



University of Missouri System

COLUMBIA | KANSAS CITY | ROLLA | ST. LOUIS

ECONOMIC AND COMMUNITY IMPACTS OF THE UNIVERSITY OF MISSOURI SYSTEM

JANUARY 2022

PREPARED BY:

**Tripp
Umbach**

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GENERATING IMPACT THROUGHOUT MISSOURI FY2021

UNIVERSITY OF MISSOURI SYSTEM



\$5 billion
generated in
economic impact

49,937 jobs
supported and
sustained

\$281.8 million
generated in state
and local taxes



\$597.2 million
generated in
economic impact

7,291 jobs
supported and
sustained

\$33.4 million
generated in state
and local taxes



\$487.2 million
generated in
economic impact

6,540 jobs
supported and
sustained

\$27.3 million
generated in state
and local taxes



\$429 million
generated in
economic impact

5,485 jobs
supported and
sustained

\$24 million
generated in state
and local taxes

4
UNIVERSITIES

75,000+
STUDENTS

502,291
ALUMNI

17,000+
STAFF

6,000+
FACULTY & RESEARCHERS

900+
DEGREE OPTIONS

CHARITABLE GIVING AND VOLUNTEERISM

\$26.1 million

in donated time and charitable giving by staff, faculty, and students

\$14.6 million

donated to local charitable organizations

\$11.5 million

in value of volunteer time

These benefits are in addition to the **\$6.5 billion** annual impact that the UM System generates for the state.

RESEARCH

generated

\$1.5 billion

in economic impact

more than

10,000 jobs

supported and sustained

produced more than

\$81.1 million

in state and local taxes

ACADEMIC MEDICINE

generated

\$2.4 billion

in economic impact

more than

25,200 jobs

supported and sustained

produced more than

\$135.1 million

in state and local taxes

ATHLETICS

generated

\$376.8 million

in economic impact

4,200 jobs

supported and sustained

\$18.8 million

generated in state and
local tax revenues

ALUMNI & WORKFORCE

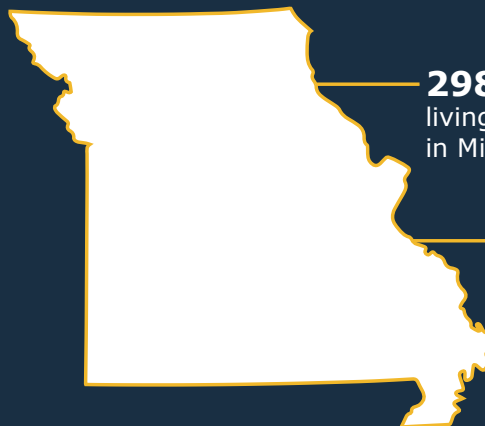
1 out of 29

employees within the state of
Missouri are UM System graduates

UM System graduates on average make

\$11,000

more per year than graduates from
other institutions in Missouri



298,669 alumni

living and working
in Missouri

\$52.5 billion

in overall economic impact
generated by alumni in Missouri

ECONOMIC VALUE OF STATE INVESTMENT

For every **\$1** in state funding received by the UM System, **\$15.49** is generated in economic expansion by the System's operations and programs



ABOUT THE UNIVERSITY OF MISSOURI SYSTEM

The University of Missouri System (UM System)¹ is a powerful engine for education, outreach, and research. The UM System plays an essential role in generating economic expansion, employment growth, and increasing local tax revenue in communities throughout Missouri. With four diverse universities, a robust research footprint, two growing academic medical centers, and a statewide extension program, the UM System contributes significantly to the state and local economies in all regions of the Show Me State.

Throughout its long history, the UM System has been the state's partner in the education of Missouri's citizens and the growth of its economy. With more than 75,000 students enrolled, the UM System educates approximately half of all undergraduate students enrolled in Missouri's public four-year institutions. UM System universities educate more than 60 percent of Missouri's graduate students enrolled at public institutions and the overwhelming majority of professional students in programs such as medicine and law.

The UM System's breadth and depth impact citizens throughout Missouri. This report demonstrates that the UM System is a driving force in the economic success of the state and an important asset to the nation and the world.



STUDY OVERVIEW

In August 2021, the UM System retained Tripp Umbach² to measure the economic value generated by the UM System³ operations and expenditures throughout the state of Missouri in FY21. The impact analysis measured effects throughout the state and each of its four universities, in Columbia, Kansas City, Rolla and St. Louis, as well as MU Extension, academic medicine, research, athletics, and alumni.

The influence the UM System and the aforementioned entities have on the vitality of the economy within each region and across the state includes:

- Business volume impacts (capital expenditures, operational expenditures, and payroll)
- Direct, indirect, and induced employment impacts
- State and local tax impacts
- Impact of employee and student spending (retail/merchandise, hospitality, etc.)
- Impact of alumni on the economy (including wage premiums and job creation)
- Impact of visitor spending on the economy (wage premiums, job creation, etc.)⁴
- The impact that employees and students have on the community through donations and volunteer work

UM SYSTEM STUDY OUTLINE

DATA SOURCE:

University of Missouri System

Study Type:

Economic Impact Analysis

Geography:

State of Missouri

Study Year:

Fiscal Year 2021 (FY21)

Methodology:

