

The Institute for Research on Innovation and Science (IRIS) is a national data resource dedicated to providing credible data and rigorous findings about the value of the research enterprise to inform effective policy-making, support outreach, aid in research management, and expand the state of knowledge. This university-led consortium is currently housed at the University of Michigan's Institute for Social Research.

IRIS News

Winter 2018



INSTITUTE FOR
RESEARCH ON
INNOVATION & SCIENCE

From the Executive Director

Dear Friends of IRIS:

Happy New Year! I hope 2018 finds you all well and in good spirits. We have had an eventful few months.

We've launched several new initiatives that will help us support research and reporting that illuminates the value of universities.

- One line of work examines university researchers' public service on federal advisory committees (see page 6).
- With colleagues in the CTSA, we are piloting new analyses about the impact of translational science and training (see page 2).
- In partnership with the Association of American Universities and the U.S. Census Bureau, we are producing aggregate reports that leverage data from our many member institutions to emphasize the larger social and economic effects academic research has for the nation (see page 2).
- Generous funding from the Alfred P. Sloan Foundation has allowed us to make our first round of IRIS research grants (see pages 4-5). I encourage you to share information about IRIS data with relevant researchers on your campuses.



Jason Owen-Smith

Ongoing IRIS research is bearing important fruit. A new book using IRIS data to examine the economic value of research in the case of food safety has just been published, co-authored by IRIS Co-PI Julia Lane (page 3). IRIS was featured prominently on panels and

discussions at the recent American Economic Association meetings in Philadelphia, and new work on university collaboration networks was presented at the National Academy of Sciences Arthur M. Sackler Colloquium in December (page 5).

The day-to-day work of IRIS continues apace. Our most recent data transmission included information from 26 member institutions. New reports for our campuses are scheduled to arrive starting early next month and a new research data release will be launched in March. With excellent input from the Technical Advisory Group (TAG) we are making new updates to our member portal to streamline our data ingest and cleaning processes while enhancing the user experience. Finally, we're gearing up for our next data submission. The deadline is April 15, 2018.

With input from our Board of Directors, we have empanelled a new Scientific Advisory Board that will help guide the technical and research aspects of the Institute (see page 6). We are also nearing our second round of elections for two Board seats. Elections will be held in early spring and we will be in touch with members to ask for nominations. In the same time frame we will be convening a Policy and Outreach Committee.

It is hard to believe, but for our first group of member institutions it is renewal time. We look forward to speaking with each of you about your participation in IRIS and our future directions.

This promises to be a banner year and we look forward to continuing to work with you to expand IRIS' reach and impact. Thank you, once again, for all you do with and for the Institute.

2018 Data Release

IRIS is pleased to announce its **second annual data release scheduled in March 2018**. The forthcoming IRIS dataset for research is based on our fourth quarter 2017 Census data transfer. Similar to last year's release, this dataset will be comprised of two collections. The first collection is a transaction-level dataset that includes information on research awards, wage payments from research awards to university employees, vendor purchases, subcontracts, and the unit performing funded research for 26 universities. In addition to core files, we will release crosswalk files linking IRIS data to external datasets (e.g., publication, federal award, and patent data) at the individual and award level.

IRIS data use cases include studies to determine how research experience shapes the career pathways of students; to examine

how federally funded research yields safer and more secure food systems; and to measure how university vendors produce additional innovations and contribute to regional growth.

The restricted, de-identified IRIS dataset is available to researchers within the secure **IRIS Virtual Data Enclave** environment. Researchers from all disciplines are encouraged to [apply for access](#). A mirror of this dataset with linkages to restricted Census data is available through the Federal Statistical Data Center ([FSRDC](#)) system.

Using Data in the IRIS Virtual
Data Enclave



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From the Technical Director

Aggregate Reports

IRIS is always looking to develop new data products and improve existing reports in the service of enhancing our mission to understand, explain, and enhance the public value of universities.

