UMETRICS @ Institute for Research on Innovation & Science (IRIS)

Creating trusted, independent data about research

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➢ **UMETRICS** is

- A CIC initiative to create independent statistical evidence about the value of university research, provide powerful information for outreach, and integrate university administrative data with restricted U.S. Census Bureau data

➢ **IRIS** is

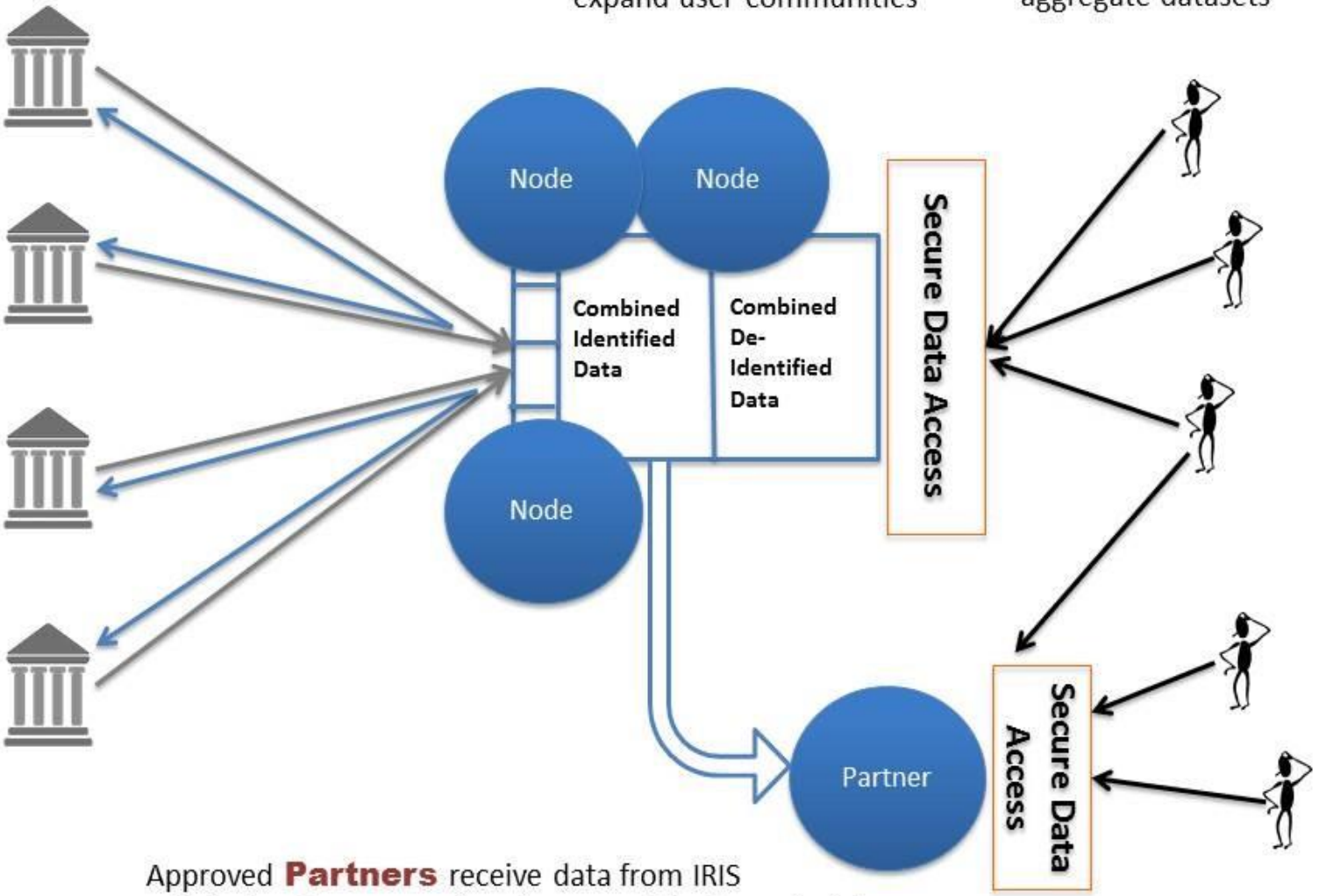
- a new, IRB-approved platform to make UMETRICS a trusted and permanent national data resource for the academic community. It is member-driven, created by and for universities.

