

# Being more scientific about scientific integrity

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# A comparative benchmarking database: why, what, and how

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ILLINOIS

[illinois.edu](http://illinois.edu)

# At ncppe, we:



recognize that no one seeks disaster; small choices are important in personal and ethical pathways



educate about ethics as the smart choice, not just the right choice



develop leaders using evidence-based, practical, applied strategies



create tools, systems, and resources to help others educate about ethics and leadership



help institutions assess the integrity of their environments



when things go wrong, we provide strategies for salvage and for returning to business as usual



People are complicated



Context matters

Reproducibility of Research: Issues and Proposed Remedies



**2017 Sackler Symposium: Reproducibility**



# people are complicated



## Human judgment and ambition

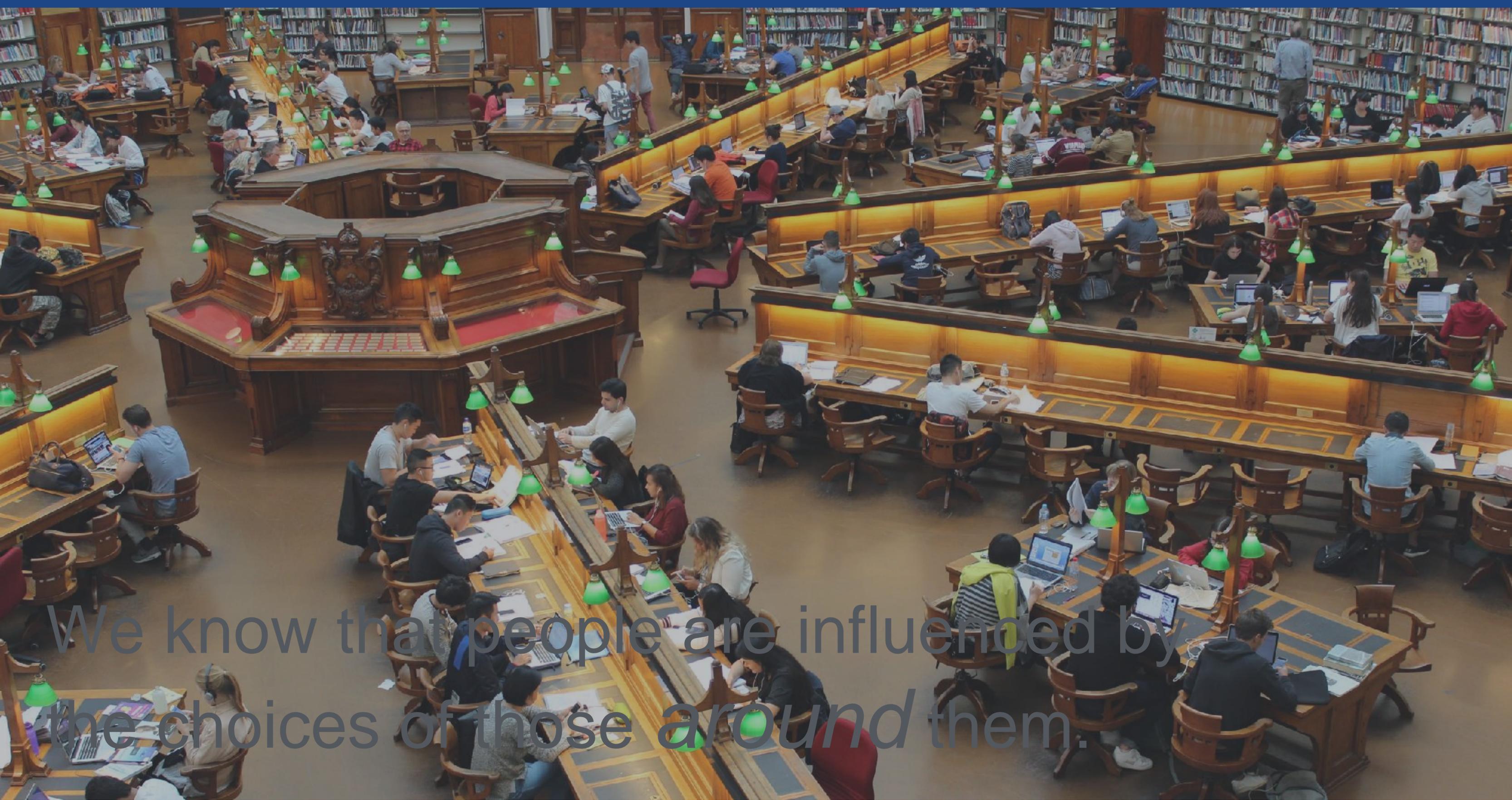
Sure, there are **bad** apples



We are each always individually responsible for our own actions.



*And, the barrel shapes  
perceptions and  
choices.*



We know that people are influenced by the choices of those around them.



*Research  
tells us:*

“The amount of cheating in which human beings are willing to engage depends on the structure of our daily environment.”



*The Truth About Dishonesty, Ariely  
2013*



2002 IOM  
Report on  
Research  
Integrity

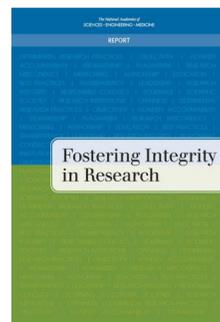
To promote responsible research conduct and fostering integrity, institutions should:

-  Establish and continuously measure their structures, processes, policies, and procedures
-  Evaluate the institutional environment supporting integrity in the conduct of research
-  Use this knowledge for ongoing improvement

## Recommendation Two:

*Research institutions need to exercise vigilance in several distinct areas:*

- Creating and sustaining a research culture that fosters integrity and encourages adherence to best practices through effective education and training and other mechanisms;
- Monitoring the integrity of research environments through internal assessments and multi-institution benchmarking exercises, and acting on the results;
- Ensuring that institutional policies and processes to investigate and address allegations of research misconduct are robust and generate just and timely outcomes; and
- Ensuring that senior institutional leaders such as the president, other senior executives, administrators, and faculty leaders are guiding and actively engaged in these efforts.



