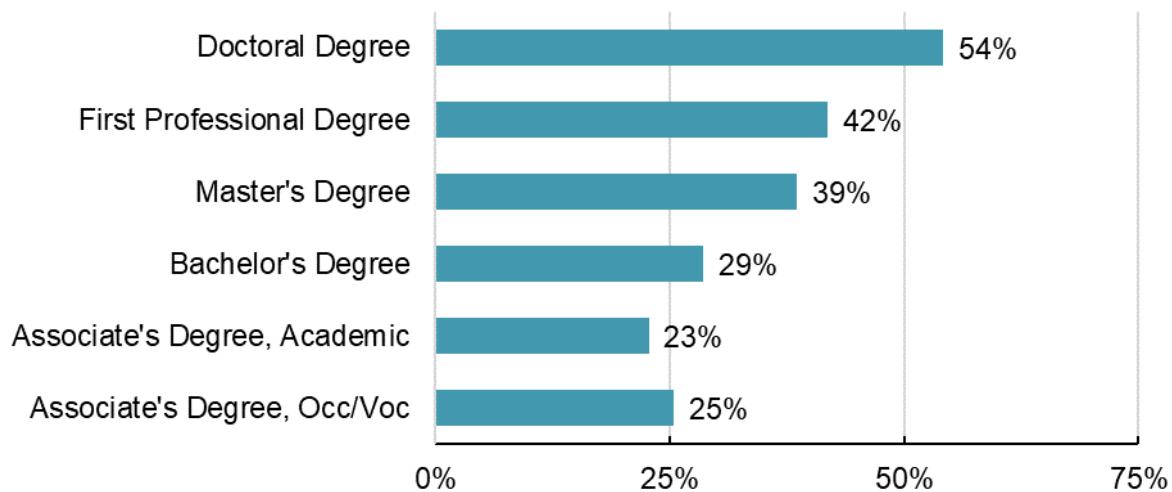
**Table D-19: Select CPS Community Engagement Indicators by Highest Education Attainment, Virginia September 2019:
Belonging to Groups, Organizations, or Associations**

Indicator	High School Diploma or GED	Some College, No Degree	Associate Degree, Occ/Voc	Associate Degree, Academic Program	Bachelor's Degree	Master's Degree	First Profess. Degree	Doctoral Degree
In the past 12 months did you belong to any groups, organizations, or associations?	Yes: 25.4% 431,313	Yes: 25.1% 236,840	Yes: 18.5% 51,131	Yes: 34.3% 113,674	Yes: 37.4% 522,532	Yes: 42.1% 335,830	Yes: 57.3% 39,556	Yes: 61.3% 68,015
Total Yes = 1,798,891	No: 74.6% 1,265,761	No: 74.9% 705,845	No: 81.5% 225,594	No: 65.7% 217,566	No: 62.6% 874,733	No: 57.9% 461,282	No: 42.7% 29,478	No: 38.7% 42,897
Total No = 3,823,156								
Total by Education Level N = 5,622,047	1,697,074	942,685	276,725	331,240	1,397,265	797,112	69,034	110,912

Source: U.S. Census Bureau. (2019, September). *CPS volunteering and civic life supplement* (201909) [Data set]. <https://data.census.gov/mdat/#/>

Note: Counts/percentages exclude no answer, refused, don't know, not in universe, and lesser education conditions. Supplement weight applied.

Figure D-5: Percent of Virginia Educated Respondents who Self-Reported Belonging to any Non-Profit, Civic, Tax-Exempt, or Charitable Organizations in the Past 12 months



Note: Data are weighted.

Table D-20: Select CPS Community Engagement Indicators by Highest Education Attainment, Virginia September 2019: Attending Public Meetings

Indicator	High School Diploma or GED	Some College, No Degree	Associate Degree, Occ/Voc	Associate Degree, Academic Program	Bachelor's Degree	Master's Degree	First Profess. Degree	Doctoral Degree
In the past 12 months, did you attend a public meeting, such as a zoning or school board meeting, to discuss a local issue?	Yes: 4.4% 74,143	Yes: 8.2% 77,338	Yes: 2.0% 5,542	Yes: 7.4% 25,478	Yes: 9.9% 138,871	Yes: 26.7% 214,705	Yes: 6.9% 4,733	Yes: 8.6% 10,093
Total Yes = 550,903	No: 95.6% 1,622,930	No: 91.8% 867,122	No: 98.0% 275,497	No: 92.6% 317,769	No: 90.1% 1,265,682	No: 73.3% 588,931	No: 93.1% 64,301	No: 91.4% 106,616
Total by Education Level N = 5,659,751	1,697,073	944,460	281,039	343,247	1,404,553	803,636	69,034	116,709

Source: U.S. Census Bureau. (2019, September). *CPS volunteering and civic life supplement* (201909) [Data set]. <https://data.census.gov/mdat/#/>

Note: Counts/percentages exclude no answer, refused, don't know, not in universe, and lesser education conditions. Supplement weight applied.

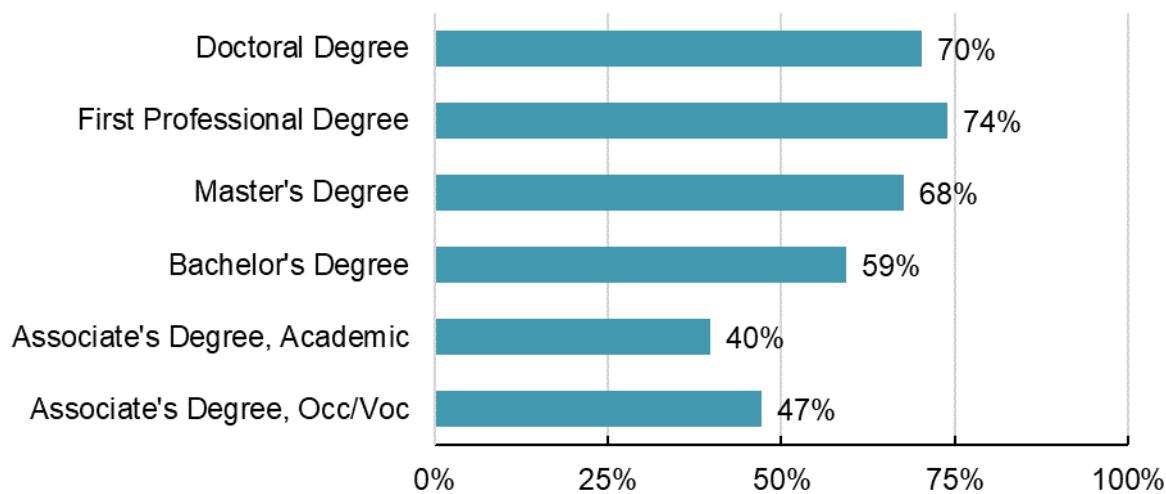
**Table D-21: Select CPS Community Engagement Indicators by Highest Education Attainment, Virginia September 2019:
Buying or Boycotting Products or Services**

Indicator	High School Diploma or GED	Some College, No Degree	Associate Degree, Occ/Voc	Associate Degree, Academic Program	Bachelor's Degree	Master's Degree	First Profess. Degree	Doctoral Degree
In the past 12 months, did you buy or boycott products or services based on the political values or business practices of that company?	Yes: 9.2% 156,588	Yes: 11.2% 106,079	Yes: 24.3% 68,314	Yes: 17.6% 59,413	Yes: 17.2% 241,274	Yes: 29.4% 234,164	Yes: 39.1% 26,995	Yes: 31.5% 36,772
Total Yes = 929,599	No: 90.8% 1,540,486	No: 88.8% 838,381	No: 75.7% 212,724	No: 82.4% 278,187	No: 82.8% 1,159,190	No: 70.6% 561,814	No: 60.9% 42,039	No: 68.5% 79,936
Total by Education Level N = 5,642,356	1,697,074	944,460	281,038	337,600	1,400,464	795,978	69,034	116,708

Source: U.S. Census Bureau. (2019, September). *CPS volunteering and civic life supplement* (201909) [Data set]. <https://data.census.gov/mdat/#/>

Note: Counts/percentages exclude no answer, refused, don't know, not in universe, and lesser education conditions. Supplement weight applied.

Figure D-6: Percent of Virginia Educated Respondents who Self-Reported Attending Community Meetings, Rallies, Protests, or other Demonstrations or Supporting/Avoiding a Business for Political/Social Reasons Since Completing their Undergraduate Education



Note: Data are weighted.

