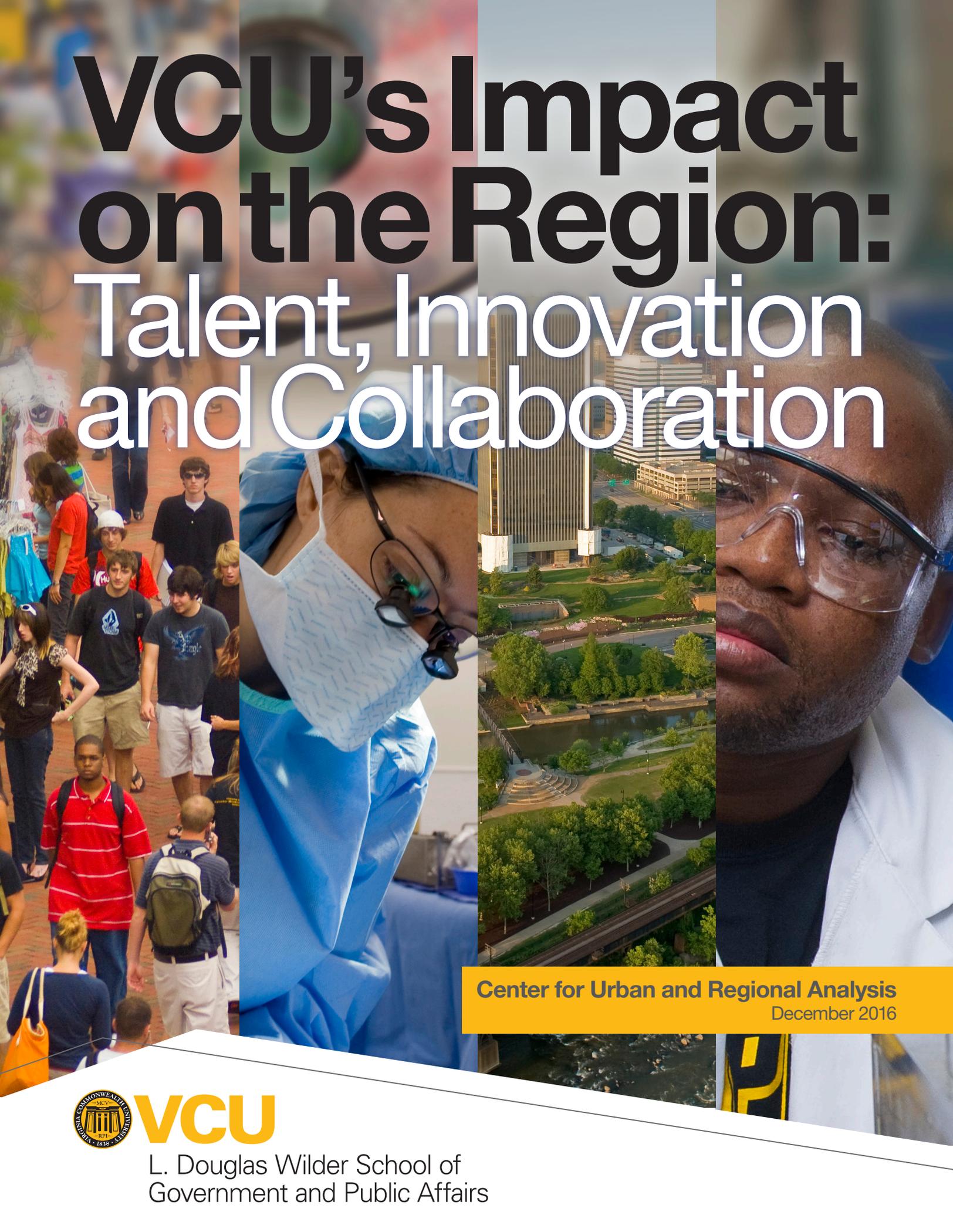


VCU's Impact on the Region: Talent, Innovation and Collaboration



Center for Urban and Regional Analysis

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VCU

L. Douglas Wilder School of
Government and Public Affairs

VCU's Impact on the Region: Talent, Innovation and Collaboration

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Executive summary

Universities, as large organizations that are anchored in their communities, can potentially have significant economic and social impacts on the immediate community, the region, and even the state. Virginia Commonwealth University's economic impact on the Richmond region is significant. Within the metropolitan statistical area (Richmond MSA), VCU's spending on operations, maintenance and capital investment, and the spending of its employees, students and visitors generates:

- Total economic impact of \$4 billion
- 47,000 jobs
- A total Richmond regional multiplier of 3.7 — for every dollar that VCU spends in the metropolitan area, the region experiences a total economic impact of \$3.70.

VCU's impact on the economy of the commonwealth of Virginia is also significant. VCU's spending within the commonwealth generates:

- Total economic impact of \$5.9 billion
- 63,000 jobs
- A total commonwealth of Virginia multiplier of 3.2 — for every dollar that VCU spends in the state, the commonwealth experiences a total economic impact of \$3.20.

How is this impact achieved? As VCU and its employees, students and visitors spend money purchasing needed supplies, food and services, etc., the businesses that supply these goods and services must, in turn, purchase supplies and employ workers who, in turn, use their money to purchase goods and services. The size of the multiplier reflects the extent to which the dollars circulate in the economy.

But VCU's impact in the region and commonwealth extends well beyond what is captured in the numbers. Through descriptive data, as well as focus groups and interviews with businesses, government agencies, nonprofits and other regional stakeholders, we identified VCU's contributions in key areas that shape economic impact and the overall quality of life. These are:

- *Talent*: VCU produces graduates whose skills meet the needs of area businesses and other organizations. As one business leader stated in a focus group, "VCU is the leader in the region's talent pipeline."

- Within the Richmond metropolitan area, 67,000 VCU alumni live and work. Their degrees and skills lead to increases in the average wage, which enhances the economy overall.
- Businesses, nonprofits and government agencies alike seek the cutting-edge solutions that VCU faculty research creates.
- *Innovation and the entrepreneurial ecosystem:* VCU is a leader in innovation and creativity, with a profound impact on the economy that reverberates across the region, the state, the nation and the globe.
 - For example, Venture Creation University is a universitywide initiative focused on nurturing and guiding the entrepreneurial and innovative mindset in students. It offers students a broad array of programs and classes that expose them to this entrepreneurial mindset and culture. These include Vertically Integrated Projects (VIPs), housed in the School of Engineering, which provide undergraduate students the opportunity to participate in multiyear, multidisciplinary, team-based projects guided by faculty and graduate students.
 - The result of programs like these is that 51 percent of students are interested in entrepreneurship, and 30 percent of students want to start a company.
 - VCU Innovation Gateway facilitates the commercialization of both faculty and student research, supports university research through collaborative agreements and supports the creation of new business ventures.
 - To increase the impact of its entrepreneurship work and strengthen the regional entrepreneurial ecosystem in general, VCU engages in numerous partnerships, including those with the Virginia Biotechnology Research Park, Dominion Resources Innovation Center and Lighthouse Labs.
- *Regional stewardship:* VCU shows that it cares about the Richmond region by exercising leadership to address challenges and move forward. Its regional stewardship takes many forms, most of which can be grouped under the headings of community developer, convener, thought leader and moral leader.
 - *Community developer.* As a major property developer, VCU has helped to revitalize the neighborhoods surrounding its Monroe Park Campus in addition to downtown Richmond, in general. At the same time, the university is very conscious of its obligation to be a good neighbor, respecting the character of surrounding communities and sharing its resources. For example, residents of the Carver neighborhood may use VCU recreational sports facilities at no cost.

- *Convener:* VCU uses its regional footprint to help break down boundaries between local governments and other organizations to advance important regional goals. As focus group a participant put it, “VCU is able to take the politics out of some things.” For example, VCU recently helped to create the Metro Richmond Exports Initiative, which covers 19 independent political jurisdictions.
- *Thought leader:* VCU attracts more than \$200 million each year in sponsored research that powers innovative thinking on society’s toughest challenges. One local business owner stated, “The thought leaders in their fields are at VCU.”
- *Moral leader:* VCU takes principled stands and follows up with action. For example, the VCU Office of Multicultural Student Affairs plays an integral role in reducing cultural barriers through various events and projects. Also, VCU recently allocated \$28 million to develop the Children’s Hospital Foundation Heart Center. In 2015, U.S. News & World Report named VCU’s children’s hospital one of the best in the United States for the third year in a row.
- *Local culture:* VCU influences the local culture, the milieu of Richmond, creating both businesses that supply products and services, and a market that purchases distinctive products and services.
 - Many VCU students and alumni become entrepreneurs, creating businesses that help make Richmond not only an attractive place to visit, but also an attractive place to live after graduation.
 - VCU students, alumni and staff create a market that supports creative art, music, food, artisan products and sports.
 - VCU embraces diversity in its student body, faculty and staff, which has had lasting effects on the Richmond region. As one focus group participant expressed it:
 - “I think VCU has added to the diversity of Richmond. We had black and white issues and rich and poor. It needs a lot of work still, but with VCU’s students and openness and being more accepting, black and white and gender equality and diversity is there.”

The identities and the fates of VCU and of Richmond are inextricably linked. The city provides a supportive home to the university, and VCU, in turn, produces tremendous economic value and contributes in every conceivable way to the betterment and enhancement of the community.

Introduction

In recent decades, universities have increasingly commissioned studies documenting their impacts on the communities and regions in which they are located. Most of the studies seek to show the quantitative impact of a university's employment, purchasing and educated graduates on the regional economy. However, some universities now take a more comprehensive approach and seek to document their impacts as "anchor institutions" on the economic well-being of the communities surrounding them, as well.

Over the past 25 years, Virginia Commonwealth University has commissioned several studies to analyze the impact of its employment, purchasing and educated graduates on the regional economy. In November 2015, VCU President Michael Rao, Ph.D., commissioned the Center for Urban and Regional Analysis to conduct a study that would encompass both the traditional approach to documenting VCU's impact on the regional economy, as well as its broader impacts as an anchor institution. The latter aspect includes VCU's role in fostering innovation and its service as a regional steward, which includes its work as a community developer, thought leader, moral leader and convener of stakeholders around important issues.

CURA first conducted a thorough review of the most current literature on university impact analyses, as well as anchor institutions and their role in stimulating local economic development, supporting the regional entrepreneurial ecosystem and providing stewardship for the community at-large in addressing its challenges. We then devoted two months to data reconnaissance, interviewing key VCU administrators and program heads to better understand the complexity of the university's activities in the region. This phase was instrumental in creating a comprehensive outline of the study.

From January through March 2016, CURA met with several VCU administrators and staff to vet the outline structure and to identify where the needed data was stored. By the end of March, the data-reconnaissance process had expanded to include meetings with prominent stakeholders and gatekeepers of dispersed university data. We learned that because VCU neither stores nor catalogs data in central locations, we would need to engage in over 40 meetings with about 70 administrators, staff and faculty to understand what data exists and to make initial requests for it. VCU administrators and staff expressed great interest in the study and a willingness to provide data. We learned that many offices are interested in improving data collection and storage methods,

as well as analytical capabilities. However, we rarely received data after the first meeting and sometimes not until after three meetings over two months, often because of the technical time it takes to aggregate some of the requested information.

We learned that data necessary to measure VCU's economic impacts is stored in several different units or offices.¹ Ultimately, we were able to collect extensive descriptive data on:

- Students, including enrollment, graduation and retention rates, and demographic characteristics
- Visitation
- Programs offered, including service-learning courses and community outreach activities
- VCU's network of career centers
- Alumni
- Employment and payroll
- Research output
- Programs and activities in support of innovation and entrepreneurship
- Operational budget and capital investments
- VCU Health System and its community support programs

We collected data from the following VCU units:

- Division of Community Engagement
- Division of Student Affairs
- Division of University Relations
- Office of Development and Alumni Relations
- Office of Research and Innovation
- Office of Strategic Enrollment Management
- Office of Human Resources
- Office of Planning and Decision Support
- Office of the President
- School of Education
- School of the Arts
- School of Business
- School of Engineering
- L. Douglas Wilder School of Government and Public Affairs

¹ An example is the estimate of VCU visitor spending impacts. Visitation data are comprised of more than 10 different data points (i.e., data stored in specific VCU units), in addition to external data on average spending and spending categories.

- School of World Studies
- University Controller's Office
- Virginia Biotechnology Research Park
- VCU Athletics
- VCU da Vinci Center
- VCU Facilities Management
- VCU Health

The data was used to describe VCU's activities as a higher education institution, its role in promoting an entrepreneurial culture among its students and faculty, and its quantitatively measured economic impact on the regional economy.

In order to capture the many ways in which VCU contributes to the community and the region, CURA also embarked on a qualitative research process, conducting a survey and interviewing more than 60 stakeholders and community partners. The goal of this phase was to gauge the external perception of VCU, including its roles in the community and region, and the areas where its presence has made a difference.

For this purpose, and with the support of the Division of Community Engagement and VCU Innovation Gateway, from May to August 2016, we completed the following research activities:

- Two focus groups with representatives of several neighborhood associations
- Two focus groups with key members of the Richmond-metropolitan entrepreneurial sector
- Three focus groups with regional stakeholders and community partners
- A survey of approximately 150 alumni and current students who have participated, or are participating, in innovation or entrepreneurship classes or programs at VCU
- Several interviews with community leaders, entrepreneurs and regional economic development practitioners who hold various leadership positions in the community

This report is the result of an extensive research process. It provides descriptive statistics of VCU activities, operations and impacts. These are then complemented, confirmed or, in some cases, challenged by what we learned through interviews, surveys and feedback from more than 45 focus group participants.

The report is presented in four chapters, each covering a specific theme. Chapter 1, Talent, presents basic statistics about VCU as a higher education institution, including

student enrollment, retention and graduation rates; human capital development; employment; research output; and alumni's economic impact in the region. Included in this chapter are also descriptions of the VCU career center system and of knowledge transfer.

Chapter 2, *Place*, presents the results of a traditional, quantitative economic impact study, with a very customized approach to reflect the complexity of VCU and VCU Health System, where VCU and VCU-associated spending are analyzed to estimate the overall impact on the regional economy. Included in this chapter is also a qualitative focus on the impact of VCU Health System on the community, and its role in improving the quality of life of the most disadvantaged residents in the region.

Chapter 3, *Innovation and Entrepreneurship*, identifies the university's contribution to the regional innovation and entrepreneurial ecosystem, both through its own research activity and by supporting, directly or indirectly, the entrepreneurial efforts of VCU students and alumni.

Chapter 4, *Regional Stewardship*, shows how, with intention and leadership, VCU deploys talent, place, and innovation and entrepreneurship to some of the community's most pressing needs and challenges. As a regional steward, VCU plays the role of community developer, convener, and thought and moral leader, and is widely respected for doing so.

The conclusion points out that VCU's presence has contributed, along with other factors, to the development of a creative, artistic, artisanal and culinary culture in Central Virginia. The emergence of this culture has arguably improved the quality of life in the region and helped it to attract talented, young workers and businesses who want to employ them.

Under separate cover is an appendix containing survey and focus-group instruments, as well as related material. Also under separate cover, we provide some reflections on data collection, organization and storage, now that we have had the opportunity to experience how this is done at the university. We do not believe it is either possible or desirable to centralize all data, but other methods such as data maps might prove useful as VCU becomes a more data-driven organization. Together with the report, we provide an example of a data map resulting from this research project. It includes all data collected, its purpose within the study and the unit or department where it is located.

I. TALENT: Developing Tomorrow's Workforce, Contributing to Our Communities

"The thought leaders in their field are at VCU."

**– Barry Matherly, president and CEO
of the Greater Richmond Partnership**

Virginia Commonwealth University's role as a premier, urban higher education institution reflects its notable academic, research, athletic and cultural achievements. But at its core, VCU is invested in developing its people and maximizing their potential to achieve success. The university's contributions to the region as a producer of talent firmly ground the institution in the economic development of Richmond. The physical presence of VCU affects the region's urban and economic landscape, but the less visible contribution — knowledge transfer, human capital and a well-prepared workforce — remains equally important.

A wide range of nationally recognized academic programs yields a talent base that distinguishes Richmond from other Virginia cities. Many Richmond and Virginia employers seek out VCU graduates. The diversity of students at VCU enhances this pool and increases economic opportunity for underrepresented groups, including women and populations of color. Diversity at VCU influences the culture of Richmond, promoting inclusion and partnerships across the community.

Students have unique opportunities to engage in impactful research while at VCU, developing skills they will apply to post-graduate careers and service. Talent developed by VCU is attuned to the needs of the community, and students graduate with skill sets uniquely positioned to address those needs. While enrolled at VCU, students must engage in community service and gain hands-on experience serving the community. This service provides opportunities for a two-way exchange of knowledge and understanding between the university and its students and the Richmond community. VCU and the Richmond community influence each other through continual exchange of skills and information, or knowledge transfer.

VCU attracts and anchors talent in the commonwealth. Most graduates from VCU remain in Richmond or Virginia. Those graduates enter the workforce well-prepared to meet the needs of industry. The close relationship between the university and private industry benefits students while serving the region's economic needs. VCU guides its students through education and the transition into the workforce. Career Services offices for VCU and the schools of Business and Engineering have strengthened their programs and improved employment outcomes for students and employers.

This chapter describes the themes above in greater detail using data gathered from VCU and outside sources.

1. Students and Institution

ENROLLMENT AND TRENDS

As of fall 2015, VCU was the third-largest public, four-year university in Virginia, serving 31,242 students.¹ Close to three-quarters of enrolled students — 24,051 individuals — were seeking undergraduate degrees (Figure 1). Graduate students constituted the second-largest group with 5,451 individuals, or 17 percent. Another 6 percent of students (1,740) were first professionals, which included those seeking Doctor of Dental Surgery, Doctor of Medicine or Doctor of Pharmacy degrees.

VCU Fall 2015 Enrollment by Student Level

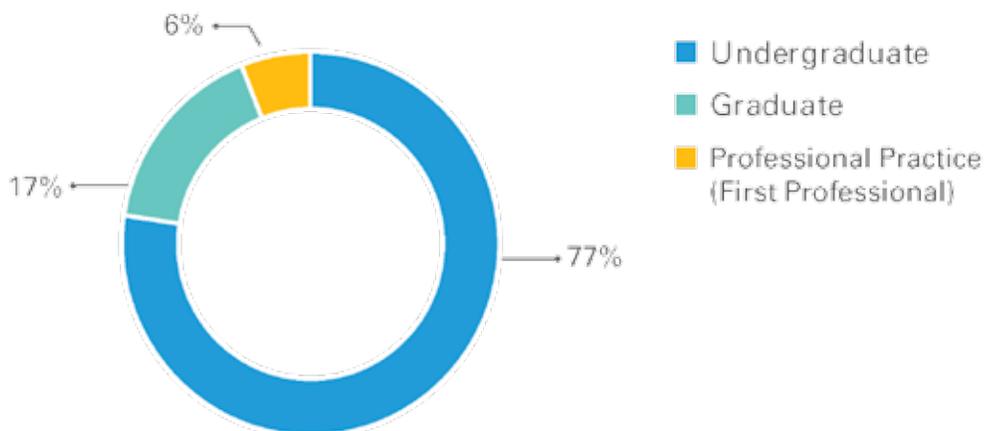


Figure 1: VCU Fall 2015 Enrollment

VCU’s total enrollment reached a high of 32,434 students in fall 2009 — a 14 percent increase from 2004 enrollment — and declined to 31,242 students in 2015 (Figure 2). Undergraduate enrollment represented the majority of the total student population. That segment experienced the greatest growth since 2005. The 2015 enrollment of 24,051 undergraduate students marks a 25 percent increase over 2005 undergraduate

¹ The largest public university in Virginia was George Mason University, with total enrollment at 33,791 in fall 2014. Virginia Tech became the second largest in 2014. State Council of Higher Education for Virginia (SCHEV), SCHEV Research, “E03: Fall Headcount Enrollment in Percentages (1992 through Current Year),” Available: <http://research.schev.edu/?xs16>, Accessed: 18 July 2016.

enrollment (Figure 4).² Much of that growth occurred between 2005 and 2009, with enrollment increasing by 3 to 7 percent annually. The remaining years between 2005 and 2015 exhibited more modest growth (under 2 percent annually).

VCU Fall Enrollment 10 Year Trend Undergraduate and Total

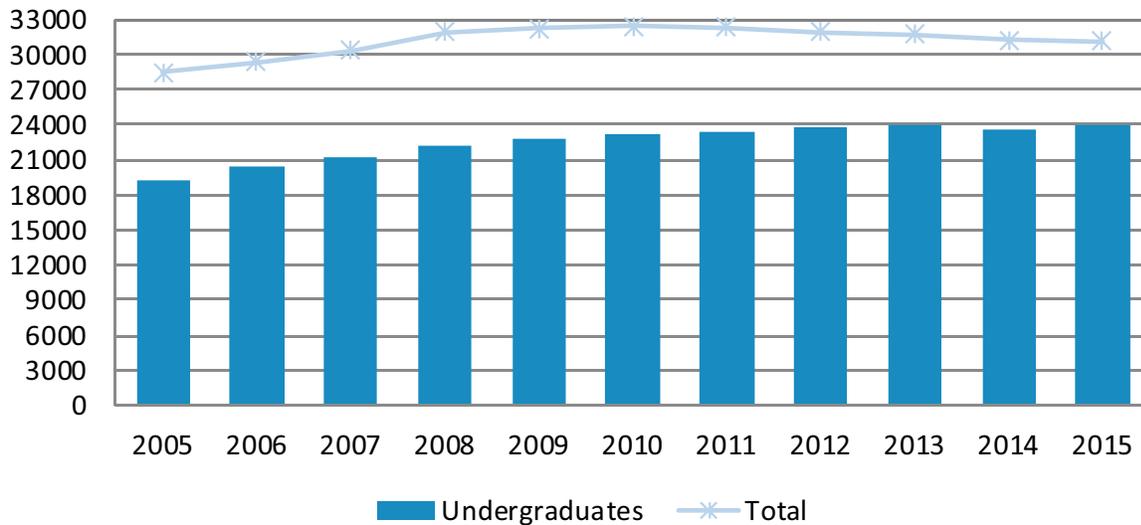


Figure 2: VCU Fall Enrollment 10-Year Trend, Undergraduate and Total

Graduate enrollment peaked at 8,151 in 2007 and declined by 33 percent to 5,451 in 2015 (Figure 3). Graduate enrollment exhibited the largest year-over-year shifts from 2005 to 2015, ranging from an 8 percent increase between 2006 and 2007 to a 10 percent decrease between 2010 and 2011. Enrollment fell by 29 percent between 2005 and 2015 (Figure 4).

First-professional student enrollment grew slowly from 2005 to 2015, from 1,571 to 1,740 students (Figure 3). First-professional enrollment experienced a 2 percent decline from 2008 to 2009. However, the years before and after demonstrated steady upward movement.

The decline in total enrollment from 2009 to 2015 appears to be driven by a shrinking number of graduate students. In that six-year span, undergraduate enrollment grew

² State Council of Higher Education for Virginia (SCHEV), SCHEV Research, "E02: Fall Headcount Enrollment (1992 through Current Year)," Available: http://research.schev.edu/enrollment/E2_Report.asp, Accessed: 20 July 2016.

VCU Fall Enrollment 10 Year Trend Graduate and First Professional Students

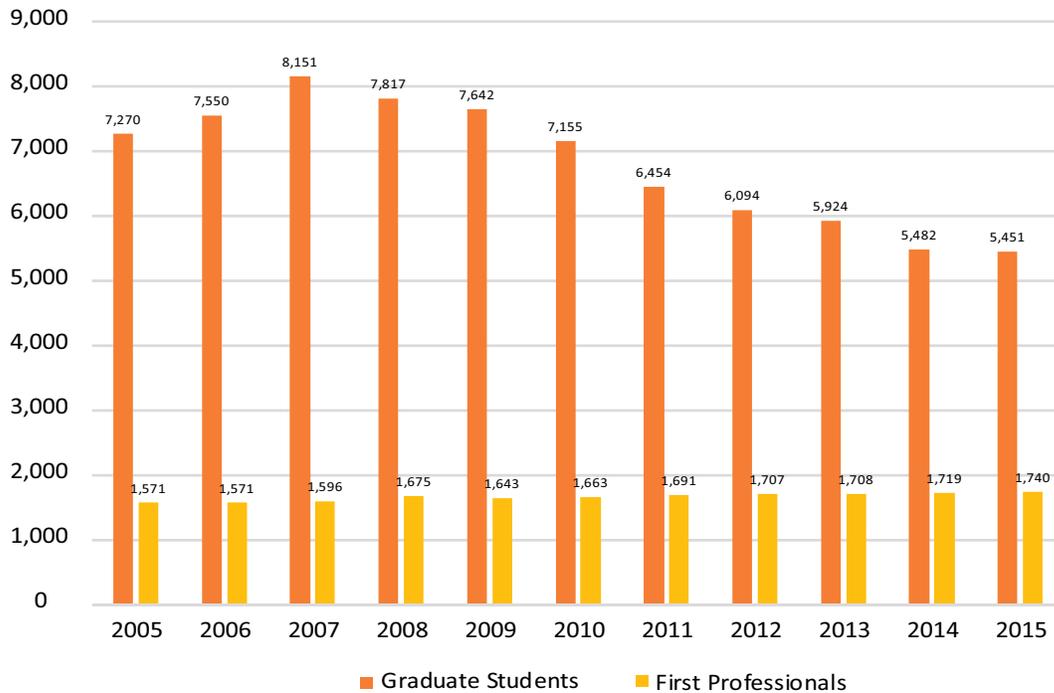


Figure 3: VCU Fall Enrollment 10 Year Trend, Graduate and First-Professional Students

by 4 percent (Figure 2) and first-professional enrollment increased by 5 percent (Figure 3). Graduate student enrollment fell by 28 percent, from 7,642 in 2009 to 5,482 in 2014 (Figure 3). The 2015 graduate enrollment marked a 30 percent decline since peak graduate student enrollment in 2007, and a 29 percent decline over a 10-year period (Figure 4).³

Growth in undergraduate and first-professional student enrollment over 10 years was partially offset by a decreasing number of graduate students, while slower growth in nongraduate enrollment after 2009 made declines in graduate enrollment more visible.

³ Ibid.

VCU Enrollment Percent Change 2004-2015

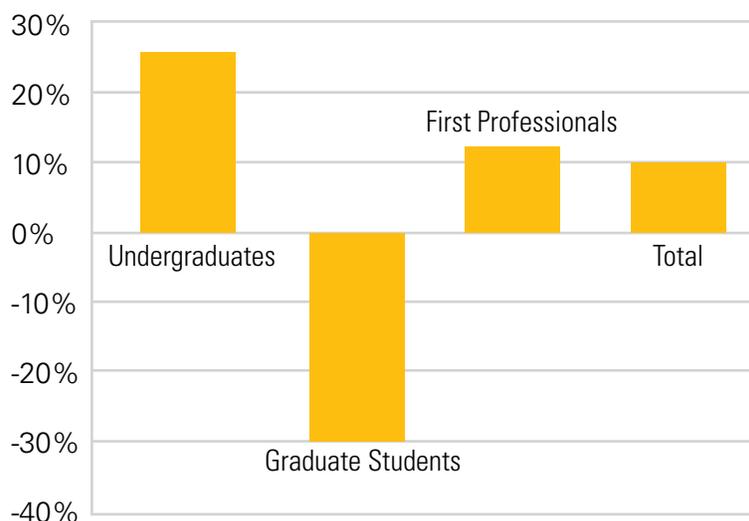


Figure 4: VCU Enrollment Percent Change, 2004-2015

DIVERSITY IN ENROLLMENT

The composition of VCU's enrollment is increasingly diverse. Enrollment of traditionally underrepresented populations⁴ rose from 40 percent of all students in 2005 to 49 percent in 2015.⁵ Some of that growth stemmed from increases in enrollment of students who identify as Asian, Hispanic or multirace (Figure 5). The proportion of Asian students grew from 9 percent of the total enrollment in 2005 to 12 percent in 2015. The proportion of Hispanic students increased from 3 percent to 7 percent of the total enrollment. Black or African-American student enrollment consisted of 16 percent of the total enrollment in 2015, a decline from 18 percent in 2005. This decline is strongly influenced by significant Asian, Hispanic and multirace growth. It should be noted that black or African-American enrollment declined in numbers following the economic recession, but 2016 enrollment estimates suggest an upward trend. International students accounted for 7 percent of the population in 2015, up from 4 percent in 2005.⁶

4 Traditionally underrepresented populations (URP) are defined by SCHEV as students who meet any of the following criteria: (1) non-white U.S. citizen and permanent resident; (2) receiving Pell grants within the last five years; (3) age 25 or older at entry; or (4) from Virginia localities in the lowest quintile of associate and baccalaureate attainment rates.

5 VCU Reporting Center.

6 State Council of Higher Education for Virginia (SCHEV), SCHEV Research, "E22: Fall Headcount: Trends in Race Ethnicity," Available: http://research.schev.edu/enrollment/E22_report.asp, Accessed: 29 August 2016.

VCU Fall Enrollment 10 Year Trend - Total Student Race and Ethnicity

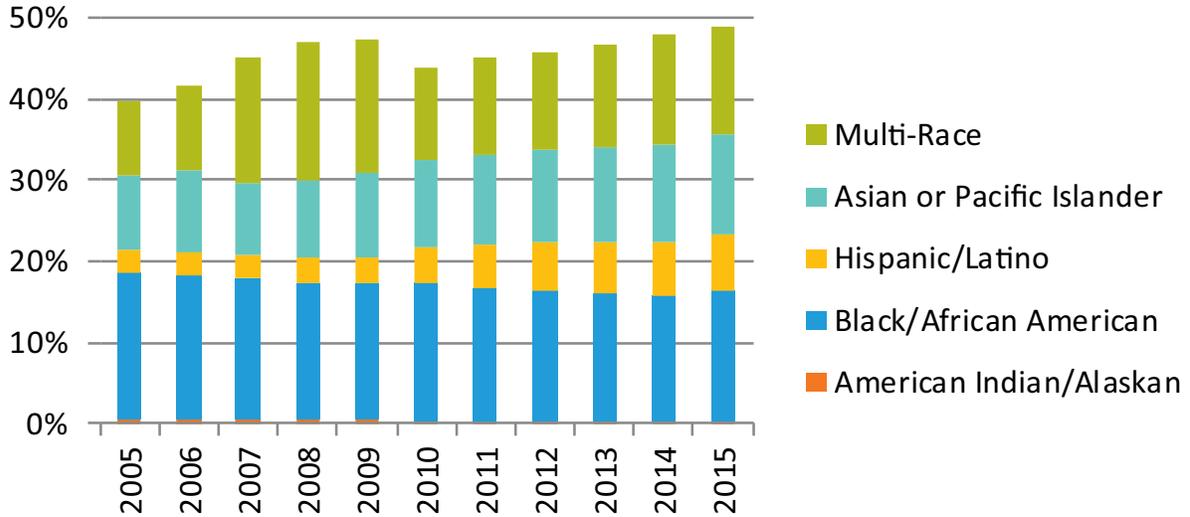


Figure 5: VCU Fall Enrollment 10-Year Trend, Student Race and Ethnicity

Women represented 57 percent of enrollment at VCU in 2015. This proportion held across most degree levels. In VCU’s graduate post-master’s certificate programs, women consisted of almost 80 percent of students.⁷ Women who are reentering the workforce, continuing their education or building new skills to further their careers are partnering with VCU to do so.

VCU’s progress in guiding traditionally underrepresented students through matriculation to graduation is growing. Women compose the majority of those receiving degrees at VCU, at 60 percent of total degrees conferred. And every year since 2011, the proportion of degrees conferred to underrepresented minorities has increased (Figure 6).

Trends for enrollment by age group have remained stable since fall 2011 (Figure 7). As of fall 2015, 13 percent of students were age 18 and younger; 59 percent were 19 to 24 years old; 15 percent were 25 to 29 years old; and 13 percent were over 30 years old.⁸

⁷ Virginia Commonwealth University, VCU Reporting Center, Insights, “Fall Enrollment Headcount By Student Level,” 2011-2014.

⁸ Ibid.

Percent of Total Degrees Conferred by Underrepresented Minority

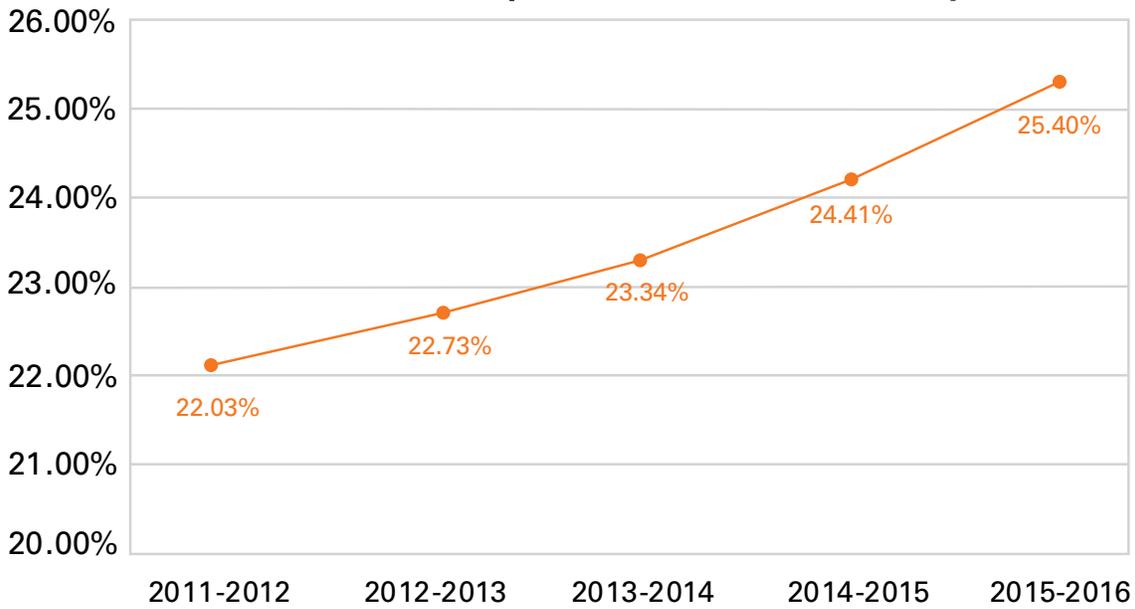


Figure 6: Percent of Total Degrees Conferred to Underrepresented Minority Populations

Fall Enrollment by Age Group 2011- 2015

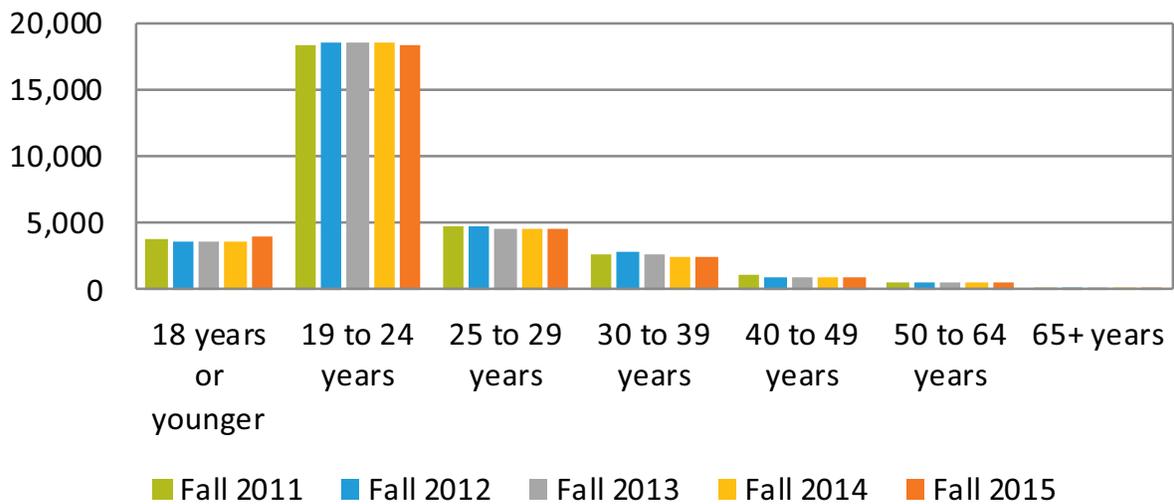


Figure 7: VCU Fall Enrollment by Age Group, 2011-2015

VCU is a public university serving the residents of Virginia. Approximately 85 percent of the university’s students are from the commonwealth, a pattern that’s remained consistent since fall 2011.

