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The Economic Impact of

James Madison University on the Harrisonburg Metropolitan Area and Commonwealth of Virginia

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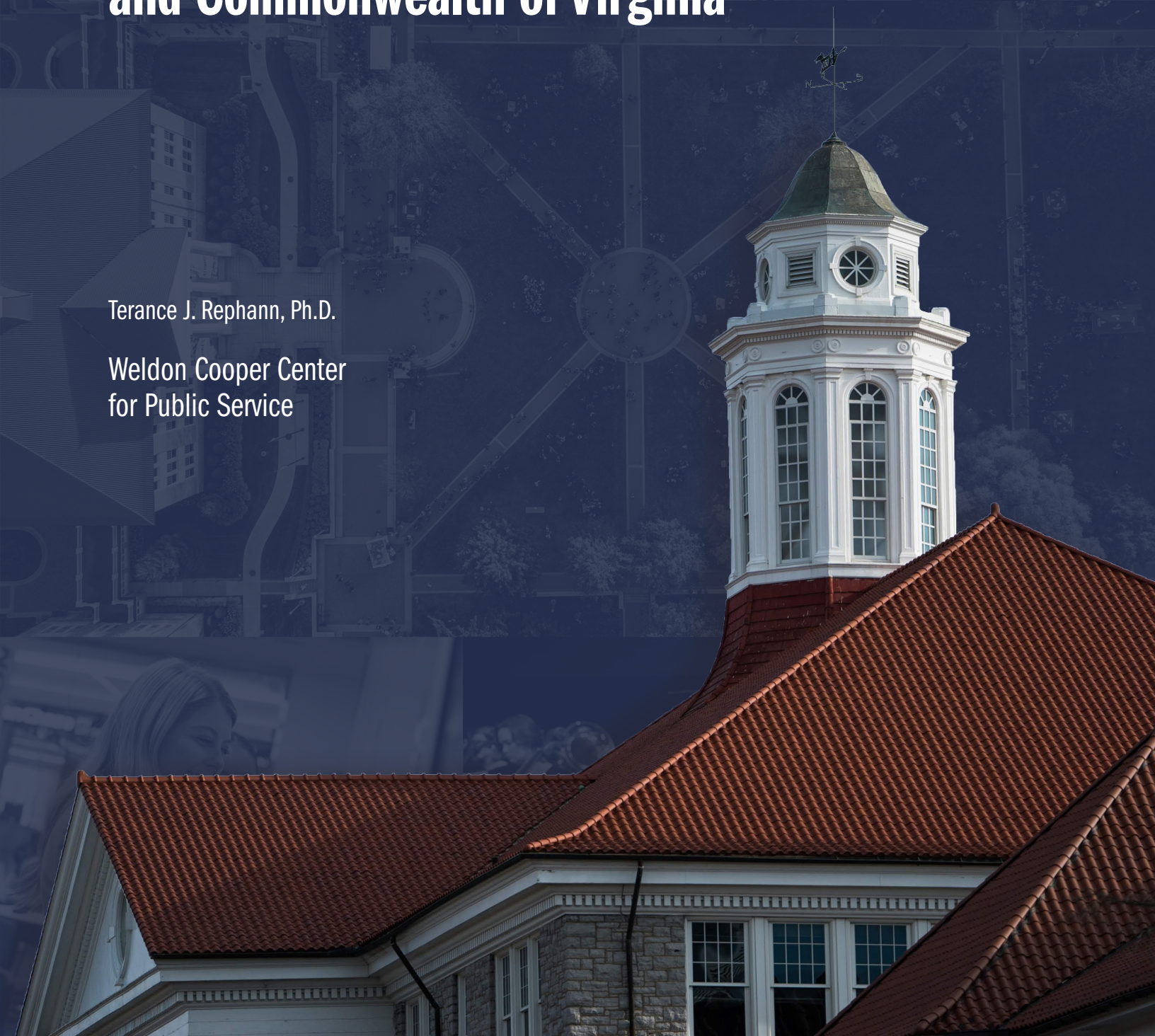
for Public Service



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EXECUTIVE SUMMARY

James Madison University (JMU) is a comprehensive public university that is part of the statewide system of public higher education in the Commonwealth of Virginia. From modest beginnings in 1908 as the State Normal and Industrial School for Women at Harrisonburg, the school officially became coeducational in 1966 when it was known as Madison College and was re-named James Madison University in 1977 after the nation's 4th president and "Father" of the U.S. Constitution James Madison. Since that time, it has grown into the fifth largest public university in Virginia with an enrollment of over 22,000 students that offers a broad range of over 135 undergraduate and graduate programs. JMU is truly a statewide institution with students drawn from 131 of the Commonwealth's 133 counties and independent cities in Fall 2021. The institution also enrolled 4,565 students from 47 different states, and 288 international students from 66 countries.

JMU's motto is "being the change", which emphasizes the importance of both action and initiative. Its mission is to be "a community committed to preparing students to be educated and enlightened citizens who lead productive and meaningful lives" and its vision is to be "the national model for the engaged university, engaged with ideas and the world." JMU defines engagement as comprising three parts: engaged learning, civic engagement, and community engagement. JMU emphasizes a balanced approach to teaching and research that places priority on student learning through interdisciplinary, multicultural, and real world and applied student research experiences. Moreover, academic quality, community, diversity, innovation, integrity, and student focus are core university values. Reflecting its enhanced academic and research scholarship activities, the university was reclassified by the Carnegie Commission from an M1 Master's College and University: Larger Programs to an R2 Doctoral University: High Research Activity in 2022.

JMU excels on measures of institutional quality, accessibility, and innovation and has received recognition and accolades from several major print publications and organizations, including *U.S. News and World Report*, the *Washington Monthly*, and the *Wall Street Journal* (College Pulse). JMU students and alumni also regularly give the university high marks for their educational experiences and life and career preparation.

JMU had a budget of approximately 600 million dollars in FY 2022, the reference year used for the economic impact analysis in this report.[1] Like other higher education institutions, the university was profoundly affected by the COVID-19 pandemic, which resulted in the suspension of normal operations in spring 2020 and the introduction of remote learning. These pandemic effects can be found in university revenues during the period, including a drop in tuition and

[1] Although this study reports primarily financial, enrollment, graduation, and other data through the year of the economic impact analysis (FY 2022), many JMU measures such as university expenditures and student enrollment have continued to grow since that time. Thus, this study likely underestimates JMU's current state and regional economic impacts.

auxiliary enterprise revenue, which was only partially offset by federal pandemic relief. The transition back to more typical financial and enrollment conditions continued during FY 2022.

JMU's campus of over 785 acres (inclusive of 31 acres at the University Farm located off-campus) is located in Harrisonburg, Virginia. The university has close access to I-81 and is less than two hours' driving time to the rapidly growing Washington metropolitan area. JMU continues to modernize its campus infrastructure and expand its footprint as part of its most recent Campus Master Plan Update (JMU 2017). Regular capital outlays are secured to acquire developable properties adjacent to the campus that would be available for future development. However, the university capital project pipeline has been slowed in part by the COVID-19 pandemic impacts. FY 2022 capital outlay expenses were $18 million compared to an average of $100 million over the FY 2016-FY 2021 period. Future university capital improvements focus on campus infrastructure renewal and expansion, renovations of buildings for code compliance and renovation, and additions to existing buildings to meet program requirements and enrollment growth.

The purpose of this study is to evaluate the economic contribution that James Madison University (JMU) makes to the Harrisonburg Metropolitan Area and the Commonwealth of Virginia. Although the primary mission of JMU is to prepare students "to be educated and enlightened citizens who lead productive and meaningful lives," the university also produces important secondary benefits to the region and state through increased economic activity and enhanced economic development potential. This economic impact study is an update to a study last performed for FY 2015 and employs broadly similar methodology and data inputs.

The study has two components. The first part examines the economic contribution that results from university-related spending. This contribution includes the economic activity stimulated by university-related spending. These effects not only include the direct injection of university-related expenditures into the regional and state economies but the consequent chain reaction of spending and re-spending that occurs as the result of this initial stimulus. The second part examines a broader set of economic and social benefits that result from the presence of the university, including economic development, workforce development, community engagement, environmental sustainability, diversity, research and development, entrepreneurship and innovation, industry partnerships and business growth, civic engagement and governmental relations, and tourism and amenities.

James Madison University can be expected to provide a stimulus to the local and state economies because many of its goods and services purchases are made from local and state businesses. In measuring this stimulus, we count not only most of the spending that results from university outlays on payroll, procurement, and capital but also spending that occurs because the university attracts students and visitors. We also count the spending of JMU retirees since their retirement pension and annuity payouts and their long-term residential

location decisions can also be attributed to the presence of the university. Lastly, healthcare-related spending that results from university health insurance coverage benefits is counted.

JMU-related spending made in the region and state are counted as direct injections into the local and state economies. Linkages with other industries in the area means that this initial injection has further stimulative effects that result from the purchases of goods and services and payments to employees. The stimulus causes a "multiplier effect" that results when money is re-spent in the local or state economy. The tool used to estimate this multiplier effect is called input-output analysis. Input-output analysis relies on input-output tables, which show the flows of purchases and sales among sectors of the economy.

Input-output analysis organizes the total impact of this university activity into three parts: a direct effect, an indirect effect, and an induced effect. The direct effect consists of JMU-related regional expenditures that remain in the community. The indirect effect measures the cumulative change that results from JMU-related spending on goods and service inputs purchases including subsequent rounds of firm good and service purchases needed to supply other producers. The induced effect is attributable to the spending of households.

The impact analysis for this study used IMPLAN (Impact analysis for PLANning) Online software (release 6.9), including the most recent 546-sector model based on 2021 data released in November 2022. IMPLAN is an industry standard input-output model that has been used in many university economic impact studies, including studies of other Virginia universities. The economic impact analysis is based on an IMPLAN Multi-Regional Input-Output (MRIO) model consisting of a Harrisonburg Metropolitan Area model (which consists of the City of Harrisonburg and Rockingham County) that is conjoined with another area model that covers the remaining 131 localities in the state. Results are presented for three different economic measures: total expenditures, employment, and state and local tax revenues. Total expenditures are simply the total spending in the region. Employment is measured in terms of full-time equivalent employment. State and local tax revenues include taxes, fees and fines, and charges for service.

An analysis of fiscal year 2022 spending by JMU, faculty and staff, students, retirees, and visitors found that $565 million was spent in the Harrisonburg Metropolitan Area and $664 million in the Commonwealth of Virginia. The largest categories of spending in the metropolitan area were student spending ($187 million) followed by employee wages and salaries ($185 million). For the Commonwealth of Virginia, employee wages and salaries were largest ($235 million), and student spending was second ($187 million). Since acquisitions of existing property are treated as transfers and do not generate economic impacts, they are not included in economic impact analysis. After adjusting for these acquisitions, the total amounts entered into the economic impact model as direct expenditures were $565 million for the Harrisonburg Metropolitan Area and $664 million for the state.

These initial injections of spending cause subsequent rounds of business and household spending that result in the direct, indirect, and induced effects described earlier. The indirect effect attributable to business spending on inputs was $77.3 million for the metropolitan area and $131.9 million for the state. The induced effect attributable to household spending was $237.1 million for the metropolitan area and $349.2 million for the state. The total impact of JMU was $593 million for the Harrisonburg Metropolitan Area and $793 million for the state.

JMU directly employed 3,803 full-time and part-time faculty and staff in FY 2022. University-related spending helped support an additional 4,432 full-time and part-time jobs in the metropolitan area and 5,453 for the state. When these employment figures are converted to full-time equivalents, the number of estimated jobs created is 3,872 for the metropolitan area and 4,798 for the state. Total jobs associated with the institution—calculated in line with previous JMU economic impact reports by adding the direct full-time and part-time direct employment to the full-time-equivalent indirect and induced employment—were 7,675 for the Harrisonburg Metropolitan Area and 8,601 for the state. For the metropolitan area, the largest employment impact is associated with students (1,210 jobs). The second highest impact resulted from operational spending (1,121 jobs) of which Aramark Corporation dining contracting is a significant driver. The third largest category was employee spending resulting from university payroll (884 jobs). For the state, operational spending produces the largest employment impact (1,415 jobs) followed by student spending (1,306 jobs) and employee payroll (1,193 jobs). In addition, medical spending related to health insurance supports 375 jobs.

Results indicate that economic activity resulting from JMU-related spending is associated with almost $60 million in state and local tax revenue. Tax revenue collected from individuals, such as personal income taxes and property taxes, sum to $6 million. Taxes collected on business entities are $53.6 million, including sales tax ($25.5 million), real and personal property taxes ($21.3 million), and corporate income tax ($1.3 million). Of the total taxes generated for the state and localities, an estimated $30,883,023 of tax revenue accrues to the state; $22,726,103 to the City of Harrisonburg, Rockingham County, and local townships and special districts (e.g., sanitary districts); and $6,137,924 to other localities within the state.

Although the flows of economic activity that result from expenditures and employment related to the operation of James Madison University are important to the economies of both the Harrisonburg Metropolitan Area and Commonwealth of Virginia, the university makes numerous other economic and social contributions to the region and state. Indeed, these activities are at the heart of the university mission, which promotes student learning and engagement through research and community and civic service. Among these other impacts are the following:

- **Economic Development.** JMU has significantly expanded its economic development engagement activities and created a one-stop shop to assist its industry and community partners. In 2019, the university formed the University Economic Development Committee

(UEDC) to serve as a body to guide economic development strategic planning and better coordinate with community partners. This collaboration has aided area businesses, institutions, and organizations in addressing regional issues such as workforce training, transportation, childcare, and affordable housing needs. JMU is now leveraging its newly earned designation as an R2 Doctoral University by the Carnegie Foundation to prepare for the Association of Public and Land-Grant Universities' (APLU) Innovation and Economic Prosperity (IEP) designation to further enhance its visibility and impact on regional economic and community development.

- **Workforce Development.** JMU provides for the workforce needs of the Harrisonburg Metropolitan Area and the Commonwealth of Virginia. Recent 2017-2021 data from the U.S. Census American Community Survey for Virginia shows that college degree awardees earn significantly more than non-college graduates. For Virginia residents aged 25-64 those with a bachelor's degree earned, on average, $74,228, those with a master's degree earned $95,962 and those with a doctorate earned $117,827 compared to just $32,754 for high school graduates. Virginia Longitudinal Data System (VLDS) data on Post-Completion Wages from the State Council of Higher Education for Virginia (SCHEV) show that the JMU bachelor's degree graduate cohorts employed in the Commonwealth earned $58,414 five years after graduation, $67,375 10 years after graduation, and $90,025 20 years after graduation. JMU makes a significant contribution toward fulfilling the Commonwealth's need for STEM and Health Sciences (STEM-H) graduates. JMU has rapidly grown the number of graduates with STEM-H-related degrees from 1,608 in 2014-15 to 1,942 in 2021-22, an increase of over 20 percent. It has also pledged to further increase the number of STEM grads as part of an incentive package to provide skilled computer science graduates for Amazon's continued HQII expansion in Arlington. Furthermore, JMU provides comprehensive support for STEM education for thousands of younger students through programming offered to K-12 schools and other STEM partners. Activities supported by the university include conferences and workshops for educators and students, student science fairs and competitions, student mentoring, college visits, technology learning experiences, and student technology camps.

- **Community Engagement.** JMU recently renewed its Carnegie Foundation for the Advancement of Teaching 's Community Engagement Classification, which recognizes its commitment to community engagement. The university emphasizes student engagement through learning projects that involve collaborative work with other students, faculty, and the community and has created lasting partnerships with community organizations to connect students and faculty with creative problem-solving experiences and service opportunities. These activities are integrated at the curriculum and program level through coursework practicums, internships, and clinical experiences and also encouraged at the institution level with out-of-the-classroom volunteer and service activities. Students also provide volunteer and service-learning hours to community service organizations and agencies. For example, the Community Engagement & Volunteer Center (CEVC), which coordinates partnerships with more than 100 community service organizations and agencies, tracked nearly 24,000 hours of

student service in FY 2022. Another important center for community engagement activity is the college of Health and Behavioral Studies Institute for Innovation in Health and Human Services (IIHHS), which provided 30,268 hours of student engagement in direct services, program support, service learning and other activities. The JMU community is also active in fundraising to benefit local charities. During FY 2022, faculty, staff, and students contributed $210,716 through payroll deductions to nonprofit organizations. Student organizations also routinely organize fundraisers to benefit local, state, and national charitable organizations.