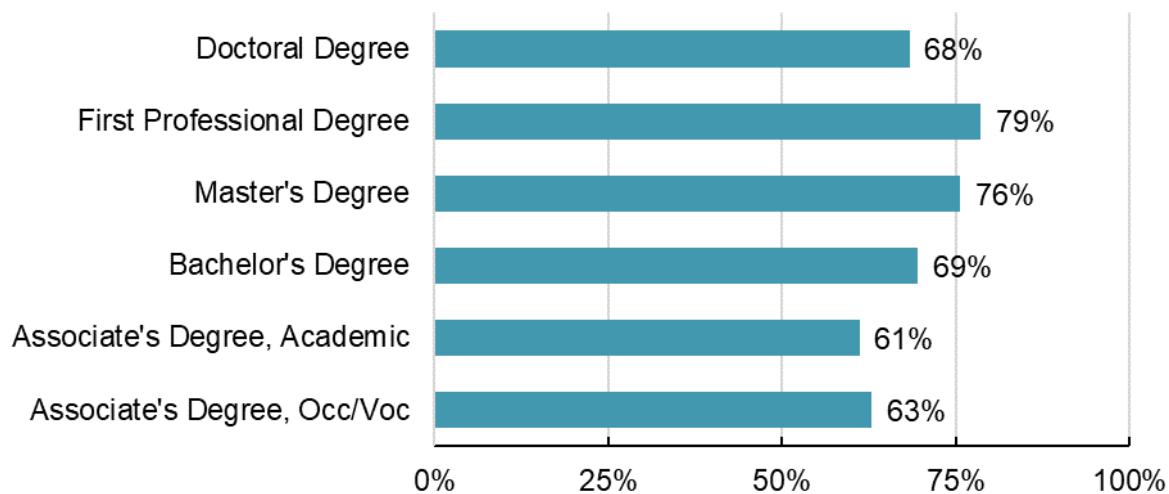
**Table D-22: Select CPS Community Engagement Indicators by Highest Education Attainment, Virginia September 2019:
Voting in Last Local Election**

Indicator	High School Diploma or GED	Some College, No Degree	Associate Degree, Occ/Voc	Associate Degree, Academic Program	Bachelor's Degree	Master's Degree	First Profess. Degree	Doctoral Degree
In the past 12 months, did you vote in the last local election, such as for mayor or school board?	Yes: 41.6% 706,492	Yes: 46.6% 438,009	Yes: 43.6% 118,667	Yes: 61.0% 195,600	Yes: 56.3% 787,575	Yes: 67.2% 529,161	Yes: 71.1% 49,100	Yes: 52.8% 61,630
<i>Total Yes = 2,886,234</i>	No: 52.2% 886,293	No: 51.0% 479,209	No: 56.4% 153,458	No: 39.0% 124,936	No: 41.2% 576,296	No: 32.8% 258,081	No: 28.9% 19,934	No: 42.0% 49,043
<i>Total Not Eligible to Vote = 166,334</i>	Not eligible: 6.1% 103,628	Not eligible: 2.4% 22,380	Not eligible: --	Not eligible: --	Not eligible: 2.5% 34,291	Not eligible: --	Not eligible: --	Not eligible: 5.2% 6,035
<i>Total by Education Level N = 5,599,818</i>	1,696,413	939,598	272,125	320,536	1,398,162	787,242	69,034	116,708

Source: U.S. Census Bureau. (2019, September). *CPS volunteering and civic life supplement* (201909) [Data set]. <https://data.census.gov/mdat/#/>

Note: Counts/percentages exclude no answer, refused, don't know, not in universe, and lesser education conditions. Supplement weight applied.

Figure D-7: Percent of Virginia Educated Respondents who Self-Reported Voting in the Most Recent Local Elections Since Completing their Undergraduate Education



Note: Data are weighted.

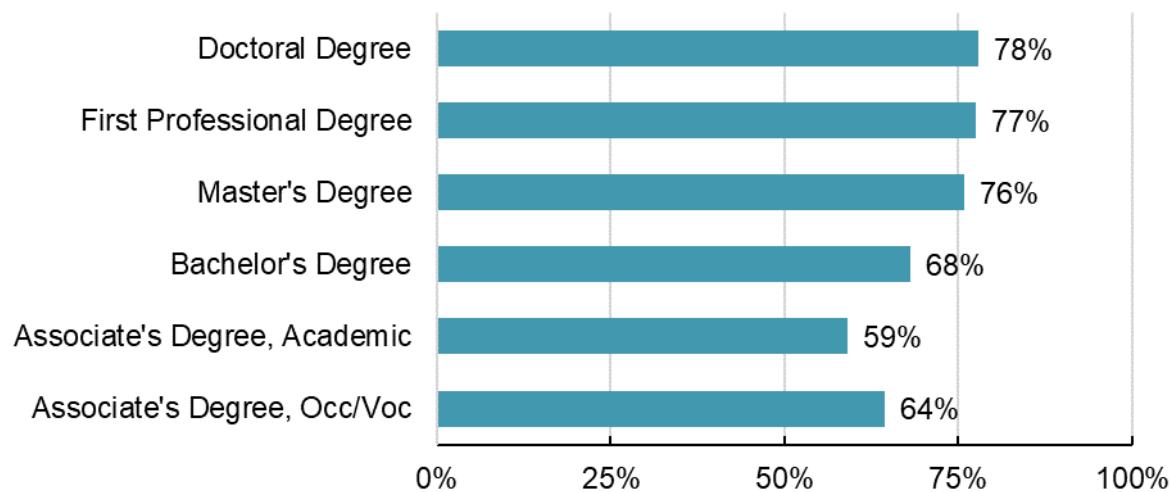
**Table D-23: Select CPS Community Engagement Indicators by Highest Education Attainment, Virginia September 2019:
Donations to Non-Political Groups or Organizations**

Indicator	High School Diploma or GED	Some College, No Degree	Associate Degree, Occ/Voc	Associate Degree, Academic Program	Bachelor's Degree	Master's Degree	First Profess. Degree	Doctoral Degree
In the past 12 months, did you give money or possessions with a combined value of more than \$25 to a non-political group or organization, such as a charity, school, or religious organization?	Yes: 46.9% 788,817	Yes: 50.0% 475,970	Yes: 31.1% 87,442	Yes: 56.9% 195,314	Yes: 73.6% 1,052,905	Yes: 81.8% 672,894	Yes: 59.6% 41,153	Yes: 80.6% 94,089
	No: 53.1% 892,671	No: 50.0% 475,166	No: 68.9% 193,596	No: 43.1% 147,933	No: 26.4% 377,738	No: 18.2% 149,499	No: 40.4% 27,881	No: 19.4% 22,619
	1,681,488	951,136	281,038	343,247	1,430,643	822,393	69,034	116,708
<i>Total Yes = 3,408,584 Total No = 2,287,103 Total by Education Level N = 5,695,687</i>								

Source: U.S. Census Bureau. (2019, September). *CPS volunteering and civic life supplement* (201909) [Data set]. <https://data.census.gov/mdat/#/>

Note: Counts/percentages exclude no answer, refused, don't know, not in universe, and lesser education conditions. Supplement weight applied.

Figure D-8: Percent of Virginia Educated Respondents who Self-Reported Making any Monetary or In-Kind Donations to any Non-Profit, Civic, Tax-Exempt, or Charitable Organizations in the Past 12 Months



Note: Data are weighted.

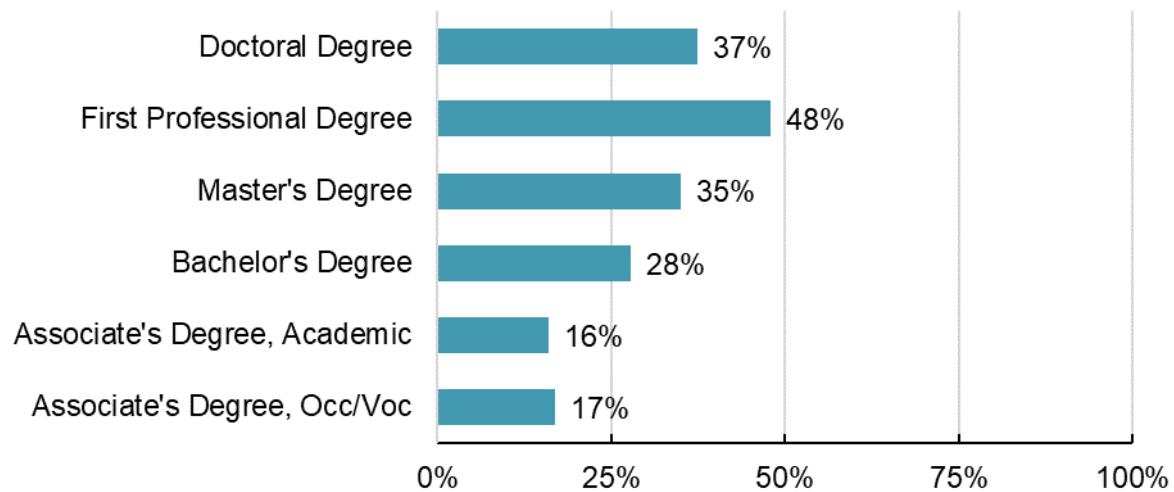
Table D-24: Select CPS Community Engagement Indicators by Highest Education Attainment, Virginia September 2019: Donations to Political Organizations, Parties, or Campaigns

Indicator	High School Diploma or GED	Some College, No Degree	Associate Degree, Occ/Voc	Associate Degree, Academic Program	Bachelor's Degree	Master's Degree	First Profess. Degree	Doctoral Degree
In the past 12 months, did you give money or possessions with a combined value of more than \$25 to a political organization, party, or campaign?	Yes: 6.5% 109,994	Yes: 7.0% 65,491	Yes: 4.7% 13,076	Yes: 5.1% 17,208	Yes: 13.0% 183,711	Yes: 16.5% 134,533	Yes: 13.5% 9,333	Yes 18.1% 21,158
	No: 93.5% 1,575,624	No: 93.0% 875,152	No: 95.3% 267,962	No: 94.9% 320,392	No: 87.0% 1,230,848	No: 83.5% 681,343	No: 86.5% 59,701	No: 81.9% 95,551
	<i>Total Yes = 554,504</i> <i>Total No = 5,106,573</i>							
Total by Education Level N = 5,661,077	1,685,618	940,643	281,038	337,600	1,414,559	815,876	69,034	116,709

Source: U.S. Census Bureau. (2019, September). *CPS volunteering and civic life supplement* (201909) [Data set]. <https://data.census.gov/mdat/#/>

Note: Counts/percentages exclude no answer, refused, don't know, not in universe, and lesser education conditions. Supplement weight applied.