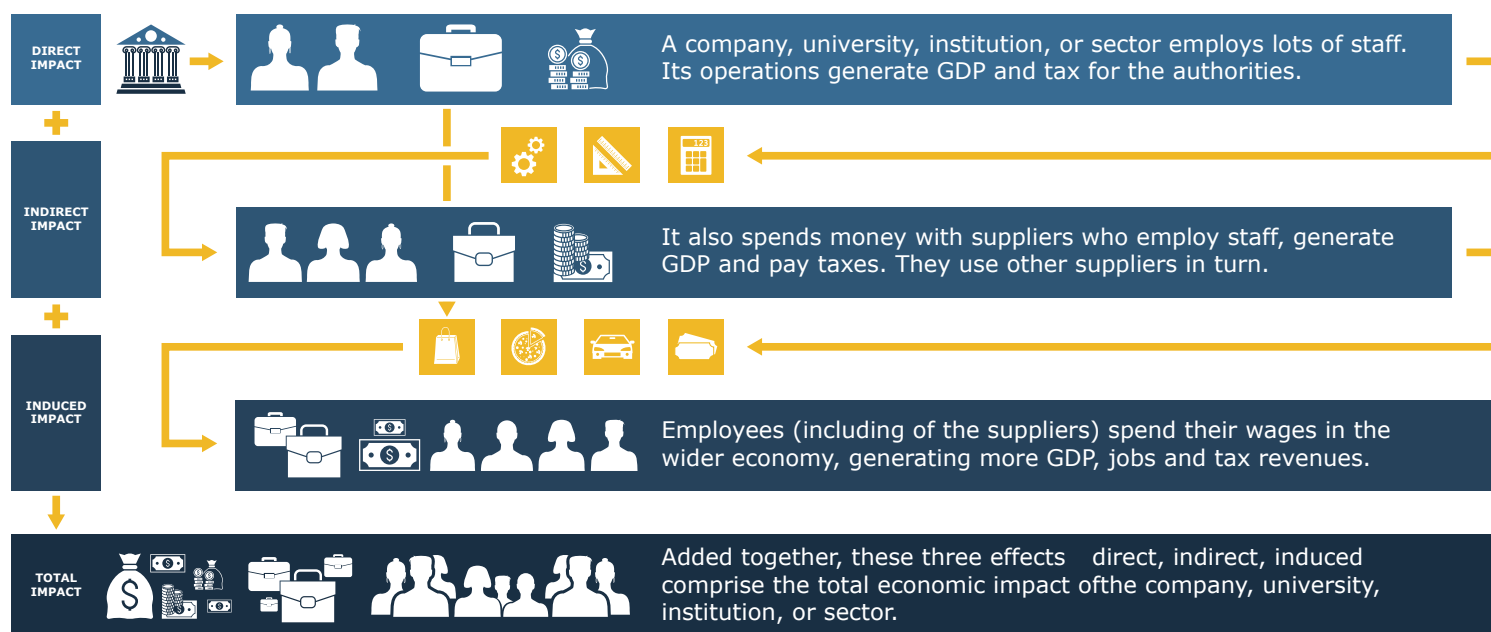
IMPLAN

ECONOMIC IMPACT ANALYSIS

Tripp Umbach analyzed the economic impact of the UM System using the IMPLAN input-output model.⁵ Primary data utilized to conduct the analysis were collected from the UM System. Data included capital expenditures, operational expenditures, number of employees, payroll and benefits, taxes paid to local and state governments, visitation numbers for events on campus, number of students, and proportions of students who live on and off campus to accurately measure their spending in the local area.

Tripp Umbach used both secondary data and the firm's benchmarking databases, developed over 30 years from experience with hundreds of similar studies, to estimate spending by visitors to the universities, conference and meetings, commercialization value of research, number of spin-off companies, and the value of donations and volunteerism by students, faculty and staff.

The economic impact values presented in this report are generated by direct, indirect, and induced operational spending, capital spending, payroll, visitor spending, and student spending throughout Missouri. It is important to remember that not all dollars spent by a university remain in its home state. Dollars that "leak" out of the state in the form of purchases from out-of-state vendors are not included in the university's economic impact on the state.



COMMUNITY BENEFITS ANALYSIS

Community benefits provided in this report outline two forms of impact — monetary donations made by employees and students to local nonprofits as well as volunteer hours that are valued at a monetary value.⁶ The UM System's overall impact to the state goes beyond the economic outcomes analysis that is this report's primary focus. The broader impact is acknowledged but not comprehensively documented in this report.

For more information on the methodology, or for definition of terms, technical information and FAQs, see pages 31-37.

STRENGTHENING THE MISSOURI ECONOMY

ECONOMIC IMPACT

In FY21, The UM System generated more than **\$6.5 billion** in economic impact for the state of Missouri. This total represents the direct impact of spending in the state (**\$2.5 billion**) and the indirect and induced spending that occurs as a result of UM's presence (**\$4 billion**). Table 1 shows the breakdown of the impacts by type as well as the top 10 industries that the UM System impacts in Missouri economically.

Table 1: Direct and Indirect Employment Driven by the Presence of the UM System in Missouri, 2021

Description	Total Economic Output
Colleges/Universities	\$1,371,654,710
Hospitals	\$515,033,283
Scientific Research and Development Services	\$426,307,705
Tenant-Occupied Dwellings	\$424,087,982
Scenic & Sightseeing Transportation and Support Activities	\$212,364,843
Retail – Clothing & Accessories	\$170,295,474
Transit and Ground Passenger Transportation	\$145,002,613
Retail – Food & Beverage	\$121,409,528
Retail – Sporting Goods, Hobby, Musical, etc.	\$112,400,366
Personal Care Services	\$99,952,546

Source: Tripp Umbach, using IMPLAN results from data obtained through the UM System

THE UM SYSTEM SUPPORTS AND SUSTAINS JOBS

The UM System supported **69,253 jobs** in Missouri, directly impacting workforce vitality and bolstering the economy on a number of levels. These jobs, both full-time and part-time, include not only direct employment (**35,980 jobs**) by the System but indirect and induced jobs (**33,273 jobs**).

These employment impacts make a direct contribution to Missouri's overall workforce vitality and bolster the economy. Those directly employed spend dollars in the state and, therefore, support additional employment. The UM System's spending on capital projects, development and planning projects, and suppliers supports additional indirect jobs throughout Missouri.

The UM System supports thousands of jobs statewide in virtually every sector of the Missouri economy, such as construction, business and professional services, restaurants and hotels, hospitals, and other higher education institutions. Table 2 shows the top 10 industries impacted by the presence of the UM System, in terms of employment.

Table 2: Direct and Indirect Employment Driven by the Presence of the UM System, 2021

Description	Total Employment (in jobs)
Colleges/Universities	27,745
Hospitals	13,778
Scientific Research and Development Services	3,819
Transit and Ground Passenger Transportation	3,160
Personal Care Services	1,959
Full-Service Restaurants	1,662
Retail – Sporting Goods, Hobby, Musical, etc.	1,399
Retail – Clothing & Accessories	1,372
Real Estate	1,371
Retail – Food & Beverage	1,263

Source: Tripp Umbach, using IMPLAN results from data obtained through the UM System

THE UM SYSTEM STRENGTHENS STATE AND LOCAL GOVERNMENTS

State and local taxes generated by the UM System totaled **\$366.5 million**. Through its local spending and direct and indirect support of jobs, the UM System’s presence strengthens the local and statewide tax base.

ECONOMIC VALUE OF STATE INVESTMENT

For every dollar received by the UM System from Missouri taxpayers, **\$15.49** is generated by the System’s operations and programs in the state’s economy.



UNIVERSITY OF MISSOURI-COLUMBIA

The University of Missouri-Columbia (MU) has been a significant contributor to Missouri's economy. Founded in 1839, MU is a public land-grant research university and the flagship of the UM System. The state's largest and most comprehensive university, Mizzou has more than 300 degree programs, including 89 online options, through 12 colleges and schools and is one of only six public universities nationwide that has a medical school, veterinary medicine college, and a law school on the same campus. In 2021, U.S. News and World Report ranked MU as the #12 best value among all national public universities and the #1 best value among national public universities in Missouri and neighboring states.

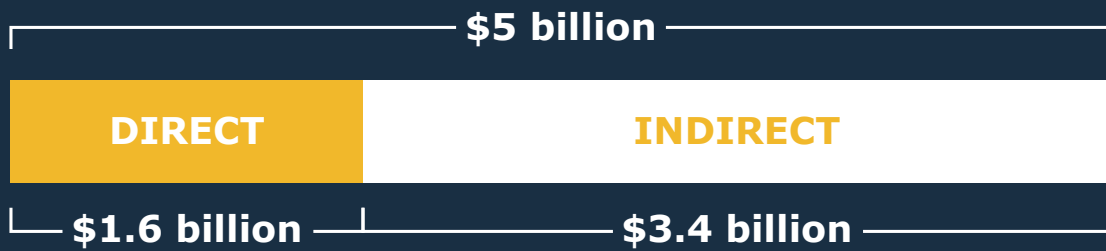
As Missouri's only state-supported member of the Association of American Universities, MU's mission is to provide all Missourians the benefits of a world-class research university. More than 4,300 faculty and 15,400 staff work at MU. MU's faculty is a community of passionate, creative, and dedicated teacher-scholar-mentors. The students are educated by some of the top minds in their fields, while also being exposed to a diverse range of community and social activities and events.

