



TRANSFORMATIVE INNOVATION

**2022 VCU Economic and
Social Impact Report**

Full Report



VCU

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EXECUTIVE SUMMARY

Virginia Commonwealth University (VCU) is a broad access, Carnegie 1,¹ public research university that has significant, wide-reaching economic and social impacts on the City of Richmond, the region and the Commonwealth of Virginia. As an urban institution committed to transformative innovation, VCU is in a unique position to influence the long term economic, social, and physical health and well-being of the communities it serves. This report attempts to answer two questions – *how are we doing and how can we do better?*

ECONOMIC IMPACT

Economically, the impact of VCU and the VCU Health System on the Commonwealth of Virginia is significant. The economic impact is calculated from the aggregated spending on operations, maintenance and capital investment combined with the spending of employees, students, and visitors (i.e., VCU-associated spending) generated the following total economic impact:

\$9.5B **58K**
 FOR THE COMMONWEALTH OF VIRGINIA JOBS CREATED OR SUPPORTED

\$6.3B **44K**
 FOR THE RICHMOND METROPOLITAN STATISTICAL AREA (MSA)² JOBS CREATED OR SUPPORTED

\$3.9B **33K**
 FOR THE CITY OF RICHMOND JOBS CREATED OR SUPPORTED

TALENT, PLACE AND INNOVATION

In addition to this significant economic impact, VCU and VCU Health System’s collective activities advance transformative innovation, enhancing the economic and social well-being of region through its investments in talent, place and innovation.

People at the Center (Talent): The Foundation of Healthy, Prosperous and Equitable Communities looks at how we are meeting the regional workforce needs and advancing equity and economic mobility for all Virginians. This section details who VCU’s students are, how they are doing, and the importance of student success for the university, city, region and Commonwealth. Then it looks at how VCU advances workforce development opportunities. For example:

¹ The Carnegie classification is a framework that classifies U.S. colleges and universities. A Research I University is the highest designation a doctoral university can receive, denoting world class research, academic excellence and excellent students.

² The Richmond MSA includes the independent cities of Richmond, Petersburg, Hopewell and Colonial Heights and the following counties: Amelia, Caroline Charles City, Chesterfield, Dinwiddie, Goochland, Hanover, Henrico, King William, New Kent, Powhatan, Prince George, and Sussex, and the incorporated town of Ashland.

- In 2019, VCU was the third largest public, four-year university in Virginia, enrolling 30,101 students of which about three quarters are undergraduates.
- VCU student demographics are diverse: White students (45%), Black students (17%), Hispanic or Latino (9%), Asian and Pacific Islander (13%), International students (5%) and American Indian or Alaska Native (.2%).
- VCU is the Commonwealth's university and truly serves Virginia, as 87% of VCU students are in-state students. Moreover, the University offers 39 programs unique in Virginia, and has 26 top-ranked graduate and professional programs, representing its strength in health care, the arts, and education.
- VCU students are also economically diverse. Almost a third of entering full-time freshmen are Pell-eligible, and almost a third are also first-generation college students. VCU enrolls more underrepresented minority students than our selective institution peers, thus graduates them in higher numbers.

Vibrant, Healthy Places (Place) documents the economic and community impact of VCU and VCU Health System and how those activities influence the quality of place. Highlights include:

- The School of Education develops teachers for the city, region and Commonwealth, with expertise in high needs areas (elementary, special education) and high needs schools. Moreover, it has launched a series of programs aimed at increasing diversity among teacher groups to meet local and Commonwealth demand. Students taught by graduates of its RTR Teacher Residency program have been shown to outperform students of non-RTR students in math, English and social studies.
- Addressing social determinants of health is a VCU and VCU Health priority, generating programs to focus on housing, food insecurity, workforce

development, legal aid, homelessness as well as prevention education and health needs for VCU Health System (VCUHS) patients and other community residents. Equally important is the emergence of new approaches that align multiple services to deliver comprehensive, coordinated care such as the Richmond Health and Wellness Program and the VCU Health Hub at 25th.

- Enhances art and culture. Examples include the Institute for Contemporary Art at VCU, which is a non-collecting institution created to showcase art of our time, advance dialogue and collaboration with the community, and anchor the City's Arts District, and the CreateAthon, where VCU students volunteer to provide marketing assistance to support area non-profits solve their marketing challenges.

Building an Inclusive Future (Innovation): From Research to Thriving Communities lays out VCU and VCU Health System's contribution to the innovation ecosystem. That work includes the scope of VCU's research, its translation from the lab into the community, its promotion of entrepreneurship and business development among students, faculty, staff, and regional employers and how the response to COVID-19 is advancing a whole new model of transformative innovation. Some highlights are:

- A robust response to the coronavirus pandemic that saved lives and created a new, more comprehensive approach to innovation to address societal challenges. Several VCU innovations advanced health globally, including:
- VCU Health participated in early, groundbreaking clinical research trials of potential COVID-19 treatments. In the earliest days of the pandemic, VCU was selected to lead clinical trials of Remdesivir, then an investigational COVID-19 drug. VCU's team of experts formed a first-of-its-kind partnership among hepatology, infectious disease, critical care-pulmonology, and cardiology. Today, Remdesivir is an essential tool in saving lives; VCU played a vital role in this global transformative innovation.

- A VCU-based partnership, the Medicines for All Institute³, joined multiple pharmaceutical leaders in May 2020 to address the pharmaceutical supply chain shortages brought into stark focus by the global nature of the pandemic. The partnership, led by Richmond-based pharmaceutical research and development company Phlow Corp., secured a \$354 million, four-year contract with the U.S. Department of Health and Human Services to accelerate their efforts to reduce dependency on overseas drug manufacturers, specifically for the domestic production of chemicals used in the manufacture of COVID-19 treatments.
- Early in the pandemic when medical safety equipment was in short supply, the Health Innovation Consortium developed a new, scalable ultraviolet decontamination method for N95 respirators. The innovation was disseminated nationwide and offered without licensing fees for public benefit.
- In FY20, the university received \$335 million in sponsored research, including \$91.8 million from the National Institute for Health to research drug abuse, alcohol abuse, cancer, heart conditions, asthma, diabetes, and mental health. VCU schools of Medicine, Arts, and Education are the top three research award recipients, reflecting VCU's interdisciplinary commitment to health, education, and the quality of place in Richmond.
- VCU da Vinci Center in partnership with the Jackson Ward Collective, Activation Capital, and VCU REAL (VCU's experiential learning hub) have launched the Entrepreneurship Academy to bring entrepreneurship skills to students and community members. The work of the academy is complemented by the launch of Shift Retail lab, where VCU students and Jackson Ward entrepreneurs can showcase their products and services directly to consumers.

GROWTH AREAS

VCU is committed to doing better. We have recognized several growth areas where we are committed to improve. Those areas include:

- **Talent:** Address inequities at graduate level, especially first professionals (medical, pharmacy, dental) by increasing the number of underrepresented minorities (URM) in these programs. Achieving this goal also requires that we increase the number of URM undergraduate students who graduate with Science, Technology, Engineering, Math and Health degrees.
- **Place:** Increase the number of Small, Woman and Minority (SWaM) Vendors that contract with VCU.
- **Innovation:** Increase the number of URM faculty startups.

We invite you to keep us accountable. Always let us know - **How are we doing? How can we do better?**

³ The Medicines for All Institute was founded in 2017 in VCU's College of Engineering with the goal of increasing access to safe, effective, and affordable medications through advanced manufacturing technologies. The initiative has also partnered with VCU's School of Pharmacy and the Department of Chemistry in the College of Humanities and Sciences.



INTRODUCTION

“Our mission is to serve students, patients and our communities in the best possible ways leading every person toward their success. So when I think about our mission, I ask myself two questions: How are we doing? How can we do better?”

– Michael Rao, Ph.D., President, VCU and VCU Health System
2021 State of the University

Virginia Commonwealth University is a broad access, Carnegie 1 public research institution with significant, wide-reaching economic and social impacts on the city of Richmond, the region and the Commonwealth of Virginia. As an anchor institution committed to innovative transformation, VCU is in a unique position to influence the long term economic, social, and physical health and well-being of the communities it serves. The goal of this report is to answer President Rao’s questions: How are we doing? How we can do better?

VCU has been analyzing its impact over the past 25 years. In the early years, it provided a traditional analysis highlighting the impact of employment, purchasing, and students on the local and state economies. In the last impact study in 2017, the analysis widened its scope to look at the broader anchor impacts including innovation, service to the region, community development, and moral leadership.

Much has happened between the last analysis and this one. From the commitment to OneVCU, which aims to align the resources of VCU and the VCU Health System⁴, the release of Quest 2025: Together We Transform, VCU’s strategic plan, the pandemic and the social movement triggered by the death of George Floyd, VCU has transformed in response, providing enhanced services to directly address the pandemic and recommit to achieving

social, educational, and health equity in the city, region and Commonwealth. This report builds on the 2017 study, and looks ever more deeply into the social and cultural as well as the economic impacts of its activities. It will include what we have accomplished, and where we anticipate going as an institution.

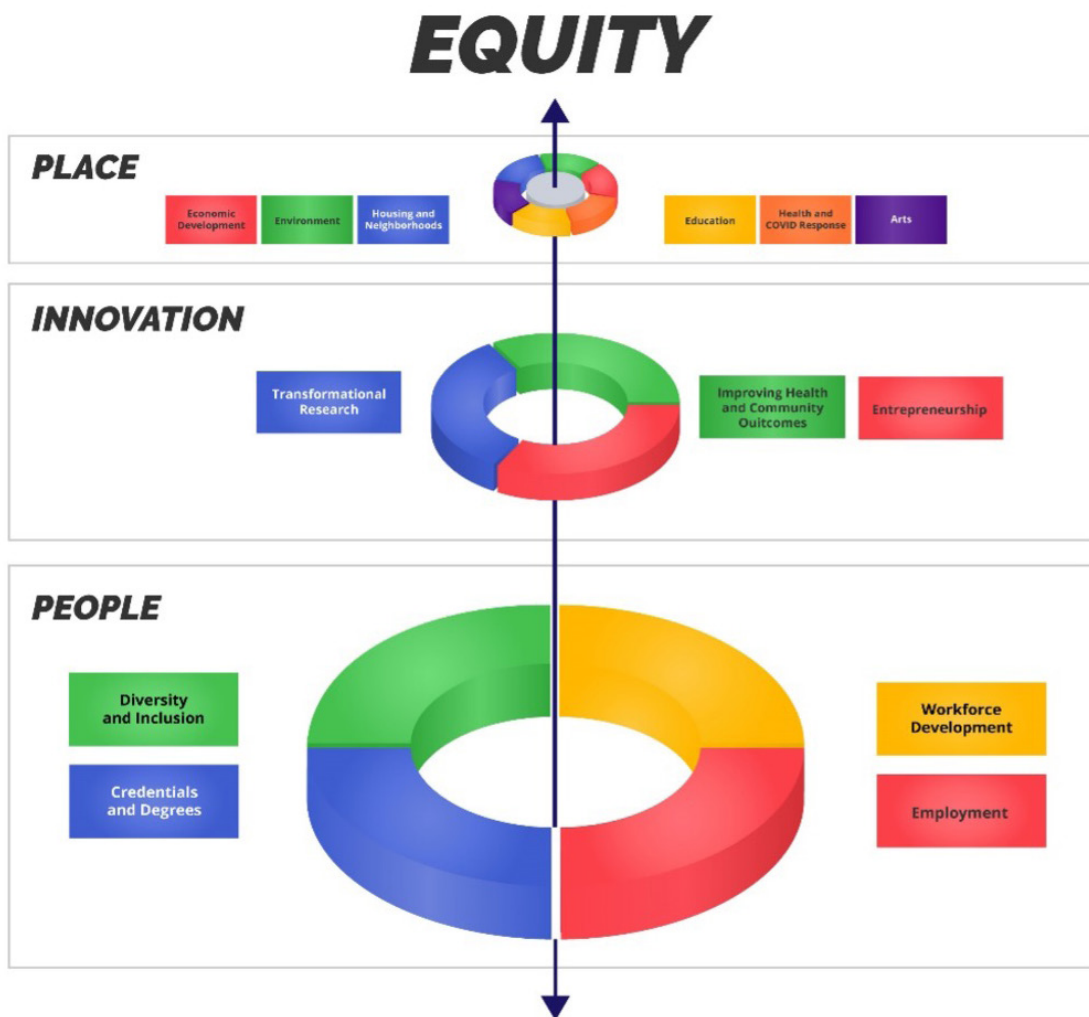
In this climate of social and economic change, we need to measure what we value, ensure that we are meeting the goals we’ve set for ourselves, and that those goals align with the needs and priorities of our city, state, and region.

To this end, we’ve developed the following framework for assessing that impact, and building a clearer narrative on how the work of an urban university shapes regional opportunities. The framework illustrates and expands upon the Association of Public and Land-grant Universities definition of economic engagement which centers on talent, innovation, and place. The report is organized around this framework as follows:

⁴ The VCU Health System is an urban, comprehensive academic medical center that includes the clinical activities of its hospitals and clinics, MCV Physicians and VCU School of Medicine. VCU Medical Center, Children’s Hospital of Richmond at VCU and VCU Community Memorial Hospital are collectively referred to as VCU Health Hospitals and Clinics. The VCU Health System, combined with the five VCU health sciences schools (Allied Health Professions, Dentistry, Medicine, Nursing and Pharmacy), comprise the VCU Medical Center.

- **Section 1: People at the Center (Talent): The Foundation of Healthy, Prosperous and Equitable Communities** looks at how we are meeting the regional workforce needs and advancing equity and economic mobility for all Virginians. This section details who VCU's students are, how they are doing, and how they are prepared for careers now and in the future. Then it looks at how VCU advances workforce development opportunities.
- **Section 2: Vibrant, Healthy Places (Place)** documents the economic and community impact of VCU and the VCU Health System and discusses how those activities influence the quality of place.
- **Section 3: Building an Inclusive Future (Innovation): From Research to Thriving Communities**, shows VCU's contribution to the innovation ecosystem. These contributions include the scope of VCU's research and its translation from the lab into the community, its role in advancing entrepreneurship and business development of students, faculty, staff and regional employers and how VCU's response to the COVID-19 crisis generated a whole new approach to innovation.

The conclusion details how ONE VCU puts these components together to improve impacts on talent, place and innovation, and commitments for the future, both to build on VCU's strengths and make improvements where needed.



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***PART 1: PEOPLE AT THE CENTER
(TALENT): THE FOUNDATION
OF HEALTHY, PROSPEROUS AND
EQUITABLE COMMUNITIES***

VCU is an essential part of the regional and Commonwealth workforce development system. Its academic and medical campuses create economic opportunity and advance mobility through:

1. Undergraduate and graduate degree programs;
2. Workforce development strategies; and
3. Employment and staffing.

DEGREES: DIVERSE TALENT, STRONG ECONOMY

A talented, diverse workforce is the economic engine that enhances place, drives innovation and delivers the public and social services that help people and communities thrive. The pathway to good jobs is through post-secondary, credentials. According to the Georgetown Center on Education and the Workforce, since 1991, good jobs⁵ that require a bachelor's degree grew by 18.2 million, while those that require a high school degree declined by 1.8 million.⁶

Enrollment and Trends

As of Fall 2019, VCU is the third-largest public, four-year university in Virginia⁷, with 30,101 enrolled

⁵ The Georgetown Center on Education and the Workforce defines good jobs as those earning a pay median of \$56,000 for workers with less than a BA and \$65,000 for jobs requiring a BA or higher.

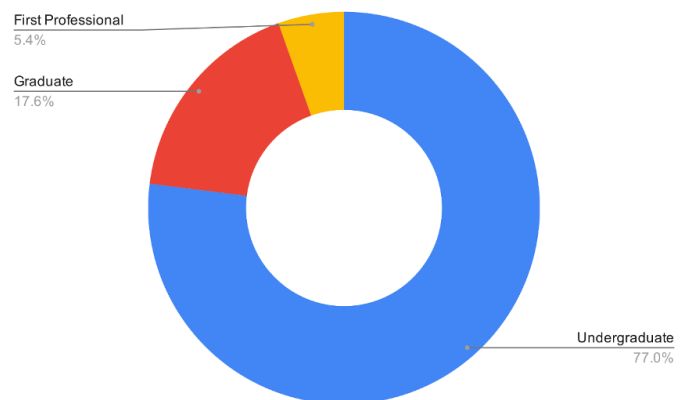
⁶ Georgetown Center on Education and the Workforce, Three Educational Pathways to Good Jobs: High School, Middle Skills and Bachelor's Degree.

⁷ The largest public university in Virginia was George Mason University (38,255) in fall 2019, followed by Virginia Tech (36,383). State Council of Higher Education for Virginia, "EO2: Fall Headcount Enrollment (1992 through Current Year)."

students. Over three-quarters of enrolled students — 23,172 — were seeking undergraduate degrees. Graduate students made up the second-largest group with 5,292 individuals, or a little under 18%. Another 5% of students — 1,639 — were first-professionals, which included those seeking a doctorate in dental surgery, medicine, or pharmacy.

VCU's 2019 enrollment of 30,103 marked a decline of 7.2% from its peak at 32,434 in 2009. Until 2019, any declines in enrollment resulted from decreasing graduate student enrollments while undergraduate and first-professional enrollment grew in most

VCU FALL 2019 ENROLLMENT

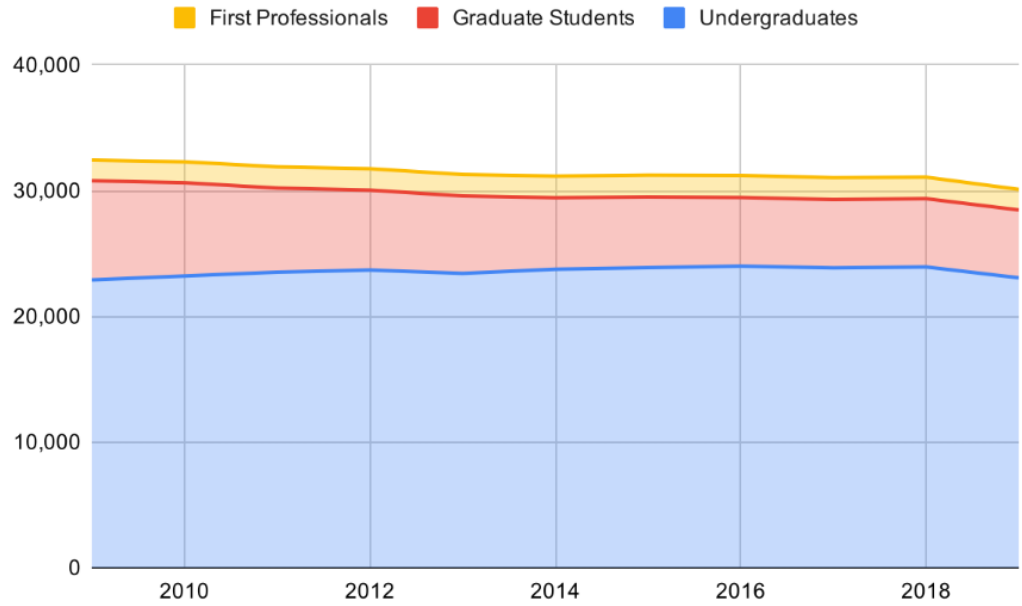


Source: State Council of Higher Education for Virginia, "EO2: Fall Headcount Enrollment (1992 Through Current Year)."

years, resulting in stable total enrollment. However, 2019 was marked by the largest enrollment shifts for undergraduates and first-professionals in the last 10 years, with each falling by around 4% or 1,000 students in total from 2018. The pandemic affected undergraduate enrollment nationally across the board, which has fallen by 6.5% since 2009.

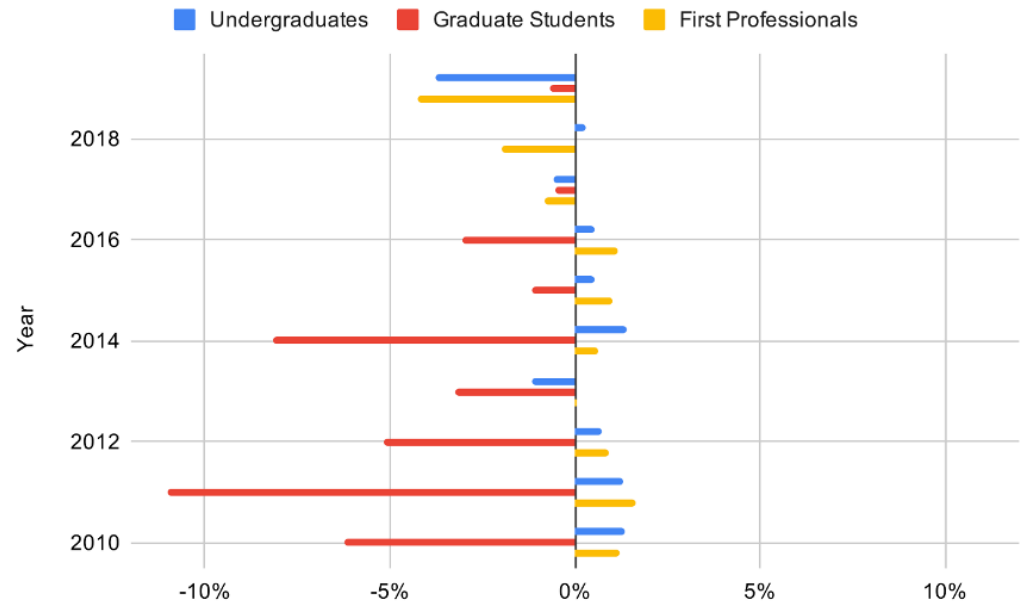
Trends for enrollment by age group indicate a declining proportion of students are 24 years or older. The percentage of students 24 years old and under increased from 67% in 2009 to 76% in 2019. Conversely, the proportion of students 25 years or older decreased steadily from 33% in 2009 to 24% in 2019. This follows a national trend of declining enrollment among students 24 years or older. National estimates of enrollment of students 24 years or older at four-year public institutions indicate a decline of 8.5% between 2012 and 2019.⁸ The reduction in enrollment of older students is of particular concern. In the short term, it suggests

VCU ENROLLMENT TRENDS (2009 TO 2019)



Source: State Council of Higher Education for Virginia, “EO2: Fall Headcount Enrollment (1992 Through Current Year).”