Enrollment for in-state and out-of-state students has remained consistent since 2011 as shown in Figure 8. The largest increase in enrollment over a five-year period for in-state students was between the 2014-15 and 2015-16 periods — a 13 percent increase to 3,610 students. The highest out-of-state enrollment year, 2012-13, saw 601 out-of-state students but dropped by 28 percent to 432 out-of-state students in 2013-14. VCU has traditionally served as an institution of opportunity for first-generation college students and continues to do so today.⁹ In fall 2015¹⁰, more than one-third of incoming freshmen were first-generation college students.¹¹

Data on the income levels of enrolled students were not available for this report.¹²

In-state vs. Out-of-state Enrollment

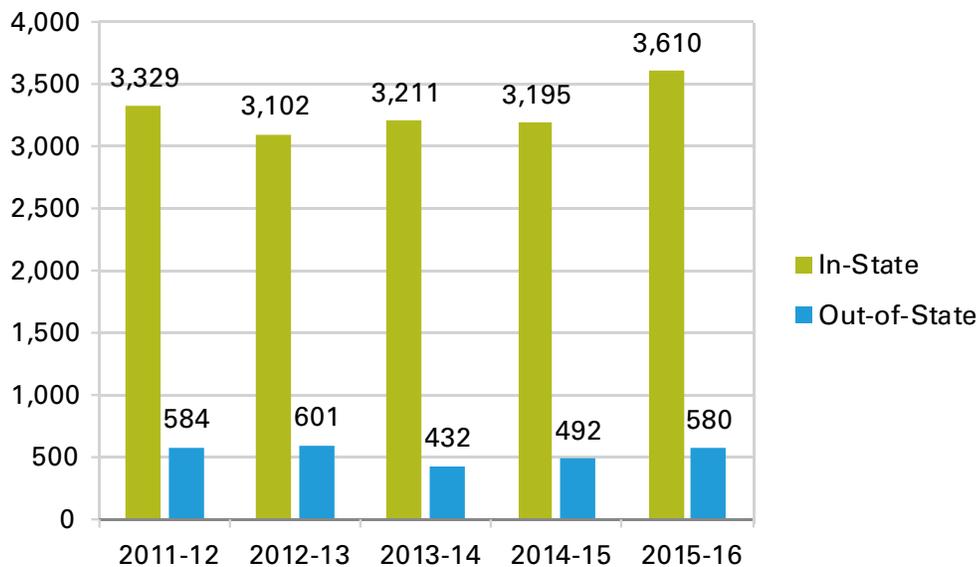


Figure 8: VCU In-state versus Out-of-state Enrollment

9 VCU School of Business AACSB CIR Report 2016, 8.

10 Collection of data on this student population began in fall 2015 and the data are not available for prior years.

11 Virginia Commonwealth University, VCU Reporting Center, Insights, “Fall Enrollment Headcount By Student Level,” 2015.

12 See Chapter 5

ACADEMIC PROGRAMS

VCU students have choices and opportunities unavailable elsewhere in Virginia. The university's capacity to attract and develop talent is rooted in a blend of formal and informal education. Within its formal structure, the university houses 13 schools and one college:

- College of Humanities and Sciences
- School of Allied Health Professionals
- School of the Arts
- School of Business
- School of Dentistry
- School of Education
- School of Engineering
- L. Douglas Wilder School of Government and Public Affairs
- School of Medicine
- School of Nursing
- School of Pharmacy
- School of Social Work
- University College
- VCU Life Sciences

Within the schools and the college are 225 degree and certificate programs. Seventy-nine of those degree programs, or 35 percent, are uniquely offered by VCU and are not available at other schools in Virginia (Table 1).¹³

	2011	2012	2013	2014	2015
Baccalaureate	14	14	13	7	12
Master's	33	34	34	17	17
Doctorate	18	19	19	16	16
First professional	1	1	1	1	1
Certificate	-	-	-	22	33
Total	66	68	67	63	79
Source: VCU Office of Planning and Decision Support					

Table 1: VCU Degree Programs Unique to Virginia

The National Center of Educational Statistics uses broader categories to classify programs across the country. Using the broader categories, VCU offers 13 degrees unique in Virginia, including the undergraduate painting program and the Doctorate in Nanoscience and Nanotechnology program (Table 2).

¹³ Office of Planning and Decision Support, "Facts 2015-2016," VCU University Relations, 2016.

CIP Code	Program	Degree
15.1601	Nanoscience and nanotechnology	PHD
19.0702	Aging studies	CERT
30.1801	Integrative life sciences	PHD
50.0201	Craft and material studies	BFA
50.0410	Communication arts	BFA
50.0708	Painting and printmaking	BFA
51.0401	Dentistry	DDS
51.0501	Dentistry	MSD
51.1506	Patient counseling	CERT
51.1509	Genetic counseling	MS
51.2010	Pharmaceutical sciences	MS/MPS
51.2310	Rehabilitation counseling	MS
51.3804	Nurse anesthesia practice	DNAP
Source: SCHEV Degree Inventory by Broad Program, 2016		

Table 2: VCU Programs Unique in Virginia by CIP Code

VCU also offers programs that do not fit neatly into any single school. The da Vinci Center — a collaboration of VCU’s schools of the Arts, Business and Engineering and the College of Humanities and Sciences — stresses innovation and entrepreneurship through a cross-disciplinary model. The program’s Master of Product Innovation is the first of its kind in the nation.

VCU’s reputation as an academic leader extends beyond Richmond. Its schools and programs are consistently ranked highly among universities nationwide. The School of the Arts offers the best public arts graduate program in the U.S., and the VCU Brandcenter offers the best graduate advertising program in the U.S. Furthermore, several graduate and first professional programs are ranked in the top 50 by U.S. News & World Report.¹⁴

Nearly 3,000 undergraduate and 200 graduate students were enrolled in VCU’s highly regarded School of the Arts in fall 2014, and the school awarded 664 baccalaureate and 80 master’s degrees in the 2014-15 academic year (Figure 9).

¹⁴ VCU, “Facts and rankings: VCU at a glance,” Available: <http://www.vcu.edu/about/facts-and-rankings.html>, Accessed: 29 August 2016.

Highly Ranked Graduate Programs (U.S. News & World Report, March 2015)

School of the Arts - Second

Sculpture - First

M.F.A. - Fourth

Fiber arts - Fourth

Graphic design and glass - Fifth

Painting and drawing - Seventh

Ceramics - Ninth

Metals and jewelry and printmaking - 10th

Photography - 13th

Multimedia/visual communications - 14th

School of Allied Health Professions

Health administration - Third

Nurse anesthesia and rehabilitation counseling - Fourth

Occupational therapy - 15th

Physical therapy - 19th

School of Social Work (M.S.W. and Ph.D.) - 11th

School of Pharmacy - 21st

School of Education - 27th

School of Nursing - 34th

School of Engineering - Ninth in the number of Ph.D.s awarded to women (American Society for Engineering Education)

Figure 9: Highly Ranked Graduate Programs

VCU's development of talent in science, technology, engineering and math (STEM) fields continues to grow. In fall 2014, almost 25 percent students enrolled in STEM majors. This is an improvement from 2011, when just 20 percent of students were enrolled in STEM majors.¹⁵

Health care is another important field for which VCU generates talent. The number of VCU students enrolled in health care programs has held steady at 13 percent since fall 2011.¹⁶ These students learn essential skills while providing care to patients from around the region.

¹⁵ Ibid

¹⁶ Ibid

ADMISSIONS

VCU consistently receives strong interest from potential students. Applications to VCU have grown since fall 2011 when 13,418 applications were received, peaking in fall 2012 at 14,789, and reaching 15,082 applications for fall 2015 (Figure 10).¹⁷ The acceptance rate increased from 71 percent in fall 2011 to 79 percent in fall 2015. The enrollment rate has dropped since fall 2011, from 41 percent to 35 percent in fall 2015.¹⁸

VCU Applicants, Admissions & Enrollment 2011-2015

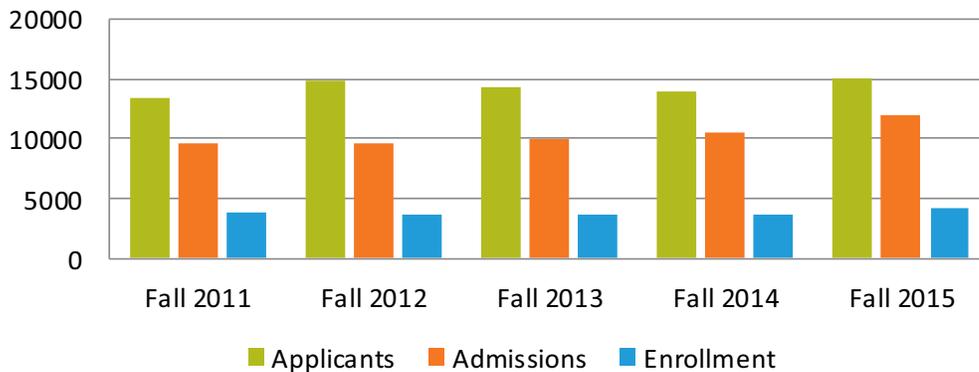


Figure 10: VCU Applications, Admissions and Enrollment, 2011-2015

The majority of incoming VCU students earn SAT scores above 1000 (Figure 11). The median SAT score is 1100. Recent trends suggest a greater number of students with SAT scores in the 1401-1600 range are choosing to come to VCU, increasing from 70 students in fall 2011 to 98 students in fall 2014. The number of students enrolling with SAT scores below 1000 has declined since fall 2011.¹⁹

17 Ibid

18 Ibid

19 Ibid

Fall First-Time Freshman Admissions Incoming Class by SAT Range

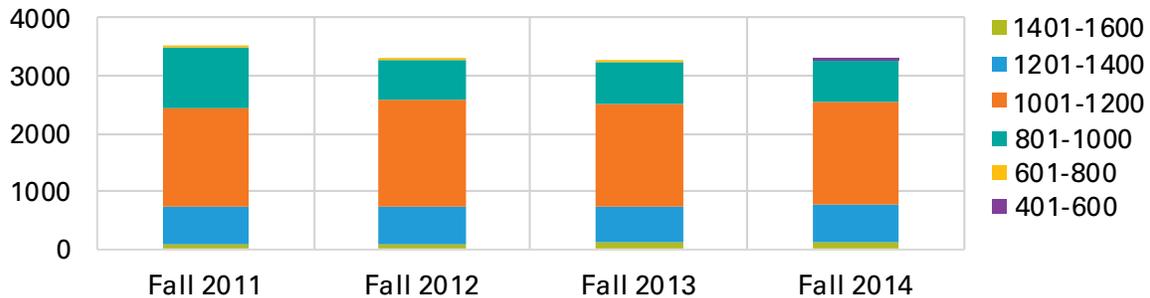


Figure 11: Fall Incoming Class by SAT Range

STUDENT SUCCESS

VCU has shown progress in helping its undergraduate students progress through a university education. Student retention rates improved for first-time freshmen from 82 percent in 2006 to 86 percent in 2015 (Figure 12). The retention rate between the 2011-12 and 2015-16 academic years has hovered between 85 and 87 percent — a trend comparable to peer institutions also experiencing relatively flat retention rates (Figure 13). VCU had a 61 percent six-year graduation rate for students in the Class of 2009-2010. This rate improved steadily since the entering Class of 2004-2005, which had a six-year graduation rate of 51 percent (Figure 14).²⁰ This improvement moves VCU closer to the 70 percent six-year graduation rate of all Virginia public universities.²¹ VCU's increasing graduation rate compares favorably to peer institutions, many of which have seen slower or flat growth in their graduation rates (Figure 15).

20 State Council of Higher Education for Virginia (SCHEV), SCHEV Research, "GRS04B: Cohort Graduation Rates, Four-Year Institutions (First-time, Full-time Freshmen Cohorts) by Year," Available: <http://research.schev.edu/graduates/cohortgrad-ratesB.asp>, Accessed 21 July 2016.

21 State Council of Higher Education for Virginia (SCHEV), SCHEV Research, "Students Entering Institution in Fall and Spring of 2009-10 and completing at this institution," Available: <http://research.schev.edu/iprofile.asp>, Accessed 21 July 2016.

VCU Fall Cohort Retention Rate 10 Year Trend

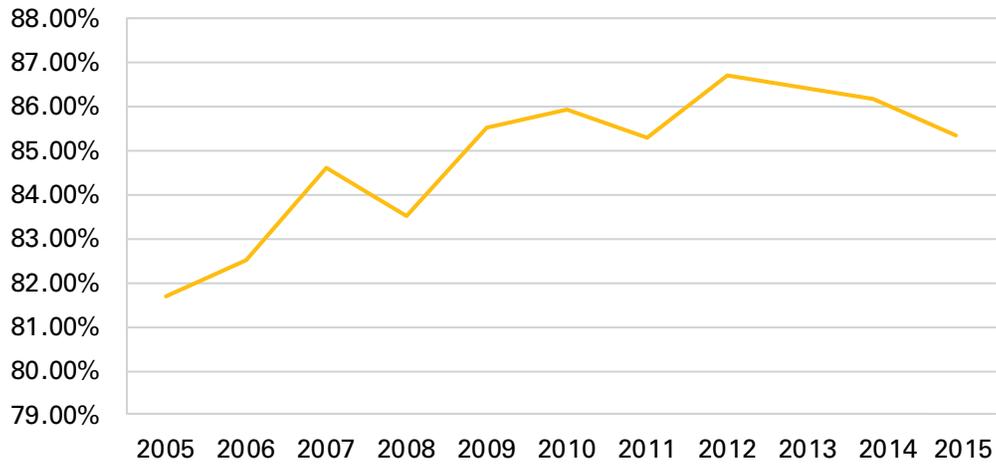


Figure 12: VCU Fall Cohort Retention Rate, 10-Year Trend

Retention Rate of VCU and Peer Institutions

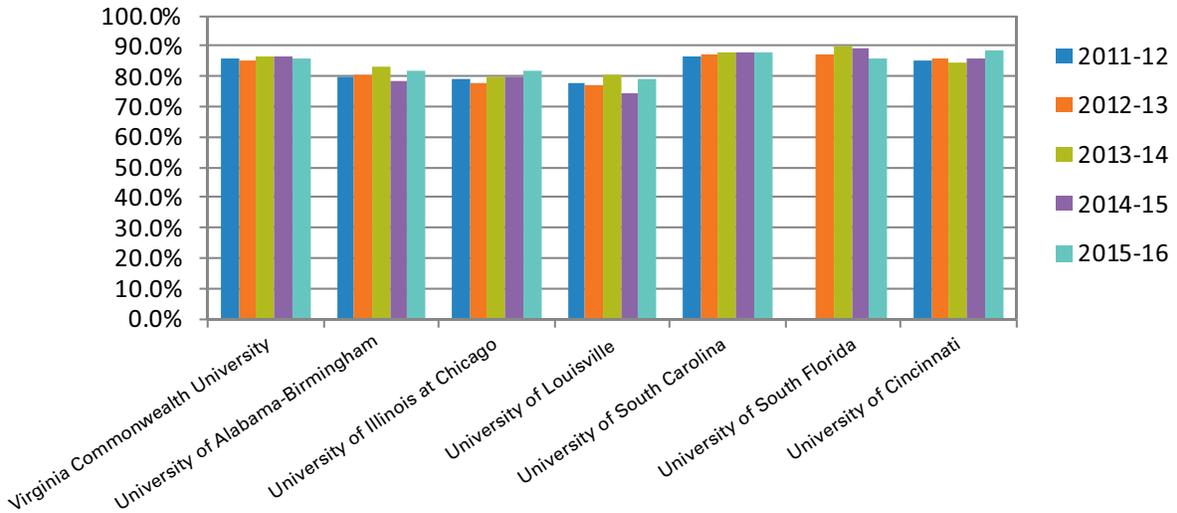


Figure 13: Fall Cohort Retention Rate of VCU and Peer Institutions

VCU Six Year Graduation Rate by Cohort Year

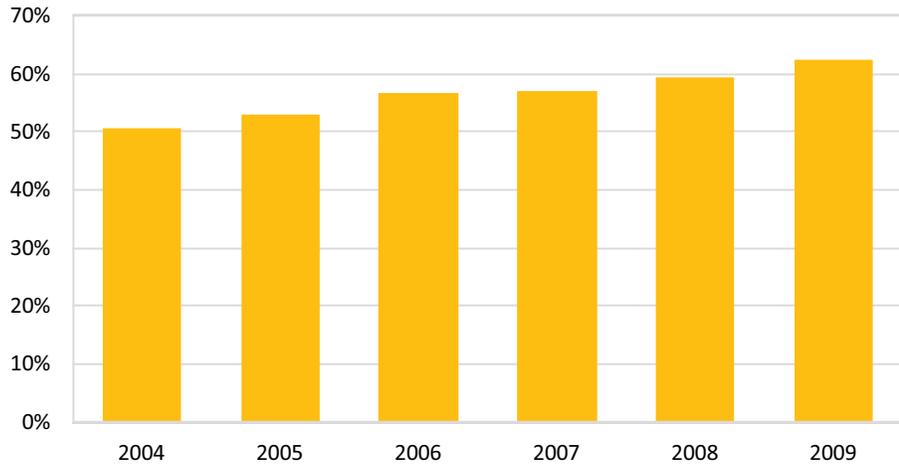


Figure 14: VCU Fall Cohort Six-year Graduation Rates

Graduation Rate of VCU and Peer Institutions

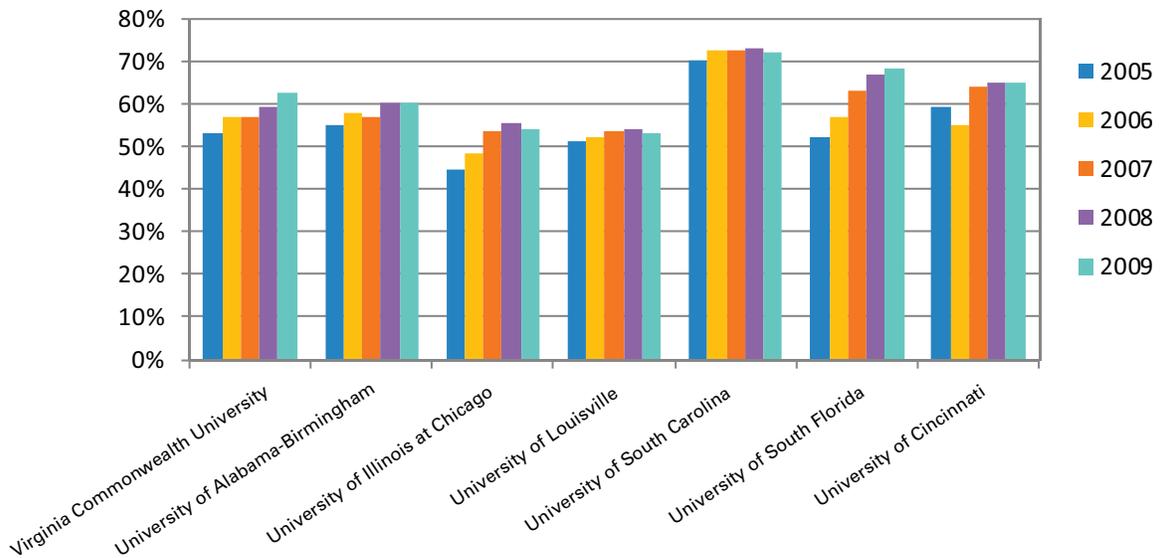


Figure 15: VCU Fall Cohort Six-year Graduation Rate and Peer Institutions

VCU was recognized in 2015 by The Education Trust for its work in boosting graduation rates for traditionally underrepresented minority groups. The Education Trust is a nonprofit advocacy group that seeks to close achievement gaps for young people, particularly those of color or living in poverty. VCU ranked among the top 26 universities for increasing the six-year graduation rate for all students and narrowing the gap between the graduation rate of underrepresented students and white students.

VCU conferred 7,677 degrees in academic year 2014-15, up from 7,192 in academic year 2010-11 (Table 3). The majority of degrees conferred at VCU are bachelor's, which accounted for 61 percent of the total awarded in 2010-11. This rose to 66 percent of all degrees in 2014-15. Master's degrees dropped from 25 to 20 percent of those conferred. Doctoral research degrees constituted 5 percent of all those conferred in 2010 and have since fallen to 4 percent. Professional practice degrees were 6 percent.²²

The Wilder School became independent in 2013 when it separated from the College of Humanities and Sciences, and the number of degrees conferred by the college reflects that shift.

As noted in Figure 6, the proportion of degrees conferred to traditionally underrepresented minority populations continued to rise between the 2011-12 and 2015-16 academic years.

VCU offers breadth, depth and uniqueness in its degree programs. Seventy percent of certificate programs are only offered at VCU. The university offers a range of opportunity for continuing education unavailable outside Richmond.

²² Virginia Commonwealth University, VCU Reporting Center, Insights, "Fall Enrollment Headcount By Student Level"

School/College	Degree level	2010-11	2011-12	2012-13	2013-14	2014-15
Allied Health Professions	Baccalaureate	70	59	73	67	78
	Master's	184	190	193	194	172
	Doctorate	147	147	111	101	112
	Certificate	14	13	16	43	31
Arts	Baccalaureate	643	629	602	594	664
	Master's	100	91	99	93	80
	Doctorate	4	1		3	6
Business	Baccalaureate	735	757	707	682	728
	Master's	238	279	257	343	361
	Doctorate	3	9	8	2	10
	Certificate	54	57	46	50	61
Business and engineering	Master's	0	0	6	3	5
da Vinci Center	Master's	0	0	0	6	8
	Certificate	3	10	21	29	40
School of Dentistry	Baccalaureate	32	28	32	20	24
	Master's	12	21	13	17	15
	First professional	89	104	111	98	104
School of Education	Baccalaureate	107	92	114	120	2
	Master's	412	341	333	282	252
	Doctorate	47	23	23	58	25
	Certificate	96	100	35	42	72
School of Engineering	Baccalaureate	188	242	241	269	292
	Master's	56	44	55	37	53
	Doctorate	14	28	28	22	21
	Certificate	4		3	6	9
Graduate School	Master's	3	16	0	0	1
Humanities and Sciences	Baccalaureate	2,140	2,371	2,469	2,241	2,430
	Master's	367	342	344	158	155
	Doctorate	44	37	57	52	39
	Certificate	77	74	88	24	17

Table 3: VCU degrees conferred by school, 2010-2015

Table 3 (continued)

School/College	Degree level	2010-11	2011-12	2012-13	2013-14	2014-15
Life Sciences	Baccalaureate	52	59	93	76	76
	Master's	23	27	27	27	29
	Doctorate	2	6	9	10	2
School of Medicine	Master's	68	84	77	73	83
	Doctorate	46	50	57	50	40
	First professional	176	187	197	192	200
	Certificate	59	49	55	67	63
School of Nursing	Baccalaureate	290	300	241	254	266
	Master's	93	82	69	85	99
	Doctorate	5	14	4	6	0
	Certificate	7	5	4	11	6
Office of the VP for Research	Master's			1	2	4
School of Pharmacy	Master's	4	6	11	3	7
	Doctorate	10	13	21	12	8
	First professional	136	124	126	130	128
School of Social Work	Baccalaureate	66	84	73	77	80
	Master's	209	217	173	203	158
	Doctorate	7	5	6	5	9
University College	Baccalaureate	56	45	43	68	59
Wilder School	Baccalaureate				318	344
	Master's				85	81
	Doctorate				8	10
	Certificate				32	58
University total		7,192	7,462	7,372	7,450	7,677

Source: VCU Office of Planning and Decision Support

2. Real-World Talent and Teaching

VCU encourages its students to go beyond the classroom to become globally engaged in a way that transforms lives and communities. In doing so, students not only change the world, but also change themselves. VCU offers three types of engagement: living-learning programs, service-learning courses and student service opportunities, including internships, volunteer work and externships.

In 2014, the Corporation for National and Community Service honored VCU with admission to the President's Higher Education Community Service Honor Roll for the eighth consecutive year. VCU was one of 121 schools nationwide that earned the recognition of Honor Roll with Distinction in 2014 for the second year in a row. This award goes to "applicants that display strong levels of institutional commitment, provide a compelling case for partnerships that produce measurable impact in the community and have a federal work-study community service percentage of 15 percent or above."²³

LIVING-LEARNING PROGRAMS

The university's strategic plan, Quest for Distinction, aims to provide students with high-quality living-learning experiences that prepare them for success in a global environment. Each living-learning program has unique residency and coursework requirements, in addition to service and engagement commitments.

ASPiRE

VCU ASPiRE is a living-learning program promoting community engagement through academic coursework and cocurricular activity. VCU ASPiRE enriches and deepens students' understanding of their



TURN AWARENESS
INTO ACTION

²³ VCU Office of the Provost Community Engagement, "News: VCU Named to President's Community Service Honor Roll," Available: <http://www.community.vcu.edu/news-and-events/outreach/vcu-named-to-2014-presidents-community-service-honor-roll-with-distinction.html>, Accessed: 10 August 2016.

capacity to create positive change in communities and address critical societal needs through long-term sustainable partnerships.

In 2014-15:

- ASPIRE students completed 10,017 cocurricular hours, with 526 activities offered. Of those hours, 6,669 were in direct service to the local community and had an economic impact of \$153,853.83 for the year.
- The median GPA for ASPIRE students was 3.16. Within the program, there were 42 majors represented, 17 students with double majors, 24 honor students and 21 students with GPAs higher than 3.75.
- ASPIRE partnered with 104 community and campus partners in the areas of accessible and affordable housing; community building; education and workforce development; environmental sustainability; and health and wellness.²⁴ Community partners indicated in a 2015 focus group survey that ASPIRE staff members are dependable, and the quality of students is high. These partners also reported that there were many benefits to the community, a key one being that together with VCU and students, they “were breaking down barriers [of] race, income, generational, and so on.”²⁵

LEAD

VCU LEAD is a distinguished leadership-focused living-learning program for undergraduate students of sophomore status or higher. VCU LEAD is focused on developing graduates who can successfully lead professional and civic organizations at a local, national and global level within their respective fields.

In addition to the two-year residency, leadership studies coursework and minimum GPA requirements, participants must complete at least 20 hours of VCU service and 20 hours of community service each year. Students must also attend at least five VCU LEAD events each academic year, and at the end of the program, each student must submit curricular and cocurricular portfolios.²⁶

24 VCU Office of the Provost: Division of Community Engagement, “Working Together. Changing Lives. 2014-2015 Impact Report,” 6.

25 Jettner, Jennifer and Tessa McKenzie, Office of Community-Engaged Research, Division of Community Engagement, VCU Office of the Provost and Vice President for Academic Affairs, “ASPIRE Partner Report,” 21 June 2016, 3.

26 VCU Division of Student Affairs, “VCU LEAD.” Updated 20 January 2016. Available: <https://students.vcu.edu/vculead/>

GLOBE

VCU Globe is a living-learning community that prepares students to navigate within and among global communities at home and abroad and in professional and personal contexts. Students are exposed to the impact of global migration and become more aware of globalization's role in the lives of people around the world. Students expand their knowledge, identity and impact as citizens of the world, and develop their leadership skills in global education and in their academic majors.



The VCU Globe curriculum consists of a 1-credit orientation course, five 1-credit globally focused seminars, a special section of UNIV 200 or an approved alternative and one 3-credit course from an approved list. In addition to curriculum, minimum GPA and the two-year residency requirements, Globe students must also complete at least 40 hours of service, demonstrate experience in cultural immersion, attend 10 VCU Globe events during participation in the program, and submit curricular and cocurricular portfolios at the end of the program.

A special feature of the Globe program is that students currently enrolled are eligible to participate in the Peace Corps Prep certificate program. VCU is one of 25 institutions around the country that participate in the program. This academic and service initiative is designed to help students build cultural awareness and develop practical skills sought by the Peace Corps, other nonprofit organizations and global employers.

Students who enroll in the Peace Corps Prep program will gain knowledge and experience that make them more competitive Peace Corps applicants.²⁷

In AY 2016, VCU Globe had 273 students enrolled in the program. In AY 2014, students completed 1,290 community service hours. This number grew to 2,020 in AY 2015 and is projected to be 2,800 in AY 2016. Initially the program worked with four community partners. Now it has 10 partners, including Richmond Public Schools, Henrico County Adult Education, CrossOver Healthcare Ministry, Sacred Heart Center, ReEstablish Richmond, Virginia Center for Inclusive Communities, The Daily Planet, YMCA, Housing Opportunities Made Equal and Communities in Schools.

²⁷ VCU Global Education Office, "About the Program." Updated 24 October 2014. Available: <http://www.global.vcu.edu/vcuglobe/about/>

The first cohort graduated in December 2015, with 92 percent successfully completing the program and the remaining 8 percent scheduled to graduate successfully in the next term.²⁸

VCU Innovate Living-Learning Program

A collaboration of VCU's schools of the Arts, Business and Engineering and the College of Humanities and Sciences, the VCU da Vinci Center is a unique collegiate model that advances innovation and entrepreneurship through cross-disciplinary collaboration.

VCU Innovate students interact with inventors, entrepreneurs and members of research and development teams from across the region and country through a series of events and activities designed by the residential community. At the completion of the program, VCU Innovate students receive a four-credit certificate of completion in innovation and entrepreneurship alongside a da Vinci Center undergraduate certificate in product innovation or venture creation.

Students must complete a two-year residency and coursework requirements. Additionally, students must fulfill 60 hours of VCU Innovate cocurricular activities that consist of a speaker series, workshops or trips focused on innovation and entrepreneurship.²⁹

A new, **high-impact practices** assessment model was piloted during the 2015-16 academic year on two VCU HIPs: service learning and the ASPIRE living-learning program. Results indicated that both are succeeding as high-impact educational practices at VCU. Underrepresented and diverse student groups are well represented as participants in these two HIPs, and participating students are retained and graduate at higher rates than undergraduates who have not participated.³⁰

²⁸ Globe Impact Report, August 2016

²⁹ VCU da Vinci Center, "VCU Innovate Living-Learning Program." Available: <http://www.davincicenter.vcu.edu/programs/vcuinnovatellp/>.

³⁰ Pelco, L. (2016). High Impact Practices (HIPS) Assessment Model: 2015-2016 Pilot Mid-Year Report. Virginia Commonwealth University, Richmond, VA, 2.

SERVICE LEARNING

Service learning is a high-impact educational practice that engages students in organized service activities and guided reflection. These activities benefit the community and enhance the academic curriculum of the participating students. VCU defines service learning as an intentional teaching strategy that engages students in organized service activities and guided reflections.

Service learning courses must meet the following criteria:

- Each student completes at least 20 hours of service.
- Service must meet a community-identified need.
- Students must engage in reflection that connects service and learning.

In AY 2014-15, service learning at VCU consisted of:

- 233 class sections and 117 distinct courses taught by 92 instructors
- More than 130 sustained community partners
- 72,160 service hours provided by approximately 3,469 service-learning students³¹

The number of service-learning courses rose from 131 courses in 2011 to 192 in 2014, an increase of almost 50 percent (Figure 16). Student enrollment in these courses was also up by 34 percent over the same time period.

VCU's students engage in service learning at different rates by school. VCU's first-professional programs — the schools of Dentistry, Medicine and Pharmacy — demonstrated the highest service-learning participation rates among all academic units (Table 4). More than 25 percent of students in the School of Dentistry enrolled in some form of service learning in the 2014-15 academic year.

³¹ VCU Office of the Provost: Division of Community Engagement, "Working Together. Changing Lives. 2014-2015 Impact Report," 6.

Service Learning Enrollment Trend 2011-2015

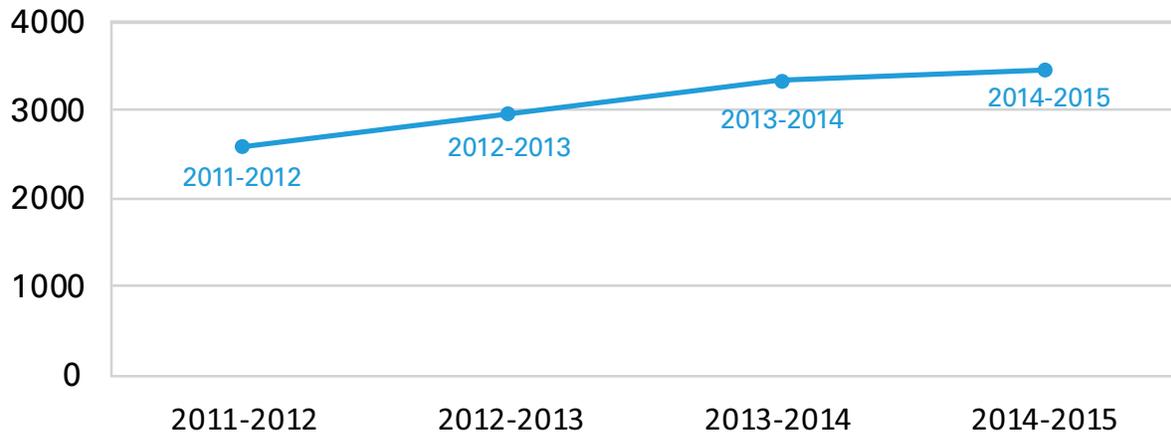


Figure 16: Service-Learning Enrollment Trend, 2011-2015

VCU Service-Learning Summary, 2014-15	
College, school or unit	Percent within academic unit
Allied Health Professions	5.21
Arts	6.18
Business	3.51
Dentistry	25.45
Education	6.52
Engineering	2.25
Government and Public Affairs	9.66
Humanities and Sciences	8.96
Medicine	16.94
Nursing	8.29
Pharmacy	22.24
Social Work	8.42
University College	10.00
VCU Life Sciences	10.54

Table 4: VCU Service Learning Summary, 2014-15

COMMUNITY SERVICE

In addition to service-learning classes, VCU students generously donate their time both on and off campus. Community service activities as defined by the Division of Community Engagement are those designed to improve the quality of life of community residents, particularly low-income persons. VCU was named as a finalist for the 2015 General Community Service Presidential Award in fall 2016 – the ninth consecutive year of recognition and first as a finalist. More than 12,700 students participated in some form of community service, including service learning, during AY 2014-15. Those students provided a combined 1.46 million hours of service (Table 5).