MU is home to the nation's most powerful university research reactor and is the only U.S. provider of 5 life-saving medical isotopes used in cancer and cardiac drugs. The university also operates MU Health Care, the largest health system in Mid-Missouri, with more than 6,000 physicians, nurses and health care professionals in over 80 specialties working together to serve more than 240,000 patients each year.



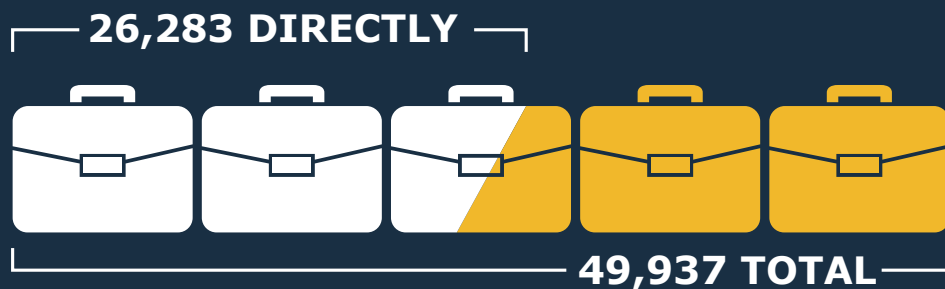
IN FY21 MU:

ECONOMIC IMPACT



Generated more than **\$5 billion** in economic impact for Missouri. This total represents the direct impact of spending in the state (**\$1.6 billion**), as well as the indirect spending that occurs as a result of MU's presence (**\$3.4 billion**).

EMPLOYMENT IMPACT



Directly supported **26,283** (full-time and part-time) jobs throughout the state. In total, the university's presence supports **49,937 jobs** in Missouri. This employment makes a direct contribution to the region's overall workforce vitality and bolsters the economy. Those directly employed individuals spend dollars in the state and, therefore, support additional employment.



STATE AND LOCAL TAX IMPACT

Generated more than **\$281.8 million** in direct and indirect/induced tax payments in Missouri for state and local governments.



2021 HIGHLIGHTS

Rising Despite a Pandemic

Boldly building on its values of respect, responsibility, discovery, and excellence, MU rose to new challenges – and beyond – in 2021. The COVID-19 pandemic didn't slow Mizzou's ascension in the U.S. News & World Report best value rankings, a 13-spot improvement from the previous academic year. MU also climbed in the category of online programs and was named to the Military Times' Best for Vets list. Despite a national drop in college enrollment, Mizzou increased its overall enrollment, a milestone that included an uptick in the average ACT score for incoming freshmen.

NextGen Research Efforts Continue

The Roy Blunt NextGen Precision Health building celebrated its grand opening in October 2021, ushering in a new era of leading-edge research in a facility that unites researchers, clinicians, and industry partners. The NextGen Precision Health initiative, which promotes bench-to-bedside discoveries, will assemble clusters of researchers under one roof in search of solutions to the world's greatest health challenges. The humanities also play an important part in the initiative, providing inspiration and creativity that are hallmarks of science and the arts.

COVID-19 Research Continues at Mizzou

Mizzou's innovative students and faculty have taken on the challenge of researching a global pandemic from the heart of Missouri. Whether through harnessing a \$4 million grant from the National Institutes of Health to study wastewater, investigating COVID-19's effect on the clothing industry, developing a wearable bioelectronic device to monitor patients, identifying strategies used in nursing homes to overcome challenges, or breaking down the benefits and challenges of telehealth, MU has affected timely solutions.

The Future of Mizzou

To round out the year, the University of Missouri announced the launch of MizzouForward, a \$1.5 billion investment over 10 years to use existing and new resources to recruit new tenure and tenure-track faculty, enhance staff to support the research mission, build and upgrade research facilities and instruments, augment support for student academic success, and retain faculty and staff through additional salary support.

UNIVERSITY OF MISSOURI-KANSAS CITY

The University of Missouri-Kansas City (UMKC), originally chartered in 1929 as a private institution, is now the largest comprehensive, fully accredited university in the Kansas City area. UMKC prides itself on being Kansas City's university. As an urban research university, UMKC's mission is to promote learning through the discovery, preservation, and dissemination of knowledge of public value across a broad spectrum of disciplines and fields of study.

With a 14:1 student-to-faculty ratio and students from all 50 states and more than 85 countries, UMKC has earned national and international attention for the quality of its faculty, students, research, and community leadership. UMKC is at the heart of a thriving urban area. UMKC's medical, dental, pharmacy and nursing schools are anchors in the UMKC Health Sciences District. Although the university doesn't own a health system, its faculty operate specialty programs at University Health, formerly Truman Medical Centers/ University Health; Saint Luke's Hospital; and Children's Mercy Medical Center.



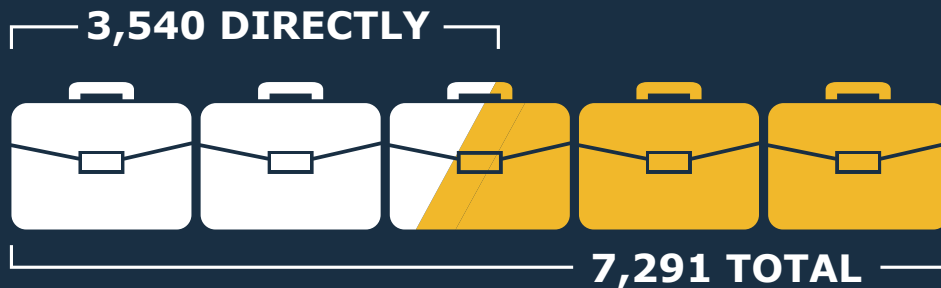
IN FY21 UMKC:

ECONOMIC IMPACT



Generated more than **\$597.2 million** in economic impact for Missouri. This total represents the direct impact of spending in the state (**\$186.6 million**) and the indirect spending that occurs as a result of UMKC's presence (**\$410.6 million**).

EMPLOYMENT IMPACT



Directly supported **3,540** (full-time and part-time) jobs throughout the state. UMKC's spending on capital projects, development and planning projects, and suppliers supports additional indirect jobs throughout Missouri. In total, the university's presence supports **7,291 jobs** in Missouri.



STATE AND LOCAL TAX IMPACT

Generated more than **\$33.4 million** in direct and indirect/induced tax payments in Missouri for state and local governments.



2021 HIGHLIGHTS

Renovation of Bloch Heritage Hall Moves a Thriving Business School into the Future

The \$15.2 million renovation, expected to welcome students by the fall 2022 semester, is really about fulfilling its namesake's unwavering vision of excellence for the school. For more than three decades, Henry W. Bloch, who died in 2019, faithfully invested in the business school with his time and money because he believed that having a top business school in Kansas City was key to the city's success. The improvements will put Bloch ahead of many business schools around the country.