VCU ENROLLMENT TRENDS (2009 TO 2019)

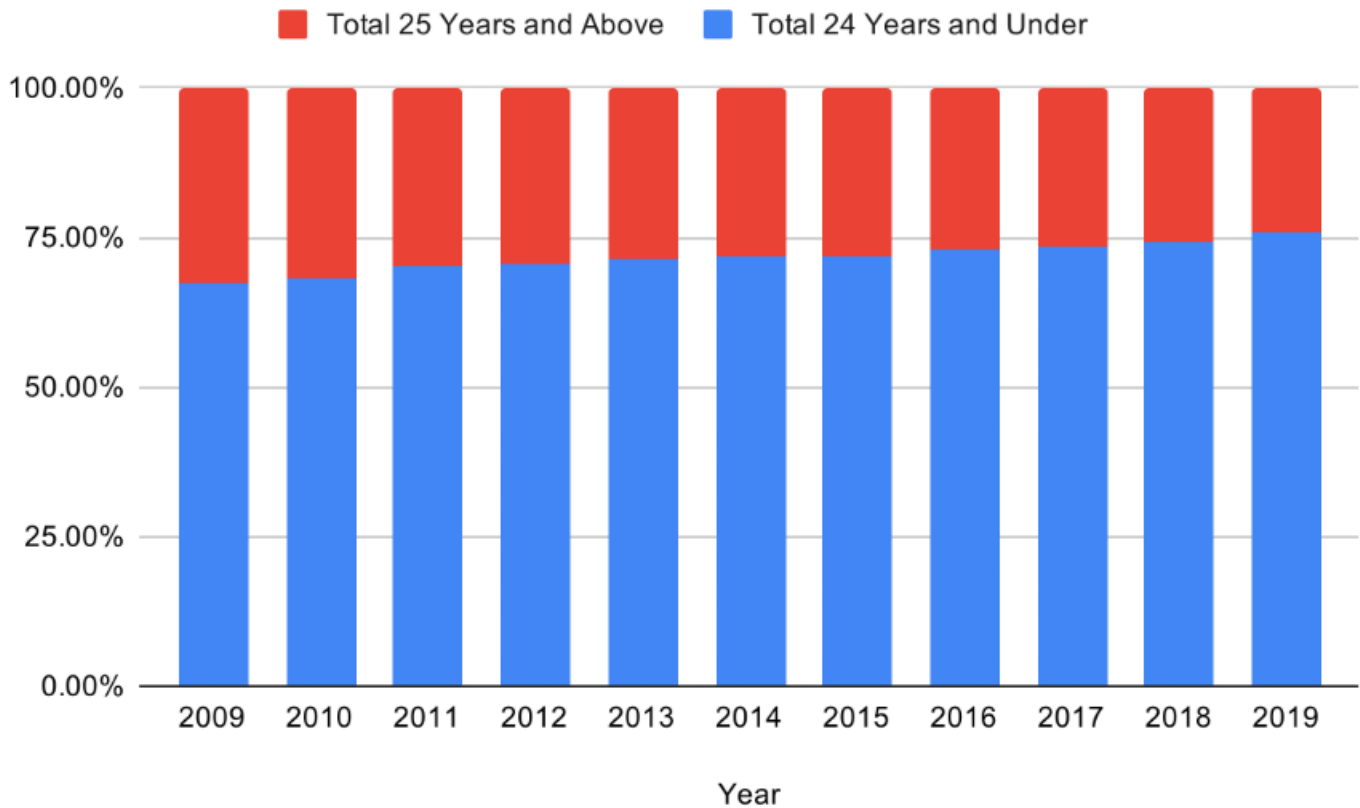


Source: State Council of Higher Education for Virginia, “EO2: Fall Headcount Enrollment (1992 Thru Current Year).”

⁸ National Student Clearinghouse Research Center, “Current Term Enrollment Estimates Fall 2012.”; “Current Term Enrollment Estimates Fall 2019.”

how difficult it will be to recruit back the students who left during the pandemic. Over the long term, it holds more significant threats to universities' sustainability. During the pandemic, the U.S. birthrate has fallen to its lowest level, accelerating a continuous decline since 2007. The Western Interstate Commission for Higher Education (WICHE) estimated that by 2025, the number of 18-year-old high school graduates will fall between 11% and 15%. These trends flag continuing enrollment challenges moving forward.

TRENDS IN ENROLLMENT BY AGE



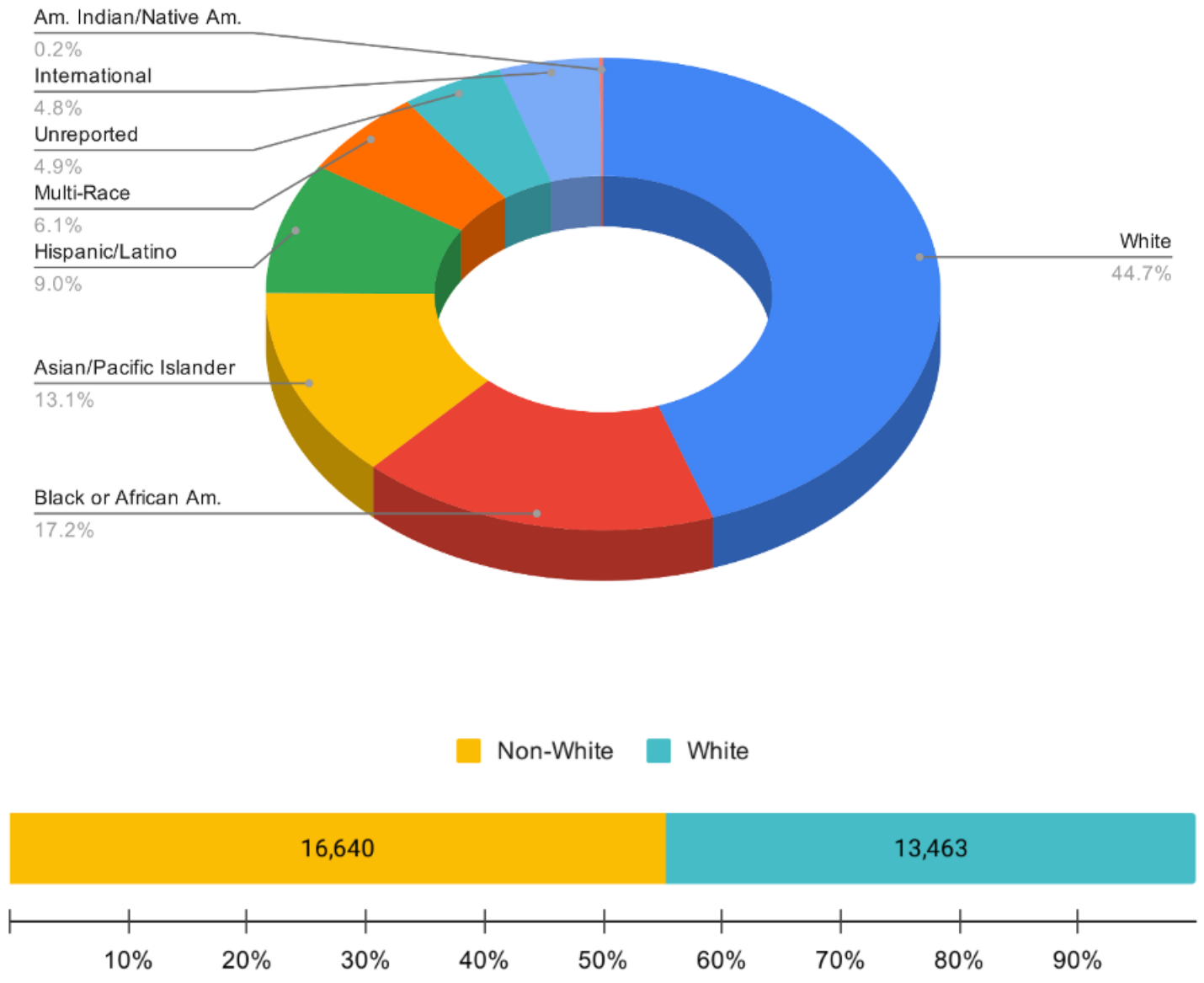
Source: State Council of Higher Education for Virginia, "EO2: Fall Headcount Enrollment (1992 Through Current Year)."

Diversity and Enrollment

VCU's 2019 combined undergraduate and graduate enrollment reflects an increasingly diverse student body. White students represent the largest plurality by race or ethnicity with 45% of students but not the majority. Black students comprised 17% of students enrolled in 2019, followed by Asian and Pacific Islander students (13%) and Hispanic or Latino students (9%). International students comprised 5% of students. American Indian or Native American students represent the smallest group by race or ethnicity, with 0.2% of the student population.

Undergraduate enrollment reflects total enrollment demographics almost exactly. The demographic picture for graduate enrollment looks different, and will be discussed below in more detail.

2019 ENROLLMENT BY RACE AND ETHNICITY



Source: State Council of Higher Education for Virginia, “EO2: Fall Headcount Enrollment (1992 Through Current Year).”

Undergraduate Enrollment by Program

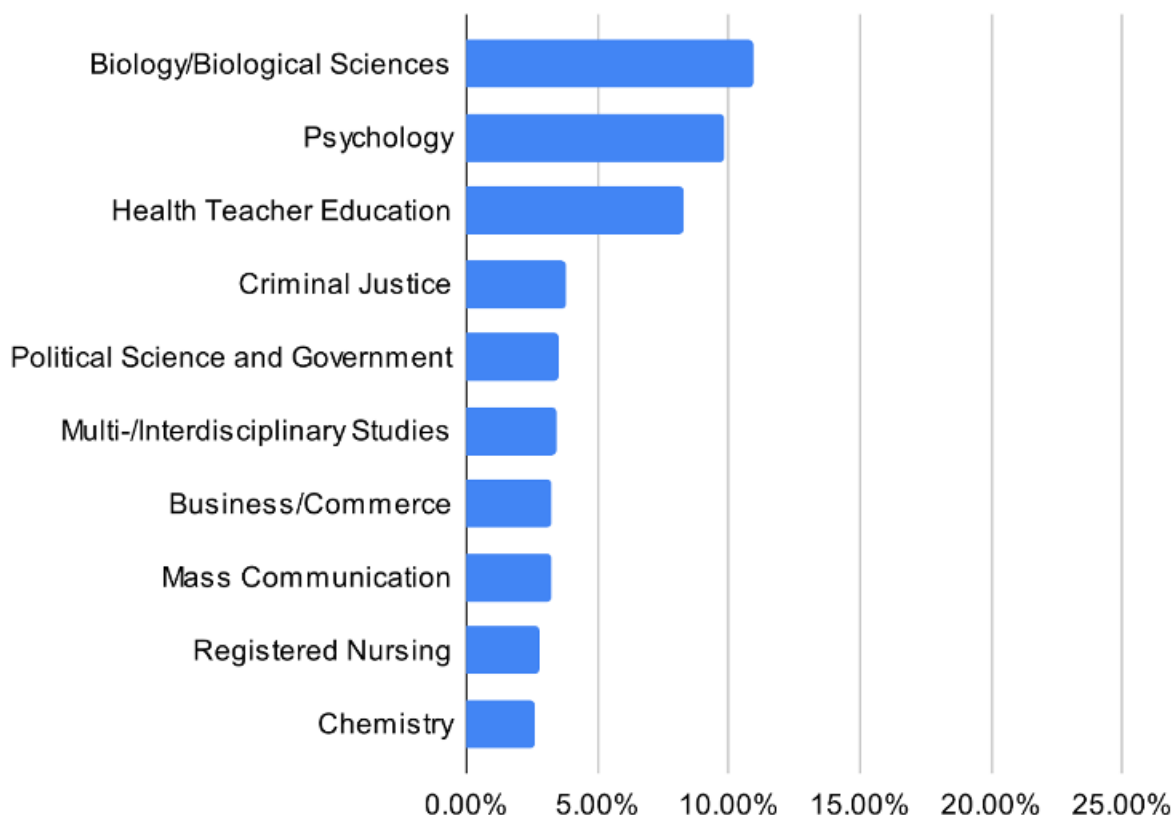
Total undergraduate enrollment in VCU in 2019 was distributed through 63 four-year programs, 66 master’s programs, 3 first-professional programs, and 42 doctoral or biological sciences, followed by Psychology (10%), Health Teacher Education (8%), and Criminal Justice (4%).

Enrollment in four-year programs by race or ethnicity reveals that although the programs mentioned above are broadly popular, some groups are more heavily represented in unique programs.

- Foreign and International students demonstrate greater enrollment in VCU School of the Arts programs such as Graphic Design, Interior Design, Art History, Painting, and Fashion Design. VCU Arts’ programs are highly ranked with a global reputation, which may explain these figures.

- Black student enrollment does not vary much from overall enrollment. The exceptions are that Black students enroll in Health Teacher Education and Fashion Design at higher rates than overall student enrollment.
- More than 1 in every 5 Asian students enrolled at VCU in fall 2019 studied Biology or the Biological Sciences (which may include biochemistry and biophysics). Asian student enrollment in STEM programs appears to outpace that of other groups, with the top four-year programs being Chemistry, Computer Sciences, Biomedical Engineering, and Information Science.
- Hispanic or Latino student enrollment largely follows the overall four-year program enrollment with the exception of Homeland Security and Mechanical Engineering. Those programs are among the top 10 for students who identify as Hispanic, but they fall outside the top 10 for students who do not identify as Hispanic.
- White student enrollment at VCU in fall 2019 also largely follows the overall four year enrollment pattern, but showed greater preference for both Mechanical Engineering and English Language and Literature outside the top three. STEM programs did not constitute a major focus of enrollment of White students.
- Students enrolled in some programs appeared to have a greater tendency to refrain from reporting their race or ethnicity. More than 1 in 4 students whose race or ethnicity was unknown was enrolled in the four-year Registered Nursing program in fall 2019.

VCU'S TOP 4-YEAR PROGRAMS BY TOTAL ENROLLMENT, FALL 2019



Source: State Council of Higher Education for Virginia, "E16: Enrollment by Race-Ethnicity, Gender, and Program Detail."

Graduate Enrollment by Race or Ethnicity and Program

While VCU has made significant strides in student success at the undergraduate level, that is but the first step. It is also necessary to see that success at the graduate level. The demographic breakdown of graduate students (master's degrees, doctorates, first-professional degrees, and post-graduate certificates) is: White (53%), Asian (12%), Black (11%), Hispanic or Latino (4%), International (7%), Two or more (3%) and unknown (10%).

TOP MASTERS PROGRAMS BY TOTAL ENROLLMENT, FALL 2019



Source: State Council of Higher Education for Virginia, "E16: Enrollment by Race-Ethnicity, Gender, and Program Detail.

The top three master's programs were Social Work, with nearly 15% of all master's students, Business Administration and Management and Business. Social Work represented the program with the greatest enrollment for Black, Hispanic or Latino, and White students. However, International and Asian students enrolled more heavily in Business and Business Administration graduate programs. International student enrollment also highlights some of the University's most competitive programs for admissions, including the fine arts.

Black and Hispanic or Latino student enrollment features greater percentages of students in education-related programs, such as Counselor Education and Special Education. Black student enrollment also features strong representation in Public Administration.

It is also important to look at differences across various types of graduate programs, as enrollment patterns are quite different. The demographics of first-professionals (Medicine, Dentistry, Pharmacy) showed a distinctly different pattern - Whites (37%),

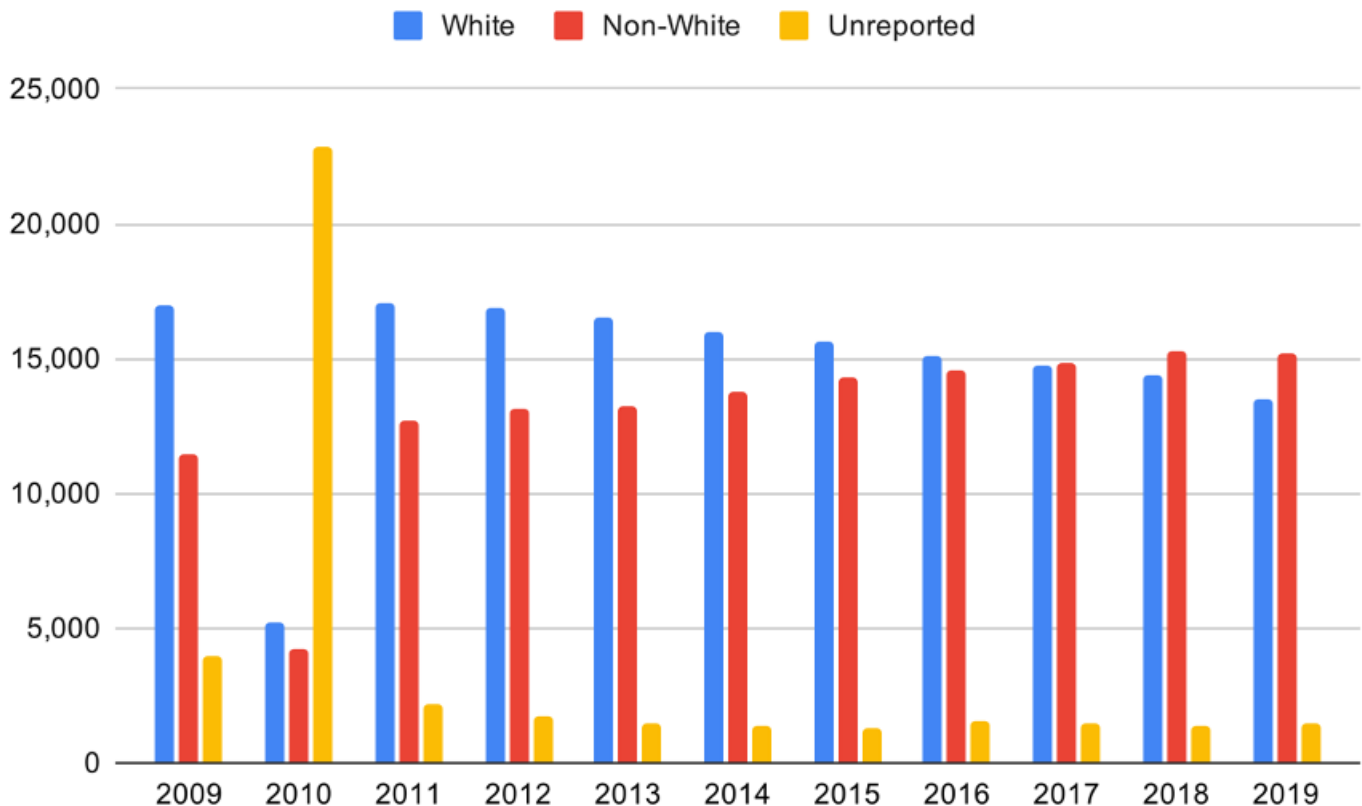
Asian (26%), Black (6%), Hispanic or Latino (4%), International (3%). In other words, about 50% of Asian graduate students are enrolled in a first-professionals' track.

Nationally, the diversity of first-professionals' career path is lagging. For example, according to Association of American Medical College, only 5% and 5.8% of physicians identify respectively as Black and Hispanic. Similarly, according to the American Association of Colleges of Pharmacy, 5% of pharmacists identify as Black. While the first-professionals' data reflects these national challenges and identifies areas for improvement, we see some promising change. In the School of Dentistry, 8% of dental students are Hispanic or Latino. In the School of Pharmacy, 11% of graduate student are Black.

Enrollment Trends

Finally, it is important to review trends, to get a clearer picture of changes over time. CURA's 2016 analysis of VCU's regional impact indicated enrollment of students of color populations rose from 30% of graduate and undergraduate students in 2005 to more than 43% in 2015. That upward trend has continued, and 2019 marks the first year in which students of color comprise more than 50% of student enrollment. The shift has been led by declining enrollment of White students and increasing enrollment of most students of color. National trends between 2010 and 2018 show growth in the enrollment of Hispanic or Latino students, Asian students, and students of multiple races and

ENROLLMENT TREND BY WHITE, STUDENTS OF COLOR, AND UNREPORTED STUDENTS (ALL LEVELS) (2009-2019)



Source: State Council of Higher Education for Virginia, "EI6: Enrollment by Race-Ethnicity, Gender, and Program Detail.