VCU Student Service Summary 2014-2015 (Incl. Service-Learning)		
School or Unit	Students	Hours
Allied Health Professions	798	392,480
Arts	161	34,572
Business	77	24,640
Dentistry	413	4,781
L. Douglas Wilder School of Government and Public Affairs	152	34,153
College of Humanities and Sciences	1,607	296,948
Medicine	250	34,582
Nursing	1,324	125,587
Pharmacy	40	982
Office of the President	286	2,168
Provost and Senior VP for Academic Affairs	4,454	218,778
Social Work	612	250,906
Division of Student Affairs	2,552	42,142
Division of University Relations	34	134
Total	12,762	1,462,854

Table 5: VCU Student Service Summary

VCU student service activity has an important economic impact. Excluding service learning, in AY 2014-15, 9,289 VCU students provided 1,393,394 service hours, or about 150 hours of service per student. Using a national standard set by Points of

Light for volunteer work valuation (\$23.07/hour for 2014), VCU students provided about \$32 million in volunteer work in one year. From 2012 to 2014, students provided \$85 million in service hours.^{32,33}

3. VCU Alumni

Alumni from VCU make an impact in Richmond and across Virginia. VCU Alumni Services data indicates 65 percent of current alumni live in the commonwealth. About 80 percent of employed recent undergraduate and graduate alumni reported their job location as within Virginia.³⁴ This group feeds into the economic health of the greater region. The highest concentration of alumni in Virginia is along the I-95 corridor from Richmond through Northern Virginia (Figure 17), with the Richmond MSA having the most alumni, followed by Fairfax County.³⁵

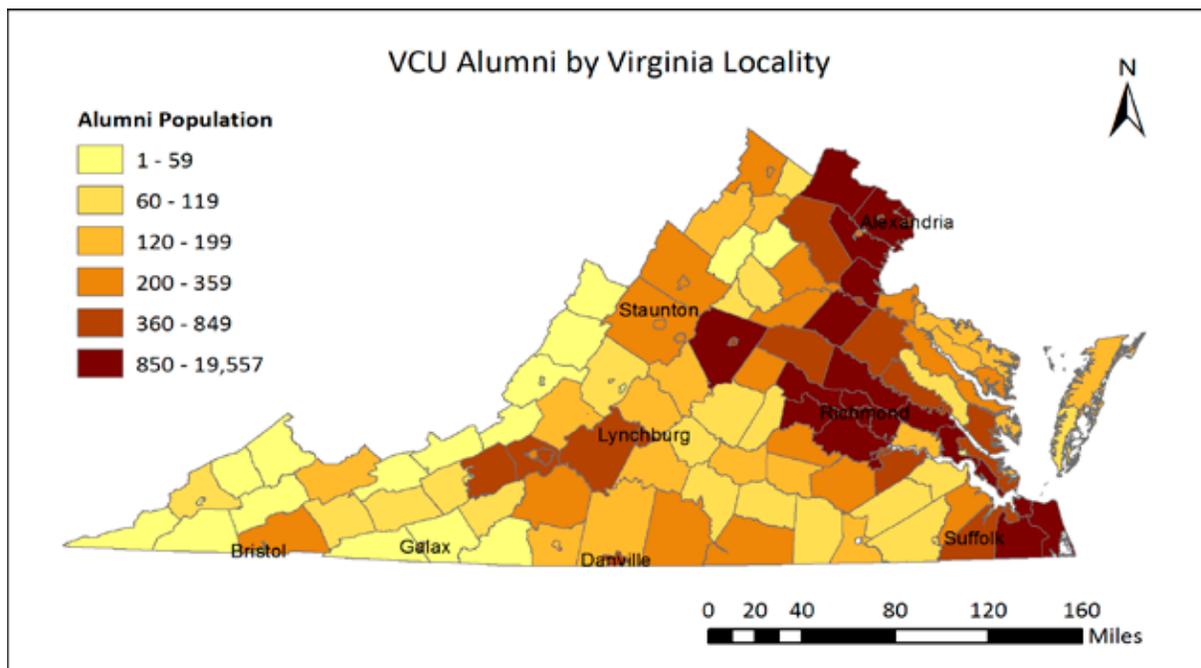


Figure 17: VCU Alumni by Virginia Locality

32 VCU Office of the Provost: Division of Community Engagement, "Community Engagement Dashboard." Available: <http://www.community.vcu.edu/community-indicators--data-/community-engagement-dashboard/>

33 Community service activities may include but are not limited to: academic service-learning, co-curricular service-learning (not part of an academic course, but utilizing service-learning elements), and other co-curricular student volunteer activities, as well as Federal Work-Study community service and paid community service internships. Community service includes both direct service to citizens (e.g., serving food to the needy) and indirect service (e.g., accessing community nutrition needs or managing a food bank).

34 VCU & GradLeaders, "The Outcomes Survey." Six-month post-graduation (May 2015) survey.

35 Ibid

Many VCU alumni continue to contribute locally — 40 percent live in the Richmond area.³⁶ Retention of VCU talent indicates the economic health of the Richmond area and the role the university plays in the future economic health of the region. More alumni have remained within the Richmond MSA than those who have moved out of Virginia (Table 6).

	Number of Alumni	Percent of Total Alumni
Virginia	112,785	65%
Richmond MSA	67,323	39%
Out of State	61,788	35%
City of Richmond	12,083	7%

Table 6: VCU Alumni Distribution

VCU’s College of Humanities and Sciences boasts the greatest number of alumni. The college’s 45,856 graduates constitute more than 25 percent of current alumni (Table 7). The schools of the Arts, Business and Education each have graduated more than 15,000 current alumni.³⁷

School	Current Alumni
Humanities and Sciences	45,846
Business	29,617
Arts	21,439
Education	15,003
Allied Health Professions	13,712
Medicine	11,470
Nursing	10,447
Social Work	10,160
L. Douglas Wilder School of Government and Public Affairs	8,942
Dentistry	5,719
Pharmacy	5,429
Engineering	3,963
Life Sciences	723

Table 7: VCU Alumni by School, 2015

³⁶ VCU Alumni Services

³⁷ Ibid

THE OUTCOMES SURVEY

The work and contributions of VCU alumni soon after graduation represent one of the greatest potential impacts a university may have on a community. To better understand the educational outcomes of its own students, VCU has initiated a post-graduate survey to measure how its alumni are contributing to the community 3, 6 and 12 months after graduation. Results indicate most recent VCU graduates find employment within months, most remain in Virginia and the vast majority consider their experience at VCU — particularly service learning and volunteer experiences — as helpful in preparing them for the workplace and a career of their choosing.³⁸

At three months after graduation, more than 55 percent of undergraduate respondents and 65 percent of graduate respondents had found full-time employment. After six months, more than 58 percent of undergraduate respondents were working full-time, as well as 68 percent of graduate respondents and 90 percent of doctoral program respondents.

Employed respondents reported an anticipated median income of \$43,000 six months after graduation. Undergraduate respondents reported slightly lower compensation (\$38,000 median), while graduate and doctoral respondents reported higher compensation (\$46,500 graduate median and \$53,000 doctoral median).

At three months after graduation, more than 55% of undergraduate respondents and 65% of graduate respondents had found full-time employment.

Eighty-four percent of undergraduate respondents, 76 percent of graduate respondents and 60 percent of doctoral and professional respondents reported that they chose to remain in Virginia to work.

A large majority of all respondents reported their primary post-graduation jobs were somewhat or very related to their program area of study and related to their career goals. More than 78 percent of respondents described themselves as somewhat or very satisfied with their primary occupation after graduation. And more than 68 percent of respondents described their service-learning and academic volunteer experiences as helpful or very helpful in preparing them for those occupations.

³⁸ For the 12-month survey, the overall response rate was about 24 percent, with 50 percent being undergraduate respondents, 34 percent were Master's program graduates, and 17 percent were Doctoral/Professional graduates.

VCU graduates impact the community outside of their occupations as well. Six months after graduation, more than half of all respondents reported taking on active roles within their communities by volunteering, participating in community groups or serving on local boards and committees.

ESTIMATED WAGE IMPACT OF VCU ALUMNI ON RICHMOND

VCU attracts and develops human capital, contributing citizens who often remain within the Richmond area, enhancing wages and tax revenues. The absence of VCU and its alumni would have a direct, negative impact on both earnings and services.

The most recent available information indicates VCU has 174,573 alumni around the world. Of those alumni, 67,323 (39 percent) are located in the Richmond MSA. Within the Richmond region, 12,083 of alumni live in the city of Richmond, 19,557 live in Henrico County and 18,770 live in Chesterfield County. More alumni reside within the Richmond MSA (67,323) than have moved out of Virginia (61,788). Fairfax County — the largest concentration of VCU alumni outside the Richmond MSA — has 7,600 VCU alumni.

The economic impact of alumni on wages in the Richmond area may be considered by following a methodology derived from studies of other public universities such as the Michigan University Research Corridor.³⁹ This approach measures university impact by estimating how the education and skills levels of the region's workforce would differ in the university's absence.

The Richmond MSA has an employed population of 595,247.⁴⁰ Assuming all VCU alumni in the Richmond MSA are employed, they account for 11.3 percent of workers. In the Richmond MSA, the median earnings for those with a bachelor degree is \$51,398, and the median earnings for those with a graduate degree is \$65,728.⁴¹ The

³⁹ Anderson Economic Group, LLC, "Empowering Michigan." 4 January 2013.

⁴⁰ U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates, Table B23025.

⁴¹ U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates, Table B20004.

per capita income for the Richmond MSA is \$30,944.⁴² VCU has an estimated 45,107 undergraduate alumni and 22,216 graduate alumni located in the Richmond MSA.⁴³

The income potential of all bachelor and graduate/professional degree holders (VCU and other universities) across the Richmond MSA may be estimated by multiplying the median incomes associated with each education level by the number of individuals in the Richmond region at those education levels. This calculation results in a \$15.6 billion aggregate income potential.⁴⁴ Applying these income assumptions to area VCU alumni results in \$3.8 billion aggregate income potential, or 24 percent of all potential income among all bachelor and graduate/professional degree holders in the region.

If VCU were not in Richmond, there would be significant loss of human capital and a decline in economic activity as a whole. Even assuming some in-state students may eventually locate in Richmond despite the hypothetical absence of VCU, out-of-state students would be less likely to play a role in the regional or state economies without the university's presence to draw them. Between 2010 and 2015, 155,535 students were accepted to VCU. Of those students, 14 percent (22,349) relocated from out of state.⁴⁵ Assuming 14 percent of all alumni enrolled at VCU as out-of-state students, approximately 24,440 alumni have been brought to Richmond by VCU for at least the duration of their education. And assuming 14 percent of regional alumni enrolled as out-of-state students, 9,425 alumni in the region would otherwise work elsewhere.

In addition to the loss in human capital from out-of-state students, there would also be a monetary loss in potential income and income tax for the Richmond MSA. Using a method derived from Chmura Economics and Analytics' 2012 analysis of VCU's economic impacts, the value of out-of-state students' tax revenues may be estimated. Assuming again that 14 percent of regional alumni enrolled at VCU as out-of-state students, an estimated 6,314 undergraduate and 3,110 graduate alumni would be removed from the region's economy in the absence of VCU. Losing those numbers of workers would represent a 3.6 percent drop in persons with an undergraduate degree and a 3.1 percent drop in persons with a graduate degree. Applying those decreases to the median earnings at those educational attainment levels would shrink undergraduate earnings by \$1,850, from \$51,398 to \$49,548. Graduate earnings would shrink by \$2,038,

42 U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates, Table B19301.

43 Alumni Statistics - Degree Breakout - as of 06/30/2015

44 U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates, Tables B06009 and B20004.

45 Student Residency

from \$65,728 to \$63,690. Applying the newly calculated median earnings to the estimated regional alumni from out of state results in a calculated loss in potential earnings of \$511 million.

The impact of VCU not being located in Richmond would be felt on a state level as well. Assumptions about earnings and employment holding, VCU alumni contribute an estimated \$218 million in state income tax, or 5.75 percent of \$3.8 billion. If VCU were not located in Richmond, the loss of out-of-state students would result in a \$29 million loss of potential state income tax, or 5.75 percent of the \$511 million identified above. The ripple effect of reduced income tax revenue would be felt across Virginia, as well as in the Richmond MSA, in reduced revenues that support a variety of important government programs and infrastructure.

4. VCU Employment

VCU is one of the largest employers in the commonwealth of Virginia, the Richmond MSA and the city of Richmond. The university is recognized as both a health care employer with VCU Health System and an academia employer at VCU. The Virginia Employment Commission identifies VCU and VCU Health System as two separate employers having 1,000-plus employees, and both are ranked accordingly. In fiscal year 2015, VCU had a total of 11,477 employees and the health system had 7,987 employees.⁴⁶ Table 8 identifies the top employers in the commonwealth, Richmond MSA and Richmond. In Virginia, VCU is ranked 20th while VCU Health System is 25th. In the city of Richmond, VCU and the health system are the top employers, and within the MSA, VCU is the top employer followed by Capital One, Henrico County School Board, Chesterfield County School Board and VCU Health System rounding out the top five.

As of 2015, VCU employed 11,477 workers, of which 52 percent are full time with the remaining employees being part-time adjunct faculty, graduate assistants or hourly as shown in Table 9.⁴⁷ VCU Health System employed 10,202 workers, of which 87

⁴⁶ The 7,987 are just the number of employees of VCU Medical Center. However, VCU Health System has another 2,215 employees working in other medical facilities in the Richmond MSA – bringing the total employment for VCU Health System to 10,202.

⁴⁷ VCU Office of the Provost; Planning and Decision Support, Fact Card accessed 9/26/2016 <http://www.opds.vcu.edu/eaar/facts-and-figures/factcards/>

VCU as a Large Employer			
Rank	City of Richmond	Richmond MSA	State of Virginia
1	Virginia Commonwealth University	Virginia Commonwealth University	U.S. Department of Defense
2	VCU Health System*	Capital One Bank	Walmart
3	Richmond City Public Schools	Henrico County School Board	Fairfax County Public Schools
4	City of Richmond	Chesterfield County School Board	Sentara Healthcare
5	U.S. Department of Veterans Affairs	VCU Health System	Huntington Ingalls Industries, Inc.
6	HCA Virginia Health System	HCA Virginia Health System	Food Lion
7	University of Richmond	Bon Secours Richmond Health System	Postal Service
8	Federal Reserve Bank, Richmond	U.S. Department of Defense	County of Fairfax
9	Philip Morris U.S.A., Inc.	Walmart	HCA Virginia Health System
10	Dominion Resources	Richmond City Public Schools	U.S. Department of Homeland Defense
11	MCV Physicians	County of Henrico	Prince William County School Board
12	Crestar Mortgage Corporation	City of Richmond	City of Virginia Beach Schools
13	VDOT	County of Chesterfield	Inova Health System
14	SunTrust Bank	Anthem	University of Virginia/Blue Ridge Hospital
15	Overnite Transport Company	Amazon.com KYDC Inc.	Loudoun County Schools
16	Estes Express Lines	Hanover County School Board	Capital One Bank
17	Virginia Department of Motor Vehicles	U.S. Department of Veterans Affairs	Lowe's Home Centers, Inc.
18	Altria Corporate Services Inc	Martin's Food Market	U.S. Department of Commerce
19	Virginia State Department of Health	Food Lion	Virginia Polytechnic Institute and State University
20	Virginia Department of Taxation	Kroger	Virginia Commonwealth University

Source: Virginia Employment Commission, Quarterly Census of Employment and Wages (QCEW)

Table 8 : Top-Ranked Employers

*VCU Health System 25th in state

percent are classified full-time employees while the remaining 13 percent are hourly workers. From 2011 to 2015, full-time employment saw an increase of 8.3 percent for VCU and 22.24 percent for VCU Health System, while part-time employment decreased by less than 1 percent for VCU and increased 22.63 percent for the health system. However, VCU and VCU Health System together saw an overall 11.84 percent increase in employment.

VCU Employee Profile									
	University			VCU Health System			VCU TOTAL		
	2006	2011	2015	2006	2011	2015	2006	2011	2015
Full Time									
Teaching and Research Faculty	1787	2031	2264				1787	2031	2264
Administrative/ Professional Faculty	527	655	842				527	655	842
Other Faculty/ House Staff	250	238	214	632	667	718	882	905	932
Classified Staff	2425	2548	2658	5467	6726	8319	7892	9274	10977
Subtotal	4989	5472	5978	6099	7393	9037	11088	12865	15015
Part Time									
Adjunct Faculty	1091	1132	1015				1091	1132	1015
Graduate Assistants	799	860	950				799	860	950
Regular Hourly	928	1340	1122	1023	950	1165	1951	2290	2237
Student Hourly	2073	2036	2151				5073	2036	2151
Other		154	261					154	261
Subtotal	4891	5522	5499	1023	950	1165	5914	6472	6664
VCU TOTAL	9880	10994	11477	7122	8343	10202	17002	19337	21679
Source: Chmura was used for 06' and 11' -The issue is OPDS provided FT data for 2010-2015 but only PT data for 2015. Gokhan (OPDS) was used for 2015.									

Table 9: VCU Full-time and Part-time Employees

Together, VCU and VCU Health System account for 21,679 workers in the Richmond MSA. VCU has strived to create a diverse university culture. The diversity for full-time employees has a distribution of teaching and research faculty, with 56 percent male and 43 percent female, and administrative faculty has 62 percent female and 38 percent male as shown in Table 10.⁴⁸ VCU employment diversity based on race and ethnicity for instructional faculty has a distribution of 73.63 percent white, 12.77 percent Asian, 4.99 percent Black/African American, 3.67 percent international and 2.56 percent Hispanic/Latino. Full-time employee distribution for classified workers

48 VCU Office of the Provost; Planning and Decision Support, Fact Card accessed 9/26/2016 <http://www.opds.vcu.edu/eaar/facts-and-figures/factcards/>

is 58.5 percent white, 31.84 percent Black/African American, 4.6 percent Asian, 2.08 percent Hispanic/Latino, and 1.5 percent two or more races. It is important for students and the community to see diversity amongst the employees at VCU.

Demographics of Full-time Employees			
	Teaching and Research Faculty	Administrative Faculty	Classified
Gender			
Male	56.32%	38%	22.39%
Female	43.68%	62%	77.59%
Race/Ethnicity			
American Indian/Alaskan	0.22%	0.12%	0.50%
Asian	12.77%	2.49%	4.16%
Black/African-American	4.99%	13.78%	31.84%
Hawaiian/Pacific Islander	0.04%	0.12%	0.13%
Hispanic/Latino	2.56%	1.78%	2.08%
International	3.67%	1.19%	0.22%
Two or more races	1.15%	1.07%	1.50%
Unknown	0.97%	0.48%	1.07%
White	73.63%	78.97%	58.50%

Table 10: Demographics of Full-time Employees

VCU as a place to work

VCU conducted a Great Place Initiative survey in 2013 to obtain feedback from faculty and staff about the workplace environment. The survey was completed by 3,853 employees across all VCU campuses and research facilities. Of the respondents, 776 were from administrative and professional, 2,180 were from the university classified staff and 897 were from teaching and research faculty. At VCU, diversity and inclusivity were deemed important priorities. The majority of respondents felt they were treated respectfully and have equal employment opportunities regardless of their race/ethnicity, gender, age, sexual orientation, religious beliefs, disability or socio-economic status.

Question:

At VCU, people are treated respectfully regardless of their race/ethnicity, gender, age, sexual orientation, religious beliefs, disability or socio-economic status?

Response group	% Very positive	% Positive	% Neutral	% Negative	% Very negative
A & P	25	53	14	6	2
Staff	22	52	14	8	4
T & R	25	48	16	8	3

Being a top-ranked university, the caliber of work required from faculty and staff is to further the growth of VCU. Employment at VCU should include potential career advancement and promotional opportunities, career paths, mentoring and networking, as well as leadership support. The majority of respondents felt the physical work environment and resources available supported their ability to get work done efficiently and effectively.

Question:

My physical work environment promotes getting my work done efficiently and effectively.

Response group	% Very positive	% Positive	% Neutral	% Negative	% Very negative
A & P	21	52	11	13	2
Staff	19	52	15	10	3
T & R	16	48	16	16	4

However, respondents were more neutral in acknowledging the recognition received from the university for good job performance. Departments and supervisors do provide performance evaluations, which the majority of respondents felt were a fair and accurate assessment of their job performance. The majority of respondents had a neutral response for advancement opportunity at VCU.

Question:

I feel I have good opportunities career advancement at VCU.

Response group	% Very positive	% Positive	% Neutral	% Negative	% Very negative
A & P	6	32	28	23	12
Staff	9	29	27	23	12
T & R	6	31	26	22	15

These are a few examples of feedback from respondents. Based on the results, VCU has taken the initiative over the last two years to address the feedback from the surveys. VCU conducted another GPI survey in the fall of 2016 to assess if the initiative to improve workplaces was beneficial or if there are areas that still need to be addressed. However, it is important to note that VCU looked to the survey to understand how its employees view the workplace environment. Regardless of positive and negative responses, the university has attempted to improve the overall quality that will be determined in the fall survey.

VCU RESEARCH OUTPUT

The intellectual output of VCU’s academic, research and administrative communities includes major contributions in nearly every field. VCU Libraries oversees an electronic publishing platform that covers the combined output of VCU students, faculty and staff, from published research to policy documents. The VCU Scholars Compass provides visibility and accessibility to the intellectual achievements of VCU’s scholars. As of fall 2016, the platform hosts over 9,200 papers that have been downloaded more than 450,000 times. The most popular papers available on the service include a master thesis on art education classroom strategies, a research article on evaluation of evidence-based practices of health professionals and an M.F.A. thesis displaying a history of calligraphy and typography.

VCU has continued to sustain its research funding and expenditures, ranking among the top research universities in both the commonwealth and the country. The National Science Foundation ranked VCU 101st nationwide for research spending and 76th

nationwide for total federal obligations among universities in 2014.⁴⁹ These mark improvements from 103rd in research spending and 80th in federal obligations in 2013. In each category, VCU ranks third in Virginia among public universities, with Virginia Tech and the University of Virginia ranked higher. The National Institutes of Health rank VCU 58th nationwide in research project grant funding among higher education institutions, second in Virginia only to the University of Virginia.⁵⁰

VCU research funding fluctuated between 2011 and 2015, according to data from the university’s Office of Sponsored Programs. Direct award dollars reached \$233 million (inflation-adjusted) in 2012, but fell to \$210 million the next year (Table 11). Research awards rose to \$225 million in 2015.⁵¹

Health sciences continues to receive the majority of VCU research and grant funding (Figure 18), with the School of Medicine alone receiving 43 percent of VCU’s award total in 2015. However, the distribution of grant awards has shifted since a 2010 report showed that the MCV Campus received 76 percent of total research awards.⁵² The School of the Arts increased its awards from \$37 million in 2011 to \$43 million in 2015 – about 44 percent of all awards on the Monroe Park Campus.

VCU Faculty Award Trends - Direct Cost (2015 Dollars)

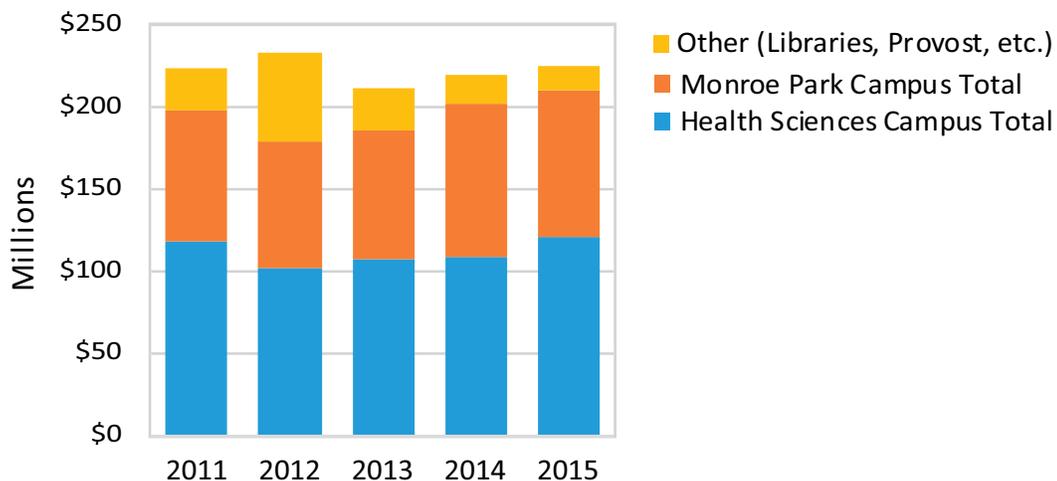


Figure 18: VCU Faculty Awards, 2011-2015 (2015 dollars)

49 National Science Foundation, “Institution rankings (most recent year),” Available: <https://ncesdata.nsf.gov/profiles/site?method=ranking>, Accessed 30 August 2016.

50 National Institutes for Health, “NIH Awards by Location & Organization,” Available: <http://report.nih.gov/award/index.cfm>, Accessed: 30 August 2016.

51 On top of \$225 million in direct cost awards is \$46 million to cover VCU operational expenses that support research.

52 Chmura Economics & Analytics, “Virginia Commonwealth University – Delivering Talent; Creating Economic Benefits.” 6 May 2012.

	2011	2012	2013	2014	2015
Allied Health Professions	2,731,477	1,848,083	2,783,116	2,939,520	2,808,809
Dentistry	1,382,893	1,010,587	661,780	925,009	2,406,533
Medicine	97,366,661	87,906,967	89,978,896	91,870,682	97,947,604
Nursing	1,650,354	1,083,359	664,956	1,071,987	1,249,572
Pharmacy	3,374,027	4,956,842	6,301,150	4,832,657	6,333,920
VP for Health Sciences	11,717,046	4,209,331	6,888,759	6,453,552	9,691,207
Health Sciences Campus Total	118,222,458	101,015,168	107,278,657	108,093,407	120,437,645
(none)	2,863,005	2,524,847	1,490,549	1,060,680	1,098,178
Business	301,504	102,325	156,060	113,034	106,201
Education	21,471,088	17,677,854	21,269,647	26,532,900	16,925,410
Engineering	4,248,051	4,324,991	4,014,080	9,307,423	11,139,411
Humanities and Sciences	10,265,307	13,260,685	10,002,075	13,323,716	15,344,316
Social Work	3,290,260	1,010,334	417,096	990,278	799,824
The Arts	37,555,793	38,525,902	41,075,006	42,621,959	43,375,066
Monroe Park Campus Total	79,995,008	77,426,938	78,424,515	93,949,990	88,788,406
Other (Libraries, Provost, etc.)	25,401,928	54,591,505	24,857,495	16,787,276	16,024,762
Total	223,619,394	233,033,611	210,560,667	218,830,673	225,250,813

Table 11: VCU Faculty Award Dollars, Direct Cost (2015 dollars)

VCU secures most of its awards from federal sources. The U.S. government served as the source of approximately 58 percent of VCU-sponsored program awards in 2015.⁵³ The NIH provided more than half of all federal awards. Non-federal sources

⁵³ VCU Office of Research & Innovation, "VCU Sponsored Awards Portfolio FY 2015." Available: http://www.research.vcu.edu/osp/vcu_fy15_awards.pdf, Accessed 30 August 2016.

include the commonwealth of Virginia (9 percent) and private industry (7 percent). VCU's relationship with corporate partners helps translate research into practice. Industry provided \$19 million in grant funding in FY 2015.⁵⁴ Many funded projects include clinical trials with the potential to address medical and health issues facing community members in Richmond, as well as the commonwealth. VCU's access to research grants and awards from major pharmaceutical companies such as Astra Zeneca, Bayer, GlaxoSmithKline, Novartis and Pfizer make those trials possible.⁵⁵

5. Knowledge Transfer



*Image 1: Monica Rao with Global Education Office,
Source: VCU*

VCU actively promotes and cultivates a culture of giving back whereby students and faculty apply skills gained or learned at VCU to the benefit of the surrounding community in an impactful way. For the purposes of this report, the community is defined as Richmond and the state of Virginia. The examples of knowledge transfer featured here involve students and faculty collaborating with

community members or entities for community development — building on local assets to develop something new or advance the area in some way, and in the process, an exchange of skills and knowledge occurs between the students, faculty and the community.

Each school and the College of Humanities and Sciences actively promotes student engagement beyond the classroom. Faculty are also supported in their individual efforts to serve and benefit the community using their expertise. The following examples extend beyond the community service discussion above.

⁵⁴ Ibid

⁵⁵ VCU Office of Research & Innovation, "Corporate Funded Sponsored Projects Activity." Available: http://www.research.vcu.edu/osp/vcu_fy15_awards.pdf, Accessed 30 August 2016.

Specific Examples By School:

- **College of Humanities and Science**

- o In 2014-2015, 1,607 students in the college served almost 300,000 hours.⁵⁶
- o The college has given more than \$9 million in total grant support involving community engagement in the following areas of focus:
 - Neighborhoods and communities
 - K-12 education
 - Government and leadership
 - Family, individual and community well-being
 - Community and public safety
 - Technology, media and humanities⁵⁷



Image 2: College of Humanities and Science Department of Biology student connecting with elementary school students about climate change; Source: VCU

- **School of Allied Health Professions**

- o To promote the health sciences and prepare students for health professions, the school has participated in a number of local community outreach programs, including Healthcare Quest, the Cosby High Acceleration Program, the Governor's School Summer Enrichment Program and Jump Rope to Stethoscope, an outreach program introducing students to potential health care careers through nursing camps, career days, hospital tours and middle school classes.
- o Twenty-nine faculty members provided public service to 55 state and local agencies.⁵⁸

⁵⁶ VCU Office of the Provost: Division of Community Engagement, "Community Engagement Dashboard,"

⁵⁷ <http://rampages.us/psychology/2016/05/11/new-vcu-community-engagement-grants/>

⁵⁸ SAHP, Annual Report Executive Summary 2014-2015.

- **School of the Arts**

- o The Healthy Baby Project is an interdisciplinary collaboration among the Department of Graphic Design, the Institute for Women’s Health and the Centering Pregnancy® Program at the VCU Medical Center. In the greater Richmond area, there is a high rate of pre-term birth and infant mortality among African-Americans. The Healthy Baby Project seeks to address this issue. Over a series of three discovery sessions in spring 2015, VCUarts students and community partners met as students began working on visual



Image 3: School of the Arts “Mother Courage and Her Children”; Source: VCU

ideas for a logo and a poster as the start of a campaign to bring awareness and help build a support network within Richmond’s urban neighborhoods. Community members and invited guests were asked to vote for the solution they found most unique and appropriate.⁵⁹

- o In 2014, 14 theatre pedagogy M.F.A. graduates worked with actress Kathleen Turner in Bertolt Brecht’s musical, “Mother Courage and Her Children.” The production ran February 1 to March 9 at the Arena Stage in Washington, D.C.⁶⁰

- **School of Business**

- o Three faculty members participated in the initial faculty externship program in 2015 with placements at local corporations in the financial and energy sectors. Manu Gupta, Ph.D., went to Cornerstone Valuation, which produces independent business valuations, and Oleg Korenok, Ph.D., and Jens Schubert, Ph.D., worked at Dominion Resources, a power and energy company. Plans call to expand the program in summer 2016.

59 VCUarts, “2015 Spring Studio,” Available: <http://arts.vcu.edu/publications/2015-spring-studio/>, Accessed: August 2016.

60 VCUarts, “2014 Spring Studio,” Available: <http://arts.vcu.edu/publications/2014-spring-studio/>, Accessed: August 2016.

- o The VA Entrepreneurship Challenge program, in partnership with Junior Achievement, engaged 60 high school students during summer 2015. Students interacted with entrepreneurs, generated ideas, built a light business plan and pitched their ideas in a Shark Tank-style competition.
- o Students learned to prepare income tax returns and then volunteered to assist low-income families. In 2015, nearly 150 families were assisted.
- o Since 2011, teams of graduate business students have worked on projects funded by the Ford Foundation. In 2013-14, the Ford Foundation funded the \$25,000 service-learning project, "Building Sustainable Transportation in RVA." For 2014-15, a team of VCU students won a \$25,000 Ford Foundation College Community Challenge grant for student-led projects focused on building sustainable communities. The student organization Springboard VCU received \$25,000 for its project, "Green Ride RVA."⁶¹

- **School of Dentistry**

- o Faculty serve on the board of directors of the Virginia Dental Association. Faculty members also serve as delegates to the American Dental Association House of Delegates, representing the district that includes South Carolina, North Carolina and Virginia.
- o In 2014-2015, students participated in more than 25 outreach projects in the Richmond area with the goal of fostering civic responsibility while helping meet the needs of a community. The dental hygiene Class of 2015 participated in more than 270 hours of community service.
- o The School of Dentistry continues to play a significant role in the Virginia Dental Association's Mission of Mercy projects. Students from all class years, pre-dental students, faculty and staff from the dental school typically constitute up to half of the volunteers at these service missions. In 2014-2015, students provided a total of 11,359 hours across five projects. The VCU School of Dentistry Mission of Mercy Project was submitted as an exemplar project of community service for the 2015 President's Honor Roll.⁶²

61 SOB AACSB CIR Report 2016

62 SOD Annual Report to VPHS 2015, 24-25.

- **School of Education**

- o In AY 2014-15, faculty served 23 different community organizations in Richmond and Virginia.
- o The school has partnership projects with K-12 schools and other constituents in more than 40 projects, including the Excellence in Children’s Early Language and Literacy (ExCELL) program. ExCELL brings together families, educators, community agencies and early literacy specialists with the goal of ensuring that young students receive the learning opportunities they need at home, at school and in the community that are necessary to develop critical early language and literacy skills known to predict later reading success.⁶³



Image 4: School of Education Community Engagement, Source: VCU

- **School of Engineering**

- o In pursuit of earning their Nuclear Science Merit Badge, a group of 30 Richmond-area Boy Scouts came to VCU’s School of Engineering East Hall and Nuclear Simulator Lab. Hosted by the VCU student section of the American Nuclear Society and students from the VCU School



Image 5: School of Engineering Boyscout Nuclear Science Merit Badge workshop, Source: VCU

of Engineering, the Nuclear Science Merit Badge workshop gave students a glimpse of what future studies in engineering and science can be. The event returned the Nuclear Science Merit Badge to Virginia, where it has not been offered in recent years. Based on the success of the workshop, it will be offered again every spring and fall.⁶⁴

63 SOE Report

64 <http://www.egr.vcu.edu/boy-scouts-and-vcu-engineering-get-energized-over-science/>

- **School of Medicine**

- o The CARITAS Clinic is a portable, student-led clinic that provides basic health screenings for primarily homeless adults in the Richmond area. The free clinics are offered one evening each month for six months throughout the academic year.⁶⁵



*Image 6: School of Medicine Free Clinic in Wise, VA
Source: NBC News*

- o The annual RAM Clinic held in Wise, Virginia, provides free health care to an estimated 6,000 people in three days, staffed by VCU volunteers, including physicians, nurses, dentists, pharmacists, radiologists, podiatrists, respiratory therapists, lab technicians and students.⁶⁶

- **School of Nursing**

- o Since 2011, the School of Nursing has co-sponsored the Mosby Resource Center in the public housing development in collaboration with the Richmond City Health District and the Richmond Redevelopment and Housing Authority. Through the relationship with the RCHD, two additional resource centers now serve as clinical sites. In these collaborative community-based centers, dedicated faculty and students provide a wide range of services such as sports physicals; counseling for HIV/AIDS, pregnancy, sexually transmitted diseases and chronic disease detection/prevention care; stress management; academic, financial and job counseling; and social services and leadership development programs.
- o In 2014-2015, the School of Nursing doula program received the Clinical Scholars Grant to continue its work within the community to provide doula support for women and their families in Richmond. Eighteen nursing students were

⁶⁵ VCU School of Medicine, Available: <http://www.medschool.vcu.edu/community/caritas/> Accessed: 11 August 2016.