UMKC Forward Plan

UMKC is pledging to invest more than \$50-\$60 million over the next five years in five key investments: in student success, faculty development, research, career credentialing for adult learners and community engagement. Chancellor Mauli Agrawal said the investments are designed to achieve growth and excellence for Kansas City's university. In addition, the university will spend another \$5 million to hire new faculty in key strategic areas over the next three years.

National STEM Education Initiative for Students with Disabilities

UMKC will serve as backbone for a \$10 million research effort from the National Science Foundation, to promote science, technology, engineering, and mathematics, or STEM, education among students with disabilities. Auburn University will lead the five-year project while UMKC will "backbone," or guide vision and strategy, support aligned activities, establish shared measurement practices, and support the implementation of research.

High-Tech Research Center

UMKC unveiled its new \$32 million high-tech research center to hundreds of guests in October 2021. The five-story, 57,800-square-foot Robert W. Plaster Free Enterprise and Research Center features 11 state-of-the-art research labs. The privately funded capital project is the largest in UMKC history, with more than 25 donors.

The Plaster Center will be a resource for the Kansas City community. From independent makers to entrepreneurs and innovators, the lab spaces are available to experiment and explore new technology, new innovations in materials, and breakthroughs in application and design. Some of the technology within the labs is not available anywhere else in Kansas City, demonstrating UMKC's leadership in research and education while helping community partners do the same.

MISSOURI UNIVERSITY OF SCIENCE AND TECHNOLOGY

Missouri University of Science and Technology (Missouri S&T) puts a strong focus on innovation and research. Founded in 1870 as one of the first technological institutions west of the Mississippi River, Missouri S&T continues to build on its heritage of discovery, creativity, and innovation to equip and inspire today's students to meet tomorrow's great global challenges.

Known as a STEM-focused research university of more than 7,200 students, Missouri S&T is located in the close-knit community of Rolla. Missouri S&T offers 101 degree programs in 40 areas of study and in 2020 was among the nation's top 10 universities for return on investment, according to Business Insider. The university also is home to the nationally No. 1-ranked Human Powered Vehicle Design Team⁷ and to the Kummer Institute.

Missouri S&T offers a personalized learning environment and an outstanding record of student success. The university serves as a vital knowledge center and the foremost contributor to the region's educational, social, cultural, and economic development.



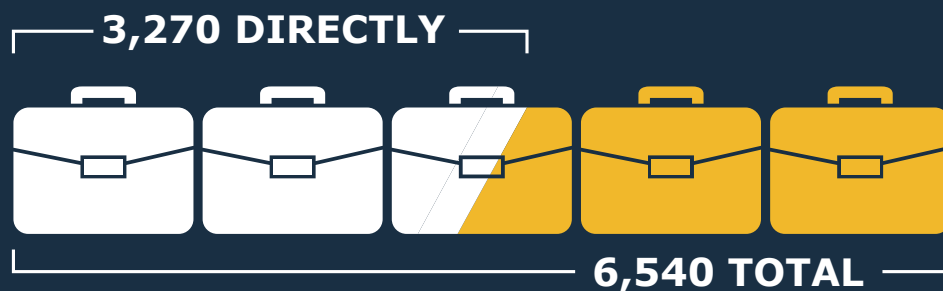
IN FY21 MISSOURI S&T:

ECONOMIC IMPACT



Supported **\$487.2 million** in economic impact for the state. This total represents the direct impact of spending in the state (**\$140.5 million**) and the indirect spending that occurs as a result of the university's presence (**\$346.7 million**).

EMPLOYMENT IMPACT



Directly supported **3,270** (full-time and part-time) jobs throughout the state. In total, the university's presence supports **6,540 jobs** in Missouri.

This employment makes a direct contribution to the region's overall workforce vitality and bolsters the economy. Those directly employed individuals spend dollars in the state and, therefore, support additional employment.



STATE AND LOCAL TAX IMPACT

Generated more than **\$27.3 million** in direct and indirect/induced tax payments in Missouri for state and local governments.



2021 HIGHLIGHTS

Missouri Protoplex

The Missouri Protoplex, an advanced manufacturing research and development facility, will serve as the anchor building for Missouri S&T's planned manufacturing technology and innovation campus. Missouri S&T envisions the Protoplex Facility as headquarters for a statewide ecosystem where experts, innovators, small and large businesses, entrepreneurs, educators, and policymakers develop and adopt the technologies needed to create and sustain manufacturing jobs in Missouri.

The Protoplex will house Missouri S&T's facilities operations, design, construction and space management, and environmental health and safety operations. The project is scheduled to be completed by June 2023. The Missouri Protoplex and manufacturing technology and innovation campus both will support Missouri S&T's efforts to aid manufacturers in Missouri to be more innovative and competitive in the global marketplace.

Missouri S&T Researchers Among Top 2% in their Fields

Sixty-five current and former faculty of Missouri S&T are among the top researchers in their fields as measured by their career research records, and 15 other current or former Missouri S&T researchers were among the best in their fields in 2020, according to a recent analysis by Stanford University.

The Kummer Institute

The Kummer Institute for Student Success, Research and Economic Development will transform Missouri S&T and the south central Missouri region by cultivating leadership and technological innovation; promoting an entrepreneurial mindset; fostering expansion of academic-industry partnerships to address emerging needs of industry; and creating jobs and economic growth for the region. One element of the Institute is The Kummer Center for STEM Education, which will serve K-12 students and teachers primarily in the rural schools of south central Missouri. Late St. Louis entrepreneur Fred Kummer, a Missouri S&T graduate, and his wife, June, donated \$300 million to Missouri S&T in 2020 to establish the Kummer Institute. Their donation is the largest single gift ever to any public or private university in Missouri and one of the largest ever to any university. This gift will enable the university to establish a new college of innovation and entrepreneurship, develop new areas for research, provide numerous scholarships and fellowships for students, and bolster the Rolla region's economy.

UNIVERSITY OF MISSOURI-ST. LOUIS

The University of Missouri-St. Louis (UMSL) is the largest public research university in eastern Missouri. Today, the campus has more than 15,500 students, 80% of whom come from the St. Louis region and reflect the region's broad diversity. There are 1,650 faculty and staff, offering courses in 45 buildings located on 450 acres. The campus has more than 100 programs at the bachelor's, master's, doctoral, and professional levels. Last year, annual research expenditures totaled nearly \$30 million while private giving totaled more than \$21 million.

UMSL provides excellent learning experiences and leadership opportunities to a diverse student body whose influence on the region upon graduation is immense. To date, UMSL has graduated more than 105,000 students, 75% of whom continue to live in the region. The campus provides the largest number of college-educated citizens working in St. Louis. UMSL is also home to Express Scripts, which is the first and only Fortune 500 company in the United States to locate its headquarters on a college campus.