Fostering  
Integrity in  
Research  
2017

## Organizational Climate

“The shared meaning organizational members attach to the events, policies, practices, and procedures they experience and the behaviors they see being rewarded, supported, and expected.”

Ehrhart, Schneider, and Macey, 2014 (p. 115)



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# The Survey of Organizational and Research Environments (SOURCE)

*Developed by Carol Thrush and Brian Martinson,*

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- ✓ First and currently only instrument statistically validated with large sample size
- ✓ Scores show correlation between choices and research environment
- ✓ Benchmarking through two-stage reporting: campus and anonymized comparison database



Benchmarking power comes from competitive instincts of human beings. Let's harness that to improve.



## SOURCE

-  Survey includes 28 items on seven scales
-  Responses are confidential
-  Takes 10-15 minutes to complete online
-  Results correlate with self-reported research conduct behavior



SOURCE  
*Analytics*

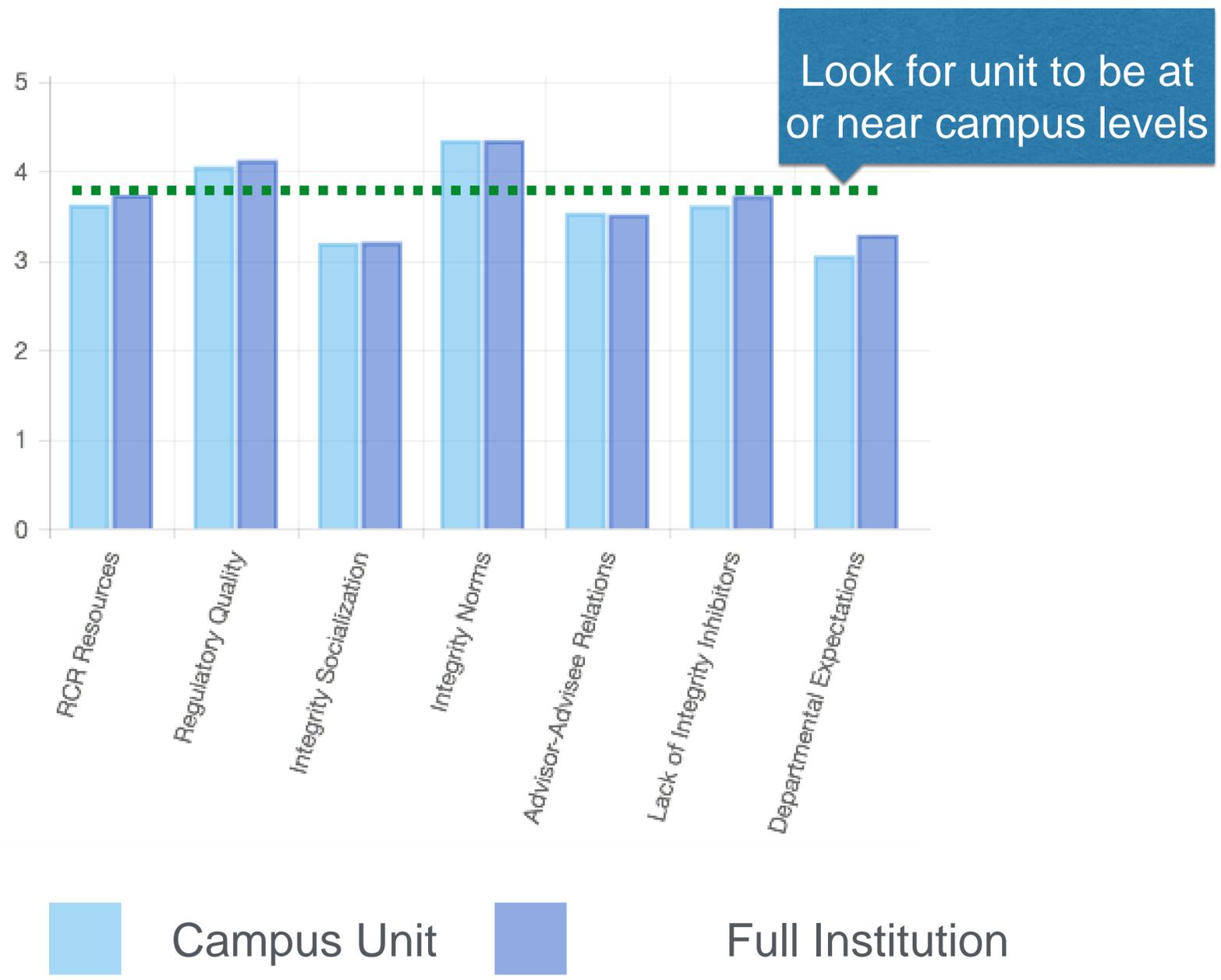
-  Web-based tool for understanding results
-  Analysis for institution; individual units within it; by roles
-  Ability to interact with data in multiple ways
-  Accessible data
-  Data summary at different levels