⁶⁶ VCU School of Medicine, Available: <http://www.medschool.vcu.edu/community/ram/> Accessed: 11 August 2016

educated and trained to be doula for the program. In 2014-2015, out of 100 inquiries, 45 mothers were enrolled in the program and 40 mothers delivered with doula support from the program.

- o Faculty serve on the board of directors for the March of Dimes Foundation and the Lucy Corr Foundation.⁶⁷
- **School of Pharmacy**
 - o Since 2001, 17 full-time faculty, 37 residents and more than 600 students have provided more than 33,000 patient care encounters in the greater Richmond area.
 - o Community partnerships among School of Pharmacy clinical faculty, residents and students continued with the Richmond Area High Blood Pressure Center, CrossOver Healthcare Ministry, the Daily Planet, Dominion Place, Goochland Free Clinic and Family Services, Imperial Plaza and Richmond Area Compassionate Care Pharmacy. The initiative at Dominion Place, known as the Richmond Health and Wellness Program, has expanded to include Randolph Place.⁶⁸

- **School of Social Work**

- o School of Social Work students delivered nearly 300,000 hours of service to Richmond and the commonwealth in AY 2014-2015. School of Social Work faculty members are involved with almost 100 community partners in and beyond the Richmond region.
- o Community engagement is also encouraged through research projects such as “Agri-Culture: Growing Food and Community with Richmond Refugees.” Working with ReEstablish



Image 7: School of Social Work outreach ReEstablish Richmond, Source: VCU

⁶⁷ SON Annual Report 2014

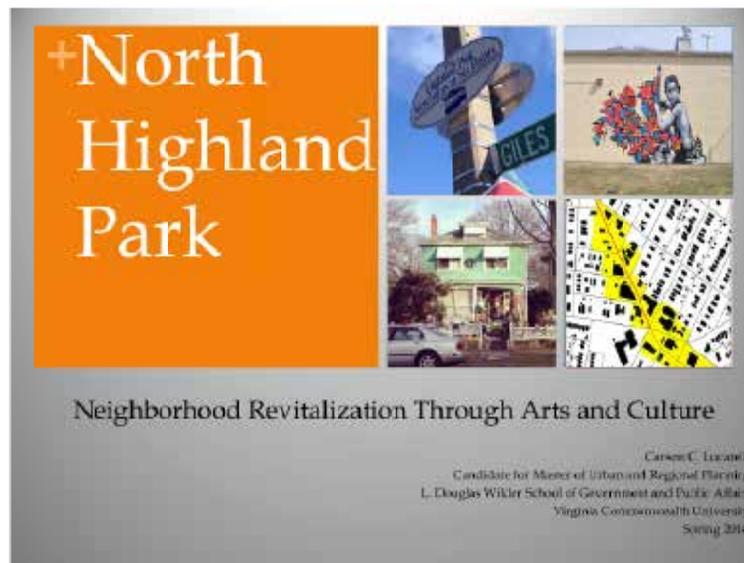
⁶⁸ SOP 2014-2015 Community and public service

Richmond, the goals are to increase healthy food access, promote bio- and cultural diversity, and to involve VCU faculty and students in the Richmond-area refugee communities.⁶⁹

- **L. Douglas Wilder School of Government and Public Affairs**

- o Amid an open discussion nationwide about policing, community engagement and the Black Lives Matter movement, Hayley Cleary, Ph.D., in the school's criminal justice program is helping facilitate conversations between the Richmond Police Department and incarcerated youth. A three-day workshop took place in August 2016 — held in collaboration with Art180, a community arts organization — that brought the two groups together to examine patterns of how they interact with each other and to consider new approaches. This helps to place VCU at the forefront of difficult but vital conversations.
- o Among many, three studio projects in 2015-2016 brought Wilder School students together with community partners to address outstanding community needs:
 - A group of 14 students created a walkable mixed-use neighborhood plan along the forthcoming bus rapid transit line called the Pulse. The plan focused on creating a three-dimensional vision of the neighborhood that illustrated how the area could be transformed over the next 20 years, with the primary goal of creating a foundation from which useful public space can be promoted. It included proposals for building, streetscape, public art, open space and parking improvements. Richmond is using the plan and neighborhood vision to educate neighborhood and business leaders about what is possible for the area.
 - A team of 14 students worked in Hopewell to create a plan for historic preservation and neighborhood design for the City Point neighborhood, with the goal of increasing tourism and the value of existing properties. Hopewell City Council adopted the plan and is awaiting funding for implementation.

- A student developed a green infrastructure plan for the Fan neighborhood in Richmond. It focused on elements such as green roofs, plantings, permeable paving and rain gardens. The Fan District Association accepted the plan for review to prioritize phase one projects.
- In 2015, the Survey and Evaluation Research Laboratory partnered with the Richmond City Health District to provide a web-based data system for the Housing Opportunities for Persons with AIDS program, which is the only federal program dedicated to the housing needs of people living with HIV/AIDS.



*Image 8: L. Douglas Wilder School of Government and Public Affairs, MURP Studio Plan
Source: VCU*

- **The VCU Brandcenter**

- The VCU Brandcenter, ranked as the No. 1 graduate program in advertising and branding in the U.S. and whose faculty members come from prestigious careers in the marketing industry, immerses students in a team-oriented, experiential learning environment. Graduates develop both a broad perspective on the industry, as well as a superior portfolio of work demonstrating their individual talents. The Brandcenter moved from the College of Humanities and Science to the School of Business in 2013, creating rich opportunities for synergistic growth.

- o The Brandcenter played a major role in RVA Creates, a collaborative effort to strengthen Richmond’s creative identity. RVA Creates helped Richmond to be named the Most Artistic Mid-Sized City in America in a Gogobot study, in addition to earning a No. 3 ranking on the list of Best Places to Travel in 2016 by Travel and Leisure magazine. To help Richmond attract more LGBT travelers, Brandcenter students created the successful OutRVA campaign, featured in The New York Times.⁷⁰
- o Faculty at the Brandcenter serve Richmond through such activities as serving on the board of directors for The Valentine and collaborating with Lighthouse Labs to present a how-to-pitch lab for four local startups.
- o The Brandcenter Class of 2017 has 103 students, with an average age of 25 and slightly more women than men. Nearly half of the students are from out of state, and 5 percent are international. Seventy-seven percent of the students have prior work experience.⁷¹

6. VCU Networks

VCU strives to prepare students today for tomorrow’s workforce, connecting them with opportunities to pursue rewarding careers. VCU links employers to a talented employee base with skills tailored to the needs of the region. At VCU, three primary on-campus offices help match students and employers:

- VCU Career Services
- School of Business Career Services
- School of Engineering Career Services

VCU CAREER SERVICES

VCU Career Services consists of educators and student workers who believe that career and professional development is an essential link between the university and

⁷⁰ SOB AACSB CIR Report 2016

⁷¹ SOB AACSB CIR Report 2016, 16.

the community. The department serves a vital role in knowledge transfer, transitioning students from their development at the university to careers within the community.

The office of VCU Career Services is open to more than 26,000 students and 100,000 alumni. Through individualized career and professional development, it bridges VCU with industries by delivering relevant services and providing success strategies. The office builds and maintains community relationships through strategic engagement, including evaluation, intentional outreach and active collaboration. It educates and cultivates the diverse VCU communities, advancing sustainable career and professional development in a competitive global economy.⁷²

The office is housed within Student Affairs and has been in service since the 1980s. Since then, it has continually adapted to changes in economic conditions and student and employer needs. Most recently, new leadership brought increases in staffing, modern technology and outreach practices, as well as a remodeling of office space that brought the services closer to students.

In 2015, VCU Career Services assisted 13,000 students. Of those, 7,000 accessed services in person. Key accomplishments between 2013 and 2016 were:

- High rate of drop-in advising appointments
- New website featuring key resources and content for on-demand career and professional development
- Improved employer engagement through new methods of tracking and assessment, including the creation of the VCU Engagement/Employer Guide, resulting in a twofold increase in employer engagement metrics from 2013 to 2015
- Universitywide launch of HireVCURams, a comprehensive website for students, alumni and employers featuring job and internship postings
- Staff efforts realigned to focus on students and employers in the health care sector
- Increased internship postings to HireVCURams by 142 percent since 2013-2014
- Inaugural universitywide Outcomes/Graduation survey launched in May 2015
- Staff training for specific identity groups, such as military and LGBTQ students

⁷² VCU Career Services, "About Us," Available: <http://www.careers.vcu.edu/who-we-are/about-us/>, Accessed: August 2016.

More recently, VCU Career Services has collaborated with VCU Innovation Gateway to establish the Founder's Corner, a co-working space for students with product or business ideas. In its one year of operation, the pre-accelerator program has provided 16 teams of students with the space and support to form 14 companies, most of which are woman or minority led. Those companies have created 29 full- or part-time jobs and generated more than \$1 million in total revenue, grants and investments.⁷³ These successes continue to guide the office's strategic plan. A future goal of VCU Career Services is to improve student preparation for careers. Programs being piloted in 2016 include a course of modules designed to help better prepare students for careers and life after VCU.⁷⁴

VCU Career Center Strategic Plan 2016 Goals

- I. Establish a career curriculum to foster learning by emphasizing self-directed resources and on-demand services resulting in increased access to and utilization of VCU Career Services.
- II. Enhance and increase the level of existing employer engagement and develop new partnerships with local, regional, national and international employers.
- III. Increase the number of and effectiveness of initiatives that prepare students and connect members of the VCU communities with the healthcare sector.
- IV. Develop VCU Career Services experiential learning standards, structure, and guidelines to create an enriched educational experience and to provide direction and professional success strategies.
- V. Provide alumni with sustainable career services and with student engagement opportunities to develop a career and professional network and to encourage VCU involvement.
- VI. Evaluate and increase career center staff knowledge of the unique needs of identified student populations.

73 VCU Public Affairs, "VCU student-led startup companies bring in more than \$1 million," 6 June 2016. Available: http://news.vcu.edu/article/VCU_studentled_startup_companies_bring_in_more_than_1_million.

74 Interview with Joslyn Bedell, July 2016.

When businesses seek VCU students, they often start at the School of Business or School of Engineering Career Services office, which began as one joint office. Now they are two separate entities collaborating toward the same goals — to meet employer needs for VCU talent and to see students employed by top organizations in Virginia and the world.

The schools of Business and Engineering offer flexibility that allows them to adjust their curriculum where needed to meet employer needs. The two schools collaborate on curriculum development, and advisory boards work to ensure that the curriculum meets industry needs. Since 2010, 700 different employers have hired VCU students from the schools of Business and Engineering. Both schools seek to build relationships with employers that reach beyond their respective schools; they act as an entry point to VCU and can connect companies to students, co-op opportunities, experts in the field and the university at large, among others.⁷⁵

The School of Business Career Services office assists students in several ways:

- Career fairs — Two are held each year, and the most recent fair hosted 100+ companies.
- Mock interviews — Local human resources professionals volunteer to give students feedback. Representatives from 22 companies assisted 83 students and alumni in fall 2015.
- Meetings with career counselors — An associate director and part-time counselors provide one-on-one advice for undergraduate students and alumni.
- Career-related workshops and classroom presentations — Topics include resume writing, interviewing skills and internships. Several are offered each semester.
- Student-employer networking and community service events
- Etiquette dinners — Two dinners are held each year where 200 students dine with an etiquette consultant and the event's sponsors.

Enrolled student utilization of career services has increased from 40 percent in 2011 to 56 percent of students today.⁷⁶

⁷⁵ Interview with Career Services Directors, 2016.

⁷⁶ SOB AACSB CIR report, 2016.

In 2015, the School of Engineering Career Services office held more than 100 events and made in excess of 7,000 contacts, of which more than 1,700 were unique, meaning they saw each student at least once.

Other schools within the VCU system are moving toward department-oriented career centers. The L. Douglas Wilder School of Government and Public Affairs recently established the Office of Student Success. The office has created programming to help students develop the necessary skills and contacts to successfully transition into careers. In 2016, the office planned a series of “Get In Gear” events — workshops that allow students to meet, learn about and interact with prospective employers. Each workshop featured a single employer such as the Prince William County Police Department or the National Geospatial-Intelligence Agency. The Wilder School’s Office of Student Success also uses VCU Career Services’ HireVCURams system as a central location for posting internship and employment information.

II. PLACE: Supporting the Regional Economy

“[VCU plays] a huge role in shaping the path of economic development in the city and region with outreach to local governments and planning.”

– Richmond City Councilwoman Ellen Robertson

VCU and VCU Health System represent the biggest employer in the city of Richmond and the entire Richmond MSA. Its direct and associated spending is, therefore, a powerful economic stimulus to the region, which benefits to a great extent from the university's presence and its activities.

VCU's economic impact on the region is significant. Within the Richmond MSA, the university's spending on operations, maintenance and capital investment, and the spending of its employees, students and visitors (i.e., VCU associated spending) generate:

- A total economic impact of \$4 billion
- 47,000 jobs
- A total Richmond regional multiplier of 3.7 — for every dollar that VCU spends in the metropolitan area, the region experiences a total economic impact of \$3.70.

VCU's impact on the economy of the commonwealth of Virginia is also significant. The university's spending within the state generates:

- A total economic impact of \$5.9 billion
- 63,000 jobs
- A total commonwealth of Virginia multiplier of 3.2 — for every dollar that VCU spends in the state, the commonwealth experiences a total economic impact of \$3.20.

In this chapter, we present these results in more detail, describing the impacts of VCU operations and associated spending on the economies of the city of Richmond, the Richmond MSA and the commonwealth of Virginia.

For every **\$1** spent by VCU:

The region gains **\$3.7**

Virginia gains **\$3.2**

At the end of the chapter, a special focus is dedicated to the VCU Health System, its impressive statistics and, most importantly, its contribution to making Richmond a better place by addressing crucial community needs in terms of health access and health literacy for the most disadvantaged communities.

Introduction

The economy of a region, state or nation can be likened to the nerve network of the human body — the entire network is connected in a very specific pattern. In an economy, this network consists of the industries that buy from other industries and make products or services that are sold to yet other industries, or to final consumers. When one industry increases or decreases production, it sends an impulse that is felt in other parts of the network. Economic impact models have information on how the network of industries is structured, so the effect of an increase in production in one industry can be estimated throughout the economy.

To estimate the impact of VCU's operations and associated spending on the state's economy, CURA used IMPLAN Pro™ software to prepare and customize an economic model for each of the three study areas: the city of Richmond, the Richmond MSA¹ and the commonwealth of Virginia. IMPLAN is a regional input-output computer modeling system used by economists to estimate the effects of spending and policy actions. We used IMPLAN Pro™ to estimate the economic effects that take place as goods and services are purchased in connection with expenditures related to VCU operations and associated spending. We used data on employment, student enrollment, visitations and expenditures mostly provided by VCU.²

The IMPLAN model divides economic activity into three components — direct, indirect and induced effects — and then totals them to derive a total economic impact.

1 The Richmond MSA consists of the counties of Amelia, Caroline, Charles City, Chesterfield, Hanover, Henrico, Goochland, King William, New Kent, Powhatan, Prince George and Sussex and the cities of Colonial Heights, Hopewell, Petersburg and Richmond.

2 To have an accurate estimate of the economic impact for each of the study areas, VCU operation 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 (more details on how spending data has been reviewed and modified can be found later in this chapter). Purchases that are 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 and therefore are not counted in the calculations of the overall economic impact. This spending literally "leaks out" to other geographic areas. In general, the smaller the geographic/economic area that is analyzed, the greater is the leakage of spending outside its borders and the lower is the impact of the activity being studied.

Definitions of IMPLAN Impact Terms	
Impact Term	Definitions
<i>Direct Impact</i>	The initial expenditures, or production, made by the industry experiencing the economic change
<i>Indirect Impact</i>	The effects on local inter-industry spending through backward linkages (which track industry purchases backward through the supply chain)
<i>Induced Impact</i>	The results of local spending of employee wages and salaries for both employees of the directly affected industry, and the employees of the Indirectly affected industries

Source: Frances Day - "Principles of Impact Analysis & IMPLAN Applications"

Table 1: Definitions of IMPLAN Impact Terms

Direct effects are expenditures made in relation to VCU operations and associated spending. This spending includes materials, services (e.g., food service contractors) and labor. This initial spending causes ripple effects, also known as “multiplier effects,” within the study area. These additional effects are called indirect and induced impacts.

Indirect effects are “supplier” effects. Businesses (e.g., contractors or professional services) that receive money from the original purchases must also buy additional goods and services to accommodate the new demand. As purchases are made from other firms, the economy is stimulated further.

Induced effects are generated by changes in household expenditures. When companies receive more business because of direct and indirect effects, they meet the new demand by hiring additional workers or paying existing employees to work longer hours. As a result, these employees will have more money to spend for the goods and services that they buy within the study area.

The direct, indirect and induced effects are estimated for labor income, value added, economic impact and employment impact. These components are defined below:

- **Labor income:** The wages and salaries paid to local employees of firms, along with an estimate of the value of benefits earned by these workers. Labor income also includes payments received as income by freelance employees.
- **Value added:** In addition to labor income, value added includes income from rents, dividends, profits, royalties, interest and indirect business taxes paid

by companies. Value added is the contribution of this economic activity to the regional gross domestic product, which is defined as the value of all final goods and services produced within the borders of a state.

- **Economic impact:** The overall economic effects on the region, which can be viewed as the total (additional) output generated by the project and that is equal to the value added plus intermediate expenditures. Another way to look at it is to consider the economic impact as the value of change in sales or the value of change in production.
- **Employment:** The number of total jobs in the study area, including both full-time and part-time employees, supported by the new economic activity.

1. Overall Economic Impact of VCU Operations and Associated Spending for Fiscal Year 2015

There is little doubt that VCU plays a crucial role as a major economic agent in the city and the region. However, the benefits on the local economy go well beyond VCU's operational and capital spending or the income that it provides to its more than 20,000 employees.³ They also include additional expenditures related to or associated with VCU, from its students to its many visitors. 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."⁴ Using this definition, CURA linked the presence of VCU in the region with some additional (associated) spending that would not have occurred otherwise. This includes capital investments, student spending and students', employees' and VCU Health System patients'

³ To get a truly comprehensive picture of these effects, CURA adopted an analysis-by-parts approach, while traditional studies simply apply a change in demand for a specific sector in the input-output model. From there, they calculate direct effects (the actual change in demand); indirect effects (inter-industry interactions); and induced effects (payroll spent in the local economy)—the analysis-by-parts (ABP), on the other hand, does not start with an impact on a specific target industry sector. Instead, it focuses on the goods and services the target industry (in our case VCU, and therefore a governmental institution) purchases in order to satisfy a demand or production level (in our case to conduct its normal operations). "The purchase of these goods and services from local sources actually represents the first round of indirect purchases by the target industry [in our case a governmental institution]. In addition to the goods and services (first part), we need to analyze the impact of the payroll (second part) of our target industry necessary to meet the new demand or production level" (IMPLAN PRO Knowledge base: "Case Study: Analysis-By-Parts" <https://goo.gl/oXBKcr> Accessed 09/08/2016).

⁴ Watson, P., J. Wilson, D. Thilmany, and S. Winter. 2007. Determining Economic Contributions and Impacts: What is the difference and why do we care? *The Journal of Regional Analysis and Policy*, 37(2): 140-146.

visitors spending. Data on all five of these spending sources were then obtained for the fiscal year 2015 (July 1, 2014 to June 30, 2015).

However, not all the spending by VCU or its associates creates an economic impact in the region; some of the money is spent outside the three study areas and, therefore, has not been included in this analysis.⁵ 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.

Table 2 shows the overall economic impact from all spending sources in Richmond, the Richmond MSA and Virginia. A breakdown of the impact by spending source is shown in Table 3.

Every year, VCU, VCU Health System and their associated spending generate in the economy of the city of Richmond:

- A total economic impact of \$1.48 billion
- More than 18,000 jobs
- A total city multiplier of 1.9 – for every dollar that VCU spends in the city of Richmond, the city experiences a total economic impact of \$1.90.

Within the Richmond MSA, VCU's spending on operations, maintenance and capital investment and the spending of its employees, students and visitors generate:

- A total economic impact of \$4 billion
- 47,000 jobs
- A total Richmond regional multiplier of 3.7 – for every dollar that VCU spends in the metropolitan area, the region experiences a total economic impact of \$3.70.

⁵ Additional details on data cleaning is provided later in the chapter, when the economic impact of each spending source is analyzed.

VCU's impact on the economy of the commonwealth of Virginia is also significant. VCU's spending within Virginia generates:

- A total economic impact of \$5.9 billion
- 63,000 jobs
- A total commonwealth of Virginia multiplier of 3.2 — for every dollar that VCU spends in the state, the commonwealth experiences a total economic impact of \$3.20.

Estimated Impacts of VCU, VCU Health and VCU-associated Expenditures					
City of Richmond	Economic Impact	Labor Income	Employment Impact <i>(number of jobs)</i>	Tax Impact <i>State and local</i>	Tax Impact <i>Federal</i>
	\$1,472,666,432	\$869,963,446	18,393	\$40,518,874	\$165,046,947
Richmond MSA	Economic Impact	Labor Income	Employment Impact <i>(number of jobs)</i>	Tax Impact <i>State and local</i>	Tax Impact <i>Federal</i>
	\$4,017,006,054	\$2,172,950,423	46,953	\$165,942,471	\$491,500,598
Commonwealth of Virginia	Economic Impact	Labor Income	Employment Impact <i>(number of jobs)</i>	Tax Impact <i>State and local</i>	Tax Impact <i>Federal</i>
	\$5,914,607,817	\$3,172,533,798	62,801	\$246,476,611	\$696,505,002

Source: VCU, various units, and the Center for Urban and Regional Analysis at VCU, using IMPLANPro™. Inflation adjustments made using the U.S. Bureau of Labor Statistics' "Consumer Price Index for All Urban Consumers".

Note: All dollar values are in 2015 Dollars

Table 2: Estimated Impacts of VCU

Tables 3, 4 and 5 show, for each of the study areas, a greater level of detail about these impacts, including their direct, indirect and induced effects.

For FY 2015, VCU and VCU Health System operations and associated spending, which include operational expenditures, capital investments, payroll, student spending and visitor spending, generated an impact of \$1.48 billion in Richmond, supporting more than 18,000 jobs and generating almost \$870 million in labor income. In addition, VCU activities and VCU associates' spending in the city have generated additional state and local taxes of more than \$40 million and federal taxes of \$165 million.

Overall, in the city of Richmond, for every dollar spent by VCU and VCU Health System (combining operational budget and payroll), there is an economic impact (i.e., multiplier) of \$1.97. This means that for every dollar spent by VCU and VCU Health System, the city economy gains another 97 cents.⁶

To put these numbers in perspective, in the city of Richmond alone, VCU and VCU Health System directly support almost 13,500 jobs, more than \$600 million in employee compensation and \$830 million in economic impact through its education, research and health care programs and activities, as well as student and visitor spending in the city. These activities indirectly create or support an additional 2,996 jobs, \$177 million in employee compensation and almost \$387 million in economic impact. Finally, the additional spending of those employed directly or indirectly through VCU and VCU Health System produces an induced effect of an additional 1,902 jobs, almost \$90 million in labor income and \$255 million in economic impact.

Estimated Impacts on the City of Richmond from VCU, VCU Health, and VCU-Associated Expenditures				
	Direct	Indirect	Induced	Total
Labor income	\$603,105,659	\$177,325,802	\$89,531,985	\$869,963,446
Value added	\$768,090,388	\$233,812,293	\$159,055,869	\$1,160,958,550
Economic Impact	\$830,295,231	\$386,632,523	\$255,738,678	<u>\$1,472,666,432</u>
Employment Impact <i>(number of jobs)</i>	13,495	2,996	1,902	<u>18,393</u>
Tax Impact <i>State and local</i>				<u>\$40,518,874</u>
Tax Impact <i>Federal</i>				<u>\$165,046,947</u>

Source : Estimates developed on TNS, CRUSA and CURA Survey data by the Center for Urban and Regional Analysis at VCU, using IMPLANPro™. Inflation adjustments made using the U.S. Bureau of Labor Statistics' "Consumer Price Index for All Urban Consumers".

Note: All dollar values are in 2015 Dollars

Table 3: Estimated Impacts on the City of Richmond

6 The multiplier was calculated dividing the overall economic impact in the city of Richmond by that portion of VCU and VCU Health operational budget and payroll spent in the city of Richmond minus inter-institutional spending and individual's savings. This approach considers VCU associated spending (VCU capital investment, as well as student and visitor spending) as dollars retained in the region that would otherwise be lost in absence of VCU operations.

At the metropolitan level, where operational and employee spending are more robust, the VCU presence generated a total economic impact of more than \$4 billion, including labor income of \$2.17 billion, supporting almost 47,000 jobs. In addition, this spending generated new tax revenues of \$491 million at the federal level and \$166 million in state and local taxes.

Overall, in the Richmond MSA, for every dollar spent by VCU and VCU Health System (combining operational budget and payroll), there is an overall economic impact, or multiplier, of \$3.74, meaning that for every dollar spent by VCU and VCU Health System, the Richmond MSA economy gains an additional \$2.74.⁷

Estimated Impacts on the Richmond MSA from VCU, VCU Health and VCU-Associated Expenditures				
	Direct	Indirect	Induced	Total
Labor income	\$1,388,913,533	\$307,064,112	\$476,972,779	\$2,172,950,423
Value added	\$1,731,596,159	\$416,154,107	\$856,429,339	\$3,004,179,605
Economic Impact	\$1,840,434,965	\$716,284,933	\$1,460,286,156	<u>\$4,017,006,054</u>
Employment Impact <i>(number of jobs)</i>	30,680	5,542	10,731	<u>46,953</u>
Tax Impact <i>State and local</i>				<u>\$165,942,471</u>
Tax Impact <i>Federal</i>				<u>\$491,500,598</u>

Source: Estimates developed on TNS, CRUSA and CURA Survey data by the Center for Urban and Regional Analysis at VCU, using IMPLANPro™. Inflation adjustments made using the U.S. Bureau of Labor Statistics' "Consumer Price Index for All Urban Consumers".

Note: All dollar values are in 2015 Dollars

Table 4: Estimated Impacts on the Richmond MSA

More specifically, in the Richmond MSA, VCU and VCU Health System directly support 30,680 jobs, almost \$1.4 billion in employee compensation and more than \$1.8 billion in economic impact. In addition, VCU and VCU Health System activities indirectly create or support an additional 5,542 jobs, \$307 million in employee compensation and more than \$715 million in economic impact. Finally, the additional

⁷ Ibid

spending of those employed directly or indirectly through VCU and VCU Health System produces an induced effect of an additional 10,731 jobs, more than \$475 million in labor income and \$1.46 billion in economic impact.

Finally, in FY 2015, Virginia received an economic boost of \$5.9 billion from VCU operations and associated spending. This translated also in 62,800 supported jobs and almost \$3.2 billion in labor income. From a fiscal standpoint, this generated almost \$700 million in federal taxes and \$246 million in state and local taxes. Overall, in the commonwealth of Virginia, for every dollar spent by VCU and VCU Health System (combining operational budget and payroll), there is an overall economic impact (i.e., multiplier) of \$3.20 – for every dollar spent by VCU and VCU Health System, the Virginia economy gains an additional \$2.20.⁸

Estimated Impacts on the Commonwealth of Virginia from VCU, VCU Health, and VCU-Associated Expenditures				
	Direct	Indirect	Induced	Total
Labor income	\$1,687,738,046	\$870,803,815	\$613,991,937	\$3,172,533,798
Value added	\$2,091,313,922	\$1,102,568,291	\$1,111,603,482	\$4,305,485,695
Economic Impact	\$2,240,247,674	\$1,797,909,513	\$1,876,450,630	<u>\$5,914,607,817</u>
Employment Impact <i>(number of jobs)</i>	34,383	14,691	13,727	<u>62,801</u>
Tax Impact <i>State and local</i>				<u>\$246,476,611</u>
Tax Impact <i>Federal</i>				<u>\$696,505,002</u>

Source : Estimates developed on TNS, CRUSA and CURA Survey data by the Center for Urban and Regional Analysis at VCU, using IMPLANPro™. Inflation adjustments made using the U.S. Bureau of Labor Statistics' "Consumer Price Index for All Urban Consumers".

Note: All dollar values are in 2015 Dollars

Table 5: Estimated Impacts on the Commonwealth of Virginia

At the state level, VCU and VCU Health System directly support 34,383 jobs, almost \$1.7 billion in employee compensation and more than \$2.2 billion in economic impact. In addition, VCU and VCU Health System activities indirectly create or support an

⁸ Ibid

additional 14,691 jobs, \$870 million in employee compensation and almost \$1.8 billion in economic impact. Finally, the additional spending of those employed directly or indirectly through VCU and VCU Health System produces an induced effect of an additional 13,727 jobs, more than \$600 million in labor income and almost \$1.9 billion in economic impact.

2. Dissecting the Economic Impact of VCU by Spending Source

As mentioned in the previous section, in order to create a comprehensive picture of the many ways in which VCU and VCU associates' spending influence the regional economy, we adopted an analysis-by-parts approach. For this purpose, CURA analyzed each spending source separately and then aggregated the results as shown above. The five spending sources are:

- VCU and VCU Health System operational budget
- VCU and VCU Health System payroll
- VCU and VCU Health System capital investments
- VCU student spending
- VCU visitor spending

THE ECONOMIC IMPACT OF VCU AND VCU HEALTH SYSTEM OPERATIONAL SPENDING

As a large institution, VCU spends a considerable amount of money in the region to purchase goods and services to support its operations.

In FY 2015, VCU and VCU Health System had an operational budget of \$3.4 billion. Considering that payroll was approximately \$1.57 billion and that its effects were examined separately, the resulting budget without payroll that was used for this study was \$1.83 billion. A consistent portion — \$843.7 million — represents claim payments for Virginia Premier Health Plan, VCU's health insurance for low-income people, while the remaining \$986 million is the "real" operational budget. This

distinction is particularly important because these two components of the budget impact the region’s economy in different ways, both in terms of where and how the money is spent.

Table 6 provides details for each study area (after accounting for leakages) on how much is being spent and for what purpose. (VPHM medical claims are incorporated into hospital services.) VCU hospital services represent, by far, the greatest amount in each of the three geographic levels (57 percent), followed by instruction (7 percent), research (6 percent) and auxiliary enterprises, which includes dining halls, residence halls and athletic facilities (5 percent). The remaining expenditures, besides depreciation — representing 14 percent of the budget without payroll — are for academic support and student services.

Total VCU and VCU Health Operational Expenditures without payroll, by location (FY2015)			
Expenditures Categories	RVA	MSA	VA
Instruction	\$13,502,568	\$18,686,833	\$33,707,674
Research	\$11,194,924	\$15,493,177	\$27,946,894
Public service	\$907,875	\$1,256,450	\$2,266,409
Academic support	\$2,510,207	\$3,473,993	\$6,266,456
Student services	\$996,142	\$1,378,607	\$2,486,759
Institutional support	\$4,375,865	\$6,055,963	\$10,923,864
Operations and maintenance of plant	\$8,963,711	\$12,405,298	\$22,376,918
Student aid	\$5,979,873	\$8,275,824	\$14,928,093
Auxiliary enterprises	\$10,295,266	\$14,248,098	\$25,700,997
Hospital services	\$178,349,023	\$306,056,643	\$1,130,963,380
Depreciation expense	\$28,905,396	\$40,003,525	\$72,159,137
Other expenses	\$553,885	\$766,548	\$1,382,713
Total operating expenses	\$266,534,735	\$428,100,959	\$1,351,109,295

Source: VCU, various units

Note: All dollar values are in 2015 Dollars

Table 6: Total VCU and VCU Health System Operational Expenditures

Once the exact amount spent was calculated for each of our regional models, CURA estimated the economic impact by using the Government Spending Pattern for Education Institutions (the first of the analysis-by-parts) provided by IMPLAN. The spending pattern, which encompasses more than 200 industry sectors, was further customized to better reflect VCU and VCU Health System activities and spending.

As Table 7 shows, the economic impact of VCU and VCU Health System’s daily operations was almost \$364 million in Richmond, more than \$765 million in the Richmond MSA and \$2.2 billion in Virginia. In terms of jobs and income generated, VCU and VCU Health System’s operational expenditures support almost 3,000 jobs in Richmond with more than \$168 million in distributed income; 6,125 jobs and more than \$324 million in labor income in the Richmond MSA; and almost 18,000 jobs and over \$1 billion in labor income at the state level.