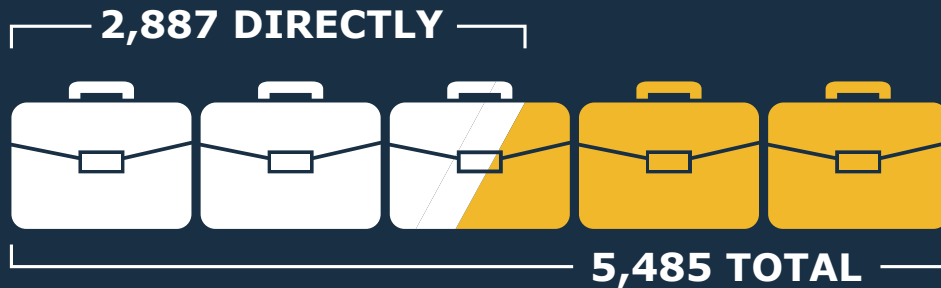
IN FY21 UMSL:

ECONOMIC IMPACT



Generated more than **\$429 million** in economic impact for the state. This total represents the direct impact of spending in the state (**\$134.1 million**) and the indirect spending that occurs as a result of the university's presence (**\$294.9 million**).

EMPLOYMENT IMPACT



Directly supported **2,887** (full-time and part-time) jobs throughout the state. UMSL spending on capital projects, development and planning projects, and suppliers supports additional indirect jobs throughout Missouri. In total, the presence of the university supports **5,485 jobs** in Missouri.



STATE AND LOCAL TAX IMPACT

Generated more than **\$24 million** in direct and indirect/induced tax payments in Missouri for state and local governments.



2021 HIGHLIGHTS

Top Performers on Social Mobility

UMSL was included among the top 100 universities in the nation in the 2020 U.S. News & World Report's inaugural "Top Performers on Social Mobility," index. This ranking focused on the nation's best universities for graduating Pell grant-eligible students with top financial need.

Rise Up for St. Louis Initiative

Rise Up for St. Louis is focused on elevating UMSL's partnerships to help drive the region forward while modeling and embracing inclusive prosperity. The university also aims to work with partners to eliminate barriers in St. Louis that have inhibited change. The initiative's goal to establish UMSL as the top urban, metropolitan research university in the nation will further strengthen and deepen the university's roots and impact in St. Louis.

UMSL Remains on the Rise in Latest U.S. News 'Best Colleges' Rankings

UMSL was once again regarded as a Tier 1 national university, moving up eight places to No. 118 among public universities in the 2022 rankings unveiled in September 2021. UMSL climbed 19 places in the overall rankings, bringing its two-year rise to 42 places – the sixth-highest improvement in the nation during that span. UMSL also received its highest total score in the 17 measures U.S. News uses to inform the rankings.

Bridge Program

UMSL celebrated the 35th anniversary of its award-winning college preparation Bridge Program with Olympic gold medalist Lisa Leslie as the keynote speaker. The Bridge Program has served thousands of under-served students in our community, resulting in 100% college attainment and multimillion dollars' worth of scholarship offers for these students.

COMMUNITY DRIVEN

Economic impact studies often capture only the impact that can be assigned a quantitative number, but the qualitative value and impact of UM System go far beyond its annual multibillion-dollar economic impact. The UM System provides countless opportunities for faculty, staff, and students to service the community through institutional partnerships, programs, and service-learning projects that deliver a significant impact to the community. Assigning a dollar amount to the outreach and community activities of the UM System is challenging, but on a daily basis, the lives of those in the surrounding communities are significantly enhanced by its presence in a multitude of ways.

Tripp Umbach estimates that UM System employees and students in FY21 generated more than \$26.1 million in charitable donations and volunteer services across Missouri. These benefits are in addition to the \$6.5 billion annual impact that the UM System generates for the state. The \$26.1 million impact includes:

- **\$14.6 million** donated to local charitable organizations by UM System employees and students.
- **\$11.5 million** in value of volunteer time provided to area communities by UM System employees and students.

Throughout its history, the UM System has been able to give back more by working together, a tradition that will continue through the years. Each component works toward upholding the phrase that's part of the university and state motto: "Salus populi," meaning "the welfare of the people."

COMMUNITY HEALTH

The health and safety of the community is the UM System's paramount priority as it adapted to the COVID-19 threat. The UM System remains dedicated to ensuring the safety of its universities and communities by continually assessing guidelines and adjusting protocols as the pandemic enters its third year.

MU Extension's Community Health program's goal is to achieve optimal health and well-being for every Missourian at every stage of life. The work through the Community Health program touches each area of people's lives. MU Health Care, in one year, provided nearly 95,000 COVID-19 vaccinations to nearly 44,000 individuals in Mid-Missouri.

By focusing on all factors that contribute to health and well-being, the UM System partners and works collaboratively to positively impact the health and well-being of individuals, communities, and the state. Through coordinated, collective action and focused intention, the Community Health program leads with curiosity and partnership in mind, continually improving to work efficiently, cohesively, and succinctly.

ALUMNI AND WORKFORCE

MISSOURI WORKFORCE

The UM System educates and trains the future workforce of Missouri and beyond. Nearly 17,000 students graduate every year from a UM System university, and each graduating class provides essential contributions to the state's human capital and workforce needs. By producing highly educated, engaged, global citizens, the UM System continues to shape a skilled workforce that Missouri needs to succeed in the 21st century. While operational impacts are impressive, the impact of UM System graduates is even greater.

While strong job creation, income generation, and workforce development are undoubtedly key contributors to financial and economic growth, it is also important to recognize the countless associated benefits in communities throughout Missouri. The UM System is the largest generator of the state's doctors, dentists, and teachers and an indispensable pipeline for talent into the business and industry. Without the UM System, there would be a void of readied talent, especially in the fields agriculture and animal health, as the UM System has the state's only veterinary medicine program.

- **298,669 alumni** living and working in Missouri
- **1 out of 29** employees within the state of Missouri are UM System graduates

ALUMNI IMPACT

There are **298,669 alumni living in Missouri**, comprising about half of all the UM System alumni around the world. The total economic impact to the Missouri economy associated with the in-state spending by UM System alumni is estimated at **\$52.5 billion**. The economic impact to the Missouri economy from the extra income of UM System alumni compared with other college graduates equal approximately **\$2.3 billion**.⁸

IN FY21



UM System graduates on average make

\$11,000

more per year than graduates from
other institutions in Missouri



\$52.5 billion

generated in economic impact
by alumni annually

RESEARCH

Research and medical innovation provide multiple benefits beyond the economic and employment impacts generated by UM System operations. Significant additional economic expansion and employment are created through the commercialization of research activities within Missouri executed by the UM System and its collaborating partners, the employment of world-class researchers, and the attraction of additional federal research funding.

The UM System has a statewide network of 10 research parks and business incubators, each designed to help faculty, entrepreneurs, and businesses collaborate to move innovative research to the marketplace. Because of these networks, startups and businesses across Missouri have access to innovative intellectual resources, a high-performance computing center, medical and advanced technology specialized facilities, cutting-edge plant science research, and much more.

Research and innovation emanating from the UM System's research, graduate studies, and economic development activities are continually advanced by faculty, staff, and student innovation and scholarship. As a result of research activity and spending by the UM System across all four universities, significant economic, employment and government revenue is generated throughout the state. In FY21, the UM System's research enterprise generated **\$1.5 billion** in economic impact and supported and sustained more than **10,000 jobs** while producing over **\$81.1 million** in state and local tax revenue.

