

The Institute for Research on Innovation and Science (IRIS) is a national data resource dedicated to understanding the impact of academic research conducted at universities and other institutions. This university-led consortium is currently housed at the University of Michigan's Institute for Social Research.

IRIS News

Fall 2016

IRIS

INSTITUTE FOR
RESEARCH ON
INNOVATION & SCIENCE

From the Executive Director

It has been quite a full year for IRIS. The institute continues to grow. Membership is up dramatically as new commitments represent participation from 52 campuses around the country. University specific reports developed by IRIS and in collaboration with the U.S. Census Bureau have been distributed to the members who have already submitted data. We are hard at work developing and beta testing new interactive reports that will bring even more information back to our campus partners. We are looking forward to an early September data transfer to the Census Bureau and to a new round of reports and products based on data from even more of our members.



Jason Owen-Smith

and to researchers. The IRIS virtual data enclave is up and running and teams of researchers from seven institutions are beginning to use de-identified IRIS data to pursue new analyses of the process, products, social and economic impact of academic research conducted on IRIS' member campuses. Finally, after an extended comment and revision period, we have circulated a draft set of bylaws for IRIS proposed national governing body. We hope to finalize that document and empanel a board before the end of the calendar year.

I am very proud of what the IRIS team has accomplished and hope you enjoy the news of our work. Thank you, yet again, for all you do with and for IRIS.

As you will see in reading this newsletter, IRIS research and activities are making quite a splash in the media and in discussions of science and higher education policy. New books and papers by IRIS PIs and researchers examine topics ranging from "big data" methodology to the gender gap in pay for recent doctorates and the role of academic research in sustaining a safe and secure food system. We were very pleased this year to have the AAAS Lincoln Project make use of IRIS data in two of their recent reports.

Finally, IRIS operations continue to expand. Our staff has grown to better support the needs of data collection, improvement, and protection as well as product design and outreach to our members

Membership Update

- **52** US campuses have committed to participate in IRIS
- IRIS members comprise nearly **\$25 billion in R&D**
- In 2014, R&D at IRIS member campuses comprised **36% of all US university R&D**
- IRIS members represent **21 states** and are a mix of **public and private** institutions
- **AAU and APLU** continue to support our active new member engagement strategy

From the Technical Director

My sixteen months as IRIS technical director has been exciting and, at times, daunting. In the early days IRIS was a great idea but there was little in the way of infrastructure to make it all happen. Since then, we have developed web based tools to make uploading data to IRIS as easy as possible. Countless processes have been written to manage the data once it is in our hands. Our relationship with Census has been strengthened as more universities join



Kevin Bjorne

the IRIS family and we have produced the first of the reporting products from that relationship.

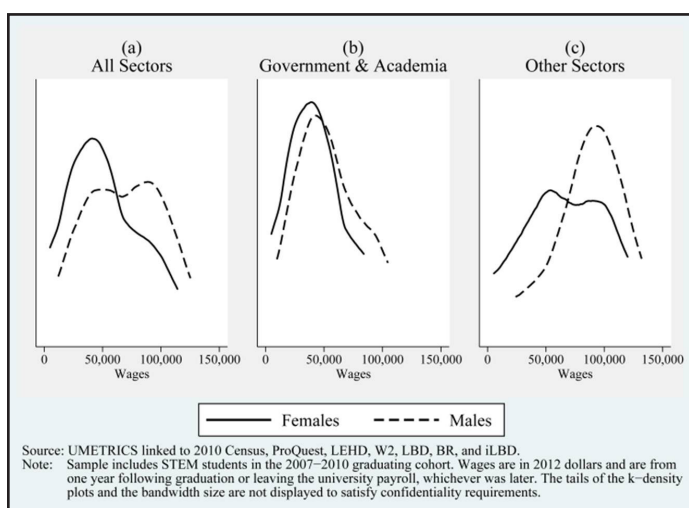
New data products have been developed, such as a federal spending report and most recently an interactive version of the report which is accessible through our secure web portal. New reports are in the works based on new data sets that can be merged with university submitted data. We are also adding a new data dashboard that will give you more feedback about the data that are submitted.

Overall, it has been a great start to IRIS and I know it will only get better.

IRIS Research

IRIS data shows young women in STEM fields earn up to one-third less than men

One year after they graduate, women with Ph.D.s in science and engineering fields earn 31 percent less than do men, according to a new study using IRIS data¹. The pay gap dropped to 11 percent when researchers took into account that women tended to graduate with degrees in fields that generally pay less than fields in which men got their degrees.



"There's a dramatic difference in how much early career men and women in the sciences are paid," said Bruce Weinberg, co-author of the study and professor of economics at The Ohio State University. "We can get a sense of some of the reasons behind the pay gap, but our study can't speak to whether any of the gap is due to discrimination. Our results do suggest some lack of family-friendliness for women in these careers."