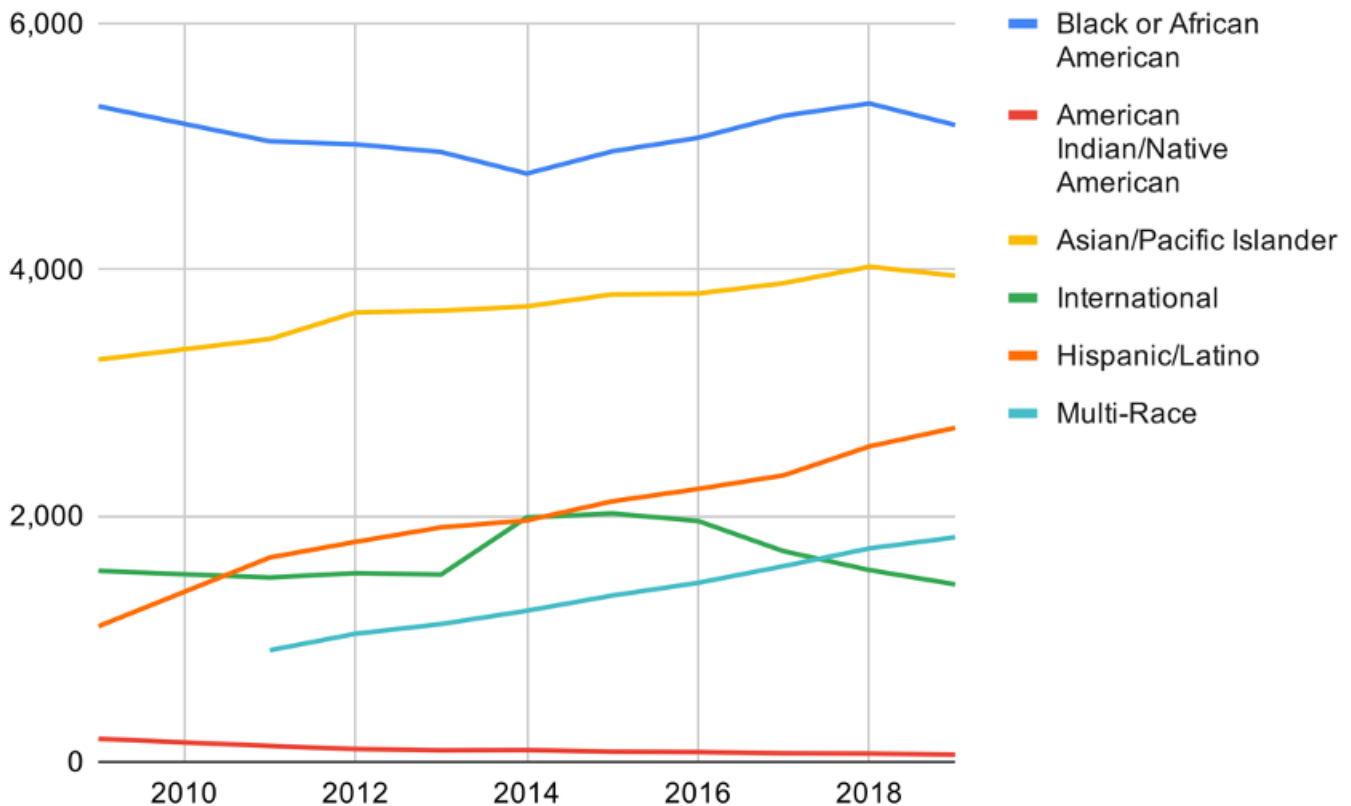
declines in White and Black student enrollment.⁹

Most of the growth in non-White populations stemmed from increases in multi-race, Latino, and Asian or Pacific Islander student enrollment; those groups also saw the largest growth as populations in Virginia between 2010 and 2019. Between 2009 and 2019, enrollment of students identifying as two or more races increased by more than 1,800. Enrollment of Latino students increased by more than 1,600—an increase of 146%. And enrollment of Asian or Pacific Islander students increased by nearly 700, or around 21%. Population estimates indicate the total population of Virginians identify-

ing as two or more races increased by 78%, identifying as Hispanic or Latino by 38%, and identifying as Asian by 30% between 2010 and 2019.¹⁰

Black student enrollment at VCU has shown a flat trend, experiencing decline from 2009 to 2014 followed by growth through 2018. The 2019 enrollment of students identifying as American Indian or Native American represents a 69% decrease from 2009. A 31% decrease in the number of international students enrolled between 2015-2019 coincides with a decline in international students across U.S. institutions of higher education.

ENROLLMENT TREND BY RACE OR ETHNICITY (2009-2019)*



* 2010 data removed from series due to irregularities

Source: State Council of Higher Education for Virginia, “EO2: Fall Headcount Enrollment (1992 Thru Current Year).”

⁹ National Center for Educational Statistics, “The Condition of Education: Undergraduate Enrollment,” May 1, 2020 https://nces.ed.gov/programs/coe/indicator_cha.asp

¹⁰ American Community Survey 5-year estimates, Hispanic or Latino Origin by Race (Table B03002).

Women represented 61% of total enrollment at VCU in 2019, or slightly higher than the national average of 57% at Title IV institutions.¹¹ Approximately 38% of students identified as men. Women constituted a larger proportion of graduate students with 64% of enrollment compared to men with 35% of enrollment. Enrollment by gender in first-professional programs was more evenly distributed, with 57% of students identifying as women and 43% men. In VCU's graduate post-master's certificate programs, women made up almost 80% of students enrolled.

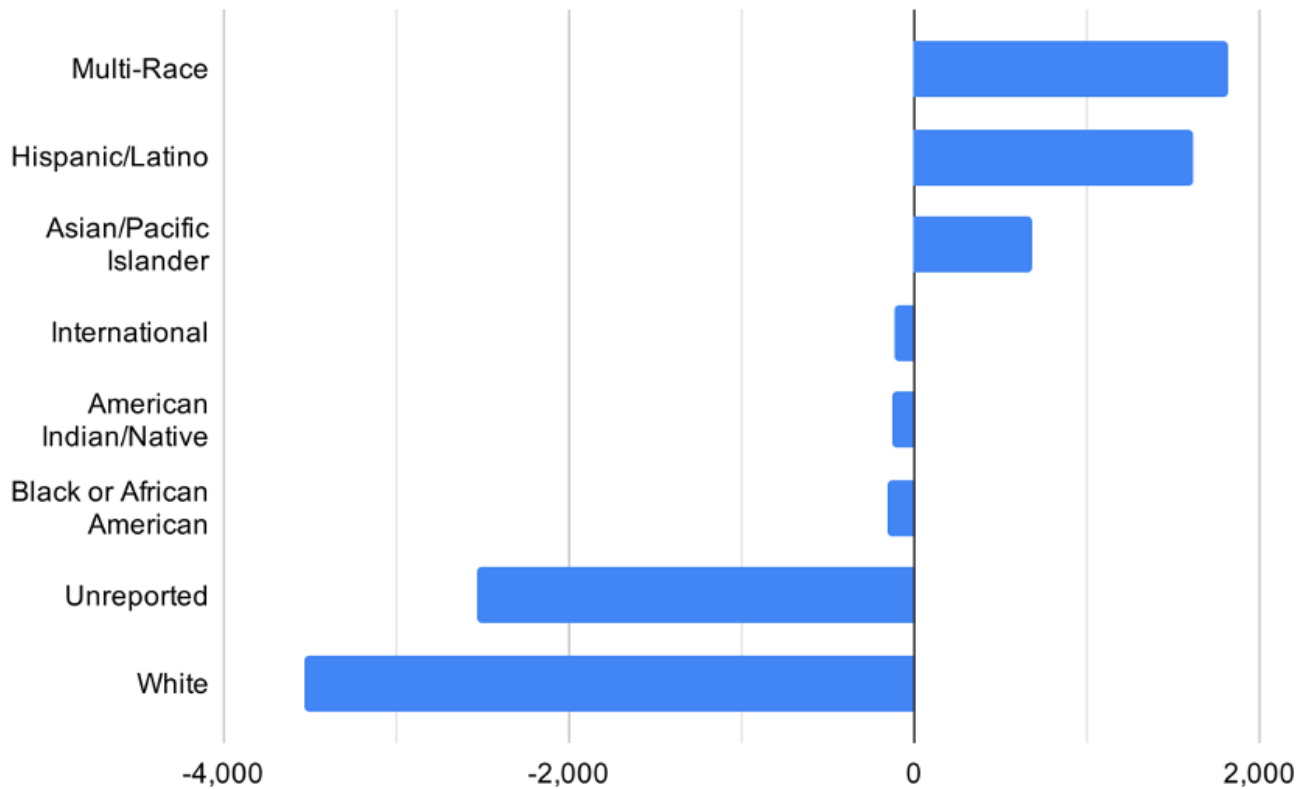
Enrollment among women between 2009 and 2019 remained relatively stable, starting at 18,800 in 2009, falling to 17,800 in 2014 and 2015, and rising to 18,800 again by 2018. Enrollment among men has declined steadily since 2010, falling from

13,700 to 11,500. This is consistent with national trends showing fewer men opting for higher education. This trend has been attributed to the increased cost of education and perceived need to enter the workforce.

Retention and Graduation

As a result of dedicated efforts to nurture success among its students and provide opportunities to stay enrolled, VCU has made progress in guiding all students to graduation, steadily increasing its six-year graduation rate from 59% for the 2008 cohort to 67% for the 2013 cohort. The increase in the six-year graduation rate means that the university has successfully increased the likelihood that more students will have upward mobility and be able to achieve economic stability.

NUMERIC CHANGE IN ENROLLMENT BETWEEN 2009 AND 2019 BY RACE OR ETHNICITY



Source: State Council of Higher Education for Virginia, "EO2: Fall Headcount Enrollment (1992 Thru Current Year)."

¹¹ U.S. Department of Education, National Center for Education Statistics, IPEDS, Fall 2019, 12-Month Enrollment component (provisional data).

As traditionally underrepresented students grew as a proportion of enrollment, graduation rates among all populations have also increased, demonstrating the universal impact of deliberate strategies. White students achieved six-year graduation rates that paralleled trends in the overall student body. The graduation rate of Black students increased from 57% to 67%, closing the gap between Black and White students. The graduation rate of Asian students increased from 66% to 75%. And Latino students increased their graduation rate from 58% to 64%.

As indicated above, this is critical for a diverse workforce, but also for diversifying the pipeline to increase the number of graduated talent.

VCU's focus on retention and graduation is important for the Commonwealth. As a public university

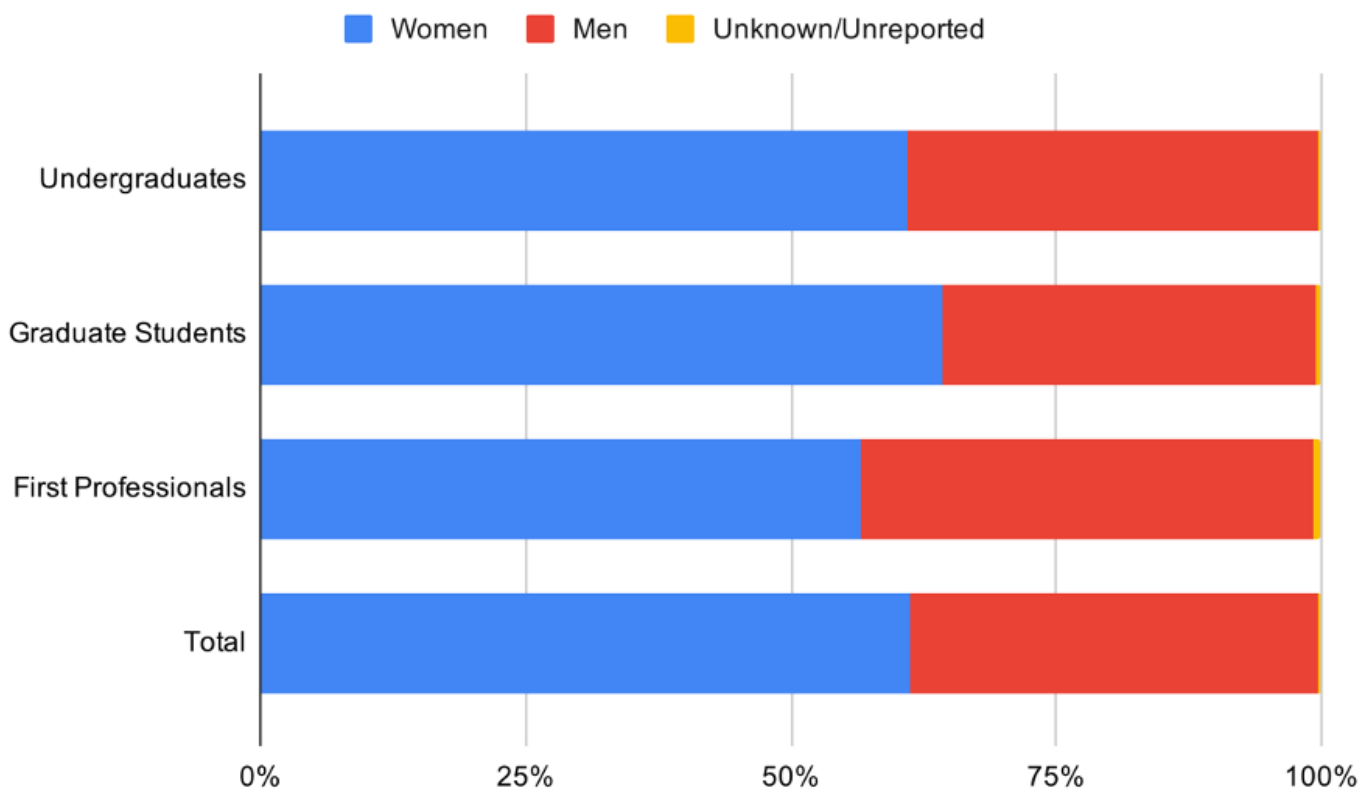
servicing the residents of Virginia, VCU's fall 2019 student body is comprised of approximately 87% in-state students, a slight increase of one point from fall 2009. The ratio of in-state to out-of-state students at VCU has remained stable.

Academic Programs

When nurturing talent for the region and the Commonwealth, VCU's role as a developer and innovator of labor market-relevant academic programs is critical. Educating students for current and future jobs and employers is how the cultivation of talent impacts the vitality of the community.

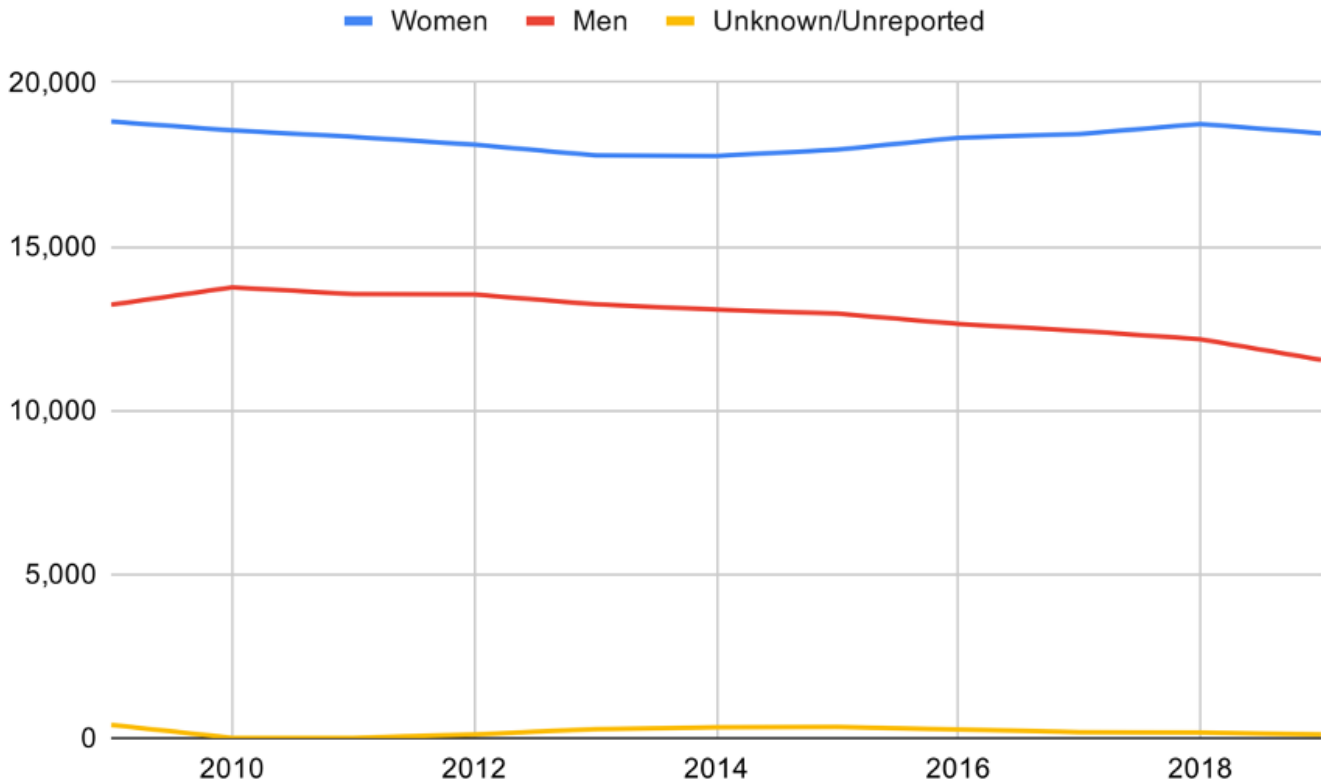
VCU's academic programs are offered across two campuses in the city of Richmond. The Monroe Park Campus houses most undergraduate students and most of the graduate and undergraduate

2019 ENROLLMENT BY GENDER



Source: State Council of Higher Education for Virginia, "EO2: Fall Headcount Enrollment (1992 Thru Current Year)."

ENROLLMENT TREND BY GENDER (2009-2019)



Source: State Council of Higher Education for Virginia, “EO2: Fall Headcount Enrollment (1992 Thru Current Year).”

programs outside of the health sciences. The MCV Campus is situated one mile east of the Monroe Park Campus and built around VCU Medical Center. The MCV Campus is home to the five health sciences schools, the region’s only Level I trauma center, and the Virginia BioTechnology Research Park.

VCU students have choices and opportunities unavailable elsewhere in Virginia. The University offers 39 programs that are unique in Virginia.¹² Notably, this represents VCU’s and central Virginia’s strength in physical and mental health care, as well as VCU Arts programs that boast a global reputation.

¹² Small, Leah, VCU News “‘I can get a degree in that?’ A look at some of the unique programs you can study at VCU.” April 4th 2018. https://news.vcu.edu/article/I_can_get_a_degree_in_that_A_look_at_some_of_the_unique_programs

The university’s ability to attract and develop talent emanates from its synthesis of discipline-based curricula and interdisciplinary study.

The formal structure of the university houses 11 schools and three colleges:

- College of Humanities and Sciences
- College of Health Professions
- College of Engineering
- School of Dentistry
- School of the Arts
- School of Business
- School of Education
- L. Douglas Wilder School of Government and Public Affairs

- School of Medicine
- School of Nursing
- School of Pharmacy
- School of Social Work
- School of Nursing
- School of Social Work

Within the 11 schools and three colleges, the university offers more than 200 programs.

VCU offers programs that, by definition, require integration across different academic fields. For example, the da Vinci Center — a collaboration of VCU’s schools of the Arts, Business, College of Engineering, and the College of Humanities and Sciences — focuses on innovation and entrepreneurship through a cross-disciplinary model. The program’s Master of Product Innovation degree is the first of its kind in the nation. In 2019, the College of Engineering and School of Pharmacy created the Center for Pharmaceutical Engineering and Sciences, home to the first Ph.D. program in pharmaceutical engineering in the nation.

| VCU Programs Unique in Virginia | | |
|---|--|---|
| B.S. in Clinical Radiation Sciences | M.S. in Gerontology | Graduate Certificate in Patient Counseling |
| B.F.A. in Communication Arts | M.A. in Homeland Security and Emergency Preparedness | Graduate Certificate in Professional Counseling |
| B.F.A. in Craft and Material Studies | M.S. in Human Genetics | Ph.D. in Chemical Biology |
| B.A. and B.F.A. in Fashion | M.S. in Nurse Anesthesia | Doctor of Dental Surgery |
| B.A. in Homeland Security and Emergency Preparedness | M.S. in Patient Counseling | Ph.D. in Human Genetics |
| B.F.A. in Painting and Printmaking | M.S. in Pharmaceutical Sciences | Ph.D. in Integrative Life Sciences |
| B.F.A. in Sculpture | Master of Product Innovation | Ph.D. in Nanoscience and Nanotechnology |
| Undergraduate Certificate in Product Innovation | M.S. in Rehabilitation and Mental Health Counseling | Doctor of Nurse Anesthesia Practice |
| Undergraduate Certificate in Spanish/English Translation and Interpretation | Graduate Certificate in Addiction Studies | Ph.D. in Oral Health Research |
| M.S. in Addiction Studies | Graduate Certificate in Aging Studies | Ph.D. in Pharmaceutical Sciences |
| M.S. in Anatomy and Neurobiology | Graduate Certificate in Health Behavior Coaching | Ph.D. in Rehabilitation and Movement Science |
| M.S. in Dentistry | Graduate Certificate in Health Sciences | Ph.D. in Social and Behavioral Sciences |
| M.S. in Genetic Counseling | Graduate Certificate in Homeland Security and Preparedness | Ph.D. in Pharmaceutical Engineering |

| VCU Program Level Breakdown | | | |
|-----------------------------|-----------------|---------------------------------|-------------------|
| Degree Level | Programs at VCU | VCU Programs unique in Virginia | Degrees Conferred |
| Baccalaureate | 67 | 8 | 5,259 |
| Master's | 72 | 11 | 1,400 |
| Doctorate | 42 | 8 | 353 |
| First-Professional | 3 | 2 | 435 |
| Certificate | 49 | 10 | 326 |

VCU's reputation as an academic and innovative leader extends beyond the city of Richmond. VCU boasts 26 graduate and first-professional programs that ranked in the top 50 of their fields in U.S. News & World Report in March 2020. VCU School of the Arts is ranked 4th overall among all graduate public art programs. It ranks 1st in sculpture, 2nd in print-making, 3rd in glass, and 4th in graphic design. VCU Brandcenter is the number one ranked advertising program in the country. In 2020, 26 Brandcenter alumni worked on 18 Super Bowl commercials.¹³

VCU has more than two-dozen graduate and first-professional programs from both the Monroe Park Campus and the MCV Campus ranked in the top 50, including nursing anesthesia (1st), rehabilitation consulting (4th), and healthcare management (5th).