- **Environmental Sustainability.** The university has played a significant leadership role in promoting environmental stewardship sustainable development and environmental literacy in the Shenandoah Valley Region. The following principles guide JMU's individual and institutional actions toward more sustainable practices: create an institutional culture of sustainability; foster interdisciplinary research, education, and literacy in sustainability; build sustainable communities through partnerships, service, and outreach; and improve environmental quality and conserve natural resources. Partners across the university collaboratively build an environmentally literate community whose members think critically and act individually and collectively as model stewards of the natural world. More than 300 faculty conduct research related to environmental, economic, and/or environmental sustainability. The university routinely develops initiatives in direct support of environmental quality, such as reducing waste and encouraging recycling; investing in clean energy and energy efficiency; encouraging walking, cycling, ride-sharing, and public transit; and promoting sustainable dining. JMU has received national and state recognition for its leadership in environmental improvement, including recognition by *The Princeton Review's Guide to Green Colleges*, the League of American Bicyclists, the Arbor Day Foundation, the APPA (formerly the Association of Physical Plant Administrators), and the International Society of Arboriculture. JMU uses the Association for the Advancement of Sustainability in Higher Education (AASHE) Sustainability Tracking, Assessment & Rating System (STARS) tool to assess its combined environmental, economic, and social sustainability performance every three years. Based on the STARS' most recent sustainability report, JMU earned a silver rating.

- **Diversity.** JMU places a significant emphasis on expanding access and opportunities for underserved and disadvantaged groups within the Shenandoah Valley and the Commonwealth, including immigrants, racial and ethnic minorities, economically disadvantaged residents, rural residents, the disabled, the LGBTQ+ community, first-generation college students, and others. As evidence of its commitment to diversity and inclusion, the university has been awarded the INSIGHT into Diversity Higher Education Excellence in Diversity (HEED) award multiple times. JMU recently graduated its first cohort of 17 students from the Valley Scholars program, which provides educational enrichment activities to disadvantaged secondary school students from the Shenandoah Valley for college preparation, awarding full scholarships to completers. JMU has taken a leadership role in efforts to welcome and integrate immigrants and refugees in the Valley region through the

provision of housing, transportation, English conversation, academic tutoring, and other assistance to families.

- **Research and Development.** In recognition of JMU's expanded graduate programs degree production and research activity, JMU was recently reclassified from an M1 Master's College and University: Larger Programs to an R2 Doctoral University: High Research Activity by the Carnegie Classification of Institutions of Higher Education. JMU faculty, students, and staff are active in applying for external funding to support research, instruction, outreach, and other activities. In FY 2022, JMU received $31.8 million in external funding for research and scholarship, a record amount that was driven in part by increased funding provided by the federal government from COVID-19 pandemic-related programs. JMU has a nationally recognized research portfolio in areas such as environmental science and sustainability, health care, teaching and education, psychology, and communication and media studies.

- **Entrepreneurship and Innovation.** JMU is an important state and regional asset for developing innovation and entrepreneurship. The university provides numerous resources for boosting student, faculty/staff, and community innovation and entrepreneurship, including: programs to assist student entrepreneurial networking; resources, such as space, equipment, and supplies to support innovation; workshops on entrepreneurship and business planning; sponsored competitions for annual student business plan and business start ideation; and rewards for faculty and staff innovators. The University Foundation established the Madison Trust in 2015 to provide a vehicle to fund faculty, staff, and student innovators who competitively pitch their ideas to a panel of investors and donors. Since its inception, over 170 proposals have been submitted that sought over $2.7 million in funding. Nearly $1 million in private funding has been provided for 33 projects.

  The university also supports technology transfer activities and innovation commercialization and business development services. It manages and markets licenses for several new technologies developed at JMU including patented technologies in the areas of vibratory cough suppression, organic nanoparticles development for chemical products, animal monitoring data stations, and Sjogren's disease diagnosis. JMU partners with regional organizations to promote entrepreneurship and innovation including angel investors and technology innovators. JMU officials and staff serve on the boards of several regional organizations with innovation, technology, and entrepreneurship missions.

- **Industry Partnerships and Business Growth.** JMU has developed numerous partnerships with state, local and regional businesses, nonprofits, and government agencies to foster business recruitment, expansion, and retention. JMU participates in the Shenandoah Valley Partnership, Virginia Economic Development Partnership, Northern Virginia Technology Council, Shenandoah Valley Technology Council, and the Virginia University-Based Economic Development (UBED) group.

University departments engage in a variety of different partnerships with private sector industry. Corporate partners serve on departmental advisory boards, provide speakers for university forums and events, and participate in campus recruitment events. Business partners play an especially vital role by working with students on real-world research projects, hosting internships, and providing clinical experiences. The business sector is also involved in joint research projects with faculty and staff. Industry partners sponsored 12 projects in FY2020 through FY 2022 worth $829,867.

JMU has formed an innovative workforce training and partnership with Blue Ridge Community College (BRCC) and Elkton-based pharmaceutical company Merck & Co (also known as the "Merck Model"). Funding for the initiative was provided by a $2.5 million special appropriation through the State Council of Higher Education for Virginia (SCHEV) in 2019 that funds improvements to JMU/BRCC curriculum, personnel, and institutional equipment to develop education and training programs. This business training and education assistance, in combination with a $7.5 million custom grant administered by the Virginia Economic Development Partnership (VEDP), were instrumental in attracting a $1 billion and 152 employee expansion of the Merck pharmaceutical plant to produce the Human Papillomavirus (HPV) vaccine. JMU is assisting education and workforce programming to help build Merck's workforce and to augment the 2–4-year college graduate education pipeline in several different areas.

- **Civic Engagement and Governmental Relations.** JMU fosters civic engagement, public service, and good governmental relations through a variety of activities, including working with outside organizations and sponsoring community dialogue on important community and public policy issues.

  JMU contributes to the costs of providing services to area governments, by providing cash payments and in-kind services. The university made a $287,266 Payment in Lieu of Taxes (PILOT) to the City of Harrisonburg in FY 2022 to help defray city public safety costs and reimburse the city for foregone property revenues. It also participates in a mutual aid agreement that allows JMU police department officers to operate as city officers within the city limits and conducts joint emergency preparedness training exercises with local public safety agencies. Faculty, staff, and students also serve on volunteer firefighting and rescue squads and auxiliary police units in the City of Harrisonburg and Rockingham County. JMU is the largest customer for the Harrisonburg Rapid Transit Authority and helps sustain a service that is able to offer a greater variety of routes and more convenient scheduling for non-university customers than would otherwise be possible.

  As the university footprint grows, JMU has been a major factor in the redevelopment of real estate throughout Harrisonburg. For example, in 2005, the university acquired the former Rockingham Memorial Hospital (adjacent to campus), which led to the subsequent construction of the Student Success Center (2014), the College of Health and Behavioral

Studies (2016), the Chesapeake Parking Deck (2018), and the Hotel Madison and Shenandoah Valley Conference Center (2018). Other recently acquired properties now host the new Atlantic Union Bank Center (2020) and the East Campus Parking Deck (2019).

- **Tourism and Amenities.** JMU is a large business, cultural, recreational, and entertainment attraction in the Shenandoah region. As such, it attracts numerous visitors from inside and outside the Harrisonburg Metropolitan Area. Among its tourism resources are the Forbes Center for the Performing Arts, which provides theatre, dance, and music programs; Bridgeforth Stadium and Zane Showker Field, a major football stadium with seating capacity of over 25,000; the Festival Conference and Student Center on East Campus, which provides conference and meeting space; the 8,500 seat Atlantic Union Bank Center which opened in November 2020 and plays host to numerous events including basketball games, graduation and convocation ceremonies, concerts, conventions, and trade shows; and the Duke Hall Gallery of Fine Art which features visual art exhibitions. The JMU libraries, and their array of special regional and historical collections, also draw outside researchers and hobbyists. The Hotel Madison and Shenandoah Valley Conference Center—a public-private partnership between JMU, the City of Harrisonburg and a private development company—opened in 2018. The hotel, owned and operated by dpM Partners, features 230 guest rooms, a restaurant, a large pool, and 21,000 square feet of meeting and event space that can accommodate up to 1,200 conference participants.

  During FY 2022, JMU attracted an estimated 276,862 visitors from outside the area to the campus for college-related events and activities. Athletic events resulted in 84,365 non-local spectators and 40,208 participants and members of travel parties for visiting teams and other athletic-sponsored activities, such as sports banquets and sports camps. The JMU Admissions Office estimated that approximately 60,400 parents and prospective students visited the campus during the year for recruitment activities and campus visits. Alumni Affairs drew approximately 5,000 alumni visitors. These figures do not include visitors to other university events such as non-athletic summer camps and functions sponsored by outside organizations. In FY 2022, JMU hosted over 100 meetings and conferences by outside businesses and non-university organizations.

INTRODUCTION

The purpose of this study is to evaluate the economic contribution that James Madison University (JMU) makes to the Harrisonburg Metropolitan Area and the Commonwealth of Virginia. The primary mission of JMU is to prepare students "to be educated and enlightened citizens who lead productive and meaningful lives." However, the university also produces important secondary benefits to the region and state through increased economic activity and enhanced economic development potential. This economic impact study is a follow up to one conducted for FY 2015 (Rephann 2016) and uses a similar methodology and data inputs.

The study has two components. The first part examines the economic contribution that results from university-related spending. This contribution includes the economic activity stimulated by university payroll, procurement, capital investment in buildings and equipment, student spending, visitor spending, health spending from health insurance, and the spending of university faculty and staff retirees who remain in the region and state. These effects not only include the direct injection of university-related expenditures into the regional and state economies but the consequent chain reaction of spending and re-spending that occurs as the result of this initial stimulus. The second part examines a broader set of economic and social benefits that result from the presence of the university, including economic development, workforce development, community engagement, environmental sustainability, diversity, research and development, entrepreneurship and innovation, industry partnerships and business growth, civic engagement and governmental relations, and tourism and amenities.

This study is divided into four sections. The first section examines important features of the university, including enrollment, graduation, and financial and campus characteristics. The second section describes the economic impact model and construction of the input data used to estimate JMU's economic contribution. The third section presents the results of the economic impact analysis. The fourth section examines other quantitative and qualitative impacts of the university on economic development.

SECTION 1

JAMES MADISON UNIVERSITY CHARACTERISTICS AND GROWTH

James Madison University is a comprehensive public university that is part of the statewide system of public higher education in the Commonwealth of Virginia. From modest beginnings in 1908 as the State Normal and Industrial School for Women at Harrisonburg, the school officially became coeducational in 1966 when it was known as Madison College. In 1977, the university was re-named James Madison University after the nation's fourth president and "Father" of the U.S. Constitution, James Madison. Since that time, it has grown into the fifth largest public university in Virginia with an enrollment of over 22,000 students and a broad range of over 135 undergraduate and graduate programs. The institution is accredited by the Southern Association of Colleges and Schools Commission on Colleges.

JMU's motto is "being the change", which emphasizes the importance of both action and initiative. Its mission is to be "a community committed to preparing students to be educated and enlightened citizens who lead productive and meaningful lives" and its vision is to be "the national model for the engaged university, engaged with ideas and the world" (JMU 2023). JMU defines engagement as comprising three parts: engaged learning, civic engagement, and community engagement. JMU emphasizes a balanced approach to teaching and research that places priority on student learning through interdisciplinary, multicultural, and real-world and applied student research experiences. Moreover, academic quality, community, diversity, innovation, integrity, and student focus are core university values. Reflecting its enhanced academic and research scholarship activities, the university was reclassified by the Carnegie Commission from an M1 Master's College and University: Larger Programs to an R2 Doctoral University: High Research Activity in 2022.

James Madison University excels on measures of institutional quality, accessibility, and innovation. Niche, a popular college ranking and review website, lists JMU 66 among top public universities, while *Washington Monthly* ranks it 51 among National Universities. In 2024, *U.S. News and World Report* ranks it 64 among Top Public Schools—National Universities, and 124 among National Universities. The *Wall Street Journal* (College Pulse) 2024 Best Colleges in the U.S. places it 152 among U.S. colleges and universities. JMU undergraduate academic programs also receive prestigious *U.S. News and World Report* rankings such as Undergraduate Engineering-No Doctorate (30), Undergraduate Nursing (86), Undergraduate Psychology (98), Undergraduate Business (103), and Undergraduate Economics (145). High graduate program rankings are obtained for Audiology (20), Speech-Language Pathology (32), Physician Assistant (50), Occupational Therapy (79), part-time MBA (89), Nursing Schools: Master's (92), Nursing Schools: Doctorate (120), Fine Arts (99), Public Affairs (109), and Psychology (111). Website OnlineMasterDegree.org has recognized two Master's Degree programs for excellence: Mathematics Education (8) and Computer Science (27). JMU has also received accolades for its environmental stewardship. The university is listed in *The Princeton Review's Guide to Green Colleges* for its environmental efforts, was recognized by *The Princeton Review* as one of the Top

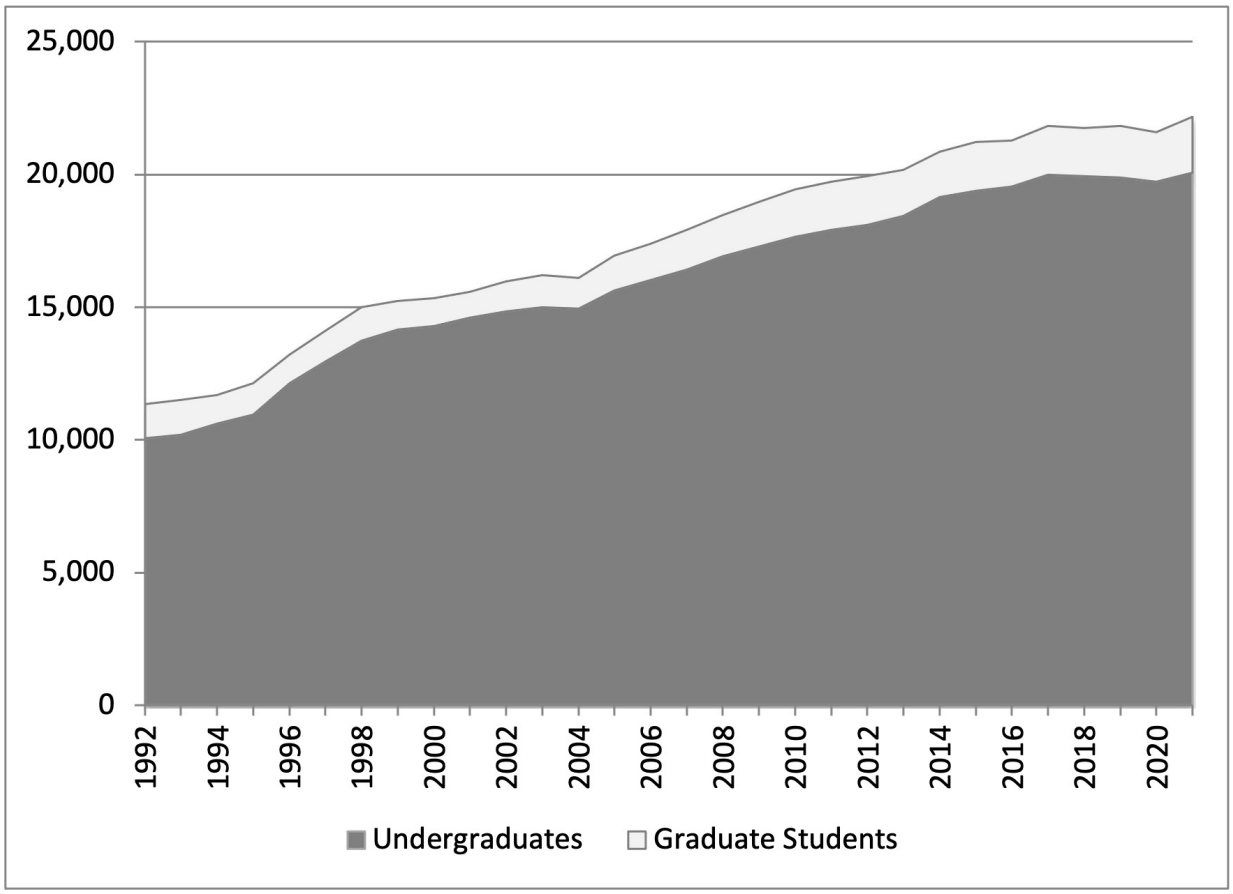
50 Green Colleges in 2022, and recently earned a STARS Silver rating from the Association of the Advancement of Sustainability in Higher Education (AASHE) for its environmental record. JMU students and alumni regularly give the university high marks for their educational experiences and life and career preparation.

University Enrollment and Graduation Characteristics

JMU enrollment was 22,166 in fall 2021. As is true for other Virginia public higher education institutions,[2] enrollment growth slowed over the 2014 to 2021 period compared to the rapid pace observed in the previous decade. Enrollment grew 6.3 percent from Fall 2014 to Fall 2021, compared to an average 3.8 percent growth rate for all public four-year institutions (see **Figure 1.1**). Approximately 9 percent of fall 2021 growth was due to graduate student enrollment. JMU is truly a statewide institution with students drawn from 131 of the Commonwealth's 133 counties and independent cities. Approximately 21.2 percent of students are from out-of-state. The institution enrolled 4,565 students from 47 different states, and 288 international students from 66 countries.

[2] Financial, enrollment, and graduation figures referenced in this section parallel the FY 2022 period used in the economic impact analysis. University enrollment continued to expand through fall 2023. Total headcount enrollment was 22,224 in fall 2022 and grew further to 22,760 students in fall 2023.

