

Economic Impact of University of Minnesota FY17

March 2018



UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

Completed by:

**Tripp
Umbach**

Table of Contents:

Executive Summary	3
Study Background	5
UMN Impacts Throughout the State of Minnesota	9
UMN Research Transforms the World	15
Regional Extension Offices Provide Vital Outreach	24
M Health Sustains the State’s Healthcare Industry	27
UMN Outreach and Engagement Strengthens Minnesota	30
UMN Students and Alumni Impact Minnesota	33
Generating Impact throughout the State	35
Appendix A: Definition of Terms	52
Appendix B: Technical Appendix	53
Appendix C: FAQs Regarding Economic Impact Assessment	55

Executive Summary

The University of Minnesota (UMN) is a public research university that is consistently ranked among the world's most comprehensive and renowned institutions for academic, clinical, and research advancement. With five campuses located throughout Minnesota—Twin Cities, Duluth, Morris, Crookston, and Rochester—the university creates a culture of discovery and innovation to improve society for all. Founded in 1851, the University of Minnesota has the special distinction of being Minnesota's sole research university and its only public land and sea grant institution, with a unique capacity and responsibility to improve the lives of Minnesotans and drive the state forward through advanced education, knowledge discovery, and collaboration. UMN's breadth and depth of services have a far reach that impacts virtually every person throughout the state and communities across the globe and meets the many challenges of a diverse and changing world in the 21st century.

The University of Minnesota is founded on the belief that all people are enriched by understanding. The university is dedicated to the advancement of learning and the search for truth; to the sharing of this knowledge through the education of a diverse community; and to the application of this knowledge to benefit the people of the state, the nation, and the world. The university's mission, carried out on multiple campuses and throughout the state, is threefold:¹

Research and Discovery

Generate and preserve knowledge, understanding, and creativity by conducting high-quality research, scholarship, and artistic activity that benefit students, scholars, and communities across the state, the nation, and the world.

Teaching and Learning

Share that knowledge, understanding, and creativity by providing a broad range of educational programs in a strong and diverse community of learners and teachers, and prepare graduate, professional, and undergraduate students, as well as non-degree-seeking students interested in continuing education and lifelong learning, for active roles in a multiracial and multicultural world.

¹ Mission and Policy Statement for the University of Minnesota, http://regents.umn.edu/sites/regents.umn.edu/files/policies/Mission_Statement.pdf

Outreach and Public Service

Extend, apply, and exchange knowledge between the University and society by applying scholarly expertise to community problems, by helping organizations and individuals respond to their changing environments, and by making the knowledge and resources created and preserved at the university accessible to the citizens of the state, the nation, and the world.

To quantify the economic impacts generated by the university within the state of Minnesota and each Economic Development Region, UMN retained the consulting firm Tripp Umbach² to complete an economic and community impact study for Fiscal Year 2017. Key findings from the study include the following impacts:

- UMN generates \$8.7 billion in combined economic impact annually for the state of Minnesota.³
- UMN supports 77,911 jobs throughout Minnesota.
- The University of Minnesota is the fifth largest employer in Minnesota.⁴
- State and local government revenue attributable to the presence of UMN totaled \$472.6 million.
- For every dollar invested by the state in the University of Minnesota, \$13.83 is generated in the state's economy.
- UMN faculty, staff, and students generate more than \$131.4 million annually in community impact through donations and volunteer time to local

² Tripp Umbach is a Pittsburgh-based consulting firm specializing in economic development and impact studies and has completed customized studies for colleges and universities, academic medical centers, hospitals and health systems, non-profit organizations, research institutes, and economic development agencies, as well as arts, tourism, and sports initiatives.

³ Combined impacts include calculations for the University of Minnesota schools and colleges, UMN Research, UMN Research and Outreach Centers, UMN Extension, and M Health.

⁴ Minnesota Department of Employment and Economic Development, Top Employers Statewide; <https://mn.gov/deed/business/locating-minnesota/companies-employers/top-employers.jsp>

THE UMN SYSTEM SUPPORTS THE STATE ECONOMY

OVERALL ECONOMIC
IMPACT OF THE UMN
SYSTEM ACROSS THE
STATE WAS \$8.6 BILLION.



THE UMN SYSTEM
DIRECTLY OR INDIRECTLY
SUPPORTED 77,664 JOBS
THROUGHOUT THE
STATE OF MINNESOTA.



THE UMN SYSTEM
GENERATED APPROXIMATELY
\$470.2 MILLION IN STATE
AND LOCAL GOVERNMENT
REVENUES FOR THE STATE
OF MINNESOTA.



nonprofits. In addition, M Health supports more than \$6.9 million in charity care to underserved populations in across the state.

Study Background

In June 2017, Tripp Umbach was retained by the University of Minnesota (UMN) to provide a comprehensive analysis of the economic, employment, government revenue, and community benefits that arise from university operations. Impact analysis was conducted to measure these effects throughout the state of Minnesota and each Economic Development Region⁵.

The influence that the University of Minnesota has on the vitality of the economy in the region and state includes the following elements:

- Economic impact of the university
- Business volume impacts (UMN capital expenditures, operational expenditures, and payroll)
- Direct, indirect, and induced employment impacts
- Government revenue impacts at the local and state levels
- The impact of spending by employees in the local economy on goods and services
- The impact of visitor spending on the economy (wage premiums, job creation, etc.)
- The impact of student spending in the region (retail/merchandise, hospitality, etc.)
- The impact of the attraction to external research dollars, the commercialization of research discoveries, and the impacts on the economic development throughout the region

The impact that employees and students have on the community through donations and volunteer work, alongside contributions through service-learning, community-based research projects, and internships. This economic impact analysis measures the effect of direct, indirect, and induced economic, employment and government revenue impacts for the University of Minnesota, including its schools and colleges, UMN research and outreach centers, UMN Extension and Regional Extension Offices, and M

⁵ The Minnesota Department of Employment and Economic Develop (DEED) defines the state's 13 economic development regions as: (1) Northwest; (2) Headwaters; (3) Arrowhead; (4) West Central; (5) North Central; (6E) Southwest Central; (6W) Upper Minnesota Valley; (7E) East Central; (7W); Central; (8) Southwest; (9) South Central; (10) Southeast; (11) 7 County Twin Cities. <https://apps.deed.state.mn.us/assets/lmi/areamap/wsa.shtml>

Health throughout the state of Minnesota and each Economic Development Region. For the purposes of the impact analysis, UMN is defined as the combined impacts of the University of Minnesota, the UMN network of Research and Outreach Centers (ROCs), UMN Regional Extension Offices, and M Health. These entities are further defined as:

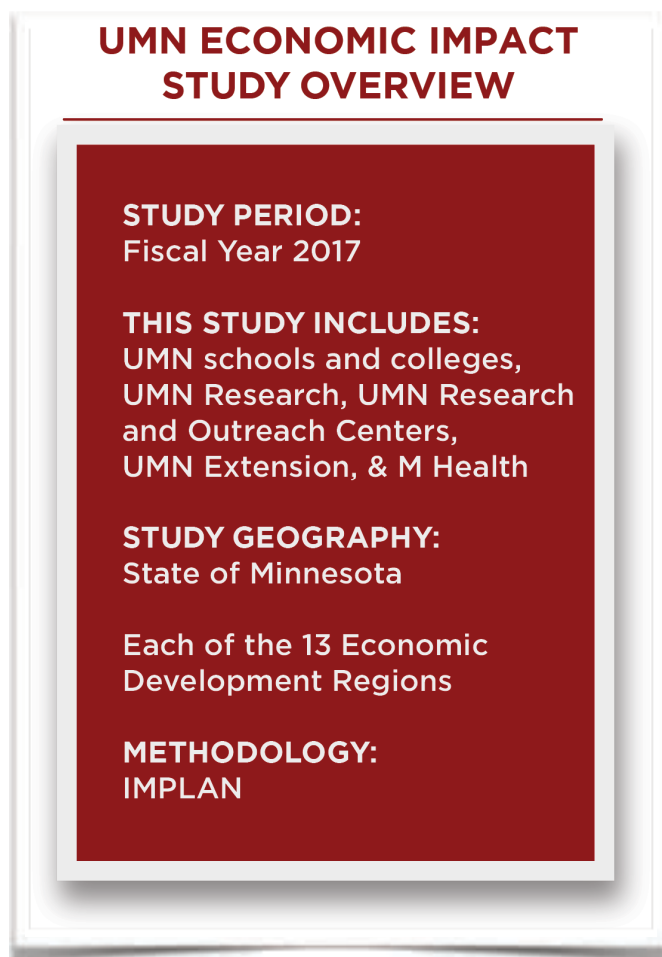
- The University of Minnesota – Impact analysis conducted for the combined totals of each campus of the UMN system (Twin Cities, Crookston, Duluth, Morris, and Rochester) with respective schools and colleges.
- UMN Research and Outreach Centers (ROCs) – Impact analysis conducted for total research operations and the operations of the UMN Research and Outreach Centers (10 centers in communities throughout Minnesota).
- UMN Regional Extension Offices – Impact analysis conducted for statewide UMN Regional Extension Offices located in: Andover, Brainerd, Cloquet, Crookston, Farmington, Grand Rapids, Mankato, Marshall, Moorhead, Morris, Rochester, Roseau, St. Cloud, Willmar, and Worthington.
- M Health – Impact analysis conducted for the University of Minnesota Medical Center (UMMC), University of Minnesota Physicians (UMP), University of Minnesota Masonic Children's Hospital (in partnership with the Fairview Health System), and a number of free standing clinics and ambulatory surgery centers located throughout the state.

Methodology Employed in the Economic Impact Study

Tripp Umbach’s economic impact analysis measures the direct, indirect, and induced business volume and government revenue impacts of UMN’s operations throughout the state of Minnesota and each Economic Development Region for FY17⁶. UMN provided Tripp Umbach with the following primary data used to conduct the analysis: capital expenditures, operational expenditures, number of employees, payroll and benefits, and taxes paid to local and state governments.

Tripp Umbach analyzed the economic impact of the University using the IMPLAN input-outcome model.⁷ Economic impact begins when an organization spends money. Studies measuring economic impact capture the direct economic impact of an organization’s spending, plus additional indirect and induced spending in the economy as a result of direct spending. Visitor and student spending in the region is also a substantial component of the economic impact of an organization.

Visitors and students spend money for retail purchases, lodging, restaurants, and other goods and services; these expenditures filter through the economy and support local jobs.⁸



The graphic is a white-bordered box with a dark red background. At the top, the title "UMN ECONOMIC IMPACT STUDY OVERVIEW" is written in white, bold, uppercase letters. Below the title, there are four sections of text, each starting with a bold, white, uppercase heading followed by white text. The sections are: "STUDY PERIOD: Fiscal Year 2017", "THIS STUDY INCLUDES: UMN schools and colleges, UMN Research, UMN Research and Outreach Centers, UMN Extension, & M Health", "STUDY GEOGRAPHY: State of Minnesota", and "Each of the 13 Economic Development Regions", and "METHODOLOGY: IMPLAN".

⁶ Fiscal Year 2017 represents the period of time from July 1, 2016 to June 30, 2017.

⁷ 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.

⁸ To remain conservative while calculating visitor spending throughout the state, Tripp Umbach utilized federal per diem rates for Minnesota; <https://www.gsa.gov/travel/plan-book/per-diem-rates>

The University of Minnesota's total economic impact represented here includes the university's spending on goods and services with a variety of vendors, the spending of UMN's faculty, staff, students, and visitors, and the business volume generated by organizations within the regions and the state. Not all dollars spent by an institution remain in the institution's home state. Dollars that go out of the state, through spending by out-of-state organizations or people, are not included in the UMN's economic impact. 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 within the state of Minnesota and the Economic Development Regions.

The University's overall impact to the state goes beyond the economic outcomes analysis that is this report's primary focus. As a globally engaged research and teaching institution with a land-grant mission of serving the public, the University—through its research, teaching, and outreach—is a catalyst for innovation and collaboration benefiting Minnesota communities; its impact also extends to the development of human capital, promotion of civic values, and other significant impacts of value to the state. The broader impact is acknowledged but not comprehensively documented in this report.

UMN Impacts Throughout the State of Minnesota

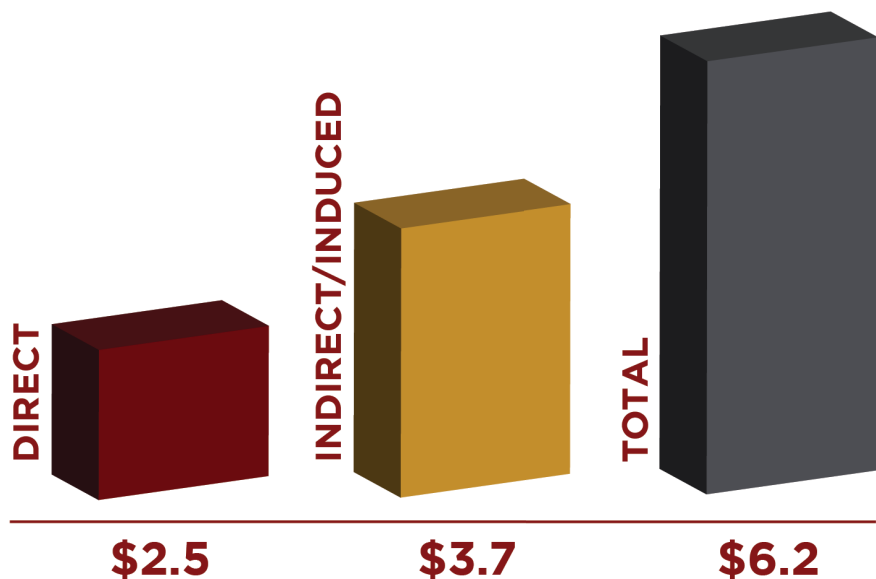
The University of Minnesota is a driving engine for education and research in the state of Minnesota, and is a name linked withto outreach and engagement with stakeholders and communities across the state. The University’s activities as the state’s state-chartered research institution and land-grant university generate economic benefits, employment, and government revenue throughout the state. With five locations—Twin Cities, Crookston, Duluth, Morris, and Rochester—the university contributes significantly to regional and state economies. As the fifth largest employer in the state of Minnesota, UMN generates significant impacts for its employees as well as the state on a daily basis.⁹

Economic Impact

The University of Minnesota provides important economic activity throughout Minnesota. Direct spending by the university system to vendors and employees helps to generate additional spending in the areas of each campus as well as economic activity important throughout the state.

The mission-based activities supported by these expenditures affect Minnesotans each day as UMN works to improve life for all. In FY17, the university campuses alone generated more than \$6.2 billion in economic impact for the state of Minnesota. This total represents the direct impact of all five campuses spending in

OVERALL ECONOMIC IMPACT OF UMN (IN BILLIONS)



Source: Tripp Umbach using IMPLAN results from data obtained through the UMN.