One of the new initiatives we are working on is an aggregate version of our Census linked employee report that will allow us to combine administrative data from universities in interesting and useful ways. Aggregate reports would not reveal individual institutional data, but rather data for a grouping of institutions. The initial aggregate report that we are developing is for IRIS member universities who are also members of the Association of American Universities (AAU), and will be used to demonstrate the impact of



Kevin Bjorne

their member universities as a group. In addition to shedding new light on the social and economic impact of academic research, we hope it will provide another demonstration of the value to universities of IRIS membership.

We have other ideas for aggregate reports in the works, and would like to hear from our member universities if they would like specific aggregate reports. Some possibilities include those based on states (such as a state of Pennsylvania aggregate report) or an academic/athletic conference (e.g. Big 10 Academic Alliance, PAC 12, etc). The critical requirement of such aggregate reporting is that we must include at least 3 institutions participating in order to continue to maintain our commitment of confidentiality to our members.

Stay tuned for future updates and as always, please share your ideas with us so that we can provide maximum value to you.

Exploring the Impact of the Clinical & Translational Science Award KL2 Program with IRIS Data

The Clinical & Translational Science Award (CTSA) is a large institutional award from the NIH to enhance the efficiency and quality of the process of moving scientific discovery into improved human health. An important element of the CTSA program is a KL2 Mentored Clinical Research Scholar Award, which provides support and training to early career investigators who are commencing translational research programs. Following a feasibility pilot project with the University of Michigan's CTSA (the Michigan Institute for Clinical and Health Research, or MICHHR) last year, IRIS is expanding this pilot to include several additional IRIS member institutions that have a CTSA program (Northwestern University, the Ohio State University, and the University of Iowa, in addition to the University of Michigan). We will provide these CTSA programs (or hubs, as they are known) with data on key metrics,

CTSA Clinical & Translational Science Awards Program

including scientific career outcomes (including subsequent R01 awards, transition time between KL2 and R01 awards, and size/composition of research teams on subsequent R01 awards) and professional career outcomes (continuing in research careers, earnings data, and employment trajectory).

In addition to this project, IRIS Executive Director Jason Owen-Smith is working with the MICHHR Principal Investigator George Mashour to develop collaboration network visualizations for individuals who access various services at MICHHR. Specifically, they will use network science techniques to test the hypothesis that MICHHR's services enhance the translational research landscape using IRIS data. Jason Owen-Smith will present findings from these projects at the upcoming Translational Science meeting in April of 2018.

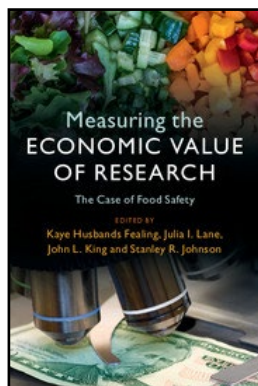
IRIS Membership Renewal

The past three years have been a time of great development for IRIS. IRIS was built upon the STAR METRICS and UMETRICS programs; we now have 31 member institutions. We have produced and distributed multiple rounds of reports that our members are using for many different purposes. We have convened a national Board of Directors anchored on your elected representatives. Our first research release is starting to be broadly used by researchers

from many institutions, and we are preparing for a second research release. IRIS data are also being used to address national policy issues. After three years IRIS is becoming an important part of the national conversation about the public value of academic research. As IRIS continues to develop and grow we expect to produce a suite of new products to help our members tell their stories.

Just Published

This exciting and innovative study uses IRIS data to trace the impact of federal research funding on the structure of research, and the subsequent economic activities of funded researchers. Focusing on the impact of US federal food safety research, this book develops vital data-intensive methodologies that have a real world application to many other scientific fields.



K. Husbands Fealing, J. Lane, J. King, & S. Johnson (Eds.), (2017). **Measuring the Economic Value of Research: The Case of Food Safety.** Cambridge: Cambridge University Press. <https://doi.org/10.1017/9781316671788>

What's the Buzz on IRIS?