## SOURCE *Analytics*

Internal  
Comparison

# Department Compared to Institution

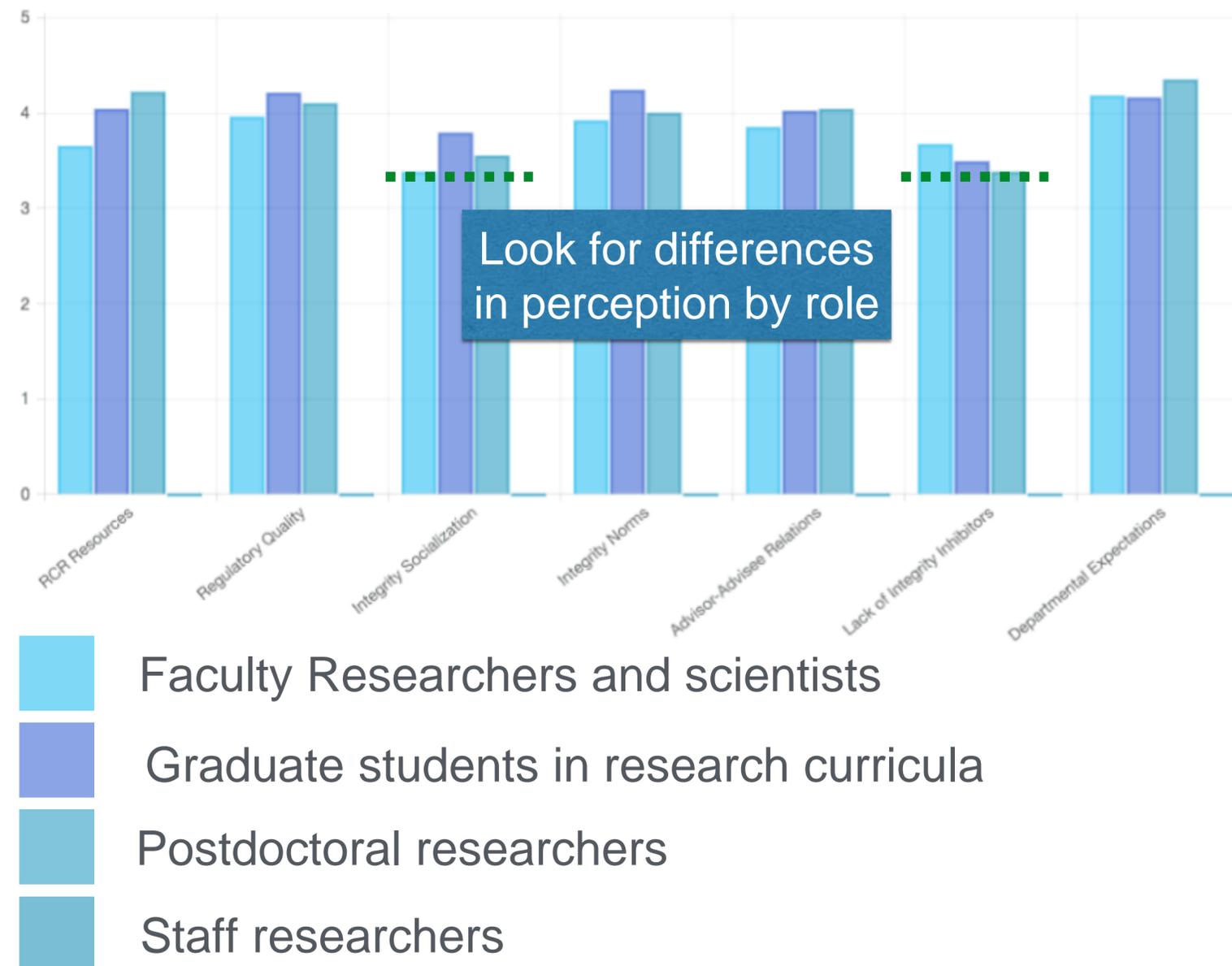




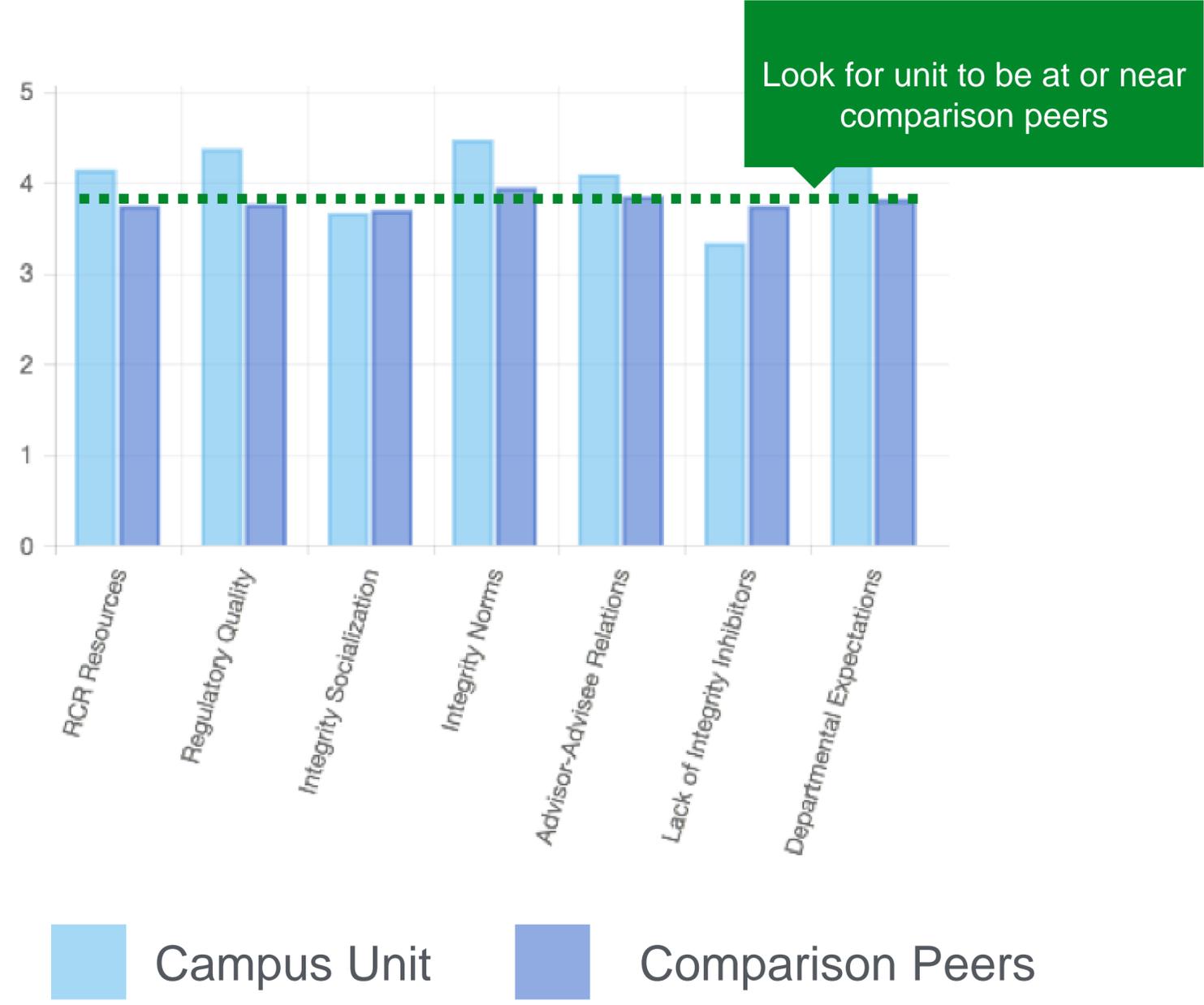
## SOURCE *Analytics*

### Role Comparison

# Roles within Department



# Department Compared to Peers



SOURCE  
*Analytics*

Peer  
Comparison



## SOURCE *Analytics*

### Score and Benchmark Analysis

Scale	Group	Mean	Population	StDev	Low	Mod	High
Responsible Conduct of Research (RCR) Resources	Unit Name	3.98	125	0.99	30%	32%	38%
	Comparison Group	3.71		1.07	36%	39%	25%
Regulatory Quality	Unit Name	3.95	39	0.83	31%	41%	28%
	Comparison Group	3.55		1.13	44%	33%	23%