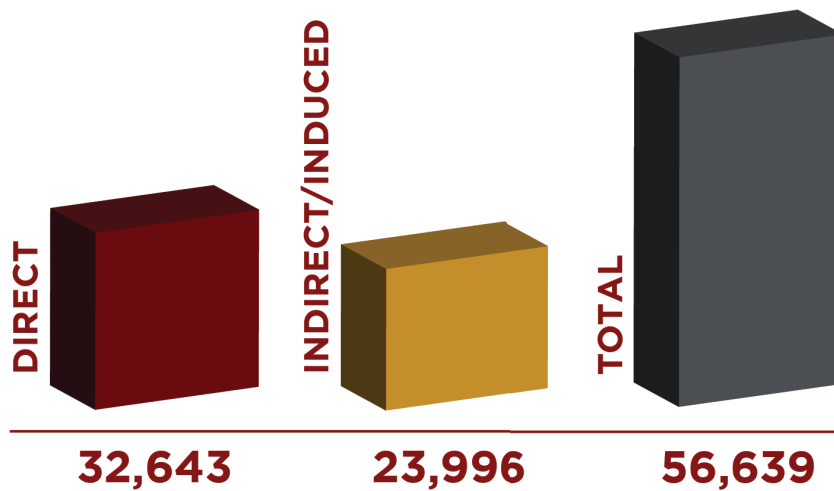
⁹ Minnesota Department of Employment and Economic Development; Top Employers Statewide; <https://mn.gov/deed/business/locating-minnesota/companies-employers/top-employers.jsp>

the state (\$2.5 billion), as well as the indirect spending that occurs as a result of the presence of UMN (\$3.7 billion). Please note this figure excludes the impact of the UMN's contributions to the state's economic development through intermediary agencies.

Employment Impact

In FY17, the University of Minnesota campuses directly supported 32,643 jobs (full-

**OVERALL EMPLOYMENT IMPACT OF UMN
(IN JOBS)**



time and part-time) throughout the state. This employment makes a direct contribution to the overall workforce vitality of the state and bolsters the economy. Those directly employed by UMN spend dollars in the state, and, therefore, support additional employment. UMN spending on capital projects, its development and planning projects, and its suppliers support

Source: Tripp Umbach using IMPLAN results from data obtained through the UMN.

additional indirect jobs throughout Minnesota. In total, the presence of the university supports 56,639 jobs in the state of Minnesota.

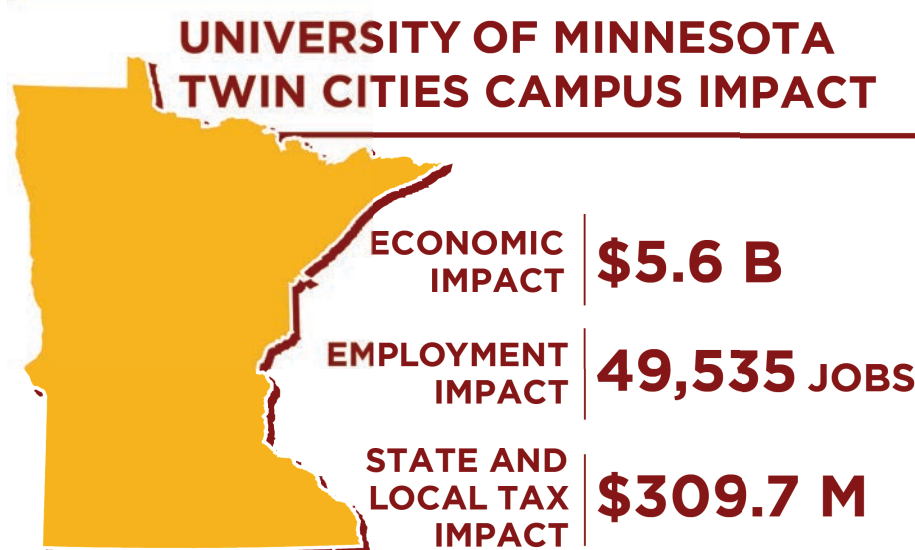
State and Local Government Revenue Impact

The University of Minnesota contributes significantly to the state and local tax bases. The university's spending with state and local organizations, support of jobs for university employees living in Minnesota, and visitor spending contributes to state and local tax revenues. In FY17, UMN generated more than \$343.4 million in direct and indirect/induced tax payments in Minnesota for state and local governments.

University of Minnesota—Twin Cities Campus Impact¹⁰

The University of Minnesota, Twin Cities (UMTC), is among the country's largest and most comprehensive public research universities, with a faculty of scholars, scientists, and teachers spanning many fields and including field-leading experts from around the globe. With 16 colleges and schools, nearly 50 interdisciplinary graduate degree programs, and over 200 collaborative institutes and centers, the UMTC is also one of few major public research universities located in a large and diverse metropolitan area and is one of just four campuses in the nation that have agricultural programs and an academic health center with a major medical school. UMTC places strong emphasis on publicly engaged research and teaching and the campus is a hub for research collaborations addressing the most critical challenges of Minnesota and the world. It offers undergraduate, graduate, and professional students a multitude of opportunities for study and research, integrated with extensive community-engaged learning, research, service, and internship opportunities with world-renowned health centers, global corporations and private businesses, government agencies, and arts, nonprofit, and public service organizations.

Research activity and spending by the University of Minnesota—Twin Cities results in significant economic, employment, and government revenue impacts generated throughout the state. In FY17, the economic impact of the Twin Cities campus totaled \$5.6 billion. The employment impacts of the campus supported 49,535 jobs throughout the state. Considering the campus's operations, an additional \$309.7 million was generated in state and local government revenue that is attributable to the Twin Cities campus.



¹⁰ History of the University of Minnesota; <https://r.umn.edu/node/511>

University of Minnesota—Crookston Campus Impact¹¹

The University of Minnesota, Crookston (UMC), proudly carries on the tradition of a century’s worth of educational services to northwestern Minnesota. UMC equips all students and faculty with laptop computers and offers individual attention in a technology-rich environment. Integral to the University's statewide land-grant mission, UMC provides applied, career-oriented learning programs and connects its teaching, research, and outreach to local, county, and regional economic development agencies in support of the rural economy.

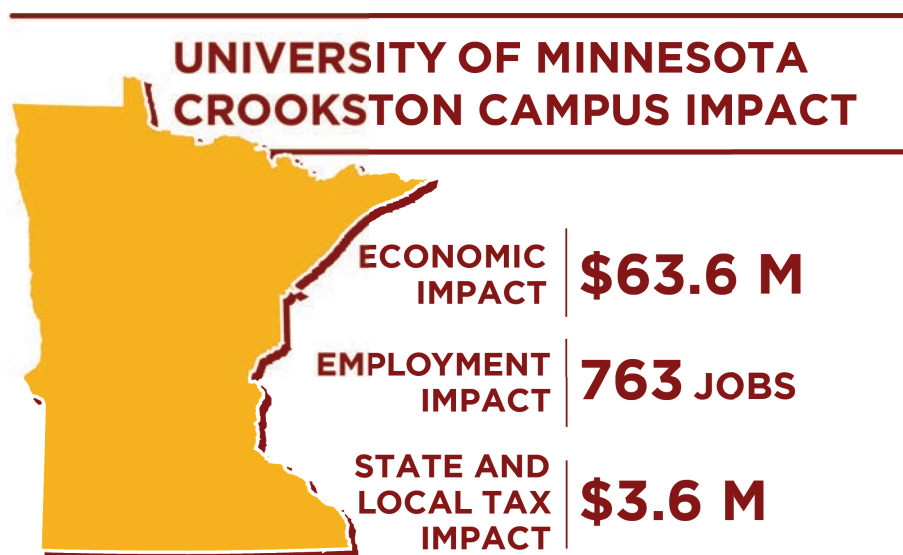
As a result of research activity and spending by the University of Minnesota—Crookston, there is

significant economic, employment, and government revenue impacts generated throughout the state.

In FY17, the economic impact of the Crookston campus totaled \$63.6 million. The employment impacts of the campus

supported 763 jobs

throughout the state. Considering the campus’s operations, an additional \$3.6 million was generated in state and local government revenue that is attributable to the Crookston campus.

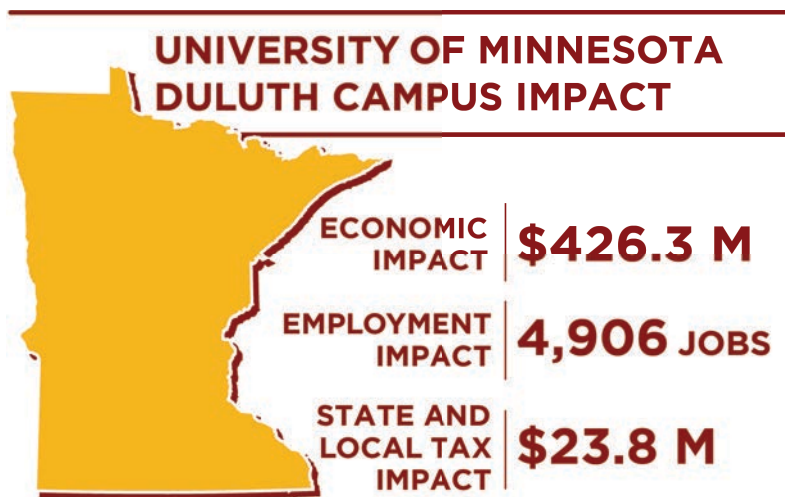


University of Minnesota—Duluth Campus Impact¹²

The University of Minnesota, Duluth (UMD), consistently ranks among the top regional universities. Overlooking Lake Superior, UMD provides an alternative to both large research and small liberal arts environments and attracts students looking for a personalized learning experience on a medium-sized campus of a major university. A

¹¹ Ibid.

¹² Ibid.

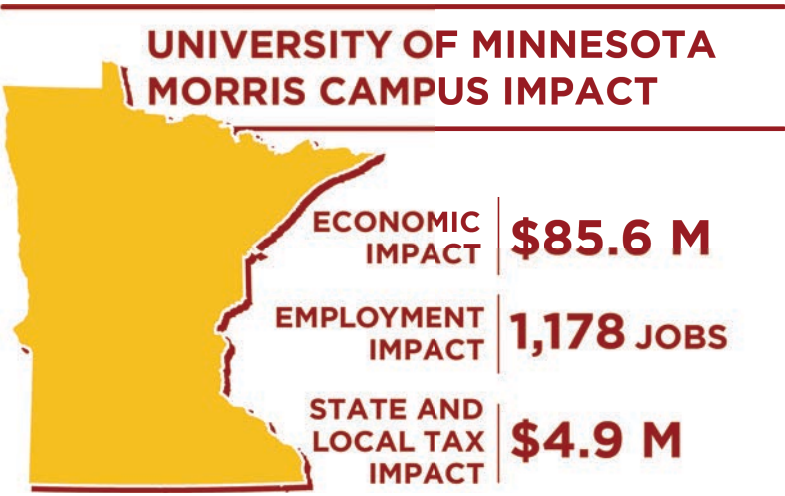


firm liberal arts foundation anchors a variety of traditional degree programs that draw on UMD’s many research institutes and labs. As a result of research activity and spending by the University of Minnesota—Duluth, there is significant economic, employment, and government revenue impacts

generated throughout the state. In FY17, the economic impact of the Duluth campus totaled \$426.3 million. The employment impacts of the campus supported 4,906 jobs throughout the state. Considering the campus’s operations, an additional \$23.8 million was generated in state and local government revenue that is attributable to the Duluth campus.

University of Minnesota—Morris Campus Impact¹³

The University of Minnesota, Morris (UMM) makes its home on a 121-year-old campus on the western edge of the state and is one of the top public liberal arts colleges in the nation. The small, close-knit campus emphasizes faculty/student collaboration in research, study abroad, and service learning. Deeply rooted in the tall grass prairies of Minnesota, the campus also has advanced sustainable, environmentally friendly initiatives that have grown to levels of national leadership and touch nearly all aspects of campus life.



¹³ Ibid.

As a result of research activity and spending by the University of Minnesota—Morris, there is significant economic, employment, and government revenue impacts generated throughout the state. In FY17, the economic impact of the Morris campus totaled \$85.6 million. The employment impacts of the campus supported 1,178 jobs throughout the state. Considering the campus’s operations, an additional \$4.9 million was generated in state and local government revenue that is attributable to the Morris campus.

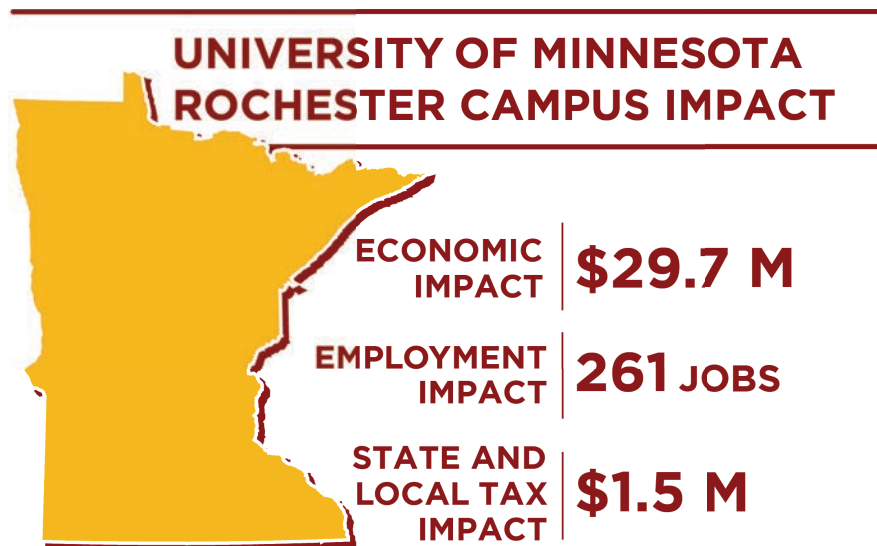
University of Minnesota—Rochester Campus Impact¹⁴

The University of Minnesota, Rochester (UMR), formally established in 2006, is the newest campus in the University of Minnesota system and serves the academic and professional needs of southeastern Minnesota. UMR provides graduate and undergraduate degrees and focuses on the areas of health sciences and biotechnology, preparing students for a broad spectrum of certification programs, professional schools, and graduate programs leading to careers in the health profession, as well as entry-level science and laboratory positions in industry, government agencies, and universities. It also offers programs in business, education, public health, and social work.

As a result of research activity and spending by the University of Minnesota—Rochester, there is significant economic, employment, and government revenue impacts generated

throughout the state. In FY17, the economic impact of the Rochester campus totaled \$29.7 million. The employment impacts of the campus supported 261 jobs throughout the state. Considering the campus’s operations, an additional \$1.5 million was generated

in state and local government revenue that is attributable to the Rochester campus.



¹⁴ Ibid.

UMN Research Transforms the World

As the state's major research university, the University of Minnesota plays an integral role in Minnesota's academic research and knowledge creation. As a globally engaged research institution and Minnesota's flagship research university, the University of Minnesota 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. The UMN has a comprehensive, systemwide public engagement agenda focused on integrating and embedding outreach and public service into the University's research and teaching missions. As Minnesota's only comprehensive research and land-grant university, the University marshals wide-ranging strengths toward research collaborations addressing the most pressing and complex problems of the state and plays a critical role in developing human capital, creating innovation, and sharing knowledge advancing Minnesota business and industries, informing policymaking, and strengthening the well-being of families and communities. The University of Minnesota consistently ranks among the top 10 U.S. public research universities according National Science Foundation Higher Education Research and Development (NSF HERD) Survey, the primary source of comparative information on R&D expenditures at U. .colleges and universities.