IRIS shines a light on the likely effects of budget cuts to research funding proposed by the Trump administration. It identifies "everyone employed on research projects, not just those who appear as authors on research articles....who turn out to be an important part of the workforce on funded research projects. It's like taking into account everyone who works in a particular store, not just the manager and owner."

"Who feels the pain of science research budget cuts?"
The Conversation, reprinted in Salon

Authors cite IRIS data as a way to marshal the best arguments to make a case for public investment in research. They argue that "[u]niversities must do everything possible to document and articulate how the research and teaching enterprise benefits local, state and national economies," pointing to IRIS data as a means to tell the story in a compelling and concrete way for lay and policymaking audiences.

"Communicating the value of university research when science is under attack" *Inside Higher Ed*

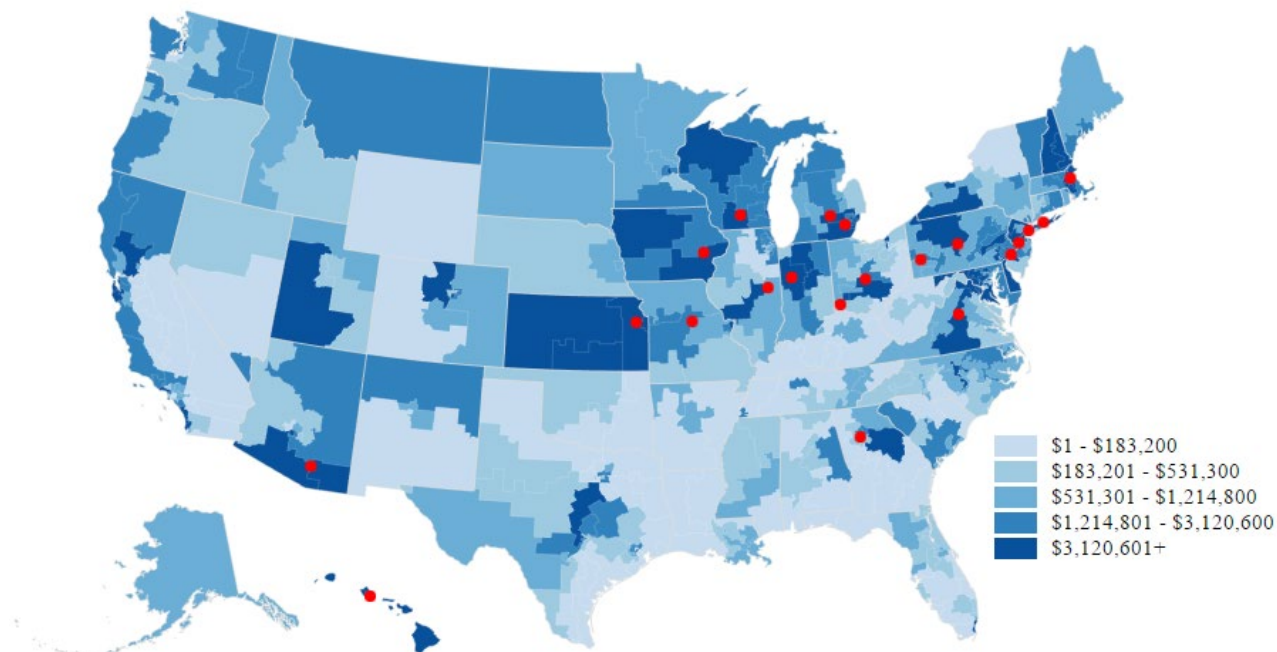
In response to Trump administration proposed cuts to medical research, IRIS was highlighted as a way to illustrate the ripple effects of research spending on the economy, particularly in the home county of each university. Authors noted that there are "entire industries devoted to supporting biomedical research."