Figure 1.1 Fall Enrollment by Year, 1992-2021



Source: State Council of Higher Education for Virginia (SCHEV), E02 Fall Headcount Report

The JMU student population has also grown increasingly diverse. In Fall 2021, 75 percent of students were white compared to 77 percent in Fall 2014. Of the minority student population 7 percent were Hispanic, and 5 percent each were Asian, Black/African American, or reported multiple ethnicities in Fall 2021. Sixty percent of students were female in Fall 2021 compared to 59 percent in Fall 2014. In Fall 2021, 1,896 students (8.6 percent) were 25 years of age or older compared to 1,446 (6.9 percent) in Fall 2014.

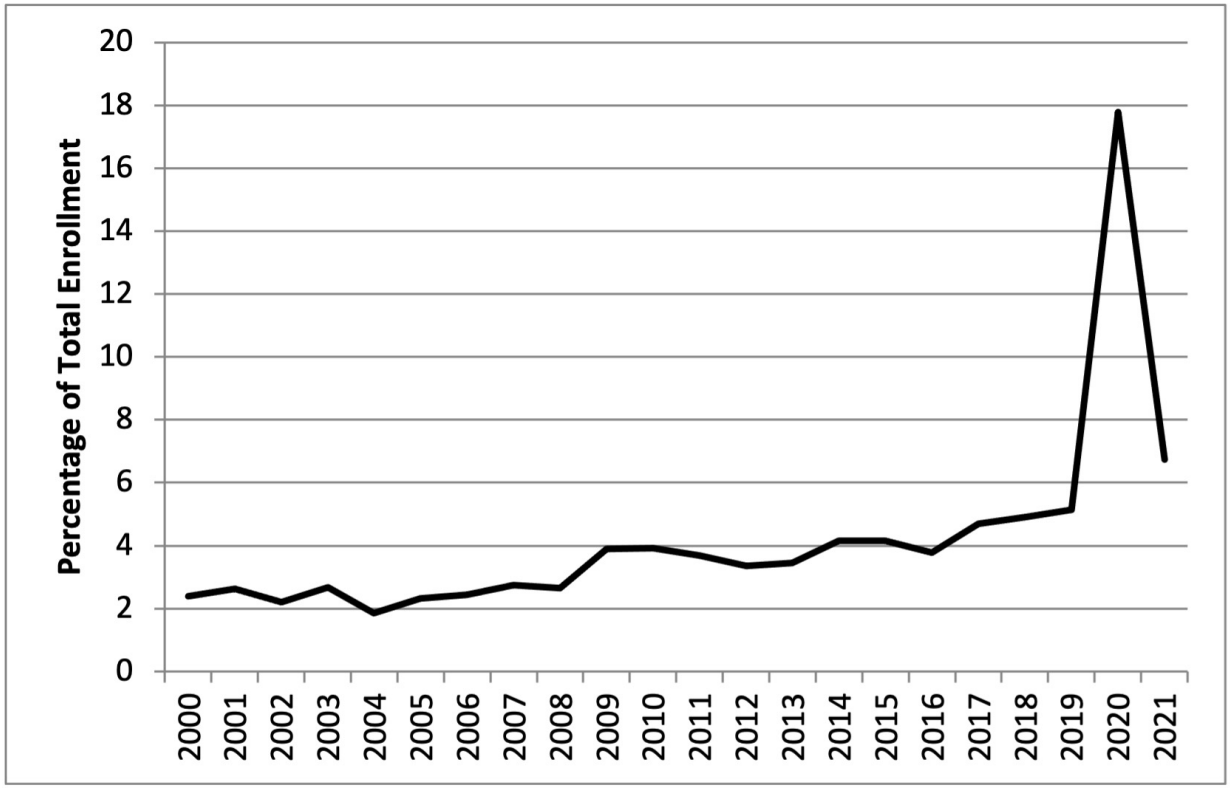
Table 1.1 Fall 2021 Enrollment Demographic Characteristics

Characteristic	Number	Percentage
Ethnicity		
American Indian/Alaska Native	28	0.1
Asian	1,061	4.8
Black/African American	1,084	4.9
Hawaiian/Pacific Islander	28	0.1
Hispanic	1,549	7.0
White	16,623	75.0
Two or more	1,058	4.8
Unreported	425	1.9
Non-Resident Alien	310	1.4
Total	22,166	100.0
Age		
17 & under	391	1.8
18-19	8,807	39.7
20-21	8,522	38.5
22-24	2,550	11.5
25-29	741	3.3
30-34	387	1.8
35-39	271	1.2
40-49	341	1.5
50-64	145	0.7
65 and over	11	0.1
Total	22,166	100.0
Gender		
Men	9,098	41.0
Women	13,068	59.0
Total	22,166	100.0
On/Off Campus		
On-Campus	20,673	93.3
Off-Campus	1,493	6.7
Total	22,166	100.0

Source: James Madison University, Planning, Analytics and Institutional Research (PAIR)

Although the vast majority of coursework is provided at its main campus in Harrisonburg, off-campus (including distance learning) offerings have become much more significant, particularly during and immediately after the COVID-19 pandemic (see **Figure 1.2**). In the fall of 2021, 1,493 students were enrolled in off-campus programming, including those enrolled in online programs and those attending Virginia higher education centers such as the New College Institute in Martinsburg, offering a Masters in Educational Leadership program, and the Roanoke Higher Education Center. This 6.8 percent share is up from 4.1 percent in fall 2014, but down from the 17.8 percent observed because of the rotation of campus coursework online during the height of the pandemic in fall 2020.

Figure 1.2 Fall Off-Campus Enrollment Percentage by Year, 2000-2021



Source: James Madison University, PAIR

JMU conferred 5,322 degrees in Academic Year (AY) 2021-22, including 4,537 bachelor's degrees, 748 master's degrees, and 37 doctorates. This is down slightly from a historic high of 5,578 degrees awarded in AY 2020-21. The number of degrees awarded increased by 7.9 percent from AY 2014-15 to AY 2021-22, which exceeded the 4.4 percent rate of enrollment increase over the same period. This higher degree growth can be partly explained by climbing student retention and success rates. For example, the Student Success Index, a comprehensive measure developed by SCHEV to measure graduation rates for all entering student cohorts (full-time, part-time and transfer students), increased from an average of 73.3 percent over the

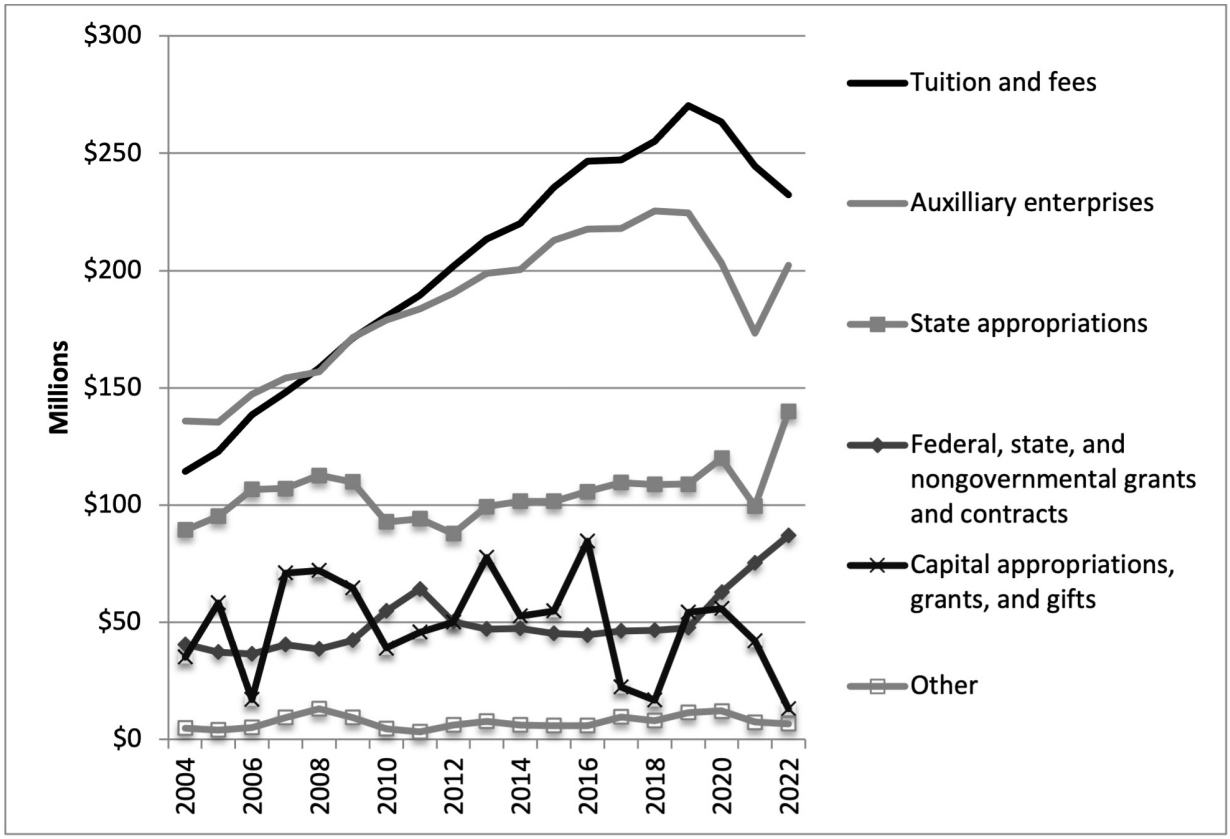
period AY 2004-05 to AY 2010-11 to 78.2 percent over the AY 2011-12 to AY 2017-18 period.[3] This compares to a Student Success Index of 70.4 percent for all four-year public institutions for the latter cohorts.

JMU had a budget of approximately $600 million dollars in FY 2022.[4] Like other higher education institutions, the university was profoundly affected by the COVID-19 pandemic, which resulted in the suspension of normal operations in the spring 2020 semester and the introduction of remote learning. These pandemic effects can be found in university revenues, including a drop in tuition and auxiliary enterprise revenue, which was only partially offset by federal pandemic relief (see **Figure 1.3**). The transition back to normal financial conditions continued during FY 2022. On the expenses side, compensation expenses (i.e., wages, salaries, benefits), represented half of JMU's total operating and non-operating expenses. According to a recent financial analysis (Orem 2019), JMU spends almost 80 percent of its Education and General (E&G) funding on instruction and academic support, which placed it first among national peer group institutions. Furthermore, it spent just 13 percent on institutional support, among the lowest in the same peer group and reflective of lean administrative operations.

[3] These index values are for normal time-to-completion (full-time—4 years; part-time—6 years, full-time transfers—3 years, part-time transfers—5 years). See https://research.schev.edu//gradrates/success_index.asp

[4] University operating revenues increased to approximately $650 million in FY 2023.

Figure 1.3 University Operating Revenues (2022 Dollars) by Source, FY 2004- FY 2022



Source: U.S. Department of Education, Integrated Post-Secondary Data System, Finance Survey, 2004-2022 and JMU Financial Reports

University Campus Characteristics

JMU's campus of over 785 acres (inclusive of 31 acres at the University Farm located off-campus) includes approximately 160 buildings. It is located in Harrisonburg, Virginia, an independent city with over 51,000 residents. The university campus straddles I-81, the principal transportation artery for the Shenandoah Valley, and provides less than a two hour's driving time to the rapidly growing Washington metropolitan area. The Bluestone Area is the original campus and contains many of the university's earliest limestone façade buildings that face or are in close proximity to the lawn area known as "The Quad" (See **Figure 1.4**). It contains a mixture of academic, administrative, and residential buildings, including the Carrier Library. The Mid Campus contains the 9.1-acre Newman Lake and includes Bridgeforth Stadium, Plecker Athletic Performance Center, the Zane Showker Building that houses the JMU College of Business, and many of the university's residential and dining facilities. The East Campus, in the Skyline and Ridge Areas, contains the Convocation Center, Atlantic Union Bank Center, many of the university's science and technology buildings, and most outdoor recreation facilities. The West Campus (west of South Main Street) includes the Forbes Center for the Performing Arts and many of the campus administrative buildings. The North Campus Area (Grace Street Corridor) between Grace Street

and M.L.K. Jr. Way is one of the newest areas of JMU and includes the Student Success Center, the Health and Behavioral Studies Building, and the Hotel Madison and Shenandoah Valley Conference Center.

Figure 1.4 Campus Landscape

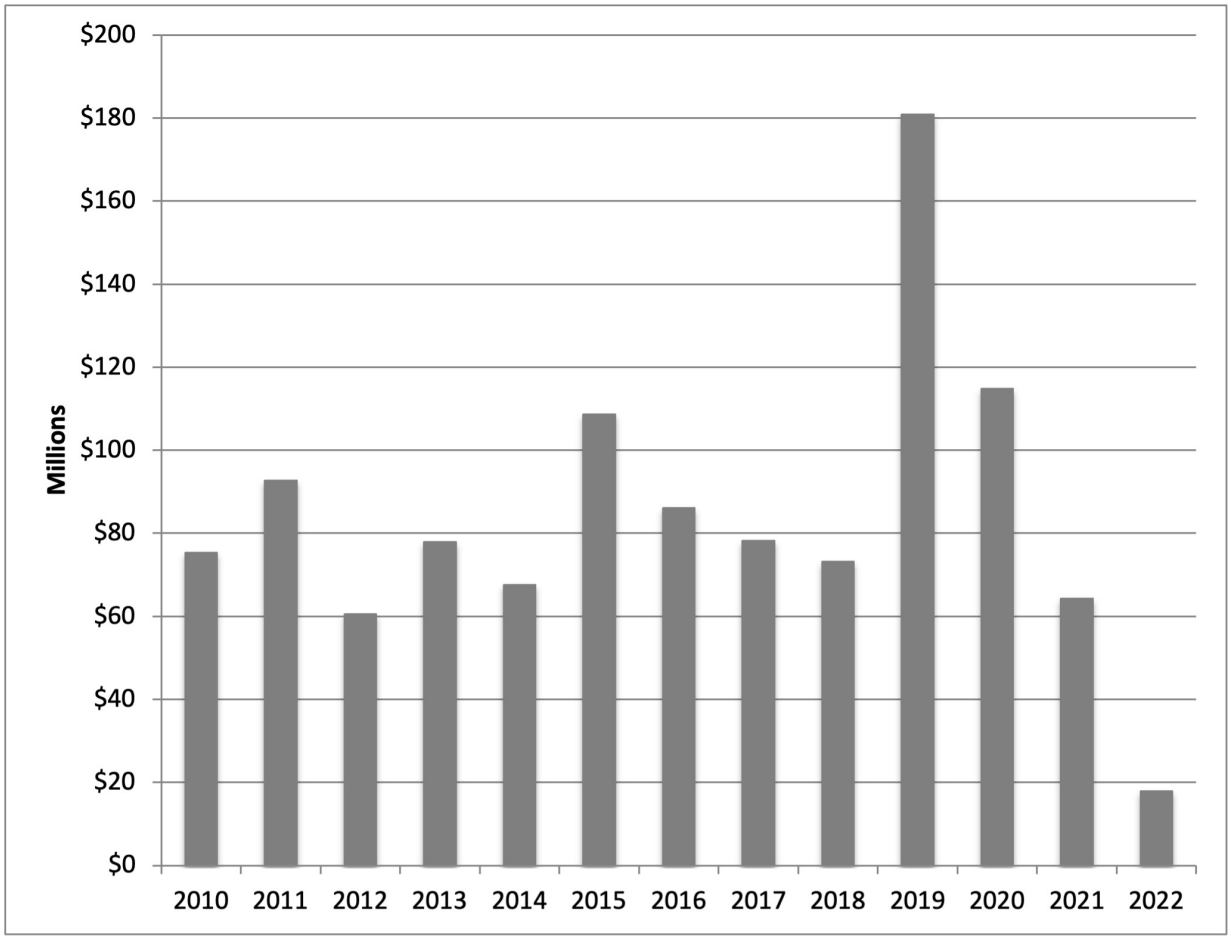
Clockwise from upper left: (a) The Quad in the Bluestone Area, (b) Mid Campus Area, (c) East Campus Area, (d) Forbes Center for the Performing Arts in North Campus Area, and (e) Student Success Center in North Campus Area

JMU continues to modernize its campus infrastructure and expand its footprint as part of its most recent Campus Master Plan Update (JMU 2017). Regular capital outlays are secured to

acquire developable properties adjacent to the campus that would be available for future development. For example, the City of Harrisonburg Waste Incinerator, a steam and chill water plant located on Newman Drive, was acquired in November 2014 and is now the focus of a major campus infrastructure improvement project described further below.

The university capital project pipeline has been slowed, in part, by the COVID-19 pandemic impacts. FY 2022 capital outlay expenses were $18 million compared to an average of $100 million over the FY 2016-FY 2021 period. Future university capital improvements focus on campus infrastructure renewal and expansion, renovations of buildings for code compliance and modernization, and additions to existing buildings to meet program requirements and enrollment growth. The source of funding for major capital projects includes state funds, university bonds, auxiliary reserve funds, private donations, and public-private partnership investments.