In FY17, the University of Minnesota attracted nearly \$745 million in external sponsored research funding, with federal funds making up 59 percent of the research portfolio. The University competes successfully for funds from a wide variety of federal agencies, including National Institutes of Health (\$244M), National Science Foundation (\$72M), Department of Defense (\$26 million), USDA (\$22 million, Department of Energy (\$15 million), and Department of Education (\$10 million). Research awards from business and industry (\$83.9 million) have also been on the rise, in both value and number of projects, reflecting the University's efforts to grow public-private partnerships and diversify its research portfolio. Companies located throughout the state draw upon the University's innovative resources.

As a result of research activity and spending by the University of Minnesota, there is significant economic, employment, and government revenue impacts generated throughout the state. In FY17, the direct and indirect economic impact of research conducted by faculty, staff, and students totaled \$1.2 billion.

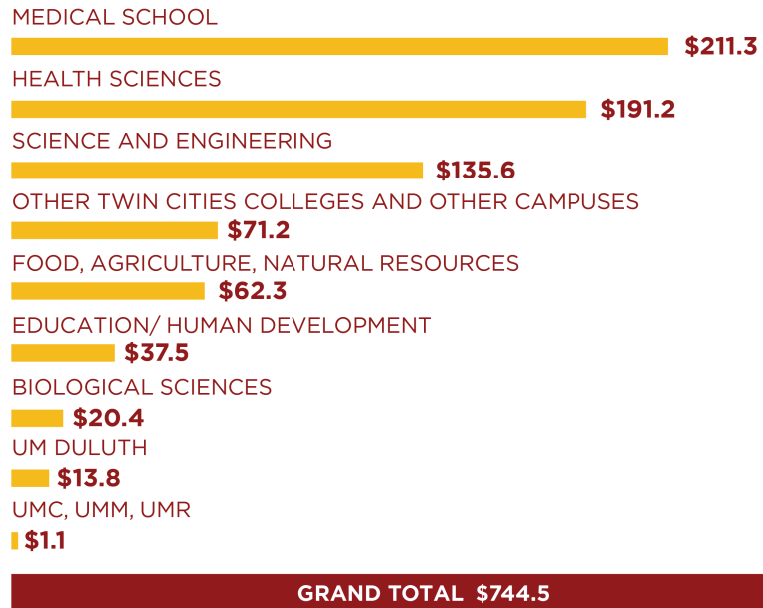
Leading Centers

The University of Minnesota is home to over 300 research, education, and outreach centers and institutes, including but not limited to:

Agricultural Research Center	Institute on Community Integration
C-SPIN: Center for Spintronic Materials, Interfaces	Institute on the Environment
Caenorhabditis Genetics Center: NIH funded (P40 Infrastructure)	Large Lake Observatory
Cancer Center	Microbial Plant Genomics Institute
Cedar Creek Ecosystem Science Reserve	Minnesota Dental Research Center for Biomaterials and Biomechanics
Center for Aging Science & Care Innovation	Minnesota Invasive Terrestrial Plants and Pests Center
Center for Drug Design	Minnesota Population Center (IPUMS, Institute for Social Research and Data Innovation)
Center for Infectious Disease Research and Policy	Minnesota Supercomputing Institute
Center for Magnetic Resonance Research (CMRR)	Nano Center
Center for Regional & Tribal Child Welfare Studies	Natural Resources Research Institute (NRRI)
Center for Small Towns	Neuromodulation Research Center:
Center for Sustainable Building Research	Polar Geospatial Center
Center for Sustainable Polymers (CSP)	Research Data Assistance Center (ResDAC)
Center for Transportation Studies	Research for Indigenous Community Health (RICH) Center
Center for Urban and Regional Affairs	Robina Institute of Criminal Law and Justice
Clinical and Translational Science Institute	Saint Anthony Falls Laboratory
Dairy Education Center	Specialized Center of Research on Sex Differences
Earl E Bakken Medical Devices Center	The Center for Research and Outreach: Military REACH (USDA)
Energy Transition Lab	University of Minnesota Center for Quantum Materials (USDOE)
Food Protection and Defense Institute	Upper Midwest Agricultural Safety and Health Center (U54 NIH Center)
Gary S. Holmes Center for Entrepreneurship	Urban Research and Outreach Engagement Center
Hormel Institute	
IMA	
Inorganometallic Catalyst Design Center (ICDC)	
Institute for Advanced Study	
Institute for Translational Neuroscience	

AWARD DOLLARS BY COLLEGE/CAMPUS RECIPIENT IN FY 17
(IN MILLIONS)

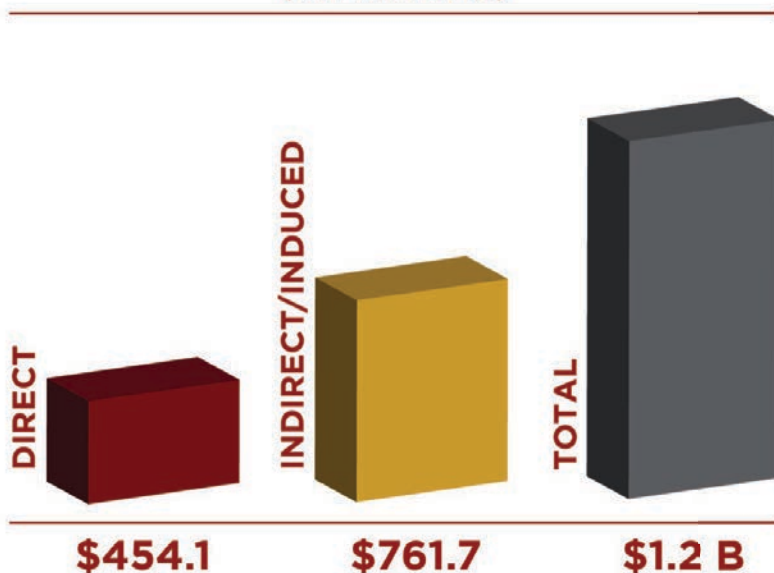
Health Sciences represents the School of Public Health (\$79.1 million), four other colleges (Dentistry, Nursing, Pharmacy, and Veterinary Medicine), and shared centers with the Academic Health Center (AHC).



Research Generates Economic Impact

The University’s research expenditures for FY17 totaled more than \$454 million which translates to an economic impact totaling more than \$1.2 billion. The impacts of the research can be seen and felt both in the state of Minnesota as well as throughout the

OVERALL ECONOMIC IMPACT OF UMN RESEARCH
(IN MILLIONS)



nation with new product development and commercialization of the research findings.

The University’s research operations make tangible and quantifiable economic contributions. Not only do the research operations support a large portion of the University’s mission but they also support employment on campus and with research supporting organizations as well as promoting a culture of

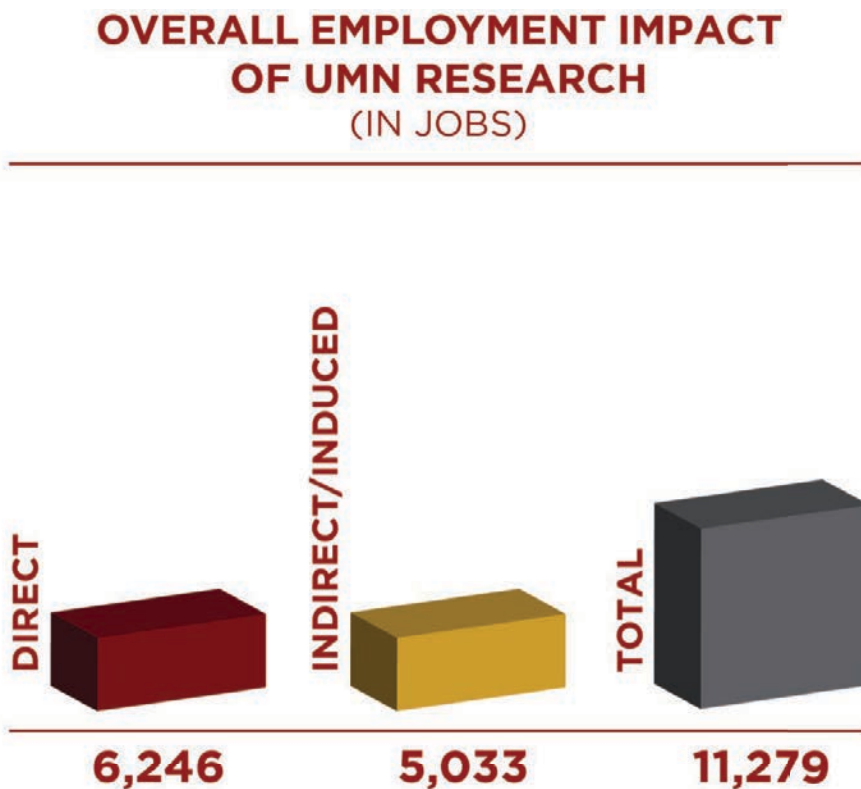
Source: Tripp Umbach using IMPLAN results from data obtained through the UMN.

economic development, entrepreneurial nature, and commercial ventures in the local and statewide economy. The employment impact of these activities supported 11,279 jobs throughout the state.

In FY2017, the operational and capital expenses that the University made for sponsored research and other sponsored programs supported 11,279 jobs, which equates to about 15 percent of the University's total employment impact of 77,911 jobs.

These jobs include not only direct employment by the University of Minnesota for research professionals, but also indirect jobs created by the University such as supply and equipment vendors, contractors, and laborers in the construction and renovation of laboratory facilities, administrators and managers who support the research infrastructure, and jobs created in the community by the spending of the scientific workforce. The University's research impacts are driven by the quality of the faculty, who are able to attract sponsored research in a wide range of fields. Attracting and

retaining highly productive faculty who are driven to discover is key to the University's continued role in helping to create good jobs in Minnesota. Considering the research component of the university, an additional \$60.5 million was generated in state and local government revenue that is attributable to the research activities of UMN.



Source: Tripp Umbach using IMPLAN results from data obtained through the UMN.

Leveraging the Strengths of the University of Minnesota

Minnesota's Discovery, Research and Innovation Economy (MnDRIVE)

MnDRIVE is a partnership between the University and the State of Minnesota that aligns the University's strengths with the state's key and emerging industries. Starting in 2013, \$17.5 million in state funding was authorized each year for research across four MnDRIVE research areas: Robotics, Global Food, Environment, and Brain Conditions.

In the four years of activity thus far, funding has catalyzed projects involving more than 980 researchers across three campuses (Twin Cities, Duluth, and Morris), including more than 100 departments within dozens of colleges. For example, in the area of Brain Conditions, MnDRIVE support has helped the University attract a significant NIH-funded center on Parkinson's Disease and involvement in a new medical device trial.

Partnerships to the Challenges of Minnesota and the World

Each of the five campuses serves the state through outreach and public engagement activities that connect faculty, staff, and students with a broad range of communities and stakeholders across the state. The University's Grand Challenges initiative recognizes opportunities and responsibilities the campus has to innovate and lead through transformative research and teaching engaged with the most pressing and complex challenges of Minnesota and the world. A strategic priority for the University, Grand Challenges jump-starts and expands ambitious interdisciplinary research in five interrelated areas in which the the University is positioned for great impact. The University has provided funding to seed and develop collaborations aimed at five grand challenges with high relevance for Minnesota communities: Assuring Clean Water and Sustainable Ecosystems; Fostering Just and Equitable Communities; Advancing Health Through Tailored Solutions; enhancing Individual and Community Capacity for a Changing World; and Feeding the World Sustainably.

Minnesota Partnership for Biotechnology and Medical Genomics

The Minnesota Partnership for Biotechnology and Medical Genomics was formed in 2003 as a unique collaborative venture among The Mayo Clinic, The University of Minnesota, and The State of Minnesota. The idea was born out of a desire to elevate Minnesota's position in the area of bioscience research. The collaboration has become a globally-recognized model of innovation in the biomedical field.

The Partnership's focus is to:

- 🎯 Position Minnesota as a world leader in biotechnology and medical genomics
- 🎯 Conduct powerful research to improve life and stimulate Minnesota's economy
- 🎯 Achieve breakthroughs in new methods to accurately diagnose and develop innovative therapies for major disease areas
- 🎯 Create a pipeline for new industry, dynamic new businesses, and quality jobs
- 🎯 Maintain Minnesota's position as a destination for medical care and a leader in the medical industry

The Minnesota Partnership approaches its work with two goals in mind: improving health through the development of diagnostics and treatments for multiple high-profile diseases; and creating economic opportunity for Minnesota through an enhanced research and development base and commercialization of biomedical innovations.

In recent years, the Partnership has funded significant work in Alzheimer's disease and cancer. Previous research has led to successful licensing, patents, and other commercialization of discoveries including therapies for glaucoma, multiple sclerosis, type 2 diabetes, congestive heart failure, fungal infections, Alzheimer's disease, and various types of cancer. As of 2017 there have been over 62 patent filings, 12 patent filings still pending, 5 issued patents, more than 24 new technologies stemming from Partnership-funded projects, one licensed technology to an existing company, and one new start-up company.

Technology Commercialization

UMN researchers continue to develop breakthrough technologies in science, engineering, medicine, agriculture, and other fields key to Minnesota's economy and to advancements in human health and well-being.

The Office for Technology Commercialization (OTC) helps researchers move their ideas beyond the lab and into the marketplace through intellectual property protection, marketing, connections with interested outside companies, license negotiations, and startup company creation.

- 🎯 OTC and other partners at the University have developed the Minnesota Innovation Partnerships (MN-IP) program, which is aimed at simplifying technology license agreements and facilitating sponsored research projects. The MN-IP Create program, launched in December 2012, has brought in more than \$2 million in licensing revenue, and over \$50 million in sponsored research funding. In FY17, MN-IP brought in over \$20 million to fund UMN research.

- The Venture Centre, a unit of OTC launched in 2006, has spun out 119 companies based on a diverse mix of University technologies. Three out of four startups are based in Minnesota and 78 percent are still active today.
- A 2017 Milken Institute study ranked the U of M 4th among US tech transfer offices in executing license deals and 6th among US public tech transfer offices overall.