VCU's development of talent in science, technology, engineering, and math (STEM) fields included around 23% of 2019 enrollment, almost 6,600 students.¹⁴ The 3% decline in total enrollment between 2018 and 2019 appears amplified in the STEM majors, as STEM enrollment fell by 8% in the same period. Between 2015 and 2018, enrollment in STEM majors remained between 24% and 25% of total enrollment. Given that U.S. Bureau of Labor statistics projects that STEM occupations will grow over two times faster than all other occupations (8% as compared to 3.7%), this decline challenges

VCU's ability to meet labor market needs and to train students for both current and future career opportunities. Notably, the decline in STEM enrollment is unequally distributed across disciplines—fall 2021 enrollment in the College of Engineering is higher than its pre-pandemic peak, a 7.3% increase in 2020.

The history of health care at VCU pre-dates the university itself with the founding of the Medical College of Virginia in 1854. The health care programs at VCU are an essential part of the university and the region. Between 2009 and 2019, the proportion of VCU students enrolled in health care programs has remained steady around 13%. The programs are highly selective, where students learn essential skills in the classroom and lab while providing care to patients from around the region at the VCU Medical Center.

¹³ Uginclus, Lella. "Bringing in the Celebrity Big Guns for Super Bowl LIV Ads." VCU Division of University Relations, February 3, 2020. https://news.vcu.edu//article/Bringing_in_the_celebrity_big_guns_for_Super_Bowl_LIV_ads.

¹⁴ Office of the Provost, IRDS. "Enrollment Trends by STEM - H (Fall)." VCU, 2020. <https://irds.vcu.edu/eaar/interactive-reports/enrollment/enrollment-trends-by-stem---h/>.

In addition to increasing the numbers in STEM and health care, the need is to find ways to recruit and support more students across demographic categories. As the table shows, around 75% of American Indian/Native America, Black, Hispanic, and two or more races do not choose either STEM or health care fields, fields that offer employment opportunity, and desirable salaries.

Admissions

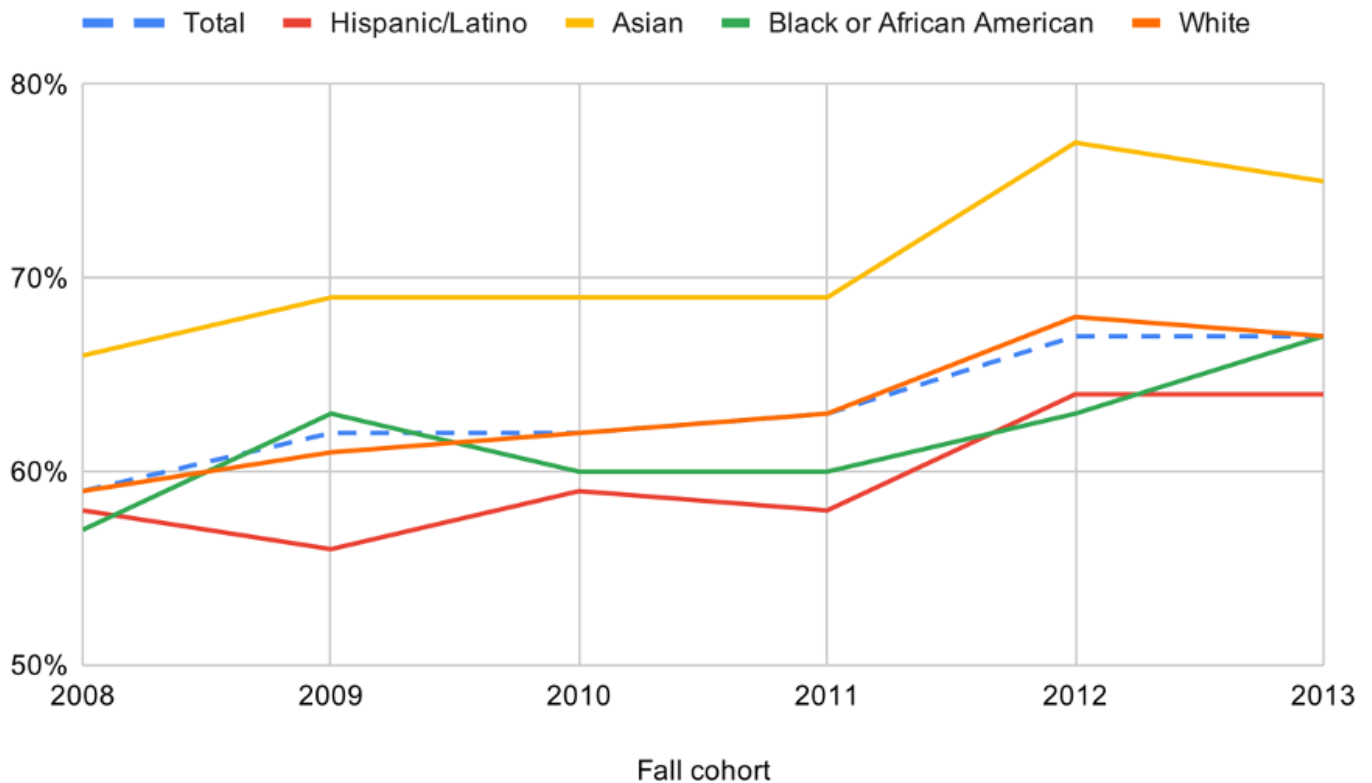
VCU receives tens of thousands of applications from interested students each year. Recent years are no exception. The number of applications from first-time college students to VCU increased 12% from almost 15,000 in 2009 to 16,800 in 2019. During the same period, enrollment increased more than 20% from 3,900 to around 4,600. The acceptance rate also increased from 69% in 2009

to more than 85% in 2019, and the percentage of accepted students who enrolled (the yield rate) increased from 37% in 2009 to 41% in 2012 before falling to 32% in 2019.¹⁵

Graduate admissions for new graduate students yielded around 2,000 students every year between 2010 and 2019 after a decline from 2,400 in 2009. The university accepted 2,800 to 3,200 graduate students in 2010 and 2019, or 42% to 52% of applicants, respectively. The lower acceptance rate and higher yield rate of VCU's graduate programs compared to undergraduate programs suggests graduate students applying to VCU do so with specific programs in mind. Around two-thirds of graduate

¹⁵ State Council of Higher Education for Virginia. "B8 Report: Applications, Acceptances, Enrolls - Total." SCHEV Higher Ed Data. https://research.schev.edu/enrollment/Bo8H_report.asp.

6-YEAR GRADUATION RATES BY RACE OR ETHNICITY



Source: National Center for Educational Statistics. "IPEDS Data Center." IPEDS, 2019. <https://nces.ed.gov/ipeds/datacenter/Facsimile.aspx?unitid=234030>.

**Top-50-ranked graduate and first-professional programs,
U.S. News & World Report, March 2020**

| | | | |
|---------------------------------|------|--|------|
| Fine Arts – Sculpture | 1st | Special Education (online) | 15th |
| Nursing Anesthesia | 1st | Nuclear Engineering | 18th |
| Fine Arts – Printmaking | 2nd | Educational Administration (online) | 19th |
| Fine Arts – Glass | 3rd | Pharmacy | 20th |
| Fine Arts | 4th | Physical Therapy | 20th |
| Fine Arts - Graphic Design | 4th | Social Work | 25th |
| Rehabilitation Counseling | 4th | Best Education Schools | 26th |
| Health Care Management | 5th | Nursing (online) | 32nd |
| Time-based New Media | 5th | Best Nursing Schools: Master’s | 33rd |
| Education (online) | 10th | Best Nursing Schools: Doctor of Nursing Practice | 37th |
| Fine Arts - Painting/Drawing | 12th | Public Management and Leadership | 39th |
| Nursing Administration (online) | 12th | Clinical Psychology | 43rd |
| Occupational Therapy | 15th | Public Affairs | 45th |

Percent headcount by STEM-H Identification by academic period

| | Fall 2019 STEM | Fall 2019 Healthcare | Fall 2019 Not STEM-H |
|---------------------------|---------------------------|---------------------------------|---------------------------------|
| American Indian/Alaskan | 9.1% | 16.4% | 74.5% |
| Asian | 37.2% | 15.3% | 47.5% |
| Black/African American | 19.4% | 5.6% | 75.0% |
| Hawaiian/Pacific Islander | 45.5% | | 54.5% |
| Hispanic/Latino | 21.4% | 5.9% | 72.7% |
| International | 37.2% | 10.3% | 52.5% |
| Two or More Races | 19.8% | 5.6% | 74.6% |
| Unknown | 5.3% | 55.5% | 39.2% |
| White | 19.3% | 11.9% | 68.8% |

Source: VCU Institutional Research and Decision Support Databases <https://irds.vcu.edu/>

students accepted to VCU consistently choose to enroll at VCU.

Student SAT scores have also improved, with the average combined SAT score increasing 90 to 100 points between 2009 and 2019. Although many VCU schools continue to utilize standardized testing in admissions requirements, others, such as the School of Social Work, have ended the practice.

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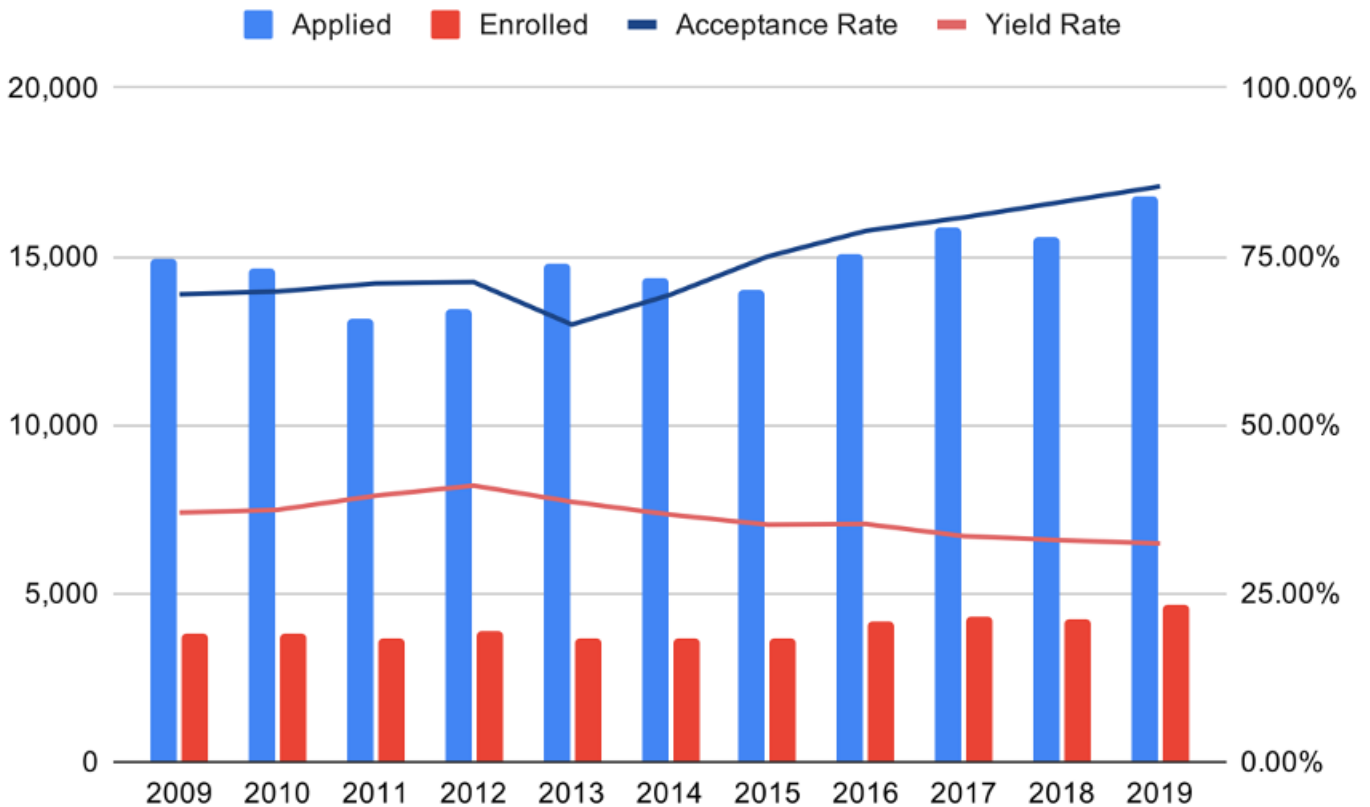
Student Success

VCU has had a steady track record of helping undergraduate students progress through a university education. Retention rates between 2009 and 2018 for first-time, full-time¹⁶ students have wavered between 83% and 87%¹⁷, a trend comparable to peer institutions also experiencing relatively flat retention rates. Moreover, VCU's six year graduation rate has increased from 62.1% to 67.2% over the same years, which is higher than the 2019 national average of 62.2%

¹⁶ First-Time Full-Time (FTFT) refers to full-time students who have not taken courses at any postsecondary institution prior to enrollment.

¹⁷ State Council of Higher Education for Virginia, "RTOI: Retention Report (First-time, Full-time Students)"

VCU ADMISSIONS TRENDS (FIRST TIME COLLEGE STUDENTS), 2009-2019



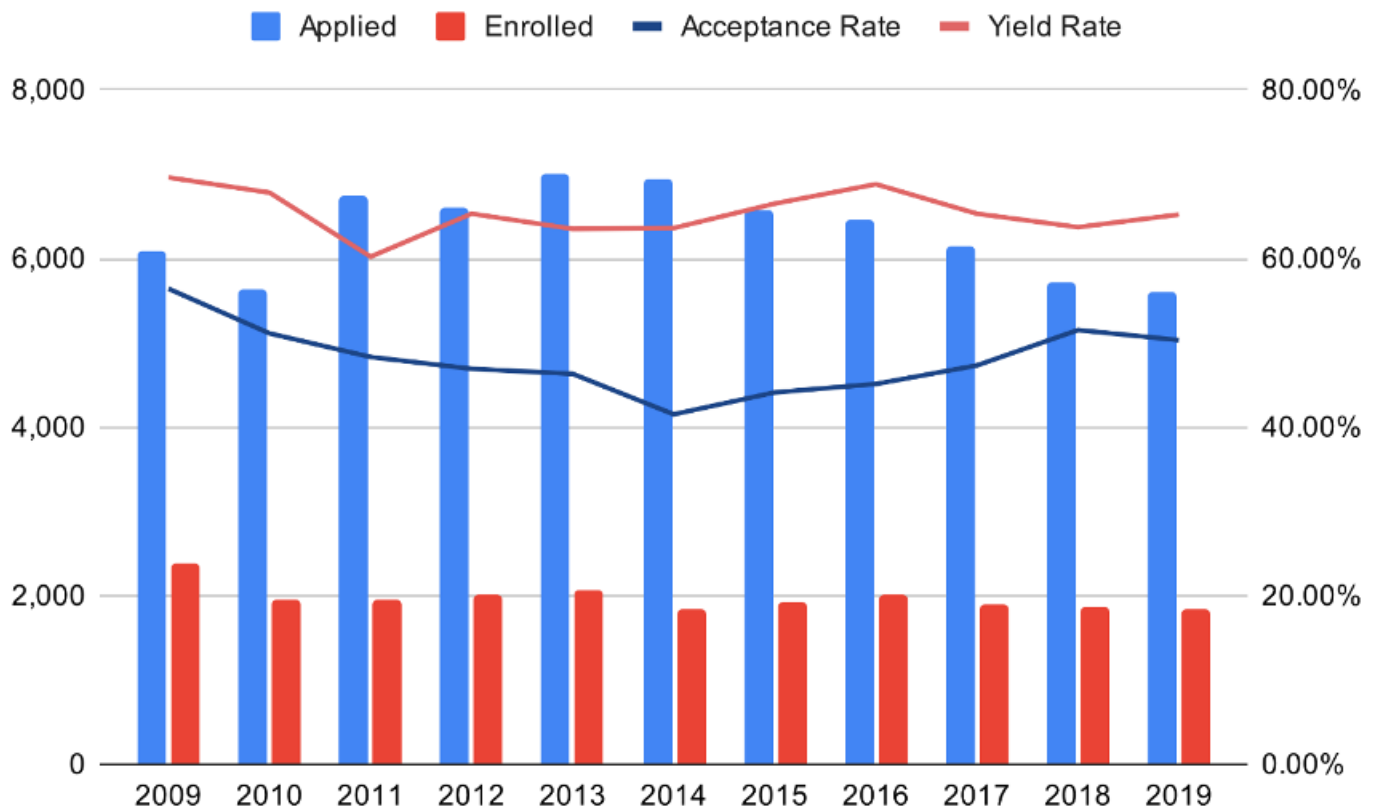
Source: State Council of Higher Education for Virginia, "B8 Report: Applications, Acceptances, Enrolls - Total."

VCU's vitality as a launching pad for success in society is demonstrated by its students' achievement rates after graduation. Survey results found that six months after graduating from VCU, 74% of graduates were employed or in graduate school. Around 86% of survey respondents reported finding jobs related to their major. Alumni survey results indicate that 93% of undergraduate alumni felt able to get along with a diverse workforce and to understand different perspectives. From the same survey, it was reported that 90% of undergraduate alumni felt ready to apply knowledge and diverse perspectives to work in their field.¹⁸ The May 2020 First Destination Survey also noted that 73% of students are employed in Virginia, 43% in health care, and the overall median salary is \$50,000. Notably, 83% of students had one or more co-curricular experiences, of which 25% led to an employment offer.

Encouraged by this data, VCU continues to innovate around curriculum and student learning. Since the last impact report, we've seen VCU launch the REAL (Relevant, Experiential and Applied Learning) initiative to provide hands-on learning and work-relevant skill building experience to every student. As of the Spring 2021 semester, REAL had a 66.8% participation rate.

¹⁸ Virginia Commonwealth University, Life at VCU, "After VCU" Available at <https://www.vcu.edu/life-at-vcu/after-vcu/> Accessed: December 23, 2020

VCU ADMISSIONS TRENDS (NEW GRADUATES), 2009-2019



Source: State Council of Higher Education for Virginia, "B8 Report: Applications, Acceptances, Enrolls - Total."

WORKFORCE DEVELOPMENT: REACHING WIDER AND DEEPER INTO THE COMMUNITY

Workforce development looks at how VCU assets are delivered to all community learners to open up economic opportunities and support the economic mobility of area residents.

The Office of Professional and Continuing Education (OPCE) provides continuing education, professional development and skill building to the community. Recently, it implemented a badging strategy to recognize the attainment of skills and competencies for VCU students and the communities within the city of Richmond. As of 2021, VCU has developed 94 badges, which have been allocated to 2,000 learners. Examples of OPCE community offerings include:

- A badge for Paralegal training which leads to local jobs;
- A program to support craft beer (a burgeoning local industry on hold due to the pandemic); and
- A partnership with the VCU Department of Rehabilitation Counseling to provide continuing education to the communities within Richmond for counseling and behavioral health.

VCU's School of Education (SOE) has also assumed an important role in workforce development. Recognizing that the well-being of families is paramount to the success of children, they have developed and implemented many workforce-related projects to support families in the region. SOE has been awarded \$12.46 million dollars to prepare adult learners for the workforce, which includes literacy training and English language learning.

As we have seen earlier in this report, the need to increase STEM skills is critical. The VCU College of Engineering is building digital technology skills as part of an effort by the Capital Region, which runs from the cities of Richmond to Baltimore, to increase the number of people ready for high-demand technology jobs. The Capital CoLab Digital Tech Credential is a free program for learners to gain digital skills in high demand fields such as cybersecurity, AI and machine learning, and data analysis, with either a generalist or specialist credential recognized by regional employers.

Notably, Digital Tech credentials provide skills to STEM and non-STEM students alike. VCU was the first higher education institution in the capital region to offer the badge to students. Badges can be completed early in the student journey, allowing students to access jobs and internships. The courses are also cross-listed with the OPCE to offer community members access to the credential.

Another opportunity available to VCU students and local community members is the recent launch of the Entrepreneurship Academy, a partnership among VCU's da Vinci Center, its REAL initiative, Activation Capital, and the Jackson Ward Collective, a local area business hub that promotes black entrepreneurship. Learners will develop entrepreneurship skills such as how to pitch an idea, design thinking, and digital literacy.