Figure D-9: Percent of Virginia Educated Respondents who Self-Reported Donating Money to – or Volunteering for – a Political Candidate, Campaign, or Advocacy Organization Since Completing their Undergraduate Education



Note: Data are weighted.

**Table D-25: Select CPS Community Engagement Indicators by Highest Education Attainment, Virginia September 2019:
Volunteering Status**

Indicator	High School Diploma or GED	Some College, No Degree	Associate Degree, Occ/Voc	Associate Degree, Academic Program	Bachelor's Degree	Master's Degree	First Profess. Degree	Doctoral Degree
In the past 12 months, did you spend any time volunteering for any organization or association?	Yes: 23.7% 400,839	Yes: 21.9% 208,204	Yes: 17.0% 46,972	Yes: 36.6% 126,556	Yes: 47.9% 688,322	Yes: 51.5% 417,451	Yes: 57.3% 39,556	Yes: 49.0% 57,178
Total Yes = 1,985,078 Total No = 3,712,900	No: 76.3% 1,292,023	No: 78.1% 742,933	No: 83.0% 229,753	No: 63.4% 218,779	No: 52.1% 747,626	No: 48.5% 392,777	No: 42.7% 29,478	No: 51.0% 59,531
Total by Education Level N = 5,697,978	1,692,862	951,137	276,725	345,335	1,435,948	810,228	69,034	116,709

Source: U.S. Census Bureau. (2019, September). *CPS volunteering and civic life supplement* (201909) [Data set]. <https://data.census.gov/mdat/#/>

Note: Counts/percentages exclude no answer, refused, don't know, not in universe, and lesser education conditions. Supplement weight applied.

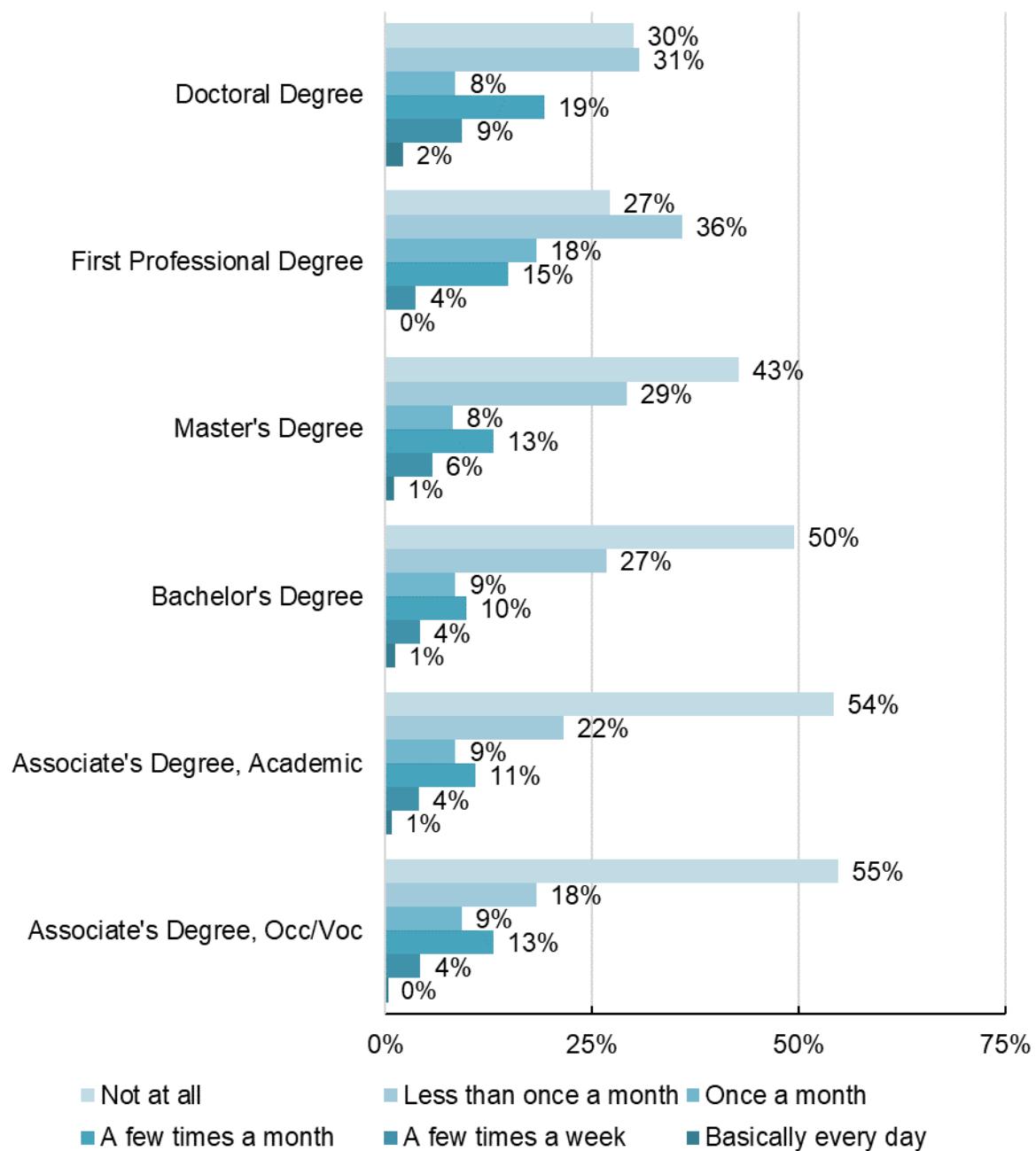
Table D-26: Select CPS Community Engagement Indicators by Highest Education Attainment, Virginia September 2019: Volunteering Frequency

Indicator	High School Diploma or GED	Some College, No Degree	Associate Degree, Occ/Voc	Assoc Degree, Academic Program	Bachelor's Degree	Master's Degree	First Profess. Degree	Doctoral Degree
In the past 12 months, how often did you volunteer?								
...basically every day	1.6% 7,057	--	--	--	2.1% 15,472	1.3% 5,875	--	--
Freq Total N = 28,404								
...a few times a week	22.0% 98,778	14.5% 34,598	17.2% 8,763	3.1% 5,353	14.5% 106,612	8.0% 37,169	--	7.5% 4,278
Freq Total N = 295,551								
...a few times a month	31.2% 139,911	29.4% 70,048	12.7% 6,464	42.7% 73,094	23.7% 173,917	29.0% 134,268	78.5% 39,309	28.8% 16,480
Freq Total N = 653,491								
...once a month	16.9% 75,660	17.3% 41,195	36.7% 18,757	23.3% 39,937	27.7% 203,129	25.4% 117,701	11.5% 5,738	55.7% 31,841
Freq Total N = 533,958								
...less than once a month	27.2% 122,101	38.8% 92,304	33.5% 17,094	27.4% 46,948	30.8% 225,568	36.2% 167,623	10.0% 5,009	8.0% 4,579
Freq Total N = 681,226								
...not at all	1.2% 5,369	--	--	3.4% 5,854	1.1% 8,100	--	--	--
Freq Total N = 19,323								
Total by Education Level N = 2,211,953	448,876	238,145	51,078	171,186	732,798	462,636	50,056	57,178

Source: U.S. Census Bureau. (2019, September). *CPS volunteering and civic life supplement* (201909) [Data set]. <https://data.census.gov/mdat/#/>

Note: Counts/percentages exclude no answer, refused, don't know, and not in universe conditions. Supplement weight applied.

Figure D-10: Virginia Educated Respondents' Self-Reported Community Volunteering Frequency, Past 12 Months



Note: Data are weighted.