Institute for Research on Innovation & Science (IRIS)

Member universities contribute data, support infrastructure and receive campus-specific and aggregate products

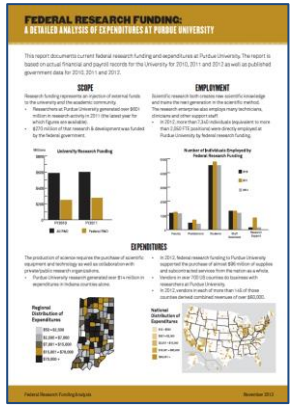
Approved **Nodes** materially improve data, develop products, and expand user communities

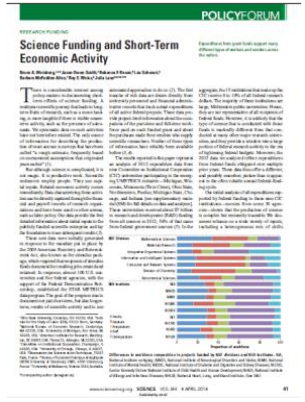
Approved **Users** securely access de-identified, aggregate datasets



Approved **Partners** receive data from IRIS which they improve and make accessible through their own secure systems

Creating new research and reports





UMETRICS @ IRIS

UMETRICS participants:

Goal: National Coverage in 3-5 Years

- >150 institutions
- All 50 states
- >90% R&D Spending

Seed Funding for IRIS infrastructure:

STAR METRICS LEVEL 1 demonstrated the value universities can generate using this approach

UMETRICS @ IRIS continues and expands this effort

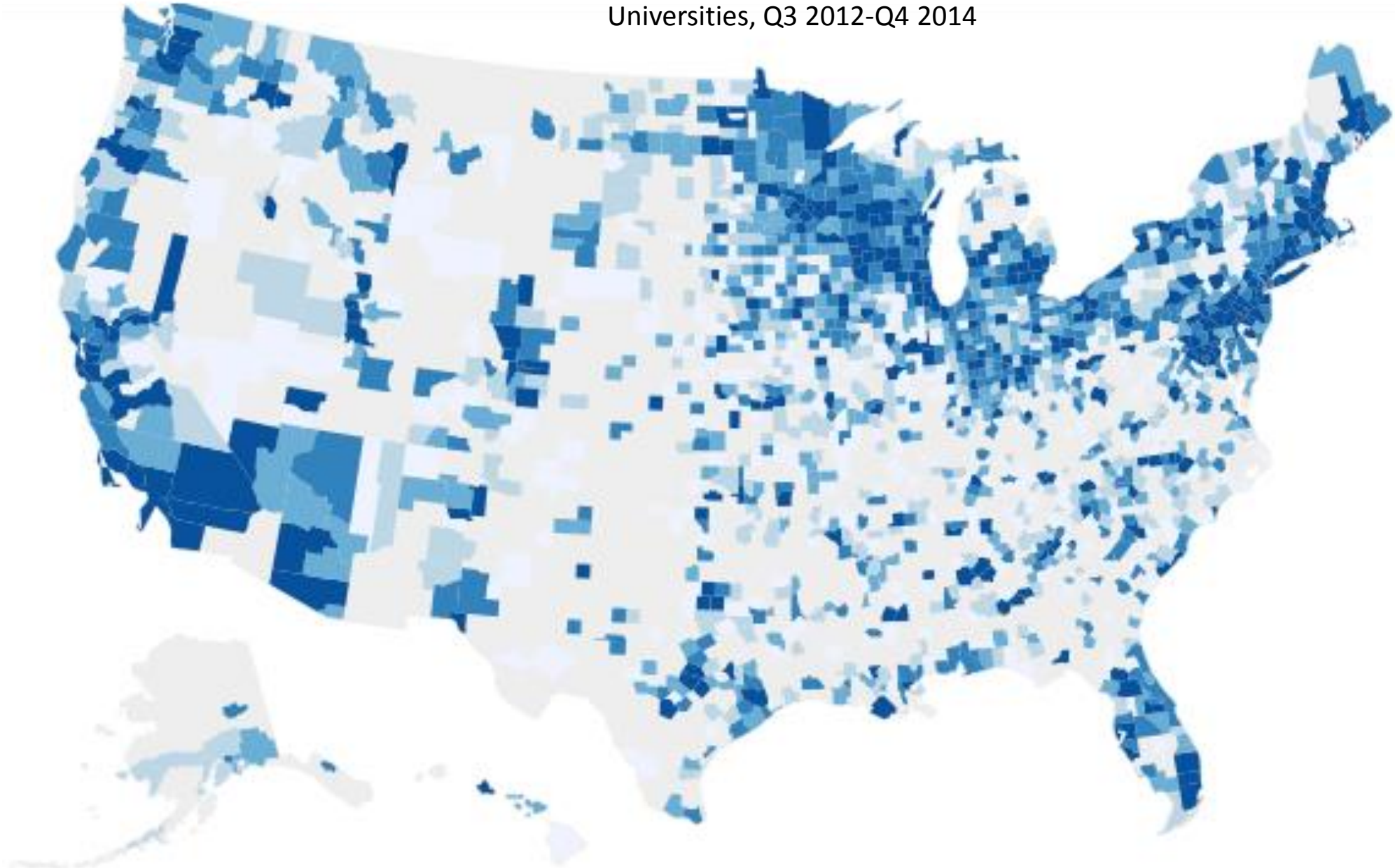
A permanent, national data repository based on the STAR METRICS system implemented by NIH is under construction at Michigan