Estimated Impacts of VCU and VCU Health Operational Expenditures			
City of Richmond	Economic Impact	Labor Income	Employment Impact <i>(number of jobs)</i>
	\$363,654,373	\$168,532,443	2,942
Richmond MSA	Economic Impact	Labor Income	Employment Impact <i>(number of jobs)</i>
	\$765,483,544	\$324,440,325	6,125
Commonwealth of Virginia	Economic Impact	Labor Income	Employment Impact <i>(number of jobs)</i>
	\$2,202,673,311	\$1,003,019,808	17,910

Source : VCU, various units, and the Center for Urban and Regional Analysis at VCU, using IMPLANPro™. Inflation adjustments made using the U.S. Bureau of Labor Statistics' "Consumer Price Index for All Urban Consumers".

Note: All dollar values are in 2015 Dollars

Table 7: Estimated Impacts of VCU and VCU Health Operational Expenditures

THE ECONOMIC IMPACT OF VCU AND VCU HEALTH SYSTEM CAPITAL SPENDING

The impact of an urban footprint

VCU and VCU Health System have a vital and revitalizing physical presence in Richmond. The two campuses are inseparable from the fabric of the city — both influencing and being influenced by their surrounding neighborhoods. VCU’s physical footprint represents decades of capital investments in the university and the Richmond region. These investments have served a stabilizing role through periods of disinvestment and a revitalizing role in times of renewed urban interest.

The Richmond of 2016 is vibrant and growing. Rates of violent crime have mirrored national trends and fallen steadily over 20 years. The population has grown, reversing a pattern of urban disinvestment that began in the middle of the 20th century. In short, Richmond is an attractive urban setting for capital investments, and VCU’s capital projects reflect that. However, VCU’s recent investments in Richmond offer only a partial understanding of the university’s role in the city’s transformation.

VCU’s role in Richmond must be understood within the context of its investments over the last 20 years. VCU capital projects have sustained neighborhoods through economically difficult eras. Between 1996 and 2013 — beginning near the peak of a violent crime epidemic and extending through the nadir of Richmond’s population loss and the Great Recession — VCU invested over \$1.6 billion⁹ in its MCV and Monroe Park campuses. It built and enhanced medical facilities to treat patients from throughout the region. It invested in residence halls that established life and commerce in otherwise disinvested corridors.

The volume of VCU’s capital investments in Richmond exceeds that of most, if not all, other institutions in the region. VCU, VCU Health System and the VCU Real Estate Foundation invested a combined \$1 billion in capital projects from FY 2011 to FY 2015. The city’s FY 2011 to FY 2015 Capital Improvement Plan totaled \$812.5 million.

The university’s development has been and continues to be guided by a strategic vision and master site plan. VCU’s 2020 Master Site Plan update (2013) is a proactive

⁹ Accordino, Suen, Gapas, & Hall, “Richmond, Virginia: A Downtown Profile,” 2013.

outline and plan of the university's capital investments that will impact the region's cultural, educational and economic infrastructure in the near future.

The master site plan is informed by VCU's umbrella strategic plan, VCU Quest for Distinction. The strategic plan guides the university's efforts to develop and capitalize on its assets in service of four objectives:

- Become a leader in the provision of high-quality educational and living experiences.
- Build influence through continued contributions in scholarship, research, creative expression and clinical practice.
- Achieve full integration as a top-tier research university committed to human health.
- Demonstrate and implement effective models of community engagement and regional impact.

The master site plan represents the most visible implementation of these guiding principles and aims. It does so within the constraints of VCU's urban environment. VCU's Monroe Park and MCV campuses lie within the heart of the city (Figure 1), placing VCU at the adjacent centers of cultural, political, recreational and economic resources of Richmond and the commonwealth. The urban nature of the campuses limits development opportunities. Usable space and real estate are difficult to acquire, and spaces of the size needed to accommodate VCU's institutional uses often mandate the acquisition of multiple parcels.¹⁰



Figure 1: VCU Monroe Park and MCV Campuses

¹⁰ Virginia Commonwealth University. "VCU 2020: Master Site Plan 2013," Available: http://www.facilitiesmanagement.vcu.edu/docs/VCU_MasterSitePlan_FINAL.pdf, Accessed: 7 September 2016.

Monroe Park Campus

The Monroe Park Campus is situated one mile west of Richmond’s Capitol Square amid a mix of urban mixed-use and residential neighborhoods. VCU has woven itself into the fabric of the surrounding neighborhoods. The Franklin Street corridor of historic mansions repurposed as VCU administrative offices and classrooms blends seamlessly into Richmond’s Monument Avenue. The West Grace and Broad Street corridors — a largely disinvested mix of shops, eateries and vacant structures through the 1990s — have grown into a series of modern residence halls, arts facilities and student services buildings filled with students that continue to attract and support local commercial establishments. The 90-acre campus footprint remains identical to that of 2004, but renovations, property acquisitions and new construction have created a greater density of institutional uses and people. The campus features a dozen residence halls for over 4,500 students¹¹ (Table 8).

VCU Housing	
Residence Hall	Capacity
Monroe Park Campus	4,558
Ackell Residence Center	396
Brandt Hall	624
Broad and Belvidere	410
Cary and Belvidere	413
Gilmer Street Addition	70
GRC Suites 3	172
Grace and Broad	397
Honors College	177
Johnson Hall	527
Rhoads Hall	527
West Grace South	461
West Grace North	384
MCV Campus	582
Bear Hall	30
Cabaniss Hall	423
Mcrae Hall	45
Rudd Hall	46
Warner Hall	38
Source: 2013 VCU Master Site Plan update; 2014 VCU Housing Master Plan; VCU University Relations	

Table 8: VCU Housing

The demolition and replacement of Gladding Residence Center — a \$96 million project — is expected to accommodate an additional 1,500 students by fall 2018.¹² The completion of the residence hall will achieve a top priority in VCU’s 2014 Housing Master Site Plan: housing all freshmen on campus. VCU plans to construct one new residence hall

¹¹ Ibid

¹² VCU Residential Life and Housing, “Gladding Residence Center Project.” Available: <http://www.housing.vcu.edu/grc-project/>, Accessed: 10 September 2016.

by 2025 and renovate four residence halls by 2028.¹³ The Monroe Park Campus features more than 40 parking lots and decks with a total of nearly 6,000 spaces (Table 9).

The master site plan update identifies several opportunities for growth:

- Redevelopment of the Franklin Street Gym site to support a home for the College of Humanities and Sciences
- Redevelopment of the Thalheimer Tennis Center site on Cary Street to support the Life Sciences programs
- Continued support of the Monroe Park master plan
- Continued and enhanced presence of the School of the Arts on the Broad Street corridor

¹³ Virginia Commonwealth University Department of Residential Life and Housing, "2014 Housing Master Plan." Available: http://www.housing.vcu.edu/media/housing/docs/VCU_Housing_Master_Plan_2014_FINAL-screen.pdf. Accessed: 9 September 2016.

VCU Parking Facilities				
Deck/Lot	Spaces		Deck/Lot	Spaces
Monroe Park Campus	5,984		West Broad Street Deck	980
AA Lot	4		West Cary Street Deck	719
AR Lot	9		West Main Street Deck	1,101
AR Lot Ext.	26		WG Lot	15
BB Lot	28		WW Lot	10
BC Lot	50		YY Lot	17
BL Lot	68		ZZ Lot	50
Bowe Street Deck	424			
Broad & Belvidere Deck	194		MCV Campus	7,118
EE Lot	100		A Lot 1	276
FF Lot	11		A Lot 2	303
FS Lot	4		A Lot 3	76
GG Lot	34		Coliseum Deck	400
GY Lot	2		D Deck	2,074
HH Lot	25		Eighth Street Deck	972
HB Lot	32		F Lot	48
Henry St. D East	385		G Lot	6
Henry St. D West	361		H Deck	100
HH Lot	24		I Lot	442
IT Lot	13		J Lot	8
Jefferson Street Deck	679		K Deck	100
JJ Lot	10		L Lot (Larrick Center)	9
JL Lot	118		M Lot	350
Laurel Street Deck	209		N Deck	994
OO Lot	4		One Capitol Square	60
PH Lot	7		P Lot	16
PL Lot	11		PA Deck	130
RR Lot 1	14		Q Lot 1	36
RR Lot 2	10		Q Lot 2	21
SP Lot	29		Q Lot 3	5
SS Lot	28		H Deck	55
ST Lot	13		R Lot	278
TT Lot	55		RTD Deck	100
UU Lot	51		S Deck	25
VV Lot	6		T Lot	19
WG Lot	15		W Deck	150
WBSD alley	21		Y Lot	20
WC Lot	18		Z Lot	45
Source: VCU Parking & Transportation Inventory, 5 August 2016.				

Table 9: VCU Parking Facilities

MCV Campus

The MCV Campus is a densely organized, 52-acre footprint located adjacent to Richmond's central business district. It features the only Level I trauma center in the region. The area has served as a campus since 1838, and VCU has preserved many of its historic structures such as the Monumental Church and the Egyptian Building. Historic buildings such as The Valentine and its museum and the White House of the Confederacy remain mixed among the structures preserved by VCU.

The campus of 4- to 10-story urban buildings is landlocked by I-95 to the north and east, Broad Street and state government uses to the south and city government uses to the west. The compact nature of the MCV Campus promotes close relationships between the research, scholarship and clinical practice functions of VCU Health.¹⁴ The campus has 865 patient beds, and supports 4,400 students and more than 10,000 employees.¹⁵ The MCV Campus features five residence halls for almost 600 students (Table 8).¹⁶

The Virginia Biotechnology Research Park has grown adjacent to the campus, creating potential for collaborative synergies. The campus features 29 parking lots and decks with more than 7,100 spaces (Table 9).

The master site plan update notes that although VCU Health benefits from the proximity of all functions on campus, it limits growth opportunities. Potential areas of growth identified in the plan include:

- Renovation or reuse of existing space
- Acquisition of existing real estate or development partnerships to support integrated health sciences research and education
- Expansion of the campus boundary

VCU Health conducts parallel site planning efforts specific to the system's clinical functions and needs. Those planning efforts include capital projects such as:

- Development of the Virginia Treatment Center for Children site (contingent upon relocation of the program)
- Development of the School of Pharmacy site (contingent upon relocation of the school)

¹⁴ Virginia Commonwealth University, "VCU 2020: Master Site Plan 2013." Available: http://www.facilitiesmanagement.vcu.edu/docs/VCU_MasterSitePlan_FINAL.pdf, Accessed: 7 September 2016.

¹⁵ Ibid

¹⁶ Ibid

Major Capital Projects

Capital spending between FY 2011 and FY 2015 reflects increasing investments in the region. Significant new construction and continued renovation investments have pushed capital spending to levels near or above the highest of the 2000s.¹⁷ Total spending in FY 2012 and FY 2015 mark the largest capital outlays of the five-year span (Table 10), but outlays have not fallen below \$200 million since FY 2011. VCU drove 68 percent of capital spending in FY 2012, but VCU Health’s share of spending grew to 56 percent in FY 2015 (Figure 2).

VCU Capital Improvement Spending Trends (nominal dollars)						
	FY2011	FY2012	FY2013	FY2014	FY2015	5-year total
VCU	90,674,245	159,091,262	121,332,477	61,948,495	110,569,750	543,616,229
VCU Health	47,848,875	68,986,999	78,864,092	133,860,163	153,491,112	483,051,241
VCU Real Estate Foundation	736,748	4,587,933	8,345,651	11,452,576	10,788,170	35,911,078
Total	139,259,868	232,666,194	208,542,220	207,261,234	274,849,032	1,062,578,548
Source: VCU Finance and Administration						

Table 10: VCU Capital Improvement Spending Trends

Major VCU capital projects include:

- The VCU Basketball Development Center, a \$25 million practice facility that sits across from the Siegel Center on West Marshall Street that replaced the 64-year-old Franklin Street Gym¹⁸
- The VCU Institute for Contemporary Art, a \$41 million¹⁹ project that will serve as a gateway to both VCU and Richmond, as well as a visual statement of VCU’s commitment to and achievements in the arts, which is expected to open in 2017²⁰
- The Grace and Broad Residence Center, the two-phase project that added more than 400 beds to VCU’s housing capacity, which was completed in 2015
- James Branch Cabell Library renovations, a \$50 million renovation and expansion of a hub of activity and scholarship on the Monroe Park Campus, completed in 2015

17 Chmura Economics & Analytics, “Virginia Commonwealth University—Delivering Talent; Creating Economic Benefits.” 6 May 2012.

18 Pearrell, Tim. “‘Every turn it’s a wow’ in VCU’s new practice facility,” Richmond Times-Dispatch. 10 October 2015.

19 Slipek, Edwin. “Behind the Scenes at VCU’s \$41.2 Million Institute for Contemporary Art,” Style Weekly. 9 August 2016.

20 VCU Institute for Contemporary Art, “ICA FAQs.” Available: <https://ica.vcu.edu/about/faqs/>, Accessed: 10 September 2016.

Major VCU Health System capital projects include:

- The Children’s Pavilion, a \$201 million project that opened in 2016 on East Broad Street. It serves as an outpatient clinic of the Children’s Hospital of Richmond at VCU. Its construction, in tandem with the ICA, strengthens the link between the Monroe Park and MCV campuses with two newly constructed, visually impactful and regionally important buildings on Broad Street.

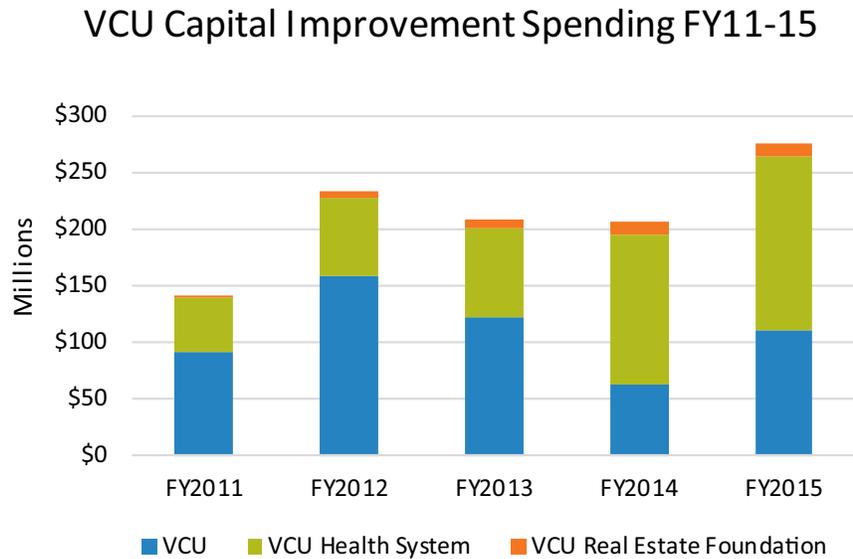


Figure 2: VCU Capital Improvement Spending

A Unified University

VCU is an important steward of the land in and around the Monroe Park and MCV campuses. The university’s investments have grown the areas as successful research and clinical institutions, and they have allowed nearby commercial and residential districts to thrive. The two campuses are connected by the Broad Street corridor. The city designated the corridor an arts and cultural district in 2012 as part of an effort to encourage redevelopment.²¹ Two highly visible VCU capital projects bookend the district, with the Institute for Contemporary Art at the district’s western terminus and the Children’s Pavilion at its eastern terminus.

²¹ City of Richmond Economic & Community Development, “Broad Street Arts & Cultural District.” Available: <http://www.yesrichmondva.com/neighborhood-revitalization/Broad-Street-ArtBiz-District>, Accessed 10 September 2016.

VCU's master site plan acknowledges the importance of the corridor and suggests a revitalized Broad Street would more directly connect the two vibrant campuses as a single university. The size and availability of parcels limit development opportunities on Broad Street, particularly those of the scale needed for VCU's institutional uses. The master site plan identified the Central National Bank site in 2013 as a potential site for a mix of university uses, including residential. As of fall 2016, the site is in the final stages of redevelopment as a 200-unit apartment building by a private developer.

The Broad Street corridor remains an important link between the two campuses and VCU is an important stakeholder in its revitalization.

The Economic Impact of VCU and VCU Health System Capital Investments

The physical presence of VCU in the city of Richmond and the magnitude of the real estate development that the university and VCU Health System have undertaken in the past 30 years, besides revitalizing Richmond's core, have created a direct economic impact on the city's and region's economies. However, the economic benefits of VCU capital investments go beyond the construction phase: The revitalization of entire neighborhoods over time increases property values in adjacent blocks, providing additional revenues to local government. In addition, revitalized neighborhoods tend to attract new businesses — proven by the many vibrant commercial corridors that animate many of the neighborhoods adjacent to VCU — which, in turn, generate new tax revenues for local, state and federal governments. Because of data and time limitation, in this section, we present only the economic impact generated by VCU and VCU Health System capital spending in FY 2015.

In FY 2015, VCU spent a total of almost \$250 million in capital investments. But not all of them have been spent in our geographic areas. For the purpose of this study, CURA applied the same geographic spending distribution percentages that were used for the VCU operational budget: 20.61 percent for the city, 28.52 percent for the Richmond MSA and 51.44 percent for the state. Table 11 shows the capital outlay considered for each regional model broken down by unit (VCU, VCU Health System and VCU Real Estate Foundation).

Total VCU and VCU Health Capital Investments considered for this study, by location (FY2015)			
	RVA	MSA	VA
VCU	\$22,785,049	\$31,533,291	\$56,880,364
VCU Health	\$31,629,831	\$43,773,997	\$78,960,388
VCU RE Foundation	\$2,223,112	\$3,076,669	\$5,549,755
Total Capital Investments	\$56,637,992	\$78,383,956	\$141,390,507

Source: VCU, various units

Note: All dollar values are in 2015 Dollars

Table 11: Total Capital Investments for Study

Also in this case, the larger the geographic area, the greater the impact: Businesses located outside the city will benefit from a portion of VCU capital spending generating a larger impact. The same holds true for those businesses located outside the MSA. Table 12 shows how the impact of VCU investments in Richmond was almost \$78 million, supporting 435 jobs and generating more than \$26 million in labor income. In the Richmond MSA, the supported jobs are 837, with almost \$42 million in labor income and \$137 million in total economic impact. Finally, at the state level, VCU capital spending supported 1,426 jobs and generated a total economic impact of more than \$236 million and total labor income of almost \$73 million.

Estimated Impacts of VCU and VCU Health Capital Investments			
	Economic Impact	Labor Income	Employment Impact (number of jobs)
City of Richmond	\$77,998,120	\$26,219,697	435
Richmond MSA	\$137,156,918	\$41,931,069	837
Commonwealth of Virginia	\$236,212,623	\$72,801,590	1,426

Source: VCU, various units, and the Center for Urban and Regional Analysis at VCU, using IMPLAN Pro™. Inflation adjustments made using the U.S. Bureau of Labor Statistics' "Consumer Price Index for All Urban Consumers."

Note: All dollar values are in 2015 Dollars

Table 12: Estimated Impacts of Capital Investments

THE ECONOMIC IMPACT OF VCU EMPLOYEE SPENDING

In FY 2015, VCU employed a total 21,704 people, who lived and shopped in the region. However, not all VCU employee spending was used for this study. First, 2,404 VCU employees were students. Because what students earn from VCU is already included in the next section on student spending, salaries for both work-study and student workers were taken out of payroll, bringing the total payroll considered for this study to \$1,560,728,610. Second, not all VCU employees lived near the university. Based on data obtained from VCU payroll, only 29 percent of VCU employees lived in the city of Richmond; 78.51 percent lived in the MSA and 95.6 percent lived in Virginia. The spending for each geographic area was, therefore, modeled according to these percentages. However, those employees who did not live in the city spent some money around campus. The VCU 2010 survey showed that the average employee weekly spending was \$41.99 in 2015 dollars; this additional spending was added to the spending of VCU employees who lived in the city. This brought total spending considered for this study in the city to \$482 million, \$1.22 billion in the MSA and \$1.49 billion in Virginia.²²

Table 13 shows that VCU payroll — and consequent employees spending — supported almost 11,000 jobs in the city, generating \$535 million in labor income and \$717 million in total economic impact. The Richmond MSA benefited from VCU payroll with a total economic impact of almost \$2.5 billion and 32,754 jobs supported with more than \$1.5 billion in labor income. Finally, at the state level, VCU employee income and spending generated a total economic impact of \$2.8 billion and more than 36,000 jobs with a labor income of \$1.8 billion.

²² To estimate the economic impact in the three regions, VCU payroll (i.e. employee spending) has been entered in IM-PLAN using the dedicated sector (532) "Employment and Payroll of State Government – Education." This special sector has no associated spending pattern (meaning that the value entered here is considered a "final purchase" made by the institution VCU which pays its employees in return for their labor). It accounts for employees' taxes and expected savings, and it reflects the purchases (induced effects) that are made by employees using their income, modeling them through the built-in Input-Output matrix.

Estimated Impacts of VCU and VCU Health Employees Expenditures			
City of Richmond	Economic Impact	Labor Income	Employment Impact <i>(number of jobs)</i>
	\$717,069,967	\$535,523,719	10,886
Richmond MSA	Economic Impact	Labor Income	Employment Impact <i>(number of jobs)</i>
	\$2,486,446,856	\$1,568,334,073	32,754
Commonwealth of Virginia	Economic Impact	Labor Income	Employment Impact <i>(number of jobs)</i>
	\$2,837,959,115	\$1,848,367,491	36,110

Source : VCU, various units, and the Center for Urban and Regional Analysis at VCU, using IMPLANPro™. Inflation adjustments made using the U.S. Bureau of Labor Statistics' "Consumer Price Index for All Urban Consumers".

Table 13: Estimated Impacts of Employee Expenditures

THE ECONOMIC IMPACT OF VCU STUDENT SPENDING

In FY 2015, data showed that 31,163 students were enrolled at VCU. From the National Center for Education Statistics, CURA obtained the average cost of attending college (minus tuition and fees), which for that fiscal year was \$13,930 per year, mostly for accommodation, transportation, food and entertainment. However, some students already paid some of these costs (like room and board) to VCU and were, therefore, already calculated in the economic impact of the VCU operational budget. After removing these expenses, the total VCU student spending considered for this study was \$407,403,404.

Similarly to what has been done for the employees, also in this case the total spending was adjusted to reflect the place of living of VCU students. Based on a VCU survey administered in 2010²³, CURA learned that 58 percent of VCU students

23 Unfortunately, no recent survey asking the place of residence has been administered to VCU students. However, the latest demographic trends show consistently percentage increase of young people that choose to live in urban areas. If anything therefore, the economic impact calculated on the 2010 percentages might be slightly undercounting the effects of student spending in the City of Richmond.

lived in the city of Richmond, 91.9 percent in the Richmond MSA and 98.7 percent in Virginia. However, students who did not live in Richmond still spent some money around campus, increasing the overall spending in the city. The same 2010 VCU survey showed that the average VCU student spent \$43.70 (\$47.50 adjusted by inflation) per week around campus. The resulting amount of spending from students who live outside the city has been added to the overall VCU student spending in Richmond.

The resulting expenditures were \$256 million in Richmond, \$374 million in the Richmond MSA and \$402 million in Virginia. Based on VCU spending statistics and on other studies that analyzed student spending at other universities, these expenditures were then modeled into the appropriate IMPLAN categories to build the multipliers for each of our economic regions.

The resulting annual impact of student spending (Table 14) in Richmond is \$282 million in total output, \$118 million in labor income and 3,530 supported jobs. At the Richmond MSA and state levels, the observed results are similar, with almost 6,000 supported jobs, \$530 million in total economic impact and more than \$190 million in labor income.

Estimated Impacts of VCU Students Expenditures			
City of Richmond	Economic Impact	Labor Income	Employment Impact <i>(number of jobs)</i>
	\$282,614,340	\$118,814,358	3,530
Richmond MSA	Economic Impact	Labor Income	Employment Impact <i>(number of jobs)</i>
	\$524,688,509	\$190,085,722	5,826
Commonwealth of Virginia	Economic Impact	Labor Income	Employment Impact <i>(number of jobs)</i>
	\$530,875,993	\$196,533,869	5,908

Source : VCU and the Center for Urban and Regional Analysis at VCU, using IMPLANPro™
 Inflation adjustments made using the U.S. Bureau of Labor Statistics' "Consumer Price Index for All Urban Consumers". Note: All dollar values are in 2015 Dollars

Table 14: Estimated Impacts of Student Expenditures

THE ECONOMIC IMPACT OF VCU VISITOR SPENDING

Finally, VCU and VCU Health attract hundreds of thousands of people to the region every year. These people, in turn, will spend their money, generating additional impacts in the local economy.

On the academic side of VCU, Table 15 shows the number of visitors (and their spending) who come to the region to visit VCU students or employees, or to attend one of the hundreds of VCU activities throughout the school year. Using visitation data from the VCU 2010 survey, it is known that the average student receives 4.8 visitors during an academic year and that the average length of stay is 2.7 days. Similarly, the average VCU employee receives 5.9 visitors each year with an average length of stay of 3.4 days. For FY 2015, this has resulted in more than 128,000 employees' personal visitors and almost 150,000 students' personal visitors. Additionally, more than 300,000 visitors are attracted to the area by major events held at the Stuart C. Siegel Center and other VCU sports facilities (e.g., Sports Backers Stadium) such as VCU basketball games and the Richmond region's high school graduation ceremonies. An additional 16,000 visitors are estimated to have attended undergraduate admission activities, and more than 30,000 have attended Commencement ceremonies at the school or departmental level. The total visitor volume for FY 2015 was estimated to be almost 665,000 people.

VCU visitors obviously spend their money in the region. From Virginia Tourism Corporation data²⁴, CURA learned that the average visitor daily expenditure is \$55 (this is an average of daytrip and overnight travelers). Based on regional tourism data²⁵, we know that only 26 percent of the money spent in the Richmond MSA is actually spent in the city. This percentage has been applied to visitors to VCU events (26 percent of their money is being spent in Richmond and, therefore, only that portion is used to estimate the impact on the city's economy, while at the MSA and state levels, we used the whole spending amount), while VCU employees' and students' visitors spending has been modeled based on the place of residence of VCU employees and students. The resulting overall visitor spending is estimated to be \$25.6 million in Richmond, \$61.5 million in the Richmond MSA and \$67.2 million in the state (Table 15).

²⁴ Virginia Tourism Corporation: Travel Profile to Virginia - TNSTravelsAmerica, FY2015.

²⁵ Virginia Tourism Corporation: Economic Impact of Domestic Travel on Virginia Counties, 2015 and 2014 - US Travel Association data.

VCU Students', Employees', and other Visitors spending, by location (FY2015)				
	Number of visitors	RVA	MSA	VA
Employees personal visitors	128,054	7,025,883	18,988,023	23,121,322
<i>Employees personal visitors' average length of stay</i>	3.4			
Students personal visitors	149,582	13,012,367	20,617,872	22,143,460
<i>Student personal visitors' average length of stay</i>	2.7			
Welcome Center visitors (undergraduate admissions)	8,636	124,730	479,730	479,730
Preview Day visitors (undergraduate admissions)	3,023	43,661	167,928	167,928
Open House (undergraduate admissions)	4,373	63,159	242,920	242,920
Miscellaneous on-campus Office of Admission events	314	4,535	17,443	17,443
Commencement (Monroe, MCV, and individual schools)	30,106	434,821	1,672,388	1,672,388
Family weekends	2,540	36,685	141,097	141,097
Orientation	3,927	56,718	218,145	218,145
Alumni activities	5,951	85,950	330,578	330,578
MCV campus visitors	377	5,445	20,942	20,942
French Film Festival	14,520	209,712	1,222,100	1,222,100
Sport facilities (including non sport activities)	303,658	4,385,732	16,868,202	16,868,202
School of the Arts performances*	7,536	108,842	418,625	418,625
Student Commons	2,324	33,566	129,098	129,098
TOTAL	664,921	25,631,808	61,535,091	67,193,978

Source: VCU, various units

Note: All dollar values are in 2015 Dollars

* This includes attendance for dance and theatre performances held at VCU Theater, Grace Street Theater. To avoid double counting of student spending, and since student usually enjoy free admission, attendance for the purpose of this study was calculated solely on the number of tickets sold.

Table 15: VCU Student, Employee, and other Visitor Spending by Location

VCU Health System is also responsible for additional visitor spending. The increasing importance of VCU Medical Center — one of the few Level I trauma centers in the state offering among the most advanced treatments in the country — draws patients from all over Virginia and beyond. Based on data provided by VCU Health, in FY 2015 it admitted 36,105 patients to its hospitals (excluding emergency and outpatient visits). Approximately one-third of them were from Richmond, one-third were from the remaining jurisdictions that constitute the MSA and the remaining one-third came from the rest of Virginia or from out of state.

For the purpose of this study, it is assumed that visitors of those patients who lived in Richmond did not spend any additional money in the region. For the remaining

patients' visitors, it is assumed that the average daily spending was \$55, and 25 percent of that amount was spent in the city. The resulting spending from VCU Health System visitors for FY 2015 was, therefore, \$2.1 million in the city and \$6.35 million in the MSA and in Virginia (Table 16).

Table 17 shows the economic impact of both VCU and VCU Health System visitors in all three study areas. In Richmond, the overall economic impact was \$29.5 million, with 577 supported jobs and \$19.8 in labor income. There were similar results for the MSA and the state level: almost 1,400 jobs, \$100 million in total economic impact and a little less than \$50 million in labor income.

VCU Health Patients' Visitors Spending, by Location (F 2015)					
	Origin	Discharges	RVA	MSA	VA
VCU Medical Center	RVA	12,474	\$0	\$0	\$0
	MSA (no RVA)	12,598	\$604,704	\$604,704	\$604,704
	VA (no MSA)	9,849	\$1,344,254	\$5,170,208	\$5,170,208
	Out of State	1,096	\$149,589	\$575,342	\$575,342
	TOTAL	36,017	\$2,098,547	\$6,350,254	\$6,350,254
	<i>Average number of visitors per patient (only for out of RVA)</i>	1.5			
<i>Average number of days in the hospital (only for out of MSA)</i>	6.3				
Children's Hospital (Brook Road)	RVA	43	\$0	\$0	\$0
	MSA (no RVA)	25	\$1,200	\$1,200	\$1,200
	VA (no MSA)	20	\$2,062.46	\$7,933	\$7,933
	Out of State	0	\$0	\$0	\$0
	TOTAL	88	\$3,262	\$9,133	\$9,133
	<i>Average number of visitors per patient (only for out of RVA)</i>	1.5			
<i>Average number of days in the hospital (only for out of MSA)</i>	4.8				
TOTAL		36,105	\$2,101,810	\$6,359,387	\$6,359,387

Source: VCU Health System

Note: All dollar values are in 2015 Dollars

Table 16: VCU Health Patients' Visitors Spending

Estimated Impacts of VCU and VCU Health Visitors Expenditures			
City of Richmond	Economic Impact \$29,584,719	Labor Income \$19,842,440	Employment Impact (number of jobs) 577
Richmond MSA	Economic Impact \$98,470,614	Labor Income \$45,584,580	Employment Impact (number of jobs) 1,356
Commonwealth of Virginia	Economic Impact \$99,878,758	Labor Income \$48,052,014	Employment Impact (number of jobs) 1,373

Source: VCU, various units, and the Center for Urban and Regional Analysis at VCU, using IMPLAN ProTM. Inflation adjustments made using the U.S. Bureau of Labor Statistics' "Consumer Price Index for All Urban Consumers".
 Note: All dollar values are in 2015 Dollars

Table 17: Estimated Impacts of VCU and VCU Health Visitors Expenditures

3. FOCUS: VCU Health and the Richmond community

VCU Health’s impacts throughout the Richmond community are difficult to overstate. It operates as one of the largest providers of health care education, services, workforce development, employment and community partnerships in the region and the state, and its mission addresses three areas of focus:

1. Health care provision to all people
2. Research to find the cause and cure of diseases
3. Education of those who wish to serve

This mission encompasses all components of VCU Health:

- VCU Medical Center serves as the physical location and infrastructure for health care provision.
- MCV Physicians are the doctors and medical practitioners who provide care and education.
- Virginia Premier Health Plan provides and manages health insurance for low-income and vulnerable populations.

- Children’s Hospital of Richmond at VCU is the only full-service children’s hospital in Central Virginia and the only Level I pediatric trauma center in Virginia. It provides specialized care to children, and it offers training and education to future caregivers.
- University Health Services offers VCU students high-quality care and health education.
- University Health Services Professional Education Programs offer continuing education and professional development to health care professionals.

HEALTH SERVICE THROUGH EDUCATION

As a leading academic medical research center, VCU educates future health professionals and conducts groundbreaking research in nearly every field of health care. As noted in Chapter 1, VCU’s schools of Allied Health Professions, Pharmacy and Nursing are ranked among the country’s best. The School of Medicine conferred 952 professional degrees between the 2010 and 2015 academic years.²⁶ Students from these schools receive education and training while serving the health care needs of community members and conducting research to address health care needs globally.

VCU Medical Center — the teaching hospital component of VCU Health — demonstrates VCU’s impact on thousands of lives at a time. The emergency department treated 89,549 patients in 2015.²⁷ The trauma center — Central Virginia’s only Level I, and longest-standing, trauma center — admitted 4,632 patients, including pediatrics and burn victims. More than 20 percent of those patients (1,025) were transferred to the VCU Medical Center for further treatment. VCU Medical Center provides 1,125 licensed beds for short-term and extended patient care.

In 2015, VCU Health generated \$2.6 billion in total operating revenue and incurred \$2.5 billion in operating expense.²⁸ Operations were supported in part by 36,036 inpatient discharges and 631,874 outpatient clinic visits.²⁹

26 VCU Office of Planning and Decision Support, “Degrees and Certificates Awarded by School/College and Degree Level.” 12 November 2015. Available: <http://www.opds.vcu.edu/media/decision-support/factandfigures/degrees/degrees/degrees2008-15byschoollevel.pdf>. Accessed 15 September 2016.

27 VCU Health, “2015 Workforce Annual Report.” Available: <https://vcuhealthsystem.uberflip.com/i/685821-2015-workforce-annual-report>. Accessed 22 September 2016.

28 VCU Health Authority FY2015 Income Statement VCU Health

29 VCU Health, “2015 Workforce Annual Report.” Available: <https://vcuhealthsystem.uberflip.com/i/685821-2015-workforce-annual-report>. Accessed 22 September 2016.

VCU has helped to staff more than 100 clinics throughout the Richmond MSA, extending the health system's footprint well beyond the downtown campus and main hospital. VCU Health covers nearly 200 specialty areas of medical treatment, including multidisciplinary centers for cancer, cardiology, neurosurgery and transplantation.