Figure 1.5 Capital Outlay Project Expenses by Year, FY 2010- FY 2022



Source: James Madison University, Facilities Management

During FY 2022 several large capital projects (see **Table 1.5**) were in progress. They include a $124 million renovation and expansion of the Carrier Library, which was last updated nearly 30 years ago. The improvements include a 69,300 gross square feet building addition; safety, ADA, and life-cycle updates; a new entrance; new programming spaces; and a café. The building is projected to be completed in 2026. Another sizeable project is the East Campus Power Plant infrastructure improvement. It entails a major upgrade of a dated Power Plant that JMU purchased from the City of Harrisonburg. The over $110 million project entails construction of a new boiler building and boiler, replacement of existing power plant boilers and chillers, and installation of infrastructure to connect campus buildings to the system. After the opening of the Atlantic Union Bank Center as the new venue for JMU basketball in 2020, renovation of the old 110,000 square foot Convocation Center proceeded with a project cost of $20 million. The renovated building hosts volleyball, indoor training space for track and field, sports medicine, and other sport programs.

The next phase of campus investments will focus mainly on building renewal and expansion. The university has submitted a 2024-26 biennial request list that includes eight projects that are estimated to cost $285 million. Some of the projects represent the final phase of large-scale building and infrastructure projects. For example, the university has applied for funding to equip and furnish the Carrier Library and complete Phase 3 of its East Campus Infrastructure plan to install the lines required to connect all of the current and future buildings of the East Campus. The largest project is a 5-story, 125,367 gross square feet expansion of the College of Health and Behavioral Studies building (which opened in 2016 on the former site of Rockingham Memorial Hospital's East Tower Building). The addition will allow the university to consolidate other health studies entities that could not be accommodated in the original facility when it was constructed. Moody Hall, Johnston Hall, and Spotswood Hall involve re-modelling of Bluestone historic structures. Although not all of the projects on this list are guaranteed to receive funding within the requested period, they demonstrate the continued commitment that the university makes to modernizing and expanding its facilities into the next half of the decade.

Table 1.2 JMU 2024-2026 Biennial Projects, A/E, FFE, and Construction

Project	Description	Amount ($ Millions)
Moody Hall Renovation	Renovation of building housing Blackwell Auditorium African, African American and Diaspora Studies Program, classrooms, and faculty offices.	46.3
Carrier Library Renovation and Expansion - FF&E	Purchase and installation of furniture and equipment for modernizing and expanding library building	7.0
Spotswood Hall Renovation	Renovation of student residential facility	23.8
East Campus Infrastructure - Phase 3	Updated Power Plant and infrastructure to serve East Campus heating and air conditioning needs	28.7
College of Health and Behavioral Studies Expansion	Renovation and expansion of the College of Health and Behavioral Studies building, which houses nursing, OT, PT, and other health sciences programs	109.6
Godwin Hall Renovation	Renovation of the building used by Department of Intercollegiate Athletics	40.5
Johnston Hall Renovation	Renovation of the building used by Department of Psychology and Anthropology programs	26.8
Blanket - Property Acquisition	Funding for the incremental acquisition of future properties adjacent to the University	3.0
Total		**285.8**

Source: Virginia Department of Planning and Budget

Two projects on the project list will be renovated in part or entirety without state funding. They include the Spotswood Hall renovation, which will rely on University Auxiliary Services funds, and the East Campus Infrastructure (Phase 3) project which will utilize approximately $9.5 million in Revenue Bond funding.

SECTION 2

ECONOMIC IMPACT METHODOLOGY

James Madison University can be expected to provide a stimulus to the local and state economies because many of its goods and services purchases are made from local and state businesses. Moreover, the vast majority of its payroll is disbursed to local and state residents. This section describes the methodology and data inputs used to gauge this initial financial stimulus and the multiplicative effect that results. The analysis relies on an economic modeling tool called input-output analysis, which is described in further detail below.

Determining University-related Spending in the Harrisonburg Region and State

An economic impact analysis for an existing business, organization, or agency attempts to measure the effect of removing the spending associated with the entity from the economy. For a relatively small economy, such as the Harrisonburg Metropolitan Area, the removal of the university would leave a large vacuum since almost all of the spending associated with James Madison University would not have occurred without the presence of the university.[5] **Table 2.1** below indicates that of the 61 percent of JMU spending in FY 2022, $363 million occurred within the Harrisonburg Metropolitan Area (up from 54 percent in FY 2015). Of this local spending, 71 percent consists of faculty and staff payroll. The largest two procurement-spending categories consist of dining and lodging services ($57.5 million) and utilities ($11.4 million). The university also paid out an additional $125.4 million to residents and businesses elsewhere in Virginia. In total, JMU spent more than $488 million in the Commonwealth in FY 2022, over 82 percent of its total spending. Once again, payroll ($326 million or two-thirds of the total) was the largest component.

[5] For the removal of a single public higher education institution, measuring economic impact on the state is more complex since some students may substitute attendance at one institution for another higher education institution within the state. Also, state spending in support of aid to one institution is fungible and can be used to support other types of public spending. This issue is explored in greater detail in Rephann (2009; 2023). The results of the statewide analysis would be more accurately termed an "economic footprint" or "economic contribution" analysis since it shows the overall effect of spending associated with the university rather than the results of an actual "with" and "without" type analysis.

Table 2.1 University Spending by Major Category and Location, FY 2022

Major Categories	Harrisonburg Metropolitan Area	Other In-State	Total In-State	Out-of-State	Grand Total
Payroll (wages and salaries, benefits)					
	$257,165,517	$68,469,910	$325,635,427	$9,408,852	$335,044,278
Facility					
Contract construction	$5,801,182	$6,603,351	$12,404,533	$1,030,110	$13,434,643
Building and maintenance operations	$10,187,566	$2,715,649	$12,903,216	$1,019,082	$13,922,298
Utilities					
	$11,447,942	$49,326	$11,497,268	$5,008,879	$16,506,146
Wholesale and retail purchases					
Food and beverages	$176,258	$66,379	$242,637	$49,861	$292,497
Furniture and equipment	$576,837	$1,913,414	$2,490,251	$13,992,510	$16,482,761
Office supplies	$3,366,518	$4,661,407	$8,027,925	$28,280,174	$36,308,099
Building materials and supplies	$800,226	$1,402,307	$2,202,533	$587,596	$2,790,129
Services					
Accounting/auditing/bookkeeping	$527	$34,857	$35,384	$681,960	$717,344
Advertising/marketing promotion	$170,517	$179,235	$349,753	$2,476,104	$2,825,856

Major Categories	Harrisonburg Metropolitan Area	Other In-State	Total In-State	Out-of-State	Grand Total
Computer/data processing services	$175,037	$634,875	$809,912	$9,191,767	$10,001,679
Repair services	$2,802	$31,658	$34,459	$606,524	$640,983
Management/consulting services	$625,504	$223,644	$849,148	$431,005	$1,280,153
Educational services	$163,622	$207,685	$371,307	$859,952	$1,231,259
Equipment rent/lease (except autos)	$3,791,267	$795,132	$4,586,399	$929,239	$5,515,638
Dining and lodging	$57,509,467	$315,857	$57,825,325	$1,688,700	$59,514,024
Telecommunications	$11,138	$375,815	$386,953	$2,223,044	$2,609,997
Other services	$5,081,719	$11,154,381	$16,236,100	$7,822,939	$24,059,039
Transportation					
Air	$1,895,427	$313,847	$2,209,273	$786,472	$2,995,745
Motor freight and transportation	$207,161	$93,156	$300,317	$688,880	$989,197
Auto purchases	$320,460	$119,793	$440,253	$815,249	$1,255,502
Maintenance, repair, and operation	$298,192	$404,785	$702,976	$156,291	$859,267
Incidentals					
Insurance	$2,407	$1,907,813	$1,910,219	$527,922	$2,438,142
Postal	$7,644	$46,595	$54,239	$459,650	$513,890
Printing	$100,847	$775,503	$876,349	$252,439	$1,128,788

Major Categories	Harrisonburg Metropolitan Area	Other In-State	Total In-State	Out-of-State	Grand Total
Other					
Bond payments (principal and interest)	$0	$15,178,842	$15,178,842	$12,292,782	$27,471,624
Property acquisitions	$860,000	$0	$860,000	$2,432	$862,432
Other payments (employee reimbursements and student payments)	$1,946,100	$6,770,715	$8,716,815	$2,692,264	$11,409,080
Total	**$362,691,884**	**$125,445,929**	**$488,137,813**	**$104,962,677**	**$593,100,491**

In measuring the economic impact of university-related spending, we replicated the methodology of the previous JMU economic impact study (Rephann 2016). Thus, we count not only most of the spending that results from university outlays reflected in Table 2.1 but also spending that occurs because the university attracts students and visitors. We also count the spending of JMU retirees since their retirement pension and annuity payouts and their long-term residential location decisions can also be attributed to the presence of the university. Lastly, healthcare-related spending that results from university health insurance coverage benefits are also counted. In total, six distinct spending components are identified that are connected to the university.[6] They include:

- **Operations Spending.** This component represents university spending on procurement of supplies, materials, equipment, and services for operational purposes.
- **Capital Spending.** This category includes spending on depreciable assets such as buildings and equipment.
- **Employee Net Wages.** This item consists of university spending on faculty and staff wages and salaries, special payments for bonuses and incentives, disability benefits, and termination-related personal costs.
- **Employer Paid Premiums for Health Insurance.** This component measures the effect of university disbursements made towards faculty and staff health insurance benefits and their feed-through effects on local and state healthcare expenditures.
- **Retirement Spending.** This item represents spending from JMU-defined contributions and defined payment retiree pension payments to local and state residents.
- **Student Spending.** This category captures student expenditures such as room, board, transportation, and other goods and services purchases within the community and state.
- **Student Visitor Spending.** This spending component measures the expenditures of travelers who visit university students.

Information sources and methods for constructing the spending items for use in the economic impact modeling are described in more detail in **Appendix A**. Data is collected from both university and non-university sources. **Table 2.2** shows the estimates of the various component expenditures. Only spending within the Harrisonburg Metropolitan Area and Commonwealth of

[6] Several potential sources of JMU impact are not included in this analysis. For example, the income from faculty and staff external consulting and businesses is not counted. Economic activity resulting from university spinoffs and student businesses are also not included. Most importantly, the study does not attempt to estimate the economic impacts that accrue from increased lifetime student wages and salaries as a result of JMU education. Section four of this report attempts to describe and quantify some of these other university-related economic impacts.

Virginia are used in the economic impact analyses. Spending outside these regions is considered spending "leakage" and plays no role in the analysis.

The analysis of FY 2022 spending by JMU, faculty and staff, students, retirees, and visitors found that $565 million was spent in the Harrisonburg Metropolitan Area and $664 million in the Commonwealth of Virginia (see **Table 2.2**). The largest categories of spending in the metropolitan area were student spending ($187 million) followed by employee wages and salaries ($185 million). For the Commonwealth of Virginia, employee wages and salaries were largest ($235 million), and student spending was second ($187 million). Since acquisitions of existing property are treated as transfers and do not generate economic impacts, they are not included in the IMPLAN modeling described further below. After adjusting for the amounts, the total amounts entered into the economic impact model as direct expenditures were $565 million for the Harrisonburg Metropolitan Area and $664 million for the state.

Table 2.2. Local and State University Spending by Component, FY 2022

Spending Categories	Harrisonburg Metropolitan Area	Commonwealth of Virginia
Total local expenditures	**$565,459,815**	**$664,416,819**
Total for IMPLAN modeling	**$564,599,815**	**$663,556,819**
Students	$187,095,649	$187,095,649
Employee net wages	$185,322,168	$235,040,359
Operations	$99,827,493	$127,028,056
Capital planning and construction	$8,954,968	$12,598,990
Employer paid premiums for health insurance	$33,802,230	$42,510,669
Retirement	$31,646,622	$39,855,950
Student visitors	$17,950,685	$19,427,148
Capital acquisitions *(not included in IMPLAN model)*	$860,000	$860,000

Economic Impact Methodology

JMU related spending made in the region and state are counted as direct injections into the local and state economies. Linkages with other industries in the area means that this initial injection has further stimulative effects that result from the purchases of goods and services and payments to employees. The stimulus causes a "multiplier effect" that results when money is re-spent in the local or state economy. The tool used to estimate this multiplier effect is called

input-output analysis. Input-output analysis relies on input-output tables, which show the flows of purchases and sales among sector of the economy.

The total impact of this activity consists of three parts: a direct effect, an indirect effect, and an induced effect. The direct effect consists of JMU-related regional expenditures that remain in the community. In the case of regional retail and wholesale purchases, only the margin (or retail/wholesale markup) was counted as the local purchase amount. The indirect effect measures the cumulative change that results from JMU-related spending on goods and service inputs purchases, including subsequent rounds of firm good and service purchases needed to supply other producers. For example, JMU purchases printing and copying services from Harrisonburg businesses, which causes a "ripple effect" on the local economy when money is re-spent by these businesses on tools, supplies, business services, and other goods and services from local businesses. These businesses spend a portion of their sales revenues on their supplies and services from other local firms who, in turn, purchase a portion of their supplies and services from other local firms. This cascading sequence of spending continues until the subsequent rounds of spending dissipate due to leakages in the form of saving or spending outside the area. The sum of these cascading rounds of inter-industry purchases constitutes the indirect effect. The final component of total impact (the induced effect or induced impact) is attributable to the spending of households. For example, businesses in the supply chain pay households for their labor services. These households then purchase goods and services from area firms who, in turn, receive a portion of their labor, material, and service inputs from within the region. Again, leakages occur at each round due to purchases of goods and services outside the state. The induced effect is the sum of the industry impacts associated with these household purchases.

The impact analysis for this study used IMPLAN (IMpact analysis for PLANning), including the most recent 546-sector model based on 2021 data released in November 2022. IMPLAN is an industry standard input-output model that has been used in many economic impact studies, including studies of Virginia Commonwealth University (VCU 2022), and the University of Virginia (Tripp Umbach 2016). The economic impact analysis is based on an IMPLAN Multiregional Input Output Model (MRIO) constructed for a Harrisonburg Metropolitan Area model (which consists of the City of Harrisonburg and Rockingham County) which is linked with another model that covers the remainder of the state.[7] These models are constructed using baseline U.S. data and area-specific data for the metropolitan area and state.

[7] MRIO analysis measures the economic impacts of spending within the principal study region as well as impacts on other areas that are linked with the principal study area. Because of these linkages, spending leakages into other regions cause economic impacts that result in leakages from those areas back into the principal study region. Two regional models representing the Harrisonburg Metropolitan Area and residual Virginia region were linked. Harrisonburg Metro Area economic impacts were obtained from the Metropolitan Area model, while state impacts were obtained by summing the results of the Harrisonburg Metropolitan Area and residual Virginia regional linked models.

The first stage of estimating economic impact was to convert JMU-related expenditures into local and state final demand by accounting for initial spending leakages outside the area. This process is described in Appendix A for each of the spending components. The next stage involved mapping the expenditures onto the appropriate IMPLAN sector, with adjustments for retail and wholesale margins. The rules and routines used for mapping the expenditures for each spending component are also explained in the Appendix. The third stage involves running the IMPLAN model and generating the economic impact results.

Results are presented for three different economic measures: total expenditures, employment, and state and local tax revenues. Total expenditures are simply the total spending in the region. It encompasses spending on intermediate inputs for use in production as well as spending on products by final consumers. Employment is measured in terms of full-time equivalent employment. Full-time equivalent employment was computed by converting IMPLAN employment results (which includes both full-time and part-time employment) to full-time equivalents using IMPLAN industry-level FTE to total employment weights for 2021. State and local tax revenues include taxes, fees and fines, and charges for service, and were computed using IMPLAN's tax impact report (IMPLAN Group LLC 2020).[8]

[8] In computing revenues, employer's social insurance estimated tax contributions by employer and employees were excluded. This was done to replicate the reporting of previous JMU economic impact reports.

SECTION 3

ECONOMIC IMPACT RESULTS

Table 3.1 shows the economic impacts of JMU on both the Harrisonburg Metropolitan Area and Commonwealth of Virginia. Approximately $565 million was spent in the local region and $664 million was spent in the state. These initial injections of spending cause subsequent rounds of business and household spending that result in the direct, indirect, and induced effects described earlier. The indirect effect attributable to business spending on inputs was $77.3 million for the metropolitan area and $131.9 million for the state. The induced effect attributable to household spending was $237.1 million for the metropolitan area and $349.2 million for the state.[9] The total impact of JMU was $593 million for the Harrisonburg Metropolitan Area and $793 million for the state.

Table 3.1 also shows employment associated with JMU at the local and state levels. JMU directly employed 3,803 full-time and part-time faculty and staff in FY 2022. University-related spending helped support an additional 4,432 full-time and part-time jobs in the metropolitan area and 5,453 for the state. When these employment figures are converted to full-time equivalents, the number of estimated jobs created are 3,872 for the metropolitan area and 4,798 for the state. Total jobs associated with the institution—calculated in line with previous JMU economic impact reports by adding the direct full-time and part-time direct employment to the full-time-equivalent indirect and induced employment—were 7,675 for the Harrisonburg Metropolitan Area and 8,601 for the state.