STAR METRICS Institutions are uniquely positioned to join UMETRICS @ IRIS

UMETRICS currently provides

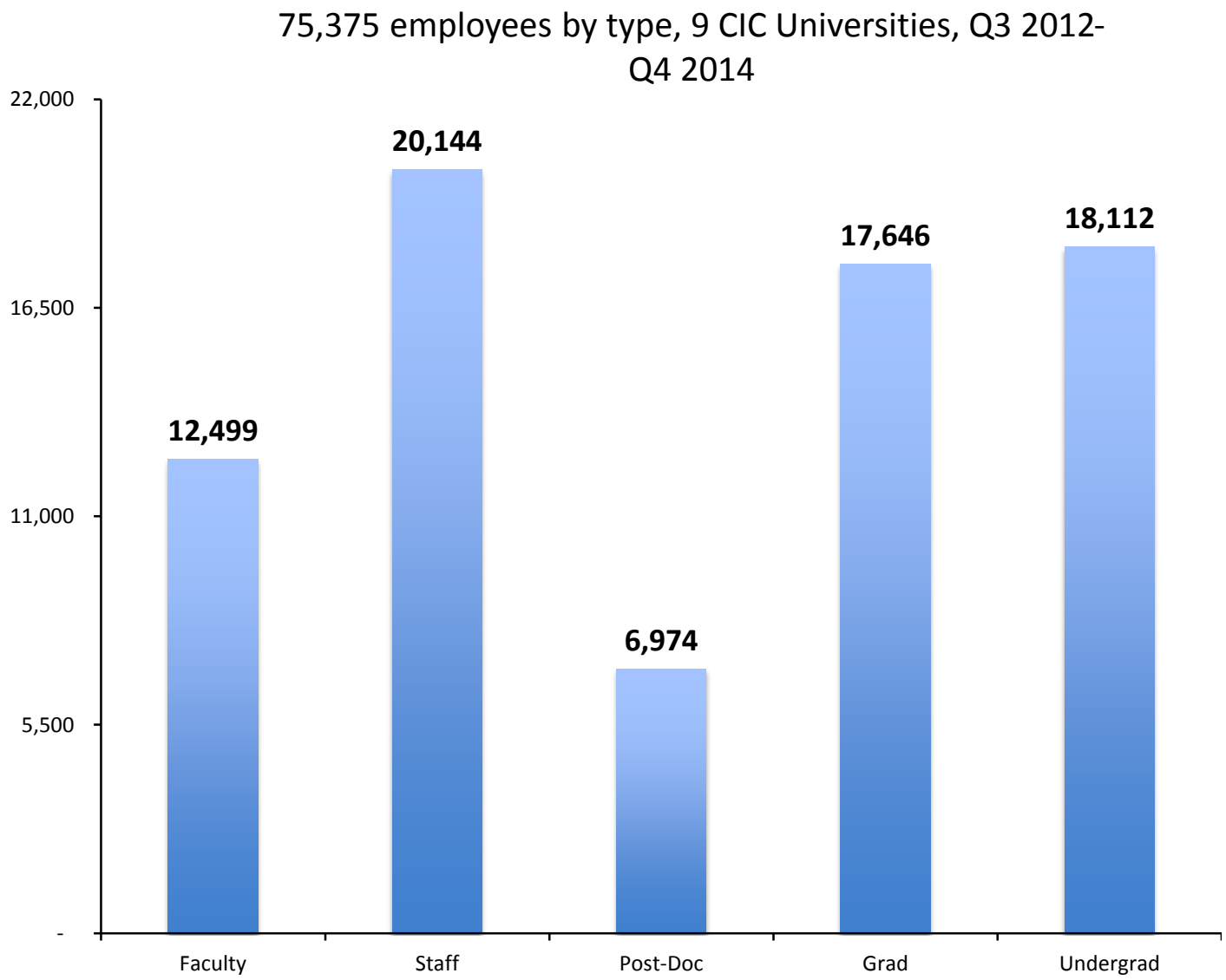
Independent statistical evidence about national, regional & local economic impact

$1.949 Billion in Direct Cost Vendor Purchases from 9 CIC Universities, Q3 2012-Q4 2014