VCU Health strives to serve all patients in need. Administrators express a commitment to community members — particularly those who are the most medically, socially and financially vulnerable — stating their mission as the provision of “high-quality care for everybody, regardless of ability to pay.”³⁰ VCU's Indigent Care Program provides free care to patients whose incomes fall below the federal poverty level; it also establishes a sliding scale discount for patients whose incomes are less than 200 percent of the federal poverty level.³¹ Patients go through an intensive screening process, including an asset test, to ensure supplemental cost assistance is available to those with the greatest need. Financial assistance is supported with state, federal and university funds. VCU Health served 10,184 patients in 2015 whose costs were addressed or reduced through the Indigent Care Program.³²

VCU Health has a payer mix in which 74 percent of the population receives government-funded health care assistance or lacks insurance. The remaining 26 percent of payers serve as support capital. VCU Health underwrites the cost of care, meaning it funds part of the cost and federal and state funding supplements the remaining cost. VCU Health provides financial options to the underinsured by allowing those that do not qualify for the Indigent Care Program to establish a payment plan.

Medication is also costly, and VCU Health seeks to address that through several programs. It participates in 340B Health, a pharmacy assistance program. This federally supported program provides discounted medications for financially vulnerable citizens. VCU Health also utilizes pharmaceutical manufacturer patient assistance programs to help uninsured patients obtain medications. Through PAPs, pharmaceutical companies provide medications free or at low cost to qualified

30 Interview with VCU Healths Administrators, 24 August 2016.

31 VCU Health, “Financial Assistance,” Available: <http://www.vcuhealth.org/patients-visitors/financial-assistance>. Accessed 16 September 2016.

32 VCU Health, “Beyond our walls: Community Engagement 2016.” Available: http://www.vcuhealth.org/upload/docs/Human%20Resources/Community%20Engagement%20Report_2016.pdf. Accessed 22 September 2016.

patients. In 2011, 80 percent of VCU Health outpatients lacked prescription drug coverage. PAP programs allowed VCU Health to provide medication to over 9,400 patients who otherwise may have gone without.³³

VCU HEALTH SYSTEM AS A REGIONAL EMPLOYER

VCU’s status as a premier medical center stems not only from its services and research, but also from its employees.³⁴ VCU Health System is the second-largest employer in the Richmond region with 11,585 employees. VCU Medical Center accounts for 69 percent of VCU Health System employment with 7,987 workers (Table 18). An additional 1,779 workers are VCU Health System physicians. Another 377 workers are employed at the Children’s Hospital of Richmond at VCU, and 705 workers are at Virginia Premier.

VCU Health	Employees
Children’s Hospital of Richmond	377
MCV Physicians	1,779
Virginia Premier	705
VCU Health House Staff	737
MCV Hospitals	7,987
Total Employment	11,585
Source: VCU Healths	

Table 18: VCU Health Employment by Division, 2015

VCU Health System employees are relatively young, with an average age of 42.³⁵ They also stay with VCU, with the average employee having 7.3 years of service.³⁶ More than 40 percent of employees identify as a racial or ethnic minority, demonstrating a commitment to quality and the importance of diversity in serving the community.

33 340B Health, “Case Studies from the Field: How 340B Impacts the Community.” Available: <http://www.340bhealth.org/340b-resources/why-340b-matters/case-studies/virginia-commonwealth-university-health-system>. Accessed 16 September 2016.

34 Virginia Employment Commission, Quarterly Census of Employment and Wages, QCEW 2015

35 VCU Health, “2015 Workforce Annual Report.” Available: <https://vcuhealthsystem.uberflip.com/i/685821-2015-workforce-annual-report>. Accessed 22 September 2016.

36 Ibid

VCU Health System employees show a high commitment to patient care and safety. More than 12,000 staff members have been trained in safe behaviors and error-prevention tools since 2008.³⁷ The results have earned VCU Medical Center its 250th Safety Star, as well as the American Hospital Association-McKesson Quest for Quality Prize honoring leadership and innovation in safety and quality improvement.³⁸ AHA specifically recognized the impacts of VCU Health's Complex Care Clinic and Virginia Coordinated Care programs. Through these programs, VCU Health was able to reduce inpatient admissions by 44 percent and emergency care utilization by 38 percent, resulting in a 49 percent reduction in hospital costs totaling \$4 million.³⁹

COMMUNITY ENGAGEMENT THROUGH PARTNERSHIPS

VCU Health provided \$3.9 million in support that allowed community physicians and federally qualified health clinics to participate in the Virginia Coordinated Care for the Uninsured program. The Greater Richmond Boys and Girls Club received \$99,270 to support the VCU Emerging Leaders East End Injury and Violence Prevention Program. VCU also funded post-discharge care of individuals with insufficient housing or suffering from substance abuse issues through the Daily Planet and The Healing Place (Table 19).

VCU Health partners with area organizations to create and implement innovative community programs. The Richmond Health and Wellness Program — developed at and operated by VCU — brings health care services to older adults where they live. The program serves more than 300 adults in five low-income senior housing facilities, giving them the resources and care to age in place rather than making regular trips to the hospital.⁴⁰ The program allows older adults to lead healthier and happier lives at home while controlling health care costs by reducing hospital visits and stays. Students and faculty from VCU schools of Nursing, Pharmacy, Medicine and Social Work and the psychology department provide onsite medical care to the chronically ill, disabled, and older, low-income adults. Since the program's inception

³⁷ VCU Medical Center, "2014 Annual Report." Available: <http://www.annualreports.vcu.edu/medical/pdf/medcenter2014-annualreport.pdf>. Accessed: 16 September 2016.

³⁸ VCU Health, "2015 Workforce Annual Report." Available: <https://vcuhealthsystem.uberflip.com/i/685821-2015-workforce-annual-report>. Accessed 22 September 2016.

³⁹ Ibid

⁴⁰ VCU Health, "Beyond our walls: Community Engagement 2016." Available: http://www.vcuhealth.org/upload/docs/Human%20Resources/Community%20Engagement%20Report_2016.pdf. Accessed 22 September 2016.

in 2012, 503 students have participated to help provide 2,229 visits to the 246 residents located at Health and Wellness Program sites.⁴¹ The benefit of this program allows for those in need to stay in the comfort of their homes and receive premium medical care.

Community Partner	Program	Funds
Community physicians and Federally Qualified Health Centers	Funds for participating in Virginia Coordinated Care for the Uninsured (VCC) program	3,900,000
Rubicon	Inpatient substance abuse treatment	153,000
Community Safety Net Providers	Community benefit grants	140,000
Daily Planet	Medical Respite: Five beds for uninsured patients in need of additional care post-discharge	122,500
Greater Richmond Boys and Girls Club	VCU Emerging Leaders: East End Injury and Violence Prevention program	99,270
The Healing Place	Rehabilitation services post-discharge for homeless patients with alcohol and/or substance abuse issues	50,000
Virginia Supportive Housing	Support housing for medically fragile individuals	25,000
Source: VCU Office of Health Innovation		

Table 19: VCU Health Community Benefit Support

The faculty and residents of VCU Health provide care outside campus facilities, staffing local clinics, public health facilities and hospitals across the Richmond region. Faculty and residents from VCU’s OB/GYN staff the Chesterfield and Henrico county prenatal health care public health facilities. This partnership is funded jointly by the counties and VCU, and provides women access to vital care during pregnancy. The Hayes Willis Health Center, a public health care facility for low-income minorities, has operated in undeserved South Richmond since 1992. The center is partially staffed with VCU residents and staff.

VCU Health also partners with the Hunter Holmes McGuire Veterans Medical Center in South Richmond, where residents work in the emergency department and clinic serving military veterans. Many residents, faculty and staff volunteer their time or have VCU coordinate the partnership. These partnerships enable patients to have the highest-quality medical staff available for their health care needs.

⁴¹ VCU Center for Interprofessional Education and Collaborative Care, “Richmond Health and Wellness Program.” Available: <http://ipe.vcu.edu/clinical-programs/richmond-health-and-wellness-center/>. Accessed 16 September 2016.

VCU Health is focused on providing access to health care for all residents in the Richmond region, and part of that focus includes access to health literacy. Patients benefit greatly from understanding the care they are receiving and how it relates to their conditions. Its health literacy programs provide information to patients at their reading comprehension levels. VCU Health's library also provides resources and space for support groups and patient/family advocacy groups. In 2014, it received the AHA Quality award for engaging patients and family with programs tailored to meet their needs.

ENGAGING THE PAST WITH THE COMMUNITY

Sometimes the role of VCU Health extends beyond health care and into addressing the social implications of the university's — and Richmond's — history. It has served as an educator, service provider and employer in the region since 1838, when the medical department of Hampden-Sydney College opened in Richmond as the Richmond Department of Medicine.⁴² That department would evolve into the Medical College of Virginia and become a state institution in 1860. MCV operated through the Civil War, established schools of Dentistry, Pharmacy and Nursing, and opened new hospitals before merging with the Richmond Professional Institute to form VCU in 1968.

MCV's history remains an important part of VCU's efforts to serve and preserve the Richmond community and its history. VCU has worked with the community as a partner in acknowledging and addressing more difficult aspects of that history. A 1994 construction project on the MCV Campus revealed an abandoned well containing human bones.⁴³ The remains belonged to 19th-century Richmonders, primarily of African descent. Historians believe the bones likely belonged to deceased victims of grave robbery whose cadavers were utilized in medical education and then discarded by medical staff.

⁴² VCU University Relations, "Timeline." Updated 30 September 2016. Available: <http://175.vcu.edu/timeline/>. Accessed: 30 September 2016.

⁴³ VCU Office of the President, "East Marshall Street Well Project." Updated 30 September 2016. Available: <http://emsw.vcu.edu/about/>. Accessed 30 September 2016.

VCU President Michael Rao, Ph.D., established a committee of community and university representatives in 2013 to help guide university efforts to properly acknowledge and preserve this history and afford the human remains the dignity and respect they did not receive early in VCU and MCV's shared history. That committee established a separate Family Representative Council to serve on behalf of the descendant community. A draft report from the council recommended specific steps to address concerns and issues surrounding research of the remains, memorialization and, finally, internment or burial of the remains. In a June 2016 blog entry, Rao wrote, "We owe this to our neighbors — past, present and future — and these individuals."⁴⁴

ENGAGING THE FUTURE OF THE COMMUNITY

VCU and VCU Health are clearly engaged in the health of the community. From students to faculty, VCU Health provides outreach programs to help educate and provide medical care for area residents. But VCU Health also approaches the health of the community from a forward-looking perspective. By engaging the youth of Richmond, VCU aims to resolve health care issues before they start.

In its ninth year, the Wellness Block Party, formerly known as the VCU/MCV Community Health Fair, is a student-organized and student-run wellness program open to the public and free of charge. The block party provides general health screenings, dental services and STD/HIV screenings for adults and children. The 2015 Wellness Block Party was held at Armstrong High School in Richmond's East End; various organizations lined the halls to provide information related to family resources, health insurance, mental health, nutrition and health education. The event provided health screenings and wellness education to approximately 500 children and adults from the surrounding community.⁴⁵

VCU has sought to energize and recruit youth into the field of health care with the East End: Emerging Leaders program. The program identifies at-risk middle- and high-school-age youth who live in the East End of Richmond, where large concentrations of public housing and once-redlined neighborhoods remain disinvested.

⁴⁴ Rao, Michael. "East Marshall Street Well Project Update," 9 June 2016. Available: <http://blog.president.vcu.edu/2016/06/09/east-marshall-street-well-project-update/>. Accessed 8 September 2016.

⁴⁵ VCU University Relations, "VCU Wellness Block Party provides free services and health screenings in the community," 24 March 2016. Available: https://news.vcu.edu/article/VCU_Wellness_Block_Party_provides_free_services_and_health_screenings. Accessed 16 September 2016.

Emerging Leaders encourages students to explore health care careers and participate in internships; it offers them a glimpse of exciting and rewarding careers committed to human service.⁴⁶

VCU Health also engages youth through the Health Care Quest and Health Sciences Academy. Both programs expose children and young adults to health care careers. More than 750 high school students have earned college credit for career exploration courses at the Health Sciences Academy. The programs have allowed students the opportunity to volunteer, and those volunteers have performed 13,820 hours of community health care service.⁴⁷ About 21 percent of Health Sciences Academy students have ultimately enrolled at VCU — a clear sign that engaging students today can set them up to be the health care providers of tomorrow.

Just as much as VCU seeks to serve the community, the community often provides for VCU. VCU received over \$147 million in sponsored research awards in 2014.⁴⁸ Much of that research provides Richmond communities with opportunities to receive state-of-the-art care and treatment. Joshua Langberg, Ph.D., received a \$1.4 million grant to conduct research at VCU and Cincinnati Children's Hospital Medical Center to study the association between sleep problems and academic and social functioning among middle- and high-school-age adolescents, with a particular focus on adolescents with attention deficit hyperactivity disorder.⁴⁹ Langberg's research hopes to improve the outcomes of adolescents with ADHD from middle school through college, focusing on understanding what factors and behaviors are most important in predicting long-term academic outcomes.⁵⁰ Langberg will follow adolescents in Richmond and Cincinnati for several years, and the data collected may serve as the basis for ADHD treatments in the future.

The health and education of the community are major goals of VCU Health. It continues to expand its reach beyond campus through community engagement, addressing the university's quest for distinction by improving the health of populations through food, transportation, active lifestyles and housing in the community.

46 VCU Health, "Beyond our walls: Community Engagement 2016." Available: http://www.vcuhealth.org/upload/docs/Human%20Resources/Community%20Engagement%20Report_2016.pdf. Accessed 22 September 2016.

47 Ibid

48 VCU Medical Center, "2014 Annual Report." Available: <http://www.annualreports.vcu.edu/medical/pdf/medcenter2014-annualreport.pdf>. Accessed: 16 September 2016.

49 VCU University Relations, "VCU professor receives \$1.4 million grant to study sleep problems among adolescents." 13 April 2016. Available: https://news.vcu.edu/article/VCU_professor_receives_14_million_grant_to_study_sleep_problems. Accessed 16 September 2016.

50 Ibid

VCU Health remains an important regional resource. The university continues to engage the community in its history, its present and its planning for the future, and each entity — VCU Health and the Richmond community — is vital to the health of the other. In seeking to improve the health of Richmond communities, VCU Health addresses its own future: recruiting future doctors, reducing disease, fighting illness and cutting associated costs before they are incurred.

III. INNOVATION AND ENTREPRENEURSHIP: The Impact of VCU as an Innovation Leader

“Every conversation I have about who needs to be at the table, VCU is included in some way, especially in entrepreneurship. Their presence is required at key stakeholder meetings.”

**– Paul Nolde, director of
business development at NRV**

The Innovative Mindset

Innovation and creativity drive a healthy economy. Innovation — introducing new methods and approaches — and the stimulation of imagination result in an environment of ideas. The exchange of new ideas spurs creativity and production, which increases economic activity. In this environment, entrepreneurs bring new products to market. When imagination and ingenuity come together, a creative impulse sparks economic activity. This creative economy relies on the use and generation of knowledge and information. Communities thrive where innovation and creativity flourish.

Universities play a huge part in the health of a local economy. Given their unique role as centers of learning, universities foster innovation, especially in communities that face complex economic problems. The universities that prosper are the ones that excel in cultivating creative approaches that lead to new ideas and solutions.

VCU excels on these fronts. The university is a leader in innovation and creativity, with a profound impact on the economy that reverberates not only regionally, but also nationally and globally. VCU embraces forward-thinking approaches through its many academic and research programs. Across the university — from the schools of the Arts, Business and Engineering to the Virginia Biotechnology Research Park — VCU is leading the creative economy, one that continues to grow and move the region forward.

1. Venture Creation University

Venture Creation University, or VCUsquared, is a universitywide initiative that includes the highly marketable da Vinci Center and Brandcenter, innovation-minded schools, cross-disciplinary collaborations and partnerships with regional stakeholders. A recent VCU Innovation Gateway survey found that more than half the student population (51 percent) is interested in entrepreneurship. That interest resonates across the university, as more than 30 percent of students want to start a company.



VCUsquared is focused on nurturing and guiding the entrepreneurial and innovative mindset in students. VCU neither concentrates its teachings within one specific school or center, nor does it limit exposure to traditional classroom settings. All students within VCU's schools and college are exposed to innovation and entrepreneurship, and all have access to entrepreneurial pathways. This approach encourages interdisciplinary interaction, reduces redundancies and allows VCU to build an innovative and entrepreneurial culture throughout the campus. VCU offers students a broad array of programs and classes that expose them to this mindset and culture;¹ it offers many innovative curriculums, portals to markets and networking opportunities like it never has before.

INNOVATIVE CURRICULUMS FOR CREDIT

The innovative-minded and entrepreneurial curriculums are just one aspect of VCUsquared. This initiative has launched a universitywide, comprehensive effort to encourage creativity and novelty across and among all disciplines. The creative spirit has been harnessed by many of the schools as they strategically steer their disciplines toward the future. These include:

- School of Business vision — Drive the future of business through the power of creativity.
- School of Business mission — To be a dynamic hub of business research and education, fueled by creativity and a commitment to preparing students to lead in a complex world.²

¹ <http://entrepreneurship.vcu.edu/about>

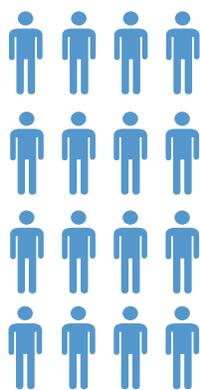
² <https://business.vcu.edu/about-the-school/school-facts/vision-mission--strategic-plan/>

- School of Engineering vision — To become a preeminent school in education, research and technological development at the intersection of engineering, business, medicine and the life sciences.
- Biomedical engineering mission — To educate students to be significant contributors in health care, research and development in biomedicine and bioengineering. The curriculum links technical fundamentals in science, engineering and the life sciences in combination with team building, societal and ethical issues, and communication and leadership skills.

Vision and direction found at VCU propel the creative concepts that courses then instill among the future creators of the region’s economy. Administrators and faculty are not alone in driving this mindset: Students are increasingly interested in creative careers and entrepreneurship. From 2013-2014, student interest in entrepreneurship classes and programs rose 8 percent to 48 percent, according to the Innovation Gateway survey.

Innovative Courses for Credit

As mentioned, innovation and creativity are not exclusive to just a few schools within the university. VCU develops new courses each year to meet dynamic new interests. In 2014-2015, the Innovation Gateway tracked 34 courses (Figure 1) improving and spreading the entrepreneurial mindset at VCU. This list provides only a snapshot. Other VCU schools and departments introduce and reinforce innovation through courses not officially designated entrepreneurial and, therefore, are not listed with the Innovation Gateway.



A total of **6,564 students** were either enrolled in one of the more than 30 entrepreneurship-related courses or in the 14 noncredit entrepreneurship-related programs.³ Student involvement goes beyond the courses for credit and noncredit programs at VCU to include more than \$500,000 of capital investment, not including student clubs such as StartUp VCU, for the entrepreneurial minded, and ArtUp, which cuts across art departments to focus on translating skills into creative entrepreneurship.

³ Innovation Gateway metrics report 2014-2015

School/Department Implementing Class or Program	Class Name
	ARTS 350: The Creative Economy ARTS 351: Piloting the Enterprise ARTS 352: Idea Accelerator ARTS 353: Creative Disruption ARTS 393: CoLab Internship DESI 621: Design Research Studio: Leadership and Entrepreneurship FASH 445: Advanced Store Development MHIS 380: Survey of the Music Industry
	EGRB 401 and 402 ENGR 402 and CLSE 402 CMSC 461 EGRE 402 and 426 EGMN 401 and 402 ENGR 497
	BUSN 400 FIRE 313 MGMT 321 MGMT 422 ACCT 202 ECON 203 FIRE 311 MKTG 301 MGMT 435: New Venture Strategy MGMT 436: New Venture Initiation MGMT 491: Technology Entrepreneurship and Innovation MGMT 655: Entrepreneurship MGMT 691: New Venture Finance
School of Pharmacy	PHARM 686: Entrepreneurial Pharmacy and Independent Pharmacy Practice
VCU Life Sciences	INFO 621: Business and Entrepreneurship Essentials for Life Scientists
	INNO 200: Seminar in Product Innovation INNO 221: Introduction to Arts and Design Principles INNO 223: Introduction to Business Principles INNO 225: Introduction to Engineering and Technology Principles INNO 460: da Vinci Product Innovation Project Course VNTR 300: Venture Creation Skills VNTR 460: Venture Creation Project VNTR 491: Special Topics in Venture Creation

Figure 1: Innovative Courses for Credit

THE DA VINCI CENTER

The da Vinci Center is a collaboration of VCU's schools of the the Arts, Business and Engineering and the College of Humanities and Sciences. The da Vinci Center is a unique collegiate model that advances innovation and entrepreneurship through cross-disciplinary collaboration and promotes inspiration, ideation and realization. In charge of the center is the new executive director, Garret Westlake, formerly Arizona State University's associate dean of student entrepreneurship in the Office of Entrepreneurship and Innovation. In that post, he brought ASU ahead of the powerhouse universities of Stanford and MIT to the No. 1 innovation university, according to U.S. News & World Report.⁴ Under his leadership, the center houses four programs, three of which are new, including Innovate, a living-learning program. For the 2015-16 academic year, total enrollment in da Vinci was 640 students in 19 unique courses with 21 participating faculty members teaching and mentoring.

Master in Product Innovation

The center's crown jewel is the Master in Product Innovation — the first degree of its kind in the nation. Because of the diverse educational backgrounds of the faculty and students, the da Vinci Center provides a robust environment for the multidisciplinary experience and dynamism sought after in an entrepreneurial market.

VCU Innovate Living-Learning Program



The living-learning program is an experientially based, entrepreneurial program that accents the accompanied undergraduate certificates and has accepted its first cohorts. The rigorous program enables the graduates to spur a mindset and cross-disciplinary culture that enables them to pursue innovation and entrepreneurship efforts.⁵

Undergraduate Certificate in Product Innovation and Undergraduate Certificate in Venture Creation

The undergraduate program has a long history of impacting the region's innovative potential. For example, innovation in the health industry has occurred with companies such as Pfizer and our da Vinci team. The project begins with objectives to

⁴ http://news.vcu.edu/article/New_da_Vinci_Center_director_sees_university_as_a_living_lab

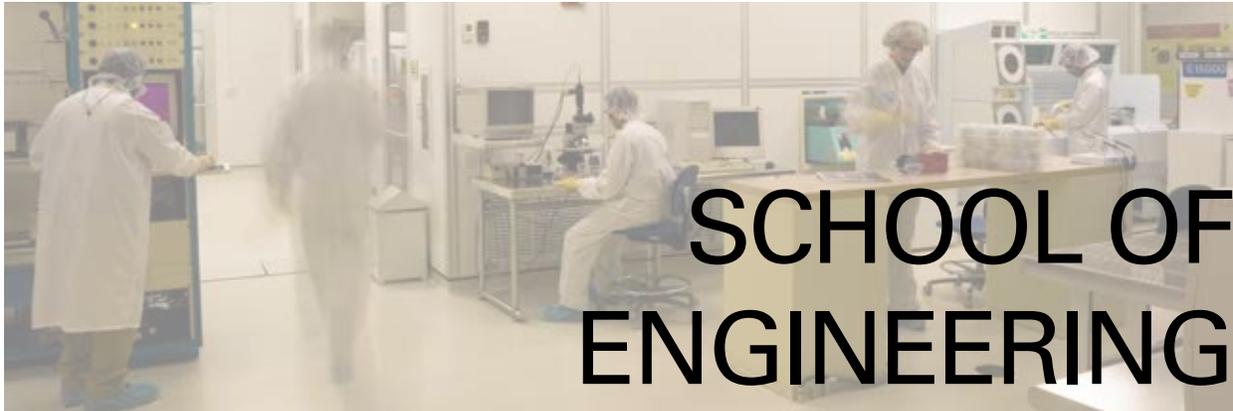
⁵ <http://www.davincicenter.vcu.edu/programs/vcuinnovatellp/>

identify key insights and needs surrounding a Pfizer product, and based on these insights, the product design, packaging, point of purchase and other ideas are evaluated and realized. As a corporate affiliate with the da Vinci Center, industry partners gain close, personal access to the best design, business and engineering students at VCU. Along with the partnership and real-life settings, each project is kept confidential through nondisclosure agreements.⁶

While many sponsors benefit from the talent at VCU, the team and faculty gain the private industry and business experience necessary for success in today's dynamic economy.



⁶ The Value of Partnering with VCU at www.go.vcu.edu/ecodev14



VCU established the School of Engineering in response to the workforce and economic development needs of Richmond and Central Virginia. Since its opening in 1995, the school has undergone development through the collaborative efforts of the university and the industrial community. This is reflected in the school's curricula, which include business courses, the recruitment of faculty with industry experience, as well as the opportunities for students to gain relevant experience.⁷ Through internships and cooperative education, the school helps students reach their potential as the next generation of engineers. Several distinctive programs at the School of Engineering highlight its commitment to cutting-edge innovation and inventions in new ways.

Distinctive Programming

VIP@VCU The **Vertically Integrated Projects** program provides undergraduate students the opportunity to participate in multiyear, multidisciplinary, team-based projects under the guidance of faculty and graduate students in their areas of expertise. Undergraduate students can earn technical elective or free elective course credits (depending on major) for working on specific research projects with other undergraduates, graduate students and faculty in their research labs. Take for example the collaboration with unmanned aerial vehicles. UAVs are currently the most dynamic growth sector of the international aerospace industry. The Association for Unmanned Vehicle Systems International and other industry groups predict that in the next three to four years, more than 70,000 jobs will be created in the UAV area with an economic impact of more than \$13.6 billion. By 2025, that could increase to more than 100,000 jobs and an economic impact of \$82 billion.

⁷ <http://www.egr.vcu.edu/about/history/>

While military uses such as intelligence surveillance and reconnaissance (called ISR) are what people are most familiar with, civilian applications are increasing at a rapid rate and are predicted to eclipse military applications as the most promising areas for UAVs. These civilian applications include such things as aerial photography and cinematography, for which UAVs are already in wide use; agricultural crop inspection and maintenance; wildlife monitoring and protection; land surveying; utility right-of-way inspection; firefighting; disaster and emergency relief efforts; and search and rescue.⁸ The Leona M. and Harry B. Helmsley Charitable Trust is the project partner and sponsor, and the team advisers in the UAV Lab are Robert Klenke, Ph.D., Tim Bakker, Ph.D., and Matt Leccadito, graduate research assistant. The VIP program is expected to double from its three current projects by fall 2017. Klenke explained, “The VIP program is an excellent way for students to feel a part of the school. Students are not here to just learn in a regular class and be lectured at.”⁹

The School of Engineering acknowledges the value of experiential learning, as well, with the Co-op Education Program. Engineering skills alone are not enough for success in the 21st century, and this program provides help for students in the transition to a job. It works by alternating periods of traditional curriculum with industry fieldwork, and students are often paid between \$17 and \$25 an hour, well above the regional living wage of \$11.93 for a single adult as determined by MIT.¹⁰ Unlike internships, the co-op program offers students long-term opportunities to dig in at a business and seek to attain individualized learning and performance objectives.



“ The VIP program is an excellent way for students to feel a part of the School. Students are not here to just learn in a regular class and be lectured at. ”

There is also the new dual Ph.D. program with the University of Cordoba, Spain.

⁸ <http://www.vip.vcu.edu/>

⁹ http://www.egr.vcu.edu/wp-content/uploads/sites/1830/2016/01/2016_annualreview_web.pdf

¹⁰ <http://livingwage.mit.edu/counties/51760>

Overall, there are five accredited departments delivering curriculums that create and nurture a highly collaborative, creative, innovative and entrepreneurial culture.¹¹



**Biomedical
Engineering**



**Chemical and Life
Sciences Engineering**



Computer Science



**Electrical and Computer
Engineering**



**Mechanical and Nuclear
Engineering**

The largest program is the Mechanical and Nuclear Engineering program, with 574 undergraduates and 68 graduates pursuing either a Bachelor of Science, Master of Science or the joint Ph.D. in mechanical and nuclear engineering.

Metrics^{12,13}

As of fall 2015, 52.8 percent of undergraduates in the School of Engineering are minority or mixed race, with an average GPA of 3.95 upon freshman admittance. Diversity is an important component to driving innovation and, more importantly, it embodies the core principles at VCU of diversity, equity and inclusion. In addition, the increasing costs at universities are often a hurdle for students of all demographics and a burden for years afterwards; this chapter addresses economic hardship in greater detail later. But in the

School of Engineering, an impressive proportion of students receive aid; 56 percent of graduate students have scholarships. The school has an operating budget of \$32 million, with 90 faculty members operating in facilities stretching across more than

Graduates

92% of May 2012 graduates are employed or in advanced studies six months after graduation based on survey results from November 2012

75% full-time employment

17% graduate school

1% seeking employment

¹¹ http://www.egr.vcu.edu/wp-content/uploads/sites/1830/2013/06/Final-SoEng-StratPlan-Overview-7_8_13-Posting1.pdf

¹² <http://www.egr.vcu.edu/about/facts-figures/>

¹³ http://www.egr.vcu.edu/wp-content/uploads/sites/1830/2016/01/2016_annualreview_web.pdf

329,000 square feet and 4,118 alumni. The job outcomes of the Class of 2015 have exceptionally high placements. In fact, 97 percent of those graduates are in jobs or are continuing their education. The faculty members serve 1,714 undergraduates and 271 graduate students, with a student to teacher ratio of 19 to 1.

Student Stories of Success¹⁴

Capstone Design is the culmination of every School of Engineering senior's undergraduate career. The VCU Capstone Design Experience features industry-sponsored projects with partners such as Jefferson Lab, Dominion and Evonik Industries.

Ben Ward, Ph.D., associate professor and Capstone Design coordinator, said, "There is no substitute to the kind of hands-on guidance provided by our industry and health sciences mentors to our student teams. The experience provides rewards to our students, faculty and sponsors." Student teams in the departments of Chemical and Life Science, Mechanical and Nuclear Engineering, Biomedical Engineering, Electrical and Computer Engineering and Computer Science practice problem analysis, solution-based investigation and prototyping under the guidance of these industry experts.

Projects submitted from more than 30 companies and four departments in VCU Health Sciences have translated into 41 sponsored Capstone Design projects, representing 53 percent of the 77 projects currently underway. Over 80 percent of the Capstone Design projects in both the departments of Chemical and Life Science Engineering and Computer Science have garnered outside sponsorship.

Laura Hayward graduated from the Department of Chemical and Life Science Engineering in 2014. She was awarded the Fulbright Fellowship in research, a grant offered to outstanding students in scientific fields. For her fellowship, Hayward spent 10 months working on next-generation sequencing techniques and bioinformatics to drive personalized medicine diagnostics and treatments at the Australian Institute for Bioengineering and nanotechnology at the University of Queensland. Now she's pursuing a medical degree to serve communities with cellular diseases.



¹⁴ http://www.egr.vcu.edu/wp-content/uploads/sites/1830/2015/04/VCU_SOE_Apr29.pdf



For many years, **Shellie Lundquist** was orbiting her dream profession. When she expressed an interest in a technical career, she was often advised to take alternative, more “appropriate” routes for her gender. She felt her opinions and individual contributions weren’t fully valued. With a nudge from a mentor at Newport News Shipbuilding, Lundquist enrolled at VCU to take her career to the next level as an electrical and computer engineering major. Lundquist juggled family commitments, part-time jobs and schoolwork. When Afroditi Filippas, Ph.D., associate dean for undergraduate studies, encouraged Lundquist to take on more responsibilities, Lundquist did not think it was possible. And yet Lundquist grew empowered and confident under Filippas’ continued encouragement and belief in her.

Lundquist is now breaking down those gender barriers in Virginia. She founded Wohack, an offshoot of Hack RVA, to get women involved in Virginia’s maker community. She has taught soldering and woodworking workshops, and has even connected interested male participants from other groups to traditionally female activities such as fiber arts and paper crafting. Following graduation, she will work in Altria’s Engineering Leadership Development Program, a four-year program in which the company will rotate her through various aspects of the company, such as research and development, maintenance and engineering, and business leadership development.¹⁵

After earning his bachelor’s degree in biomedical engineering from VCU, **Christopher Dosier** picked up his Ph.D. from Georgia Tech. He is now working at the Virginia Biotechnology Research Park for SpherIngenics Inc., an early-stage company focused on enhancing stem cell therapies for reconstructive procedures. Dosier is responsible for operational oversight of the research laboratory and conducting experiments focused on cartilage tissue and chronic wound treatments. Dosier attributes his research success to early opportunities to gain diverse experience in physics, chemistry and mathematics, in addition to engineering, at VCU. He’s also continuing his education by enrolling in VCU’s Executive M.B.A. program.



¹⁵ http://www.egr.vcu.edu/wp-content/uploads/sites/1830/2016/01/2016_annualreview_web.pdf



Facilities

VCU Institute of Engineering and Medicine, constructed in 2009 as an addition to West Hall, houses labs that foster collaborative programs among the schools of Engineering and Medicine, as well as VCU Life Sciences. The state-of-the-art collaborative research environment is one of the largest configurable research spaces in the U.S.¹⁶ IEM houses the Nanomaterials Core Characterization facility of the VCU Office of Research, making accessible more than \$11 million in sophisticated materials characterization equipment and analytical services unique to the Mid-Atlantic region.

Translational Research Innovation Projects, located in downtown Richmond's BioTech One, works with prototype design and development and welcomes experts from the schools of Engineering, Medicine, Dentistry, Pharmacy and Nursing, as well as VCU Life Sciences. In this 2,400 square-foot creative environment, multidisciplinary teams address a gap in current professional and medical needs. Teams can advance their product concept into critical prototypes for testing and evaluation.

The C. Kenneth and Dianne Harris **Wright Virginia Microelectronics Center** features a 6,100-square-foot Class-1000 cleanroom for the fabrication and development of a wide array of micro- and nanofabricated devices, as well as the state-of-the-art Microelectronics Materials and Device Laboratory.

¹⁶ <http://www.egr.vcu.edu/departments-centers/institute-medicine-engineering/>



Founded in 1928, the VCU School of the Arts — VCUarts — is an acclaimed public, accredited four-year art and design school housed within a major research university. In 1928, Teresa Pollak taught the first art class at what was then called Richmond Professional Institute. A well-known painter, Pollak was trained at the Art Students League of New York, received a prestigious Carnegie Fellowship and exhibited work in the first Whitney Biennial in 1932. She went on to serve as the first chairperson of VCUarts when it was established as a school in 1933. Pollak taught for 40 years, the first of a long line of well-regarded, professional artist faculty members who helped grow VCUarts into one of the most highly regarded schools of art and design in the country.