**Table D-27: Select CPS Community Engagement Indicators by Highest Education Attainment, Virginia September 2019:
Doing Something Positive in Neighborhood or Community**

Indicator	High School Diploma or GED	Some College, No Degree	Associate Degree, Occ/Voc	Associate Degree, Academic Program	Bachelor's Degree	Master's Degree	First Profess. Degree	Doctoral Degree
In the past 12 months, did you get together with other people from your neighborhood to do something positive for your neighborhood or the community?	Yes: 16.7% 284,420	Yes: 13.6% 127,140	Yes: 8.1% 22,892	Yes: 20.6% 70,795	Yes: 28.1% 399,548	Yes: 34.2% 276,689	Yes: 29.1% 20,079	Yes: 41.7% 48,658
	No: 83.3% 1,420,425	No: 86.4% 811,056	No: 91.9% 258,146	No: 79.4% 272,452	No: 71.9% 1,022,171	No: 65.8% 533,465	No: 70.9% 48,954	No: 58.3% 68,051
	<i>Total Yes = 1,250,221</i> <i>Total No = 4,434,720</i>							
Total by Education Level N = 5,684,941	1,704,845	938,196	281,038	343,247	1,421,719	810,154	69,033	116,709

Source: U.S. Census Bureau. (2019, September). *CPS volunteering and civic life supplement* (201909) [Data set]. <https://data.census.gov/mdat/#/>

Note: Counts/percentages exclude no answer, refused, don't know, not in universe, and lesser education conditions. Supplement weight applied.

Higher education: Health impacts

There is significant research literature about the positive relationship between educational attainment and health. This is commonly referred to as the education-health gradient – those who are more educated report higher levels on a variety of health measurements (Trostel, 2015).

These positive outcomes for educational attainment persist for a multitude of health indicators, such as self-reported perceptions of overall health, smoking, and mortality rates (Furnée et al., 2008; Rosenbaum, 2012; Woolf, et al., 2007). According to the 2014 Gallup, Inc. and Purdue University Index, 35 percent of college graduates strongly agree that their physical health is near-perfect and that they felt productive and active every day in the preceding week.

Furnée and colleagues (2008) conducted two meta-analyses on 40 total studies and found a strong link between education and self-reported overall health. In the *2013 March Social and Economic Supplement* of the CPS, 73 percent of individuals with bachelor's degrees but not advanced degrees report their health to be very good or excellent – only 50.5 percent of high school graduates without college answered similarly (Trostel, 2015). Further supporting the education-health gradient, data on high school, sub-baccalaureate, and baccalaureate graduates from the *National Longitudinal Study of Adolescent to Adult Health* indicate that individuals with a baccalaureate degree are significantly less likely to self-report obesity, depression, and daily smoking than those with sub-baccalaureate degrees (Rosenbaum, 2012). Based on this data, there is a less pronounced difference between high school graduates and those whose highest degree is sub-baccalaureate, but the latter is more likely to report daily smoking than the former. Even when controlling for various factors related to selection into college, college graduates exhibit healthier behaviors than their less-educated peers (Lawrence, 2017).

Research also indicates that there is a strong association between educational attainment and smoking behaviors (Assari & Mistry, 2018; Green et al., 2007). Based on data from the 2003 *Tobacco Use Supplement* (TUS) of the CPS, individuals who either are enrolled in college or have completed a college degree are half as likely to report smoking as non-college-educated adults – those with no college education report a smoking prevalence of 14 percent compared to 30 percent for those who are college-educated. Similarly, only 10 percent of U.S. college graduates report smoking on the 2011-17 NSDUH whereas non-graduates report smoking at a rate of 26 percent (Coleman et al., 2019). In addition to a lower prevalence of smoking in general, college graduates are also lighter smokers than non-graduates based on average cigarettes per day and the number of days smoked in the past 30 days.

Lastly, higher educational attainment has been linked to lower mortality risk in prior research (Trostel, 2015). Using mortality data reported by the National Center for Health Statistics (NCHS), Woolf and colleagues (2007) estimate that, between the years 1996 and 2002, an average of 195,619 deaths could have been avoided annually if mortality rates among non-college-educated individuals were the same as those who are college-educated. Further empirical

evidence of this relationship between higher educational attainment and lower mortality risk can be found in Everett et al. (2013), Masters et al. (2012), and Meara et al. (2008).

In summary, research points to a positive connection between educational attainment and health outcomes, like self-reported perceptions of physical health, mental health, and smoking. Some data point to a lower overall mortality risk associated with higher education.

Education attainment and health behaviors: National tobacco and alcohol use metrics

It is advantageous to look at data from the NSDUH to get a sense of alcohol- and tobacco-related behaviors across the broader population. Functioning under the authority of the Substance Abuse and Mental Health Services Administration's Center for Behavioral Health Statistics and Quality (SAMHSA CBHSQ), the NSDUH is a study that has been conducted since 1971 (SAMHSA and RTI International, n.d.). Through annual interviews of approximately 70,000 persons aged 12 and older, NSDUH collects information on the use of alcohol, tobacco, and other drugs. It also gathers data about perceived risk of substance use, the presence of mental illness, as well as receipt of treatment for substance abuse, mental health, or co-occurring concerns.

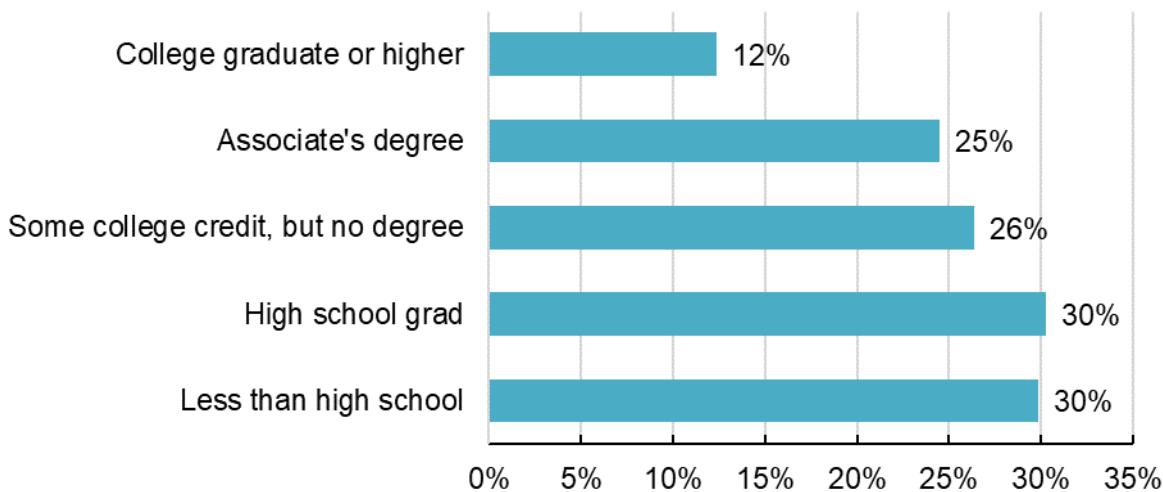
(Note: NSDUH data is provided for less than high school education to college graduate/higher; because numerous *Virginia Educated* respondents pursued supplemental education, survey data by highest degree attained/in progress are similarly reported. NSDUH and *Virginia Educated* data reflect the application of weights.)

Although state-level data is not available by education attainment, the 2019 NSDUH suggests that, across the nation, past 30-day tobacco use declined as education level increased – for instance, 30 percent of persons with less than a high school education and 30 percent of those with a high school education reported using tobacco in the preceding month (Substance Abuse and Mental Health Data Archive; SAMHDA, accessed August 2021). This compares to 26 percent of some college credit/no degree respondents, 25 percent of associate degree holders, and 12 percent of college or higher graduates. When examining *Virginia Educated* results, the same pattern appears – 22 percent of some college/no degree participants (i.e., certificates/awards of less than two years) reported using tobacco in the past 30 days, whereas 16 percent of associate degree graduates and 11 percent of bachelor's degree or higher graduates did so. See Figure D-11 and Figure D-12 for more information.

A different trend emerged nationally regarding past 30-day alcohol consumption. According to the 2019 NSDUH (SAMHDA, accessed August 2021), a larger percentage of college/higher graduates (66 percent) reported using alcohol in the month prior, relative to associate degree holders (61 percent), persons with some college/no degree (57 percent), high school (46 percent), and less than a high school education (34 percent). The same tendency can be observed with *Virginia Educated* data: 78 percent of bachelor's degree or higher graduates indicated past 30-day alcohol consumption, relative to 63 percent of associate degree recipients and 59 percent of

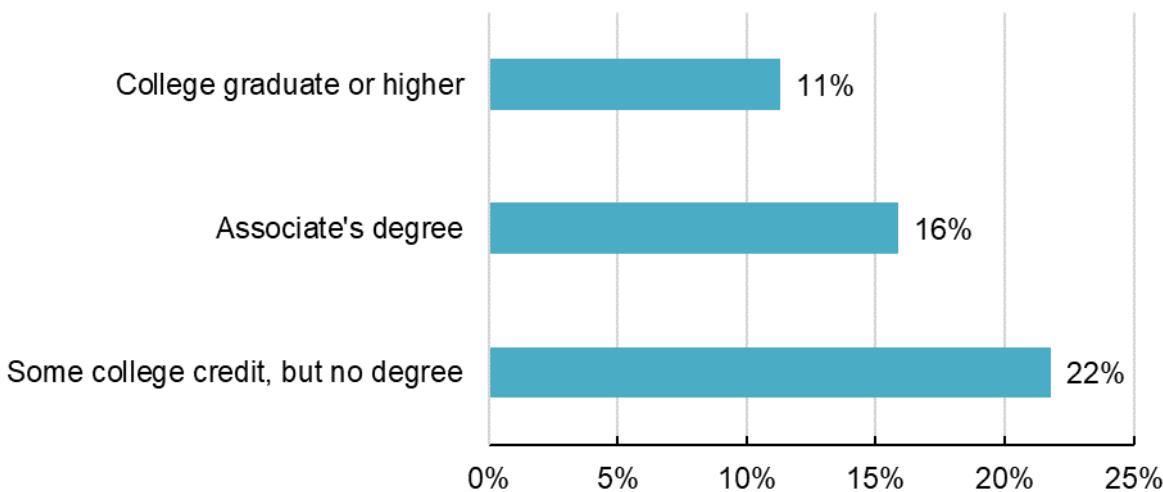
individuals with some college credit but no degree (i.e., certificates/awards of less than two years). See Figure D-13 and Figure D-14 for reference.