Integrity Socialization	Unit Name	3.43	70	1.25	47%	31%	21%
	Comparison Group	3.51		1.19	42%	36%	22%
Integrity Norms	Unit Name	3.9	67	1.06	27%	42%	31%
	Comparison Group	4.11		0.91	22%	39%	40%
Advisor-Advisee Relations	Unit Name	3.96	54	0.95	31%	33%	35%
	Comparison Group	3.75		0.93	31%	51%	18%
Lack of Integrity Inhibitors	Unit Name	3.21	103	1.3	58%	20%	21%
	Comparison Group	3.67		1.26	39%	27%	34%
Departmental Expectations	Unit Name	3.5	38	1.08	45%	39%	16%
	Comparison Group	3.42		1.06	44%	44%	12%

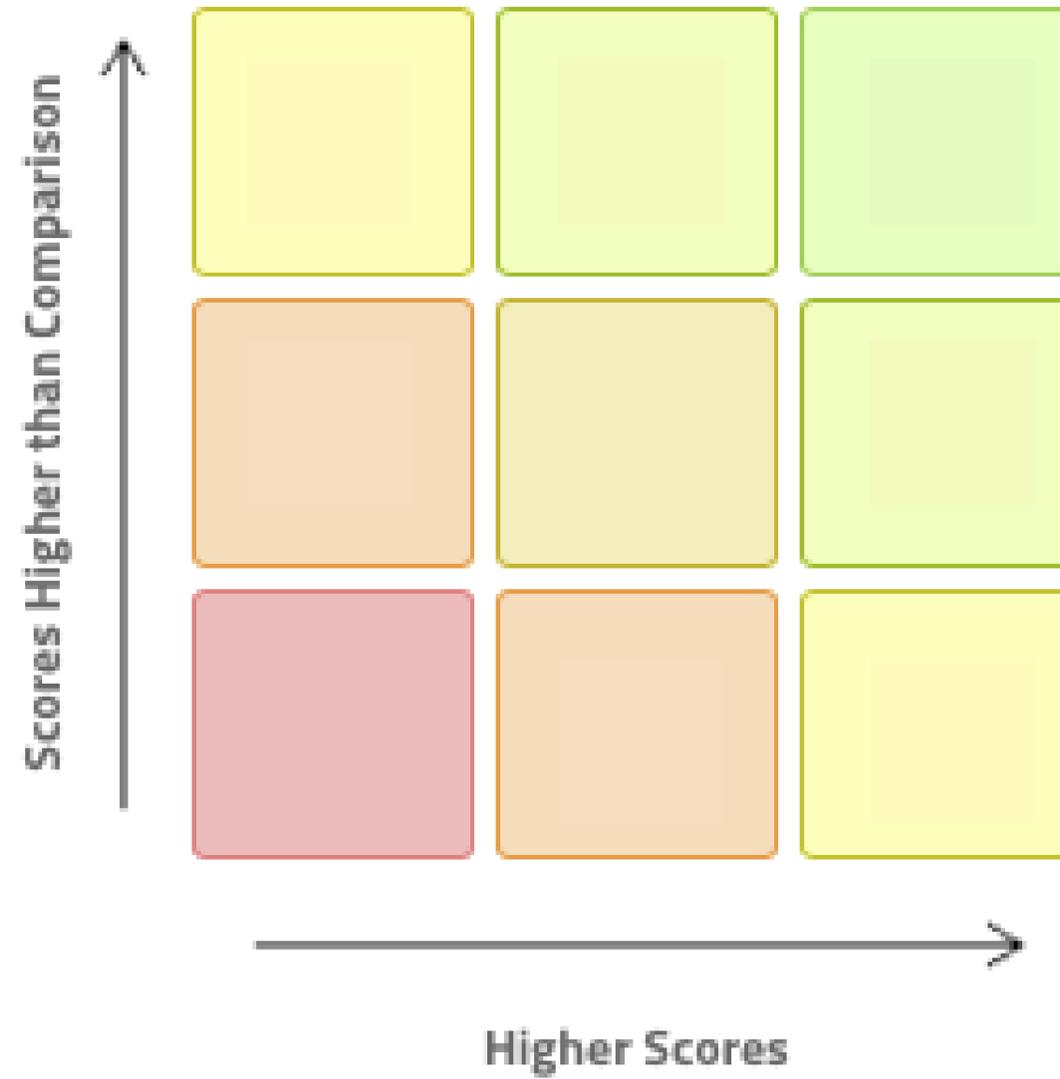
Scores: Show % of respondents with low, moderate, and high quality perceptions of the particular research environment component.

