

IRIS Year in Review

Fall 2019

IRIS INSTITUTE FOR
RESEARCH ON
INNOVATION & SCIENCE



**Data to understand, explain and improve
the public value of research and higher education**

Since Julia Lane, Bruce Weinberg and I founded IRIS in 2015, the initiative has grown by leaps and bounds. As our fifth anniversary approaches, our membership, our staff and the vibrant communities we support have expanded in both scale and scope. I look forward to our next five years, which we hope will be marked by increased involvement and integration of stakeholders from across higher education and research.

Our current membership now accounts for nearly one-third of the total federal spending in academic research. As detailed later in this report, our third data release earlier this year contained information on nearly 400,000 sponsored project awards totaling almost \$84 billion.

These data are of course very useful to researchers, but are also increasingly being used by member universities to demonstrate the value of academic research to their campus communities, legislators and other decision makers, and the general public. In the past year, we've added a communications specialist to the IRIS staff, who is dedicated to helping members distribute press releases and other material that highlights the impact of research investments for economic development, education and the career pathways of research-trained employees. This year we expanded and redesigned our vendor report. We look forward to your feedback on new products we hope to release in the coming year.

IRIS is also focused on building up the community of researchers that can take advantage of large, restricted datasets. As you can read about on page 4 of this report, we recently received a \$1 million award from the National Science Foundation that will expand and diversify the cohort of researchers able to take full advantage of IRIS datasets and other similar data sources.

We trust that perusing this summary of the past year will demonstrate the value that IRIS provides to member universities, to researchers, and to the science policy community as a whole. Please feel free to get in touch with us with any questions, comments or collaborative opportunities. Thank you for all you do with, and for IRIS. Our work is only possible because of your engagement and support.

Jason Owen-Smith

IRIS Executive Director
Professor of Sociology, University of Michigan



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2019: Growth and Innovation

2019 data release

Our third annual data release was the largest to date, representing approximately one-third of U.S. federal research expenditures from 31 universities. Access to the dataset is provided free of charge to member institutions through a virtual data enclave. In addition, IRIS provides members with detailed reports on the economic impact of federally funded research on the students, communities and companies involved. Member universities often use IRIS reports to make the case for continuing investments in higher education and research.

For more, visit iris.isr.umich.edu/research-data

400,000 funded awards

650,000 research employees

\$84 billion in award spending

\$61 billion in vendor & subaward spending

New vendor profile report

Our redesigned vendor profile report shows the numbers of minority- and woman-owned vendors supported by university research projects, and includes a new way to drill down into the specific industries that receive research contracts.

The report also reveals which research-supported industries have a greater economic impact in certain areas, as measured by employment counts, average earnings



for employees, and number of establishments that have research-related contracts with IRIS member universities.

Making the case

Universities across the country are using IRIS data to demonstrate the value of public investments in research and higher education to stakeholders on campus, to government decision makers, and to the public at large. For example:

- **Boston University** highlighted the broad reach of its research

investments in an article titled "[BU Research Has Powerful Economic Impact.](#)" The article is based on the 2019 IRIS Vendor Report for BU, which showed that the university's research spending exceeded \$395 million between 2015 and 2018.

- **Northwestern University** also used the IRIS Vendor Report to feature the impact of its research spending. Its story, "[Northwestern](#)

[research provides economic boost of nearly \\$800 million.](#)" appeared on the front page of the university's website for several days.

- The **University of Michigan** issued press releases on several IRIS data products, such as [student outcome data](#) distributed by the U.S. Census Bureau in collaboration with the university and IRIS. Those data show salaries earned, by University graduates by major, and by year after graduation, as well as the industries and locations in which they work and live.
- IRIS members including **Princeton University** used IRIS data in preparing annual reports and in discussions with legislative leaders to make the case for investments in research and higher education.