"Trump administration proposes big cuts in medical research"
NPR Shots

How is IRIS Becoming a Critical Tool for the U.S. Higher Education Enterprise?

The power of IRIS is its ability to use large-scale data to demonstrate the value of universities. IRIS data was recently provided as supporting evidence of the impact of research on the economy in conversations between several university presidents and Trump administration officials about the proposal to reduce facilities and administrative costs for federal research grants.

IRIS University Research Spending Report by Congressional District



2018 IRIS Researcher Awards

In fall 2017, IRIS issued a call for proposals for the 2018 IRIS Researcher Awards, seeking applications from a broad range of candidates including those in the early stages of their doctoral studies as well as more established researchers. We sought research proposals across multiple academic fields with ideas for ways in which to utilize and improve IRIS data. An excellent pool of candidates made the decision making process difficult but we are excited to announce that the recipients for the inaugural IRIS Researcher Awards have now been chosen.

The 2018 Dissertation Award recipients are **Charu Gupta**, **Douglas Guilbeault**, and **Elan Segarra**. The 2018 Early Career Award recipients are **Jason Coupet** and **Jonathon Mote**, and the 2018 Established Researcher Award recipient is **Lisa Cook**. This talented cohort of researchers will attend an IRIS Data Camp in

March 2018 in Ann Arbor. We look forward to helping them meet their research goals.

IRIS is grateful to the Alfred P. Sloan Foundation for making possible the funding of these awards. For more information about the IRIS Researcher Awards, visit <http://iris.isr.umich.edu/research-data/grants/>. We will update this webpage in the summer with our 2019 call for proposals, and encourage you to pass along information about the award to anyone who may be interested.



**Alfred P. Sloan
FOUNDATION**

For more about our 2018 awardees and their IRIS research projects, please read below. Full abstracts are available on the IRIS webpage at <http://iris.isr.umich.edu/research-grants-awardees/>.

2018 IRIS Researcher Award Recipients

Dissertation Awards



Douglas Guilbeault is a PhD student in the Annenberg School for Communication at the University of Pennsylvania. He holds a Bachelor's degree in Philosophy, Rhetoric, and Cognitive Science from the University of Waterloo and a Master's degree in Linguistics from the University

of British Columbia. His research interests include the application of network science and online experiments to the study of collective creativity and how new ideas emerge and spread as a result of interdisciplinary research. His IRIS research proposal, "**The Network Dynamics of Interdisciplinary Research**," plans to "use IRIS data to develop network based measures to predict the creativity and productivity of interdisciplinary teams, with the aim of informing the optimal design of scientific institutions."



Charu Gupta is a PhD student in the Wharton School of Business at the University of Pennsylvania specializing in Managerial Science and Applied Economics. She holds a Bachelor's degree in Economics and International Relations from Brown University and a Master's degree in Economics from the London

School of Economics and Political Science. Her research interests include the economics of innovation, knowledge complementarity and productivity, and the adoption and diffusion of new medical technologies and pharmaceuticals. Her IRIS research proposal, "**The role of collaboration networks in science productivity**," seeks to "develop metrics for academic productivity, industry innovation, and knowledge relatedness and explore how collaboration networks evolve over time."



Elan Segarra is a PhD student in the Department of Economics at the University of Wisconsin-Madison. He holds a Bachelor's degree in Mathematics from Harvey Mudd College and a Master's degree in Economics from San Francisco State University. His research interests

include microeconomics, applied econometrics, economics of innovation, and agricultural economics. His IRIS research proposal, "**Describing Heterogeneity in Research Projects Via Classification of Expenditure Profiles**," seeks to classify projects based on their expenditure profiles to produce a list of "standardized expenditure categories (SECs) together with mappings between every (IRIS) member university's idiosyncratic expenditure categories and the SECs, and a framework [...] to create mappings for new universities."