IN FY21:

UM SYSTEM

- \$1.5 billion generated in economic impact
- More than 10,000 jobs supported and sustained
- \$81.1 million generated in state and local taxes

MU

- \$988.8 million generated in economic impact
- 6,830 jobs supported and sustained
- \$55.2 million generated in state and local taxes

UMKC

- \$186.3 million generated in economic impact
- 1,287 jobs supported and sustained
- \$10.2 million generated in state and local taxes

MISSOURI S&T

- \$190.6 million generated in economic impact in FY21
- 1,342 jobs supported and sustained
- \$10.3 million generated in state and local taxes

UMSL

- \$100.3 million generated in economic impact in FY21
- 692 jobs supported and sustained
- \$5.4 million generated in state and local taxes

HIGHLIGHTS

NextGen Precision Health

NextGen Precision Health (NextGen) unites the UM System's four public research universities, MU Health Care, MU Extension, and private partners toward a single goal: precision health solutions for society's toughest diseases. NextGen is taking on society's biggest health care challenges and expanding collaborative research efforts to bring precision health to patients, no matter where they live. From major urban centers to underserved rural communities, NextGen investigators are dedicated to delivering the next generation of personalized health care solutions.

Research Reactor

For more than 50 years, the faculty and staff of the University of Missouri Research Reactor (MURR) have promoted groundbreaking research and developed life-saving radiopharmaceuticals, providing benefits to people across the country and around the world. MURR is the most powerful university research reactor in the United States, operating at 10 megawatts, 6.5 days a week and 52 weeks a year.

The MURR facility enables research across many disciplines – from investigating ancient cultures and how plants respond to their environment to analyzing industrial materials and developing radiopharmaceuticals that have lifesaving clinical applications. The MURR facility is a reliable resource for researchers, scientists, engineers, and students across the country.

Medical Research

MU School of Medicine faculty clinicians practice at MU Health Care and help patients across Missouri and around the world receive leading-edge care. University researchers, scientists, and physicians work together to provide bench-to-bedside treatments that give patients access to truly personalized medicine based on factors as specific as the DNA of cancer tumors. Through access to the MURR, researchers are able to pursue and provide innovative, customized treatments to the people of Missouri and beyond.



EXTENSION

University of Missouri Extension (MU Extension) works with citizens across the state to help them gain practical knowledge, understand and adapt to change, solve problems, and make informed decisions. Using university research-based knowledge, MU Extension addresses a wide range of needs that fall into three grand challenges for the state:

- Economic Opportunity
- Educational Excellence
- Healthy Futures

While MU Extension has nearly 200 years of history in agriculture, Extension services in 2021 were also focused on expansion of services in health care, broadband connectivity, business development, and environmental science. Every year, more than 2.5 million Missourians turn to MU Extension to gain practical knowledge, solve problems, adapt to change, and make informed decisions. The MU Extension program engages people, organizations, and communities by connecting them to the knowledge base of the university, giving them a link to resources to manage issues of local concern and improve their quality of life. MU Extension operations support faculty serving in all 114 counties of the state and the City of St. Louis. Providing services to every county, MU Extension has the capacity to adapt university programs and resources to very different local needs and aspirations.

MU Extension has a significant economic impact on employment and revenue generated throughout the state. In FY21, the economic impact of MU Extension operations within the UM System totaled **\$117.6 million**. Tripp Umbach estimates that for every dollar invested in MU Extension, **\$13** of public value is returned. The total returned public value for MU Extension was estimated at **\$1.2 billion**.

For every \$1 invested in the Business Development Program in the past three years, the program returned \$133 in economic impact for its clients in the form of increasing sales by more than \$1.6 billion.

Similarly, for every \$1 invested in MU Extension's Business Development Program in the past three years, the program returned **\$133 in economic impact** for its clients in the form of increasing sales by more than **\$1.6 billion**. The program has helped create or retain more than **37,000 jobs** while attracting nearly **\$451 million** in capital investments and **\$1.5 billion** in government contracts for a total impact of **\$3.1 billion** over the past three years.

INDUSTRY PARTNER

The UM System understands the benefits to partnering with other innovative organizations and institutions. The exchange of ideas and the opportunity to mutually promote initiatives encourages innovation and economic development throughout the state. MU Extension plays an integral role in the knowledge production and discovery needed to expand understanding of the world, improve how people live and work, and drive scientific and technological innovation. MU Extension programs are important contributors to maintaining a highly skilled workforce within Missouri. More than ever, MU Extension plays a vital role to help Missourians compete in a global economy, providing the next generation of innovators with a firm foundation.

2021 HIGHLIGHTS

Missouri Small Business (Missouri SBDC)

Sponsored by MU Extension, the Missouri SBDC is part of a statewide network of business experts uniquely qualified to help businesses develop and thrive. These centers provide expert business counseling, training and online resources that assist small businesses with questions about management, human resources, marketing and sales, finance, technology development and commercialization, complying with regulations and saving money by using “green” practices.

Elevate Program

Developed in 2021, the SBDC’s Elevate Program empowers companies looking to grow in Missouri with research and information aimed at moving their businesses forward as a key driver of economic sustainability and success. The program provides expert knowledge and resources for companies in the 10-99 employee category. These businesses may not have a sales/marketing team, a business development team, or a human resources team, all pivotal to sustainable growth.

ACADEMIC MEDICINE

The UM System helps to deliver quality, life-changing medicine and health care throughout Missouri. Each of the four System universities offers programs under the broad umbrella of academic health care, including two M.D.-granting medical schools with comprehensive academic clinical and research programs in Columbia and Kansas City. MU School of Medicine students also have the option to spend their third and fourth years in Springfield, thanks to a public/private partnership with CoxHealth and Mercy hospitals. MU Health Care is the largest health system in Mid-Missouri, with more than 6,000 physicians, nurses and health care professions in over 80 specialties who care for more than 240,000 patients a year from each of Missouri's 114 counties. MU Health Care facilities include Capital Region Medical Center, Ellis Fischel Cancer Center, the Missouri Orthopedic Institute, Missouri Psychiatric Center, University Hospital, Women's Hospital and Children's Hospital, as well as multiple quick care, urgent care, primary care, specialty and affiliate locations. MU also has the state's only College of Veterinary Medicine and is an anchor of the Animal Health Corridor stretching into Kansas. In addition, MU has the Sinclair School of Nursing and the School of Health Professions, which is the state's only public health program located on a health sciences campus. Besides medicine, UMKC has a School of Nursing and Health Sciences, School of Dentistry, and School of Pharmacy on the UMKC medical campus. UMSL has the state's only College of Optometry, and Missouri S&T has recognized strengths in biomedical engineering.



In FY21, the economic impact of academic medicine programs offered by the UM System totaled **\$2.4 billion**.⁹ The employment impacts of these activities supported more than **25,000 jobs** throughout the state, while **\$135.1 million** of in-state and local tax revenue was generated in FY21 can be attributed to the activities of academic medicine across the System.