Figure D-11: Select NSDUH Indicators by Highest Education Attainment, National 2019: Self-Reported Tobacco Use in the Past 30 Days



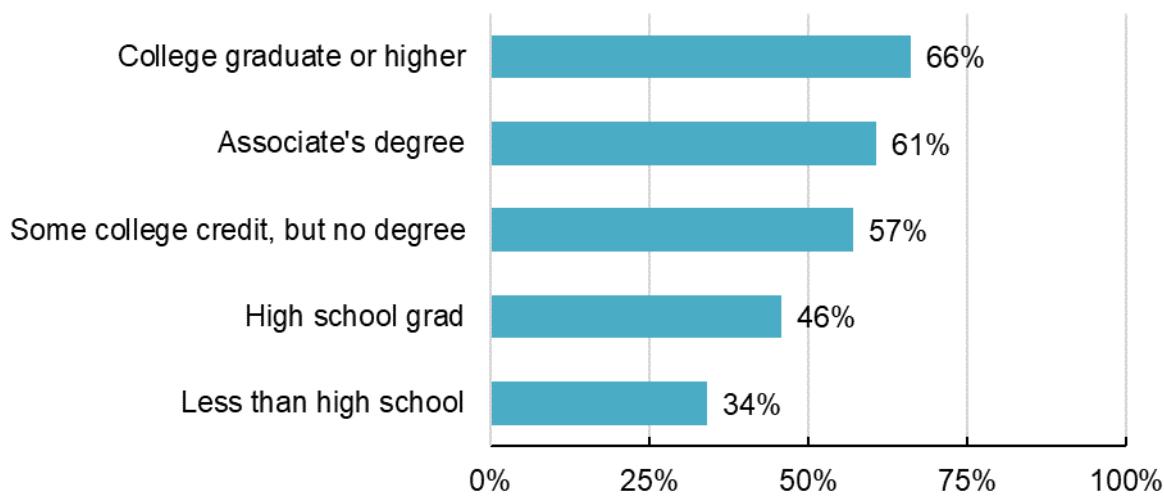
Source: Substance Abuse and Mental Health Data Archive. (n.d.) *National survey on drug use and health, 2019* [Data set]. U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration. Accessed August 2021. <https://pdas.samhsa.gov/#/survey/NSDUH-2019-DS0001> Note: Data are weighted.

Figure D-12: Percent of Virginia Educated Respondents Who Self-Reported Tobacco Use in the Past 30 Days



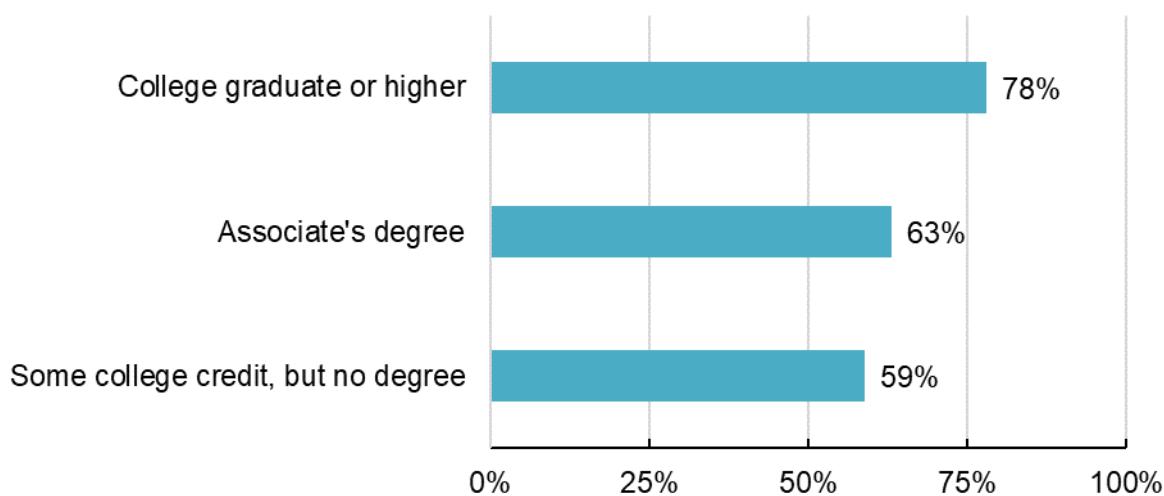
Note: Some college credit/no degree refers to certificates/awards of less than two years. Data are weighted.

**Figure D-13: Select NSDUH Indicators by Highest Education Attainment, National 2019:
Self-Reported Alcohol Use in the Past 30 Days**



Source: Substance Abuse and Mental Health Data Archive. (n.d.) *National survey on drug use and health, 2019* [Data set]. U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration. Accessed August 2021. <https://pdas.samhsa.gov/#/survey/NSDUH-2019-DS0001> Note: Data are weighted.

Figure D-14: Percent of Virginia Educated Respondents who Self-Reported Alcohol Use in the Past 30 Days



Note: Some college credit/no degree refers to certificates/awards of less than two years. Data are weighted.

Education attainment and other health behaviors: Virginia metrics

To further situate *Virginia Educated*'s findings, it is similarly useful to consider data derived from the Centers for Disease Control and Prevention's BRFSS. BRFSS has a nationwide reach, and it collects state-level information on health behaviors, health status, and healthcare usage (National Center for Chronic Disease Prevention and Health Promotion, 2017). Usually conducted by telephone, BRFSS helps shape an understanding of factors that influence premature illness and death. More than 400,000 BRFSS interviews with adult residents of all 50 states, Washington, D.C., Puerto Rico, the U.S. Virgin Islands, and U.S. territories are completed each year. This makes BRFSS the largest ongoing health survey in the world (National Center for Chronic Disease Prevention and Health Promotion, 2014).

(Note: for the purposes of reading data, BRFSS educational categories are: (a) did not graduate high school, (b) graduated high school, (c) attended college or technical school, and (d) graduated from college or technical school [National Center for Chronic Disease Prevention and Health Promotion, 2020] Data are reported by crude prevalence and are not age-adjusted.)

Although some of the differences in the samples are small, BRFSS data (National Center for Chronic Disease Prevention and Health Promotion, accessed July 2021) suggest that college graduates living in Virginia in 2019 were less likely than less-educated residents to have histories of chronic health conditions like arthritis, asthma, coronary heart disease/myocardial infarction, depression, diabetes, and high blood pressure. They also appeared to consume more fruits and vegetables each day, and they more often met weekly benchmarks for aerobic and strength-related exercises. They were more often considered normal weight per Body Mass Index measures (BMI; between 18.5-24.9). Conversely, they were less often characterized as obese (BMI of 30.0-99.8).

In summary, the BRFSS health survey suggests that, in 2019, lower percentages of college graduates living in Virginia experienced certain types of chronic diseases than residents with less education. They hit exercise benchmarks comparatively more often, and a larger share of college-educated 18-64-year-olds had healthcare coverage. They were less likely to smoke, and they were more inclined to rate their general health as excellent or very good. A larger percentage also reported zero days of poor physical or mental health relative to Virginians with less education.

Earlier BRFSS data shows that college graduates in Virginia tended to use preventative health services more so than peers with some post-high school, high school/GED, or less than high school education.

College graduates living in Virginia did not do distinctly better – and in fact may have fared slightly worse – on some measures of alcohol usage.

Other BRFSS findings stand out. In 2019, college degree holders in Virginia ages 18-64 tended to have access to healthcare coverage more so than persons with some post-high school, high school/GED, or less than high school education (National Center for Chronic Disease Prevention and Health Promotion, accessed July 2021). A larger percentage also reported having at least one person as their personal doctor or healthcare provider. In addition, a smaller share said they needed to see a doctor in the past 12 months but could not do so because of cost.

BRFSS likewise reveals that, in 2019, relatively more college graduates residing in the Commonwealth had had their cholesterol checked within the past five years (National Center for Chronic Disease Prevention and Health Promotion, accessed July 2021). In 2018, college graduates in Virginia ages 50-75 were more likely to have received a colonoscopy in the preceding 10 years. In 2018 as well, a larger percentage of college-educated women over age 40 reported having had a mammogram within the past two years. This pattern also held for women ages 21-65 getting a pap test in the three years immediately prior. Similarly, a greater share of college-educated men in the state – aged at least 40 – had had a prostate-specific antigen test in the preceding two years. Further, comparatively more college graduates in Virginia in 2018 reported visiting a dentist/dental clinic – for any reason – in the past year.