TECHNOLOGY COMMERCIALIZATION DATA (FY2017)

GENERAL DATA					
	2013	2014	2015	2016	2017
INVENTION DISCLOSURES	331	343	354	402	406
NEW LICENSES	91	154	268	194	213
CURRENT REVENUE GENERATING AGREEMENTS	331	429	544	528	545
GROSS REVENUES	\$39.50	\$27.40	\$20.20	\$46.90	\$22.60
OUTGOING MATERIAL TRANSFER AGREEMENTS	281	288	297	273	233
PATENTS					
	2013	2014	2015	2016	2017
ISSUED PATENTS (U.S. AND FOREIGN)	129	104	136	168	147
NEW PATENT FILINGS	148	138	146	202	232
MN-IP					
	2013	2014	2015	2016	2017
MN-IP RESEARCH AGREEMENTS	41	51	69	81	72
COMPANIES WITH MN-IP RESOURCE AGREEMENTS	38	44	54	62	51
SPONSORED RESEARCH COMMITMENTS	\$3.80	\$4.30	\$10.80	\$12.20	\$20.90
STARTUPS					
	2013	2014	2015	2016	2017
	14	15	16	17	18

AGGREGATE INVESTMENT CAPITAL RAISED

\$ 3 9 7 , 9 2 0 , 0 0 0

A History of Innovation and Discovery

Technology commercialization has been an essential part of the University of Minnesota's mission for many years. Some notable examples are:

Pacemaker

Honey Crisp Apples

Carbovir Compounds (foundation for AIDS medication)

Flight Data Recorder

Retractable Seat Belts

Taconite

Sleeping Beauty Transposition (pioneering gene transfer platform)

Economic Development

The Office of University Economic Development (UED) was established in 2014 to help business and industry partners connect with University resources, services, and expertise, and to work with government and economic development partners to identify opportunities for collaboration that grow and diversify Minnesota's economy. In 2015, the Association of Public and Land-Grant Universities (APLU) recognized the University for its commitment to state and regional economic development.

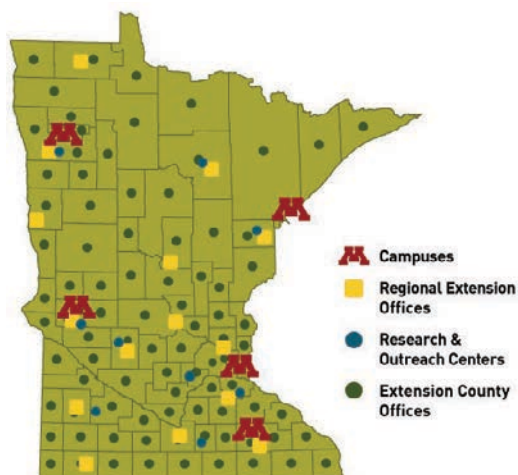
University of Minnesota Research and Outreach Centers

The College of Food, Agricultural and Natural Resource Sciences (CFANS) at the University of Minnesota coordinates the 10 UMN Research and Outreach Centers (ROCs) throughout the state. The centers support applied research techniques and best practices to communities and regions across Minnesota to enhance the quality of agricultural production, human health, renewable energy, and the environment.

University of Minnesota Research and Outreach Centers are geographically spaced throughout the state and together include more than 10,000 acres of land dedicated to field and horticultural crop improvement, forestry, ecological preservation and restoration, wildlife management, livestock improvement, soil fertility and health, climate adaptation, water quality, and utilization research and outreach in each one of the four biomes across the state.

The ROCs include the following sites:

- 📍 Cloquet Forestry Center
- 📍 North Central Research and Outreach Center
- 📍 Northwest Research and Outreach Center
- 📍 Southern Research and Outreach Center
- 📍 Southwest Research and Outreach Center
- 📍 West Central Research and Outreach Center
- 📍 Rosemount Research and Outreach Center
- 📍 Horticultural Research Center
- 📍 Sand Plain Research Center
- 📍 Hubachek Center



As a result of research activity and spending by the University of Minnesota, there is significant economic, employment, and government revenue impacts generated throughout the state. In FY17, the economic impact of UMN Research and Outreach Centers totaled \$74.2 million. The employment impacts of these activities supported 740 jobs throughout the state. Considering the activities performed at ROCs, an additional \$3.5 million was generated in state and local government revenue that is attributable to research activities at UMN Research and Outreach Centers. The ROCs more broadly serve the state as a source of science-based responses and advances that dramatically improve productivity and use of resources, contributing to statewide economic development.

UMN Libraries

University Libraries serve as the state's only research libraries; they develop and deliver high-demand services and programs to all 5.5 million Minnesota residents. Their archives and special collections serve several distinct, off-campus communities. With a goal of equitable and open access, the Libraries share rich resources with a global audience (www.continuum.umn.edu/2017/05-we-won). In 2017, the University Libraries received the National Medal for Museum and Library Science from the Institute of Museum and Library Services (MILS) in recognition of their efforts to respond to societal needs in innovative ways, making a difference for individuals, families, and their communities. The University Libraries were the only academic library to win the National Medal this year.

Regional Extension Offices Provide Vital Outreach

University of Minnesota Extension provides innovative research that transforms the lives of all Minnesotans, ensuring a better future for all. Since 1909, UMN Extension has played a critical role in the development of Minnesota's identity as a national leader in research and community outreach. Extension is part of a national association, of more than 100 land-grant institutions, that provides non-formal education and learning activities to people throughout the country. Through Extension, land-grant institutions deliver vital information to agricultural producers, small business owners, consumers, families, and young people to create positive change¹⁵. UMN's focus on agriculture, community, environment, family, food, and youth cultivates exceptional progress for the state. UMN Extension operates 15 Regional Extension Offices that conduct agricultural, biological, and forestry research, in addition to having contacts in every county throughout the state¹⁶. Extension connects faculty, researchers, and students with key stakeholders in the community to address critical issues that contribute to economic vitality and success.

Economic Impact

UMN Regional Extension Offices provide important economic activity throughout Minnesota. Direct spending by Regional Extension Offices to vendors and employees helps to generate additional spending in the area as well as throughout the state. These activities affect Minnesotans each day as Extension works to improve life for all. In FY17, UMN Regional Extension Offices generated more than \$12.1 million in economic impact for the state of Minnesota. This total represents the direct impact of spending in the state (\$5 million), as well as the indirect spending that occurs as a result of the presence of Regional Extension Offices (\$7.1 million).

Employment Impact

In FY17, UMN Regional Extension Offices directly supported 628 jobs (full-time and part-time) throughout Minnesota. This employment makes a direct contribution to the overall workforce vitality of the state and bolsters the economy. Those directly employed spend dollars in the state, and therefore, support additional employment. UMN Regional Extension Offices' spend money on capital projects, development and planning projects, and suppliers support additional indirect jobs throughout the state. In total, the presence of UMN Regional Extension Offices supports 1,077 jobs in the state of Minnesota.

¹⁵ National Institute of Food and Agriculture – Extension; <https://nifa.usda.gov/extension>

¹⁶ UMN Regional Extension Offices are located in Andover, Brainer, Cloquet, Crookston, Farmington, Grand Rapids, Mankato, Marshall, Moorhead, Morris, Rochester, Roseau, St. Cloud, Willmar, and Worthington.

State and Local Government Revenue Impact

The University of Minnesota's Regional Extension Offices contribute significantly to the state and local tax bases. Due to the Regional Extension Offices' spending with state and local organizations, their support of jobs for university employees living in Minnesota, and their visitor spending, these offices contribute to state and local tax revenues. In FY17, UMN Regional Extension Offices generated more than \$650,000 in direct and indirect/induced tax payments in Minnesota for state and local governments.

Regional Extension Offices Provide Critical Research to Minnesotans

The University of Minnesota's Regional Extension Offices provide a conduit for faculty, students, and other researchers to work on topics and causes that impact the world.

Flagship Extension programs include:¹⁷

- Agricultural production – Extension partners with the agricultural industry to increase and improve crop and livestock production while conserving land and water across Minnesota. This engagement includes collaborative faculty, staff, and student research with producers and crop professionals, as well as traditional outreach methods.
- Citizen Science – Extension's large volunteer-driven programs such as Master Gardeners and Master Naturalists engage more than a million Minnesotans every year. Volunteers taught by Extension faculty share their research-based knowledge with the public, thus 'extending' Extension's impact.
- Community Economics – Extension's Community Economics team works with Minnesota communities to chart courses that are realistic, well-informed and supported by the community. Educators consult with regions and communities to address issues such as retaining and expanding local businesses, understanding economic changes, and tourism and retail trade.
- 4-H – In 4-H, youth design and participate in their own education and activities, from raising dairy cows to building rockets or performing onstage. This unique, learn-by-doing model teaches young people essential skills needed to succeed in life, such as problem-solving, decision-making, coping, communicating, and responding to the needs of others. 4-H is delivered throughout Minnesota in urban, suburban, and rural communities. With 130,000 annual youth participants, 4-H reaches nearly 13% of all Minnesota youth between the ages of 5-19.

¹⁷ UNM Extension Strategic Plan and Fact Sheets; Extension Programs; <http://www.extension.umn.edu/about/facts/>

- Science of Agriculture – Minnesota 4-H’s major initiative in Science, Technology, Engineering and Math (STEM) helps youth become the next generation of scientists, engineers, and technology experts by actively engaging in programs including aerospace, biofuels, robotics, wildlife biology, and wind power.
- Farm-to-School – Extension works to increase the use of healthy, local foods in schools through farm-to-school programs and working collaboratively with state agencies, non-profits, and professional associations. Extension and its partners provide schools with training and other resources to increase the use of Minnesota-grown food in school meals.
- Global Initiatives – Extension engages with scientists, teachers, and students around the world to build a network of professionals who can share their expertise. Current efforts are funded through partnership with the U.S. Department of Agriculture, grants from other partners, and donor gifts.
- Nutrition Education – Through the federally funded Supplemental Nutrition Assistance Program (SNAP) education program, Extension delivers creative, engaging nutrition education to low-income Minnesotans where it is convenient for them. Classes are offered in many community settings, including food shelves, WIC clinics, senior citizen centers, daycare centers, shelters, migrant centers, summer camps, low-income housing, grocery stores, and even in homes. The fun, innovative curriculum is customized to the needs of a diverse audience. By promoting good nutrition in children, Extension’s community nutrition educators help prevent future health problems for participants.
- Farm Financial Training – Through the Farmer-Lender Mediation program and Extension’s farm financial management programs, Extension helps agricultural producers manage their finances. The program connects farmers and their creditors with a team of mediators, financial analysts, and University of Minnesota Extension professionals to find solutions to financial crises. In addition, Extension agricultural business management programs provide research-based information that helps growers increase their knowledge about financial management, marketing and crop insurance, estate planning, farm transfers, and farmland and machinery acquisition.
- Water Quality – University of Minnesota researchers and Extension educators discover scientific answers to questions about protecting and improving water resources – helping homeowners, farmers, local decision-makers, construction managers, and landscape professionals make informed decisions on water quality.

M Health Sustains the State's Healthcare Industry

For the purposes of this economic impact study, University of Minnesota Health (M Health) is defined as the combined operations of the University of Minnesota Medical Center (UMMC), University of Minnesota Physicians (UMP), University of Minnesota Masonic Children's Hospital, and a number of free standing clinics and ambulatory surgery centers located throughout the state. M Health serves Minnesotans at the state and local levels, and builds upon the University's mission to apply knowledge that benefits the people of the state, the nation, and the world.

University of Minnesota Medical Center

The University of Minnesota Medical Center (UMMC) is the main research and teaching hospital for UMN's Medical School. Having two campus locations, one on each bank of the Mississippi River, UMMC is a world renowned medical center that serves Greater Minnesota. The center is owned and operated by Fairview Health Services, and works closely with University of Minnesota Physicians and community partners to provide care. UMMC practices a wide array of health care delivery, but areas of specialization include organ, blood, and marrow transplantation, neurosciences, pediatrics, and behavioral illnesses.

University of Minnesota Physicians UMP¹⁸

University of Minnesota Physicians (UMP) is an independent multi-specialty group practice at the University of Minnesota Medical School faculty. The group specializes in interdisciplinary primary care services that provide patients with a full range of managed care. Established in 1997, UMP manages more than 50 specialty clinics and five family medicine clinics and employs more than 900 physicians and 1,600 health professionals and staff. In addition to practicing medicine, these physicians continue to play a vital role in the advancement of academic medicine at the school. UMP has strategic partnerships with community health care providers at the following locations: University of Minnesota Medical School, Fairview Health Services, Masonic Children's Hospital, Park Nicollet, Regions Hospital, North Memorial Hospital, TRIA Orthopedic Center, and many more.

University of Minnesota Masonic Children's Hospital

The University of Minnesota Masonic Children's Hospital is an award winning research and teaching hospital located in Minneapolis, MN. U.S. News & World Report ranked the University of Minnesota Masonic Children's Hospital in its 2017 Best Children's Hospital list for five specialty areas: Neonatology (ranked 33rd); Pediatric Diabetes and Endocrinology (ranked 48th); Pediatric Gastroenterology and GI Surgery (ranked 39th);

¹⁸ University of Minnesota Physicians Mission and Leadership; <https://umphysicians.org/mission-and-leadership/advancing-medicine>

Pediatric Nephrology (ranked 31st); and Pediatric Pulmonology (ranked 34th)¹⁹. As a pioneer in children’s health care delivery, Masonic Children’s Hospital partners directly with UMN to engage in innovative research that has led to several firsts, including the first successful pediatric blood marrow transplant, the first successful infant heart transplant in Minnesota and the first successful cochlear ear implant surgery for a child.²⁰

Economic Impact


Each day, M Health offers a broad range of primary and specialty care services for children, teens and adults. These services provide important economic impact throughout Minnesota. Economic impact is generated by M Health when it spends on goods and supplies, when patient care is provided, and when it pays its employees. In FY17, M Health generated more than \$1.2 billion in economic impact for the state of Minnesota. This total represents direct spending in the state (\$491.1 million), as well as the indirect spending that occurs as a result of the presence of M Health (\$673.6 m million).

Employment Impact


In FY17, M Health directly supported 3,599 jobs (full-time and part-time) throughout Minnesota. This employment makes a direct contribution to the overall workforce vitality of the state and bolsters the economy. Those directly employed spend dollars in the state, and therefore, support additional employment. M Health spending on capital projects, development, planning

M HEALTH SUPPORTS THE STATE ECONOMY


OVERALL ECONOMIC IMPACT OF M HEALTH ACROSS THE STATE WAS \$1.2 BILLION.

 **\$1.2 BILLION**

M HEALTH DIRECTLY OR INDIRECTLY SUPPORTED 8,165 JOBS THROUGHOUT THE STATE OF MINNESOTA.

 **8,165 JOBS**

M HEALTH GENERATED APPROXIMATELY \$64.6 MILLION IN STATE AND LOCAL GOVERNMENT REVENUES FOR THE STATE OF MINNESOTA.

 **\$64.6 MILLION**

¹⁹ U.S. News & World Report 2017 Pediatric Hospital Rankings by Specialty; <https://health.usnews.com/best-hospitals/pediatric-rankings>

²⁰ Fairview Health System, University of Minnesota Masonic Children’s Hospital; <https://www.fairview.org/locations/university-of-minnesota-masonic-childrens-hospital>

projects, and suppliers support additional indirect jobs throughout the state. In total, the presence of M Health supports 8,165 jobs in the state of Minnesota.

State and Local Government Revenue Impact

M Health contributes significantly to the state and local tax bases. Revenue is generated when M Health and its employees, health professional students, patients and visitors spend on goods in the region (e.g., at restaurants, retail, hotels/motels, etc.). In FY17, M Health generated more than \$64.6 million in direct and indirect/induced tax payments in Minnesota for state and local governments.