Highlight: Two-part benchmarking comparison based on low and high quality perceptions (green low means fewer unfavorable perceptions, red low means more unfavorable perceptions, green high means more favorable perceptions, and red high means fewer favorable perceptions).



# SOURCE *Analytics*

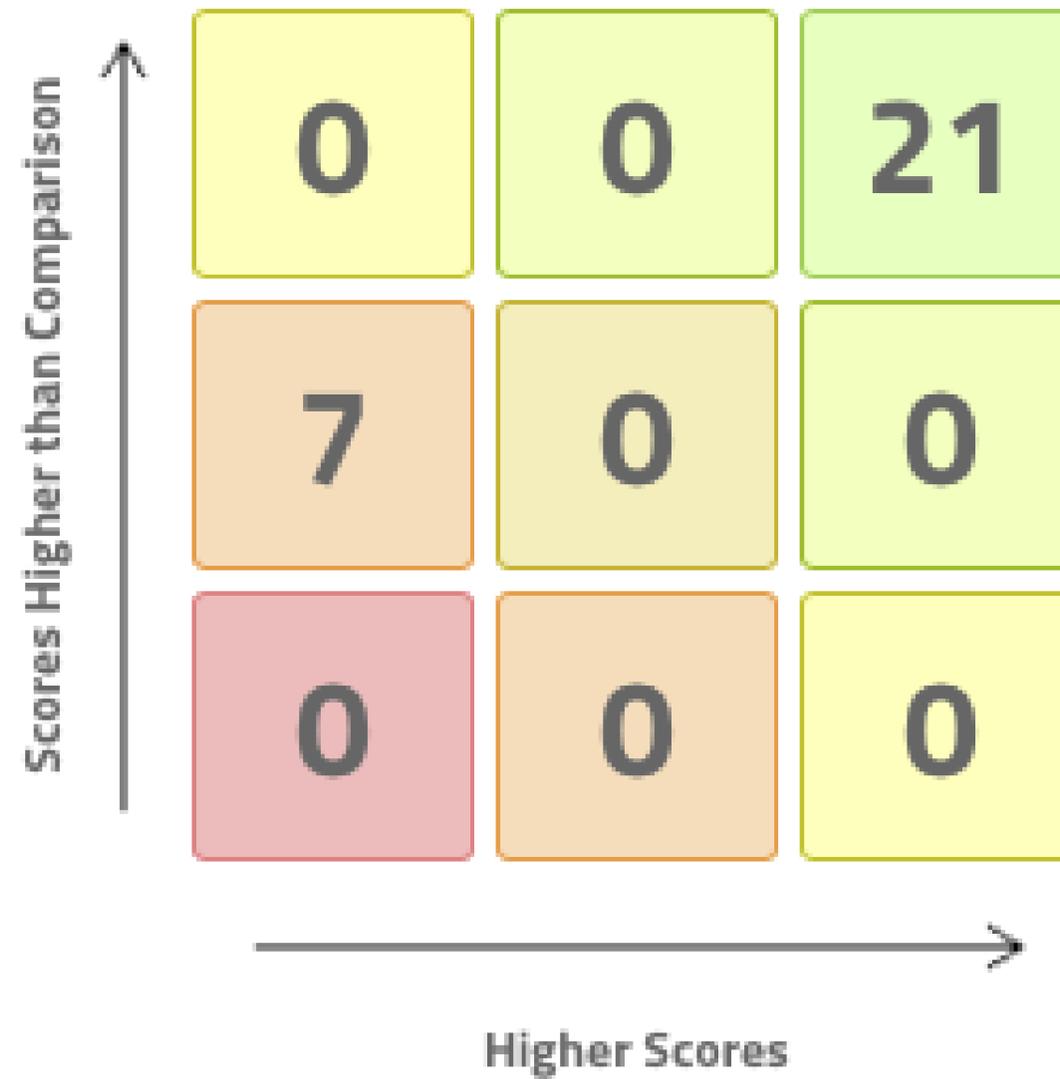
Results at a  
Glance





## SOURCE *Analytics*

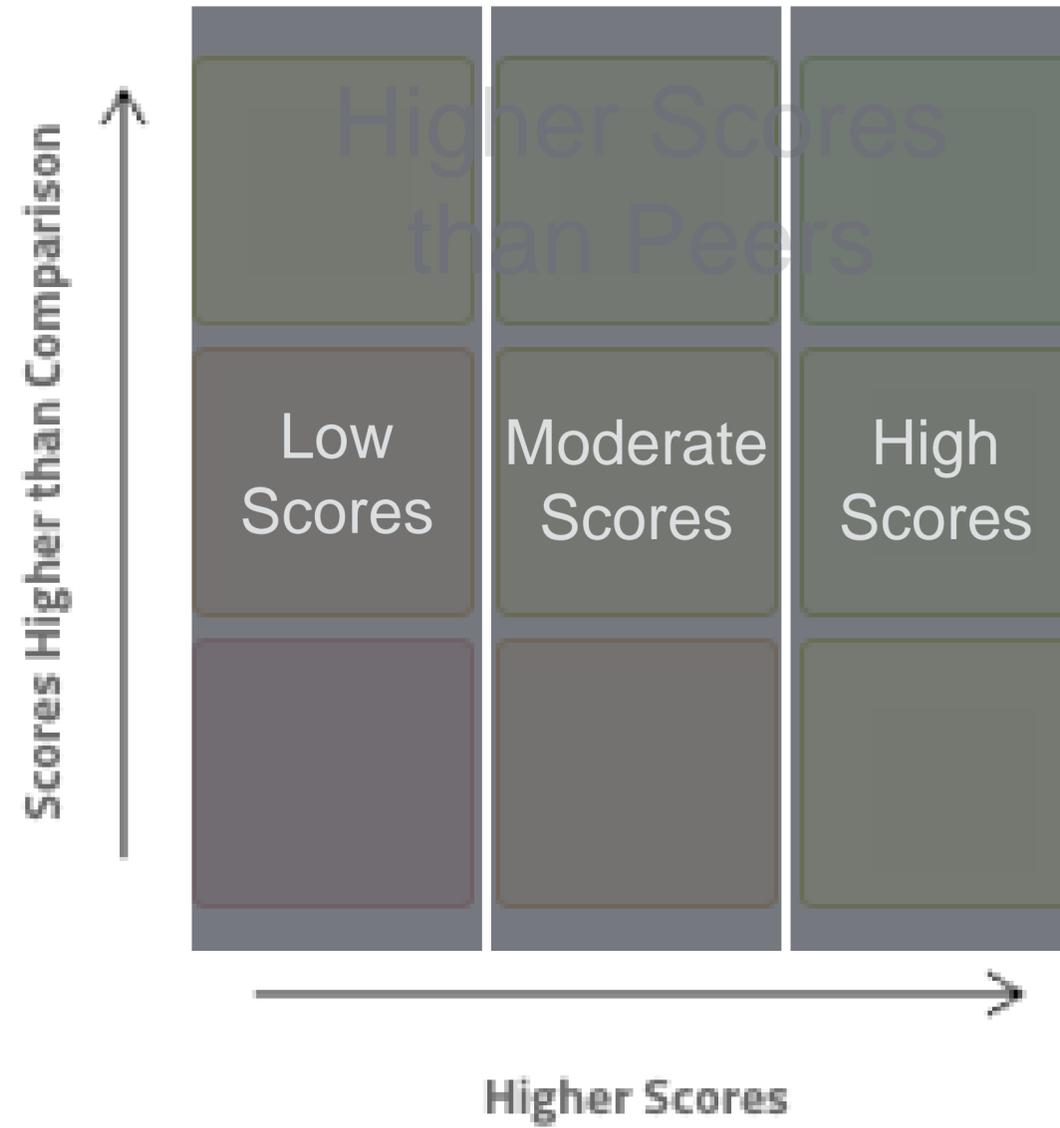
Results at a  
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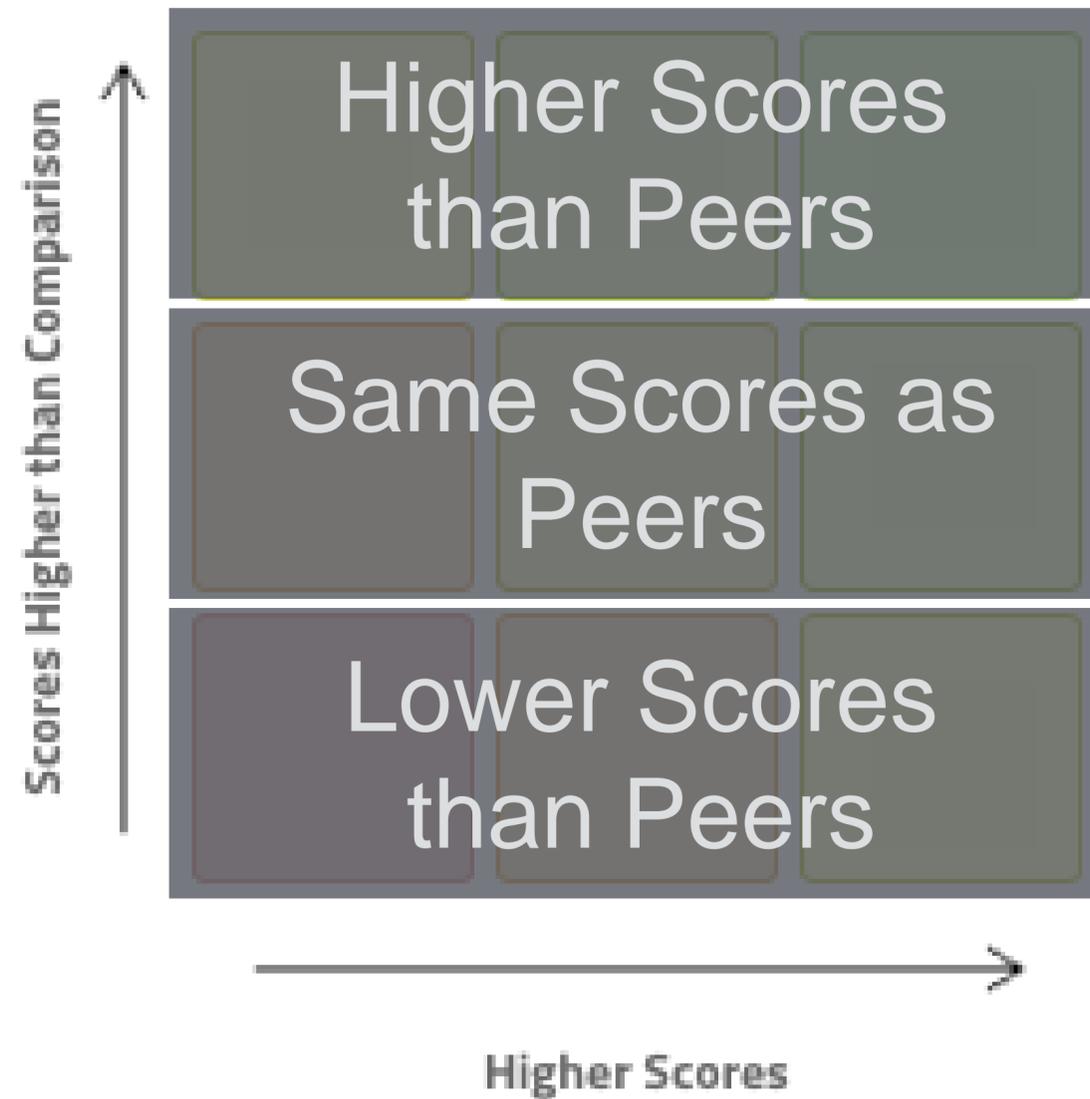
Results at a  
Glance