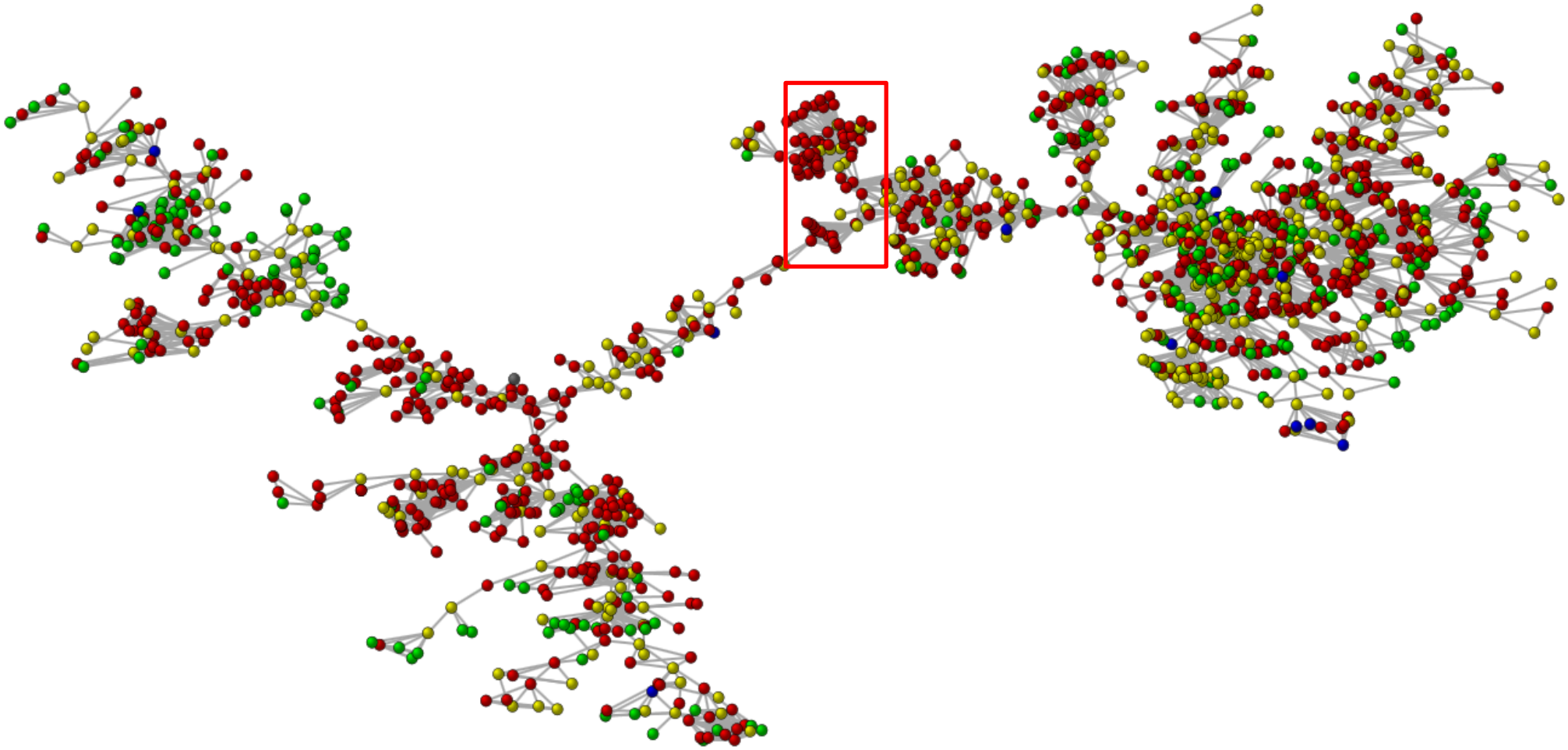
UMETRICS currently provides

Independent statistical evidence about academic workforce composition



UMETRICS Currently provides

Independent statistical evidence about academic research collaborations