When considering other behaviors, in 2019, a much smaller percentage of college degree recipients living in Virginia were classified as current smokers than residents with less education (National Center for Chronic Disease Prevention and Health Promotion, accessed July 2021). They were far more likely to have never smoked, too, and in 2017, they were much more likely to have never used e-cigarettes. In 2018 they more often reported always/nearly always wearing a seatbelt.

Regarding physical and mental health, BRFSS also demonstrates some divergence. In the Commonwealth in 2019, college graduates more often had zero days when their physical health was not good. The same pattern was true for mental health days, though it was less substantial. Virginians with college degrees were also more inclined to rate their overall health as excellent or very good relative to Virginians with lesser education.

It is important to mention that not all BRFSS findings point to favorable differentials. For instance, college degree holders residing in Virginia in 2019 were not less likely than other residents to be binge drinkers; in fact, they were classified as binge drinkers slightly more so, on a percentage basis, than less-educated persons (National Center for Chronic Disease Prevention and Health Promotion, accessed July 2021). The percentage *not* meeting the criteria for heavy drinking was not as distinct, either.

See Table D-28 through Table D-30 for more details.

Table D-28: Select BRFSS Health Indicators by Education Attainment, Virginia 2019

Indicator	Less than High School	High School or GED	Some Post-High School	College Graduate
Adults who have been told they have arthritis	35.9% (n = 313)	25.7% (n = 822)	28.0% (n = 961)	22.0% (n = 1,248)
Adults who have ever been told they have asthma	13.9% (n = 108)	15.9% (n = 344)	15.0% (n = 410)	12.3% (n = 533)
Respondents who have ever reported having coronary heart disease or myocardial infarction	9.8% (n = 98)	6.8% (n = 221)	4.8% (n = 205)	4.2% (n = 283)
Ever been told that you have a form of depression	17.4% (n = 135)	18.3% (n = 436)	19.7% (n = 563)	13.8% (n = 654)
Ever been told by a doctor that you have diabetes	15.9% (n = 144)	12.9% (n = 418)	11.3% (n = 396)	7.5% (n = 435)
Adults who have been told they have high blood pressure	42.3% (n = 369)	38.1% (n = 1,106)	31.4% (n = 1,092)	29.1% (n = 1,589)
Consumed fruit one or more times per day	59.7% (n = 329)	54.8% (n = 1,094)	62.4% (n = 1,445)	66.5% (n = 2,625)
Consumed vegetables one or more times per day	66.5% (n = 366)	75.4% (n = 1,482)	84.2% (n = 1,953)	89.1% (n = 3,389)
Participated in 150 minutes or more of aerobic physical activity per week	32.0% (n = 174)	42.3% (n = 840)	51.2% (n = 1,173)	57.7% (n = 2,325)
Participated in muscle-strengthening exercises two or more times per week	23.9% (n = 144)	33.3% (n = 606)	36.5% (n = 811)	40.5% (n = 1,549)
Weight classification, normal (BMI = 18.5-24.9)	23.6% (n = 138)	29.4% (n = 577)	31.0% (n = 683)	37.5% (n = 1,321)
Weight classification, obese (BMI = 30.0-99.8)	43.4% (n = 244)	33.7% (n = 762)	33.7% (n = 838)	26.1% (n = 1,074)

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. *BRFSS Prevalence and Trends Data* [Data set]. Accessed July 2021. <https://www.cdc.gov/brfss/brfssprevalence/index.html> Note: Figures are reported by crude prevalence. BRFSS educational categories are: (a) did not graduate high school, (b) graduated high school, (c) attended college or technical school, and (d) graduated from college or technical school.

Table D-29: Select BRFSS Health Indicators by Education Attainment, Virginia 2019 and 2018

Indicator	Less than High School	High School or GED	Some Post-High School	College Graduate
Adults ages 18-64 who have any kind of healthcare coverage	56.2% (n = 245)	83.7% (n = 1,261)	90.2% (n = 1,498)	95.7% (n = 2,558)
One person thought of as your personal doctor or healthcare provider	59.1% (n = 445)	64.2% (n = 1,611)	72.6% (n = 1,957)	75.8% (3,327)
In the past 12 months, needed to see a doctor but could not because of cost	23.6% (n = 159)	15.3% (n = 314)	11.6% (n = 296)	6.4% (n = 264)
Adults who have had their blood cholesterol checked within the past five years	83.9% (n = 582)	85.5% (n = 1,928)	88.6% (n = 2,244)	93.4% (n = 3,896)
Age 50-75 had a colonoscopy in the past 10 years (2018)	50% (n = 193)	63.9% (n = 775)	68.4% (n = 871)	72.2% (n = 1,568)
Women aged 40+ who have had a mammogram within the past 2 years (2018)	70.8% (n = 204)	72.8% (n = 739)	76.5% (n = 849)	80.0% (n = 1,462)
Women aged 21-65 who have had a pap test in the past 3 years (2018)	70.2% (n = 83)	80.7% (n = 414)	82.3% (n = 574)	89.2% (n = 1,242)
Men aged 40+ who have had a prostate-specific antigen test within the past 2 years (2018)	23.9% (n = 71)	27.5% (n = 228)	33.5% (n = 263)	41.9% (n = 644)
Visited the dentist or dental clinic within the past year for any reason (2018)	45.9% (n = 306)	65.6% (n = 1,546)	72.2% (n = 1,860)	83.8% (n = 3,671)
Alcohol – binge drinkers (males having 5 or more drinks on one occasion; females having 4 or more drinks on one occasion)	11.5% (n = 61)	15.2% (n = 257)	16.0% (n = 305)	16.1% (n = 518)
Alcohol – do NOT meet criteria for heavy drinking (adult men having more than 14 drinks per week; adult women having more than 7 drinks per week)	95.3% (n = 609)	94.0% (n = 2,020)	93.4% (n = 2,321)	95.1% (n = 3,842)
Tobacco – adults who are current smokers	24.0% (n = 168)	19.4% (n = 453)	15.7% (n = 417)	5.9% (n = 250)
Tobacco – smoker status: never smoked	53.5% (n = 312)	56.8% (n = 1,147)	58.2% (n = 1,352)	73.8% (n = 2,801)

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. *BRFSS Prevalence and Trends Data* [Data set].

Accessed July 2021. <https://www.cdc.gov/brfss/brfssprevalence/index.html> Note: Figures are reported by crude prevalence. BRFSS educational categories are: (a) did not graduate high school, (b) graduated high school, (c) attended college or technical school, and (d) graduated from college or technical school.

Table D-30: Select BRFSS Health Indicators by Education Attainment, Virginia 2019 and 2017

Indicator	Less than High School	High School or GED	Some Post-High School	College Graduate
E-cigarette status: never used e-cigarettes (2017)	78.6% (n = 519)	72.0% (n = 1,748)	76.5% (n = 1,929)	87.2% (n = 3,668)
Always/nearly always wears seatbelt (2018)	87.6% (n = 663)	92.1% (n = 2,205)	93.9% (n = 2,382)	97.6% (n = 4,146)
Healthy days – zero days when physical health was NOT good	55.6% (n = 342)	60.6% (n = 1,320)	62.4% (n = 1,533)	69.0% (n = 2,807)
Healthy days – zero days when mental health was NOT good	66.0% (n = 430)	62.7% (n = 1,479)	60.4% (n = 1,637)	66.6% (n = 2,900)
General health – rated excellent	11.2% (n = 58)	14.3% (n = 269)	16.8% (n = 368)	24.4% (n = 949)
General health – rated very good	17.2% (n = 105)	30.1% (n = 663)	37.4% (n = 876)	40.2% (n = 1,707)

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. *BRFSS Prevalence and Trends Data* [Data set].

Accessed July 2021. <https://www.cdc.gov/brfss/brfssprevalence/index.html> Note: Figures are reported by crude prevalence. BRFSS educational categories are: (a) did not graduate high school, (b) graduated high school, (c) attended college or technical school, and (d) graduated from college or technical school.

Higher education: Recent public opinion

Several years removed from the global financial strain of 2007-09, Americans have a generally favorable view of higher education. According to *Varying Degrees: New America's Third Annual Survey of Higher Education* (Fishman et al., 2019), most respondents (90 percent) look approvingly upon postsecondary learning for the economic empowerment it facilitates. They largely and consistently believe that having a technical degree or certificate (74 percent), an associate degree (72 percent), or a bachelor's degree (87 percent) leads to higher earnings as compared those whose education does not progress beyond high school. A similar positive pattern exists regarding job searches – a majority think that technical degree or certificate awardees (88 percent), associate degree recipients (81 percent), and bachelor's degree holders (91 percent) have a less challenging time finding jobs with decent wages and reasonable security. Participants across the degree spectrum nearly always agree that the costs of public community colleges are worthwhile; although the numbers are slightly lower for four-year institutions, they are still predominately positive.