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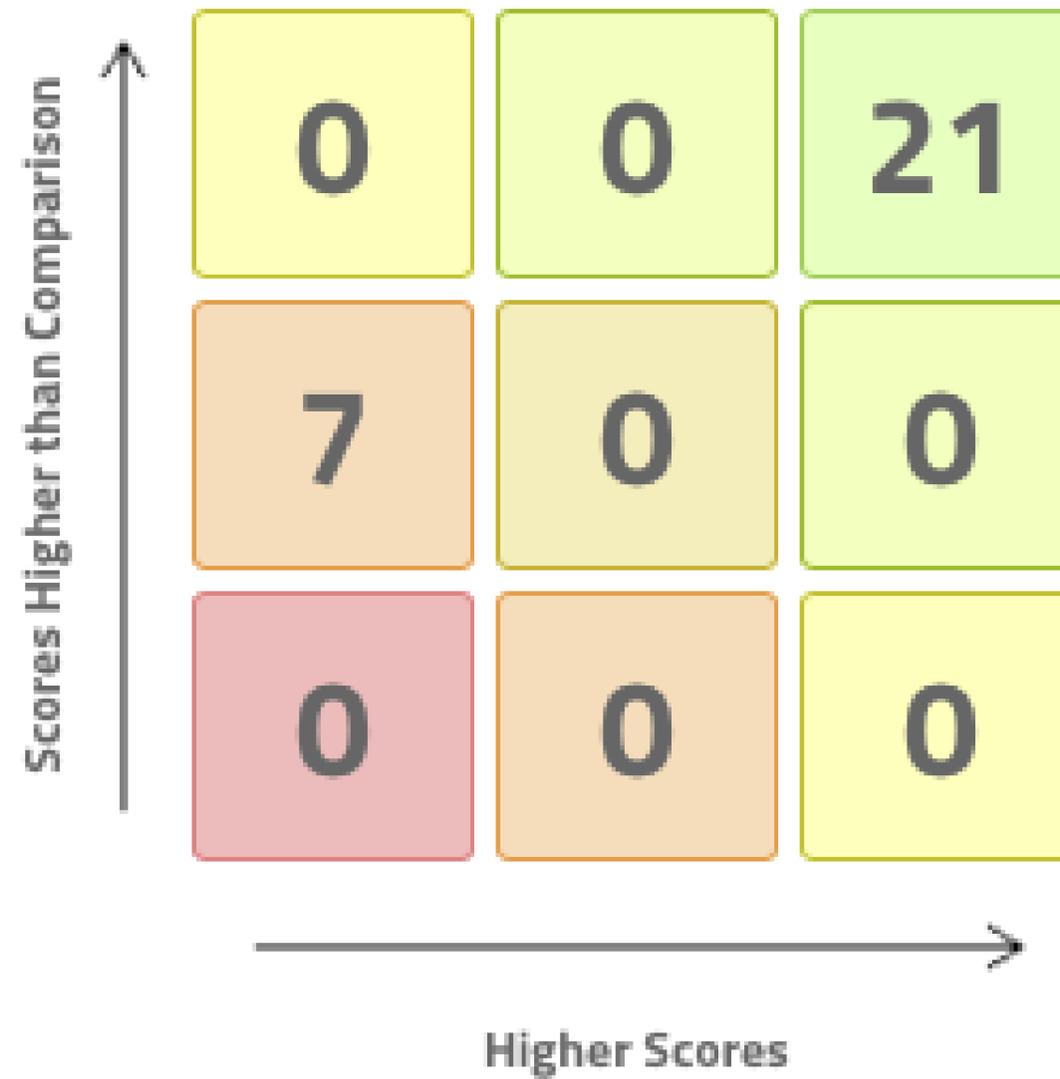
Results at a  
Glance