UMN Outreach and Engagement Strengthens Minnesota

With outreach and public service as one pillar of its mission, the University of Minnesota is committed to extending, applying, and exchanging knowledge between the University, the state, and society—integrating scholarly expertise with community needs to strengthen Minnesota communities and address the important needs and challenges of the state and world.²¹ The state’s local economies have been significant beneficiaries of the University’s outreach delivered through units including Extension and the Research and Outreach Centers (ROCs) (as documented elsewhere in this report). Outreach and engagement activities of many other University units also are found in every part of the state and engage a wide range of partners. Beyond the ROCs and Extension, the University has many engagement-focused research-and-outreach centers that advance the socioeconomic vitality of the region and state, including but not limited to the Center for Urban and Regional Affairs, the Center for Transportation Studies, the Community-University Health Care Center, and the Urban Research and Outreach Engagement Center in North Minneapolis.

The University has been recognized as a leader in building a more “engaged university” through the advancement of a 21st-century approach to university outreach emphasizing reciprocal partnerships for addressing community needs and the strong integration of research and teaching.

UMN employees and students engage with community members through endeavors that link research and curricular work with stakeholders and constituencies across the state, from business and industry to government agencies, nonprofits, and arts organizations. Community-partnered research, service-learning, and curricular-linked activities focus on advancing economic development and many other needs. Data collected through a systemwide Public Engagement Network show that the University’s schools and centers conduct outreach and engagement in the areas of arts, business/industry development, community economic development, disaster relief, diversity and inclusion, education, environment, health, homelessness, immigration, poverty, public policy, rural development, transportation, workforce development, and youth development. These efforts are supported by University investments as well as external research funding, and reflect the University’s broader impact on the economic and social vitality of the state.

The University continues to explore ways to optimize community-engaged learning experiences for undergraduate, graduate, and professional students in ways that not only enhance students’ educational experiences but also meet vital needs across the

²¹ History of the University of Minnesota; <https://r.umn.edu/node/511>

state. A growing number of departments and colleges are requiring students to complete community outreach activities that are integrated with the academic curriculum and degree expectations. For example:

- Undergraduate students in the College of Food, Agricultural and Natural Resource Sciences (CFANS) must complete an experiential learning experience, which often includes community-based learning activities.
- UMR students address health issues through a community-based, interdisciplinary service-learning experience.
- Humphrey School of Public Affairs graduate students complete a community-based master's thesis that addresses a community-focused policy issue.
- Second-year medical students complete a community-based service-learning experience to cultivate intercultural competence and professional skills.
- Dental students provide pro-bono dental services to areas across the state that have limited or no access to dental care services.

Although no one metric can capture the quality or impact of the University's public service activities, the University tracks expenditures on public service activities as one indicator of its excellence in fulfilling its mission for the state, as it does for expenditures on research activities. In 2015–16, for example, public service expenditures as measured by the University's Office of Institutional Research were \$258 million, exceeding the systemwide goal of \$245 million.

Employees and students also engage with communities through volunteer service and charitable donations. Tripp Umbach estimates that University of Minnesota employees and students generate more than \$131.4 million annually in charitable donations and volunteer services across the state of Minnesota. These benefits are in addition to the more than \$8.7 billion in economic impact that UMN generates for the state. As part of the systemwide agenda for public engagement coordinated by the Office for Public Engagement, the Center for Community-Engaged Learning works with partners to provide opportunities for students to engage in off-campus experiential learning through community work and place-based educational programs. In FY17, Tripp Umbach estimates that UMN employees and students provided the equivalent of

\$103.6 million in volunteer hours in local communities.²² Examples of these organizations include the following:

- **Land of 10,000 Stories** – The College of Liberal Arts provide college students and faculty the opportunity to teach students in several local schools how to make digital stories as a way of empowering them to tell their own story. This successful program enables students in middle and high schools to present their own thoughts in a constructive and creative way that effectively makes a point. Participants in this program have met with Minnesota State legislators to discuss issues such as bullying, sexual assault, drug use, and climate change.
- **HOPE Clinic** – Opened in 2008, The HOPE Clinic is a free, student-run clinic that is operated by medical and pharmacy students from the University of Minnesota Medical School, Duluth campus. The clinic offers patients an opportunity to receive health care and become regular patients. The clinic is staffed by medical and pharmacy student volunteers that are under the supervision of licensed physicians and pharmacists. University of Minnesota family medicine faculty serve as directors of the clinic.
- **University of Minnesota Alumni Association Day of Service** – Created in 2015, UMN’s Alumni Association hosts this annual day of service that engages alumni, faculty, and students in service to the community. This event occurs locally and across the United States each year.
- **University of Minnesota Community Fund Drive** – The Community Fund Drive is UMN’s annual charitable giving campaign for employees to donate a portion of their payroll to important causes that they care about.

²² Tripp Umbach calculated the total community benefit of employees by using the combined impacts of employees’ and students’ monetary donations to organizations and the value of a volunteer hour in Minnesota (\$26.10 per hour). https://www.independentsector.org/volunteer_time

UMN Students and Alumni Impact Minnesota

With more than 580,000 alumni, the University can be felt in virtually every corner of the world. By producing highly educated, engaged, global citizens, UMN continues to shape a skilled workforce that will transform and lead organizations throughout the world.

UMN Enriches the Current and Future Workforce

UMN conferred more than 16,000 total undergraduate, graduate, and professional degrees during FY17, including over 1/4 of the state's STEM degrees, 79% of MD degrees, and 100% of Minnesota's pharmacy, veterinary medicine, and dentistry degrees. By educating students, UMN contributes to the talent pool of human capital throughout the state. A degree from the University of Minnesota increases a graduate's value, productivity, and earning potential in the job market.

Based on data for median annual earnings, a bachelor's degree earned at a university increases a graduate's salary, compared with a graduate with only a high school diploma, by an average of about \$21,100 a year (from \$35,400 to \$56,500). A master's degree earned at a university increases a graduate's salary, compared with a graduate with only a bachelor's degree, by an average of about \$13,500 a year (from \$56,500 to \$70,000 for a master's degree).²³

In academic year 2016–2017, UMN awarded 10,446 undergraduate degrees. Historically, 61 percent of UMN graduates remain in the state to work after completing their degrees. For the undergraduate class of 2017, the increased earning power in their first year of employment equates to the creation of \$136.9 million in salary for these students. A similar analysis applied to the 5,184 advanced degrees awarded in the same academic year equates to another \$52.1 million of value created for these students' first year of employment. Therefore, on an annual basis, UMN creates \$189 million of additional earning power for members of each graduating class. This impact is in addition to the impact of the university's operations. This increased earning power translates to increased spending by alumni in the state of Minnesota.

²³ College Board. Education Pays 2013: The Benefits of Higher Education for Individuals and Society. Trends in Higher Education Series.

Alumni Continue to Generate Impact Every Day

The contributions of UMN graduates are important to the economic vitality of the state of Minnesota. Historically, 61 percent of UMN alumni stay in Minnesota after graduating; approximately 356,000 UMN alumni are living, working, and generating impact within the state.

Over a lifetime of employment (assuming 40 years of employment), UMN undergraduate alumni who remain in Minnesota increase earning potential by \$188.9 billion that would otherwise have been unachieved had these students not pursued an undergraduate degree. Likewise, over a lifetime of employment, UMN graduate alumni who remain in the state increase earning potential by more than \$67.1 billion that would otherwise not have been achieved had these students not pursued a graduate degree²⁴.

In total, all UMN alumni currently living in the state of Minnesota have increased earning power of \$256 billion over 40 years.

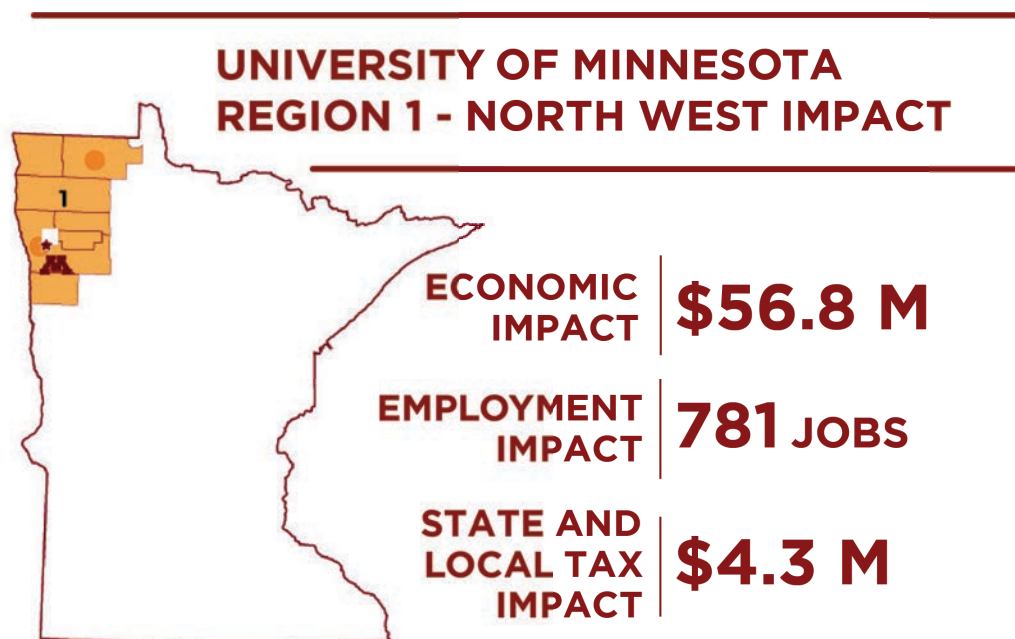
²⁴ Accounting for forgone income while attending the university, future periods of unemployment, time out of the labor force for child rearing, and other life events, total earning power over 40 years of employment was adjusted down by 80 percent.

Generating Impact throughout the State

The University of Minnesota generates economic and community impact throughout the state in localized regions. The Minnesota Department of Employment and Economic Development (DEED) functions as the state's main economic development agency that works to produce jobs and improve the state's workforce. DEED categorizes Minnesota's 87 counties into 13 economic development regions, which aim to collectively develop similar county clusters. UMN's impact is unique to each region, and touch the lives of those who live there.

Economic Development Region 1: Northwest

Located in the upper northwest of Minnesota, Region 1 includes the following counties: Kittson, Marshall, Norman, Pennington, Polk, Red Lake, and Roseau. Throughout this region, the University of Minnesota plays a central role in generating substantial economic impact. The Northwest Region includes the following UMN entities: Minnesota Area Health Education Center—Northwest, Northwest Research and Outreach Center at Crookston, Regional Extension Office—Crookston, Regional Extension Office—Roseau, and the University of Minnesota—Crookston.



Economic Impact

In FY17, the University of Minnesota generated more than \$56.8 million in total economic impact throughout Economic Development Region 1. This total represents

the direct impact of spending in the Northwest Region (\$21.4 million) as well as the indirect spending that occurs as a result of UMN's presence (\$35.4 million).

Employment Impact

In FY17, UMN directly supported 375 jobs (full-time and part-time) throughout the Northwest Region. This employment makes a direct contribution to the overall workforce vitality of the region, and bolsters the economy. Those directly employed individuals spend dollars in the state, and therefore, support additional employment. UMN spending on capital projects, its development and planning projects, and its suppliers support additional indirect jobs throughout Minnesota. In total, the presence of UMN supports 781 jobs throughout Region 1.

State and Local Government Revenue Impact

Due to the University of Minnesota's spending with regional organizations, support of jobs for university employees living in the region, and UMN visitor spending in the region, the university makes significant contributions to local tax revenues. In FY17, UMN generated more than \$4.3 million in direct, indirect, and induced tax payments for the Northwest Region.



Economic Development Region 2: Headwaters

Located in the upper northwest of Minnesota, Region 2 includes the following counties: Beltrami, Clearwater, Hubbard, Lake of the Woods, and Mahnommen. Throughout this region, the University of Minnesota plays a central role in generating substantial economic impact.

Economic Impact

In FY17, the University of Minnesota generated \$8.0 million in total economic impact throughout Economic Development Region 2. This total represents the direct impact of spending in the Headwaters Region (\$4.9 million) as well as the indirect spending that occurs as a result of UMN's presence (\$3.1 million).

Employment Impact

In FY17, UMN directly supported 84 jobs (full-time and part-time) throughout the Headwaters Region. This employment makes a direct contribution to the overall workforce vitality of the region, and bolsters the economy. Those directly employed individuals spend dollars in the state, and therefore, support additional employment. UMN spending on capital projects, its development and planning projects, and its suppliers support additional indirect jobs throughout Minnesota. In total, the presence of UMN supports 111 jobs throughout Region 2.

State and Local Government Revenue Impact

Due to the University of Minnesota's spending with regional organizations, support of jobs for university employees living in the region, and UMN visitor spending in the region, the university makes significant contributions to local tax revenues. In FY17, UMN generated more than \$422,000 in direct, indirect, and induced tax payments for the Headwaters Region.

Economic Development Region 3: Arrowhead

Located in the upper northeast of Minnesota, Region 3 includes the following counties: Aitkin, Carlton, Cook, Itasca, Koochiching, Lake, and St. Louis. Throughout this region, the University of Minnesota plays a central role in generating substantial economic impact. The Arrowhead Region includes the following UMN entities: Cloquet Forestry Center, Hubachek Wilderness Research Center at Ely, Minnesota Area Health Education Center—Northeast, North Central Research and Outreach Center at Grand Rapids, Regional Extension Office—Cloquet, Regional Extension Office—Grand Rapids, Regional Extension Office—Cloquet, and the University of Minnesota—Duluth.