The study appears in the [May 2016 American Economic Review: Papers and Proceedings](#). This research has been covered extensively **in the news** by Nature, Inside Higher Ed, and other publications. See the IRIS website for links at <http://iris.isr.umich.edu/index.php/2016/08/15/american-economic-review-paper-in-the-news/>

¹ Buffington, Catherine, Benjamin Cerf, Christina Jones and Bruce A. Weinberg. 2016. "STEM Training and Early Career Outcomes of Female and Male Graduate Students: Evidence from UMETRICS Data Linked to the 2010 Census." *American Economic Review*, 106(5): 333-38.

New NSF funded project using IRIS data

IRIS is a major subcontractor on the **Pathways to Science and Engineering Professions: Persistence and Career Choice for Bachelors and Masters Graduates** grant from the National Science Foundation's Education and Human Resources (EHR) Directorate. This project, led by Rutgers University, uses IRIS data to examine the conditions of training and early career outcomes of undergraduate and master's level students employed in research. In addition to quantitative work, ethnographic and interview based research conducted by the Rutgers team on a set of participating IRIS campuses will aid in data validation and provide new qualitative insights that can support further research.

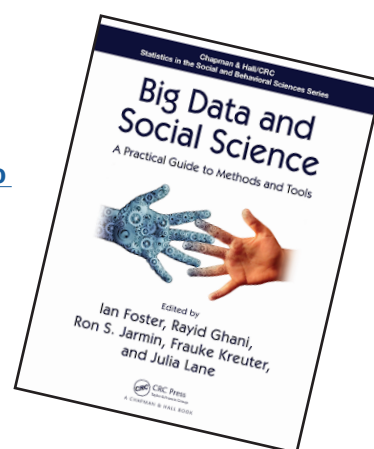


"How-to" book on data science

The new **Big Data and Social Science: A Practical Guide to Methods and Tools**² edited

by IRIS Co-PIs Ron Jarmin and Julia Lane and others shows how to apply data science to real-world problems in both research and the practice.

The book provides practical guidance on combining methods and tools from computer science, statistics, and social science. This concrete approach is illustrated throughout using an important national problem, the quantitative study of innovation.



The text draws on the expertise of prominent leaders in statistics, the social sciences, data science, and computer science to teach students how to use modern social science research principles as well as the best analytical and computational tools. It uses a real-world challenge to introduce how these tools are used to identify and capture appropriate data, apply data science models and tools to that data, and recognize and respond to data errors and limitations.

² Big Data and Social Science: A Practical Guide to Methods and Tools, Ian Foster, Rayid Ghani, Ron S. Jarmin, Frauke Kreuter, and Julia Lane (editors), Chapman and Hall/CRC Press, 2016. ISBN 9781498751407.

IRIS Team Updates

IRIS is growing by leaps and bounds, with seven new staff and students joining this year. Managing this cutting edge work requires a talented staff and we have built a team that is up for the task.

Haizan Zeng — IRIS Data Manager

Haizan came to IRIS in January of 2016 from the University of Melbourne, where she was a student completing a master's degree in finance and also a research assistant; previously she managed system operations for the Shenzhen Stock Exchange in China and also holds a master's degree in computer science. Haizan helps develop tools and scripts to facilitate automation in managing IRIS datasets, overseeing quality assurance processes, and also works on a project to develop network visualizations. Haizan's creativity and expertise add considerable depth to the IRIS technical team.

Nancy Calvin-Naylor — IRIS Managing Director

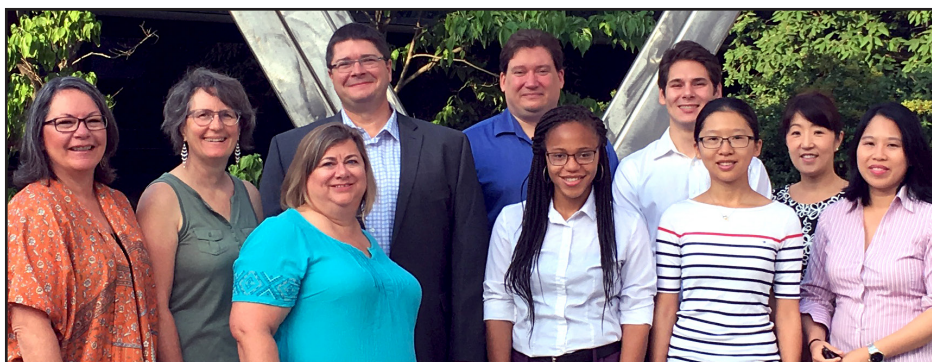
Nancy joined the IRIS team in February 2016, coming from the University of Michigan Medical School's CTSA institute, where she directed educational programs in translational research. She earned a Ph.D. in higher and postsecondary education from the University of Michigan's Center for the Study of Higher and Postsecondary Education. Nancy is part of the IRIS leadership team at the University of Michigan, assuming operational responsibility and program management duties, as well as outreach and engagement with IRIS members (and potential members) and stakeholders.

Natsuko Nicholls — IRIS Data Manager

Natsuko joined IRIS in May of 2016 from the Virginia Tech University Libraries, where she served as a research data consultant and assistant professor. She earned a Ph.D. in political science from the University of Michigan, and brings extensive knowledge of data initiatives and curation. Natsuko is leading our efforts to make de-identified data available to researchers via the IRIS virtual data interface, helping to develop policies and procedures. She is also spearheading efforts in documentation management and will help develop analytic tools.