Networks provide insights into conditions of training and their relationship to career outcomes

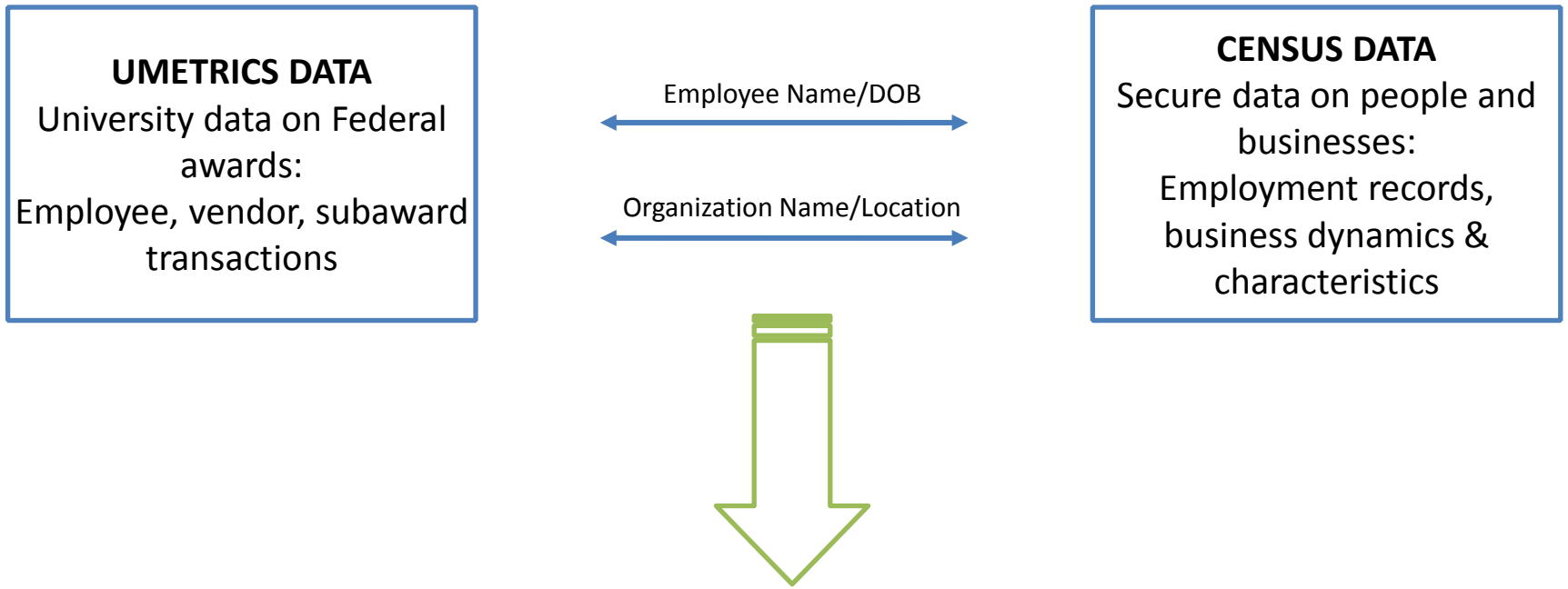
Links to academic outputs (publications, patents, grant information) inform innovation