UM SYSTEM

- \$2.4 billion generated in economic impact
- 25,263 jobs supported and sustained
- \$135.1 million generated in state and local taxes

MU

- \$2.1 billion generated in economic impact
- 21,789 jobs supported and sustained
- \$112.9 million generated in state and local taxes

UMKC¹⁰

- \$231.4 million generated in economic impact
- 2,435 jobs supported and sustained
- \$15.1 million generated in state and local taxes

UMKC anchors a comprehensive academic medical district in the heart of Kansas City. Clinical partners within the UMKC Health Sciences District include University Health, formerly Truman Medical Centers/University Health,¹¹ Saint Luke's,¹² and Children's Mercy Kansas City.¹³ While not included in the overall operational impact of UMKC or UM System, Tripp Umbach estimates that the economic impact of UMKC's clinical partners equal \$1.2 billion in FY2021.¹⁴

MISSOURI S&T

- \$18.7 million generated in economic impact in FY21
- 197 jobs supported and sustained
- \$748,000 generated in state and local taxes

UMSL

- \$80 million generated in economic impact in FY21
- 842 jobs supported and sustained
- \$6.4 million generated in state and local taxes

ATHLETICS

The athletics achievements of UM System teams are showcased in first-class athletics facilities throughout the state. UM System universities offer a wide range of athletics programs that attract teams and fans from outside of Missouri, which generates significant economic and employment impacts. The Mizzou Tigers are a nationally recognized, historic franchise competing in the competitive NCAA Southeastern Conference. The UMKC Kangaroos, UMSL Tritons, and Missouri S&T Miners also provide fans in their communities with access to sporting events.

UM System athletics rallies the community far and wide; in FY21, the economic impact of athletics totaled **\$376.8 million**. The employment impacts of these activities supported more than **4,200 jobs** throughout the state, while **\$18.8 million** of in-state and local tax revenue generated can be attributed to athletics activities across the System.

IN FY21:

UM SYSTEM

- \$376.8 million generated in economic impact
- 4,238 jobs supported and sustained
- \$18.8 million generated in state and local taxes

MU

- \$319.1 million generated in economic impact
- 3,591 jobs supported and sustained
- \$15.9 million generated in state and local taxes

UMKC

- \$23.1 million generated in economic impact
- 259 jobs supported and sustained
- \$1.1 million generated in state and local taxes

MISSOURI S&T

- \$19.2 million generated in economic impact
- 216 jobs supported and sustained
- \$955,000 generated in state and local taxes

UMSL

- \$15.4 million generated in economic impact
- 172 jobs supported and sustained
- \$825,000 generated in state and local taxes

APPENDIX A: DEFINITION OF TERMS

Study Year	Fiscal Year July 1, 2020-June 30, 2021
Total Economic Impact	The total economic impact of an institution includes both the direct impact and the indirect impact generated in the economy as a result of the institution.
Direct Economic Impact	Direct impact includes items such as institutional spending, employee spending, and spending by visitors to the institution.
Indirect Economic Impact	Indirect impact, also known as the multiplier effect, includes the re-spending of dollars within the local economy by vendors/suppliers and households.
Multiplier Effect	The multiplier effect is the additional economic impact created as a result of the institution's direct economic impact. Local companies that provide goods and services to an institution increase their purchasing by creating a multiplier.
Direct Tax Payments	Direct tax payments made by an institution to a unit of government.
Indirect Tax Payments	Government revenue that is collected by governmental units in addition to those paid directly by an institution, including taxes paid directly by employees of the institution, visitors to the institution, and vendors who sell products to the institution.
Direct Employment	Total number of employees at the institution based on total jobs.
Indirect Employment	Indirect employment is the additional jobs created as a result of the institution's economic impact. Local companies that provide goods and services to an institution increase their number of employees as purchasing increases, thus creating an employment multiplier.

APPENDIX B: METHODOLOGY

IMPLAN Methodology

The economic impact of the UM System was estimated using IMPLAN (IMpact Analysis for PLANning), an econometric modeling system developed by applied economists at the University of Minnesota and the U.S. Forest Service. The IMPLAN modeling system has been in use since 1979 and is currently used by more than 500 private consulting firms, university research centers, and government agencies. The IMPLAN modeling system combines the U.S. Bureau of Economic Analysis' Input-Output Benchmarks with other data to construct quantitative models of trade flow relationships between businesses and between businesses and final consumers. From this data, one can examine the effects of a change in one or several economic activities to predict its effect on a specific state, regional, or local economy (impact analysis). The IMPLAN input-output accounts capture all monetary market transactions for consumption in a given time period. The IMPLAN input-output accounts are based on industry survey data collected periodically by the U.S. Bureau of Economic Analysis (U.S. BEA) and follow a balanced account format recommended by the United Nations.

IMPLAN's Regional Economic Accounts and the Social Accounting Matrices were used to construct state- and regional-level multipliers, which describe the response of the economy to a change in demand or production as a result of the activities and expenditures of the UM System. Each industry that produces goods or services generates demand for other goods and services, and this demand is multiplied through a particular economy until it dissipates through "leakage" to economies outside the specified area. IMPLAN models discern and calculate leakage from local, regional, and state economic areas based on workforce configuration, the inputs required by specific types of businesses, and the availability of both inputs in the economic area. Consequently, economic impacts that accrue to other regions or states as a consequence of a change in demand are not counted as impacts within the economic area.

The model accounts for substitution and displacement effects by deflating industry-specific multipliers to levels well below those recommended by the BEA. In addition, multipliers are applied only to personal disposable income to obtain a more realistic estimate of the multiplier effects from increased demand. Importantly, IMPLAN's Regional Economic Accounts exclude imports to an economic area, so the calculation of economic impacts identifies only those impacts specific to the economic impact area. IMPLAN calculates this distinction by applying Regional Purchase Coefficients (RPC) to predict regional purchases based on an economic area's particular characteristics. The RPC represents the proportion of goods and services that will be purchased regionally under normal circumstances, based on the area's economic characteristics described in terms of actual trade flows within the area.

Employment Definitions

IMPLAN analysis is conducted to measure jobs/positions (part-time or full-time), not full-time equivalents (FTEs). Full-time and part-time employees generate impact in the economy and support additional indirect and induced employment throughout the state of Missouri. Employment data for the UM System was provided as an output of all individuals who receive a paycheck from the institution. This includes all full-time and part-time employed faculty, staff, and students.

State and Local Tax Impact Definition

State and local tax impacts generated in the current, FY21 study included all taxes paid by the UM System to the state of Missouri (i.e., payroll, property, sales, unemployment, income, and any other taxes paid to the state and local government). Any federal taxes paid by the UM System were not included in the state and local tax impacts (i.e., FICA payments).

Visitor Definitions

Impact analysis looks to quantify the impact of the attraction of “fresh” dollars to a region. Therefore, when including visitor spending in the impact analysis of a university, the analysis will include only those visitors coming to a region from outside of said region. Visitors to events who also live in the region would have spent their dollar in that region otherwise; therefore, this dollar was not attracted to the region as a result of the organization being analyzed. For the UM System, the impact analysis looked at impacts to the state of Missouri. Visitors to the UM System were counted only if they were from outside of said region being analyzed.

APPENDIX C: FAQs REGARDING ECONOMIC IMPACT ASSESSMENT

What is economic impact?