Economic Impact

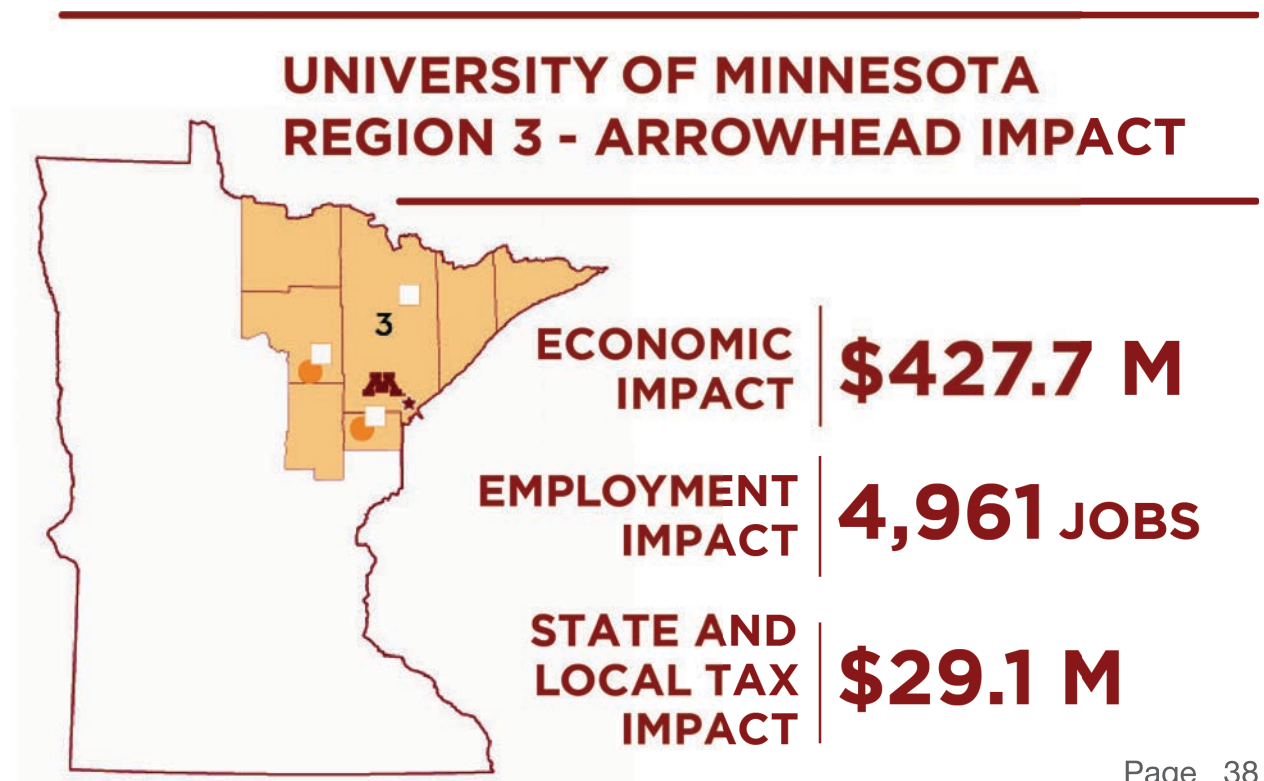
In FY17, the University of Minnesota generated \$427.7 million in total economic impact throughout Economic Development Region 3. This total represents the direct impact of spending in the Arrowhead Region (\$173 million) as well as the indirect spending that occurs as a result of UMN's presence (\$254.7 million).

Employment Impact

In FY17, UMN directly supported 2,577 jobs (full-time and part-time) throughout the Arrowhead Region. This employment makes a direct contribution to the overall workforce vitality of the region, and bolsters the economy. Those directly employed individuals spend dollars in the state, and therefore, support additional employment. UMN spending on capital projects, its development and planning projects, and its suppliers support additional indirect jobs throughout Minnesota. In total, the presence of UMN supports 4,961 jobs in Region 3.

State and Local Government Revenue Impact

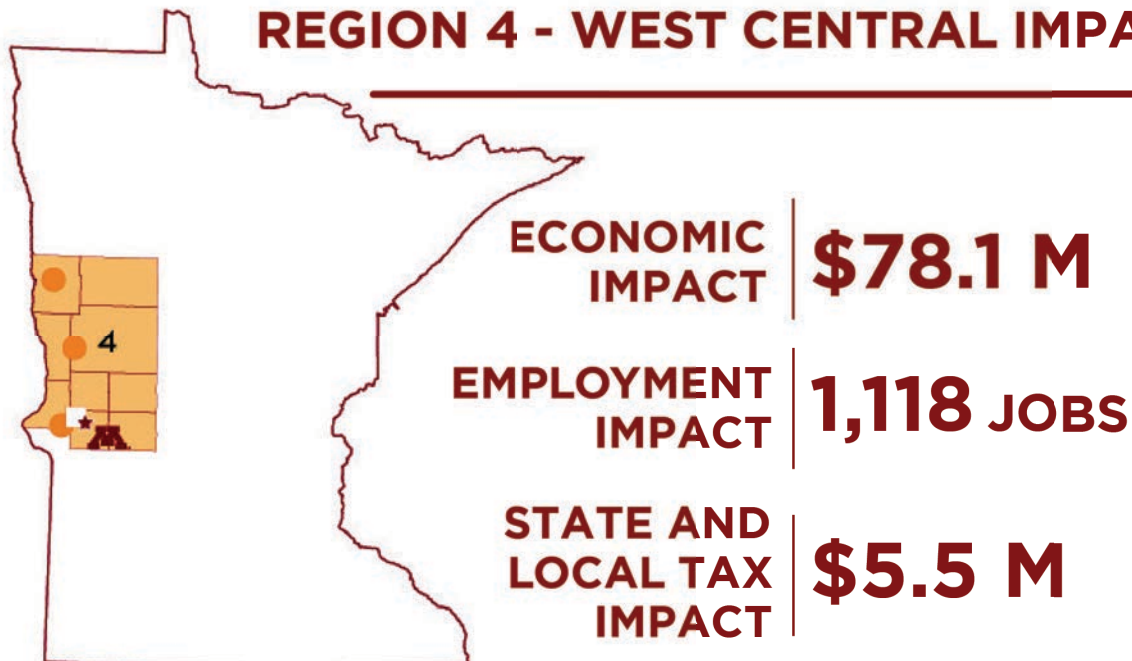
Due to the University of Minnesota's spending with regional organizations, support of jobs for university employees living in the region, and UMN visitor spending in the region, the university makes significant contributions to local tax revenues. In FY17, UMN generated more than \$29.1 million in direct, indirect, and induced tax payments for the Arrowhead Region.



Economic Development Region 4: West Central

Located on the western boarder of Minnesota, Region 4 includes the following counties: Becker, Clay, Douglas, Grant, Otter Tail, Pope, Stevens, Traverse, and Wilkin. Throughout this region, the University of Minnesota plays a central role in generating substantial economic impact. The West Central Region includes the following UMN entities: Minnesota Area Health Education Center—Central, Regional Extension Office—Moorhead, Regional Extension Office—Morris, the University of Minnesota—Morris, and West Central Research and Outreach Center at Morris.

UNIVERSITY OF MINNESOTA REGION 4 - WEST CENTRAL IMPACT



Economic Impact

In FY17, the University of Minnesota generated more than \$78.1 million in total economic impact throughout Economic Development Region 4. This total represents the direct impact of spending in the West Central Region (\$37.7 million) as well as the indirect spending that occurs as a result of UMN's presence (\$40.4 million).

Employment Impact

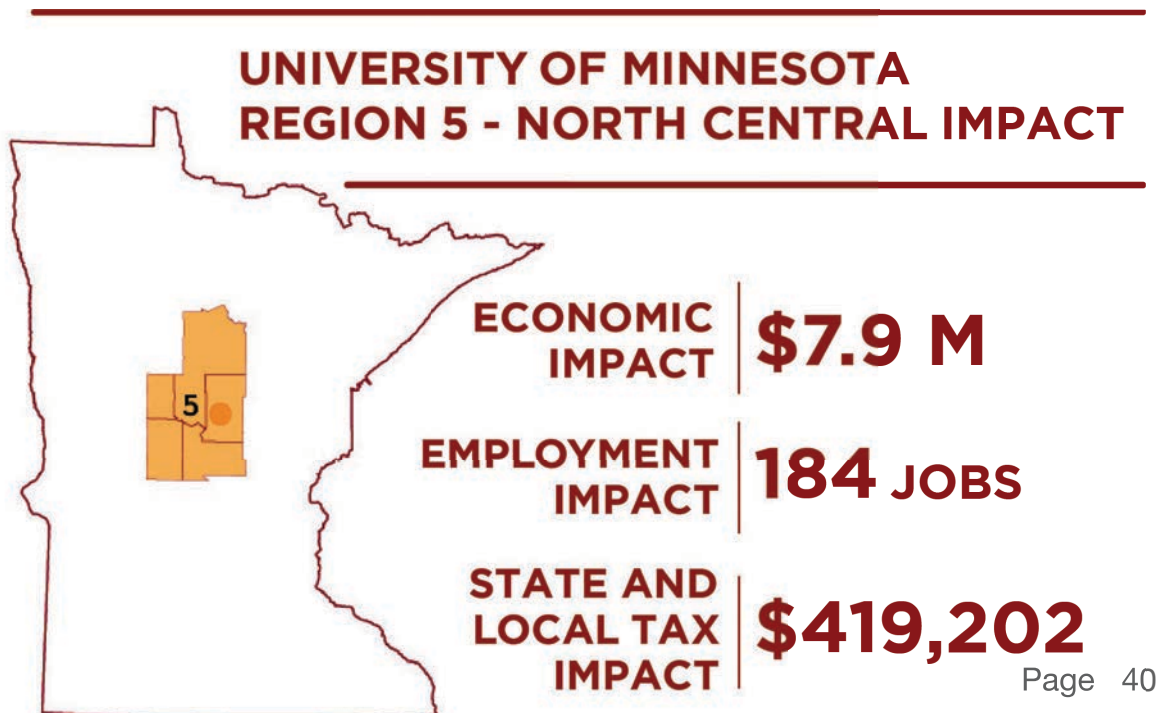
In FY17, UMN directly supported 709 jobs (full-time and part-time) throughout the West Central Region. This employment makes a direct contribution to the overall workforce vitality of the region, and bolsters the economy. Those directly employed individuals spend dollars in the state, and therefore, support additional employment. UMN spending on capital projects, its development and planning projects, and its suppliers support additional indirect jobs throughout Minnesota. In total, the presence of UMN supports 1,118 jobs in Region 4.

State and Local Government Revenue Impact

Due to the University of Minnesota’s spending with regional organizations, support of jobs for university employees living in the region, and UMN visitor spending in the region, the university makes significant contributions to local tax revenues. In FY17, UMN generated more than \$5.5 million in direct, indirect, and induced tax payments for the West Central Region.

Economic Development Region 5: North Central

Located in the center of Minnesota, Region 5 includes the following counties: Cass, Crow Wing, Morrison, Todd, and Wadena. Throughout this region, the University of Minnesota plays a central role in generating substantial economic impact. The North Central Region includes the following UMN entities: Regional Extension Office—Brainerd.



Economic Impact

In FY17, the University of Minnesota generated more than \$7.9 million in total economic impact throughout Economic Development Region 5. This total represents the direct impact of spending in the North Central (\$4.4 million) as well as the indirect spending that occurs as a result of UMN's presence (\$3.5 million).

Employment Impact

In FY17, UMN directly supported 151 jobs (full-time and part-time) throughout the North Central Region. This employment makes a direct contribution to the overall workforce vitality of the region, and bolsters the economy. Those directly employed individuals spend dollars in the state, and therefore, support additional employment. UMN spending on capital projects, its development and planning projects, and its suppliers support additional indirect jobs throughout Minnesota. In total, the presence of UMN supports 184 jobs in Region 5.

State and Local Government Revenue Impact

Due to the University of Minnesota's spending with regional organizations, support of jobs for university employees living in the region, and UMN visitor spending in the region, the university makes significant contributions to local tax revenues. In FY17, UMN generated more than \$419,000 in direct, indirect, and induced tax payments for the North Central Region.

Economic Development Region 6E: Southwest Central

Located in the center of Minnesota, Region 6E includes the following counties: Kandiyohi, McLeod, Meeker, and Renville. Throughout this region, the University of Minnesota plays a central role in generating substantial economic impact.

Economic Impact

In FY17, the University of Minnesota generated more than \$8.3 million in total economic impact throughout Economic Development Region 6E. This total represents the direct impact of spending in the Southwest Central Region (\$4.8 million) as well as the indirect spending that occurs as a result of UMN's presence (\$3.5 million).

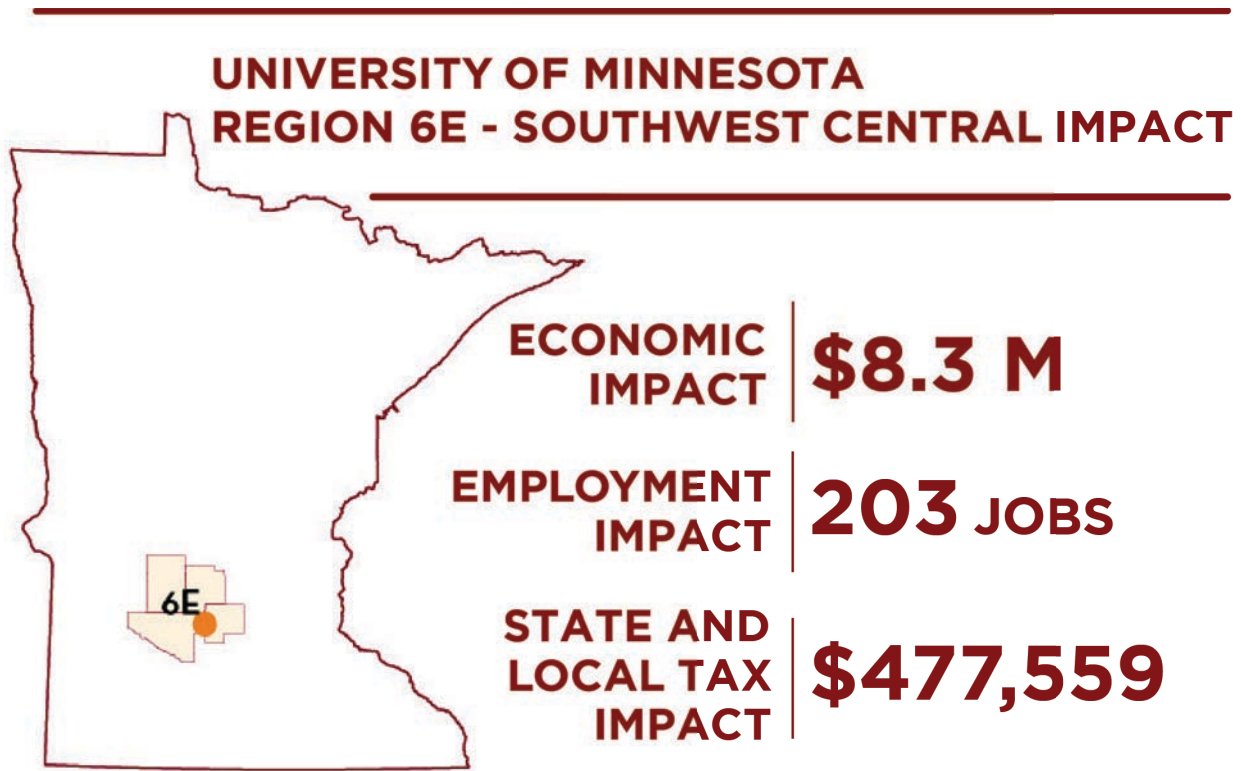
Employment Impact

In FY17, UMN directly supported 170 jobs (full-time and part-time) throughout the Southwest Central Region. This employment makes a direct contribution to the overall workforce vitality of the region, and bolsters the economy. Those directly employed

individuals spend dollars in the state, and therefore, support additional employment. UMN spending on capital projects, its development and planning projects, and its suppliers support additional indirect jobs throughout Minnesota. In total, the presence of UMN supports 203 jobs in Economic Development Region 6E.