[9] The state indirect and induced effects are substantially bigger than the metropolitan area effects because the direct spending amount is higher and the spending leakages for each round of business and household spending is smaller for the larger Virginia economy.

Table 3.1 Economic Effect of University Spending on Local and State Economies, FY 2022

Spending Effects	Harrisonburg Metropolitan Area	Commonwealth of Virginia
Total Spending in Region	**$564,599,815**	**$664,416,819**
Direct Effect	$278,548,872	$312,239,094
Indirect Effect	$77,271,410	$131,919,742
Induced Effect	$237,138,523	$349,241,736
Total Effects of Spending	**$592,958,805**	**$793,400,572**
Jobs Associated with Spending		
JMU Employees (full-time and part-time fall 2021)	3,803	3,803
Non-JMU jobs (FTE)	3,872	4,798
Total jobs associated with the institution	**7,675**	**8,601**

Table 3.2 presents the estimated local spending and employment effects of JMU spending on the Harrisonburg Metropolitan Area by spending component. Estimated local spending increased 19 percent since the last economic impact study in FY 2015, with estimated payroll spending increasing by 29 percent and operations spending by 23 percent. Visitor spending increased by 60 percent due to the marked increase in post-pandemic average travel expenditures. Capital spending decreased by 62 percent. These differences partly reflected the residual impacts of the COVID-19 pandemic. For example, auxiliary enterprises spending (e.g., campus food and residential hall services) was significantly lower than would otherwise be the case. Moreover, the pipeline of capital projects was stalled due to facilities planning uncertainty stemming from the pandemic. The largest employment impact is associated with students (1,210 jobs). The second highest impact resulted from operational spending (1,121 jobs) of which Aramark Corporation dining contracting is a significant driver. The third largest category was employee spending resulting from university payroll (884 jobs).

Table 3.2 University Expenditures and Economic Impacts in Harrisonburg Metropolitan Area by Component, FY 2015 and 2022

Spending Effects	FY 2015	FY 2022	Percent Growth	Non-JMU Jobs 2022
Total Local Expenditures	**$480,473,756**	**$565,459,815**	**18%**	**NA**
Total for IMPLAN modeling	**$474,397,191**	**$564,599,815**	**19%**	**3,872**
Students	$168,811,540	$187,095,649	11%	1,210
Employees	$144,004,069	$185,322,168	29%	884
Operations	$81,199,706	$99,827,493	23%	1,121
Capital	$23,346,797	$8,954,968	-62%	65
Medical	$23,097,737	$33,802,230	46%	265
Retirement	$22,721,492	$31,646,622	39%	151
Student Visitors	$11,215,850	$17,950,685	60%	176
Acquisitions	$6,076,565	$860,000	-86%	NA

Table 3.3 presents the estimated statewide spending and employment effects of JMU spending by spending component. For the state, operational spending produces the largest employment impact (1,415 jobs) followed by student spending (1,306 jobs), and employee payroll (1,193 jobs). In addition, medical spending related to health insurance supports 375 jobs.

Table 3.3 University Expenditures and Economic Impacts in State by Component, FY 2022

Spending Effects	FY 2015	FY 2022	Percent Growth	Non-JMU Jobs 2022
Total State Expenditures	**$620,503,284**	**$664,416,819**	**7%**	**NA**
Total for IMPLAN modeling	**$614,426,719**	**$663,556,819**	**8%**	**4,798**
Students	$168,811,540	$187,095,649	11%	1,306
Employees	$186,919,545	$235,040,359	26%	1,193
Operations	$118,456,755	$127,028,056	7%	1,415
Capital	$72,582,069	$12,598,990	-83%	104
Medical	$29,677,091	$42,510,669	43%	375
Retirement	$25,841,353	$39,855,950	54%	202
Student Visitors	$12,138,366	$19,427,148	60%	203
Acquisitions	$6,076,565	$860,000	-86%	NA

Table 3.4 provides estimates for state and local tax revenue collections associated with James Madison University. These results indicate that economic activity resulting from JMU-related spending is associated with almost $60 million in state and local tax revenue. Tax revenue collected from individuals, such as personal income taxes and property taxes, sum to $6 million. Taxes collected on business entities are $53.6 million, including sales tax ($25.5 million), real and personal property taxes ($21.3 million), and corporate income tax ($1.3 million). Of the total taxes generated for the state and localities, an estimated $30,883,023 of tax revenue accrues to the state; $22,726,103 to the City of Harrisonburg, Rockingham County, and local townships and special districts (e.g., sanitary districts); and $6,137,924 to other localities within the state.

Table 3.4 State and Local Tax Revenue Impacts, FY 2022

Tax Category	Amount
Corporate profits	**$1,327,299**
Taxes on production	
Property tax	$21,269,757
Sales tax	$25,507,666
Other taxes and fees	$5,449,399
Taxes on production total	**$52,226,822**
Personal taxes	
Income tax	$5,740,669
Motor vehicle license	$155,973
Property tax	$260,011
Other taxes, fines, fees & sport licenses	$36,276
Personal taxes total	**$6,192,929**
Total taxes	**$59,747,051**

SECTION 4

OTHER ECONOMIC AND SOCIAL CONTRIBUTIONS

Although the flows of economic activity that result from expenditures and employment related to the operation of James Madison University are important to the economies of both the Harrisonburg Metropolitan Area and Commonwealth of Virginia, the university makes numerous other economic and social contributions to the region and state. Indeed, these activities are at the heart of the university mission, which promotes student learning and engagement through research and community and civic service. Among these other impacts are human capital development, technology transfer, business growth, and community wellbeing. This section examines the various ways that the university affects the community, organized into the areas of economic development, workforce development, community engagement, environmental sustainability, diversity, research and development, entrepreneurship and innovation, industry partnerships and business growth, civic engagement and governmental relations, and tourism and amenities. Quantitative and qualitative information on university contributions is provided in support of each of these areas.

Economic Development

JMU has significantly expanded its economic development engagement activities and created more of a one-stop shop to assist its industry and community partners. In 2019, JMU formed the University Economic Development Committee (UEDC) to serve as a body to guide economic development strategic planning and better coordinate with community partners. During its initial years, the UEDC

- conducted a SWOT analysis of economic development activities to inform the planning and engagement process;
- facilitated community discussions with 120 business, nonprofit, government, and community leaders as part the of the Economic Recovery Series to foster greater resiliency from the downturn to the regional economy due to the COVID-19 pandemic;
- collaborated with various area businesses, institutions and organizations to address regionals issues, such as workforce training, transportation, childcare and affordable housing needs; and
- supported a process for leveraging its newly-earned designation as an R2 Doctoral University by the Carnegie Foundation to prepare for the Association of Public and Land-Grant Universities' (APLU) Innovation and Economic Prosperity (IEP) designation to further enhance its visibility and impact on regional economic and community development.

In organizing the latter effort, JMU established a new point of contact in the Research Office, the Vice Provost for Research and Innovation. who is charged with economic development. As part of the reorganization, three staffed functional areas were created: (a) Internships and Learning, (b) Innovation, and (c) Community Engagement. These areas align with the community engagement expectations of APLU designation in the areas of talent and workforce development; innovation, entrepreneurship, and technology-based economic development; and place development through public service, outreach, extension, and community engagement.

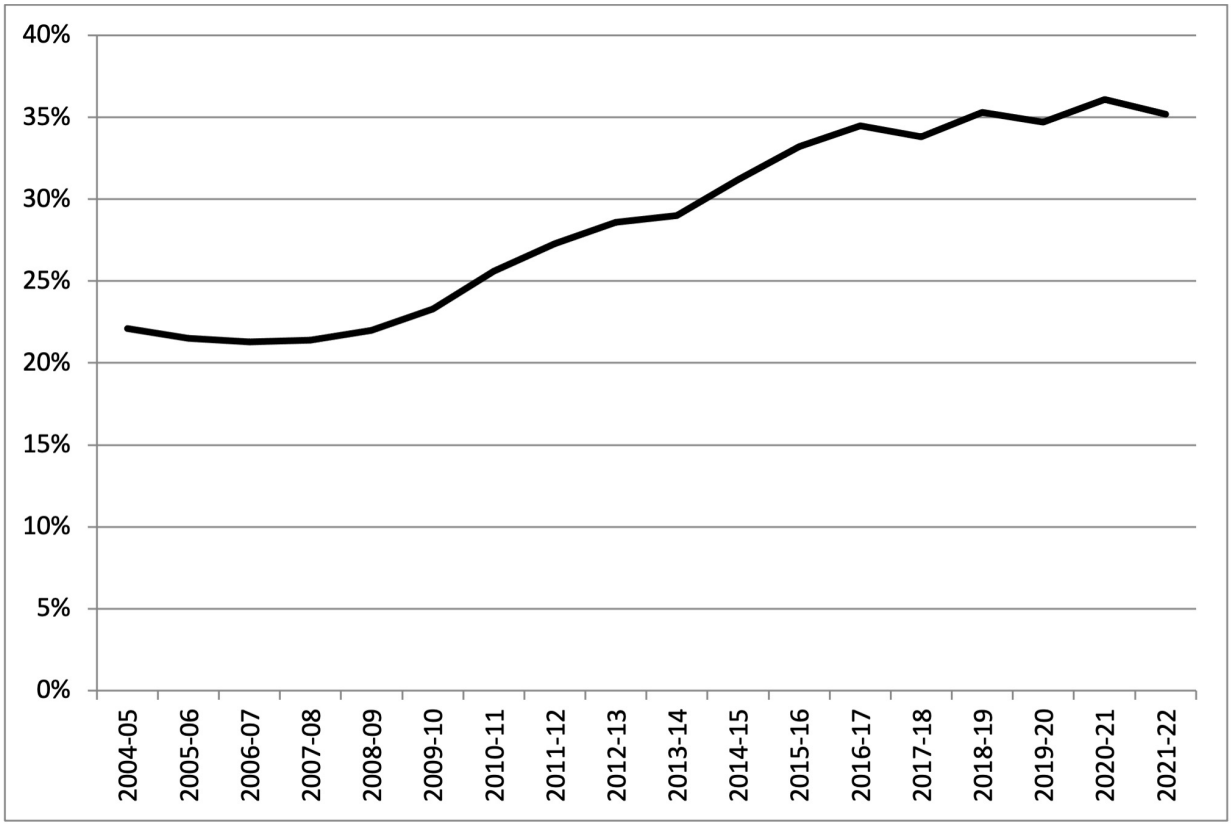
Workforce Development

JMU provides for the workforce needs of the Harrisonburg Metropolitan Area and the Commonwealth of Virginia by producing graduates, transfer students, and other students who complete non-credit or credit studies without completing a formal academic degree. In AY 2021-22, JMU graduated 5,475 students. Recent 2017-2021 data from the U.S. Census American Community Survey for Virginia shows that college graduates earn significantly more than high school graduates. For Virginia residents aged 25-64, those with a bachelor's degree earned, on average, $74,228; those with a master's degree earned $95,962; and those with a doctoral degree earned $117,827 compared to just $32,754 for high school graduates. Virginia Longitudinal Data System (VLDS) data on Post-Completion Wages from the State Council of Higher Education for Virginia (SCHEV) show that the JMU bachelor's graduate cohorts employed in the commonwealth earned $58,414 five years after graduation, $67,375 10 years after graduation, and $90,025 20 years after graduation. Degree earnings premiums grow with age and work experience making higher education both a good private and public investment.

The Commonwealth has long encouraged public higher education institutions to develop programs that would stimulate Virginia's high technology sectors. In 2019, as part of an incentive package to attract Amazon HQII to Arlington, the state provided $961.5 million in new funding to 11 universities (including JMU) to increase the number of graduates with technology degrees to 31,000 by 2039. JMU signed an agreement with the state pledging to increase the number of computer science and other eligible traded-sector technology-focused field degrees for the period by 467, which is 20 percent over baseline levels of 2,507 degrees.

JMU makes a significant contribution towards fulfilling the Commonwealth's need for STEM and Health Sciences (STEM-H) graduates. JMU has rapidly grown the number of graduates with STEM-H related degrees from 1,608 in AY 2014-15 to 1,942 in AY 2021-22, an increase of over 20 percent. In AY 2021-22, approximately 35 percent of graduates obtained a STEM-H degree (see **Figure 4.1**). JMU is also an active member of Virginia's ***4-VA***, a statewide program that supports inter-university collaboration to increase the number of college graduates in STEM fields.

Figure 4.1 University STEM-H Graduates as a Percentage of Total, AY 2005-2022



Source: SCHEV, C07 Report (Trends in STEM-H Degree Production)

JMU's graduates are an important source of new workers for Virginia's industries. **Table 4.1** shows the top ten industries for which AY 2021-22 JMU grads are equipped based on national occupational and industrial employment patterns.[10] These industries account for 90 percent of JMU graduates. They include educational services (1,472), health care and social assistance (794), professional and technical services (601), public administration (533), and other services (493). Rounding out the top ten sectors are finance and insurance (261); information (221), arts, entertainment, and recreation (214); management of companies and enterprises (176); and manufacturing (151).

[10] These classification of instructional program (CIP) mappings are made to two digit North American Industrial Classification (NAICS) industries using a methodology described in Rephann (2023).

Table 4.1 Industry Employment Program Preparation

Industry	Awards
Educational Services	1,472
Health Care and Social Assistance	794
Professional and Technical Services	601
Public Administration	533
Other Services	493
Finance and Insurance	261
Information	221
Arts, Entertainment, and Recreation	214
Management of Companies and Enterprises	176
Manufacturing	151

JMU programs are also important for developing STEM skills earlier in the educational pipeline. JMU provides comprehensive support for STEM education through the ***Center for STEM Education and Outreach***. The center connects resources at the university with K-12 schools and other STEM partners. Activities supported by the center include conferences and workshops for educators and students, student science fairs and competitions, student mentoring, college visits and technology learning experiences, and student technology camps.

Community Engagement

JMU earned the Carnegie Foundation for the Advancement of Teaching's Community Engagement Classification in 2010 for its commitment to community engagement. This Classification was renewed in 2020. JMU emphasizes student engagement through learning projects that involve collaborative work with other students, faculty, and the community. It also fosters lasting partnerships with community, regional, national, and global organizations to connect students and faculty with creative problem-solving experiences and service opportunities. These activities are integrated at the curriculum and program level through coursework practicums, internships, and clinical experiences and also encouraged at the institution level with out-of-the-classroom volunteer and service activities.

In 2021, JMU created the ***School for Professional and Continuing Education (SPCE)***. The school provides community residents lifelong learning experiences through youth programs and a Lifelong Learning Institute. The school also partners with local and regional businesses to provide customized education and training programs and works with local community

organizations and governments to support initiatives for economic and community development. The ***Madison Center for Community Development***, an organization housed within the SPCE, connects faculty and students with community organizations and local governments to provide technical assistance (e.g., strategic planning, facilitation, survey analysis, project management).

The Community Engagement Coordinating Council coordinates and oversees university engagement planning and initiatives. It receives input from an Advisory Group comprised of community partners.

A key center involved in fostering community engagement is the ***Community Engagement & Volunteer Center (CEVC)*** which coordinates partnerships with more than 100 community service organizations and agencies. It also oversees service placement, the Alternative Break program (a program that organizes group volunteer opportunities in the commonwealth and beyond), Volunteer Now (an online platform that aids students in volunteering with local community partners), Federal Works Study participation in a Community-Engaged program, Madison Community Scholars (a volunteer service program designed to increase the capacity of local community organizations), and other volunteer and service experiences. In 2021-22, the CEVC accounted for 23,634 hours of student service. The CEVC connected

- 1507 students enrolled in 67 different academic courses to Service-Learning experiences at 54 community partners for 11,648 local hours of service;
- 70 Federal Work Study eligible students to in-depth and long-term community experiences at 36 community partners for 8,662 local hours of service;
- 133 students to powerful immersion experiences on 11 different "Alternative Breaks" for 2,756 hours of service regionally and nationally; and
- 200 students to seven episodic opportunities for 568 local hours of service. Although many service activities occurred across the nation and globe, a previous tally of selected activities and other anecdotal evidence suggest that the bulk of these service hours occurred within Virginia with most located within the Valley region.

Another important center for community engagement activity is the College of Health and Behavioral Studies ***Institute for Innovation in Health and Human Services (IIHSS)***. During AY 2021-2022, the IIHHS reported that they provided 30,268 hours of student engagement in direct services, program support, service learning, and other activities. The institute provided services to 15,712 clients and offered 271 community events during the academic year.

The JMU community is also active in fundraising to benefit local charities. During FY 2022, faculty, staff, and students contributed $210,716 through payroll deductions to charitable causes such as the University Foundation, Campaign for Virginia, and WMRA Public Radio. A complete tally of other independent efforts is not available for FY 2022, but a sampling of activities

detailed in university documents and news stories help to illustrate how student initiatives have benefited the community. For example, JMU's Relay for Life event in April 2022 helped raise $310,834 for the American Cancer Society. JMU's Hart School of Hospitality, Sport and Recreation Management hosts an annual 5k charity event, *We Hart Racial Equality Race*, each April to provide funding for scholarships that serve underrepresented students in school programs. Since its inception in 2020, the race has raised over $50,000.