Supporting the Research Community

IRIS awarded NSF capacity-building grant

In August 2019, IRIS was awarded a \$1 million, 3-year grant by the National Science Foundation to train early- and mid-career social scientists in the use of a broad range of administrative data for research and proposal development. The first workshops will take place in early 2020.

This program will equip researchers of various skill levels to work with large-scale, privacy-protected data in restricted access environments, and will help them eventually submit funding proposals based on the use of such datasets.

A short course for scientists with established quantitative

skills will include sessions hosted by experienced researchers on the challenges of submitting grants based on large, restricted datasets.

A longer course for less-experienced researchers will include instruction on tools such as relational databases, Python, and network and text analysis before development of proposed grant submissions in consultation with IRIS technical staff.

The ultimate result will be a larger and more diverse scientific community better able to take advantage of recent improvements in data and technology to support new research directions.



Policy and Outreach Committee forms

In February 2019, [IRIS established a Policy and Outreach Committee \(POC\)](#) to foster communication between IRIS, its members, and a broad stakeholder community, emphasizing the value of IRIS and its products and developing best practices for outreach, governance, and engagement.

The committee's charge includes: developing mechanisms to streamline the membership process; offering guidance on marketing IRIS to universities broadly, as well as internally on a campus; generating best practices and use cases for data, reporting, and advocacy; expanding communities of support among

members at all levels; helping connect IRIS to relevant groups; and more.

Initial members are Warren Brown, Cornell; Kimberlee Emerle-Sudre, AAU; John Gonzalez, Richard Greeley, Marvin Parnes, and Elias Samuels, University of Michigan; Kimberly Griffin, Northwestern University; Mike Holland and Kristen de Paor, University of Pittsburgh; Nick Mangnall, Washington University in St. Louis; Sarah Rovito, APLU; Jim Taylor, Pennsylvania State University, Bruce Weinberg, The Ohio State University; and Jim Woodell, Consultant.

If you are interested in participating,



please let us know by contacting IRIS-info@umich.edu.

New board members elected

Elizabeth Adams, Director of the Office of Research and Project Administration at Princeton University, and Mike Holland, Vice Chancellor for Science Policy and Research Strategies at the University of Pittsburgh, will serve on the IRIS board for terms ending in 2022.

They replace Neil Sharkey, recently retired as Vice President for Research at Pennsylvania State University, and Caroline Whitacre, Senior Vice President for Research at The Ohio State University.



Adams



Holland

Data access across disciplines and institutions

The IRIS UMETRICS dataset is accessible for researchers from any institution and discipline. Access is free for investigators at IRIS member universities, and available for a small charge for others.

Through our virtual data enclave, researchers can work on the data from their home campuses. Some of the topics addressed by researchers using IRIS UMETRICS include:

- Exploring the relationship between research outputs

(patents, publications, startups established) and funding sources, specifically the differences in private sector funding of academic research

- Role of collaboration networks in science productivity
- Degree to which team structure and ethnic diversity influences productivity
- Economic outcomes for people who conduct interdisciplinary research in STEM

Researcher awards

Ran Xu from Virginia Tech (now at the University of Connecticut) and Kevin Kniffin of Cornell University were the 2019 recipients of the IRIS Researcher Awards. The awards are made possible by the Alfred P. Sloan Foundation. IRIS is [preparing to announce the next round of awards](#) in early 2020.



Researcher Q and A

Alex Xi He, Assistant Professor of Finance, University of Maryland

What are the implications for innovation and scientific discovery of the consistently falling levels of federal research funding and corresponding shift to industry funding at many research universities? Alex Xi He, Assistant Professor of Finance at the University of Maryland, is using the IRIS UMETRICS dataset to find out. Along with co-investigators Sabrina Howell of New York University and Tania Babina of Columbia University, He is exploring the quality and quantity of the patents produced by researchers who switch from federal to industry funding. He recently answered some questions about his work and the IRIS dataset.

Q: What prompted your interest in this area?