VCU Health System runs the Pathways to Health Care Workforce Program, which provides workforce training to young adults (17-26) to enter careers in the health care industry. To date, the program has trained 176 young adults living in the Richmond region, of which 121 (69%) have been offered a position at the VCU Health System. The average turnover rate for program participants is 18.7%. In addition, VCU Health partnered with Caritas to support the Quick Start program, which provides job skills and workforce development programming in construction for individuals recently released from incarceration. Other work-

force development efforts include Jump Rope to Stethoscope, Future Nurse Leaders and the Explorers partnership with the Boy Scouts of America to promote health careers in the region.

VCU AS A MAJOR EMPLOYER

As a major regional employer, VCU can help shape opportunities for the region's residents and provide regional leadership modeling best practices around salaries and diversity, equity, and inclusion. Recognizing that faculty is usually hired nationally, this section focuses on VCU staff members. The first table looks at VCU's impact on diversity, equity, and inclusion. The percentage of staff by demographic sector between fall 2016 and fall 2020 has held steady. Notably, this mirrors the population demographics of the Commonwealth (White, 61%, Black, 19%, American Indian or Alaska Native, .5%, Asian, 7%, Native Hawaiian or Other Pacific Islander .1%, two or more races, 3%). The main area of difference is the Hispanic or Latino population, which is 10% in the Commonwealth but around 5% in VCU.

Equally important to having a job is having a job with a living wage.¹⁹ The table below indicates that 87% of VCU employees do earn a family sustaining wage, although there are some gaps, with 90% of White staff earning that level. In most other groups, the proportion is around 80%. Given VCU's commitment to advancing equity, VCU will be looking at how to improve this.

In conclusion, VCU has made significant steps prioritizing outcomes for the people it serves. Student success rates have improved for a more diverse

student body, the university and health system have taken steps to provide workforce development paths to local residents, and nurturing and supporting a diverse staff - something VCU tracks publicly in this report. VCU continues to improve in the areas of expanding living wages, offering accessible workforce options, and recruiting and supporting a more diverse graduate population, especially as graduate and older student enrollment rates are on the decline.

¹⁹ Living Wage is defined a wage that supports 2 adults working, 1 child in the city of Richmond by the MIT living wage calculator. That figure is \$16.81 per hour.

VCU STAFF DEMOGRAPHICS

| | American Indian / Alaskan | Asian | Black/ African American | Hawaiian/ Pacific Islander | Hispanic/ Latino | Intl | Two or More Races | Unknown | White |
|-----------|---------------------------|-------|-------------------------|----------------------------|------------------|-------|-------------------|---------|--------|
| Fall 2016 | 0.33% | 8.37% | 18.2% | 0.05% | 3.87% | 5.15% | 2.61% | 0.86% | 60.56% |
| Fall 2017 | 0.28% | 8.26% | 18.51% | 0.05% | 4.03% | 5.02% | 2.84% | 0.68% | 60.35% |
| Fall 2018 | 0.28% | 8.48% | 18.15% | 0.05% | 4.53% | 4.79% | 2.99% | 0.69% | 60.02% |
| Fall 2019 | 0.23% | 8.76% | 18.36% | 0.04% | 4.81% | 4.97% | 3.07% | 0.48% | 59.28% |
| Fall 2020 | 0.27% | 8.97% | 17.48% | 0.11% | 5.18% | 5.03% | 2.99% | 0.48% | 59.49% |

VCU STAFF WAGES BY DEMOGRAPHIC BREAKDOWN

| | Total | Percentage above living wage | Percentage below living wage |
|--------------------------------------|-------|------------------------------|------------------------------|
| #1 Total Number of Employees | 100 | 87% | 13% |
| Breakdowns | | | |
| #1.1 By Race/Ethnicity | | | |
| American Indian/Alaskan Native | 0% | 76% | 24% |
| Asian | 5% | 79% | 21% |
| Black or African American | 23% | 81% | 19% |
| Hispanic or Latino | 4% | 81% | 19% |
| Native Hawaiian or Pacific Islander | 0% | 100% | 0% |
| White | 63% | 90% | 10% |
| Other | 4% | 81% | 19% |
| Total | | | 13% |
| #1.2 By Gender Identification | | | |
| Male | 38% | 85% | 15% |
| Female | 62% | 88% | 12% |
| Other | | | |
| Total | | | 13% |

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A man with a beard, wearing a white lab coat, is shown in profile, looking down and to the right. He is holding a mobile phone to his ear with his left hand. The background is a blurred clinical or office environment. The image is overlaid with several diagonal, semi-transparent geometric shapes in shades of yellow, orange, and grey. The text 'PART 2: A VIBRANT HEALTHY PLACE (PLACE)' is written in a bold, white, sans-serif font across the lower portion of the image.

***PART 2: A VIBRANT HEALTHY
PLACE (PLACE)***

VCU and VCU Health shape the economic, social, and cultural vitality and health of the region in the following ways:

1. They are major economic entities; thus, it is important to analyze the size and scope of that impact by analyzing how VCU operations and spending patterns impact the economy of Richmond, the Richmond MSA, and the Commonwealth.
2. They are stewards of community well-being by advancing education, health, housing, environmental sustainability, and the arts to create more beautiful, more vital, more just, and more equitable places.

ECONOMIC IMPACT

To estimate the impact of VCU's operations and associated spending on the state, regional, and local economies, VCU's Center for Urban and Regional Analysis (CURA) used IMPLAN modeling software to prepare and customize an economic model for each of the study regions. IMPLAN is a regional input-output modeling system used by economists to estimate the effects of spending and policy decisions. These customized models use data on employment, student enrollment, visitations, and expenditures mostly provided by VCU.²⁰

With a combined payroll of more than 25,000²¹ workers in FY20, VCU and VCU Health System remain the largest employers in the city of Richmond and the Richmond MSA.^{22,23} In a typical year, VCU's direct and associated spending provides the region a powerful economic stimulus that can be estimated through statistical models such as IMPLAN. However, in a year characterized by the disruptive impacts of COVID-19, including the loss of more than 300,000 jobs²⁴ in Virginia between March and April of 2020, VCU's impact as a stable employer—one that worked to avoid widespread layoffs and furloughs—in the city, the region, and the Commonwealth cannot be overstated.

Within the Commonwealth, the university's spending on operations, maintenance and capital invest-

ment combined with the spending of employees, students, and visitors (i.e., VCU-associated spending) in FY20:

- Generated an estimated total economic impact of \$9.5 billion.
- Created or supported 58,000 jobs.²⁵

²⁰ To have an accurate estimate of the economic impact for each of the study areas, VCU operations and associated expenditures have been reduced to reflect only the money spent with businesses in the three regions, which have an impact on the local economy. Purchases made at establishments outside of the study areas, as well as the cost of goods sold that are not produced in the state, have no impact on the state, regional, and city economies; therefore, these dollars are not counted in the calculations of overall economic impact. This spending “leaks” to other geographic areas. In general, the smaller the geographic/economic area that is analyzed, the greater leakage in spending will occur and, lowering the impact of the activity being studied.

²¹ Figures provided by VCU Human Resources (11,733 employees) and VCU Health System (13,477 employees).

²² Greater Richmond Partnership. “Largest Employers RVA Jan 2021,” January 2021. https://www.grpva.com/wp-content/uploads/2021/01/GRP_LargestEmployers_Jan2021.pdf.

²³ Virginia Employment Commission. “Virginia Community Profile, Richmond MSA.” Virginia LMI, November 21, 2020. <https://virginiaworks.com/Portals/200/Local%20Area%20Profiles/5121040060.pdf>.

²⁴ Virginia Employment Commission. “Local Area Unemployment Statistics (LAUS).” Current Local Area Unemployment Statistics (LAUS) - December 2020. Accessed January 30, 2021.

²⁵ Jobs figures include both new jobs created and existing jobs retained.

- Had a total Commonwealth of Virginia multiplier of 2.47—for every \$1.00 that VCU spends on operations, maintenance, and labor in the Commonwealth, Virginia experiences a total economic impact of \$2.47.

VCU's impact in the Richmond MSA is also substantial. In the 13 counties and four cities that comprise the region, VCU-associated spending in FY20:

- Generated a total economic impact of \$6.3 billion.
- Created or supported 44,000 jobs.
- Had a total regional multiplier of 2.78—for every \$1.00 that VCU spends on operations, maintenance, and labor in the Richmond MSA, the region experiences a total economic impact of \$2.78.

Finally, VCU-associated spending in the city of Richmond in FY20:

- Generated a total economic impact of \$3.9 billion.
- Created or supported 33,000 jobs.
- Had a total Richmond multiplier of 1.92—for every \$1.00 that VCU spends on operations, maintenance, and labor in the City of Richmond, the city experiences a total economic impact of \$1.92.

This section explores VCU's impact as summarized above at three geographic levels of detail. It concludes with a particular focus on the role of VCU as a stable employer throughout the pandemic, a time of unprecedented instability.

The economy of a place—the relationships of manufacturers, suppliers, wholesalers, retailers, service providers, and customers—is a network arranged in a specific pattern whereby changes at one end of the network will have effects on every other connected element. Industries buy products and services from other industries that make products or services that are sold to yet other industries or

final consumers. An economic impact model uses information on how that network is structured and estimates the effect of an increase in production in one industry on the overall economy.

This spending includes materials, equipment, services (e.g., food service contractors), and labor. This initial spending causes ripple effects, also known as “multiplier effects,” whereby the dollars flows to other industries. These additional effects are called indirect and induced impacts.

The details of how the model is customized to reflect the intermediate expenditures and value VCU adds are explained in the appendix.

This analysis of VCU's economic impact seeks to capture not just university operations and capital spending but also that of students and their guests, employees' visitors, and hospital patients and their families. The rationale for including these expenditures relies on the definition of true impact from Watson et al.: “The net change to the economic base of a region that would not otherwise be there without the industry or firm under analysis.”²⁶ Based on this definition, CURA has linked the presence of VCU in the region with the following types of spending:

1. Operating expenses: this spending includes all spending related to the operations of VCU and VCU Health System and the maintenance of plants and sites apart from payroll. This totaled more than \$2.6 billion in FY20.
2. Labor expenses: payroll costs, including benefits and taxes, are modeled separately from operational spending to understand how the household spending of employees supports additional economic activity. Labor expenses

²⁶ Watson, Philip, Joshua Wilson, Dawn Thilmany, and Susan Winter. “Determining Economic Contributions and Impacts: What Is the Difference and Why Do We Care?” *The Journal of Regional Analysis & Policy* 37, no. 2 (2007): 140–46. obs figures include both new jobs created and existing jobs retained.

are modeled by the location of the job (and where payroll taxes are incurred) rather than the home of the employee; however, the model accounts for commuting rates and where those commuters are likely to make different purchases.

3. Capital spending: money spent on new construction and infrastructure is modeled separately from operating expenses because capital investments and their impacts represent a one-time or temporary event rather than ongoing economic effects. The spending modeled in this analysis includes all capital projects completed and under construction during FY2020.
4. Student spending: VCU attracts thousands of students to the city of Richmond every year who would otherwise study elsewhere. The spending of those students—on food, lodging, entertainment, and necessities—creates a measurable economic impact. However, the spending of students who would be in the study region regardless of VCU's presence cannot be linked to VCU. Based on a survey of students conducted in December 2020, CURA estimated that 79% of student spending may reasonably be modeled in the city of Richmond, 74% in the Richmond MSA, and 17% in Virginia.
5. Visitor spending: VCU's students and employees attract visitors who stay in the area and spend money on hotels, food, and gifts. VCU Medical Center also treats patients whose family members and friends often travel with or visit them. CURA modeled the impacts of student, employee, and medical center visitor spending based on patient origin and medical center discharge information, survey data, the geographic distribution of students and employees, and estimates from the Virginia Tourism Corporation.

These expenditures may be considered “but for...” expenditures: money that would otherwise be spent outside of the region in question but for the

presence of VCU. Some of the money spent by VCU or its associates happens outside of the three study areas and, therefore, has an impact outside of the study areas. This spending is considered leakage. On top of accounting for geographic location of spending, several additional assumptions and consequent adjustments have been made for each spending source. The purpose of these adjustments is twofold: avoiding double-counting of certain expenses (e.g., students spending for rent, which is partially paid to VCU and, therefore, considered in the VCU operational budget analysis), and reflecting more accurately their final industry targets.

Overall Economic Impact of VCU Operations and Associated Spending for Fiscal Year 2020

In FY20, VCU, VCU Health System, and their associated spending generated in the economy of the city of Richmond had a total economic impact of \$3.86 billion. That economic activity:

- Supported 32,782 jobs, including more than 14,000 outside of VCU.
- Contributed more than \$2.5 billion to the city GDP.
- Generated \$1.92 in the local economy for every \$1.00 spent in VCU and VCU Health operations and labor—the original \$1.00 and an additional \$0.92.
- Generated more than \$391 million in local, state, and federal tax dollars.

Within the Richmond MSA, VCU's spending on operations, maintenance and capital investment, and the spending of its employees, students, and visitors in FY20 generated a total economic impact of \$6.34 billion. That economic activity:

- Supported 43,886 jobs, including more than 25,000 outside of VCU.
- Contributed more than \$4.3 billion to the Richmond MSA GDP.

- Generated \$2.78 in the regional economy for every \$1.00 spent in VCU and VCU Health operations and labor—the original \$1.00 and an additional \$1.78.
- Generated more than \$854 million in local, state, and federal tax dollars.

VCU's impact on the economy of the Commonwealth of Virginia is also significant. VCU's spending within Virginia in FY20 generated a total economic impact of \$9.53 billion. That economic activity:

- Supported 58,149 jobs, including more than 36,000 outside of VCU.

ESTIMATED IMPACTS OF VCU, VCU HEALTH, AND VCU-ASSOCIATED EXPENDITURES (FY20)

| Impact Region | Economic Impact | Value Added | Labor Income | Employment |
|----------------------|------------------------|--------------------|---------------------|-------------------|
| City of Richmond | \$3,862,928,435 | \$2,584,804,633 | \$1,988,754,146 | 32,782 |
| Richmond MSA | \$6,342,925,179 | \$4,312,379,484 | \$3,058,593,155 | 43,886 |
| Virginia | \$9,529,077,125 | \$5,680,827,380 | \$4,132,627,706 | 58,149 |

Note: All dollar values are in 2021 Dollars.

Sources: Estimates developed on VCU administrative data, Travel/Trak America (TNS), Virginia Tourism Corporation (VTC), the National Center for Education Statistics (NCES), and CURA survey data by the VCU Center for Urban and Regional Analysis using IMPLAN. Inflation adjustments made using the U.S. Bureau of Labor Statistics' Consumer Price Index for All Urban Consumers and IMPLAN.

ESTIMATED TAX IMPACTS OF VCU, VCU HEALTH, AND VCU-ASSOCIATED EXPENDITURES (FY20)

| Impact Region | Local | State | Federal | Total |
|----------------------|---------------|---------------|----------------|-----------------|
| City of Richmond | \$42,389,511 | \$41,261,154 | \$307,896,607 | \$391,547,271 |
| Richmond MSA | \$91,736,870 | \$132,194,482 | \$630,130,891 | \$854,062,244 |
| Virginia | \$121,549,964 | \$170,915,687 | \$835,930,477 | \$1,128,396,128 |

Sources: Estimates developed on VCU administrative data, TNS, VTC, NCES, and CURA survey data by the VCU Center for Urban and Regional Analysis using IMPLAN. Inflation adjustments made using the U.S. Bureau of Labor Statistics' Consumer Price Index for All Urban Consumers and IMPLAN.

- Contributed more than \$5.6 billion to the Virginia GDP.
- Generated \$2.47 in the state economy for every \$1.00 spent in VCU and VCU Health operations and labor—the original \$1.00 and an additional \$1.47.
- Generated more than \$1.1 billion in local, state, and federal tax dollars.

ESTIMATED IMPACTS OF VCU, VCU HEALTH, AND VCU-ASSOCIATED EXPENDITURES IN RICHMOND

| City of Richmond Summary | Direct | Indirect | Induced | Total |
|--------------------------|-----------------|---------------|---------------|-----------------|
| Labor Income | \$1,630,033,632 | \$207,192,075 | \$151,528,439 | \$1,988,754,146 |
| Value Added | \$1,984,153,746 | \$311,071,648 | \$289,579,239 | \$2,584,804,633 |
| Economic Impact | \$2,837,923,885 | \$545,204,477 | \$479,800,074 | \$3,862,928,435 |
| Employment Impact | 26,916 | 3,050 | 2,816 | 32,782 |
| Tax Impact (Local) | | | | \$42,389,511 |
| Tax Impact (State) | | | | \$41,261,154 |
| Tax Impact (Federal) | | | | \$307,896,607 |

Sources: Estimates developed on VCU administrative data, TNS, VTC, NCES, and CURA survey data by the VCU Center for Urban and Regional Analysis using IMPLAN. Inflation adjustments made using the U.S. Bureau of Labor Statistics' Consumer Price Index for All Urban Consumers and IMPLAN.

Overall Impact: City of Richmond

In FY20, VCU and VCU Health System operations and associated spending—including operational expenditures, payroll, capital investments, student spending, and visitor spending—generated an impact of \$3.86 billion in Richmond, supporting more than 32,000 jobs and generating nearly \$1.99 billion in labor income. In addition, VCU activities and VCU-associated spending in the city have generated \$42 million of local taxes, \$41 million of state taxes, and \$307 million of federal taxes. For every \$1.00 spent by VCU and VCU Health System, the city economy gained another \$0.92.

More specifically, VCU and VCU-associated spending directly supported nearly 27,000 jobs and \$1.6 billion in labor income. University operations and capital spending in addition to student and visitor spending indirectly created or supported an additional 3,050 jobs and \$207 million in labor income for a total indirect impact of \$545 million. Finally, the spending of people employed directly by VCU and indirectly by VCU-associated spending generated an induced impact of \$480 million, including \$151 million of labor income and 2,816 jobs.

Spending also generates tax revenues through sales, property, and payroll taxes, among others. Modeling estimates VCU and VCU-associated spending in Richmond generated \$42 million in local tax revenues, \$41 million in state tax revenues, and \$308 million in federal tax revenues in FY20.

Overall Impact: Richmond MSA

The Richmond MSA represents a more complete economic geography than the city alone. Although a large majority of VCU and VCU Health System jobs are in the city, most employees live in the metropolitan area outside of the city. Analyzing the entire region captures the flows of money throughout all the places that people generally live, work, and play, as well as the intraregional business transactions. The economic impact of VCU and VCU-associated spending in the Richmond MSA is larger with additional spending captured and the economic multiplier of each dollar spent is larger as well.

In FY20, VCU and VCU-associated spending in the MSA generated a total economic impact of \$6.3 billion, including \$3 billion in labor income supporting 43,886 jobs. That activity generated \$92 million in local taxes, \$132 million in state taxes, and \$630

ESTIMATED IMPACTS OF VCU, VCU HEALTH, AND VCU-ASSOCIATED EXPENDITURES IN VIRGINIA

| Virginia Summary | Direct | Indirect | Induced | Total |
|----------------------|-----------------|-----------------|-----------------|-----------------|
| Labor Income | \$2,336,684,718 | \$1,062,347,323 | \$733,595,665 | \$4,132,627,706 |
| Value Added | \$2,839,603,299 | \$1,413,115,560 | \$1,428,108,521 | \$5,680,827,380 |
| Economic Impact | \$4,778,266,839 | \$2,348,066,583 | \$2,402,743,703 | \$9,529,077,125 |
| Employment Impact | 29,290 | 14,432 | 14,427 | 58,149 |
| Tax Impact (Local) | | | | \$121,549,964 |
| Tax Impact (State) | | | | \$170,915,687 |
| Tax Impact (Federal) | | | | \$835,930,477 |

Sources: Estimates developed on VCU administrative data, TNS, CRUSA, NCES, and CURA survey data by the VCU Center for Urban and Regional Analysis using IMPLAN. Inflation adjustments made using the U.S. Bureau of Labor Statistics' Consumer Price Index for All Urban Consumers and IMPLAN.

million in federal taxes. For every \$1.00 spent in the Richmond MSA by VCU and VCU Health System in operations and labor, the regional economy gained another \$1.78.

VCU and VCU-associated spending directly supported 27,000 jobs and \$2.1 billion in labor income. Indirectly, university operations and capital spending as well as student and visitor spending supported an additional 5,400 jobs and \$381 million in labor income. And the spending of people employed directly by VCU and indirectly by VCU-associated spending generated an induced impact of nearly \$2 billion, including \$616 million in labor income supporting 11,625 jobs.

VCU and VCU-associated spending in the region generated an estimated \$92 million in local tax revenues, \$132 million in state tax revenues, and \$630 million in federal tax revenues.

Overall Impact: Virginia

Virginia represents a large economic geography that captures much of the economic activity of VCU and VCU Health System and associated spending, apart from student spending. In FY20, that activity in Virginia generated a total economic impact of

\$9.5 billion, including \$4.1 billion in labor income that supported 58,000 jobs. For every \$1.00 spent in Virginia by VCU and VCU Health System in operations and labor during FY20, the state economy gained another \$1.47.

Within the Commonwealth, VCU and VCU-associated spending directly generated \$2.3 billion in labor income, supporting 29,290 jobs. University operations and capital spending as well as student and visitor spending indirectly supported an additional 14,000 jobs and \$1 billion in labor income. The household expenditures of people employed directly by VCU and indirectly by VCU-associated spending generated an induced impact of \$2.4 billion, including \$733 million in labor income supporting more than 14,000 jobs.

VCU and VCU-associated spending in Virginia in FY20 generated \$121 million in local tax revenues, \$171 million in state tax revenues, and \$836 million in federal tax revenues.