The JMU Engagement Database Archive, which documents activities sponsored by university faculty, staff, and students lists over 850 projects, events, programs, and other activities related to community engagement that were sponsored over the period 2015 to 2022. For example, the database lists several grant-funded projects initiated in FY 2022 that will improve community health and social outcomes. A $712,000 grant to the graduate psychology program from the federal Health Resources and Services Administration will support a residency program for doctoral students to become advanced counseling practitioners or counselor educators. These resources will improve access to substance use and behavioral health services in Page County. The Department of Kinesiology was awarded a $275,000 Ability First grant by the Virginia Board for People with Disabilities (VBPD) to expand the geographical reach and quality of programming for disabled residents to improve their physical and mental wellness. JMU also received a $3,654,00 grant from the Virginia Early Childhood Foundation to provide 314 preschool education opportunities for at-risk children in minority and disadvantaged communities in the Shenandoah Valley.

Environmental Sustainability

The university has made a strong commitment to environmental sustainability and played a significant leadership role in contributing to environmental stewardship in the Shenandoah Valley region. JMU has a long history of environmental stewardship, but in 2008 launched a university-wide strategic effort that initiated more systematic tracking, coordination, and recognition of the many environmental stewardship activities. University initiatives draw on guiding principles from the university's current Environmental Stewardship Interim Action Plan (2020-2023), namely, to conserve, steward and restore natural systems, and advance environmental stewardship through education, scholarship, and engagement. Every division of the university contributes to environmental stewardship, sustainability education, and energy/environmental design.

JMU's ***Institute for Stewardship of the Natural World*** was established as a clearinghouse and catalyst for campus environmental initiatives. It is charged with facilitating sustainability by advocating for environmental stewardship priorities, coordinating reporting and recognition of the sustainability-related efforts of the JMU community, and encouraging engagement of all members of the JMU community in sustainability education and environmental stewardship. The office coordinates multiple stakeholder committees and closely collaborates with academics, student affairs, the JMU Facilities Management sustainability team that oversees environmentally

responsible operations and facilities efforts, including dining services, athletics, and transportation. JMU's environmental stewardship efforts emphasize academic, community, and operations components that interconnect.

Examples of recent campus environmental initiatives in operations include:

- Campaigns to reduce waste through recycling, composting, and curtailing food, paper, and water waste.
- Investments in energy efficiency and alternative energy such as alternative fuel systems vehicles and electric vehicles, EV parking charging stations, LED light figures, heating and ventilation system efficiency, and sustainable design.
- Programming to encourage community walking, bicycling, scootering, ridesharing, and public transit ridership.
- Activities to support local and sustainable food sourcing such as sourcing from local farms, hosting Farmers Markets on campus, and offering more meatless and vegan dining options.
- Implementation of best management practices (BMPs) to prevent erosion, improve water habitat and quality, and reduce Chesapeake Bay pollution.
- Construction of a 310-kW solar array and pollinator meadow on the East Campus Hillside. The solar array is estimated to offset about 500,000 lbs. of CO_2 each year.

The East Campus Hillside is one of JMU's most successful projects. The East Campus Hillside Project, located below King Hall, began in 2010 with an educational meadow designed in cooperation with students, faculty, and a visiting scholar. Today, the transformed six-acre area, which advances student education, environmental quality, and campus sustainability, has extensively supported student learning outcomes and brought positive attention to the university in the form of funding, recognition, and replication. The hillside features three acres of meadow containing primarily native plant species, a two-acre tree planting area—home to 25 different tree species, 1,031 feet of restored stream channel and associated riparian buffer, a solar array with pollinator habitat, beehives, raised beds, a weather station, and food forest. The hillside supports engaged learning through place-based, hands-on integration with curriculum across multiple academic areas including Biology, Geography, Geology, Integrated Science and Technology, and Interdisciplinary Liberal Studies. More than thirty-two sections of nineteen courses used the hillside in the last several years.

Community engagement is an important component of sustainability efforts. For example, JMU is partnering with several Harrisonburg City Public Schools (HCPS) to introduce pollinator gardens. The gardens provide habitats for wildlife in urban environments. They also serve as outdoor learning environments in which JMU students and HCPS students learn together about pollinators, habitats, life-cycles, biodiversity, and ecosystems. As a further example, JMU is an

active member of the Virginia Municipal Stormwater Association (VAMSA), an organization of 70 local governments that own and operate regulated municipal storm sewer systems and stormwater consulting firms that work to ensure clean water and safe infrastructure.

Environmental education opportunities include general education courses, international education programs, service-learning projects, and undergraduate research projects. The university offers seven environmental concentrations and six environmental minors. Environment concentrations are offered in the bachelor's degree programs for Biology, Economics, Engineering, Geography, Geology, Sociology, and Integrated Science and Technology. JMU offers cross-disciplinary environmental-focused minors that can be combined with any major, including Climate Science, Environmental Humanities, Environmental Studies, Environmental Science, Environmental Management, and Environmental Information Systems. A Master of Arts program in Communication and Advocacy includes the option of a concentration in environmental communication, and JMU offers an International Master's Program in Environmental Management and Sustainability. More than 140 undergraduate courses incorporate sustainability into their curricula. The JMU Geography program, which empowers students to address problems associated with processes of human and environmental change, was named as one of two recipients of the 2021 Award for Bachelor's Program Excellence in Geography by the American Association of Geographers (AAG).

Sustainability research is also a substantial component of university research activity. More than 300 current JMU employees have engaged in sustainability research—defined as research and scholarship that explicitly addresses the concept of sustainability; furthers understanding of the interdependence of ecological and social/economic systems; or has a primary and explicit focus on a major sustainability challenge, such as climate change, global poverty, and inequality. Over 115 employees conduct environment-focused sustainability scholarship.

The university hosts research centers that engage in substantial regional environmental community engagement efforts. For example, the Center for the Advancement of Sustainable Energy (CASE) provides research, education, and outreach for deploying sustainable energy to local governments, state agencies, private organizations businesses, and other stakeholders. CASE administers the Distributed Wind Assistance Program which helps businesses and landowners apply for federal grants and loans for wind energy systems and operates the Small Wind Training and Testing Facility. Another partner unit funded by the U.S. Department of Energy, Virginia Clean Cities, promotes outreach, education, and research for clean and sustainable transportation in Virginia. Many of its current efforts focus on providing planning assistance, information and analysis, and education and outreach to facilitate driving electrification.

JMU uses the Association for the Advancement of Sustainability in Higher Education (AASHE) Sustainability Tracking, Assessment & Rating System (STARS) tool to assess its sustainability performance every three years. This survey-based system provides a comprehensive measure of

campus sustainability progress based on multidimensional measures spanning University activities in engagement, education and research, operations, and planning and administration. JMU completed its most recent sustainability benchmarking in 2022 and achieved a silver rating.

JMU has received state and national recognition in recent years for its leadership in environmental improvement. These include: the League of American Bicyclists' Bicycle Friendly University silver designation in 2023; an APPA (formerly the Association of Physical Plant Administrators) Leadership in Educational Facilities Sustainability Innovation Award in 2018; a Governor's Environmental Excellence Honorable mention in 2016 for Strategies for Residence Hall Energy Reduction; International Society of Arboriculture Gold Leaf Award for Outstanding Landscape Beautification Activities in 2016; a Best Urban BMP in the Bay Area Award in 2017 for the Arboretum Stream Restoration Project; and two Gold-Level designations in 2016 for "project management" and "innovation" from the Water Environment Federation.

The university has been included in *The Princeton Review's Guide to Green College*s every year since 2010 and was recognized as one of the Top 50 Green Colleges in 2022. It also has received Tree Campus USA designation by the Arbor Day Foundation since 2018 and Bee Campus USA Affiliate recognition by the Xerces Society for Invertebrate Conservation since 2019. In 2023, JMU was the first university to earn Virginia Pollinator Smart Certification, which is designed by the Department of Conservation and Recreation to provide incentives and tools for the solar industry to adopt a native plant strategy to meet soil and water control regulations, community needs, and the needs of the biosphere.

Facilities management at JMU incorporates the concept of sustainability into building design and operations. The Facilities Management Sustainability Plan 2016-2023 outlines four goals, including: 1) improve building technology and reduce building energy use intensity; 2) reduce potable water use per acre and improve stormwater quality; 3) decrease the amount of waste sent to the landfill; 4) support the use of alternative fuels in the university's Fleet and multimodal transportation options available to faculty, staff, and students. JMU policy requires all new building construction and renovations to utilize green building standards such as LEED, Green Globes, and the Virginia Energy Conservation and Environmental Standards (VEES). JMU has 13 LEED certified buildings and one pending certification. Three other buildings are designed to meet VEES standards. As another example, Facilities Management also uses the Energy Star Portfolio Manager as a tool to assess efficient energy use for campus buildings.

Diversity

JMU places a significant emphasis on expanding access and opportunities for underserved and disadvantaged groups within the Shenandoah Valley and the Commonwealth, including immigrants, racial and ethnic minorities, economically disadvantaged residents, rural residents, the disabled, the LGBTQ+ community, first-generation college students, and others. The university has acted on recommendations from entities such as the Diversity Task Force, Task

Force on Inclusion, and the Task Force on Racial Equity to improve the experiences of students, faculty and staff, and members of the community; promote student and faculty diversity; and provide resources and tools to communities in need. The university has been awarded the INSIGHT into Diversity's Higher Education Excellence in Diversity (HEED) award multiple times for its commitment to diversity and inclusion.

In 2023, JMU graduated its first cohort of 17 students from the ***Valley Scholars*** program. The program, which receives philanthropic support from major corporations and foundations, identifies promising students drawn from disadvantaged and under-represented backgrounds from the Valley Region and provides educational enrichment activities throughout the year and a summer camp to place them on the path for collegiate academic success. The program accepts applicants beginning in the spring of the 7th grade school year from first-generation students who demonstrate academic promise and motivation. Students who successfully complete the program and maintain good grades are admitted to the university and receive full scholarships. The program offers 44 slots each year and currently has enrolled approximately 200 Valley Scholars from nearly two dozen middle and high schools in seven school systems in the Shenandoah Valley.

JMU has taken a leadership role in efforts to welcome and integrate immigrants and refugees in the Valley region. The university recently became the 14th charter member of Every Campus A Refuge, an organization that encourages community support for refugees by drawing on college assistance for refugees' needs such as food, housing, and job skills. JMU partners with a refugee resettlement agency in Harrisonburg, the Church World Service, to provide temporary housing, transportation, English conversation, and other support services to refugee families. The JMU Institute for Innovation in Health and Human Services offers a Migrant Education Program, a U.S. Department of Education funded program for public school systems in the Valley Region. The program provides learning assistance, such as academic tutoring, transportation, interpretation services, and summer programs to migrant primary and secondary students and out-of-school youth to prepare them for high school graduation, citizenship, further learning, and employment.

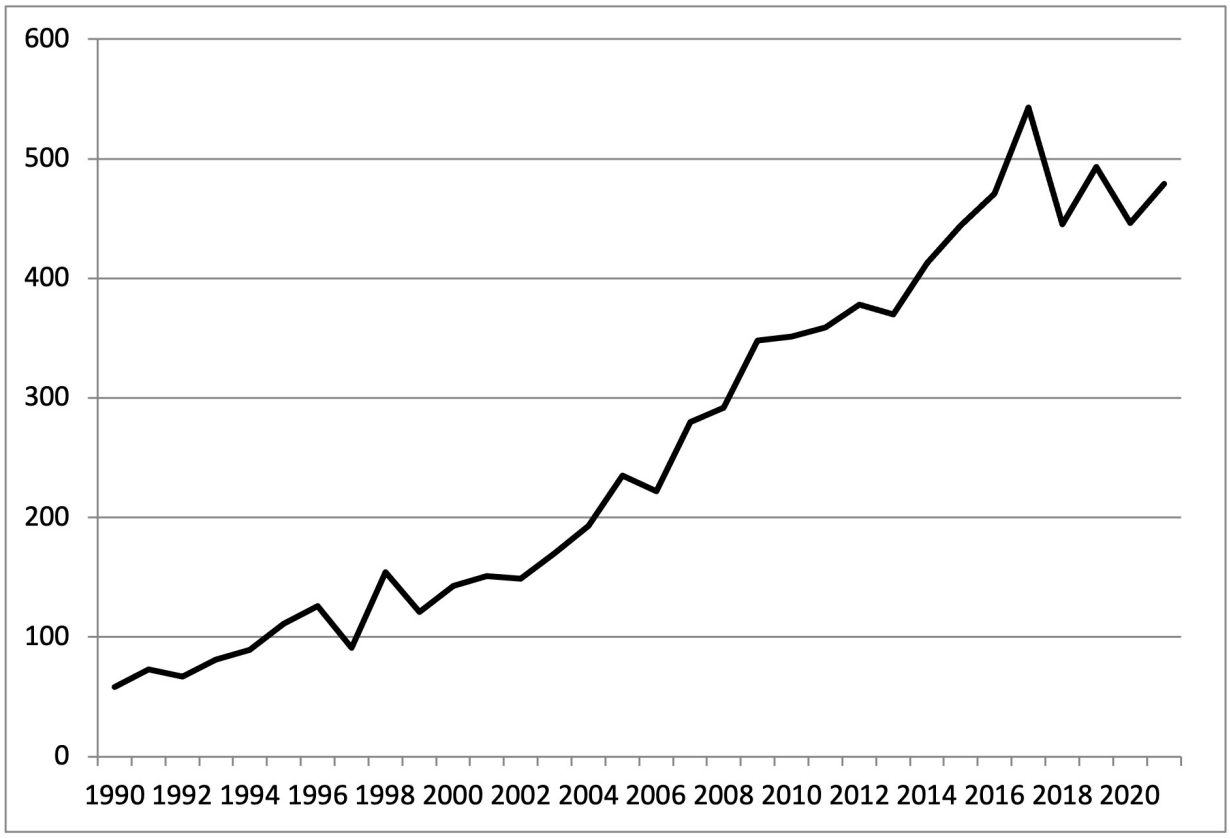
Research and Development

In recognition of JMUs expanded graduate programs degree production and research activity, JMU was reclassified from an M1 Master's College and University: Larger Programs to an R2 Doctoral University: High Research Activity by the Carnegie Classification of Institutions of Higher Education. The university's main focus continues to be on education rather than research like some doctoral-level research universities within the state. However, academic research is an important part of realizing the university's primary mission of promoting student learning through engagement, research, and service that is based on applied, interdisciplinary, and collaborative research focused on real-world problem solving.

JMU faculty, students, and staff are active in applying for external funding to support research, instruction, outreach, and other activities. Many of these applications are interdisciplinary in nature and submitted in partnership with other external partners. The Office of Sponsored Programs reports that JMU investigators submitted 280 funding proposals in FY 2022, which represented a 10 percent increase over the previous year. These applications resulted in 181 awards, which was a 6 percent increase over the previous year. In FY 2022, JMU received $31.8 million in external funding for research and scholarship, a record amount that was driven, in part, by increased funding from the federal government through COVID-19 pandemic-related programs. Nearly $23 million of the total funding was received from the federal government; $3.5 million from private non-profit organizations; $2.8 million from foundations; $2 million from state agencies; and the remaining $0.5 million from industry, localities, and other sources.

JMU has a nationally recognized research portfolio in areas such as environmental science and sustainability, health care, teaching and education, psychology, and communication and media studies. JMU scholars produced an average of almost 500 publications per year over the 2016-2021 period (see **Figure 4.2**).

Figure 4.2 Number of University Academic Articles by Year, 1990-2021



Source: Thomson Reuters, Web of Science

Entrepreneurship and Innovation

JMU places a high value on cultivating innovation and entrepreneurship within the Valley region. The university provides numerous resources for boosting student, faculty and staff, and community innovation and entrepreneurship.

The ***Gilliam Center for Entrepreneurship (GCFE)***, an interdisciplinary unit of the College of Business, coordinates many university entrepreneurship, innovation, and venture creation programs and events. They include:

- The Fallon Challenge—A shark tank-format competition that has students pitch new business ideas to a panel of entrepreneurs and business leaders with the winner receiving a $1,000 award.
- Madison Inc.—A business startup mentoring program that connects aspiring student entrepreneurs with GCFE staff and local professional and alumni entrepreneurs.
- Dukes Venture Accelerator—A six-week, paid summer internship program that provides programming, financial resources, and staff mentoring for students to develop business venture ideas.
- Bluestone Seed Fund—A donor-supported fund launched in fall 2021 that provides $5,000 in equity investments and entrepreneurial mentoring for early-stage student ventures selected through a pitch competition.

JMU provides other student entrepreneurship resources and opportunities. The School of Business offers student teams that complete COB 300—a 12-credit hour course that integrates finance, management, marketing, and operations—the opportunity to participate in the Rainey-Shepard Business Plan Competition, which awards annual scholarships totaling $25,000 to students who develop and successfully pitch their business plans to judges from the business community. ***JMU X-Labs*** provides space for experiential and cross-disciplinary learning, collaborative research, networking, and the creation of innovative and impactful projects. X-Labs helps link student entrepreneurial ideas to other university partner resources to bring ideas to market or identify research- funding opportunities. It offers an Innovation Summit each year that provides students an opportunity to network and to share and receive feedback on their innovate ideas. JMU also offers curricula and coursework to support entrepreneurship and innovation.