Evalyn Yanna — IRIS Administrative Assistant

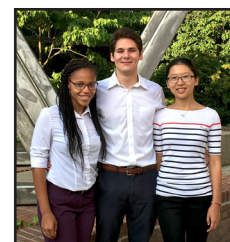
Evalyn recently joined IRIS in August of 2016, coming from Housing Information Technology at the University of Michigan. She brings a wealth of experience in providing support to a technically-focused team. She holds a bachelor's degree in organizational administration and a minor in psychology from Central Michigan University. She will be the first point of contact for stakeholders, members, and researchers, and we couldn't be more delighted to have Evalyn join the team.



Back row from left to right: Nancy Calvin-Naylor, Karen Woollams, Jason Owen-Smith, Kevin Bjorne, Paul Vicinanza, Natsuko Nicholls. Front row from left to right: Evalyn Yanna, Micaela Hunter, Xiaofan Ji, Haizan Zeng.

Micaela Hunter, Paul Vicinanza, and Xiaofan Ji — IRIS Technical Students

The success IRIS has experienced this year is also due to the very talented students who have been working with us. Xiaofan and Micaela are both master's students in the University of Michigan's School of Information, while Paul is a recent graduate from the University of Michigan with a triple major in economics, sociology, and organizational studies. We know these students will go on to do great things and feel so fortunate that they've chosen to spend time with us at IRIS.



Lest we forget....

Kevin Bjorne — IRIS Technical Director

If you haven't spoken to Kevin yet, rest assured that you will soon. He came to IRIS in May of 2015 from Lake Superior State University, where he worked in institutional research. Kevin earned a bachelor's degree in science and technical communications from Michigan Technological University and is currently pursuing a master's degree in predictive analytics from Northwestern University. Kevin directs the technical team at IRIS, having built the data architecture and infrastructure from the ground up to make this work possible.

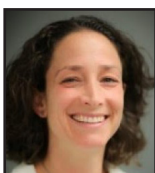
Karen Woollams — IRIS Research Coordinator

Karen was the first IRIS employee at the University of Michigan, moving from the School of Information in February 2015. Karen brings extensive research coordination experience with her, and provides this expertise to IRIS-related research activities as well as providing support for IRIS financial management. Karen earned a master's degree in social work from the University of Michigan and a bachelor's degree in history from Colorado College. She has been instrumental in helping to build the University of Michigan IRIS team and in providing support to Jason and Kevin in developing the technical infrastructure of IRIS.

And how about....

Rebecca Rosen, IRIS Product Manager

Rebecca is part of the founding IRIS team. Since 2014 she has worked closely with UMETRICS and IRIS researchers, data analysts, and university representatives to design all UMETRICS and IRIS data products, including a prototype dashboard, IRIS funding reports and Census hot reports. She is now leading the product development and dissemination strategy with the new IRIS data analysis and visualization team from her



position as associate director for Data resources and data strategy at the New York University Center for Urban Science + Progress.

And the IRIS Pls...

James Evans (University of Chicago)

Ron Jarmin (Census Bureau)

Julia Lane (New York University/Census Bureau)

Barbara McFadden-Allen (Big Ten Academic Alliance)

Jason Owen-Smith (University of Michigan)

Bruce Weinberg (Ohio State University)



Influence of IRIS

The **Lincoln Project**, named for President Abraham Lincoln to mark the Morrill Act of 1862, was undertaken by the American Academy of Arts & Sciences (AAAS) as a study of the state of public higher education in the United States today.

AAAS published a series of reports that focused on the impact of higher education institutions as drivers of economic development and opportunity. **Maps created by IRIS** demonstrating the reach and impact of research vendor spending by eight public research universities were featured prominently in two of these reports. See <https://www.amacad.org/content.aspx?d=929>.

Access to IRIS Data for Research

One of our key goals is to provide researchers with access to a cleaned and aggregated de-identified dataset. IRIS enables data access and sharing through a secure enclave where we protect the confidentiality and privacy of our member universities. The IRIS Technical and Research Support Team has developed infrastructure and user support services to assist researchers with

accessing and using de-identified IRIS data through the **Virtual Data Infrastructure (VDI)**. The VDI provides a point of access to requested data elements. For more information about access and restricted use of IRIS data, visit the [research page](#) on our website (iris.isr.umich.edu/research/data-access-faq/) or email IRIS-contact@umich.edu.

Data Summit September 21

IRIS is hosting our annual IRIS Data Summit on September 21, in Washington DC. IRIS data leads from over 20 member universities will gather to provide input and guidance to IRIS as the data infrastructure is built to a national scale. We believe it is critical to have the input of data providers and to facilitate a community of IRIS data providers who can develop and share best practices. The 2016 Data Summit will comprise three working sessions: **IRIS Products**, **Data Quality**, and **New Data Fields**. Each session will be hosted by a university data lead. All attendees will contribute to the development of recommendations regarding new and existing products and updates to the IRIS data pipeline.



May 28, 2015 Data Summit

Institute for Research on Innovation & Science

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