Census Links

- Census data contains information on (essentially) the population of organizations that employ people and the population of people who are employed in the US
- **Preliminary** findings rigorously screened to protect privacy
- More Census work remains to be done to validate
- No burden on universities – work all done at Census

Work done by Nikolas Zolas, Catherine Buffington, Nathan Goldschlag & Julia Lane

Linking UMETRICS to CENSUS data to generate new indicators



Analyze by: Occupational category | Funding agency | Research area | Years since leaving university

2010 Cohort 2-digit NAICS

NAICS	NAICS Description	LBD	All Universities
11	Forestry, Fishing, Hunting, and Agriculture Support	1.12%	0.77%
21	Mining	0.59%	0.36%
22	Utilities	0.72%	0.32%
23	Construction	4.64%	2.63%
31-33	Manufacturing	9.75%	12.24%
42	Wholesale Trade		
44-45	Retail Trade		
48-49	Transportation and Warehousing		
51	Information		
52	Finance and Insurance		
53	Real Estate and Rental and Leasing		
54	Professional, Scientific, and Technical Services		
55	Management of Companies and Enterprises		
56	Administrative and Support and Waste Management and Remediation Services		
62	Health Care and Social Assistance		
71	Arts, Entertainment, and Recreation		
72	Accommodation and Food Services		
81	Other Services (except Public Administration)		

Where do research employees get their next jobs?