The ***Office of Technology Innovation and Economic Development*** oversees the university technology transfer activities and serves as a liaison between the university and private businesses. It oversees ***James Madison Innovations***, a non-profit organization created in 2009 that affiliated with JMU to assist with technology transfer, intellectual property management, and innovation commercialization. The Office manages license agreements including those for several promising technologies including ones in the areas of vibratory cough suppression,

organic nanoparticles development for chemical products, animal monitoring data stations, and Sjogren's disease diagnosis. The office has facilitated the formation of the Shenandoah Valley Angel Investors (SVAI), a group of private investors that helps fund innovative business startups in the region.

The university also supports innovation through the ***Madison Trust***. The University Foundation established the Madison Trust in 2015 to provide a means to fund faculty, staff, and student innovators who competitively pitch their ideas to a panel of investors and donors. Since its inception, over 170 proposals have been submitted that sought over $2.7 million in funding. Nearly $1 million in private funding has been provided for 33 projects.

JMU partners with several regional organizations to promote entrepreneurship and innovation. The university is a founding member and an active partner with the Shenandoah Valley Innovation Coalition, which provides a vehicle for networking, mentoring, and linking local innovators with capital to promote the area's technology sector and assist economic development. The university partners with the Shenandoah Valley Small Business Development Center (SVSBDC) to provide business counseling to aspiring business owners. JMU officials and staff serve on the boards of several other regional organizations with innovation, technology, and entrepreneurship missions, such as the Shenandoah Valley Technology Council, the Northern Virginia Technology Council, the Shenandoah Community Capital Fund (SCCP), and the GO Virginia Region 8 Council.

Industry Partnerships and Business Growth

JMU has developed numerous partnerships with state, local and regional businesses, nonprofits, and government agencies to foster business recruitment, expansion, and retention. JMU participates in the Shenandoah Valley Partnership, Virginia Economic Development Partnership, and the Virginia University-Based Economic Development (UBED) group.

University departments engage in a variety of different partnerships with private sector industry. Corporate partners serve on departmental advisory boards, provide speakers for university forums and events, and participate in campus recruitment events. Business partners play an especially vital role by working with students on real-world research projects, hosting internships, and providing clinical experiences. In FY 2022, 63.4 percent of JMU bachelor's degree recipients had at least one internship, and 26.7 percent had two or more internships. The business sector is also involved in joint research projects with faculty and staff. Industry partners sponsored 12 projects in FY 2020- FY 2022 worth $829,867.

JMU has formed an innovative workforce training and partnership program with Blue Ridge Community College (BRCC) and Elkton-based pharmaceutical company Merck & Co (also known as the "Merck Model"). Funding for the initiative came from a $2.5 million special appropriation through SCHEV in 2019. The appropriation is earmarked for processes that support the

development of education and training programs, including curriculum creation and technology upgrades. This education and training program, along with a $7.5 million custom grant administered by the Virginia Economic Development Partnership (VEDP), were instrumental in attracting a Merck pharmaceutical expansion to produce the Human Papillomavirus (HPV) vaccine that resulted in $1 billion of capital investment and 152 additional employees. JMU is assisting education and workforce programming to help build Merck's workforce needs and to augment the 2-4 year college graduate education pipeline in several different areas including: (a) a post-degree production services "boot camp" to provide non-credit short term training for existing manufacturing employees and recent graduates of programs who lack manufacturing experience, (b) a human resources support program to assist area employers in implementing a screening program to identify the most qualified job applicants, (c) new curriculum offerings for adult degree programs; customized, noncredit STEM field training; and degree programs in STEM fields, and (d) increased interactions with the firm through internship programs. Outcomes of the project to date include:

- The hiring of 36 BRCC and 59 JMU graduates into either full-time or contract positions.
- The establishment of a JMU/Merck Internship Program in which 76 "sprinters" have been selected for internship roles with Merck in the areas of automation, quality labs, process development labs, facilities, and manufacturing production systems.
- Participation of 85 employees in JMU's School of Professional & Continuing Education's (SPCE) Foundations of Project Management & Team Communications, a course that was customized based on Merck's needs.
- Progress towards the development of a process engineering certificate. This program will benefit Merck and other local manufacturers.
- Exploration of the possibility of developing a year-long co-op program between Merck and the JMU Engineering Department.

The Merck Model will be used to address the workforce needs of other major area employers including MillerCoors, Shamrock Farms, Danone/WhiteWave, and Hershey. It has received the Judge's Choice Award from the University Economic Development Association (UEDA) Project and was named an Innovation Finalist for the 2021 UEDA Awards of Excellence.

Another example of how JMU has helped promote and facilitate industry partnerships and business growth is the work of the Shenandoah Valley Regional Airport (SHD) Air Service Task Force. JMU has taken a leadership role in supporting and sustaining non-stop air service to SHD by Express Jet service powered by SkyWest. JMU officials launched the SHD Air Service Task Force and worked with community partners to increase demand for local air service for major business markets and leisure travel in the face of headwinds from the COVID-19 pandemic. JMU has also named the SHD its Official Airport and encourages employees to utilize the local airport in out-of-town travel plans. Such service is viewed as important for regional economic development, talent recruitment and retention, and quality of life.

JMU's ***College of Integrated Science and Engineering (CISE)*** Partners Program is another university tool for fostering university-business partnerships**.** The program brings industry leaders together with JMU students and faculty to help companies "solve problems, address issues, and face challenges." The program offers firms department affiliations; collaboration with faculty-student teams on company projects; and access to special recruitment resources such as career fairs, digital media, interview rooms, and other benefits. The program currently has 17 firm partnerships and sponsors.

JMU partnered with several regional governments; industrial hemp growers, processors, and dealers; and several localities in a GO Virginia Region 8 Enhanced Capacity Building grant to study opportunities for developing the industrial hemp industry in the Shenandoah Valley, including agribusiness industries, biomedical/biotechnical industries, and other sectors.[11] The grant funds a study to map regional assets and resources for the industry, a survey to learn more about the experiences and needs of regional growers and processors, development of a network of market participants, and creation of a web-based portal to connect researchers and practitioners.

Civic Engagement and Governmental Relations

JMU seeks to foster civic engagement and good governmental relations through a variety of activities. The **James Madison Center for Civic Engagement** serves as a focal point for many of these efforts including: assisting with voter education and engagement initiatives; integrating civic learning opportunities within courses and economic programs; providing resources for education and engagement about civic issues, such as public forums, lectures, and discussions; assisting in assessing student civic learning outcomes; and working with various local, state, and national organizations, such as the MLK Research and Education Institute at Stanford University on civic initiatives and events.

Several other university centers support civic engagement activities. The ***Institute for Constructive Advocacy and Dialogue*** (an umbrella entity within the School of Communication Studies) promotes civic engagement, public service, and community dialogue. It coordinates the university ***4C: Campus Community Civic Collaborative***, which trains students to facilitate public conversations and resolve conflicts. In FY 2022, the Institute partnered with the local community to help facilitate public discussions about uses of federal COVID-19 aid, assisted with strategic planning for Harrisonburg affordable housing, and facilitated planning by the Shenandoah Valley Rail Trail Exploratory Partnership. The ***Nelson Institute for International and Public Affairs, located within the Department of Justice Studies*****,** provides opportunities for service

[11] GOVA is a statewide economic development program to encourage collaboration between businesses, education, and government to strengthen regional economies and GO Virginia Region 8, which serves the Shenandoah Valley.

learning, civic engagement, policy research, and special events that foster civic engagement. Another Justice Studies Department Center, The ***Mahatma Gandhi Center for Global Nonviolence***, supports community and global engagement to reduce conflict and promote peace.

JMU cultivates good relations with local governments. JMU paid the City of Harrisonburg $287,266 in FY 2022 for a Payment in Lieu of Taxes (PILOT). This amount helps defray city public safety costs and also reimburses the city for foregone property tax revenues when the university acquires private properties for future development until demolition. JMU and the City of Harrisonburg also have a mutual aid agreement that allows JMU police department officers to operate as city officers within the city limits. The JMU Police Department, the Harrisonburg Police Department, and area fire departments and rescue squads train annually in active shooter/mass casualty exercises to improve preparedness for such possible incidents (JMU 2021). In addition, faculty, staff, and students serve on volunteer fire firefighting and rescue squads and auxiliary police units in the City of Harrisonburg and Rockingham County. JMU is also a large customer for the Harrisonburg Rapid Transit Authority: it contributed over $1.6 million in revenue in fiscal year 2022 to the city's principal rapid transit system, which is able to offer a greater variety of routes and more convenient scheduling for non-university customers than would otherwise be possible.

As the university footprint grows, JMU has been a major factor in the redevelopment of real estate throughout Harrisonburg. For example, in 2005, the university acquired the former Rockingham Memorial Hospital (adjacent to campus), which led to the subsequent construction of the Student Success Center (2014), the College of Health and Behavioral Studies (2016), the West Campus Parking Deck (2018), and the Hotel Madison and Shenandoah Valley Conference Center (2018). Other recently acquired properties now host the new Atlantic Union Bank Center (2020) and the East Campus Parking Deck (2019).

Tourism and Amenities

JMU is a large business, cultural, recreational, and entertainment attraction in the Shenandoah region. As such, it attracts numerous visitors from inside and outside the Harrisonburg Metropolitan Area. Among its tourism resources are the Forbes Center for the Performing Arts, which provides theatre, dance, and music programs; Bridgeforth Stadium and Zane Showker Field, a major football stadium with a seating capacity of over 25,000; the Festival Conference and Student Center on East Campus, which provides conference and meeting space as well as the James and Gladys Kemp Lisanby Museum and Prism Gallery; the 8,500 seat Atlantic Union Bank Center, which opened in November 2020 and plays host to numerous events including basketball games, graduation and convocation ceremonies, concerts, conventions, and trade shows; and the Duke Hall Gallery of Fine Art, which features visual art exhibitions. The JMU libraries, and their array of special regional and historical collections, also draw outside researchers and hobbyists. The Hotel Madison and Shenandoah Valley Conference Center, a

public-private partnership between JMU, the City of Harrisonburg, and a private development company, opened in 2018. The hotel, owned and operated by dpM Partners, features 230 guest rooms, a restaurant, a large pool, and 21,000 square feet of meeting and event space that can accommodate up to 1,200 conference participants. The venue has markedly increased the region's attractiveness for hosting large conferences and meetings, many of which are sponsored by JMU. It also provides classroom facilities and learning opportunities for students enrolled in the Hart School of Hospitality, Sport, and Recreation Management.

During FY 2022, JMU attracted an estimated 276,862 visitors from outside the area to the campus for college-related events and activities (see **Table 4.2**). Athletic events drew 84,365 non-local spectators and 40,208 participants and travel parties for visiting teams and other athletic-sponsored activities, such as sports banquets and sports camps. The JMU Admissions Office estimated that approximately 60,400 parents and prospective students visited the campus during the year for recruitment activities and campus visits. Alumni Affairs drew approximately 5,000 alumni visitors. These figures do not include visitors to other university events such as non-athletic summer camps and functions sponsored by outside organizations. In FY 2022, JMU hosted over 100 meetings and conferences by outside businesses and non-university organizations, including 83 bookings at the Festival Conference Center and 35 bookings at the Madison Union.

Table 4.2 Non-local Visitors by University Function

University Function	Non-local Visitors
Athletics Spectators	84,365
Athletics Participants	40,208
Admissions	60,377
Alumni	5,000
Commencement	26,351
Forbes Center	12,624
Move In, Move Out	24,047
Orientation	12,247
Parent Weekend/Parent Events	11,643
Total	**276,862**

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APPENDIX A: INPUT DATA PREPARATION

This appendix describes the procedures for obtaining input data used in measuring each of the James Madison University component economic impacts. These components include: (a) operations spending, (b) capital spending, (c) employee net wages, (d) employer paid premiums for health insurance, (e) retirement spending, (f) student spending, and (g) student visitor spending. In estimating these spending components, the study utilizes a methodology similar to the previous JMU economic impact study (Rephann 2016).

Operations Spending

In calculating economic impacts, this study uses what is referred to as analysis-by-parts or a "Bill of Goods" approach (Swenson 2014; Ambargis, McComb, and Robbins 2011). This method provides more customized and accurate economic impact results than studies that rely on expenditure patterns borrowed from closely related private industries such the IMPLAN sector "colleges, universities and junior colleges" which represents only private and non-profit higher education institutions but does not cover public institutions. Previous analysis reported in Rephann (2016) indicated that this sector's spending pattern was not representative of JMU's spending pattern based on university financial data. The analysis-by-parts method separates the modeling into two tasks: 1) modeling the purchase of goods and services from local firms using university expenditure totals by IMPLAN industry and 2) the payment of wages and salaries as an increase in resident household income.

Operational expenditures were obtained from the JMU Finance Office for FY 2022 using the Accounts Payable and Small Purchase Charge Card files. For these files, each transaction was identified by account code (a code which represents the nature of the spending), department code, and address of vendor/payee (including street address, postal code, and zip code). For the former file, a vendor code was also provided.

In order to transform the JMU expenditure data to IMPLAN use, a crosswalk of 240 JMU operating expense codes[12] to IMPLAN industry sectors was constructed based on code descriptions and file record sampling. The service code correspondences were relatively straightforward to construct. For example, 124300 "Attorney Services" was linked to IMPLAN sector 445 "Legal services." For supplies and equipment purchases, expense records were sampled for each supplies and materials code in order to characterize the sector of major vendors. These purchases were then identified as "wholesale trade", one of twelve available retail trade sectors, or, in selected cases, as a direct purchase from a manufacturing sector. Residual payments to employees that were not captured in employee payroll were characterized as a change in labor income (IMPLAN Sector 5001 Employee Compensation). In computing

[12] The JMU Finance Procedures Manual can be found at: https://www.jmu.edu/financemanual/procedures/2015.shtml

operational expenditures, capital expenditures were excluded. Any expense that was identified as a capital expenditure by a Department ID beginning with a "7" was categorized as a capital project expenditure and is discussed under the rubric of Capital Expenditures below. Bond payments on principal and interest (Operational Expense Codes 311600 and 311700) were also excluded since they are principally financial transfers rather than sales like other sectors and do not produce economic impacts with an input-output model.

Geographical location of vendor was inferred using the address information in the Accounts Payable and Small Purchase Charge Card files. The vendor zip code was used to assign expenditures to the Harrisonburg Metropolitan Area and the state postal code to assign them to the Commonwealth of Virginia. Adjustments were made for one large vendor (Aramark Corporation) that reported some non-local billing addresses but whose principal business activity occurs within the local area. In addition, employee reimbursements for travel and other work-related expenses (which occur principally outside the service region) were not included in the total since the payee was designated as an employee rather than the vendor who sold the original goods or services. This methodology is likely to impart a downward bias on local spending estimates. It will not capture local spending by smaller establishments that bill their products and services from remote central offices rather than local branch and outlet locations but provide the product or service locally. It also will not capture employee reimbursements for local spending. Lastly, construction and maintenance expenditures were assigned entirely to the Harrisonburg Metropolitan Area because these services are necessarily provided on-site and the place of work of any resulting employees would be there.

Final tabulations indicated that a total of $99.8 million in operational expenditures were made in the Harrisonburg Metropolitan Area and $127 million in the Commonwealth of Virginia. **Table A.1** shows a breakdown of these expenditures by area and IMPLAN Sector.