Economic impact begins when an organization spends money. Economic impact studies measure the direct economic impact of an organization's spending, plus additional indirect spending in the economy as a result of direct spending. Economic impact has nothing to do with dollars collected by institutions, their profitability, or even their sustainability, since all operating organizations have a positive economic impact when they spend money and attract spending from outside sources.

Direct economic impact measures the dollars that are generated within a geographic region because of the presence of an institution. This includes not only spending on goods and services with a variety of vendors within the region, and the spending of its employees and visitors, but also the economic impact generated by businesses within the region that benefit from the spending of the institution. It is important to remember that not all dollars spent by an institution stay in the geographic region of study. Dollars that "leak" out of the region in the form of purchases from out-of-area vendors are not included in the economic impact that an institution has on the region.

The total economic impact includes the "multiplier" of spending from companies that do business with an institution. Support businesses may include lodging establishments, restaurants, construction firms, vendors, temporary agencies, etc. Spending multipliers attempt to estimate the ripple effect in the economy where the spending occurs. For example: Spending by an institution with local vendors provides these vendors with additional dollars that they respend in the local economy, causing a "multiplier effect."

What is the multiplier effect?

Multipliers are a numeric way of describing the secondary impacts stemming from the operations of an organization. For example, an employment multiplier of 1.8 would suggest that for every 10 employees hired in the given industry, eight additional jobs would be created in other industries, such that 18 total jobs would be added to the given economic region. The multipliers used in this study range from 1.8 to 2.0.

The Multiplier Model is derived mathematically using the input-output model and Social Accounting formats. The Social Accounting System provides the framework for the predictive Multiplier Model used in economic impact studies. Purchases for final use drive the model. Industries that produce goods and services for consumer consumption must purchase products, raw materials and services from other companies to create their product. These vendors must also procure goods and services. This cycle continues until all the money is leaked from the region's economy. Three types of effects are measured with a multiplier: the direct, the indirect, and the induced effects. The direct effect is the known or predicted change in the local economy that is to be studied. The indirect effect is the business-to-business transactions required to satisfy the direct effect. Finally, the induced effect is derived from local spending on goods and services by people working to satisfy the direct and indirect effects.

What methodology was used in this study?

IMPLAN (IMpact analysis for PLANning) data and software. Using classic input-output analysis in combination with regional specific Social Accounting Matrices and Multiplier Models, IMPLAN provides a highly accurate and adaptable model for its users. The IMPLAN database contains county, state, ZIP code, and federal economic statistics that are specialized by region, not estimated from national averages, and can be used to measure the effect on a regional or local economy of a given change or event in the economy's activity.

What is employment impact?

Employment impact measures the direct employment (employees, staff, faculty, administration) plus additional employment created in the economy as a result of the operations of an institution.

Indirect and induced employment impact refers to other employees throughout the region who exist because of an institution's economic impact. In other words, jobs related to the population — city services (police, fire, EMS, etc.), employees at local hotels and restaurants, clerks at local retail establishments, and residents employed by vendors used by the institution.

What is the difference between direct and indirect taxes?

Direct tax dollars include sales taxes and net corporate income taxes paid directly by the institution to the state, while indirect taxes include taxes paid to the state by vendors that do business with an institution and individuals.

Is this a one-time impact or does the impact repeat each year?

The results presented in this economic impact study are generated on an annual basis. The economic impact in future years can be either higher or lower based on number of employees, students, capital expansion, increases in external research, and state appropriations.

APPENDIX D: TRIPP UMBACH QUALIFICATIONS

Tripp Umbach is the national leader in providing economic impact analysis to leading health-care organizations, universities, and academic medical centers. Since 1990, Tripp Umbach has completed more than 300 economic impact studies for such clients as Boston University, Indiana University, Michigan State University, Pennsylvania State University, Ohio State University, University of Connecticut, University at Buffalo, University of Arizona, University of Michigan, University of Minnesota, University of Pittsburgh, University of Vermont, University of Virginia, University of Washington, and University of Alabama at Birmingham.



ENDNOTES

¹ Includes the University of Missouri-Columbia (MU), the University of Missouri-Kansas City (UMKC), Missouri University of Science and Technology (S&T) and the University of Missouri-St. Louis (UMSL); MU Extension, and MU Health Care.

² Tripp Umbach is nationally recognized as the leader in measuring the economic impact of academic medical centers, health-care organizations, universities, and bioscience organizations.

³ Economic impact analysis was completed for the UM System, as well as for each of the four universities throughout the state. Additional statewide analyses include breakouts for: MU Extension, academic medicine, research, athletics, and alumni.

⁴ Due to the COVID-19 pandemic, Tripp Umbach requested FY19 data versus FY21 visitor data to reflect the average number of annual visitors.

⁵ Minnesota IMPLAN Group Inc. (MIG) is the corporation that is responsible for the production of IMPLAN (Impact analysis for PLANning) data and software. IMPLAN is a micro-computer-based, input-output modeling system. With IMPLAN, one can estimate Input-Output models of up to 528 sectors for any region consisting of one or more counties. IMPLAN includes procedures for generating multipliers and estimating impacts by applying final demand changes to the model.

⁶ Tripp Umbach has conducted survey research to estimate the amount of monetary donations students, staff and faculty will spend in a year. This amount differs per individual but ranges from \$200 to \$700. Tripp Umbach also understands that not all individuals donate; therefore, this is adjusted as well. The value of a volunteer hour has been quantified by Independent Sector to be approximately \$30 per hour. Tripp Umbach utilized this value with the understanding (also from survey research) of the average number of hours faculty, staff, and students engage in volunteer activities (estimated 100 hours per year, for 50 percent of the employees and students).

⁷ In 2020, Missouri S&T was ranked No. 1 by the American Society of Mechanical Engineers.

⁸ Based on Tripp Umbach's assumption that UM System graduates on average earn \$11,000 more per year than graduates from other institutions. The additional economic value of UM System alumni is in addition to the system's \$6.5 billion economic impact.

⁹ The economic impact includes all academic medicine programs (i.e., both medical schools, college of veterinary science, college of dentistry, college of pharmacy, college of optometry, college of nursing, and biomedical engineering). Also includes the economic impact of MU Health and University Health in 2021.

¹⁰ The impact of academic medicine in Kansas City does not include University Health/Truman Medical Center.

¹¹ The University Health Truman Medical Center is a busy, urban hospital recognized for chronic disease management, women's health, and emergency medicine. It is the busiest Adult Level 1 Trauma Center in Kansas City with its emergency department averaging nearly 70,000 visits annually.

¹² Saint Luke's has established specialized clinical services including comprehensive cardiac treatment at Mid America Heart Institute, Women's Services, Pain Management Center, Cancer Institute, Regional Arthritis Center, kidney and heart transplantation programs.

¹³ Children's Mercy Kansas City is one of the country's leading free-standing independent pediatric medical centers with 319 licensed beds, more than 40 pediatric subspecialty clinics, and the only Level 1 pediatric trauma center between St. Louis and Denver.

¹⁴ Economic impact projections for all medical schools and teaching hospitals are based on data supplied by the Association of American Medical Colleges (AAMC). Since 1995 Tripp Umbach has conducted economic impact studies for the AAMC and uses these data for benchmarking analysis with medical schools and teaching hospitals throughout the United States.



University of Missouri System

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