A: There has been a steady decline in the amount of federal funding in the last decade, while the share of

university research funded by private companies has been increasing. How does this change affect the innovation being done by researchers in universities? Does the funding source of the researchers affect the amount, direction and quality of the research output? These are the questions that we want to understand in this project.

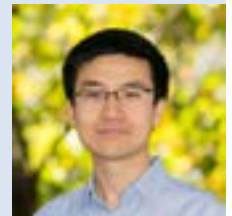
Q: How did you learn about IRIS UMETRICS data, and how helpful has it been for this study?

A: I learned about UMETRICS data first from a professor at my school [He received a Ph.D. in Economics from the Massachusetts Institute of Technology in June 2019]. Our research would not have been possible without UMETRICS data. It is the first comprehensive dataset with detailed information on the funding received by university researchers,

and allows us to do a systematic study of the impact of funding sources on the innovation outcomes of these researchers.

Q: What else excites you about IRIS data?

A: Federal R&D spending accounts for about 1% of GDP every year, and the majority of non-defense federal R&D spending goes to university researchers. Universities are also the engine for innovations and ideas, and some of the most successful companies, including Google, are founded on university campuses. IRIS provides rich individual-level data that allows us to study these university researchers that we still know very little about, and this is really exciting.



IRIS Researchers and Staff, Ann Arbor Office

Technical Team



Amy Butchart

Lead Programmer

Amy collaborates and coordinates with data curators, researchers and analysts at IRIS member institutions and federal agencies.

Najla August

Lead Developer

Najla is a data visualization expert and applications developer, and is skilled in a variety of programming platforms and languages.



Natsuko Nicholls

Research Manager

Natsuko manages, documents, and analyzes IRIS datasets and directs data support for researchers who use de-identified IRIS data in the virtual data enclave (VDE).

Beth Uberseder

Research Support Specialist

Beth helps create a strong community of IRIS researchers and provides support to researchers accessing IRIS datasets.



Rob Truex

Data Manager

Rob cleans, maintains and integrates large administrative datasets and helps ensure the robustness of the IRIS data system.

Lia Chen

Web Developer

Lia designs and develops interactive data visualizations and components in the web portal and troubleshoots IRIS web apps.



Sophia Li

Web Developer

Sophia designs, develops and implements web applications and interactive reports for IRIS member universities.



Contact Us

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Leadership Team



Jason Owen-Smith

Executive Director

Jason manages the activities of IRIS and is the liaison with future and current member institutions. He is an ex officio member of the IRIS board of directors.

Nancy Calvin-Naylor

Managing Director

Nancy handles daily operations of IRIS, including human resources, finances, and internal systems and processes. She helps set strategic goals and priorities for IRIS.



Kevin Bjorne

Technical Director

Kevin oversees technical operations, working with member universities, staff, and partners like the federal government to provide accurate and meaningful products for members.

Administrative Team



Karen Woollams

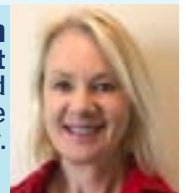
Business Manager

Karen provides pre- and post-award grant administration and can help with IRIS memberships, invoicing, and contracts, etc.

Meg Weideman

Administrative Assistant

Meg schedules meetings, plans events, and oversees daily activities to keep the office running smoothly.



Dan Meisler

Communications and Marketing Coordinator

Dan plans and executes communications, marketing and public relations to raise awareness of IRIS among members, non-members, and the general public.

Research Team



Jinseok Kim

Research Assistant Professor

Jinseok's work focuses on understanding the human interaction patterns extracted from large-scale data generated from diverse information and communication technologies.

Jake Fisher

Research Investigator

Jake develops and tests network diffusion models, to understand how ideas, innovations, and information spreading through a group help to create and maintain a common culture.



Matt VanEseltine

Research Investigator

Matt's focus is on the development of special projects, including assisting in the creation of new reports.