These results are tempered somewhat, though, because more than half (62 percent) of respondents said that numerous jobs with good compensation and tenure exist for high school graduates or GED (General Educational Development) holders (Fishman et al., 2019). About half agreed (48 percent) and half disagreed (50 percent) that postsecondary education opportunities are affordable. Age may also affect perceptions – millennials are the least likely to agree (71 percent) that postsecondary education is a good investment. By contrast, 91 percent of the silent generation, 84 percent of baby boomers, and 75 percent of Generation X believe it is. Generation Z and millennials likewise trend negative on higher education affordability when evaluated next to older respondents. Added to which, 49 percent of New America respondents think that higher education options after high school are “fine the way they currently exist” (Fishman et al., 2019, p. 23). To make improvements, respondents recommend that colleges and universities focus on workplace skills, school-to-job transitions, career development, and helping students get ready for more education (see also generally Pew Research Center, 2014). They are less likely to prioritize cultivating students’ community involvement or advancing their intellectual progress.

When questions about higher education – present and future – are put to college and university leaders around the country, several concerns appear. The Association of Governing Boards of Universities and Colleges’ 2020 *Trustee Index* (AGB & Gallup, Inc.) shows that officials are increasingly anxious about the state of education in America over the next decade – in 2018, 28 percent were “very concerned” about the 10-year outlook, and in 2019, 42 percent were (AGB & Gallup, Inc., 2020, p. 4). Leaders at public institutions ranked their most worrisome issues as financial viability, costs to students and families, declines in state dollars earmarked for higher education, how the general public values higher education, and higher education’s role in workplace preparation. Rankings varied by degree-granting status – doctoral versus undergraduate only – and whether or not participants classified their colleges or universities as liberal arts-oriented.

In 2019, 55 percent of public institution/system trustees noted concern about the financial well-being of their organizations over the next decade (AGB & Gallup, Inc., 2020). Between 2017 and 2019, leaders across *all* kinds of colleges and universities felt less confident about graduates’ abilities to perform well in the world’s marketplace (45 percent strongly agree/agree to 35 percent strongly agree/agree). They also agreed less often (36 percent to 26 percent) that higher education institutions fully-grasp what employers prioritize when hiring.

In summary, concerns exist regarding the affordability and overall financial condition of higher education in the United States. However, some research suggests many Americans still see postsecondary attainment as economically advantageous.

Virginia: Degree and strategic planning landscape

Per SCHEV's report 2019-2020 *Degree and Certificate Awards* (2021c), Virginia's public and private non-profit colleges and universities conferred 122,869 degrees and certificates for the 2019-20 academic year (this does not reflect outputs from specialized programs like apprenticeships). Nearly half (46 percent) were bachelor's degrees; many of these were in psychology, liberal arts, and business. Fifty-nine percent of degree/certificate recipients were women, and there was an uptick in numbers of Hispanic/Latinx graduates against prior years. Seventy percent of all types of degrees and certificates were issued by the Commonwealth's public colleges and universities.

Noticeably, a small decrease in associate degree figures occurred in 2019-20, as compared to 2018-2019 numbers (SCHEV; 2021c). Total degrees and certificates granted by public institutions to in-state undergraduate students also missed 2019-20 projections by about 3.5 percent. However, when looking back a decade, awards from public institutions to in-state undergraduate students have grown: (a) from 15,606 associate degrees in 2010-11 to 17,401 in 2019-20; and (b) from 27,219 bachelor's degrees in 2010-11 to 31,663 in 2019-20. The 2019-20 academic year, in fact, saw a record number of bachelor's degrees bestowed upon in-state graduates of Virginia's public colleges and universities.

It is helpful to consider these figures, because the General Assembly's 2011 legislative session produced the Top Jobs for the 21st Century Act. This called upon the state's public higher education system to issue another 100,000 degrees and certificates – above and beyond its regular totals – to in-state students graduating between 2011 and 2025 (SCHEV, 2021c).

SCHEV's *Virginia Plan for Higher Education* (2011, as cited in SCHEV, 2021c) set another ambitious goal for the Commonwealth around the same time: that by 2030, Virginia would be the "best-educated" state in the nation – a place where 7 out of 10 working-age residents have a postsecondary degree, certificate, or workforce qualification. SCHEV (2019a, 2020, 2021c) projected that Virginia's public and private non-profit institutions of higher education would have to confer 1.5 million degrees, certificates, or other credentials from 2015 to 2030 to hit this mark.

Caution is required here, because vital to understanding Virginia's degree trajectory is awareness of regional differences in educational attainment in Virginia. Different completion rates are particularly apparent between Northern Virginia and rural parts of the state (SCHEV, 2019b; University of Virginia et al., 2018), as well as between low- and high-income students. Although more than half of Virginians (52 percent) have some kind of undergraduate award, this figure drops drastically among some minority (31 percent) and rural (27 percent) groups (SCHEV, 2019b; University of Virginia et al., 2018). These kinds of differences may be related to broader situational factors – especially the contrasting economic and demographic conditions present in: (a) Northern Virginia, Tidewater, and the Richmond metropolitan area; vis-à-vis (b) the Shenandoah Valley, the Southwest and Southside regions of the state, and the Eastern Shore

(otherwise known as the “Golden Crescent,” and the “Rural Horseshoe,” respectively; University of Virginia, et al., 2018, p. 3). Although it is beyond the scope of this report, a thorough analysis of attainment obstacles and the key roles postsecondary access providers play in helping students successfully pursue further education can be found in Corning et al. (2017).

If degree growth slides in future years due to population trends, or if inequities in postsecondary educational attainment continue, SCHEV (2019b, 2021c) has cautioned that the Commonwealth may not reach its Top Jobs goals or 2030 “best-educated” goals. Importantly, analysts elsewhere have sounded warnings about college enrollment declines nationally – expected to materialize in the mid-to late- 2020s. These are associated with slowing birthrates, or the “birth dearth” following the Great Recession (Grawe, 2018, as cited in Barshay, 2018, para. 5). This demographic shift may also lead, these other researchers suggest, to increased inter-institutional competition for students as well as budget cuts and more colleges shutting down.

Within Virginia, some degree gaps may be mitigated by students who graduate from private for-profit institutions (an estimated 11,000 awards in 2019-20), and/or by those who complete specific workforce training programs not included in annual degree and certificate counts. Increased in-state undergraduate activity among private non-profit colleges and universities is also worth recognizing for its attainment impacts (6,030 awards conferred in 2010-11 to 7,193 in 2019-20; SCHEV, 2021c). But, the questions raised about degree achievement overall could be concerning (see also generally University of Virginia et al., 2018).

SCHEV has re-affirmed its commitment to this 2030 “best-educated” vision in several other places, including *The Cost of Doing Nothing: An Urgent Call to Increase Educational Attainment in the Commonwealth* (2019b) and updated iterations of its strategic planning document – most recently *Pathways to Opportunity: The Virginia Plan for Higher Education* (2021b). SCHEV has, and continues to, link realization of this goal to making postsecondary education more equitable, more accessible, more affordable, and more socio-economically impactful (2019b, 2021b; see also 2020).

Framework for Virginia Educated

Acknowledging this context set the stage for the *Virginia Educated* study. Ingrained in these commitments to higher education and degree targets are significant and overarching assumptions: that better educated Virginians are better off – that they have higher quality of life, that they are more involved in their communities, that they fare comparatively well economically, and that they are more prepared for and thus perform more effectively in the workplace (SCHEV, 2019b, 2021c; see also generally Corning et al., 2017). *Virginia Educated* examines these hypotheses, going directly to thousands of graduates of publicly-supported two-year and four-year institutions to hear what they have to say on these subjects. Their reflecting – or looking back on their undergraduate experiences – provides policy makers more clarity on higher education’s costs and benefits. This is helpful, in turn, as they continue thinking ahead to the future postsecondary environment in Virginia.

Blueprint and timeline

SCHEV convened a Post-College Outcomes Taskforce (2019a) between May-December 2018. This group was charged with exploring ways to construct and deploy a survey reflecting SCHEV Council's interests in learning more about Virginia undergraduates':

1. Employment status
2. Employment-education connections
3. Earnings
4. Education debt
5. Mobility within and outside of the state
6. Civic engagement
7. Underemployment
8. Education satisfaction
9. Other associated variables

The information collected through this effort would also be paired with administrative data routinely gathered and maintained by SCHEV (with respondent consent). It would feed back into SCHEV's strategic planning and inform discussions about Virginia becoming the "best-educated" state by 2030 (SCHEV, 2019a). Significantly, the taskforce emphasized that the survey should offer a broad inquiry into graduates' lives, because there is much more to consider about their experiences than degree type, field of study, job placement, career progression, and wages. To generate statistically-meaningful results, they recognized a need to reach out to graduates of all 39 of Virginia's two-year and four-year publicly-supported institutions of higher education, and also to reach a goal of 15,200 survey responses. The taskforce further contemplated the possibility of making the survey longitudinal in nature.

SERL began work on the *Virginia Educated* project in the Summer 2019, under contract to SCHEV, and following the blueprint crafted by the Post-College Outcomes Taskforce (2019a).

