Measuring the Results of Research Investments

To further inform the regional, national and international debate on how to measure the results of research investments, the Committee on Institutional Cooperation, the Ohio State University, and the American Institutes for Research are hosting a research workshop to bring together Vice Presidents for Research of CIC Institutions and academic researchers who have been developing data, models, and tools in the academic arena. The goal is to develop a more scientific basis for decision-making by developing open and transparent measures and methods to quantify scientific, economic, and social impact that can be used and trusted by policymakers.

Date: March 29, 2013
Location: Gleacher Center, University of Chicago
Room 408
Organizers: Barbara McFadden Allen; CIC, Bruce Weinberg, OSU; and Julia Lane, AIR

Agenda
CIC - Star Metrics Handout

1) Work in Progress (Mairesse & Stephan, Feldman)
2) Results of Science (OwenSmith & Levenstein, Weinberg, Husbands Fealing)
3) Keynote Speaker (Freeman)
4) Research Support (Tomkins, Morpew)
5) Data Advances (Evans & Foster, Giles, Torvik)
6) Who Does Science (Contractor, Cook, Li)
7) Closing and Next Steps (Parnes)

Summary of Sessions

Impacts of Research
Margaret Levenstein and Jason Owen Smith (Michigan); Kaye Husbands Fealing (Minnesota); Bruce Weinberg (Ohio State)
Gone are the days when the advancement of knowledge per se served to justify science spending. Today, policy makers view science as an investment and expect it to be justified by its impacts such as “job creation.” These researchers discuss cutting-edge methods to study a wide range of impacts of science. Husbands Fealing focuses on flows of students from research projects to employers. Owen Smith and Levenstein analyze a wide range of impacts, from student flows to research impacts. Both rely on unique opportunities available at their home institutions, the Universities of Minnesota and Michigan. Meeting co-organizer, Weinberg discusses ways to quantify the economic impacts of science of research at a range of levels, from individual research units within universities to the scientific enterprise as a whole.

Engaging Internal Stakeholders: Scientists
Ian Foster (Chicago)
In order to optimize the scientific enterprise, it is essential to understand how scientists operate and to develop that understanding, it is critical to have data on scientists and their activities. A leading proponent of distributed computing, Foster discusses how to profiling and collaboration tools can be designed to draw in scientists drawing on lessons from social media. The results will enhance our understanding of institutions’ research portfolios, the links between internal research communities, and potential collaborators.

Research Support: Understanding and Communicating

Participating Researchers

Noshir Contractor, Northwestern University
Lisa Cook, Michigan State University
James Evans, University of Chicago
Ian Foster, University of Chicago
Lee Giles, Pennsylvania State University
Kaye Husbands Fealing, University of Minnesota
Ron Lai, IDEAS
Julia Lane, American Institutes for Research
Margaret Levenstein, University of Michigan
Danielle Li, Northwestern University
Christopher Morpew, University of Iowa
Jason Owen-Smith, University of Michigan
Lisa Pytlík Zillig, University of Nebraska
Alan Tomkins, University of Nebraska
Vetle Torvik, University of Illinois Urbana
Brian Uzzi, Northwestern University
Bruce Weinberg, Ohio State University

University Representatives

Richard Buckius, Vice President for Research, Purdue University
Marietta Harrison, Associate Vice President for Research, Purdue University
Julie Jarvis, Director of Government Costing, OBFS Grants and Contracts
Frances Lawrenz, Associate Vice President for Research, University of Minnesota
Melanie Loots, Executive Associate Vice Chancellor for Research, University of Illinois Urbana
Andrew Ludington, Associate Director of Electronic Research Administration, Northwestern University
Estelle McGroarty, Assistant Vice President, VP Research and Graduate Studies, Michigan State University
Marvin Parnes, Associate Vice President for Research and Executive Director of Research Administration, University of Michigan
Prem Paul, Vice Chancellor for Research and Economic Development, University of Nebraska, Lincoln
Cheryl Reardon, Assistant VP for Research, University of Iowa
Dave Richardson, Associate Vice Chancellor for Research and Director of Sponsored Programs
Mark Sweet, Director of Electronic Research
Research universities engage in a wide array of activities beyond research from teaching to service and even athletics. Research is frequently supported by large and often implicit transfers, the value of research is not always fully appreciated and, especially at public institutions, policy makers may not appreciate the value of research. An expert on state higher education policy and higher education marketing and communication, Morphew builds on ongoing research to study the transfers that arise within research universities to assist research offices understand where research support originates. PytlikZillig and Tomkins draw on their work to address the critical issue of how to effectively communicate the impacts of research to state policy makers.

Data Advances
_Vetle Torvik (Illinois); Ian Foster and Ian Foster (Chicago); Lee Giles (PSU)_

A myriad of advances in our ability to harvest, combine, and mine vast quantities of data as well as draw in data from scientists themselves are surely the single most important driver behind the development of the science of science and innovation. An emerging researcher, Torvik discusses his work to accurately and consistently identify authors of publications and patentees and match authors of publications to patentees. A leading proponent of distributed computing, Foster discusses how to profiling and collaboration tools can be designed to draw in scientists drawing on lessons from social media. Giles’s CiteSeerX suite of tools is an automated platform to identify and collect scientific outputs. It is currently the one the most comprehensive and widely-used online public resources for the computer and information science and is rapidly expanding into other fields. The results will provide the underlying data to understand institutions’ research portfolios and identify the links between internal research communities, and potential collaborators.

Who Does Science and How?
_Noshir Contractor and Brian Uzzi (Northwestern); Danielle Li (Northwestern); Lisa Cook (Michigan State)_

What are the benefits of scientific collaboration and how have collaborations changed over time? How do gender and race affect scientific contributions and their commercialization? How do scientists respond to rapid advancements in their fields? To make the most of their researchers, universities and funding agencies must thoroughly understand how scientists from a wide range of backgrounds work and how they respond to changes in their fields. Contractor and Uzzi build on their extensive work on collaboration networks and team science. Emerging scholar, Danielle Li uses the development of high-throughput gene sequencing technology to shed light on how researchers respond to radical technological change in their fields. Cook looks at the critical question of racial and gender differences in the production and commercialization of knowledge.

Description of Proposed Research Projects

_Michigan State University Project_

_Northwestern University (Li) Project_

_Northwestern University (Uzzi & Contractor) Project_

_Pennsylvania State University Project_
The Ohio State University Project
University of Chicago Project
University of Illinois Project
University of Iowa Project
University of Michigan Project
University of Minnesota Project
University of Nebraska Project