VCU and Regional Stability

VCU and VCU Health System provides employment to more people in the Richmond MSA than any other organization. The university employs more than 18,000 people in the region, including \$1.6 billion

of payroll that translates into household spending. As described in Part 2 of this report, the economic impact of VCU's payroll includes 26,000 jobs: the 18,000 VCU jobs held by people living in the region and an additional 8,000 supported by the spending of VCU employees who live in the region.

Between March and April 2020, the regional unemployment rate rose from 3.4% to 11.2%.²⁷ As the pandemic progressed and the continued operation of university functions remained unclear, VCU instituted a hiring and salary freeze and announced the possibility of furloughs. The economic impact of furloughs and staff reductions at the region's largest employer would be felt far beyond VCU's two campuses. However, no widespread furloughs occurred. On June 5th, 2020, the VCU Board of Visitors announced that employee furloughs were no longer being considered, stating, "We are committed to protecting jobs as much as possible."

VCU administration made clear that potential revenue shortfalls faced by the university would not fall to students. In a university update dated May 8, 2020, VCU President Michael Rao stated, "We learned during the great recession that we cannot ask our students to bear the brunt of a financial burden caused by economic conditions." The VCU Board of Visitors froze undergraduate and graduate tuition.

In maintaining the university workforce, VCU ensured that jobs supported by the spending of its employees—at grocery stores and doctors' offices—could continue for as long as those businesses could operate.

CREATING VITAL PLACES WHERE ALL PEOPLE THRIVE

VCU serves many communities and constituencies and it remains committed to seeing them all thrive. That commitment is demonstrated in numerous

ways. At the core, it means using all of its assets – research, students, staff, health services, physical locations, partnerships – to solve regional challenges and advance economic opportunities. In this period of the pandemic, social divisiveness and the national call for social justice, VCU has taken on the opportunity to make community well-being a core of its work. That requires delivering on all things that make for strong, vital places: equity, education, housing, environment, art, small business development, and health care.

Advancing equity and well-being begins with self. VCU's Office of Institutional Equity, Effectiveness and Success (IES) actualizes VCU's commitment to building an equitable, diverse and inclusive community. To meet that commitment, IES has implemented:

- VCU Universe to assess culture and social climate every 18 months and provides comprehensive reports to each unit to understand their challenges and recognize their strengths in creating an inclusive, equitable place for students and faculty.
- IExcel Education to provide a series of educational and training programs around diversity and inclusion, including the Diversity and Inclusion Leadership Certificate Program.
- VCU Institute for Inclusion, Inquiry and Innovation (iCubed) comprised of eight interdisciplinary faculty and community cores, focused on solving critical urban and regional problems. The cores focus on Oral Health; Sustainable Food Access; Intersections in Lives of LBGTQIA+ Communities; Urban Education and Family; Disrupting Criminalization in Education; Health and

²⁷ U.S. Bureau of Labor Statistics. "Unemployment Rate in Richmond, VA (MSA)," January 15, 2021. FRED, Federal Reserve Bank of St. Louis. <https://fred.stlouisfed.org/series/RICHO5URN>.

Wellness in Aging Populations; Racial Equity, Arts and Culture; and Culture, Race and Health.

- Centers such as El Centro Latinx/Chicanx and the Q Collective promote diversity inclusion through research, education, advocacy and community partnerships.
- The Center for Community Engagement and Impact (CEI) which merged with IES in 2021, recognizing the importance of community partnerships for advancing equity and inclusion on and off campus.

In recognition of its leadership, VCU has been awarded the Higher Education Excellence in Diversity (HEED) award from INSIGHT into Diversity Magazine every year from 2018 through 2021 with a Diversity Champion distinction since 2019.

Addressing equity also means addressing history. The East Marshall Street Well Project is a prime example. Although human bones and artifacts were discovered during the construction of the Kontos Building on East Marshall Street in 1994, it wasn't until VCU Professor Shawn Utsey made the documentary *Until the Well Runs Dry: Medicine and the Exploitation of Black Bodies* in 2011 that the discovery was addressed. In 2013, President Rao invited the creation of a planning community comprised of community and university representatives, to address the issue, emphasizing dignity and respect that should be accorded these human remains. The planning committee was supported by a Family Representative Council, which was chosen through a community process, to make recommendations around the memorialization and reburial of the remains. In 2019, an implementation committee was formed to implement the final recommendations on the Family Representative Council.

Other examples of how VCU is addressing history includes: 1) the introduction of the History and Health Program offered by VCU's Office of Health Equity; and 2) the renaming of several buildings to honor historic African American leaders, including

Murry DePillars, the former dean of the School of the Arts.

Education

VCU's commitment to an equitable region where all are empowered to thrive must start with a commitment to children and advancing education. Richmond City Schools are marked by high poverty rates, high use of free lunches, ongoing de facto segregation, few math, science and prep courses, lower AP course enrollment, and higher retention, suspension and expulsion rates resulting in lower performances in reading and math.²⁸ Approximately 14 percent of Richmond's population over the age of 25 have failed to graduate from high school. The VCU School of Education has made a commitment to serve students and their families in these urban and high-need communities. That commitment is seen in VCU's engagement with teacher training, research, community partnerships, and families.

The VCU School of Education trains teachers for city, regional and Virginia schools, especially in critical shortage areas and for placement in high-needs schools. They have received 9.53 million in external dollars to support educator training.

Between 2015 and 2019, 636 VCU graduates²⁹ were employed by Commonwealth of Virginia's public schools, comprising 67% of all program graduates. Of importance, 49% of all VCU-trained teachers employed in Virginia work in critical shortage areas – elementary education and special education which have been the first and second high-need areas for the past five years. Moreover, 45% of those working in Virginia public schools are working in a Title 1 school, which are schools where at least 40% of the student population come from low-income families

²⁸ *Confronting School and Housing Segregation in the Richmond Region*. University of Richmond School of Professional and Continuing Studies, HOME, and the VCU School of Education.

²⁹ Education Data is from the Virginia Department of Education, analyzed by the VCU School of Education.

and the schools are eligible to receive federal funds to support academic achievement.

Regional data show that between 2017 and 2019, 287 of those graduates worked in the region (Richmond and Petersburg City, Henrico, Chesterfield, and Hanover counties) of which 96 work for Richmond Public Schools. Similar to the data for the Commonwealth, the majority (52%) of the VCU trained teachers worked in critical shortage areas of elementary and special education.

In addition to training teachers, VCU School of Education is committed to advancing a diverse teaching workforce. Of the graduates, in 2019, 75% were White, 11% were Black or African American, and about 5% were Hispanic or Latino or two or more races, and 4% Asian. VCU's commitment to increasing the diversity of graduates is demonstrated through VCU School of Education's launch of the following programs:

- The Innovative Teacher Pipeline which trains pre-service teachers to support excellence and equity particularly for Black and Hispanic or Latino school children.
- Substitute Teaching the VCU Way recruits and prepares VCU students to serve as substitute teachers in regional schools.
- Career Switcher Programs support second career professionals transition to teach in urban and high need schools.
- Alumni Induction Support Programs mentor VCU graduates with one to three years teaching experience.
- Becoming an Antiracist Educator develops skills to engage in practices to dismantle systems that maintain racial inequities.

RTR, formerly the Richmond Teacher Residency program that expanded into Chesterfield, Henrico, and Petersburg Public Schools, is a school-based teacher prep program that combines VCU research with real-life experience in high-needs classrooms.

The first 10 cohorts (2011-2020) trained 280 teachers, of which 55% were White, 35% were Black or African American, 5% were Asian and Hispanic or Latino, 71% were female, 28% were male, and 1% nonbinary. The program has seen a steady increase in Black or African Americans. The current 2021-2022 cohort is 54% Black or African American. Preliminary findings of a 2017-2018 study suggest that the elementary students taught by RTR-trained teachers are making faster gains in math and reading compared to students taught by non-RTR teachers. A 2019 evaluation found that students taught by RTR teachers outperformed students of non-RTR teachers in english, math, and social studies.³⁰

VCU School of Education has a long-standing presence in the community. Other efforts include:

- In 1991, VCU partnered with Richmond area schools to establish the Metropolitan Educational Research Consortium or MERC, which researches the outcomes of students, schools and communities in the region.
- In addition to MERC, VCU School of Education has a research agenda focused on high-need areas. Of the \$35.46 million dollars of external funding received in FY21, \$12.79 million, the largest percentage of that funding is to support research and projects in special education.
- The Center for Innovation in STEM is a community partnership with the Science Museum of Richmond that empowers students in STEM, particularly those from historically underrepresented and underserved populations.

The VCU Health System, as part of its commitment to addressing the social determinants of health, partners with the community to improve education outcomes. Examples include a partnership with RVA Basics, which is an early childhood education and development program for parents and babies 0 to 3 years of age, and working with Children's

³⁰ Driving Meaningful Change, the VCU School of Education 2019-2020 Annual Report, p. 15.

Hospital Foundation and Bon Secours Mercy to fund health equipment for the Richmond Public Schools system.

Housing

Housing is another component of vital places. VCU's L. Douglas Wilder School of Government and Public Affairs conducts research on regional housing and develops specific initiatives to redress challenges. Their recent study, *Understand the Jobs-Affordable Housing Balance in the Richmond Region*³¹, for example, revealed a gap between the location of affordable housing and the location of jobs, a problem exacerbated by regional transit, which only provides partial connectivity between them.

Richmond also has the second highest eviction rate in the country (11%), one of five in the Commonwealth of Virginia and in the national top ten, according to Princeton University Eviction Lab data. Eviction rates are disproportionately higher in minority communities, with over 60% of all Black or African American census tracts with eviction rates of 10% or more. The RVA Eviction Lab in the Wilder School, is a direct response to this. The lab collects eviction data, and its research and efforts are organized to support local government and community members to help address this challenge. All data is public.

Through partnerships, the VCU Health System has also supported patients with housing challenges in order to improve social determinants of health in the community. Highlights include:

- Working with Central Virginia Aid Society to support an on-site attorney focused on housing and eviction prevention at the Health Hub at 25th through the Medical-Legal Partnership.
- Partnering with Virginia Supportive Housing to provide supportive and permanent housing for individuals with low incomes and specialty care needs. This effort has focused on extremely complex patients such as those with sickle cell disease.

- Supporting quarantine housing for COVID-positive patients experiencing homelessness;
- Providing seed funds for shelter and recovery for women with substance abuse disorder (SUD); and
- Support for project:Homes which provides funding for a pilot program for the purchase of air conditioning units and other supplies to ensure safe environments for low-income elderly people staying in their homes.

The Environment

How we steward our environment, ensure the quality of our land, water, air, food, flora, and fauna shapes how communities thrive. Supported by NSF grants, the VCU Center for Environmental Studies is a national leader in experiential freshwater. It is a model for combining experiential learning through field studies, diversity through its new project, Emerge, which supports training for underrepresented minority students and early career scientists in freshwater science, and leads a national network of 100 professors across 35 states providing experiential STEM education and field studies on the nation's rivers.

Clean water is also the link between the environment and public health. Informally known as VCU's River Campus, the VCU Rice Rivers Center is a field station that conducts environmental research, teaches learners, and serves the public. The Center shows us what a sustainable future should look like. Its structure is a green building that uses solar power and catches rainwater and its research looks at large river systems including wetlands restoration and public health issues concerning water borne diseases, as well as land management issues.

³¹ Understand the Jobs-Affordable Housing Balance in the Richmond Region, July 2017 https://cura.vcu.edu/meda/cura/pdfs/cura-documents/EditedJobs-Housing_July12_FINALE.pdf

The Arts

The arts are also critical to creating an environment where all thrive. VCU has a top art school with a global reputation. More than that, the arts are a priority at VCU, and are woven throughout the institution. For example, the VCU School of Business has an artist in residence, and medical residents take sculpture classes to better understand the body.

It is also an important way that VCU supports the community. Highlights include:

- Up all night, an annual Create-a-thon that brings together arts, advertising, business, and other students who provide free creative work to area non-profits over a 24-hour period.
- The Institute for Contemporary Art at VCU (ICA), a non-collecting institution, was created to showcase a continuously changing slate of exhibitions representing the art of our time, and advancing dialogue and collaboration. It is free to the public, anchors the Arts District, and is a LEED Gold Certified building, making it environmentally friendly.
- Virginia Public Media (VPM) and ICA launched a Community Media Center which makes a recording studio and workspace free and open to the public to advance storytelling skills and get voices heard. It is located at ICA in the Murry DePillars Learning Lab.

Small Business Development

It is important to understand how VCU creates specific opportunities to support economic mobility. One strategy that VCU employs is through its procurement choices. VCU established an annual goal to procure necessary goods and services from small, women and minority owned companies (SWaM). VCU consistently transacts with SWaM-owned companies more than the Commonwealth of Virginia's goal of 42%. In 2019, 43% of VCU's discretionary spent went to SWaM-owned compa-

nies, subdivided as follows: 31.6% went to small businesses, 5.8% to minority-owned and 5.7% to women-owned. VCU's goal for FY22 is 45%.

Contract commitments directly with VCU do not show the complete picture. Vendors who win large contracts are required to provide a SWaM utilization plan and construction projects require a minimum 50% SWaM subcontracting goal. VCU recognizes the importance of procurement to economic opportunity and equity, and works in collaboration with peer institutions, agencies, and community advocacy groups to promote and provide opportunities for building diverse suppliers.

Health

Even before the pandemic began, VCU and VCU Health have been central to the health of the Richmond region. VCU Health's Division of Community Health works closely with community-based organizations throughout the region every year, including FY20, to address the social and economic factors that affect the health status and well-being of community residents, and of course COVID-19.

VCU Health's Division of Community Health Division has provided grants through its Community Health Partnership Fund of over \$1.5 million (through FY22, the figure is over \$1.9 million) to local initiatives to provide housing, care coordination, access to care, legal assistance, workforce development, SUD treatment, and COVID-19 prevention and vaccination services to underserved communities in the greater Richmond area. These grants included continued funding for other vital programs throughout the pandemic, including a partnership with the Daily Planet, a free clinic dedicated primarily to serving people experiencing homelessness, to provide convalescent beds for homeless individuals after being discharged from VCU Health System. VCU Health provided additional funding to enable Daily Planet to serve disabled homeless patients who need Certified Nursing Assistant Care.

As part of its direct support to the community, the Division also committed \$25,000 to the Richmond City Health District for supplies to support COVID-19 prevention, including masks, gloves, and hand sanitizer. In addition, it donated \$100,000 to the Community Memorial Health Foundation to help safety net healthcare providers (such as free clinics) address the constantly growing needs resulting from the pandemic.³² Other examples of funded initiatives include:

- CARITAS: funding to support the engagement of men with alcohol and substance abuse issues referred from the VCU Health System emergency department, and funding to support the development of a similar model for women.
- Senior Connections: care coordination for seniors to avoid hospital readmissions.
- Crossover Clinic: prenatal and postpartum care coordination services for low income and undocumented women.
- Support to provide quarantine housing and medical follow-up for COVID-positive patients experiencing homelessness.

Beyond funding initiatives, VCU Health offers a Medical-Legal Partnership that operates in the hospital and clinics as well as partnering with other organizations to bring health-related legal services to patients and other residents. The Medical-Legal Partnership (MLP) program offers free legal advice and representation to those in need. These services help patients prevent evictions, secure government benefits, advocate for children's rights in school, help patients plan, provide employment advice, handle immigration matters, address family law and domestic violence issues, and ensure access to justice on almost every civil legal issue that affects patients' health and access to health care. The program helped over 200 patients in FY20.

As part of its effort to address social determinants of health (SDOH) at multiple levels, VCU Health screens patients in multiple clinics for food insecurity,

providing food boxes for those in urgent need and connecting them to sustainable resources such as Supplemental Nutrition Assistance Program (SNAP) and food banks to alleviate their need over the longer term. As part of its enduring commitment, VCU Medical Center put in place in 2022 an automated universal screen for SDOH as part of the patient's electronic medical record to identify patients for whom addressing social need can help support better health.

In addition to funding and supporting specific initiatives, there are two significant health efforts that look to align a range of services to deliver comprehensive, coordinated care. The first is the VCU Health Hub at 25th: a joint VCU and VCU Health System community-based health education and wellness facility in Richmond's East End. The VCU Health Hub hosts various programs that address needs identified by community residents and stakeholders. The VCU Health Hub also includes a partnership with Richmond City Health District and the Jenkins Foundation to support a Community Health Worker and Registered Nurse Case Manager to assist community members with care coordination and health education. Prior to the pandemic, the Health Hub offered its neighborhood 30 health and prevention programs in which over 500 neighborhood residents participated. The Health Hub engaged 140 students and 161 faculty members in its programs. In addition, the Health Hub has hosted COVID-19 vaccination events to support residents of the East End.

The second effort is the Richmond Health and Wellness Program (RHWP), which is a collaborative care coordination model that aims to improve community health outcomes, enhance individual lives, decrease health care costs, and educate the workforce of the future. Launched in 2012, RHWP

³² VCU Health administrative data.

specifically targets older adults and disabled adults in low-income housing settings by bringing a continuum of care services to them. RHWP visits five houses weekly that collectively serve approximately 752 residents and deliver care plans developed by the individuals, students, and faculty customized to each individual. Each team includes faculty and students from VCU schools of Nursing, Pharmacy, Medicine and Social Work and the VCU departments of Occupational Therapy, Physical Therapy, Kinesiology, Health Science, and Psychology. A partnership with the University of Richmond, School of Law will bring in legal help. As of Fall, 2019, 1,400 students have participated in the program.

Health work is ongoing and evolving. VCU's Division of Community Health launched pilots to address key social determinants of health – housing instability, food insecurity, and transportation access. In one unit, patients were screened and referred for these needs, which resulted in reduced readmissions rates in that one General Internal Medicine Unit. It is being launched to additional units, and staff are working on identifying health metrics related to these activities. An initiative was recently launched in the VCU Emergency Department to screen for housing instability and refer patients to homeless service agencies and safety net primary care providers. The success metric for this effort is a reduction in non-emergent Emergency Department visits for the homeless population. A social determinants of health screening and referral effort (to community partners) has been launched in several primary care practices. Metrics for evaluating this effort are impact on outcomes, utilization and cost for the Medicare populations served.

In response to COVID-19, ONE VCU rallied to take its community care role to yet another level by addressing disparities in prevention and response, to ensure the availability of vaccines to underserved communities, to support quarantine housing for

homeless people, and to partner with the Virginia Department of Health to expand access to resources.

In conclusion, VCU and VCU Health are stewards of place. Using their economic power, their research, expertise, and passion for the community, they are working to improve patient care and community outcomes. For the pandemic and beyond, VCU and VCU Health have found creative ways to work with the community in mind.



***PART 3: BUILDING AN
INCLUSIVE FUTURE
(INNOVATION): FROM
RESEARCH TO THRIVING
COMMUNITIES***

Recent research indicates that the role of universities in their local communities goes beyond that of education, talent development, and even their role as a central community hub. When thoughtfully integrated through policies, investments, and structure, universities foster and support a robust innovation ecosystem, advance entrepreneurship, and translate research to community impact. Through these efforts, VCU navigates current challenges to build a new future for neighborhoods, the region, and the Commonwealth.

RESEARCH FOR COMMUNITY AND SOCIETY

Research is the first source of innovation in any dynamic infrastructure. VCU and VCU Health have three main research approaches: 1) discovery which includes basic and societally-focused research; 2) community-engaged research which partners with the community to collaboratively address local needs; and 3) an emerging hybrid approach which creates cross-sector, multi-disciplinary teams that address local issues that have a potential global impact.³³ COVID-19 hyper-charged this emerging research model, showing the power of collectively addressing a common challenge.

Discovery

VCU's Office of the Vice President for Research and Innovation adopted a strategy focusing VCU's research into four societally-focused initiatives:

1. Enriching the human experience.
2. Achieving a just and equitable society.
3. Optimizing health.
4. Supporting sustainable energy and environments.

Its strategic plan—ONE VCU Research—took on particular importance throughout the year as the VCU community faced local, national, and global challenges. Within the ONE VCU framework, the university obtained \$335 million of sponsored awards in FY20—an increase of 8% over FY19 and 24% over FY18 (in nominal dollars, not adjusted for inflation).³⁴ Nearly half of those awards came from federal sources, including the National Institutes of Health (NIH), Department of Defense, other Department of Health and Human Services units, National Science Foundation, and Department of Education.

NIH awards totaling \$91.8 million³⁵ allowed university researchers to investigate drug abuse, alcohol abuse, cancer, heart conditions, asthma, diabetes, and mental health, among other issues. Industry awards totaling \$37.4 million included \$25 million for clinical trials.³⁶ The awards enabled the

³³ Lehmann et al., "The Role of Higher Education for the Development of Entrepreneurial Ecosystems."

³⁴ Office of the Vice President for Research and Innovation, "FY2020 Sponsored Awards Portfolio," VCU, October 14, 2020.

³⁵ Ibid.

³⁶ Ibid.

expansion of knowledge while allowing the city of Richmond and Commonwealth of Virginia patients access to new treatments. VCU School of Medicine received more than half of all sponsored awards in FY20, followed by VCU School of the Arts with 13% and VCU School of Education with 9%, indicating the breadth and range of research and its potential impacts.