2010 Cohort 3-digit NAICS (Manufacturing)

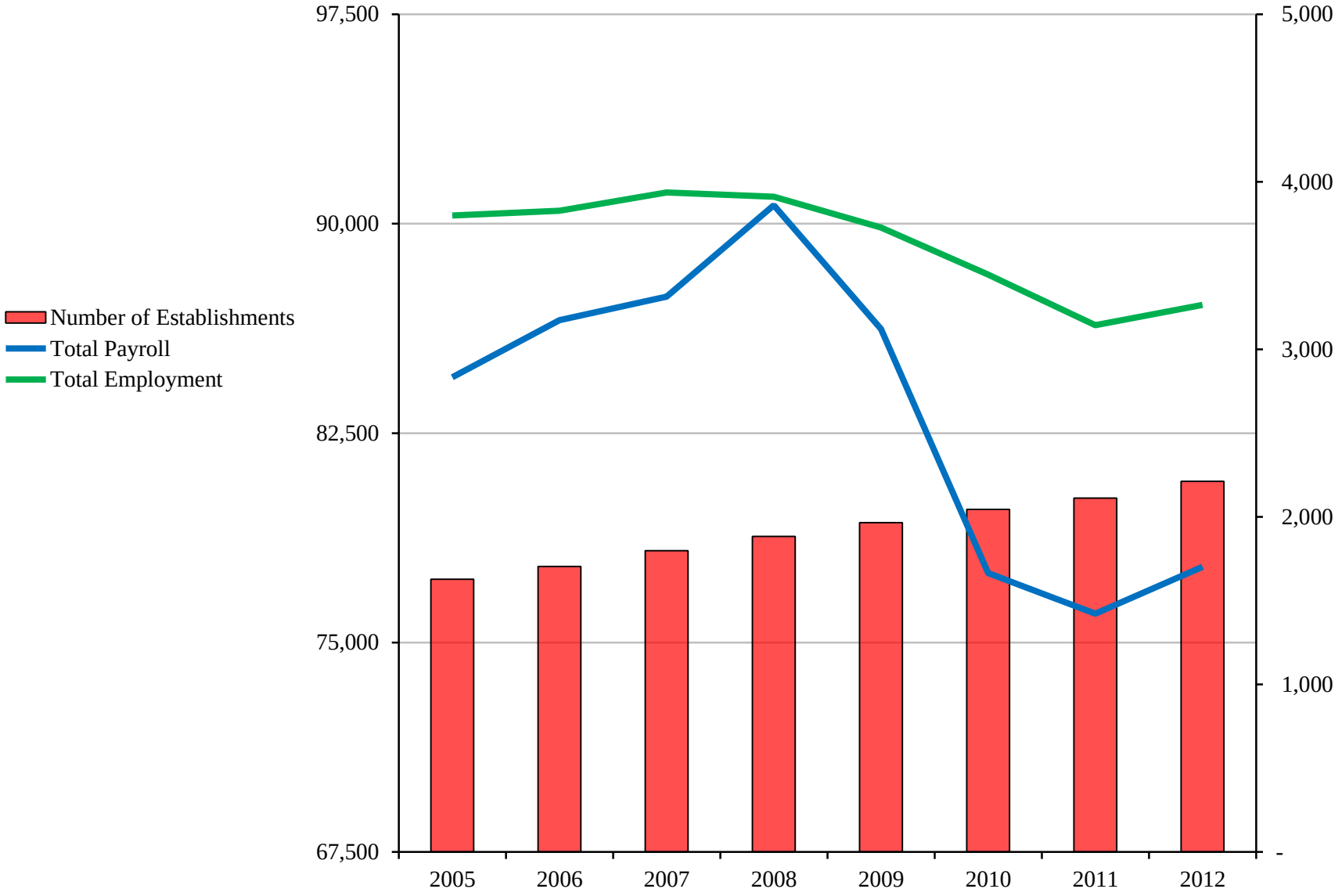
NAICS	NAICS Description	LBD	All Universities
330	Primary Metal Manufacturing	0.00%	0.01%
331	Primary Metal Manufacturing	0.33%	0.28%
332	Fabricated Metal Product Manufacturing	1.18%	1.01%
333	Machinery Manufacturing	0.85%	1.38%
334	Computer and Electronic Product Manufacturing	0.78%	1.73%
335	Electrical Equipment, Appliance, and Component Manufacturing		
336	Transportation Equipment Manufacturing		
337	Furniture and Related Product Manufacturing		
339	Miscellaneous Manufacturing		
541	Professional, Scientific, and Technical Services		
621	Ambulatory Health Care Services		
622	Hospitals		
623	Nursing and Residential Care Facilities		
624	Social Assistance		