State and Local Government Revenue Impact

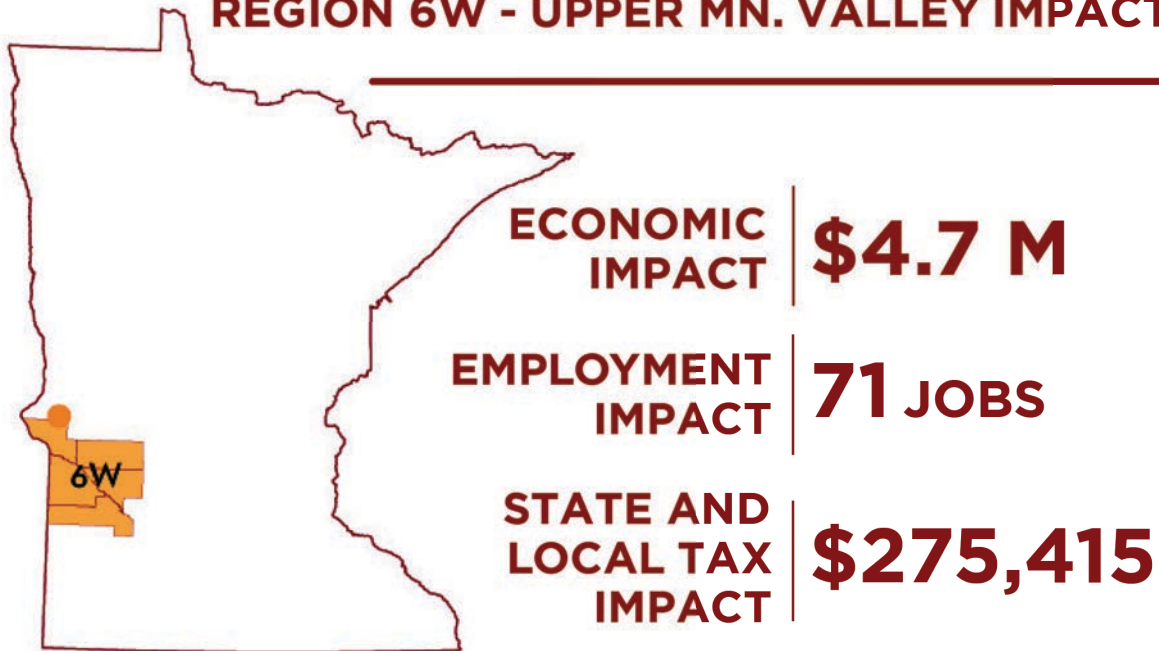
Due to the University of Minnesota’s spending with regional organizations, support of jobs for university employees living in the region, and UMN visitor spending in the region, the university makes significant contributions to local tax revenues. In FY17, UMN generated more than \$477,500 in direct, indirect, and induced tax payments for the Northwest Region.



Economic Development Region 6W: Upper Minnesota Valley

Located in the southwest of Minnesota, Region 6W includes the following counties: Big Stone, Chippewa, Lac qui Parle, and Yellow Medicine. Throughout this region, the University of Minnesota plays a central role in generating substantial economic impact.

UNIVERSITY OF MINNESOTA REGION 6W - UPPER MN. VALLEY IMPACT



Economic Impact

In FY17, the University of Minnesota generated more than \$4.7 million in total economic impact throughout Economic Development Region 6W. This total represents the direct impact of spending in the Upper Minnesota Valley Region (\$2.7 million) as well as the indirect spending that occurs as a result of UMN's presence (\$2 million).

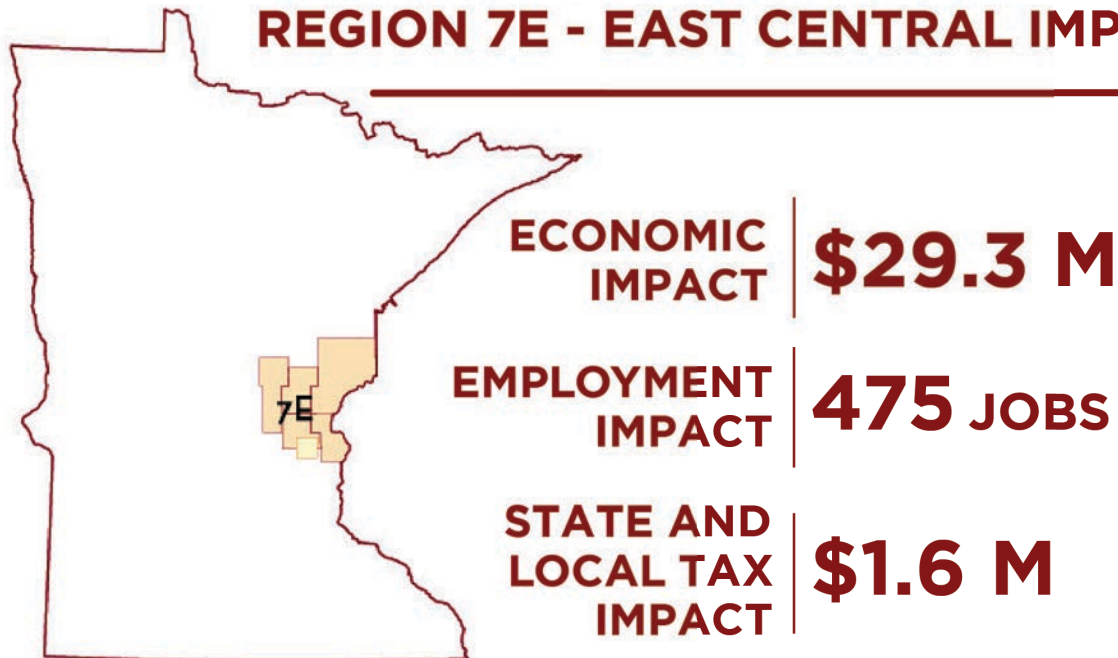
Employment Impact

In FY17, UMN directly supported 52 jobs (full-time and part-time) throughout the Upper Minnesota Valley Region. This employment makes a direct contribution to the overall workforce vitality of the region, and bolsters the economy. Those directly employed individuals spend dollars in the state, and therefore, support additional employment. UMN spending on capital projects, its development and planning projects, and its suppliers support additional indirect jobs throughout Minnesota. In total, the presence of UMN supports 71 jobs in Region 6W.

State and Local Government Revenue Impact

Due to the University of Minnesota's spending with regional organizations, support of jobs for university employees living in the region, and UMN visitor spending in the region, the university makes significant contributions to local tax revenues. In FY17, UMN generated more than \$275,400 in direct, indirect, and induced tax payments for the Northwest Region.

UNIVERSITY OF MINNESOTA REGION 7E - EAST CENTRAL IMPACT



Economic Development Region 7E: East Central

Located on the eastern boarder of Minnesota, Region 7E includes the following counties: Chisago, Isanti, Kanabec, Mille Lacs, and Pine. Throughout this region, the University of Minnesota plays a central role in generating substantial economic impact.

Economic Impact

In FY17, the University of Minnesota generated more than \$29.3 million in total economic impact throughout Economic Development Region 7E. This total represents the direct impact of spending in the East Central Region (\$17.9 million) as well as the indirect spending that occurs as a result of UMN's presence (\$11.4 million).

Employment Impact

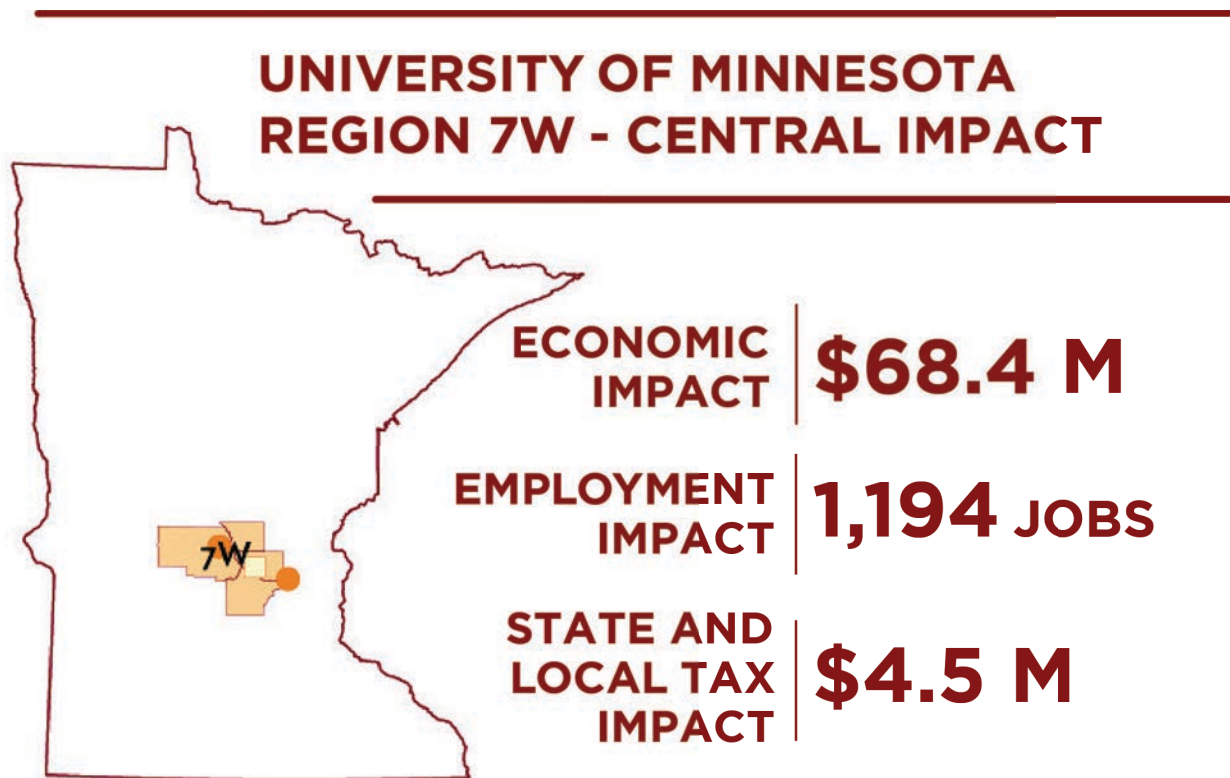
In FY17, UMN directly supported 364 jobs (full-time and part-time) throughout the East Central Region. This employment makes a direct contribution to the overall workforce vitality of the region, and bolsters the economy. Those directly employed individuals spend dollars in the state, and therefore, support additional employment. UMN spending on capital projects, its development and planning projects, and its suppliers support additional indirect jobs throughout Minnesota. In total, the presence of UMN supports 475 jobs in Economic Development Region 7E.

State and Local Government Revenue Impact

Due to the University of Minnesota’s spending with regional organizations, support of jobs for university employees living in the region, and UMN visitor spending in the region, the university makes significant contributions to local tax revenues. In FY17, UMN generated more than \$1.6 million in direct, indirect, and induced tax payments for the East Central Region.

Economic Development Region 7W: Central

Located in the center of Minnesota, Region 7W includes the following counties: Benton, Sherburne, Stearns, and Wright. Throughout this region, the University of Minnesota plays a central role in generating substantial economic impact. The Central Region includes the following UMN entities: Regional Extension Office—St. Cloud, Regional Extension Office—Willmar, and the Sand Plain Research Farm at Becker.



Economic Impact

In FY17, the University of Minnesota generated more than \$68.4 million in total economic impact throughout Economic Development Region 7W. This total represents

the direct impact of spending in the Central Region (\$41.7 million) as well as the indirect spending that occurs as a result of UMN's presence (\$26.7 million).

Employment Impact

In FY17, UMN directly supported 975 jobs (full-time and part-time) throughout the Central Region. This employment makes a direct contribution to the overall workforce vitality of the region, and bolsters the economy. Those directly employed individuals spend dollars in the state, and therefore, support additional employment. UMN spending on capital projects, its development and planning projects, and its suppliers support additional indirect jobs throughout Minnesota. In total, the presence of UMN supports 1,194 jobs in Region 7W.

State and Local Government Revenue Impact

Due to the University of Minnesota's spending with regional organizations, support of jobs for university employees living in the region, and UMN visitor spending in the region, the university makes significant contributions to local tax revenues. In FY17, UMN generated more than \$4.5 million in direct, indirect, and induced tax payments for the Central Region.

Economic Development Region 8: Southwest

Located in the lower southwest of Minnesota, Region 8 includes the following counties: Cottonwood, Jackson, Lincoln, Lyon, Murray, Nobles, Pipestone, Redwood, and Rock. Throughout this region, the University of Minnesota plays a central role in generating substantial economic impact. The Southwest Region includes the following UMN entities: Regional Extension Office—Marshall, Regional Extension Office—Worthington, and the Southwest Research and Outreach Center at Lamberton.

Economic Impact

In FY17, the University of Minnesota generated more than \$19.5 million in total economic impact throughout Economic Development Region 8. This total represents the direct impact of spending in the Southwest Region (\$5.0 million) as well as the indirect spending that occurs as a result of UMN's presence (\$14.5 million).

Employment Impact

In FY17, UMN directly supported 125 jobs (full-time and part-time) throughout the Southwest Region. This employment makes a direct contribution to the overall workforce vitality of the region, and bolsters the economy. Those directly employed individuals spend dollars in the state, and therefore, support additional employment.

UMN spending on capital projects, its development and planning projects, and its suppliers support additional indirect jobs throughout Minnesota. In total, the presence of UMN supports 379 jobs in Economic Development Region 8.

State and Local Government Revenue Impact

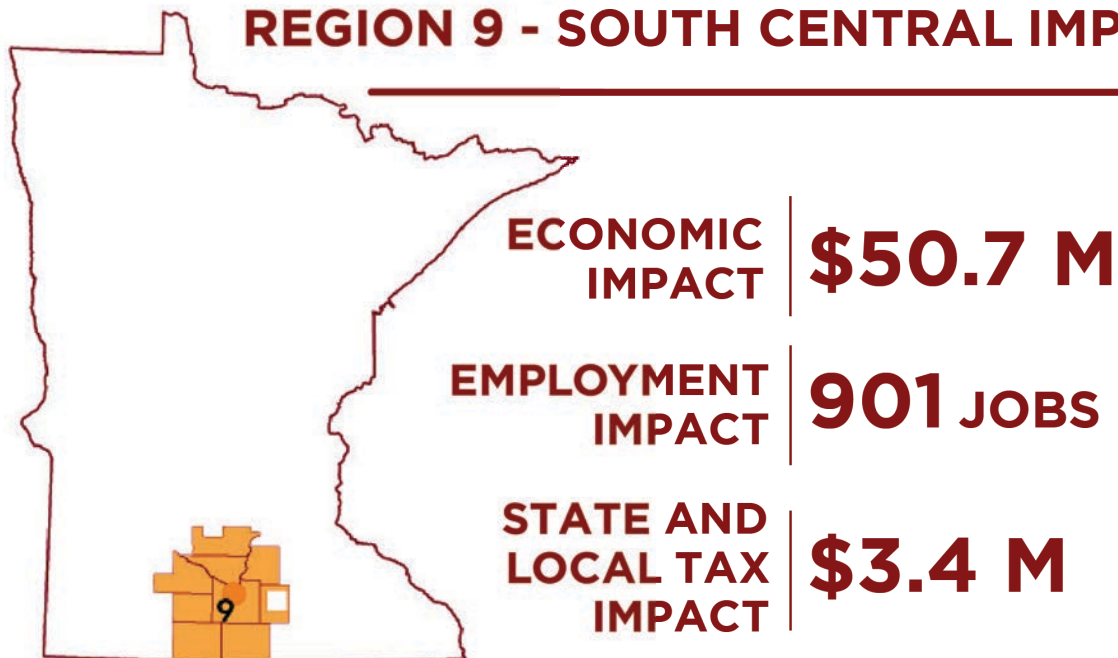
Due to the University of Minnesota’s spending with regional organizations, support of jobs for university employees living in the region, and UMN visitor spending in the region, the university makes significant contributions to local tax revenues. In FY17, UMN generated more than \$1.6 million in direct, indirect, and induced tax payments for the Southwest Region.