Joseph H. Seipel, who led the sculpture department to its No. 1 ranking during his 17 years as professor and chairperson, succeeded Richard Toscan, Ph.D., as head of VCUarts. Seipel led the school from 2011 to 2016. As dean, Seipel continued Toscan's global reach by further establishing international exchange opportunities, championed the school's interdisciplinary connections, advocated for arts research and helped turn the Institute for Contemporary Art into a reality by helping to raise \$43 million for its construction. During Seipel's tenure as dean, VCUarts moved to the No. 2 overall spot in U.S. News & World Report's rankings of graduate schools of art and design, while remaining the highest-ranked public art school in the country.¹⁷

Distinctive Programming

Matt Woolman, former director of design entrepreneurship at VCUarts Qatar, is the director of creative entrepreneurship in the School of the Arts. In this role,



¹⁷ <http://arts.vcu.edu/about/vcuarts-history/>

he leads a schoolwide mission to transform entrepreneurship from a supplementary activity to an integrated culture that maximizes the exploitation of creativity, knowledge and research into innovative products and sustainable ventures. In addition, he heads the VCUarts Center for the Creative Economy, established in 2014, which promotes the creative economy as a



postdisciplinary, collaborative force that disrupts the status quo to drive innovation and new business models around the world. It is a center as opposed to a department, which could be seen as a silo, types of barriers that need to be minimized to produce a multidisciplinary environment. Essentially, this four-course program at the Center for the Creative Economy allows students to develop the business concept and idea in school, with the idea ready to launch when they graduate.

Another program is the VCUarts CoLaboratory (Colab),¹⁸ a postdisciplinary, variable-credit internship program that provides opportunities for students to work in teams sponsored by companies. It is a direct connection with industry under a real-world schedule and time frame that gives students decision-making experience and a chance to use their skills and talents. Colab has already partnered with Capital One — the second-largest employer in the Richmond region after VCU — Snagajob and others.¹⁹

In addition to the Colab, there are the recently created Emerging Artists and Innovator programs in partnership with the Virginia Museum of Fine Arts, the Advanced Media Production Technology Post-Baccalaureate Certificate program and the User Experience Design Program.

¹⁸ <http://depot.vcu.edu/colab/>

¹⁹ Interview with Matt Woolman

DEPOT

The Depot is the headquarters for the new VCUarts Creative Entrepreneurship program, a transformative model for higher education that prepares VCUarts students to lead their

own careers and lives in innovative, entrepreneurial ways. The 16 departments and areas of study offered include art history, craft and material studies, dance and choreography, graphic design, music, painting and printmaking, photography and film, sculpture and extended media, and theatre, which all have access to these resources.

The Arts Research Institute, led by Sarah Bainter Cunningham, Ph.D., launched in 2016. The institute conducts original research, developing expert insights, framing critical problems and convening policymakers, arts leaders and other decision makers to consider the most pressing aesthetic, artistic and design issues of our times. It is one of only a few research centers of its kind in higher education, nationally or internationally.

Metrics

VCUarts is widely recognized as one of the nation's great schools of the arts and design, with more than 3,000 students from 35 countries

1st Ranked Sculpture Program in the U.S.

2nd Public university Art school

and 39 states.²⁰ The vast majority of these students are seeking one of the 18 bachelor's degrees, 20 master's degrees or four doctoral degrees. The 167 full-time faculty members — and additional 60 adjunct — result in a 17 to 1 student to teacher ratio. Forty-seven percent of graduates earned their degrees without incurring school debt, and the average for those with debt was between \$10,000 and \$20,000, well below the national average of \$35,000. The incoming Class of 2019 has an average GPA of 3.7, an average SAT score of 1147 and an average ACT score of 26. After graduation, 82 percent of Bachelor of Fine Arts alumni have a career in the arts as designers, illustrators, art directors, fine artists, educators and private teachers of the arts. The national average is 47 percent.²¹

²⁰ <http://arts.vcu.edu/admissions/>

²¹ SNAAP and VCUarts fact page: <http://arts.vcu.edu/about/fast-facts/>

Stories of Success



mOb + Storefront, a community-engaged design lab, began Recovery by Design in 2015 to bring designers and Richmond Behavioral Health Authority clients together in a series of classes and workshops using design thinking. Professional and emerging designers from mOb + Storefront's volunteer network facilitate classes and workshops that serve between 25 and 35 RBHA clients to deliver tangible design outcomes that promote a destigmatized image of recovery for mental illness. Furthermore, among the many jobs that have traveled through here: mOb students have helped with the redesign of abandoned apartments in a Richmond public housing neighborhood, conceiving ideas for shared green space, apartment layouts, parking, furniture and color palettes to make the buildings feel more homelike. Students worked on way-finding signage for the James River Park System and bike racks for the 2015 UCI Road World Championships. With each project, they are reaching the goal of mOb: to "operate an innovative design lab that realizes the potential of design to shape the city."²²



The No. 1 public arts school in the nation routinely produces successful students that go on to exclusive residency programs like the Skowhegan summer residency. Five alumni attended the 2016 Skowhegan summer residency, a nine-week program in Maine for emerging visual artists established in 1946 as a nontraditional school founded and governed by artists. Students are allowed to attend the program just once at the Skowhegan school, where valuable mentorship, confidence and opportunity for risk-taking is provided. Calvin Thompkins of the Skowhegan school states, "Becoming an artist is a risky thing to do; being one is much riskier. Skowhegan seems to foster an attitude for risk-taking of all kinds."²³ Being innovative involves breaking down boundaries and mitigating risk where possible but, make no mistake, creativity derives from the risk-taking encouraged at Skowhegan.

²² Studio Spring 2016

²³ <http://www.skowheganart.org/history/>

In addition, the VCU cinema program is continuing to place Richmond on the radar in film. Fifty arts students were involved in the 2016 film “Macbeth” — starring Angus Macfayden of “Braveheart,” “Turn” and “Washington’s Spies” fame — as actors and behind-the-scenes production as an assistant director, constructors of stage production, prop design, a musical score and storyboards.²⁴

The School of the Arts’ creative foundation is laid upon a bedrock of diversity. “We value diversity in all of its forms and support a community in which individuals of different perspectives, life experiences and cultural backgrounds are welcomed.”²⁵ Take for example the Black Arts Student Empowerment at VCU, which held its inaugural exhibition at the VCUarts Depot Gallery in November 2015. Thirty-four artists came together for the exhibition. Paintings, short films and performances spoke to the theme, “Justice Or Else!,” the 20th anniversary theme of the Million Man March. Performances from the evening included the Black National Anthem by the **Black Awakening Choir**, spoken word by **Good Clear Sound** and a rap performance by **Tolliver “Lucky” Turner**. Inspired from his experiences and conversations with the organization’s members, Alcorn began working on a series, creating one-of-a-kind portraits of each B.A.S.E. member.²⁶



A Tribute to the Anderson Gallery

Opening in 1931 through a joint grant from Col. Abraham Anderson and the Virginia Department of Education, the Anderson Gallery became the only art exhibition facility in Richmond until the Virginia Museum of Fine Arts opened. VCU art exhibitions have expanded to nearby neighborhoods and local galleries, as well as The Depot and ICA.

24 Studio Spring 2015 page 10 for specific involvement

25 <http://arts.vcu.edu/about/diversity/>

26 Studio Spring 2016

FROM EDUCATE TO INNOVATE

VCU as a higher education institution is full of programmatic and curricular opportunities for students to build their ideas and concepts, but launching them requires that next step. VCUsquared, or Venture Creation University, has acknowledged this regional economic need and has begun to build the infrastructure and pipeline to help these ideas and concepts become viable realities.

Innovation Gateway

The Innovation Gateway mission is to facilitate commercialization of university inventions; support university research through collaborative agreements; foster a culture of innovation and entrepreneurship at the university; and promote regional economic development and new venture creation.

VCU Innovation Gateway began in 1994 for the purpose of protecting and commercializing valuable inventions and creations at the university. To support the implementation of the VCU strategic plan, Quest for Distinction, Innovation Gateway broadened its mission and activities in 2014. The office is not only responsible for commercializing VCU research, but also enhancing the overall culture of innovation and entrepreneurship at the university and contributing to the growth of the region's innovation ecosystem. This broader mission will foster collaborations with local and prospective companies to build external support for our inventors and to grow an entrepreneurial population that could help us commercialize our technologies through new venture creation and thus support economic growth of our region.

2012-2015 VCU Innovation Gateway Performance Metrics²⁷

Overall, there has been a spike in entrepreneurial activity at VCU through the Innovation Gateway. Figure 2 shows VCU's most recent successes, most notably the 14 startups in the 2014-2015 academic year from zero just two years prior.

Though 2015-2016 data is still being gathered, from past years to 2014-2015 there has been great improvement. The number of patents issued has tripled in as many years and revenue from new companies has doubled. Moreover, guidance and

²⁷ "bringing ideas to life" annual report

mentorship plays an increasing role with entrepreneurial success. Eighteen startup ideas from students were assisted in 2015, up from four in 2012. Overall the Innovation Gateway documented 93 invention disclosures (44 in medicine, 31 in engineering) in fiscal year 2014-2015, and many stand to serve vital needs in not just the region but beyond. A few startups from the 2014-2015 academic year include Cancer Targeting Systems Inc., Nanofoundry LLC, Ischemaalert LLC and more.²⁸

Performance Metrics				
	2012-13	2013-14	2014-15	2015-16 Q1-Q2
IP Management-Core Activities				
Invention Disclosures	103	98	93	65
Patents Filed	152	138	130	80
Patents Issued	6	12	17	3
Copyrights	7	6	4	0
Agreements-Core Activities				
Licenses/Options	11	17	14	9
Formal Research Collaborations	7	13	4	0
Other Research Support Agreements	9	13	12	27
Targeted Industry Engagement Program				
Sponsored Research Agreements (Initiated and Facilitated)	5	1	3	
Industry Engagements	6	14	18	29
New Enterprise and Econ Development Program				
Prospect Companies Supported	6	6	7	1
Entrepreneurial Faculty Start-up Ideas Assisted	5	7	8	5
Entrepreneurial Students Start-up Ideas Assisted	4	15	18	24
Student Companies Formed	0	4	14	19
Start-ups Based on VCU Inventions and Licensing	3	3	7	
Finances				
Sponsored Research by Licenses	\$1,037,133	\$459,670	\$1,592,752	
Licensing Revenues	\$1,344,410	\$1,743,344	\$2,579,491	
Proof-of-Concept Funding (CRCF, VIP, VBHRC)	\$258,000	\$787,884	\$329,263	
Number of Staff				
Number of Staff	5	5	4	4
MTA and NDA negotiation and signing through Dec 31, 2015 MTA–Material Transfer Agreement– correlates generally with the level of research activities. NDA–Non-Disclosure Agreement – correlates generally with the level of collaboration and commercialization activities. CAP– Commercialization Advisory Panel Formal Research Collaborations– MoU, inter-institutional agreements, collaborative agreements				

Figure 2: Performance Metrics

28 http://www.research.vcu.edu/ott/start_ups.htm

The Venture Creation University Metrics Report highlights several of the indicators of entrepreneurial success and desires of VCU students.

As mentioned earlier, over half of the more than 31,000 students at VCU stated interest in entrepreneurship in the 2014-2015 academic year, and 21 percent were participating in entrepreneurial programs. In addition, 332 ideas were formally pitched and 25 student teams participated in mentorship and acceleration programs. And, as we can see above from 2014, 14 companies were formed while employing 26 people, and finally 11 companies reached revenue. While there is data to still be collected, 31 new businesses are attributed to VCU students and alumni with capital investments exceeding \$12 million. These developments and growth in innovation would not be possible without the programs available at VCU that offer the resources necessary for successful business realization, as President Rao mentions, "With guidance from mentors, our student entrepreneurs are able to put their ideas into action."²⁹

Academic Startups

Cancer Targeting Systems, Inc. (CTS)

<http://www.cts-bioscience.com/>
Developing a new approach to cancer care

Global Lyme Diagnostic, LLC

Human and Veterinary diagnostic for the tick-borne illness

Ischemaalert, LLC

Ischemaalert, LLC

Nanofoundry, LLC

<http://www.nanofoundry.us/>
Manufacturing nanoparticles for energy applications at low cost, high quality and high volume

Sanyal Biotechnology, LLC

<http://www.sanyalbio.com/>
Treatments and diagnostics for liver diseases based upon proprietary mouse model

Vesys, LLC

Virtual Team-Based Learning System

Student Innovation

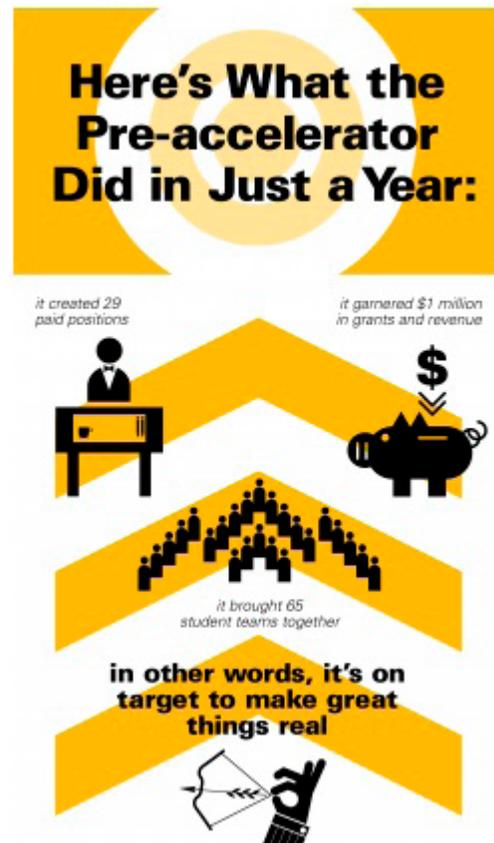
Innovation opportunities at the student level are widespread across the campus. As part of the universitywide mission to provide the networking, learning, mentoring, working space and funding, numerous programs and locations at VCU are dedicated to student innovation in all its forms.

Mentor Program. VCU Innovation Gateway has designed an ongoing mentor program for those entrepreneurial students who have new business or product ideas

²⁹ <http://blog.president.vcu.edu/2016/06/30/pre-accelerator-program-helps-student-entrepreneurs-prepare-for-success/>

and are committed to moving them forward. The team provides ongoing guidance that pushes students through a structured process, based on Lean Startup methodologies.

Pre-accelerator program. Hosted by VCU Innovation Gateway, VCU's pre-accelerator provides students with \$5,000 and access to an intense three-month program focused on guiding teams through the challenging early stages of building a startup. Startups accepted to the program take part in three-hour weekly sessions. Through a structured approach of group discussions, mentor sessions and weekly pre-work deliverables, startups walk away with the skills needed to validate their business idea, a clear understanding of their customer development strategy, a completed market and competitive analysis, an MVP and an investor-ready pitch deck.



For a select group of VCU students, school is anything but business as usual. Thanks to **Go For It!**, a new 12-week pre-accelerator initiative led by Innovation Gateway, teams of young entrepreneurs receive the initial backing and know-how to help get their startups off the ground. The program's first class each qualified for up to \$5,000 in stipends. Business concepts included craft chocolate (Upchurch Chocolate Co. established by VCU alumni Alex Brito and Alexander Burlingame), a marketing consultancy, healthy teas, custom jewelry, a homebrew gaming website, foster care resource and a cell-phone case that has a compartment to store oral contraceptives.

Access to **startup funds** is one of the most important drivers of entrepreneurialism. Each month, VCU Innovation Gateway hosts multiple Pop-up Pitch events randomly around campus. Students are given two minutes to pitch their idea for a chance to win \$300. After pitching, all students will be sent information on programs available to help them move their ideas forward. Coworking spaces are multidisciplinary work spaces that are available at VCU and help lead to the dynamism necessary to foster

innovation and cross-disciplinary collaboration. There is available space in the Student Commons for those who have proven their ability to take the next steps toward a viable business to get mentorship and advice.³⁰



The Founder's Corner is a brand-new coworking space in the Student Commons available to students working on new product or business ideas. In addition to providing office space

to VCU student entrepreneurs, Founder's Corner will also serve as a hub where students can network, attend professional development events and receive support from Innovation Gateway and University Career Center staff members to help them advance their businesses.³¹ All VCU students, undergraduate and graduate, are eligible to apply for space at Founder's Corner.

Another coworking space is the **The Depot**. Built in 1907 as a station for the Richmond-Ashland trolley line, The Depot has undergone a state-of-the-art renovation, which has modernized the building while preserving its historic character. The Depot houses a new facility dedicated to interdisciplinary collaborations, events and creative entrepreneurship education.



The Innovative Media Center, operated by the VCU Libraries' Innovative Media Department, offers a comprehensive suite of resources. Its new space on the lower level in Cabell Library offers workstations, a makerspace and much more. Users will find spaces for editing of sound, video and graphics, as well as equipment and software for creating scholarship, illustrating research, presenting information and inventing new things. Use of equipment and space is free and open to all members of the VCU academic community.



³⁰ <http://entrepreneurship.vcu.edu/current-prospective-students#.cps-finding-space>

³¹ <http://founderscorner.vcu.edu>

2016 Survey

In a recent survey conducted in 2016 of students at VCU, 29 percent of respondents have participated or are currently participating in a VCU entrepreneurship or innovative course or program. Moreover, 58 percent said they are currently engaged in some entrepreneurial or innovative activity, of which 79 percent were developing their concept further and 75 percent were networking. Twenty-five percent were currently in or seeking additional educational programming and classes and one-third were seeking funding sources. Overall, 12 respondents indicated they had already founded a business or startup company.

The largest barrier to entry into the market was the need for a stable income stated by 65 percent of respondents, and 36 percent also indicated a lack of startup funds. Those who indicated a lack of interest in their idea was the smallest reply at 14 percent. Additionally, there was praise for the entrepreneurial culture at VCU; 74 percent

Have you ever participated, or are you currently participating, in any VCU entrepreneurship or innovative course/program?

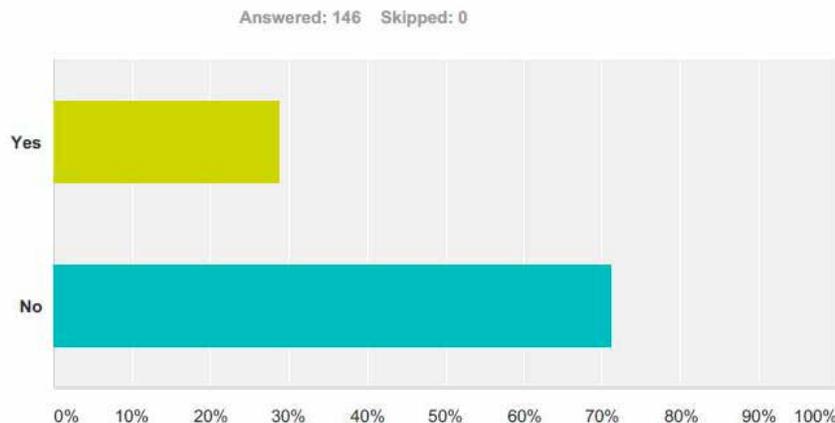


Figure 3

of those surveyed characterized the university as highly or moderately entrepreneurial. When asked about their decision to attend VCU, 32 percent stated the entrepreneurial and innovative activities found at VCU were moderately or extremely relevant in that decision.

Faculty Innovation

According to Francis Macrina, vice president for research and innovation, the Innovation Gateway “finished the year (2015) with record licensing revenues for the last eight years — \$2,579,491 — almost 50 percent increase over the previous year. We see an upward trend in the growth of licensing revenues that have been

increasing by a double-digit rate for several years now.”³² Startup companies were consistently averaging two and three per year. However, in 2015, seven start-ups began more than doubling the previous trend at VCU. In addition, 14 licenses and options were executed, and many faculty projects and ideas were supported through various programs both within and from outside of VCU.

The VCU Presidential Research **Quest Fund** is grounded in the president’s commitment to develop and enhance faculty scholarship across the institution. Formally known as VCU Presidential Research Incentive



Program, its goal is to afford all faculty internal funding opportunities to support new, emerging or continuing research. With an award up to \$50,000, the spring 2015 recipients included a plethora of disciplines and cross-discipline projects meeting the diverse needs in the region and beyond, as well as artistic creativity: John Accordino, of the Center for Urban and Regional Analysis, with the AgeWave access mapping/VCU Metro View project for senior isolation; Mikhail Dozmorov, of the Department of Biostatistics, and Catherine Dumur, of the Department of Pathology, with diagnostics and therapeutic strategies of triple-negative breast cancer guided by the patient-specific ‘omics’ data; and Edward Richardson of the Department of Music with groundbreaking new concertos for trumpet.

With regards to innovations of health, **Frank Gupton, Ph.D.**, expands access to AIDS drugs. The VCU engineering professor received an additional \$5 million grant to find cheaper and more efficient ways to manufacture AIDS drugs. With this grant, the Bill and Melinda Gates Foundation has invested nearly \$10 million in funding to support a multidisciplinary project led by Gupton, chair of the Department of Chemical and Life Science Engineering. The project, Medicine for All Initiative, seeks to streamline drugs manufacturing to treat HIV and AIDS in developing countries. Research is being conducted in partnership with the Clinton Health Access Initiative and collaborators at MIT and the University of Washington.

Within innovations concerning energy, engineering and the environment, **Supriyo Bandyopadhyay, Ph.D.**, and **Jayasimha Atulasimha, Ph.D.**, improve straintronics’ role in next generation computing.³³ Research teams — led by Bandyopadhyay,

³² http://www.research.vcu.edu/ott/annual_report_2015.pdf

³³ http://www.egr.vcu.edu/wp-content/uploads/sites/1830/2016/01/2016_annualreview_web.pdf

Commonwealth Professor of Electrical and Computer Engineering, and Atulasimha, Qimonda Associate Professor of Mechanical and Nuclear Engineering — use straintronics to switch the magnetizations of nanomagnets by applying mechanical strain on them using electrical means. These nanomagnets act as binary switches to process digital information similar to the way electronic logic devices work.

Additionally, **Puru Jena, Ph.D.**, addresses the use of rechargeable devices and inefficient batteries. People now rely on numerous rechargeable devices to get through the day. The desire to stay connected drives a global demand for millions of lithium ion batteries, all of which contain toxic materials. That is why, for the past six years, the idea of producing a greener battery has energized the work of Jena, a professor in the Department of Physics in the College of Humanities and Sciences, who pioneered the concept of “superatoms.” These are clusters of atoms that mimic the behavior of single atoms in lithium ion batteries — only without the chlorine and fluorine that make up the electrolytes of the battery. This discovery is the first step in producing a non-toxic lithium ion battery. Jena is the recipient of the VCU 2011 Presidential Medallion and was named one of three Virginia Outstanding Scientists of 2015 for his contributions to the theoretical understanding of nanomaterials with potential applications in clean energy, medicine and information technology. He has acted as principal investigator on projects totaling more than \$8 million in grant funding and has published more than 350 research papers in a number of academic journals.³⁴

Other success stories:³⁵

- Dr. Fong, in partnership with Hardywood brewery, introduced DNA sequencing to monitor and identify beer-spoiling bacteria which has led to other breweries seeking his expertise.
- Dr. Klausner and Dr. Spiech received a \$1.7 million NIH grant to study overactive bladders which affects nearly 20 percent of the world population, significantly impacting their quality of life.
- Computer science department is the No. 3 computer school in Virginia
- Dr. Gupta uses soybean lecithin, a less toxic, biodegradable liquid dispersant for oil spills, to address most challenges of current traditional liquid dispersants.

³⁴ http://www.research.vcu.edu/ott/annual_report_2015.pdf

³⁵ http://www.research.vcu.edu/ott/annual_report_2015.pdf

- Dr. Pidcoe, the 2015 recipient of 10th annual Billy R. Martin Award, developed a device that helps infants with motor-skill disabilities learn to crawl, explore and grow just like babies everywhere.
- Dr. Colello designed a football helmet with rare neodymium magnets, the strongest type commercially available, to mitigate the high-speed collisions common in football that have recently found greater public attention with the Will Smith film, “Concussion.”

The Innovation Gateway’s mission is to facilitate commercialization of university inventions, support university research through collaborative agreements, foster a culture of innovation and entrepreneurship at the university, and promote regional economic development and new venture creation. This includes the VCU technologies available for licensing:³⁶

- Biomedical
- Engineering and physical science
- Software and informatics
- Education and research tools
- Information technology

2. Regional Partners

VCU’s regional partners work together to foster the entrepreneurial ecosystem from which small businesses are conceived, supported and realized. CURA conducted focus groups and interviews with regional stakeholders of Richmond with one source stating, “There was an explosion of understanding with high-growth startups since 2006. The game was an individual game with very few organized gatherings to accomplish entrepreneurial goals. Now, there is an emphasis on collaboration.” Another regional stakeholder noted, “In the 1990s, Richmond was a bank and tobacco town.” After those industries scaled back locally, there had been a “dip, but only minor and temporary,” thanks to a “seamless transition to this new economy.” Now entrepreneurship accounts for “30 percent of our economy.” From the beginning, this regional economic development has been mostly related to VCU in some

³⁶ http://www.research.vcu.edu/ott/technologies_index.htm

capacity, whether through faculty members' expertise and ability to attract conferences and interest groups for new partnerships, facilities that foster cross-disciplinary research, student-led startups and concepts, access to diversely talented teams for investors and business angels, or the myriad VCU resources and assets available to the community.

The dynamism ignited through collaborative partnerships encourages this innovative explosion, and once formed it needs to be sustained. The silos around VCU are being bridged, and the university's regional partners are making sure these relationships continue and provide launch pads for students and their ideas after graduation. These partnerships will become increasingly vital and successful as VCU squared and the entrepreneurial thrust at VCU continues to grow.

VIRGINIA BIOTECHNOLOGY RESEARCH PARK

The Virginia Biotechnology Research Park is a life sciences community adjacent to the VCU Medical Center located on a 34-acre campus in downtown Richmond. The



park is home to more than 60 private and nonprofit companies, state and federal laboratories, and research institutes and administrative functions of VCU and the VCU Health System, employing approximately 2,400 researchers, scientists, engineers and support personnel. Major member organizations in the park include the VCU Innovation Gateway, the Altria Center for Research and Technology, United Network for

Organ Sharing, True Health Diagnostics and the Virginia Division of Consolidated Laboratory Services. The park also has developed partnerships with neighboring Chesterfield, Hanover and Henrico counties to expand its campus beyond downtown and, in turn, extend its reach.³⁷

³⁷ http://www.news.vcu.edu/article/Virginia_Biotechnology_Research_Park_Corporation_Board_Completes

VBRP Metrics³⁸

In “Moving the Needle,” a 2015 report from VBRP, 59 companies have been supported throughout the five locations or programs: VaBioTech, New Richmond Ventures, VCU Pre-Accelerator, Lighthouse Labs and Dominion Resources Innovation Center. Companies and organizations employ 2,644 people at these locations to support the growing economy, with 2,263 at the VBRP, all with the strong, diverse leadership necessary to be competitive in Richmond’s growing economy.

Human capital, in the form of experienced entrepreneurs and serial entrepreneurs, is of profound importance to the entrepreneurial ecosystem. Experienced entrepreneurs have offered to be mentors to the emerging leaders. That mentorship is invaluable to the entrepreneurial ecosystem; for instance, Lighthouse Labs logged 400 hours of mentor-to-mentee guidance, and another 288 hours were provided through the VCU Pre-Accelerator program. Human capital is a core component of the Richmond region’s continuing efforts to turn ideas into companies, support more employees and encourage diverse perspectives.

DOMINION RESOURCES INNOVATION CENTER³⁹

Established in 2009, the Dominion Resources Innovation Center’s mission is to “produce financially viable and freestanding ventures in the community by providing startups with workspace, mentoring, guidance, resources and business support services.” Located in a renovated firehouse in the heart of Ashland, the facility offers 2,700 square feet of unique space for startups, early-stage businesses and creatives alike. Its nine available private offices for resident companies, including three wet labs, accompanied by a large, open common area for coworking, provide the impetus to design and foster collaboration and productivity. Successes include the 2015 founded **Lifecycle Organic Waste, Inc**, a Charlottesville, Virginia-based company dedicated to environmental responsibility



³⁸ Innovation Council’s 2015 metrics report

³⁹ <http://www.domininnovation.com/>

and alleviating the strain on landfills. Another success is **GoGo Band**, a biotechnology company that creates thoughtfully designed products to make the transition from toddler to adolescence less daunting and more fun for children and families.⁴⁰ The center has worked with other key partners in the region, including Dominion, VBRP, Hanover County and Ashland.

VCU INNOVATION ADVISORY COUNCIL⁴¹

The VCU Innovation Advisory Council consists of 21 regional stakeholders and a chairperson, VCU President Michael Rao. The council, established in May 2012, consists of industry experts, angel investors and local entrepreneurs who provide VCU Innovation Gateway valuable feedback and recommendations regarding critical patenting, commercialization and investment decisions. The panel reviews technologies developed at VCU at quarterly meetings on the basis of patentability, market need, industry feedback, stage of development and other factors.

There are other Regional Partners:

LIGHTHOUSE LABS⁴²



Lighthouse Labs is a nonprofit, mentor-driven startup acceleration program connecting promising founders with proven mentors, investors, support services, working space and lean startup education to move from idea to viable high-growth venture in three months. With VCU, they work heavily alongside the Pre-Accelerator program. Nate Marcus, founder of PartyRVA and a Lighthouse Labs mentee, said, "It's not what you know, it's who you know. It takes a village to raise a child. You could say the same thing, it takes a village to start a business and new venture."

Two companies formed at VCU and a third founded by alumni have been accepted into Lighthouse Labs' accelerator program — a move that provides them with

⁴⁰ <http://www.dominnovation.com/our-companies/>

⁴¹ http://www.research.vcu.edu/ott/advisory_panel.htm

⁴² <http://www.lighthouselabsrva.com/impact-report.html>

\$20,000 in funding, mentorship by top Richmond-area entrepreneurs and the opportunity to pitch investors in several major cities.⁴³ One VCU and

painless 1099

Lighthouse Labs alumni company has been very successful. **Painless1099** helps independent contractors (e.g., freelance designers and real estate agents) save for tax season. Through a smart bank account, Painless 1099 automatically withholds taxes based on user information and then deposits what is safe to spend directly to the user's personal checking account.⁴⁴ After both VCU and Lighthouse Labs success, Painless1099 entered another competition billed as the largest in the world in which 11,000 startups applied for 11 spots.⁴⁵ Painless1099 was one of the last two teams standing for the \$1 million prize and just barely missed the mark. But, with the \$500,000 second-place prize, "a winner is a winner at that point," said Ace Callwood, VCU School of Business alumnus and Painless 1099 co-founder.

Lighthouse companies are more than 50 percent female- or minority-founded or co-founded; 85 percent of current participants are minorities, with 70 percent having female founders.

Other co-working spaces include:



The entrepreneurial ecosystem in the region would be naught without adventurous and risk-minded investors.

43 https://news.vcu.edu/article/VCU_entrepreneurs_companies_receive_20000_in_funding_mentorship

44 <https://painless1099.com/home>

45 https://news.vcu.edu/article/Buoyed_by_a_coveted_500000_prize_three_former_VCU_students_are

REGIONAL RECOGNITION

The Richmond region partners and many others in the community are privileged to be honored and recognized by many national media groups. A few are listed below, and they further indicate how VCU and the local community are viewed and esteemed by others:

- Virginia Biotechnology Research Park named as “Best of R&D in Virginia” and Richmond named “Best Locations for Biosciences in Virginia” and “Best Cities Regardless of Size for Startups” in the most recent issue of Southern Business and Development⁴⁶
- Richmond named one of the “10 Up and Coming Cities for Entrepreneurs” by Forbes.com, September 2013
- Richmond named a “Hot U.S. City for Jobs and Culture” by the Daily Beast, July 2013
- Ranked 25th “Best City for Job Growth” among large-sized cities by New Geography, May 2013
- One of the “Top Cities for Business Growth” among 100 metro areas rated by the Wall Street Journal’s MarketWatch.com, April 2013

THE VCU INNOVATIVE THRUST REVISITED

There is a bold entrepreneurial spirit at VCU. The entrepreneurial ecosystem is driven by leadership from the top and creativity and interest from the bottom. However, moving innovation forward is not without challenges. In a survey done at VCU, 53.9 percent of students interested in entrepreneurial activity want to have an impact on society. But when asked



what prevents them from pursuing their entrepreneurial ideas, students said they are more fearful of economic insecurity and not having a secure job than of failing to realize their idea or concept. The preventive financial fear of failing is alarming and highly constrains the innovative potential, which is why VCU provides financial

⁴⁶ <http://www.pageturnpro.com/Progress-Printing/71809-Southern-Business-Winter-2016/index.html#1>

aid to students in federal work-study programs and assistance programs that total more than \$270 million each year, in addition to the extensive resources at managing, reducing and eliminating crippling student debt.⁴⁷

The national average debt an undergraduate will have at graduation is just over \$35,000, and an in-state undergraduate at VCU will leave with \$28,425 in debt. The student debt crisis beholds students to debt payments and vastly influences their life choices and employment choices. Marsha Rappley, M.D., vice president for VCU Health Sciences and CEO of VCU Health System, says that some medical students are responding by pulling away from the disciplines they love and toward more lucrative fields. “The cost for education is beginning to shift people away from the specialties they’re most passionate about and feel a part of,” Rappley says. “We want students to go into pediatrics, primary care, cardiology or thoracic surgery because they love doing those things. We don’t want them making their decisions based on economic factors.”⁴⁸ It is this same phenomenon that impacts students in all disciplines and future potential innovators and entrepreneurs.

“The cost for education is beginning to shift people away from the specialties they’re most passionate about and feel a part of.”

While she laments the attraction to medical disciplines solely for economic gain, this same phenomenon deters entrepreneurial activity of students because of their postgraduate economic insecurity. Students wishing to pursue their entrepreneurial hopes and dreams may have to put those aside in order to fulfill their debt payments.



This hinders the creative capacity for all college graduates, but VCU can lead the way, informing students of the resources made available to its students. Awareness is key, especially if there is any truth to a national survey showing 50 percent of seniors from 100 colleges did not know they had to begin repaying loans in six to

⁴⁷ <http://finaid.vcu.edu/>

⁴⁸ http://news.vcu.edu/article/Student_debt_crisis

nine months after graduation. Figure 4 provides information on reducing student debt and increasing financial literacy.

SALT®: VCU has partnered with this free online resource to offer financial literacy guidance and tools to VCU students and alumni.



Do the Math: A VCU campaign to help make in-state students aware that they can save an estimated \$50,000 by taking 15 credits per semester and graduating in four years instead of six.

Financial Aid TV: A series of short online videos that teaches students about topics such as applying for financial aid, avoiding identity theft, and understanding credit scores.

The Money Spot: A new peer-to-peer counseling center located in Hibbs Hall where students can meet with specially trained student money coaches for help with their financial futures.



Federal work-study jobs: VCU's Financial Aid Office provides information for students interested in applying for FWS jobs on and off campus.

FAFSA form: The Financial Aid Office strongly encourages all students (including graduate-level) to fill out this form each year in order to know what aid they are eligible for, including grants, work-study and loans.

Scholarships: VCU's Financial Aid Office provides a directory of scholarships on its website.