Community-Engaged Research

Community-engaged research at VCU begins with a broadly shared goal of connecting research and the benefits of research with the larger Richmond community. Community-engaged research describes the collaborative process through which research and knowledge are both created by and distributed to the community and the university through community partnerships. In other words, it is the process by which the community's needs inform research and research can begin to address those needs. Community-engaged research has been adopted as central to the university's ONE VCU Research strategic plan. And VCU's innovation ecosystem offers pathways and support in each step of the community-engaged research process.

Building the Future of Impact Research

As the world evolves, research must evolve. To that end, in 2015, VCU launched the Institute for Inclusion, Inquiry and Innovation, known as iCubed. Housed in IES, iCubed is a partnership with VCU offices of the President, the Provost, the Vice President for Health Sciences, the Office of Research and Innovation, Human Resources, and the colleges, schools, institutes, and centers in ONE VCU. The purpose of iCubed is to connect faculty, staff, students, and community stakeholders in collaborative, community-engaged research that advances research, practice, teaching, and community impact. iCubed aims to: 1) broaden access to education for students of diverse backgrounds; 2) create an inclusive environment for diverse faculty, 3) catalyze connections across the university and

Health System and with the community; and 4) foster innovative research and solutions that address societal needs. The work of iCubed is centered in eight program cores, which are multi-sector, transdisciplinary teams of faculty, students and community stakeholders organized around specific societal and research needs. These eight cores are Oral Health; Sustainable Food Access; Intersections in the Lives of the LGBTQIA+ Communities; Urban Education and Family; Disrupting Criminalization in Education; Health and Wellness in Aging Populations; Racial Equity, Arts and Culture; and Culture, Race and Health.

The goal of iCubed is to seed this model of research across the university, opening up new opportunities through a re-envisioned way of doing research and connecting to the community. Although unplanned, the pandemic advanced our understanding of innovation and research and what we are capable, which demands a deeper look.

COVID RESPONSE: THE FUTURE OF INNOVATION

The pandemic challenged us as individuals, VCU as an institution, our city, our region and the world, and demanded a level and speed of innovation in technology, organization, and human resilience never before seen. And we rallied. The radical innovation sparked by the pandemic offers a model of transformative innovation that saw speed, scale, the repurposing of resources, a common focus and greater willingness to collaborate³⁷ that can help us build a better future, to show us how we can do better. Also known as de-risking innovation funding, COVID-19 demonstrated what happens when

³⁷ Charles Leadbeater, Innovation and crisis: The six factors that spark radical innovation in turbulent times. Nesta Blog (December 17, 2020) [nesta.org.uk/blog](https://www.nesta.org.uk/blog)

significant amounts of non-contingent funding is provided by government, philanthropy, businesses, investors, and individuals, reducing the risk for researchers to reach for bolder, more radical ideas.³⁸ The discussion below shows the big and small steps, all moving us forward to change. How we maintain this model to address big challenges will remain a focus for VCU and the world.

Reorganization

The first step in addressing a challenge of this magnitude was reorganizing VCU operations and activities. VCU began issuing guidance on COVID-19 on March 11th, 2020. Many departments rapidly began testing their capacities to conduct operations remotely, and never returned to the office.

Engaging Research and Innovation

Alongside this rapid pivot in day-to-day operations for VCU and the VCU Health System and those it serves, in late March 2020, the Health Innovation Consortium (HIC), VCU Health and the VCU da Vinci Center for Innovation stood up an entirely virtual 3-week design sprint focused on solutions related to COVID-19. Teams focused on impactful innovations to address international shortages in personal protective equipment (PPE), testing, and access to information and resources to support our local community and our healthcare providers on the front lines. Among other projects, a key highlight was the N95 Decontamination project, where students worked with faculty across VCU and members of the HIC team to develop and execute on an ultraviolet decontamination method for N95 respirators that allowed for more than 200,000 N95 masks to be decontaminated over nearly 9 months of the pandemic, thus increasing healthcare provider confidence and safety during a time of extreme supply shortages. In addition to the design sprint's engagement between faculty, staff, students, and the VCU Health System, the Health Innovation Consortium stood up a COVID-19 Task Force to iteratively engage the community and university

partners to support the VCU Health System's most critical innovation challenges during the height of the pandemic.

Another impact of national and global import emerged from VCU's Health engagement in clinical trials for Covid-19 treatments. In the early days of the pandemic, VCU was selected to lead clinical trials of remdesivir, then an investigational Covid-19 drug. VCU's Dr. Arun Sanyal lead a team of VCU experts in a first-of-its-kind partnership among hepatology, infectious disease, critical care pulmonology and cardiology. Today, remdesivir is an essential tool in saving lives and VCU played a vital role in this globally transformative innovation.

Also globally transformative, the VCU-based partnership, the Medicines for All Institute³⁹, joined multiple pharmaceutical leaders in May 2020 to address the pharmaceutical supply chain shortages brought into stark focus by the global nature of the pandemic. The partnership, led by Richmond-based pharmaceutical research and development company Phlow Corp, secured a \$354 million, four-year contract with the U.S. Department of Health and Human Services to accelerate their efforts to reduce dependency on overseas drug manufacturers, specifically for the domestic production of chemicals used in the manufacture of COVID-19 treatments. Richmond-based Phlow was co-founded by VCU alumnus Eric Edwards, M.D., Ph.D.

VCU joined and continues to be part of a larger collective of universities sharing their research related to COVID-19, and the university has continued to make its expertise, findings, and other

³⁸ Institute for the Future, Live After Covid-19.: Get Ready for the Future, Coursera.

³⁹ The Medicines for All Institute was founded in 2017 in VCU's College of Engineering with the goal of increasing access to safe, effective, and affordable medications through advanced manufacturing technologies. The initiative has also partnered with VCU's School of Pharmacy and the Department of Chemistry in the College of Humanities and Sciences.

information related to the pandemic more readily available to outside researchers. VCU also created a data dashboard informing the community of case numbers, testing, and the number of individuals in isolation.⁴⁰ VCU and Virginia Department of Health (VDH) worked together to conduct contact tracing at the university. VCU provided multiple full-time employees to work in tandem with the contact tracing team at VDH to ensure that the university and VDH are able to identify students with symptoms early who need to be quarantined.⁴¹ VCU's University Counseling Services continues to offer support groups to help students cope with the perils of the pandemic.

VCU Health and researchers at VCU have been at the forefront of COVID-19-related research. On April 3, 2020, VCU's COVID-19 Rapid Research Fund was announced. Originally, the funding was capped at \$200,000, but the initial submissions were so promising and important that the funding was increased twice to \$300,000 and \$350,000, with 31 researchers receiving funding.⁴² Here are two examples of projects supported by this fund:

- A research member at VCU Massey Cancer Center finished working on a rapid COVID-19 test with a detection time of 3 minutes, 30 seconds from swab to results.⁴³ At the time of completion, this test was the fastest molecular diagnostic test available.
- A biobank project to research why some people develop complications and why the virus affects people in different ways. The project compiles more data by asking socioeconomic questions so that researchers can factor in these variables as well.⁴⁴

VCU launched two other funds in late March 2020: the VCU COVID-19 Response Fund and the VCU Student Life and Learning Fund. The COVID-19 Response Fund provided support for caregivers and researchers working around the clock. The Student Life and Learning Fund helped students with

pressing needs such as travel, internet access, and housing.⁴⁵

In addition to the above efforts, VCU and VCU Health have also made the following contributions to fighting COVID-19 and supporting public health:

- In response to difficulties in tracking and allocating resources for COVID-19 cases in the region, VCU created a model to better identify the locations of cases. Broad data models for tracking the virus were seen as too general. The VCU model has been used to better allocate medical resources to where they are needed.⁴⁶
- A professor in VCU's Department of Chemical and Life Science used a NASA supercomputer to better understand the spike protein in the Coronavirus, which is the mechanism that works to infect the body.⁴⁷
- VCU Health was one of the first testing sites for

⁴⁰ A.J. Hostetler, VCU initiatives share faculty expertise, inventions to spur fight against COVID-19, VCU News (May 12, 2020)

⁴¹ Joan Tuppence, 'Making a positive impact': An inside look at VCU's contact tracing efforts, VCU News (September 28, 2020)

⁴² A.J. Hostetler, Final recipients of COVID-19 Rapid Research Funding Opportunity grants announced, VCU News (May 18, 2020)

⁴³ Melissa Mitchell, Massey researcher develops extremely rapid experimental COVID-19 test, VCU News (June 18, 2020)

⁴⁴ Jackie Kruszewski, Building a biobank to fight COVID-19, VCU News (July 6, 2020)

⁴⁵ Tom Gresham, New funds will support students, researchers and caregivers facing COVID-19 challenges, VCU News (March 27, 2020)

⁴⁶ Rebecca Jones, VCU experts create data model to track and predict the spread of COVID-19 across central Virginia, VCU News (June 4, 2020)

⁴⁷ Emi Endo, VCU experts create data model to track and predict the spread of COVID-19 across central Virginia, VCU News (June 1, 2020)

⁴⁸ Mary Kate Brogan, VCU becomes one of the first sites to test canakinumab against COVID-19, VCU News (May 6, 2020)

the use of canakinumab, a drug used to fight a severe overreaction symptom from COVID-19 pneumonia complications.⁴⁸ As VCU Health's COVID-19 response focused on finding treatment drugs, VCU and VCU Health have enrolled more than 150 patients in 11 clinical trials associated with drugs that either improve symptoms or shorten the duration of sickness from COVID-19.^{49,50}

- Innovation Gateway was one of the first university technology transfer offices to offer a pandemic licensing program, including non-exclusive royalty-free terms for hospitals and companies to use university technologies capable of assisting in the pandemic response. Innovation Gateway was also: 1) an early signatory of both the Stanford University led COVID-19 Technology Access Framework and the AUTM COVID-19 Licensing Guidelines; 2) created a COVID-19 Innovation Center to help external stakeholders to find university resources leading to a license for a COVID-19 therapeutic technology developed at VCU; and 3) advanced the date of its semi-annual proof of concept fund to solicit pandemic-related inventions in the summer of 2020. Two COVID-19 inventions were funded, one a possible therapeutic, and the second a virtual reality (telemedicine) technology to address substance use disorders.

VCU Health's contributions to addressing the effects of COVID-19 represent the tremendous efforts of employees in addition to their work beyond COVID-19. In FY20, VCU Health's Clinical Research unit counted:

- 330 different clinical research studies enrolling 1,276 participants.
- 256 different clinical trial studies enrolling 619 participants.
- 4,226 investigational drugs dispensed.
- 5,422 research labs processed.
- 2,316 nursing-facilitated infusions.
- \$2.2 million in research-specific charges.⁵¹

Caring for the Community

VCU and VCU Health System played a significant role in managing the pandemic locally in terms of both patient health and community well-being. VCU Health System took rapid action to prepare for a potential pandemic starting in January 2020, including surge and capacity planning. VCUHS reorganized through March and April to create additional inpatient capacity, and a system of surge response was created with six different levels ranging from transfer restrictions at the lowest level to conversion of operating rooms to intensive care units and outpatient clinics into hospitals.

The treatment of COVID-19 patients was only beginning to rise through the end of FY20, and the full story of VCU's efforts and innovation is ongoing. As of the second quarter, 2022, VCUHS has:

- Admitted over 8,394 patients with COVID-19.
- Performed over 212,424 PCR tests through VCUHS Lab.
- Administered more than 109,432 vaccine doses.⁵²

At its peak in January 2021, VCUHS was providing care to 160 patients diagnosed with or suspected of having COVID-19 at VCU Medical Center. VCUHS partnered with local health departments to provide COVID vaccines when they became available in December 2020.

Preparation for both COVID-19 treatment surges and vaccine distribution included changes in sup-

⁴⁹ Jackie Kruszewski, Clinical trials put potential COVID-19 treatments in front of patients, VCU News (June 11, 2020)

⁵⁰ Harmon and Garland, "Clinical Trials and Support," October 16, 2020.

⁵¹ McCray, Harmon, and VCU Health, "Clinical Research Operations Metrics FY20."

⁵² VCU Health Enterprise Analytics Data.

ply chain practices and partnerships with other area hospitals and hotels. Several Richmond hotels offered accommodations to VCUHS employees working with COVID-19 positive patients who did not want to expose family members. Through March 31, 2021, 220 team members stayed over 6,160 nights in local hotels.⁵³

The VCU Health Equity Initiative established a COVID-19 Health Disparities Task Force to address the impact of COVID-19 on Black, Latino, and senior populations. The task force created teams focused on engaging each population at the community-oriented sites: churches, food distribution sites, independent living communities, and Latino businesses. Each team focused on education, connecting individuals to resources, developing outreach strategies, and providing PPE and supplies.

At the time of initial COVID-19 vaccine shortage, VCU Health leadership convened a special Committee on Equitable Vaccine Distribution, facilitated by the Division of Community Health. Composed of the clinical and ethical leaders of the health system, the committee developed a vaccine distribution model to ensure that patients from low-income neighborhoods with increased COVID-19 infection rates in Richmond had equitable and prompt access to available vaccines.

Other examples of community care include:

- In March 2020, VCU Health hosted a blood drive due to COVID-19 related shortages.
- In April 2020, VCU Health began a pilot program in conjunction with EMS services in Virginia that connects medical physicians with first responders via telehealth technology. The program makes it possible for medical physicians to determine if a patient should stay home or be taken to the hospital.⁵⁴
- VCU College of Engineering offered a free program in coding to keep middle school kids learning outside of the classroom.⁵⁵

- VCU College of Engineering, School of Nursing and Health Sciences produced or donated protective gear while VCU medical students provided baby and pet sitting for essential workers.
- Many organizations offered virtual support including: Recreation and Well-Being provided online home workouts;⁵⁶ VCU's student-led and student-produced newspaper The Commonwealth Times published throughout the pandemic; and VCU Theater adapted their semester production of "She Kills Monsters" to a virtual format.⁵⁷
- The Institute for Contemporary Art at VCU reduced its operational hours, but the institute has also established new communal ways of accessing and creating art through the telephone (1-844-NOT-ZOOM). In the wake of social unrest in the Summer of 2020, the ICA worked with community members, organizers, and organizations to convert its empty parking lot into a "Resiliency Garden," a space exploring food insecurity and the disconnect between healthy food and Richmond's communities.

In sum, the impact of the work and innovations of VCU and the VCU Health System, throughout the pandemic cannot be fully calculated except in retrospect. The intensive care unit at VCU Medical Center has approached full capacity at different times in the pandemic, stretching the limits of what any institution can do to treat a global problem. VCU's employees have worked tirelessly to treat patients, reach communities at the greatest risk

⁵³ Ibid.

⁵⁴ Alex Nowak, VCU Health, EMS providers using telehealth to respond to COVID-19 cases in rural Virginia, VCU News (April 7, 2020)

⁵⁵ Emi Endo, VCU Engineering is providing free programs and resources to keep kids learning at home, VCU News, (March 28, 2020)

⁵⁶ Joan Tupponce, VCU medical students provide babysitting and pet sitting to health care workers fighting COVID-19, VCU News (March 30, 2020)

⁵⁷ VCU, INSIDE VCU'S PRODUCTION OF 'SHE KILLS MONSTERS', VCU News (October 22, 2020)

for contracting Covid 19, vaccinate hundreds of thousands of people, create new treatments, save lives, and generate new innovations that address today and tomorrow's health needs. To address COVID-19, we witnessed what level of success and innovation could be possible if we worked together.

THE INNOVATION ECOSYSTEM: BRINGING RESEARCH AND KNOWLEDGE TO THE COMMUNITY AND THE MARKET

Research is only one element of a robust innovation ecosystem. Other activities that encourage entrepreneurship and translate research and innovation into new technology, products, and services that meet market and community needs are another integral element of advancing transformative innovation.

Activities to foster a robust entrepreneurial ecosystem have been ongoing for a number of years at VCU through the efforts of strategically integrated collaborative groups like Activation Capital, the VCU da Vinci Center for Innovation, Lighthouse Labs, the Health Innovation Consortium, Startup Virginia, VCU Health System and the university itself, principally through the VCU Office of the Vice President of Research and Innovation. As we saw above, the impactful work of these groups was further accelerated in the response to the pandemic, which necessitated innovation in every aspect of life—work, home, school, social, and community.

In what follows, we focus on the infrastructure that brings VCU ideas and expertise to directly benefit the community and marketplace. That happens in three ways: 1) centers that accelerate research into products and services that meet community needs;

2) how innovation moves from the classroom into the community; and 3) the organizational infrastructure that underpins all of this work.

From the Lab to the Community

Medicines for All (M4ALL) exemplifies what it means when we move from research to impact. Based at VCU's College of Engineering, M4ALL focuses on decreasing the production costs of high quality medicines to improve global access to those medications. It does this work by optimizing pharmaceutical ingredient production and provides manufacturers worldwide access to this process, which also serves to enhance the security of the supply chains.

The C. Kenneth and Dianne Wright Center for Clinical and Translational Research is another VCU asset that serves to accelerate the transition of lab discoveries to patient treatments, engage communities in clinical research, and train clinical and translational scholars. The Wright Center, launched in 2015 with a \$16 million gift from benefactor C. Kenneth Wright is part of a national consortium of institutions working together, which have all received the Clinical & Translational Science Award (CTSA), and made VCU the first academic health center in Virginia to receive that initial \$41.5 million award.

The Wright Center's focus on translating research from clinical trials to therapies available to the public is essential for health and medical innovation in Virginia. In 2020, a clinical trial for a COVID-19 treatment run by a Wright Center leader allowed patients access to experimental drugs that, in at least one case, may have saved their life.⁵⁸

⁵⁸ C. Kenneth and Dianne Wright Center for Clinical and Translational Research, "Clinical Trial May Have Helped COVID Patient Beat Life-Threatening Pneumonia."

From Classroom to Community

Innovation that helps communities thrive does not only come from research, but also flows from innovations in curriculum development and delivery. The VCU da Vinci Center emphasizes innovation and entrepreneurship as skills that were developed through collaborations between VCU School of the Arts, School of Business, VCU College of Engineering, College of Humanities and Sciences, and VCU Health. The center offers a graduate degree in product innovation as well as graduate and undergraduate certificates in health care innovation, product innovation, venture creation, and human-centered design. In partnership with the Jackson Ward Collective and Activation Capital, the VCU da Vinci Center and VCU REAL, VCU's experiential learning hub, have formed the VCU Entrepreneurship Academy. The academy delivers innovation and entrepreneurship skills through a blended learning environment with students and community members working, learning, and networking together, earning micro-credentials for skill attainment.

Complementing this is the launch of Shift Retail Lab, a space where current VCU students, alumni, and entrepreneurs from community partners like Jackson Ward Collective can showcase and test their products and services directly with customers. Shift Retail Lab has been selected as an honorable mention in the Urban Design category as part of the 2022 World Changing Ideas Awards for Fast Company.

The da Vinci Center also hosts design sprints where students engage in workshops to rapidly take ideas through a three-stage process: ideate, test, and prototype. Following the disruption in 2020 brought on by the pandemic, VCU da Vinci Center partnered with VCU's Health Innovation Consortium to host a design sprint focused on the challenges and opportunities created by COVID-19. The partnership between VCU da Vinci Center and the Health Innovation Consortium is a natural fit.

VCU daVinci Center also nurtures student entrepreneurs. Its pre-accelerator program, VCU Pre-X, helps students learn how to pitch their ideas to potential investors and sponsors, culminating in Demo Day, where the students have the opportunity to make their pitches to potential funders and employers. In 2020, 140 students from 11 schools and colleges and five countries participated. Of these students, 37% identified as people of color, 36% identified as female and the average age was 23 years old.

Innovation Infrastructure

Innovation infrastructure must generate ideas, attract investment, provide a variety of support to entrepreneurs, and provide the organizational backbone for navigating all these pieces.

The organizational backbone of this work is at Innovation Gateway - a division of VCU's Office of the Vice President of Research and Innovation, a full-service technology transfer office serving VCU faculty, staff, and students. The mission of VCU Innovation Gateway is to facilitate commercialization of university inventions for the benefit of the public, to foster a culture of innovation and entrepreneurship at the university, and to promote industry collaborations and new venture creation. In carrying out its mission, VCU Innovation Gateway becomes common ground for university innovators and external parties to meet, share discoveries, and develop new collaborations. Programs and resources include:

1. The Commercialization Advisory Panel comprised of investors, entrepreneurs and industry experts.
2. Securing Proof of Concept (PoC) funding to include 64 PoC grants totaling \$2 million dollars, \$19.6 million follow-up funding, eight licenses, and five start-ups.

⁵⁹ McNeill, "VCU Launches New Initiative to Bring Health Innovations to Market."

3. Strategic industry engagement resulting in over \$9 million in industry-sponsored research, licensing revenues over \$30 million, and over 60 new ventures.
4. Entrepreneur-in-residence, counseling and coaching, creating investment pitches, technology-entrepreneur matching programs, relationships with venture capitalists, and the National Academy of Investors VCU chapter.

In FY21, VCU Innovation Gateway helped file 164 patent applications, resulting in 27 issued patents. The university also licensed 22 products, adding to existing licenses that generated \$3.8 million for the year. In its support of entrepreneurship, VCU Innovation Gateway supported 14 business start-ups, including 7 that were just formed.

VCU Innovation Gateway's successes over the last decade include more than \$30 million in licensing revenues, 180 patents issued (of more than 1,600 filed), and 49 new products brought to market.

To help attract investment, Activation Capital provides that connection. Activation Capital is a regional nonprofit whose board of directors consists of public officials, economic development professionals, workforce development program leaders, and research and innovation leaders, including VCU president Michael Rao. Activation Capital seeks to connect all of the elements of the region's innovation ecosystem: the VA Bio+Tech Park, seed funds and grant makers, and business acceleration, among other groups.