Table A.1 Operational Expenditures by IMPLAN Sector and Location

IMPLAN Sector	Description	Harrisonburg Metropolitan Area	Commonwealth of Virginia
5001	Employee compensation	$671,841	$1,290,764
47	Electricity transmission and distribution	$9,599,313	$9,602,302
48	Natural gas distribution	$1,726	$14,322
49	Water, sewage and other systems	$1,765,392	$1,766,686
53	Newly constructed educational and vocational structures	$168,008	$168,008
56	Newly constructed nonresidential structures	$28,009	$28,009
60	Maintained and repaired nonresidential structures	$12,238,400	$12,238,400
62	Maintained and repaired highways, streets, bridges, and tunnels	$2,325	$2,325
152	Printed materials	$100,847	$875,934
271	Photographic and photocopying equipment	$8,548	$78,978
298	Electronic computers	$245,870	$385,256
310	Other electronic components	$7,462	$24,700
369	Institutional furniture	$14,036	$638,944
376	Surgical and medical instruments	$412	$15,496
393	Wholesale services – Professional and commercial equipment and supplies	$104,306	$399,698
394	Wholesale services – Household appliances and electrical and electronic goods	$58,590	$207,975
395	Wholesale services – Machinery, equipment, and supplies	$126,316	$397,947
396	Wholesale services – Other durable goods merchant wholesalers	$10,939	$45,181
399	Wholesale services – Petroleum and petroleum products	$14,955	$288,103
400	Wholesale services – Other nondurable goods merchant wholesalers	$2,305,141	$5,132,685

IMPLAN Sector	Description	Harrisonburg Metropolitan Area	Commonwealth of Virginia
402	Retail services – Motor vehicle and parts dealers	$519,409	$705,082
403	Retail services – Furniture and home furnishings stores	$2,904	$9,202
404	Retail services – Electronics and appliance stores	$23,267	$46,288
405	Retail services – Building material and garden equipment and supplies stores	$800,226	$2,110,248
406	Retail services – Food and beverage stores	$154,016	$218,348
407	Retail services – Health and personal care stores	$93,268	$404,576
409	Retail services – Clothing and clothing accessories stores	$222,614	$351,954
410	Retail services – Sporting goods, hobby, musical instrument and bookstores	$446,664	$1,007,029
411	Retail services – General merchandise stores	$1,016	$2,266
412	Retail services – Miscellaneous store retailers	$277,577	$1,006,628
414	Air transportation services	$1,895,427	$2,209,273
417	Truck transportation services	$28,009	$104,380
418	Transit and ground passenger transportation services	$178,339	$195,094
421	Couriers and messengers services	$2,619	$3,474
424	Periodicals	$3,215	$8,161
425	Books	$16,946	$16,946
428	Software publishers	$816	$215,310
433	Wired telecommunications	$11,138	$386,613
439	Nondepository credit intermediation and related activities	$0	$227
444	Other insurance	$0	$2,821,735

IMPLAN Sector	Description	Harrisonburg Metropolitan Area	Commonwealth of Virginia
447	Other real estate services	$3,581,258	$4,240,845
453	Commercial and industrial machinery and equipment rental and leasing services	$209,950	$363,847
455	Legal services	$556	$81,140
456	Accounting, tax preparation, bookkeeping, and payroll services	$84	$30,491
457	Architectural, engineering, and related services	$704,251	$2,025,399
459	Custom computer programming services	$2,196	$4,261
460	Computer systems design services	$5,150	$12,529
462	Management consulting services	$0	$3,120
464	Scientific research and development services	$3,523,486	$10,912,537
465	Advertising, public relations, and related services	$170,517	$349,565
470	Office administrative services	$625,504	$846,028
472	Employment services	$169,596	$172,728
473	Business support services	$443	$4,893
476	Services to buildings	$1,340	$718,643
479	Waste management and remediation services	$81,474	$113,922
482	Other educational services	$163,622	$371,307
483	Offices of physicians	$32,749	$132,568
484	Offices of dentists	$23,158	$23,158
486	Outpatient care centers	$0	$650
487	Medical and diagnostic laboratories	$83	$75,134
489	Other ambulatory healthcare services	$1,051	$2,198
490	Hospital services	$0	$7,170

IMPLAN Sector	Description	Harrisonburg Metropolitan Area	Commonwealth of Virginia
507	Hotels and motel services, including casino hotels	$1,827,381	$2,072,937
509	Full-service restaurant services	$839,743	$879,971
511	All other food and drinking place services	$54,842,343	$54,872,418
512	Automotive repair and maintenance, except car washes	$78,893	$144,617
514	Electronic and precision equipment repair and maintenance	$172,026	$455,189
515	Commercial and industrial machinery and equipment repair and maintenance	$2,802	$34,459
519	Dry-cleaning and laundry services	$560,329	$611,307
522	Grantmaking, giving, and social advocacy services	$22,524	$212,699
523	Business and professional services	$20,782	$1,632,187
526	US Postal delivery services	$5,025	$50,765
531	Other products and services of State Govt enterprises	$9,276	$144,830
	Total	**$99,827,493**	**$127,028,056**

Capital Spending

Capital expenditure information was obtained in a similar fashion to operational expenditures and included all expenses for department codes beginning with a "7." Since construction and maintenance activities occur at place of construction, all non-local contractor expenditures were assigned to the Harrisonburg Metropolitan Area. **Table A.2** shows the capital expenditures by location and IMPLAN Sector. In computing capital expenditures, purchases of existing land and building were not counted since they are mainly financial transfers that do not generate new economic activity with the IMPLAN model.

Table A.2 Capital Expenditures by IMPLAN Sector and Location

IMPLAN Sector	Description	Harrisonburg Metropolitan Area	Commonwealth of Virginia
53	Newly constructed educational and vocational structures	$1,446,535	$1,446,535
60	Maintained and repaired nonresidential structures	$7,451,615	$7,451,615
152	Printed materials	$0	$415
298	Electronic computers	$0	$0
310	Other electronic components	$0	$6,787
369	Institutional furniture	$4,395	$128,112
393	Wholesale services – Professional and commercial equipment and supplies	$0	$255,302
394	Wholesale services – Household appliances and electrical and electronic goods	$6,946	$43,940
396	Wholesale services – Other durable goods merchant wholesalers	$2,193	$2,193
400	Wholesale services – Other nondurable goods merchant wholesalers	$0	$4,630
412	Retail services – Miscellaneous store retailers	$0	$5,173
444	Other insurance	$2,407	$2,407
447	Other real estate services	$119	$119
453	Commercial and industrial machinery and equipment rental and leasing services	$0	$0
455	Legal services	$1,885	$1,885
457	Architectural, engineering, and related services	$10,459	$3,109,132
464	Scientific research and development services	$28,378	$140,522
465	Advertising, public relations, and related services	$0	$187
479	Waste management and remediation services	$37	$37
	Total	**$8,954,968**	**$12,598,990**

Employee Net Wages

The JMU Finance Office provided information on university wage and salary payments and health insurance benefit payments by residence. In calculating university payroll, only salaries, wages, special payments for bonuses and incentives, disability benefits, and termination-related personal costs were counted. Payments to students were excluded to avoid double counting since these payments will already be reflected in student expenditures, which are estimated under Student Expenditures as explained below. Faculty and staff benefits were also treated differently, with only employer health insurance payments counted towards economic impacts as explained under the rubric of Health Insurance. Tabulations show that payments to faculty and staff totaled $185,322,168 for the Harrisonburg Metropolitan Area and $235,040,359 for the Commonwealth of Virginia. These payments were entered into the IMPLAN model as household income using the Sector 10007 (Household Income $70,000-$100,000) institution spending pattern since this household spending category seemed most representative of the typical JMU employee based on average employee compensation.

Employer Paid Premiums for Health Insurance

This study includes health insurance benefits payments made by the university as a separate component of economic impact to replicate the previous JMU economic impact study. Only the employer contributions are counted. These benefit payments amounted to $33,802,230 for Harrisonburg Metropolitan Area residents and $42,510,669 for Virginia residents during FY2022. In order to convert the benefits to actual healthcare-related expenditures spent locally, a crosswalk was made with health related IMPLAN sectors weighted by household commodity demand from IMPLAN for Household Sector 110007 (Household Income $70,000-$100,000) from the Harrisonburg Metropolitan Area and Virginia IMPLAN models. Using these inputs and model Local Purchase Coefficients, we estimated $17,748,556 in healthcare expenditures were spent in the Harrisonburg metropolitan area and $24,965,413 in healthcare expenditures for Virginia (see **Table A.3**).

Table A.3 Healthcare Insurance-Related Expenditures by IMPLAN Sector and Location

IMPLAN Sector	Description	Harrisonburg Metropolitan Area	Virginia
483	Offices of physicians	$8,268,390	$10,035,844
484	Offices of dentists	$2,214,175	$2,869,401
485	Offices of other health practitioners	$1,157,695	$1,623,236
486	Outpatient care centers	$1,792,755	$2,280,649
487	Medical and diagnostic laboratories	$630,874	$836,013
488	Home healthcare services	$1,640,313	$1,892,012
489	Other ambulatory healthcare services	$349,471	$459,397
490	Hospital services	$17,748,556	$22,514,118
	Total Expenditures	**$33,802,230**	**$42,510,669**

Retirement Spending

Like the previous study, this one estimates the economic impacts associated with JMU faculty and staff retiree spending within the Harrisonburg Metropolitan Area and Commonwealth of Virginia. The Technology Support Team at the Virginia Retirement System provided a customized report showing FY 2022 payments to JMU retirees. Their records indicated gross payments of $22,019,557 were made to Harrisonburg Metropolitan Area residents and $28,016,969 to Virginia residents. Many JMU residents also elect to participate in the defined contribution plan through the Teachers Insurance Annuity Fund. Therefore, it was assumed that the ratio of JMU FY2022 total contributions to the VRS defined benefits program to the total contributions to the Teachers Annuity Fund were representative of current ratio of distributions in order to extrapolate the VRS payments to total retirement plan payments. These adjustments produce estimates of $31,646,622 in pension payments to JMU retirees living in the Harrisonburg metropolitan area and $39,855,950 pension payments to those living in Virginia. These payments were assigned as household income for IMPLAN using the Sector 10007 (Household Income $70,000-$100,000) institution-spending pattern.

Student Spending

Student expenditures were also computed using the methodology of the previous study. Student expenditures are estimated from detailed data obtained from the JMU Office of Financial Aid and Scholarships on student personal expenditure allowances used to compute the

university cost of attendance. The average allowances are described in **Table A.4** for full-time undergraduate and graduate students.

Table A.4 Student Cost of Attendance, FY2022

Item	Full-time Undergraduate	Full-time Graduate
Room	**$5,564**	**$7,084**
Board	**$5,510**	**$5,510**
Books	**$1,098**	**$1,098**
Travel	**$1,896**	**$1,896**
Operating Costs	$1,596	$1,596
Parking	$300	$300
Personal	**$2,030**	**$3,258**
Internet Connection	$240	$385
Laundry/Household	$188	$302
Personal Hygiene	$353	$567
Clothing	$188	$302
Recreation	$696	$1,117
Medical/Dental	$365	$586
Loan Fees	**$76**	**$218**
Total	**$16,174**	**$19,064**

Note: Figures are extrapolated as a percentage of the overall figure and may not be found in other JMU material that lists tuition and fees

In order to obtain total student expenditures within the region, the average student expenditures for undergraduate and graduate students was multiplied by full-time equivalent student enrollment in each group, excluding Harrisonburg Metropolitan Area students (who are assumed to live at home) and off-campus students from elsewhere in the state and nation (who reside elsewhere and consist largely of students attending off-campus centers and students who take primarily on-line courses). In making these calculations, several cost of attendance expense items were excluded. Tuition and fees are excluded since these revenues received by the university will already be reflected in university operational and payroll impacts. Loan fees were

also excluded. In addition, several adjustments were made to student expenditure totals to minimize double counting. Student expenditures on room, board, books, and parking are at least partly made on university auxiliary services, such as dormitory rental, meal plans, and university parking, which are funded by student fees and charges in these areas. These expenses will already be reflected in university operational expenditures and payroll. Therefore, JMU revenues from student room fees ($37,004,539), board ($49,537,827), and parking ($4,448,770) were subtracted from estimated student outlays in each of these areas. In addition, the portion of university revenue received as a commission paid by the private university bookstore vendor ($1,313,372) and on-campus spending made on student "Flex" electronic debit cards ($2,699,270) was removed. These latter two items were subtracted from estimated student outlays on books.

Because the data is still not detailed enough to permit mapping each expenditure item onto a specific IMPLAN sector, additional information from other sources and assumptions were used. To assign student board expenditures, weights derived from a BLS study of student expenditures based on Consumer Expenditure Survey (CES) data (Paulin 2001) were used. For example, this study indicated that students spent 72.5 percent of their food budget on food at home, 25 percent on food spent away from home, and 2.5 percent on other food. Thus, total board expenditures were assigned to each of the following sectors weighted by those percentages: 406—Retail–Food and beverage stores, 510—Limited-service restaurants, and 515—All other food and drinking places. Transportation expenditures were allotted in a similar fashion to IMPLAN sectors, with supplemental detail provided by information from Consumer Expenditure Survey data for consumers under the age of 25. For several budget items (laundry/household, personal hygiene, recreation, medical/dental) where additional budget detail was unavailable from CES studies, equal proportion allotment rules were used to map to the associated IMPLAN sectors. For example, total recreation expenditures were divided into four equal parts and mapped to four recreation-related sectors: 410–Retail – Sporting goods, hobby, musical instruments, and bookstores; 429--Motion picture and video industries (i.e., movie theaters); 496--Performing arts companies; and 505--Fitness and recreational sports centers.

Similar to the previous study, the assumption was made that all student-related expenditures occurred in the Harrisonburg Metropolitan Area and, by association, within Virginia. **Table A.5** shows the final assignments by IMPLAN Sector.

Table A.5 Student Expenditures by IMPLAN

IMPLAN Sector	Description	Amount
402	Retail - Motor vehicle and parts dealers	$10,348,808
406	Retail - Food and beverage stores	$34,687,756
407	Retail - Health and personal care stores	$4,542,795
408	Retail - Gasoline stores	$7,975,228
409	Retail - Clothing and clothing accessories stores	$3,423,028
410	Retail - Sporting goods, hobby, musical instrument and bookstores	$22,603,848
411	Retail - General merchandise stores	$1,711,514
418	Transit and ground passenger transportation	$664,602
429	Motion picture and video industries	$3,168,121
433	Wired telecommunications carriers	$4,369,823
448	Real Estate	$62,656,053
450	Automotive equipment rental and leasing	$2,040,498
483	Offices of physicians	$1,329,154
484	Offices of dentists	$1,329,154
486	Outpatient care centers	$1,329,154
490	Hospitals	$1,329,154
496	Performing arts companies	$3,168,121
505	Fitness and recreational sports centers	$3,168,121
510	Limited-service restaurants	$13,328,890
511	All other food and drinking places	$1,145,842
512	Automotive repair and maintenance, except car washes	$2,397,737
517	Personal care services	$3,213,640
519	Dry-cleaning and laundry services	$1,711,514
520	Other personal services	$851,630
	Total	**$192,494,188**

Student Visitor Spending

Visitor expenditures were also computed using the same methodology as the last report. Since JMU does not have comprehensive survey-based information on the number of university-related visitors, visitation figures for students were imputed based on survey information from other Virginia universities. Per student visitor-day estimates are based on Virginia university results for the University of Virginia (Knapp and Shobe 2007), Longwood University (Longwood University 2008) and Liberty University (Magnum Economic Consulting, LLC 2014). Averaging the results from these three surveys produces an average of 19.2 visitor days per student. Visitors for faculty and other university-related visits (e.g., faculty visitors, alumni, recruitment visits, university cultural events), except to the extent that they overlap with student visitors, were excluded.

Average per visitor-day expenditures are based on information from the CY 2022 Virginia Tourism Corporation Leisure Visitor Profile (Virginia Tourism Corporation 2023). Computations indicated that the average Virginia leisure travelling party had a party size of 3.1, stayed 4.5 nights, and spent $782.20. Thus, the average per person-day expenditure was $57.30. The Leisure Visitor Profile also provides a breakdown of average traveler spending by consumer item. These category expenditures were mapped to the relevant IMPLAN sectors using equal proportion weighting rules similar to that described for student expenditures earlier.

Since the Leisure Visitor Profile represents spending within Virginia and not necessarily within the destination area, local spending proportion was inferred using supplemental information from visitor surveys reported in the Virginia Horse Industry Economic Impact Study (Rephann 2011). In that study, 92.5 percent of visitor spending for non-local, in-state, and out-of-state spectators to Virginia horse shows and competitions was made in the area where the event was held. The residual (7.5 percent), mainly spending on gasoline, food, and lodging, occurred elsewhere in Virginia en route to the event. Therefore, 92.5 percent of the total Virginia estimated visitor spending was estimated to occur within the Harrisonburg Metropolitan Area. The visitor expenditure allotments by IMPLAN sector and location are reported in **Table A.6**.

Table A.6 Visitor Expenditures by IMPLAN Sector and Location

IMPLAN Sector	Description	Harrisonburg Metropolitan Area	Commonwealth of Virginia
3,406	Retail - Food and beverage stores	$1,202,159	$1,301,038
3,408	Retail - Gasoline stores	$1,762,887	$1,907,886
3,409	Retail - Clothing and clothing accessories stores	$656,998	$711,037
3,410	Retail - Sporting goods, hobby, musical instrument and bookstores	$656,998	$711,037
3,411	Retail - General merchandise stores	$656,998	$711,037
3,412	Retail - Miscellaneous store retailers	$656,998	$711,037
3,418	Transit and ground passenger transportation	$556,701	$602,490
3,448	Tenant-occupied housing	$2,417,633	$2,616,486
3,429	Motion pictures and videos	$289,640	$313,463
3,496	Performing arts	$289,640	$313,463
3,501	Museum, heritage, zoo, and recreational services	$289,640	$313,463
3,502	Amusement parks and arcades	$289,640	$313,463
3,504	Other amusement and recreation	$289,640	$313,463
3,505	Fitness and recreational sports center services	$289,640	$313,463
3,506	Bowling activities	$289,640	$313,463
3,507	Hotels and motel services, including casino hotels	$3,583,763	$3,878,531
3,508	Other accommodation services	$766,671	$829,730
3,509	Full-service restaurant services	$1,502,699	$1,626,298
3,510	Limited-service restaurant services	$1,502,699	$1,626,298
	Total	**$17,950,685**	**$19,427,148**