Economic Development Region 9: South Central

Located on the southern border of Minnesota, Region 9 includes the following counties: Blue, Brown, Faribault, Le Sueur, Martin, Nicollet, Sibley, Waseca, and Watonwan. Throughout this region, the University of Minnesota plays a central role in generating substantial economic impact. The South Central Region includes the following UMN entities: Regional Extension Office—Mankato and the Southern Research and Outreach Center at Waseca.

UNIVERSITY OF MINNESOTA REGION 9 - SOUTH CENTRAL IMPACT



Economic Impact

In FY17, the University of Minnesota generated more than \$50.7 million in total economic impact throughout Economic Development Region 9. This total represents the direct impact of spending in the South Central Region (\$32.9 million) as well as the indirect spending that occurs as result of UMN's presence (\$17.8 million).

Employment Impact

In FY17, UMN directly supported 309 jobs (full-time and part-time) throughout the South Central Region. This employment makes a direct contribution to the overall workforce vitality of the region, and bolsters the economy. Those directly employed individuals spend dollars in the state, and therefore, support additional employment. UMN spending on capital projects, its development and planning projects, and its suppliers support additional indirect jobs throughout Minnesota. In total, the presence of UMN supports 901 jobs in Economic Development Region 9.

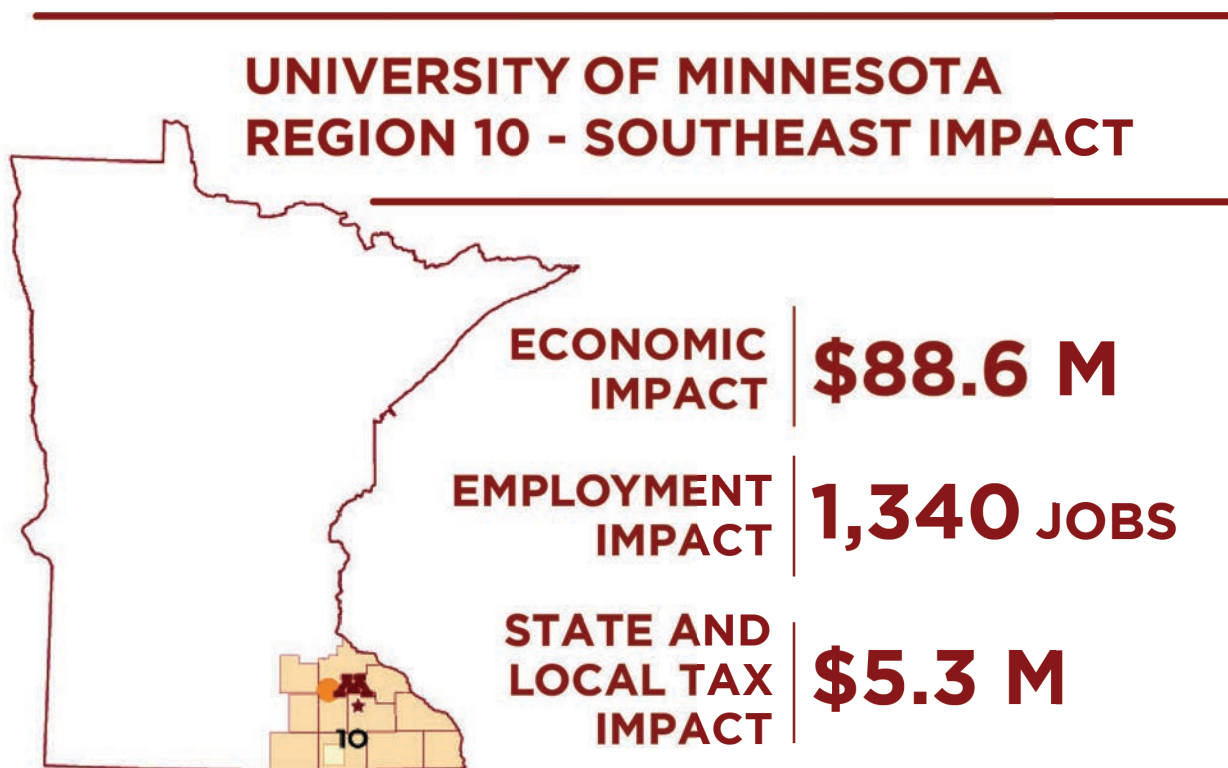
State and Local Government Revenue Impact

Due to the University of Minnesota's spending with regional organizations, support of jobs for university employees living in the region, and UMN visitor spending in the

region, the university makes significant contributions to local tax revenues. In FY17, UMN generated more than \$3.4 million in direct, indirect, and induced tax payments for the South Central Region.

Economic Development Region 10: Southeast

Located in the lower southeast of Minnesota, Region 10 includes the following counties: Dodge, Fillmore, Freeborn, Goodhue, Houston, Mower, Olmsted, Rice, Steele, Wabasha, and Winona. Throughout this region, the University of Minnesota plays a central role in generating substantial economic impact. The Southeast Region includes the following UMN entities: Regional Extension Office—Rochester and the University of Minnesota—Rochester.



Economic Impact

In FY17, the University of Minnesota generated more than \$88.6 million in total economic impact throughout Economic Development Region 10. This total represents

the direct impact of spending in the Southeast Region (\$43.8 million) as well as the indirect spending that occurs as a result of UMN's presence (\$44.8 million). The Southeast Region includes the following UMN entities: Regional Extension Office—Mankato and the Southern Research and Outreach Center at Waseca.

Employment Impact

In FY17, UMN directly supported 859 jobs (full-time and part-time) throughout the Southeast Region. This employment makes a direct contribution to the overall workforce vitality of the region, and bolsters the economy. Those directly employed individuals spend dollars in the state, and therefore, support additional employment. UMN spending on capital projects, its development and planning projects, and its suppliers support additional indirect jobs throughout Minnesota. In total, the presence of UMN supports 1,340 jobs in Economic Development Region 10.

State and Local Government Revenue Impact

Due to the University of Minnesota's spending with regional organizations, support of jobs for university employees living in the region, and UMN visitor spending in the region, the university makes significant contributions to local tax revenues. In FY17, UMN generated more than \$5.3 million in direct, indirect, and induced tax payments for the Southeast Region.

Economic Development Region 11: 7 County Twin Cities

Located on the eastern boarder of Minnesota, Region 11 includes the following counties: Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington. Throughout this region, the University of Minnesota plays a central role in generating substantial economic impact. The 7 County Twin Cities Region includes the following UMN entities: Horticultural Research Center at Chanhassen, Regional Extension Office—Andover, Regional Extension Office—Farmington, Rosemount Research and Outreach Center at UMore Park, and the University of Minnesota—Twin Cities.

Economic Impact

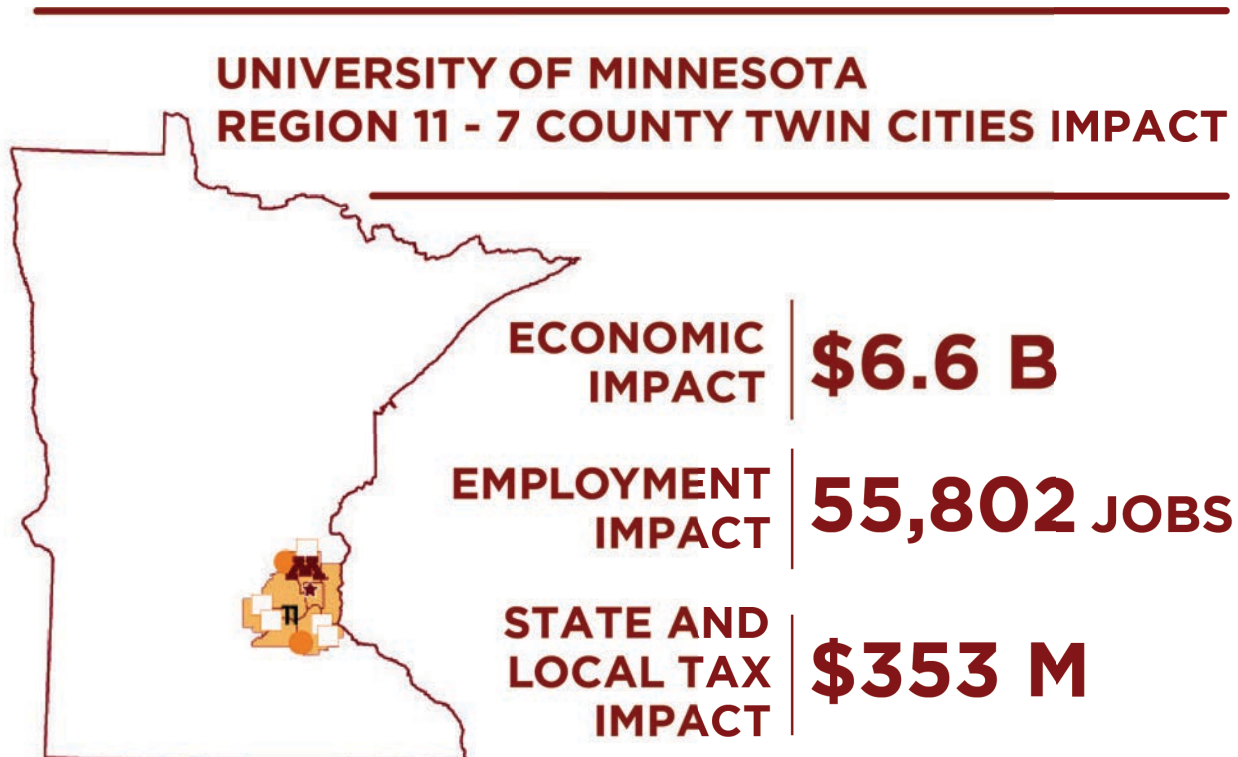
In FY17, the University of Minnesota generated more than \$6.6 billion in total economic impact throughout Economic Development Region 11. This total represents the direct impact of spending in the 7 County Twin Cities Region (\$3.7 billion) as well as the indirect spending that occurs as a result of UMN's presence (\$2.9 billion).

Employment Impact

In FY17, UMN directly supported 30,748 jobs (full-time and part-time) throughout the 7 County Twin Cities Region. This employment makes a direct contribution to the overall workforce vitality of the region, and bolsters the economy. Those directly employed individuals spend dollars in the state, and therefore, support additional employment. UMN spending on capital projects, its development and planning projects, and its suppliers support additional indirect jobs throughout Minnesota. In total, the presence of UMN supports 55,802 jobs in Economic Development Region 11.

State and Local Government Revenue Impact

Due to the University of Minnesota’s spending with regional organizations, support of jobs for university employees living in the region, and UMN visitor spending in the region, the university makes significant contributions to local tax revenues. In FY17, UMN generated more than \$353 million in direct, indirect, and induced tax payments for the 7 County Twin Cities Region.



Appendix A: Definition of Terms

Study Year	Fiscal year is defined as FY17; July 1, 2016 – June 30, 2017
Total Industry Output	The total impact of an organization includes the spending of the organization, the labor income expenditures, and the value-added to the economy as a result of the organizational spending; this is described as the total industry output.
Total Economic Impact	The total impact of an organization is a compilation of the direct impact, the indirect impact, and the induced impact generated in the economy as a result of the organization.
Direct Economic Impact	Direct impact includes all direct effects the organization has on the region due to the organization's operations. These include direct employees, organizational spending, employee spending, and spending by students and visitors to the organization.
Indirect Economic Impact	The indirect impact includes the impact of local industries buying goods and services from other local industries. The cycle of spending works its way backward through the supply chain until all money is spent outside of the local economy, either through imports or by payments to value added.
Induced Economic Impact	The response by an economy to an initial change (direct effect) that occurs through re-spending of income received by a component of value added. IMPLAN's default multiplier recognizes that labor income (employee compensation and proprietor income components of value added) is not lost to the regional economy. This money is recirculated through household spending patterns causing additional local economic activity.
Multiplier Effect	The multiplier effect is the additional economic impact created as a result of the organization's direct economic impact. Local companies that provide goods and services to an organization increase their purchasing by creating a multiplier.
Government Revenue	Government revenue that is collected by governmental units in addition to those paid directly by an organization, including taxes paid directly by employees of the organization, visitors to the organization, and vendors who sell products to the organization.
Direct Employment	Total number of employees, both full-time and part-time, at the organization based on total jobs.
Indirect Employment	Indirect employment are the additional jobs created as a result of the organization's economic impact. Local companies that provide goods and services to an organization increase their number of employees as purchasing increases, thus creating an employment multiplier.

Appendix B: Technical Appendix

IMPLAN Methodology Definitions

The economic impact of The University of Minnesota 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 over 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. 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 UMN. 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 U.S. Bureau of Economic Analysis. In addition, multipliers are applied only to personal disposable income in order 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 Minnesota. Employment data for UMN 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.

Government Revenue Impact Definition

Government revenue impacts generated in the current, FY17 study included all taxes paid by UMN to the state of Minnesota and each defined Economic Development Region (i.e., payroll, property, sales, unemployment, income, and any other taxes paid to the state and local government). Any federal taxes paid by the University of Minnesota were not included in the government revenue 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 only include 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 UMN, the impact analysis looked at impacts to the state of Minnesota and each defined Economic Development Region. Visitors to UMN were only counted if they were from outside of said region being analyzed.

Community Benefits

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.

- Tripp Umbach has conducted survey research to estimate the amount of monetary donations a student, staff, and faculty will spend in a year. This amount differs per individual but ranges from \$500-\$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 \$26.40 per individual 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).

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 due to 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 re-spend 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. There are three types of effects 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.

- **Direct effects** take place only in the industry immediately being studied.
- **Indirect effects** concern inter-industry transactions: Because an institution is in business, it has a demand for locally produced materials needed to operate.
- **Induced effects** measure the effects of the changes in household income: Employees of an institution and suppliers purchase from local retailers and restaurants.
- **Total Economic Impacts** are the total changes to the original economy as the result of the operations of an institution, i.e., Direct effects + Indirect effects + Induced effects = Total Economic Impacts.

What methodology was used in this study?

IMPLAN (IMpact analysis for PLANning) data and software were used in this study. 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.

What are Tripp Umbach's qualifications to perform economic impact analysis?

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, The Pennsylvania State University, The Ohio State University, UCONN, the University at Buffalo, University of Arizona, University of Michigan, University of Minnesota, The University of Pittsburgh, the University of Vermont, the University of Virginia, The University of Washington, and The University of Alabama at Birmingham.