The Value of IRIS Membership

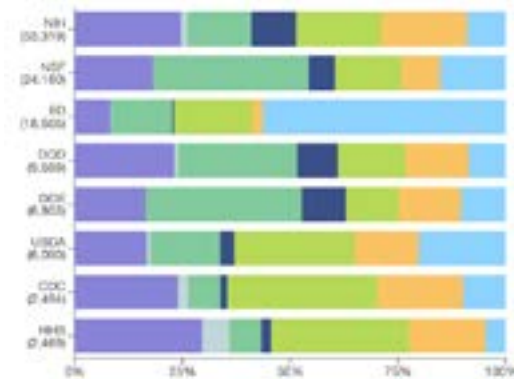
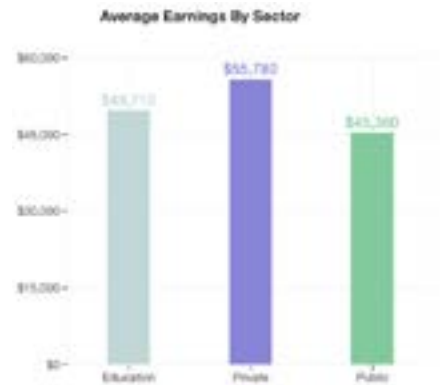
IRIS member universities are some of the most productive and prestigious research institutions in the country. Together, they account for nearly one-third of the total federal spending for academic research.

IRIS membership leverages the value of public scientific investments by providing researchers, analysts and administrators unique perspectives: a nationwide view of the employment, spending and economic impact of federal research spending, as well as university-specific data.

Member universities receive:

- **Interactive campus-level reports** that synthesize, summarize and visualize campus-level data
- **Topic-specific micro-reports** tailored for uses like government relations or research administration
- **Aggregated reports on the national impact** of academic research
- Secure access to **IRIS data for research** use by students and faculty at no additional cost
- A **seat at the table** to build future IRIS products and initiatives

Employee Profile Reports show the sector and average earnings for research-trained students at member institutions, among other data points.



Spending Reports provide spending and employment details based on specific funding sources.

Vendor Profile Reports detail the economic impact of research spending on specific industries and regions.



IRIS Membership as of Sept. 1, 2019

- Boston University
- Emory University
- Indiana University
- Johns Hopkins University
- Michigan State University
- New York University
- Northwestern University
- Ohio State University
- Pennsylvania State University
- Princeton University
- Rutgers University – New Brunswick
- Stony Brook University
- University of California – San Diego
- Texas A&M University
- University of Colorado, Boulder
- University of Illinois – Urbana Champaign
- University of Iowa
- University of Kansas
- University of Michigan
- University of Missouri
- University of Oregon
- University of Pennsylvania
- University of Pittsburgh
- University of Texas – Austin
- University of Utah
- University of Virginia
- University of Wisconsin – Madison
- Virginia Polytechnic Institute and State University
- Washington University – St. Louis



IRIS Board Members

Elizabeth Adams

Director, Office of Research and Project Administration, Princeton University

Term: June 1, 2019-March 31, 2022

Mary Sue Coleman

President, Association of American Universities
(at-large member)

Kimberly Espy

Provost and Vice President for Academic Affairs,
University of Texas-San Antonio

Term: April 1, 2017-March 31, 2020

Kimberly Griffin

Director for Electronic Research Administration,
Northwestern University

Term: April 1, 2017-March 31, 2021

James Hilton

Vice Provost for Academic Innovation, University
Librarian & Dean of Libraries, University of Michigan

Term: April 1, 2017-

Michael Holland

Vice Chancellor for Science Policy and Research
Strategies, University of Pittsburgh

Term: June 1, 2019-March 31, 2022

Daniel Reed

Senior Vice President for Academic Affairs,
University of Utah

Term: April 1, 2017-March 31, 2020

Rodolfo Torres

Vice Chancellor for Research and Economic
Development, University of California, Riverside

Term: April 1, 2018-March 31, 2021

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