2010 Cohort 4-digit NAICS (Computer & Electronics Manufacturing)

NAICS	NAICS Description	LBD	All Universities
3341	Computer and Peripheral Equipment Manufacturing	0.06%	0.26%
3342	Communications Equipment Manufacturing	0.10%	0.17%
3343	Audio and Video Equipment Manufacturing	0.01%	0.02%
3344	Semiconductor and Other Electronic Component Manufacturing	0.25%	0.54%
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	0.34%	0.74%
3346	Manufacturing and Reproducing Magnetic and Optical Media	0.01%	0.00%
5411	Legal Services	1.02%	1.23%
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	1.15%	1.29%
5413	Architectural, Engineering, and Related Services	1.13%	1.92%
5414	Specialized Design Services	0.09%	0.04%
5415	Computer Systems Design and Related Services	1.30%	1.99%
5416	Management, Scientific, and Technical Consulting Services	0.86%	1.67%
5417	Scientific Research and Development Services	0.63%	0.00%

Over three years (2010 – 2012) just over 59% get jobs in industry, just under 33% get jobs in academia.

Business Dynamics for the Companies They Found



1700-2200 new firms employing **3000-4000** people **<u>per year</u>** (2005-2012)

Vendor Activity by Industry

- At a single university we find a focus on
  - Semiconductors and electronics
  - Engineering services
  - Research services

NAICS	NAICS Description	Univ X	US
331	Primary Metal Manufacturing	0.20%	0.36%
332	Fabricated Metal Product Manufacturing	9.68%	1.68%
333	Machinery Manufacturing	4.67%	0.92%
334	**Computer and Electronic Product Manufacturing**	**17.63%**	0.62%
335	Electrical Equipment, Appliance, and Component Manufacturing	2.01%	0.25%
336	Transportation Equipment Manufacturing	0.47%	0.64%
337	Furniture and Related Product Manufacturing	0.53%	0.39%
339	Miscellaneous Manufacturing	1.63%	0.58%
541	**Professional, Scientific, and Technical Services**	**17.32%**	8.27%
	All 3-Digit Industries	100.00%	100.00%

NAICS	NAICS Description	Univ X	US
3341	Computer and Peripheral Equipment Manufacturing	1.11%	0.08%
3342	Communications Equipment Manufacturing	0.99%	0.08%
3343	Audio and Video Equipment Manufacturing	(D)	0.02%
3344	**Semiconductor and Other Electronic Component Manufacturing**	**8.25%**	0.21%
3345	**Navigational, Measuring, Electromedical, and Control Instruments Manufacturing**	**7.07%**	0.22%
3346	Manufacturing and Reproducing Magnetic and Optical Media	(D)	0.02%
5411	Legal Services	0.36%	1.44%
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	0.28%	0.50%
5413	**Architectural, Engineering, and Related Services**	**7.55%**	1.25%
5414	Specialized Design Services	0.07%	0.22%
5415	Computer Systems Design and Related Services	2.93%	2.23%
5416	Management, Scientific, and Technical Consulting Services	1.23%	1.10%
5417	**Scientific Research and Development Services**	**4.60%**	0.29%
	All 4-Digit Industries	100.00%	100.00%

In the future we might use

UMETRICS data to

- Understand complex collaborations on and across campuses
- Explain the effects of institutional, private, and state funding
- Evaluate the effect of institutional investments and initiatives
- Document discoveries and innovations from academic research

UMETRICS/Census data to

- See the economic and social effects of academic entrepreneurship
- Explain the value science trained graduates bring to their employers
- Rigorously estimate local, state and national economic returns to university work
- Characterize student, faculty, and staff entrepreneurship and its effects

As IRIS expands

- More campuses mean more fine grained reporting
- Longer time frame, trustworthy trend data
- Detailed information on research outcomes
- New research findings inform product development
- Interactive reporting mechanisms
- . . .

Becoming an IRIS Member

- 3 year, "early adopter" commitment to
  - Sign IRIS MOU
  - Provide quarterly data feeds
  - Identify data and communication contacts
  - Contribute a modest yearly fee to support infrastructure

- Members receive
  - Individual and collective reports
  - Underlying tables and graphics for your use
  - Access to aggregate data for your researchers
  - A seat at the table for new product design
  - Other products and services with additional investments