Literature reviews, calls with subject matter experts, and frequent discussions with SCHEV staff and advisory groups initially led to the construction of a custom prototype survey. This early instrument was subsequently refined through statewide focus groups, cognitive interview testing, and a pilot phase, which occurred from the Fall/Winter of 2019 to the Summer of 2020.

The *Virginia Educated* project began in the Summer of 2019, following initial work and vision set forth by SCHEV's Post-College Outcomes Taskforce.

Table D-31: Select National Postsecondary Cost and Loan Data (NCES' The Condition of Education 2020 [Hussar et al., 2020]), Part A

Datapoint	Four-Year Public Institutions First-time, full-time undergraduate students	Two-Year Public Institutions First-time, full-time undergraduate students
Average total cost of attending (lesser of in-state or in-district tuition and fees; supplies; and room and board estimates)	<u>Academic Year 2018-19</u> Living on campus: \$24,900 Living off campus, without family: \$24,900 Living off-campus, with family: \$14,600 <i>Data weighted by numbers of students with Title IV aid</i>	<u>Academic Year 2018-19</u> Living on campus: \$15,400 Living off campus, without family: \$18,300 Living off-campus, with family: \$9,400 <i>Data weighted by numbers of students with Title IV aid</i>
Average tuition and fees and percent change (lesser of in-state or in-district tuition and fees)	<u>Academic Years 2018-19 and 2010-11</u> 2018-19: \$9,200 2010-11: \$8,200 Change: +12 percent <i>Data weighted by numbers of students with Title IV aid</i> <i>Pegged to Consumer Price Index, constant 2018-19 dollars</i>	<u>Academic Years 2018-19 and 2010-11</u> 2018-19: \$3,700 2010-11: \$3,100 Change: +19 percent <i>Data weighted by numbers of students with Title IV aid</i> <i>Pegged to Consumer Price Index, constant 2018-19 dollars</i>
Average net price of attendance (average total cost, less average of all forms of grant and scholarship aid; in-state or in-district tuition rate)	<u>Academic Year 2017-18</u> \$13,700 <i>Among students awarded Title IV aid</i> <i>Omits students not awarded Title IV aid</i> <i>Accounts for Title IV aid, as well as other grants & scholarships</i> <i>Data weighted by numbers of students with Title IV aid</i> <i>Pegged to Consumer Price Index, constant 2018-19 dollars</i>	<u>Academic Year 2017-18</u> \$7,200 <i>Among students awarded Title IV aid</i> <i>Omits students not awarded Title IV aid</i> <i>Accounts for Title IV aid, as well as other grants & scholarships</i> <i>Data weighted by numbers of students with Title IV aid</i> <i>Pegged to Consumer Price Index, constant 2018-19 dollars</i>
Percentage of undergraduate students awarded loan aid and percent change*	<u>Academic Years 2017-18 and 2010-11</u> 2017-18: 46 percent 2010-11: 51 percent Change: -5 percent <i>Includes only loans made exclusively to students</i>	<u>Academic Years 2017-18 and 2010-11</u> 2017-18: 19 percent 2010-11: 15 percent Change: +4 percent <i>Includes only loans made exclusively to students</i>
Average loan amounts*	<u>Academic Years 2017-18 and 2010-11</u> 2017-18: \$7,000 2010-11: \$7,000 Change: -- <i>Includes only loans made exclusively to students</i> <i>Pegged to Consumer Price Index, constant 2018-19 dollars</i>	<u>Academic Years 2017-18 and 2010-11</u> 2017-18: \$4,800 2010-11: \$5,500 Change: -14 percent <i>Includes only loans made exclusively to students</i> <i>Pegged to Consumer Price Index, constant 2018-19 dollars</i>

Source: Integrated Postsecondary Education Data System. (Various dates). *Digest of Education Statistics*. U.S. Department of Education, National Center for Education Statistics. <https://nces.ed.gov/pubs2020/2020144.pdf> *For this financial aid information, see: Integrated Postsecondary Education Data System. (2019, December). *Spring 2002 through Spring 2011 and Winter 2011-12 through Winter 2018-19, student financial aid component*. U.S. Department of Education, National Center for Education Statistics. https://nces.ed.gov/programs/digest/d19/tables/dt19_331.20.asp Some rounding may be reflected in data appearing here.

Table D-32: Select National Postsecondary Cost and Loan Data (NCES' The Condition of Education 2020 [Hussar et al., 2020]), Part B

Datapoint	Population: Certificate Holders Public Institutions	Population: Associate Degree Holders Public Institutions	Population: Bachelor's Degree Holders Public Institutions
Percentage of awardees who had loans at any point	Academic Year 2015-16 45 percent <i>Includes only loans made exclusively to students</i>	Academic Year 2015-16 41 percent <i>Includes only loans made exclusively to students</i>	Academic Year 2015-16 66 percent <i>Includes only loans made exclusively to students</i>
Average cumulative loan amount for awardees who had loans at any point	Academic Year 2015-16 \$17,400 <i>Includes only loans made exclusively to students</i> <i>Pegged to Consumer Price Index, constant 2018-19 dollars</i>	Academic Year 2015-16 \$16,600 <i>Includes only loans made exclusively to students</i> <i>Pegged to Consumer Price Index, constant 2018-19 dollars</i>	Academic Year 2015-16 \$28,600 <i>Includes only loans made exclusively to students</i> <i>Pegged to Consumer Price Index, constant 2018-19 dollars</i>
Datapoint	Four-Year Public Institutions First-time, full-time undergraduate students		Two-Year Public Institutions First-time, full-time undergraduate students
Percentage provided financial aid and percent change*	Academic Years 2017-18, 2010-11, 2005-06, and 2000-01 2017-18: 84 percent 2010-11: 83 percent 2005-06, receiving aid: 77 percent 2000-01, receiving aid: 71 percent Change: +13 percent <i>Reflects all federal and private loans to students, as well as grants from various sources (e.g. institutional, state/local, federal)</i> <i>Includes only loans made exclusively to students</i>	Academic Years 2017-18, 2010-11, 2005-06, and 2000-01 2017-18: 76 percent 2010-11: 74 percent 2005-06, receiving aid: 61 percent 2000-01, receiving aid: 57 percent Change: +19 percent <i>Reflects all federal and private loans to students, as well as grants from various sources (e.g. institutional, state/local, federal)</i> <i>Includes only loans made exclusively to students</i>	

Source: Integrated Postsecondary Education Data System. (Various dates). *Digest of Education Statistics*. U.S. Department of Education, National Center for Education Statistics. <https://nces.ed.gov/pubs2020/2020144.pdf> *For this financial aid information, see: Integrated Postsecondary Education Data System. (2019, December). *Spring 2002 through Spring 2011 and Winter 2011-12 through Winter 2018-19, student financial aid component*. U.S. Department of Education, National Center for Education Statistics. https://nces.ed.gov/programs/digest/d19/tables/dt19_331.20.asp Some rounding may be reflected in data appearing here. Prior to 2009-10, data were for students receiving aid (given, accepted, and distributed).

Table D-33: Select National Postsecondary Cost and Loan Data (NCES' The Condition of Education 2020 [Hussar et al., 2020]), Part C

Datapoint	Four-Year Public Institutions First-time, full-time undergraduate students	Two-Year Public Institutions First-time, full-time undergraduate students
Percentage provided aid, by kind of aid*	<u>Academic Year 2017-18</u> Federal grants: 38 percent State/local grants: 38 percent Institutional grants: 50 percent Loans: 46 percent <i>Reflects all federal and private loans to students</i> <i>Includes only loans made exclusively to students</i>	<u>Academic Year 2017-18</u> Federal grants: 53 percent State/local grants: 40 percent Institutional grants: 16 percent Loans: 19 percent <i>Reflects all federal and private loans to students</i> <i>Includes only loans made exclusively to students</i>
Average amount of financial aid provided, by kind of aid*	<u>Academic Year 2017-18</u> Federal grants: \$5,100 State/local grants: \$4,300 Institutional grants: \$6,200 Loans: \$7,000 <i>Reflects all federal and private loans to students</i> <i>Includes only loans made exclusively to students</i> <i>Pegged to Consumer Price Index, constant 2018-19 dollars</i>	<u>Academic Year 2017-18</u> Federal grants: \$4,900 State/local grants: \$2,300 Institutional grants: \$2,100 Loans: \$4,800 <i>Reflects all federal and private loans to students</i> <i>Includes only loans made exclusively to students</i> <i>Pegged to Consumer Price Index, constant 2018-19 dollars</i>

Source: Integrated Postsecondary Education Data System. (Various dates). *Digest of Education Statistics*. U.S. Department of Education, National Center for Education Statistics. <https://nces.ed.gov/pubs2020/2020144.pdf> *For this financial aid information, see: Integrated Postsecondary Education Data System. (2019, December). *Spring 2002 through Spring 2011 and Winter 2011-12 through Winter 2018-19, student financial aid component*. U.S. Department of Education, National Center for Education Statistics. https://nces.ed.gov/programs/digest/d19/tables/dt19_331.20.asp Some rounding may be reflected in data appearing here.

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