Institute for Research on Innovation & Science (IRIS)

Jason Owen-Smith
IRIS/University of Michigan
jdos@umich.edu
Iris.isr.umich.edu
@IRIS_UMETRICS
In 2004, Jack Marburger issued a call for better ways to understand and measure the impact of science.
IRIS was founded in 2015 to answer that call

New information on three routes to economic impact

1. The careers of trained people
2. The purchase of goods and services
3. Entrepreneurship
Careers

Federal grants to 24 IRIS member campuses
• Paid nearly 122,000 people in FY 16
• Just over 47% of those were students or trainees
• 1 in 5 were faculty

When research trained students left 21 of those campuses
• 62% worked in the private sector
• After 3 years they made an average of nearly $92,000
• 43% stayed in the state where they were trained
• The rest spread across all 50 states
Vendor Purchases

In Fiscal 2016, 26 IRIS Member institutions

• Spent $2.5 billion from federal grants for goods and services to support research
• ~$600 million stayed in universities’ home states
• Purchases from businesses in 1819 U.S. Counties and
• 435 congressional districts
• $5 million + purchases from businesses in 11 industries including:
  ➢ Professional Scientific and Technical Services
  ➢ Healthcare and Social Assistance
  ➢ Information
  ➢ Manufacturing
  ➢ Construction
Entrepreneurship

University trained researchers hired by startups

• Were more likely to join High Tech ventures
• Particularly when funded by NSF, DOE and DOD grants
• Startups that hired university-trained researchers were significantly more likely to grow in terms of both employees and revenues
• Contributions of university trained researchers explains
  ➢ ~40 % of variation in start-up patenting
  ➢ ~11% of variation in start-up trademarking
How do we know?
Framework

Science Investments → Fund → Universities

Discovery Learning Dissemination

Knowledge, People, Skills

Hiring, Spending

Jobs Stimulus

Innovation
Entrepreneurship
Economic Growth
Public Health
Food Safety
Security
(More) Rational Policy
...

Framework


Background

- Recession & Stimulus
- Federal **STAR METRICS** (Level 1) Program
- **CIC/UMETRICS** Pilot Project
- Institute for Research on Innovation and Science (IRIS)
  - Founded 01/01/2015
  - Core facility at University of Michigan
  - 3 years seed funding for infrastructure from Sloan & Kauffman
  - 32 signed MOUs (26% federal R&D)
  - 40 more campuses in some stage of negotiation
  - Final goal = 150 (93% federal R&D)

PI Team: Julia Lane (NYU), Jason Owen-Smith (Michigan), Bruce Weinberg (Ohio State), Ron Jarmin (U.S. Census)
MEMBERS: Universities contribute data, support infrastructure and receive campus-specific and aggregate reports

NODES: Approved nodes materially improve data, develop products, and expand user communities

USERS: Approved users securely access de-identified aggregate datasets

PARTNERS: Approved partners receive data from IRIS which they improve and make accessible through their own secure systems
What do IRIS members get?

• Three interactive, campus specific reports
• Benchmarking against selected aggregate groups
• Data access for affiliated researchers
• A role in governance
• A seat at the table to inform future products
• Inclusion in aggregate reporting
• A new opportunity to shape the national conversation about academic research
Reports

• Spending
• Employee Profile
• Vendor Profile
## Governance

- Annual elections
- Members nominate and vote
- 6 university Directors

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>University/Institution</th>
<th>Term Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mary Sue Coleman</td>
<td>President, Association of American Universities</td>
<td>(at-large member)</td>
<td></td>
</tr>
<tr>
<td>Kimberly Espy</td>
<td>Senior Vice President for Research &amp; Chief Research Officer</td>
<td>University of Arizona</td>
<td>April 1, 2017-March 31, 2020</td>
</tr>
<tr>
<td>Kimberly Griffin</td>
<td>Director for Electronic Research Administration</td>
<td>Northwestern University</td>
<td>April 1, 2017-March 31, 2018</td>
</tr>
<tr>
<td>James Hilton</td>
<td>Vice Provost for Academic Innovation, University Librarian &amp; Dean of Libraries</td>
<td>University of Michigan</td>
<td>April 1, 2017-</td>
</tr>
<tr>
<td>Christopher Molloy</td>
<td>Senior Vice President, Office of Research &amp; Economic Development</td>
<td>Rutgers University</td>
<td>April 1, 2017-March 31, 2018</td>
</tr>
<tr>
<td>Daniel Reed</td>
<td>Vice President for Research and Economic Development</td>
<td>University of Iowa</td>
<td>April 1, 2017-March 31, 2020</td>
</tr>
<tr>
<td>Neil Sharkey</td>
<td>Vice President for Research, Pennsylvania State University</td>
<td>Pennsylvania State University</td>
<td>April 1, 2017-March 31, 2019</td>
</tr>
<tr>
<td>Caroline Whitacre</td>
<td>Senior Vice President for Research, Ohio State University</td>
<td>Ohio State University</td>
<td>April 1, 2017-March 31, 2019</td>
</tr>
</tbody>
</table>
Opportunities for Engagement

• BoD Elections/Nominations/Representatives
• Technical Advisory Group
• Quarterly Newsletter
• Annual Data Summit Meeting
• Policy and Outreach Advisory Committee
Research Access

• 38 research users in IRIS VDE
• From 14 institutions
• Pilot Grants with support from Sloan

http://iris.isr.umich.edu/research-data/grants/research-grants-awardees/
First Research Data Release (next in March 2018)

• 19 universities
  • $11B in 2014 federal R&D (16% of total)

• Transaction level data
  • 162,694 federal and non-federal sponsored projects
  • 333,565 individuals
    • 28,641 Post-Docs
    • 76,295 Grad Students
    • 87,195 Undergrads
  • $18.1B in vendor spending to ~81,000 establishments
  • $6B in subcontracts to other performers

• Links to abstracts etc for federal awards (NIH, NSF, USDA)
• Individual level links to dissertation information
• Title 13 crosswalks to LEHD, LBD, ACS, Decennial Census (available only through the FSRDC system)
Future directions for reporting

- Federal Advisory Committee Service
- Collaboration Networks
- Large Scale Research Projects (CTSA & XSEDE)
- Post-Docs and Trainees
- Non-Federal sponsored projects
Funding and Federal Committee Service (One University)
K Awardees (one university)

- **K Comparison Group**
  - (n=1280)

- **817 people did not leave 2004-2014; status unknown**
  - (64% of total K Comparison Group)

- **556 people left 2004-2014**
  - (43% of total K Comparison Group)
  - ***
  - We can track 312 of these individuals
  - (55% of leavers)

- **244 people do not appear in subsequent wage data**
  - (44% of leavers)

- **183 people left and state of**
  - (59% of leavers working elsewhere)
  - - California n=27
  - - Illinois n=21
  - - Not disclosed n=135

- **129 people left but working in state of**
  - (41% of leavers working elsewhere)
Subaward Tracing
What do IRIS members contribute?

- Data
- Contacts
- $25,000/year
What you can do

• Help IRIS grow by encouraging your university to participate
  ➢ Contact me with questions and for details – jdos@umich.edu

• Spread the word to colleagues and students

• Use IRIS data your research
  ➢ [iris.isr.umich.edu/research-data/](http://iris.isr.umich.edu/research-data/)
  ➢ Look for the next IRIS research grant call

• Help us conceptualize and develop new reports (POAC)
Thank You!