Figure 4: Financial Resources for Students

Entrepreneurship and innovation are more than supported at VCU; they are indeed a universitywide initiative. Venture Creation University strives to meet the diverse needs of students and faculty in all disciplines who are interested in novelty. From providing education and programmatic opportunities, fostering creative ideas and creating coworking spaces to encouraging dynamism and multidisciplinary activity with mentors, guiding innovators at the incipient concept level and on to ideation and realization, and funding options coupled with financial resources throughout a student's — and faculty's — tenure, VCU is truly immersing itself with the entrepreneurial spirit of the age.

IV. Regional Stewardship

“There has been a physical and cultural change in Richmond, and VCU is the biggest factor in Richmond’s growth in the region.”

– Danny Avula

Introduction

What is a regional steward? It is not simply a large organization, even a university, whose activities have impacts on the region. It is an entity that cares about the region and that exercises leadership to help address regional challenges and move it forward. The role of regional steward is a natural outgrowth of a university's traditional education and research missions. But it also stems in part from the loss of many segments of regional corporate leadership, as corporations have consolidated and globalized, removing decision makers from most localities. Universities and their leaders remain anchored in the communities and regions where they are located. The regional steward's role also stems from the politically fragmented region's need for a unifying force to help address common problems and opportunities, which, otherwise, would be very difficult to do.

Universities, however, can choose the extent to which they exercise stewardship of their regions. VCU is one of the most caring, committed and impactful stewards of the Greater Richmond region. This was expressed repeatedly in focus groups conducted for this report:

“VCU is known for leadership — getting something done.”

“Every conversation I have about who needs to be at the table, VCU is included in some way.”

“VCU is at so many tables, not just through passive involvement, but catalytic.”

“VCU does a phenomenal job of being a part of the community, not just being in the community. This will drive the region forward for companies, employees and alumni.”

VCU's expressed goal, as articulated in its current strategic plan, *Quest for Distinction*, is to “become a national model for community engagement and regional impact” and “attain distinction as a fully integrated urban, public research university.”¹

¹ <http://www.quest.vcu.edu/>

President Rao has repeatedly affirmed this goal: “One of the fundamental missions of a university is to advance the progress of humanity — for all people — through education, discovery, care and service. This is especially true here, where we are proudly inseparable and indistinguishable from the communities we serve.”²

As a regional steward, VCU focuses the elements of talent, place and innovation on the region’s problems and opportunities. Talent involves the entire spectrum of knowledge transfer and increased human capital to which the university educates for the 21st century. Place is engagement to develop a desirable community with attention on health and educational and environmental needs. Innovation is the creative, multidisciplinary discovery fostered at VCU that leads to economic, technological, social, policy, artistic or cultural outcomes. Applied strategically and with care for the welfare of the region, these elements exert powerful impacts. Of the many examples cited in focus groups, one that stands out is the Life Expectancy Map created by VCU’s Center for Society and Health, which brings the consequences of poverty into sharp relief by indicating differences in life expectancies across neighborhoods in the city of Richmond.

VCU’s regional stewardship takes many forms, most of which can be grouped as community developer, convener, thought leader and moral leader.

1. Community Developer

Twenty years ago, Richmond was sometimes called the nation’s murder capital because of its high murder rate per capita. Blighted neighborhoods and derelict properties plagued the city, including neighborhoods around VCU. Some reportedly encouraged VCU to shift investment to areas outside the city to escape the blight and unsafe conditions surrounding it.



Image 1: Broad Street Looking East - Richmond, Virginia, Source: Viewliner Ltd

² President’s Blog 7/8/2016

Instead, VCU launched a massive, multi-billion-dollar physical investment campaign in central city Richmond that continues to this day. These investments, along with a near-doubling in the student population and government-led revitalization policies, have had a truly transformative effect. In focus groups, the perception was clear: VCU has played a “huge role in shaping the path of economic development in the city and region with outreach to local governments and planning.”

VCU is an important steward of the land in and around the Monroe Park and MCV campuses. The university’s investments have created successful research and clinical institutions, and they have allowed nearby commercial and residential districts to thrive. The two campuses are connected by the Broad Street corridor. Two highly visible VCU capital projects bookend the district, with the VCU Institute for Contemporary Art at the district’s western terminus and the Children’s Pavilion at its eastern terminus.



Image 2: Institute of Contemporary Art, Source: ICA.VCU.edu

Today, VCU is seen as the catalyst of redevelopment from the Fan eastward to Shockoe Bottom. Redevelopment is occurring within neighborhoods and along corridors throughout central Richmond. “When I first moved here, you didn’t walk the street at night. But now I feel safe; there are places to go,” said one focus-group participant. Although this and other focus-group participants expressed a desire for VCU to recruit more independent entrepreneurs to the area and support their development, and even voiced some concerns about VCU’s aggressive physical

development downtown, many expressed support for the overall commercial rejuvenation of the area.

The increased presence of VCU Police plays a key role in the community's revitalization. From 2013 to 2015, for example, no hate crimes, murders or manslaughters were reported on VCU campuses. The VCU Police are out in the community, and their mere presence makes residents feel safer. As one focus-group participant summed up the transformation: "Twenty years ago, it was unsafe, and crime was bad. The university presence — students and staff — has helped revitalize the area."

VCU's community safety efforts have caught the eye of others as well. Gov. Terry McAuliffe honored VCU Police for its continued progress in promoting safe and sober driving. It won the Governor's Transportation Safety Award in the law enforcement category for programs and enforcement efforts completed in 2015.³ In addition, VCU Police launched RVA Buzzkill, a multimedia campaign to educate students and the community about the long-term consequences of alcohol consumption. The campaign can be heard on the radio and seen on buses, social media and signage around campus. Moreover, the police department collaborates and works alongside organizations such as Virginia State Police, Virginia Alcoholic Beverage Control Board, Mothers Against Drunk Driving (MADD) and DRIVE SMART Virginia to achieve mutual goals of public safety. In 2016, VCU Police became the largest university police force in the commonwealth of Virginia. It is also the first campus law enforcement agency in Virginia to be recognized as a Certified Crime Prevention Campus by the Virginia Department of Criminal Justice Services.

VCU has helped create a safe environment in an urban city where students and residents can play Pokémon Go, witness flash mobs or protests, or partake in street festivals.

³ http://news.vcu.edu/community/VCU_Police_wins_Governors_Transportation_Safety_Award_for_third

2. Convener

Like many areas of the country, the Richmond metropolitan area is widely regarded as politically and socially fragmented. Although the region has many organizations and leaders of goodwill who work hard to bring about positive change, few leaders are able to work effectively across political or social lines. VCU, as an organization with a regional footprint, constitutes an important exception. Overall, focus-group participants stated that VCU has great potential to convene community stakeholders around important issues, and that, on many occasions, it has lived up to this potential.

As one participant explained, “VCU was able to break down political and regional boundaries” on a particular issue and bring all stakeholders to the table. Another focus group member noted that the lack of regional government hinders the region’s ability to effectively address issues that cut across local government boundaries, like poverty. Indeed, VCU can help “take politics out of some things.”

METRO RICHMOND EXPORTS INITIATIVE

One example of VCU’s convener role is its work in the Metro Richmond Exports Initiative. With support from JPMorgan Chase and Brookings Institution, VCU’s Center for Urban and Regional Analysis, a division of the L. Douglas Wilder School of Government and Public Affairs, organized a collaborative effort among local governments and regional development organizations — normally fierce competitors in the zero-sum economic development stakes. The point of the initiative is to focus state, local and nonprofit resources on encouraging and enabling more area businesses to export their goods and services overseas.



Image 3: President Michael Rao presenting Metro Richmond Export Initiative
Source: VCU News



Image 4: Metro Richmond Export Initiative Report Cover Page, Source: CURA, VCU

The Metro Richmond Exports Initiative has worked thus far for three reasons: (1) Export stimulation does not pit communities against each other, unlike other approaches to economic development; (2) JPMorgan Chase and, recently, the Virginia Economic Development Partnership, have

provided strong financial support; and (3) VCU had the content expertise and legitimacy, as a nonpartisan regional steward, to bring erstwhile competitors together. It is probably the only entity that could have convened the parties and facilitated their working together.

THE COMMUNITY-ENGAGED PARTNERSHIP MAP

VCU faculty play convening or bridging roles in many partnerships throughout the region, but to date, the university has not kept track of these efforts. To address this information gap in a systemic way, the Division of Community Engagement has recently created the Community-Engaged Partnership Map, a tool that illuminates the lattice work of VCU's connections with

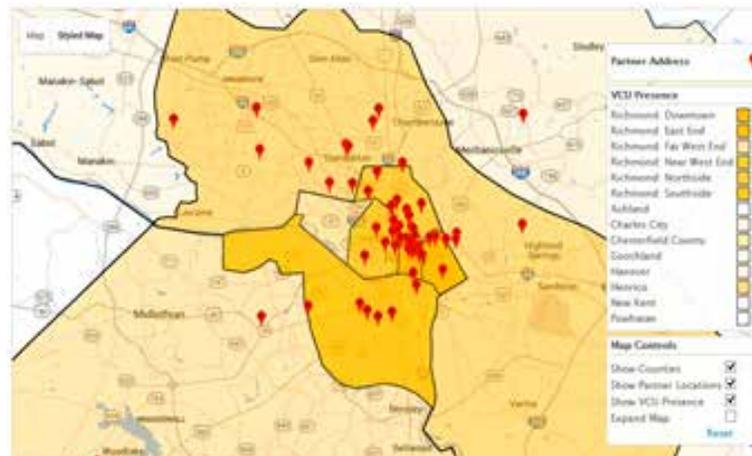


Image 5: Community-Engaged Partnership Map Source: VCU

the community and region. The map's purpose is to connect and coordinate community-engagement activities and identify areas of opportunity for new collaborations. The map uses VIVO, an open-source web application that enables the discovery of research and scholarship and promotes networking across disciplines. VIVO provides flexible reporting and data aggregations at the university, college, school, department and faculty levels.

This effort aligns with the refocused Quest Theme III and goals for 2015-2017, “to become a national model for community engagement and regional impact,” and serves as a resource to “advance focused and strategic university-community engagement that addresses critical needs and opportunities in the region.” The data can raise awareness about the partnerships that already exist and, thus, help faculty members and students with similar interests to connect with existing community partners.

The Community-Engaged Partnership Map includes information on:

- VCU and VCU Health units
- Focus topics
- Regional geographic reach
- Activity types
- Faculty scholarship
- Community-engaged partners

3. Thought Leader

Universities increasingly act as thought leaders, political leaders and even moral leaders in their communities and regions. As one local business owner stated in a focus-group discussion conducted for this report, “The thought leaders in their field are at VCU.” As innovation and entrepreneurship come to define a significant portion of new business, leaders seek the creative and innovative talent pipeline found at a research university, particularly one with “very high research activity,” as the Carnegie Foundation classified VCU in 2011. Francis L. Macrina, Ph.D., VCU’s vice president for research, states, “Carnegie rankings reflect a dramatic, decade-long growth in our sponsored-research enterprise.”⁴ VCU consistently attracts more than \$200 million in sponsored research — much of it for multidisciplinary and interdisciplinary projects.

⁴ http://www.news.vcu.edu/article/Carnegie_Foundation_Upgrades_VCU_to_Research_University_Very

THINK OF US

Thought leadership spans the spectrum of disciplines, from highly technical endeavors such as engineering to community socioeconomic issues. For example, Sixto Cancel was a member of VCU's Pre-Accelerator's first entrepreneurial cohort. There, he was able to create a solution to a need: Children in foster care were transitioning out of the system with little guidance about adulthood. An alumnus of the foster care system himself, Cancel worked with the Pre-Accelerator program to launch the organization Think of Us. His nonprofit organization uses web and mobile technology to assist young adults exiting the foster care system. Unify, an app designed by Think of Us, contains interactive videos and coaching tools to help foster care alumni set personal goals essential to living as young adults. Networking is also contained in the app. There are tools for transitioning youth to connect with advocates and services. Cancel's entrepreneurial acumen has been nationally recognized by the White House. Now incorporated, Think of Us is staffed by volunteers, freelancers and part-time employees.

VCU METRO VIEW

VCU has long been a favored partner to private, public and nonprofit organizations as a provider of comprehensive data and analysis. The expertise found at VCU helps to ensure the most current critical and extensive information is available to regional stakeholders making important community decisions. One example of VCU's leadership in the area of information for community decision making is the Metro View project in CURA. This project, initially funded through a VCU Quest grant in 2014 and now funded through local foundations and nonprofit organizations, provides information on community features such as land use, housing, employment, population and other characteristics at the micro level of detail (i.e., individual buildings and parcels) that other information systems do not provide — for the entire Richmond MSA. Through this information system, access to which is free of charge on a website maintained by CURA, analysts get a unique and powerful perspective on issues not elsewhere available.



Image 6: Metro View Homepage Source: CURA, VCU

CURA is currently using the Metro View information system to conduct a jobs-housing balance study for the entire Richmond metro area. This project addresses the well-known, but seldom studied, problem that people with moderate skills often cannot afford to live near jobs that require moderate skills (e.g., in retail) and therefore have limited access to such jobs. The study maps the entire region and points out where additional moderately priced housing would address this problem, and how it can be done without major disruptions. Another Metro View-related study maps senior citizens' access to goods and services throughout the entire metro area and recommends how to address any gaps. Another study will be using the Metro View platform to map and understand heroin abuse in the Richmond metro area.

CRAFT BREWERIES

In recent years, the craft beer industry has become a significant presence in the region, with new breweries opening almost monthly and Gov. Terry McAuliffe holding the inaugural Craft Beer Month reception in August 2016 at the executive mansion. VCU is not a bystander examining these developments from afar. The thought leaders at the School of Engineering are contributing to Richmond's craft breweries. Stephen Fong, Ph.D., vice chair of the Department of Chemical and Life Science Engineering, has partnered with Hardywood Craft Brewery's Kate Lee, director of quality assurance. It began

with Lee introducing Fong to the brewery and the intricacies of the brewing process. Eventually, Fong’s team introduced Hardywood to DNA sequencing to monitor and identify beer-spoiling bacteria such as *pediococcus* and *lactobacillus*.⁵ This led, in turn, to Hardywood experimenting with the thoughtful ideas from students.



*Image 7: Hardywood Park Brewery,
Source: VA Brew Pass*

As a thought leader, VCU nurtures not only a diverse, marketable graduating class of entrepreneurs and researchers, but also the professionals and experts in their fields who are sought out and consulted to conduct critical analyses and aid the leaders of industry in the region. When it comes to thought leadership, VCU is the “go-to destination,” according to Greg Wingfield, founding president of the Greater Richmond Partnership and



*Image 8: Blue Bee Cidery,
Source: Virginia Wine Pass*

currently a fellow in VCU’s Center for Urban and Regional Analysis. Other regional stakeholders in a focus-group discussion noted that VCU’s studies and reports have helped to inform their decision making, especially in the health care and education fields.

COMMUNITY LECTURES

VCU faculty and academic departments organize and provide numerous lectures on a variety of topics — many of which are open to the public — throughout the year. Examples include the annual International Business Forum, sponsored by the VCU School of Business’ Center for International Business Advancement, which attracts nationally known speakers to address important international business and trade topics. Another example is the annual Morton B. Gulak Memorial Lecture in

⁵ http://www.egr.vcu.edu/wp-content/uploads/sites/1830/2016/01/2016_annualreview_web.pdf

Urban Planning and Design at the VCU L. Douglas Wilder School of Government and Public Affairs, which attracts nationally known speakers on making cities walkable, retrofitting suburban shopping malls and social equity in urban design and historic preservation. These lectures are followed by decision maker breakfasts, where elected and appointed officials meet in small groups to discuss how to translate the guest speaker's ideas into action in the Richmond metro area.

ENVIRONMENTAL SUSTAINABILITY

VCU does more than think and lecture; it also practices what it preaches. An excellent example is in the area of environmental sustainability, a goal to which VCU is deeply committed. As President Rao wrote:

“Virginia Commonwealth University is committed to becoming a more sustainable campus. From the facilities where we teach, learn and live, we are committed to passing on a healthy environment to future generations.”⁶

On the educational front, students can earn certificates in sustainability and take one of the 64 classes offered. But in practice, solar panels can be seen across parking decks and buildings, and are used to save resources and several hundred metric tons of carbon dioxide equivalent from polluting the atmosphere. VCU's Office of Sustainability developed two gardens: the Monroe Park



Image 9 : VCU Earth Day Bazaar, Source: VCU

Campus Learning Garden and the MCV Learning Garden. They provide produce to RamPantry, a community produce resource, and to the Richmond Area High Blood Pressure Center. Other recent developments are the Office of Sustainability's Green Guides, which raise awareness and provide myriad examples on how

⁶ <http://blog.president.vcu.edu/2016/06/23/hos-is-vcu-making-sustainability-real/>

faculty and students can improve the environment and increase sustainability. In addition, the Walter L. Rice Education Building at VCU's Rice Rivers Center became the first LEED Platinum building constructed in the commonwealth of Virginia.

VCU not only submits reports to the Sustainability Tracking, Assessment and Rating System, a transparent, self-reporting framework for colleges and universities to measure their sustainability performance, but also has created its own climate action plan of sustainability goals for respecting the needs of future generations.



Image 10 : VCU Rice Rivers Center, Source: VCU

PRIMARY AND SECONDARY EDUCATION

VCU provides strong leadership through a number of education-related initiatives, particularly to economically disadvantaged groups. A small sample includes the following.

VCU is committed to providing higher-education opportunities to people of low-wealth backgrounds. This commitment was recognized nationally in 2015, when the Education Trust, a national nonprofit advocacy organization focused on educational justice, released a report identifying universities that have decreased the graduation gaps between underrepresented minority students and their white peers. In the report, VCU is among only two dozen universities identified as most-improved institutions, meaning that graduation rates have improved for white students (+12.2 percent) and underrepresented minority students (+15.5 percent) over the last decade.⁷

⁷ <http://blog.president.vcu.edu/2015/12/02/a-university-where-everyone-can-succeed/>

In 2011, the VCU School of Education launched the Richmond Teacher Residency Program. The program is a partnership between Richmond Public Schools and VCU designed as a concentrated program of graduate study to earn a Master of Teaching degree or a Master of Education degree. One goal for RTR is to effectively prepare teachers for high-need urban schools, especially in Richmond.

Candidates for the program are graduates from leading colleges and universities who hold a bachelor's degree and a GPA of 3.0 or higher. The selection process is highly competitive to ensure that all candidates will be prepared for an urban classroom and fully licensed before becoming the teachers of record in the Richmond Public Schools. Candidates must show a commitment to social justice and the ability and passion to explain complex ideas in various ways to meet the differing needs of learners.

As part of their training, students spend four to five days each week co-teaching in an RPS classroom — not only a benefit to students, but also a benefit to RPS, as it saves the school district \$550,000 in teacher salaries each year. After students complete their first year of residency, they apply for a teaching position with RPS and are placed through the RPS hiring process. To date, all of the program's graduates have been hired by Richmond Public Schools; 82 percent of them are reported to have stayed on in their position for three years.

RTR graduates now are teaching in 24 Richmond public schools. They have helped to educate more than 8,000 students. The program's success can also be measured in the national attention it has received. In 2014, the U.S Department of Education awarded VCU's School of Education a \$7.5 million grant — the second major grant in three years — to expand the program to prepare 120 new math, science, social studies, English and special education teachers, especially at the primary school level. Most importantly, RTR graduates are having a positive impact; students of those teaching science scored significantly higher on their Standards of Learning tests than did their non-RTR counterparts. The program is creating and linking quality teachers with the most challenging schools in Richmond.

Bridging Richmond, a partnership anchored by VCU and supported by numerous regional partners, maintains that "every person in our region will have the education

and talent necessary to be successful from cradle to career.” By partnering with VCU, Bridging Richmond engages with the community, sharing education and related data from across the region and conducting research to improve career readiness.

4. Moral Leader

Regional stewardship includes a commitment to addressing a region’s serious social issues, through independent action, and by organizing coalitions of like-minded individuals and organizations. VCU’s moral leadership includes all of these modes of activity. Thanks largely to the work of the Division of Community Engagement, VCU has long been designated by the Carnegie Foundation as a “Community-Engaged Institution.” This distinction, first awarded in 2006, combines with “Very High Research Activity,” also designated by the Carnegie Foundation, to position VCU in a special cohort of institutions to which only 27 others belong. Specific initiatives include the following.

SOCIAL JUSTICE

For many years, VCU has been known as a diverse university where students of various racial and ethnic backgrounds feel more comfortable than at other institutions.⁸ As President Rao wrote on August 25, 2016:

“At VCU, we remain committed to ensuring that our community values its members and that we embrace and respect one another. We have been a national model for diversity and inclusion in many ways, but we fully recognize the work we still need to do. This fall, we will release our Diversity and Inclusion Strategic Action Plan and begin working ... on how best to put it into operation. ... And we will continue the conversations and actions already underway with a President’s Town Hall on Social Justice...⁹”

And in the aftermath of shooting tragedies in Flint, Michigan; Orlando; Ferguson, Missouri; New York City; and Dallas involving police and African-American people,

⁸ <http://blog.president.vcu.edu/2014/12/11/vcu-community-and-national-challenges-around-race-and-diversity/>

⁹ <http://blog.president.vcu.edu/2016/8/25/a-new-year-with-infinite-opportunity>

VCU — from the president and provost to schools, academic programs and students — has affirmed the university’s respect for diversity and to resolving the problems bound up with race, public safety and social justice.

As President Rao wrote:

“The recent tragedies of our world remind us how important our work is. We are about more than social media activism; our focus is on changing the world in profound ways, to benefit every human being. Our work must be to ensure that the human experience is not defined by what we do to one another but rather what we do for one another. ... Let’s come together for meaningful conversations, based on trust, that yield solutions. Let’s review the policies and guidelines that we put in place to govern us and ensure they include all our voices. ...¹⁰”



Image 11: The Depot, Source: VCU News



Image 12: VCU Well Project, Source: VCU

Within VCU, the Office of Multicultural Student Affairs plays an integral role in reducing cultural barriers through events held throughout the year in the University Student Commons. A variety of organizations hold special events specifically related to racial conflict and the recent tragedies. Examples include the Black Art Student Empowerment group, who presented the program, “I Am Black History,” at The Depot, encouraging audience participation and dialogue about issues of race and social change. Other community programs designed to raise awareness of racial conflict and justice include the Wilder Symposia on Race and American Society, held in 2015 and 2016, which featured both nationally known and local speakers, as well as faculty from the Wilder School and elsewhere.

¹⁰ <http://blog.president.vcu.edu/2016/07/08/statement-on-the-tragedy-in-dallas>

VCU has also demonstrated respect in the way it has handled the memorialization of African-American remains in the East Marshall Street Well Project. In 1994, skeletal remains dating from the early 19th century were found in a well during construction of the Kontos Building on VCU's MCV Campus. The remains were sent to the



Image 13: Redeveloped building at 1208 W. Marshall Street
Source: Google Street Map 2016

Smithsonian Institute for analyses; the majority are believed to have been former slaves. In 2013 President Rao initiated VCU, with guidance from the Virginia Department of Historic Resources and the College of William & Mary, in the process of addressing critical issues and concerns, and constructing a physical memorial of these remains that treats them with dignity and respect. The Family Representative Council, a group formed to represent the people whose remains were found in the well, have been intimately involved in the process.¹¹

Moral leadership includes addressing poverty and the many ways it affects our community. Almost two-thirds of Richmond's poverty population is African American, and 40 percent of those in poverty are children. VCU's Clark-Hill Institute for Positive Youth Development has aligned itself with the Richmond mayor's Anti-Poverty Initiative by providing a multidisciplinary team of faculty from the departments of Epidemiology and Community Health, Psychology and Special Education and Disability Policy. The Clark-Hill Institute is one of six National Centers of Excellence for Youth Violence Prevention funded by the Centers for Disease Control and Prevention.¹²

In October 2016, the Wilder School's Master of Public Administration program received the Social Equity Award from the Network of Schools of Public Policy, Affairs and Administration. The award recognizes a public policy, affairs or administration program that exemplifies the highest standards in diversity through outstanding contributions in research, teaching and service. Richard Huff, Ph.D., chair of the M.P.A. program, said, "Social equity is a cornerstone of public administration and of the Wilder School. The faculty has worked long and hard to integrate social equity values into the curriculum, research and service."¹³

¹¹ http://blog.president.vcu.edu/2016/06/09/east_marshall_street_well_project_update

¹² <http://www.clarkhill.vcu.edu/>

¹³ http://news.vcu.edu/faculty-and-staff/Wilder_Schools_MPA_Program_Receives_Award

COMMUNITY HEALTH

The city of Richmond, due in large part to its high incidence of poverty, suffers from chronic unmet health care needs. One indicator is the infant mortality rate. According to the Virginia Department of Health, Richmond's infant mortality rate in 2012 was 10.5 for every 1,000 births, significantly higher than the rate in neighboring Henrico (7.8) and the rest of Virginia (6.3).

VCU has demonstrated its commitment to improving children's health in Richmond in several ways and over many years. Yet, two years after the Virginia Department of Health report, VCU allocated an additional \$28 million to develop the Children's Hospital Foundation Heart Center. In 2015, U.S. News & World Report named VCU's children's hospital one of the best in the nation, and did so again for three years in a row. And in what has been the largest construction project in VCU history, the Children's Hospital of Richmond at VCU Children's Pavilion has transformed children's health care in the community, reaffirming VCU's place as a premier medical center in the nation.

Focus-group participants gave VCU very high marks for its commitment to improving health throughout the community. VCU is providing an "expanded level of services we would otherwise not get," said one participant. Another noted that Sheryl Garland, M.H.A., vice president for health policy and community relations for VCU Health System, "has pioneered the effort to link community and health." Since her involvement began, "there has been a marked increase in VCU's willingness to change" in order to improve health in the community. This commitment has been manifested in numerous ways, including programmatic initiatives.¹⁴



*Image 14: VCU Children's Hospital
Source: RichmondTimes-Dispatch*



Image 15: Exterior view of VCU's Children's Hospital, Source: RichmondTimes-Dispatch

¹⁴ http://scholarscompass.vcu.edu/cgi/viewcontent.cgi?article=1027&context=community_resources

Conclusion

Talent, place and innovation, when deployed with intention and determined leadership, result in regional stewardship. This intentionality is clearly articulated in VCU's strategic plan, Quest for Distinction. In Quest, the university is to "become a national model for community engagement and regional impact" and "attain distinction as a fully integrated urban, public research university."¹⁵

As a truly effective leader, VCU does not dictate an agenda to the community; it works in concert and partnership with numerous organizations. As one focus-group participant put it, "VCU does a phenomenal job of being a part of the community, not just being in the community." Community stakeholders see VCU as "a valued partner, academically and medically," a leader driving "physical and cultural change" and a current "leader in the talent pipeline." The role of VCU is intricately connected with the issues of the community. The community issues are VCU's, too. Its mission formalizes the interconnectedness and shared responsibility with the region. VCU is a steward of the region. And when it leverages its vast resources of talent, place and innovation, social improvement and economic impacts are achieved.

“ VCU does a phenomenal job of being a part of the community, not just being in the community. ”

¹⁵ <http://www.quest.vcu.edu/>

Conclusion: VCU and Richmond Culture

Although we could not capture and, therefore, could not include in this report, many of the ways in which VCU serves the community and region, we believe that the evidence presented here makes a convincing case that VCU's work makes a very positive impact on the region. But there is more. As a large and dynamic institution, VCU also influences the local culture in beneficial ways. Writing about the underappreciated impacts of universities on the communities and regions in which they reside, Goldstein et al. identified the university's impact on the local culture, or milieu, as a significant, and usually positive, economic impact, as well:

"Milieu" ... encompass[es] aspects of culture, community tastes and demand for public goods, political attitudes, and "entrepreneurial spirit." The regional milieu of the type considered here can stimulate economic development by attracting to an area creative and talented people who seek proximity to others like themselves. A research university, almost by definition, creates such a location dynamic.

Yet one quickly realizes that not all universities, and not even all research universities, create a strong location dynamic in their communities. Those that are small, or which wall themselves off from the community and look internally to meet their needs, are unlikely to have any appreciable impact on the local culture. But VCU is large, and its physical plant has grown organically out of the very fabric of the city. More importantly, its academic units and its policies have embraced the community, and it is synergistically linked with it; its growth, development and character have influenced the development of the community. And the community, in turn, has certainly shaped VCU. When VCU was created in 1968 through the merger of the Richmond Professional Institute and the Medical College of Virginia, it was not apparent that VCU would become not only a key economic driver, but also an integral part of the very soul of the community. Less than 50 years later, it is an indisputable fact.

VCU has a student body of 31,163 and employs 21,679 employees, as of 2015. VCU has 174,573 alumni of whom 39 percent have remained in the Richmond region. Thus, at any given moment, well over 10 percent of the population of the entire

Richmond metropolitan area is comprised of former or current VCU students, faculty and staff. In the city of Richmond, this percentage is undoubtedly much higher. While they certainly do not all share the same political attitudes or tastes, their youthful, creative energy contributes in countless ways to shaping the identity of Richmond.

Incidentally, the moniker RVA is a product of a graduate class at the VCU Brandcenter, which was commissioned by Venture Richmond, a downtown Richmond development organization, to devise a new tag for the community. This is important. The academic fields in which VCU specializes attract certain kinds of students and shape them in certain ways. When they stay in the region, they shape the region in those ways. Similarly, VCU's conscious policies such as its diversity and inclusion plans of 2009 and 2016, which help to sustain a culture of excellence and access where differences are valued, and all students, faculty and staff feel welcomed, respected and supported in their academic and professional pursuit, help to shape the Richmond community. These influences are subtle and often indirect, but they matter. Focus-group participants described them as follows:

“*The creativity and innovation that I attribute to VCU spills out into all other fields. I attribute the creative energy in this city to VCU.*

VCU is playing a part in the vibrant city, downtown city, urban living.

[VCU's] creative spirit has led to the formation of local businesses.

The art school, creative university town and VCU as the largest employer, and the biggest economic force in the city; the live music scene — none of that would exist without VCU.

[VCU's influence on the revitalization of Scott's Addition, an area west of Boulevard and north of Broad Street] is indirect. I'm not aware of VCU properties that are spurring that, but it is created by young people who went to school at VCU and young people wanting to stay and create an urban environment.”

Viewed through a market lens, VCU influences the local culture, the milieu of RVA, through both the supply side and the demand side. On the supply side, VCU students and alumni become entrepreneurs and create businesses. They make Richmond

an attractive place where people want to come and where they want to stay after they graduate. On the demand side, VCU students, alumni, faculty and staff create a market that supports creative art, music, food, artisan products and sports. For example, VCU's School of the Arts helped to create and promote the nationally known Richmond Mural Project, attracting artists from around the world. The project began in 2011 and has since created more than 100 murals. Long before then, there were galleries such as 1708 Gallery, started by VCU students 38 years ago with a commitment to provide opportunities for emerging and established artists and to expand the public's understanding and appreciation of new art.

Richmond has been a strong fine-arts city for over a century, and the Virginia Museum of Fine Arts predates VCU by many decades. But VCU now partners with the VMFA in many ways, and visitors to the VMFA gift shop can even purchase products designed by VCU students.

Although Richmond does not have a basketball team, the region has VCU's Rams. The VCU men's basketball program gained national recognition from their six-time CAA Championships, but notably the 2011 NCAA tournament and VCU's first appearance in the Final Four. This event did not just place VCU and its black and gold colors on the sports map; it showcased Richmond as well.

Thanks to the success of VCU basketball, the E.J. Wade Arena at VCU's Stuart C. Siegel Center is the most exciting place to be for a sporting event in Richmond. But, sporting events are just one of the many events that take place at this 7,500-seat venue; it has hosted President Barack Obama, the Harlem Globetrotters and some of the best acts in the music industry, including James Taylor and Sheryl Crow. Most recently, the NBA Washington Wizards held its 2016 training camp at the Siegel Center.

By producing talented graduates who want to make Richmond their home, VCU attracts strong companies to the region. And the internships, living-learning arrangements and many other opportunities for practical workplace knowledge acquisition outside the classroom that they receive as students make VCU's graduates particularly valuable to these companies.

But, as detailed in this report, many of today's VCU graduates have received the knowledge, skills and inspiration to start their own businesses. Although many

universities and communities today seek to stimulate entrepreneurship and business development, the unique character of VCU and the Richmond community ensure that the new businesses here will be unique, as well. TenantTurner, for example, a business developed by VCU graduates, offers real estate technology leasing software to syndicate property listings to websites, schedule showings and screen tenants. TenantTurner participated in Lighthouse Labs' Pre-Accelerator program to receive seed funds and product development through co-working office space and legal advice.

Richmond has a number of co-working spaces that enable the innovative and creative imagination to be applied to products and services. Studio Two Three, an art studio founded by VCU alumni and located in Scott's Addition, offers members access to the studio and equipment, as well as classes and internships for learners of all levels in an environment full of fellow artists and craftspeople. Across almost every industry — information technology, engineering and software services, manufacturing, government and urban planning, health care and retail, through artisanal craft breweries, cideries, coffee shops, clothing and jewelry makers and many more — VCU students and graduates run or work in many of the establishments that constitute the Richmond economy.

But VCU alumni, students, faculty and staff are also users of the community — their tastes in food, clothing and entertainment help to determine which businesses will thrive and what community events and activities will take place. Neighborhood parks such as Abner Clay Park in Jackson Ward have seen increased use for sport practices, festivals and other activities that engage all residents of the neighborhood, since VCU's student numbers and dormitory spaces have increased. Activities happen at all times of the day; some, such as flash mobs rushing the streets, Black Lives Matter demonstrations and Pokémon Go events are organized by students. Additional activities and events, such as ethnic food festivals and movie nights in the park, are organized by others, but are heavily supported by members of the VCU family.

In addition to its students, VCU itself hosts numerous concerts, sporting events, conferences and other meetings each year, drawing from a few dozen to thousands of attendees. The kinds of events VCU hosts determine the kinds of people who come and they, in turn, support particular eateries and other local establishments.

VCU basketball games routinely draw 7,000 people from the region and beyond to downtown Richmond. In 2013, VCU hosted the largest energy and sustainability conference in Virginia with more than 800 attendees. In 2015, the annual VCU Real Estate Trends Conference host by VCU's School of Business drew 1,400 people from Virginia and North Carolina. These are only two examples of events and conferences hosted by VCU. Other events, like Parent-Student Weekend and Alumni Weekend, all bring people who support Richmond-area businesses and help to make the community the unique place it is.

Everything that VCU does — its choices of academic programs and curricula, its physical development and public safety policies, and policies to embrace diversity and inclusiveness in a serious and sustained manner — ultimately have strong and lasting effects on the community and region. As one focus-group participant expressed it:

“ I think VCU has added to the diversity of Richmond. We had black and white issues and rich and poor. It needs a lot of work still, but with VCU's students and openness and being more accepting, black and white and gender equality and diversity is there. ”

Center for Urban and Regional Analysis



VCU

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