VCU supports student, faculty, and community partners wanting to be entrepreneurs through connections to mentors in its programs and also supports business incubator Startup Virginia and startup accelerator Lighthouse Labs. These elements of Richmond's entrepreneurial ecosystem are essential to translate innovation into products that may be brought to market.

VCU INNOVATION AND COMMERCIALIZATION METRICS FY2020

| | |
|---|-----------------|
| Invention disclosures | 133 |
| Patents filed | 166 |
| Patents issued | 19 |
| Licenses (incl. options) | 22 |
| Licenses to start-ups | 6 |
| Copyrights | 7 |
| Industry engagements | 145 |
| Proof of concept grants | 10 |
| Licensing revenue | 2.5 million USD |
| Technologies reviewed for start-up opportunity | 51 |
| Teams/technologies supported for venture creation | 34 |
| Total start-ups supported | 14 |
| Start-ups formed FY2020 | 9 |
| Start-ups active FY2020 | 29 |
| Small Business Innovation Research grants submitted | 3 |
| New products to market | 42 |
| Licensing revenue | >26 million USD |
| Invention disclosures | >1,200 |
| Patents filed | >1,500 |
| Licenses (incl. options) | 158 |
| Patents issued | 172 |
| Start-ups formed licensing VCU inventions | 55+ |
| Industry engagements | 421 |

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***PART 4: CONCLUSION - THE
PROMISE OF INNOVATIVE
TRANSFORMATION AND VCU'S
COMMITMENTS TO THE FUTURE***

We live in challenging times, marked by continuous and often unpredictable change, times that are often referred to as VUCA – volatile, uncertain, complex and ambiguous. The last few years have been of fear and sorrow, and we will be navigating the trauma of it for some time to come. However, these years have also primed us with promise and potential. We have seen that we are capable of responding – of moving the world online, of developing and delivering a vaccine in a pandemic with unprecedented speed.

We see people rising up and organizing to address inequities which have too long marked the world we live in. These times are disorienting but we stand on the precipice of possibility and have demonstrated that we are capable of innovative transformation.

In this report, we've shown how we are working to that future – focusing on equity, improved patient and student experience, economic development, community engagement, health, and education. We've answered President Rao's question - How are we doing?

Together we are making a difference. By putting people at the center, building vibrant healthy places and building an inclusive future, VCU and the VCU Health System are advancing the assets and possibilities of our talent, our place, and our innovation.

Even with significant progress, there remains much to do as we have also tried to answer President Rao's second question: How can we do better? We conclude this report by reaffirming our commitment to continuous improvement to meet the goals we have set for ourselves and our community.

We recommit to our core values of accountability, achievement, collaboration, freedom, innovation, service, diversity and inclusion, and integrity.

We recommit to our strategic research priorities that prioritize enriching the human experience, achieving a just and equitable society, optimizing health, and supporting sustainable energy and environment.

In light of what we have learned over the past few years, we have re-examined the strategic goals we set forth in Quest 2025, our Strategic plan, and have recalibrated to recognize that current realities.

We invite you to keep us accountable. Always let us know - How are we doing? How can we do better?"

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APPENDIX

Economic Impact of VCU Operations and Associated Spending by Source

To model the many ways in which VCU and VCU associates' spending influence the local, regional, and state economies, CURA utilized an Analysis By Parts (ABP) approach. A typical economic impact analysis estimates impact by measuring a change in the output of a particular industry or sector, calculating direct effects in the industry, indirect effects in suppliers, and induced effects in household income changes. An ABP instead begins with the goods and services the target industry purchases to satisfy demand or a certain production level. The overall impact described earlier represents a combination of models based on an understanding of what purchases an institution makes, the institution's payroll, and other associated spending (capital spending, student spending, and visitor spending).

In this analysis, the operations of VCU and VCU Health represent separate governmental institutions modeled as State/Local Government Education and State/Local Government Hospital and Health with some customization to spending patterns based on data from VCU's Office of Procurement, VCU financial statements, and VCU Health. These results provided direct and indirect impacts. The payrolls of both VCU and VCU Health System were modeled as employee compensation in the appropriate institutional categories, providing an understanding of induced impacts. Capital spending was modeled as a combination of construction of new educational structures, new health care structures, and new commercial structures based on the specific capital projects in FY20.

These separate models allow customized inputs that more closely match reality—modeling the specific impact of VCU's presence in the region rather than basing it on typical university spending. They also allow the results to be disaggregated to discuss each individual element:

1. VCU Operations and VCU Health System Operations
2. VCU and VCU Health Payroll
3. VCU Capital Spending
4. VCU Student Spending
5. VCU Visitor Spending

With each model, we will discuss the inputs and assumptions that go into estimating the economic impact.

Impact of VCU Operations and VCU Health Operations

University operations and plant maintenance expenses refer to the money spent by VCU and VCU Health System in the operation of each institution's major functions. Those functions include instruction, research, operations and maintenance of plant, and hospital services, but they also include elements modeled separately, such as payroll, or not modeled at all, such depreciation expenses.

VCU operations and VCU Health System operations totaled more than \$4.8 billion in FY20. However, as the two institutions have different spending patterns, their operations spending was modeled separately and the results combined. After removing payroll and depreciation expenses, VCU operations totaled \$349 million and VCU Health System operations totaled \$2.1 billion. Prior to the sale of majority ownership in Virginia Premier in April 2020, VCU Health System made an estimated \$1.4 billion in claims payments. Those dollars represent a unique spending pattern, and CURA customized the model to reflect that. Based on procurement data and input on claims payments, CURA estimated the in-region spending of VCU and VCU Health System operations for the City of Richmond, Richmond MSA, and Virginia as follows:

After calculating the amount spent for each regional model, CURA estimated the economic impact by using the Institutional Spending Pattern for State/

| Operations Spending Considered | VCU (University) | VCU Health System Authority | Total | Employment |
|--------------------------------|------------------|-----------------------------|-----------------|------------|
| City of Richmond | \$102,190,258 | \$324,024,777 | \$426,215,036 | 32,782 |
| Richmond MSA | \$144,022,234 | \$553,458,726 | \$697,480,960 | 43,886 |
| Virginia | \$171,364,224 | \$1,782,329,814 | \$1,953,694,038 | 58,149 |

Sources: VCU administrative data; Virginia Commonwealth University, “2019-2020 Financial Report.”

Local Government Education and State/Local Government Hospital and Health provided by IMPLAN. The spending patterns were further customized to better reflect VCU and VCU Health System activities and spending.

The economic impact of VCU and VCU Health System’s daily operations was \$768 million in Richmond, \$1.6 billion in the Richmond MSA, and almost \$4.8 billion in Virginia. In Richmond, almost \$140 million in labor income generated by operations spending supported 2,103 jobs. Regionally, \$359 million in labor income supported 5,455 jobs. And statewide, \$1.6 billion in labor income supported 17,669 jobs.

Modeling operations spending differs from modeling the output of an industry, as it models the intermediate purchases of the institution—only one

part of the output equation. The other portion, value added, represents primarily labor income. CURA captures these effects by modeling the payrolls of VCU and VCU Health System as Industry Employee Compensation events in the relevant IMPLAN sectors: Employment and payroll of state government education, and employment and payroll of state government hospitals and health services.

Impact of VCU and VCU Health Payroll

Modeling operations spending differs from modeling the output of an industry, as it models the intermediate purchases of the institution—only one part of the output equation. The other portion, value added, represents primarily labor income. CURA captures these effects by modeling the payrolls of VCU and VCU Health System as Industry Employee Compensation events in the relevant

ESTIMATED IMPACTS OF VCU AND VCU HEALTH OPERATIONS SPENDING

| Impact Region | Economic Impact | Value Added | Labor Income | Employment |
|------------------|-----------------|-----------------|-----------------|------------|
| City of Richmond | \$768,353,693 | \$201,654,727 | \$139,586,890 | 2,103 |
| Richmond MSA | \$1,626,245,780 | \$541,356,213 | \$359,231,083 | 5,455 |
| Virginia | \$4,781,305,266 | \$1,708,460,078 | \$1,203,705,411 | 17,669 |

Sources: Estimates developed on VCU administrative data by the VCU Center for Urban and Regional Analysis using IMPLAN. Inflation adjustments made using the U.S. Bureau of Labor Statistics’ Consumer Price Index for All Urban Consumers and IMPLAN.

⁶⁰ Virginia Commonwealth University. “Financial Statements for the Year Ended June 30, 2020,” 2020.

IMPLAN sectors: Employment and payroll of state government education, and employment and payroll of state government hospitals and health services.

In FY20, VCU employed a total of 25,250 people with a total payroll (salaries and wages plus benefits and taxes) of nearly \$2.2 billion. However, not all employee spending impacts the economy. Only jobs within each region may be considered, and in places with significant in-commuting (such as Richmond), some household spending is less likely to happen within the region. Payroll was modeled around patterns of in-commuting and employee home jurisdictions, resulting in the following total labor income for each geography:

| Payroll Spending Considered | VCU | VCU Health System Authority | Total |
|-----------------------------|---------------|-----------------------------|-----------------|
| City of Richmond* | \$425,616,611 | \$816,856,515 | \$1,242,473,126 |
| Richmond MSA | \$542,993,946 | \$1,042,130,713 | \$1,585,124,659 |
| Virginia | \$651,172,747 | \$1,249,750,801 | \$1,900,923,548 |

Sources: VCU administrative data; Virginia Commonwealth University, “2019-2020 Financial Report.”

*The City of Richmond amounts modeled are less than MSA amounts to adjust for a greater degree of in-commuting than accounted for in IMPLAN models. Although this impacts the induced effects, the difference is added back into direct effects, as that labor income is still considered a direct effect within the City of Richmond.

Modeling the impacts of payroll results in two effects: the direct effect, which is the direct employment of VCU and VCU Health Systems Authority, and the induced effect, which is the economic activity generated by the household spending of those employees. The total impact includes both types of effects. The payrolls of VCU and VCU Health Systems—and consequently the household spending of employees—generated \$1.3 billion in labor income and 19,733 jobs in the City of Richmond, \$2 billion in labor income and 26,271 jobs in the Richmond MSA, and \$2.3 billion in labor income and 30,183 jobs in Virginia.

ESTIMATED IMPACTS OF VCU AND VCU HEALTH PAYROLL

| Impact Region | Economic Impact | Value Added | Labor Income | Employment |
|------------------|-----------------|-----------------|-----------------|------------|
| City of Richmond | \$1,722,344,435 | \$1,626,165,338 | \$1,320,450,850 | 19,733 |
| Richmond MSA | \$3,246,533,516 | \$2,689,963,386 | \$2,008,728,141 | 26,271 |
| Virginia | \$3,629,876,371 | \$3,074,215,637 | \$2,318,069,703 | 30,183 |

Sources: Estimates developed on VCU administrative data by the VCU Center for Urban and Regional Analysis using IMPLAN. Inflation adjustments made using the U.S. Bureau of Labor Statistics’ Consumer Price Index for All Urban Consumers and IMPLAN.

Impact of VCU Capital Spending

The physical presence of VCU in the City of Richmond has two primary kinds of impact. The first, maintenance and operation of existing buildings, is part of the operations spending modeled earlier. The second, capital spending, refers to new construction. This type of capital spending differs from predictable maintenance costs in both the spending patterns and the duration of impact. While operations spending occurs continuously and has ongoing impacts, new construction spending ends after the structure is built. Capital spending generates significant temporary impacts. This section describes the impacts VCU and VCU Health System capital spending on projects completed or under construction in FY20.

Data from VCU Construction Management indicates VCU made almost \$282 million in payments to contractors in FY20. All projects occurred within Virginia and the Richmond MSA. All projects except for the Rice Center Research Facility occurred within the City of Richmond. Finally, \$15 million in furniture, fixtures, and equipment (FFE) expenses represent non-construction spending and are modeled as purchases like operations spending.

| Capital Spending Considered | Health care construction | Educational construction | Other new commercial construction | FFE | Total |
|-----------------------------|--------------------------|--------------------------|-----------------------------------|-------------|---------------|
| City of Richmond | \$134,573,865 | \$142,609,282 | \$3,108,033 | \$4,484,830 | \$284,776,008 |
| Richmond MSA | \$134,573,865 | \$144,241,647 | \$3,108,033 | \$6,320,712 | \$288,244,256 |
| Virginia | \$134,573,865 | \$144,241,647 | \$3,108,033 | \$7,520,672 | \$289,444,215 |

Sources: VCU administrative data; Virginia Commonwealth University, “2019-2020 Financial Report.”

| Impact Region | Labor Income | Value Added | Economic Impact | Employment Impact |
|------------------|---------------|---------------|-----------------|-------------------|
| City of Richmond | \$372,953,136 | \$518,244,290 | \$856,674,830 | 6,073 |
| Richmond MSA | \$574,845,608 | \$821,204,944 | \$1,351,620,531 | 9,419 |
| Virginia | \$574,953,011 | \$821,414,429 | \$1,352,078,360 | 9,421 |

Sources: Estimates developed on VCU administrative data by the VCU Center for Urban and Regional Analysis using IMPLAN. Inflation adjustments made using the U.S. Bureau of Labor Statistics’ Consumer Price Index for All Urban Consumers and IMPLAN.

Major capital projects identified as completed in FY20 include:

- The Institute for Contemporary Art
- The Virginia Treatment Center for Children
- The School of Allied Health Professions
- Renovations to Sanger Hall

Major capital projects identified as ongoing in FY20 include:

- Parking deck repairs and corrosion protection
- A surgery innovation suite for Sanger Hall
- Renovations to Scott House
- The Rice Center Research Facility (Charles City County, Virginia)
- Expansion of the Engineering Research Building
- A teaching laboratory in the STEM building
- Emergency Center at New Kent (New Kent County, Virginia)
- Children's Hospital of Richmond at VCU: Children's Pavilion (CHoRP) Dental Care Pediatric Clinic
- Sheltering Arms Institute (Goochland County, Virginia)

As in most other cases, modeling capital spending in larger economic areas captures more economic impact. Although the bulk of capital spending happens in the City of Richmond, the economic impact outside of the city remains significant. VCU's capital spending in Richmond in FY20 generated a total impact of almost \$857 million, including \$373 million in labor income that supported 6,073 jobs. In the Richmond MSA, the total impact of more than \$1.3 billion included \$575 million in labor income supporting 9,419 jobs. The statewide impact of VCU capital spending differs little from the MSA impact. All capital spending happened within the MSA, and any leakage outside the MSA was minimal.

The total Virginia impact of more than \$1.3 billion included \$575 million in labor income supporting 9,421 jobs.

Impact of Student Spending

VCU students have a clear link to the university, and their spending has impacts on the economy. However, student spending can only be considered linked to VCU if the student would be spending money outside of the area in question but for the existence of VCU. Survey data collected by CURA in December 2020 suggests that approximately 17% of students would have likely attended a college outside of Virginia had they been unable to attend VCU. Another 62% of respondents indicated they would have attended another four-year public college in Virginia. Of the 14 other four-year public colleges and universities in Virginia, only Virginia State University is in the Richmond MSA and none are in the City of Richmond.

Using those figures, CURA estimated that approximately 79% of VCU student spending in the City of Richmond, 74% of student spending in the Richmond MSA, and 17% of student spending in Virginia may be attributed to VCU's presence.

In FY20, approximately 30,101 students were enrolled at VCU. CURA used the average cost of attending college (minus tuition and fees) obtained from the National Center for Education Statistics to estimate total student spending of \$459 million—\$15,243.80 per student—in FY20. However, some students have already paid a portion of those costs to the university in the form of room and board. Student spending was adjusted to account for those expenses paid to VCU and avoid double counting economic activity. The final student spending total of \$430 million was applied to the percentage of student spending in each region attributable to VCU:

| Student Spending Considered | Total spending |
|-----------------------------|----------------|
| City of Richmond | \$340,633,872 |
| Richmond MSA | \$296,729,951 |
| Virginia | \$72,906,358 |

Sources: VCU administrative data; NCES, and CURA survey data.

Based on VCU spending statistics and other studies that analyzed student spending at other universities, these expenditures were modeled into appropriate IMPLAN categories to estimate total student spending impact in each economic region for FY20.

Student spending linked to VCU generated a total impact of \$392 million in Richmond, including \$149 million in labor income supporting 4,691 jobs. The impact of student spending in Richmond exceeds impacts in the MSA and Virginia because more spending may be attributed to the presence of VCU. VCU student spending generated an impact of \$384 million in the MSA, including \$104 million in labor income supporting 2,468 jobs. Finally, as far fewer students' spending in Virginia may be attributed to VCU, CURA estimates the total impact of student spending in the state in FY20 at \$89 million, including \$24 million in labor income supporting 586 jobs.

Impact of Visitor Spending

Estimates of visitor spending in FY20 cannot ignore the impacts of COVID-19 in the latter half of the year. In a typical year, VCU and VCU Health attract

hundreds of thousands of people to the region through sporting events, conferences, or hundreds of other VCU activities throughout the school year. Many of those events did not happen in FY20. And the visitor spending that CURA has estimated for FY20 almost certainly does not reflect that of a year in which people could gather normally for the entire 12-month period. Visitor spending remains an important source of economic activity in the region.

CURA gathered data from students and employees from a survey on their visitors and lengths of stays. The average student hosted 2.71 visitors with an average stay of 2.4 days in FY20. The average employee hosted 2.18 visitors with an average stay of 2.9 days in FY20. CURA estimates students hosted 81,574 visitors and employees hosted 54,186 visitors. However, not all students and employees live in Richmond, the Richmond MSA, or Virginia. Using inflation-adjusted figures for average visitor expenditures from the Virginia Tourism Corporation, employee home localities identified through administrative data, and student home localities estimated through survey data, CURA estimated visitor expenditure totals for the personal visitors of students and employees.

VCU Health System is also responsible for visitor spending. The VCU Medical Center is among the few Level I trauma centers in Virginia, and its units offer some of the most advanced treatments in the country. The VCU Medical Center attracts patients from all over Virginia and beyond. Based on data

ESTIMATED IMPACTS OF VCU STUDENT SPENDING

| Impact Region | Economic Impact | Value Added | Labor Income | Employment |
|--------------------------|-----------------|---------------|---------------|------------|
| City of Richmond | \$392,015,073 | \$229,650,282 | \$149,080,645 | 4,691 |
| Richmond MSA | \$384,108,531 | \$240,284,097 | \$104,379,675 | 2,468 |
| Commonwealth of Virginia | \$89,475,543 | \$55,944,662 | \$23,791,581 | 586 |

Sources: Estimates developed on VCU administrative data by the VCU Center for Urban and Regional Analysis using IMPLAN. Inflation adjustments made using the U.S. Bureau of Labor Statistics' Consumer Price Index for All Urban Consumers and IMPLAN.

provided by VCU Health, CURA estimates that the medical center discharged approximately 35,000 patients (excluding outpatient and emergency visits) from Virginia or elsewhere. Of those patients, 25,000 were from the Richmond MSA. Within the MSA, 11,000 patients were from the City of Richmond.

For this study, CURA assumed the visitors of patients who lived in Richmond did not spend additional money in the region. For the remaining patients' visitors, CURA assumed average daily spending was \$61 for patients from outside the MSA and \$35 for patients inside the MSA. Finally, based on data on tourism spending in the MSA, CURA assumed 25% of MSA spending would happen within the City of Richmond. Using data from VCU Health about average visitors per patient and average days in the hospital, the total spending of VCU Medical Center patient visitors was broken into the same expenditure categories as the visitors of employees and students. CURA estimated visitor spending totals in FY20 as follows:

VCU-linked visitor spending in the City of Richmond had a total economic impact of \$15.6 million in FY20, including \$6.7 million in labor income supporting 183 jobs. In the Richmond MSA, VCU visitor spending

| Visitor Spending | Employees' personal visitors | Students' personal visitors | VCU Medical Center visitors | Employment Impact |
|------------------|------------------------------|-----------------------------|-----------------------------|-------------------|
| City of Richmond | \$2,746,113 | \$8,310,660 | \$2,377,959 | 6,073 |
| Richmond MSA | \$6,959,485 | \$10,611,135 | \$6,940,230 | 9,419 |
| Virginia | \$8,345,999 | \$11,819,392 | \$6,940,230 | 9,421 |

Sources: VCU administrative data; VTC and CURA survey data.

generated an impact of \$33.9 million, including \$11.4 million in labor income supporting 273 jobs. State-wide, VCU visitor spending generated a total impact of \$35.5 million, including \$12.1 million in labor income supporting 288 jobs.

ESTIMATED IMPACTS OF VCU-LINKED VISITOR SPENDING

| Impact Region | Economic Impact | Value Added | Labor Income | Employment |
|--------------------------|-----------------|--------------|--------------|------------|
| City of Richmond | \$15,612,470 | \$9,089,996 | \$6,682,625 | 183 |
| Richmond MSA | \$33,872,929 | \$19,570,845 | \$11,408,649 | 273 |
| Commonwealth of Virginia | \$35,457,293 | \$20,792,573 | \$12,108,001 | 288 |

Sources: Estimates developed on VCU administrative data, TNS, VTC, and CURA survey data by the VCU Center for Urban and Regional Analysis using IMPLAN. Inflation adjustments made using the U.S. Bureau of Labor Statistics' Consumer Price Index for All Urban Consumers and IMPLAN.



VCU