Early Career Awards



Jason Coupet is an Assistant Professor of Public Administration in the School of Public and International Affairs at North Carolina State University. He holds a Bachelor's degree in Economics from the University of Michigan, and a PhD in Management from the

University of Illinois at Chicago. His research emphasizes both efficiency measurement and the econometric investigation of the role of external funding on the efficiency of public and nonprofit organizations, with a particular emphasis on higher education. His IRIS research proposal, "**Measuring the Efficiency of the Research Enterprise,**" proposes "using a combination of operations management and organizational economics to estimate the productivity of the university and public agency grant infrastructures" to "try to capture the complexity of the research funding process and the many inputs and outputs involved."



Jonathon Mote is an Assistant Professor in the Department of Organization Sciences and Communication at the George Washington University. He holds Bachelor's degrees in Economics and History from the University of Iowa, Master's degrees in Economics and

Historical Studies from the New School for Social Research, and a PhD in Sociology from the University of Pennsylvania.

His research interests focus primarily on the interrelationship between organizational environments and networks of science and innovation. His IRIS research proposal, "**Using UMETRICS to Assess Collaboration Among Universities and National Laboratories,**" seeks to measure collaboration patterns "between member universities and the seventeen national laboratories funded and overseen by the Department of Energy" with a particular focus on the "training of STEM personnel and utilization of user facilities at national laboratories."

Established Researcher Award



Lisa Cook is an Associate Professor of Economics and International Relations in the Department of Economics at Michigan State University. She holds a Bachelor's degree in Philosophy from Spelman College and a Bachelor's degree in Philosophy, Politics and Economics from

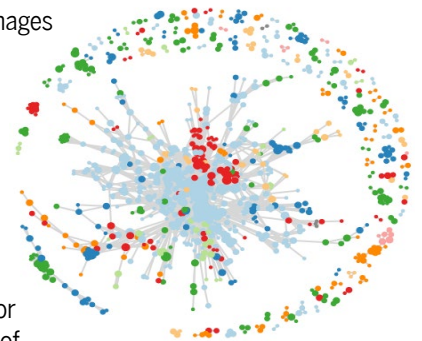
Oxford University, and a PhD in Economics from the University of California-Berkeley. Her primary research interests include economic growth and development, innovation, and financial institutions and markets. Her IRIS research proposal, "**The Idea Gap in Pink and Black,**" will examine why "rates of commercialization of ideas by women and African Americans have lagged those of U.S. inventors" and "[W]hat accounts for observed differences at each stage of the innovation process."

National Academy of Sciences Sackler Colloquium

Research has become the province of increasingly larger collaborative teams. IRIS data offer new possibilities for understanding how science investments create and sustain collaboration on and across the campuses of our member universities. Because IRIS data include information about the whole workforce (faculty, trainees, students, and staff) who work on sponsored projects, they offer a unique new way to think about how collaboration networks evolve. They also have the potential to allow researchers to explore the implications of different collaboration structures for research in training. By looking systematically at how universities organize their science it is possible to more firmly establish links between investments, the work they enable, and the outputs of trained people and new discoveries that are the core of research impact. This approach can support better understanding of how contemporary "team science" works in various contexts.

A new paper presented at the National Academy's Arthur M. Sackler Colloquium on Modelling and Visualizing Science by Jason Owen-Smith and Jacob Fisher of IRIS takes a big step in this direction by characterizing dramatic differences in the structure and composition of collaboration networks found on IRIS university

campuses. The network images demonstrate significant differences in the way that collaborations among grant-funded faculty members connect researchers working in different colleges on four IRIS campuses. The paper will soon be under review for inclusion in a special issue of *Proceedings of the National Academy of Sciences*.

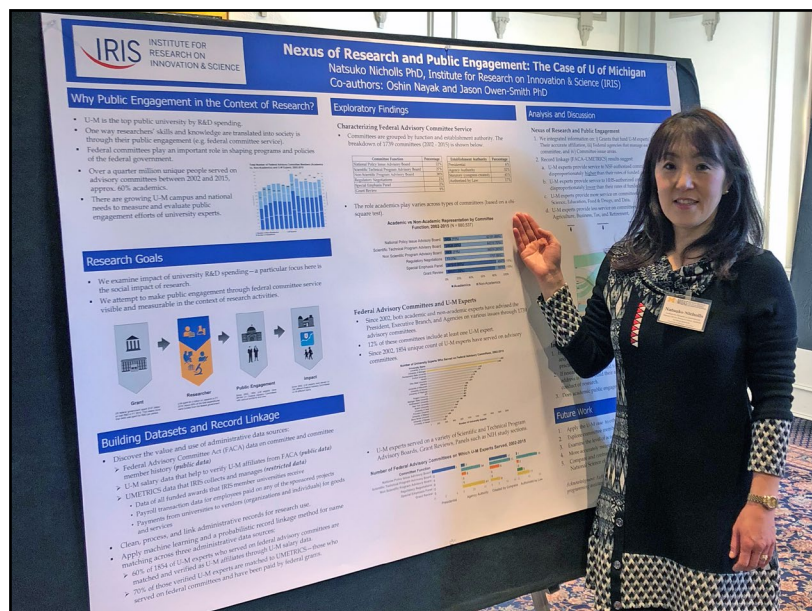


This initial work is focused on identifying the sources of those differences. Understanding how collaboration networks grow in unique ways on different campuses holds great promise for explaining the sources of competitive advantage different universities have. This line of research will also support new reporting for universities interested in better understanding how their existing research networks can create distinctive opportunities for new research and training.

Federal Advisory Committee Act Data

Natsuko Nicholls, IRIS Research Manager, presented her ongoing work with Jason Owen-Smith and graduate student Oshin Nayak, at the Data Science Research Forum hosted by the Michigan Institute for Data Science in December 2017. Their poster, entitled **Nexus of Research and Public Engagement: The Case of University of Michigan** addressed the public impact of research, focusing on the way that scientific knowledge is translated into society through researchers' public engagement (e.g., federal committee service). They discovered the value and use of administrative data sources, demonstrating benefits of linking IRIS data (restricted data) to Federal Advisory Committee Act (FACA) data on committee and committee member history (public data).

Record linkage results suggested that University of Michigan (U-M) experts provided service to NSF-authorized committees that is disproportionately higher than their rates of funded grants, and that U-M experts provide more service on committees related to topics such as computer science, education, food & drugs, and data. With a data visualization tool (e.g., alluvial/sankey chart), they made academic public engagement (via Federal Advisory committee



service data) visible and measurable in the context of university research activities. They plan to apply the U-M case to other IRIS member universities as future work.

Announcements

- **IRIS Report Webinars:** As IRIS prepares to release the next round of reports, we will be hosting webinars to walk through the reports and answer any questions you may have. Watch your email for forthcoming details about these webinars.
- **Data Submission Deadline:** April 15, 2018
- **Save the date—IRIS Data Summit:** October 15-16, 2018
- **2018 IRIS Science Advisory Board:**

Erica Fuchs
Professor, Department of Engineering and Public Policy
Carnegie Mellon University

Kaye Husbands Fealing
Chair and Professor, School of Public Policy
Georgia Institute of Technology

Ron Jarmin
Associate Director for Economic Programs, and Performing the Non-Exclusive Functions and Duties of the Director, U.S. Census Bureau

Julia Lane
Professor, Wagner School; Center for Urban Science and Progress,
Provostial Fellow, New York University

Erin Leahey
Professor of Sociology
University of Arizona

Christopher Liu
Assistant Professor, Strategic Management
University of Toronto

Andrew McCallum
Professor, Department of Computer Science
University of Massachusetts Amherst

Walter "Woody" Powell
Professor of Sociology
Stanford University

Paula Stephan
Professor of Economics
Georgia State University

Bruce Weinberg
Professor of Economics
Ohio State University