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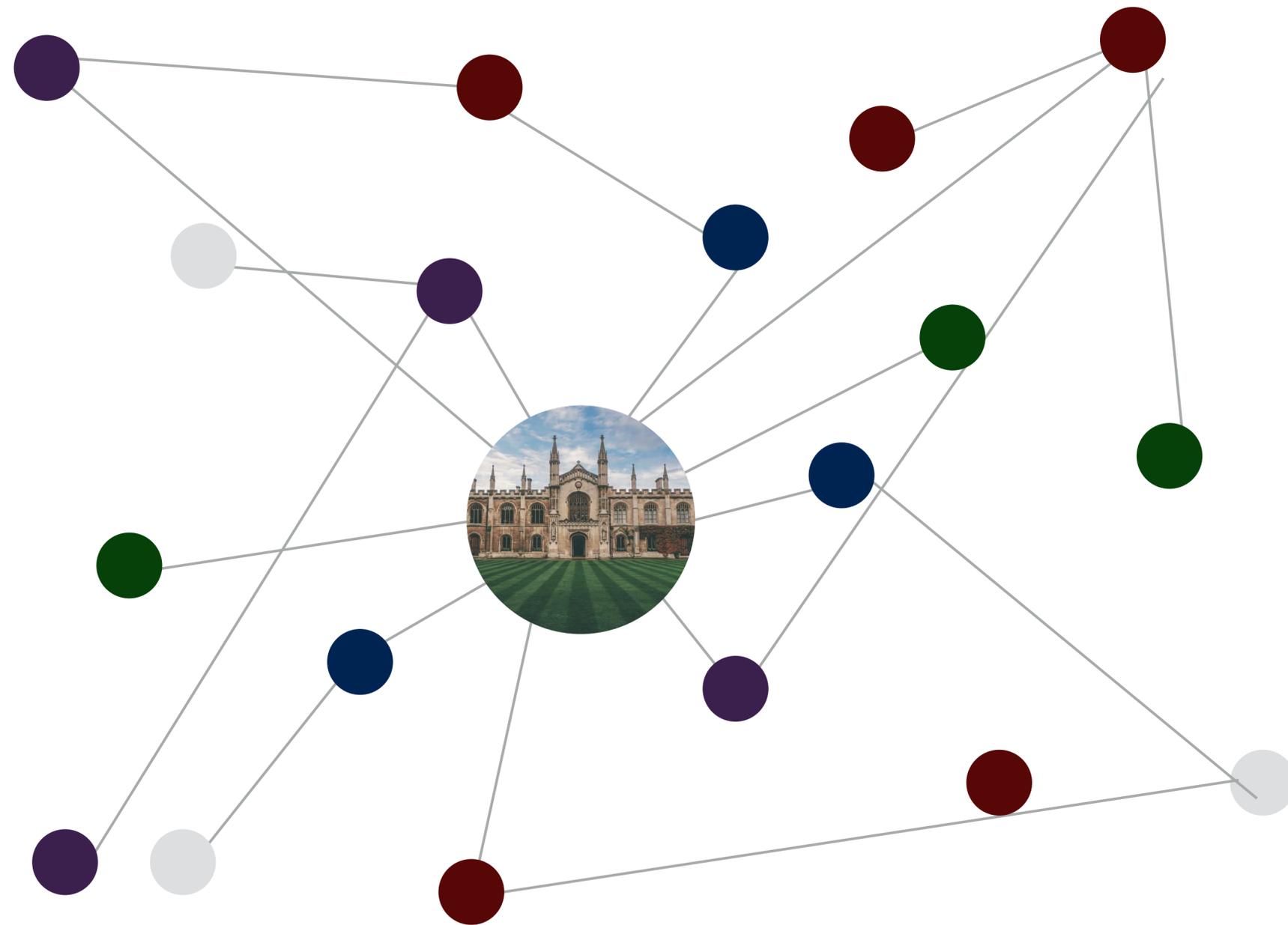
Results at a  
Glance





# SOURCE *Analytics*

Institutional  
Comparison



Benchmarking power comes from competitive instincts of human beings. Let's harness that to improve.



SOURCE  
*Analytics*



SOURCE  
*Analytics*

A national (and potentially international) comparison database will help all of us.



SOURCE  
*Analytics*

Current Use  
and Interest

8

INSTITUTIONAL  
RESULTS IN DATABASE

5

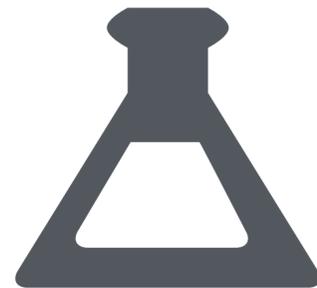
IN PROCESS

MORE HAVE EXPRESSED  
INTEREST



**SOURCE**  
*Analytics*

Flexible  
Implementation



**Research**



**International and  
cultural  
adaptation**



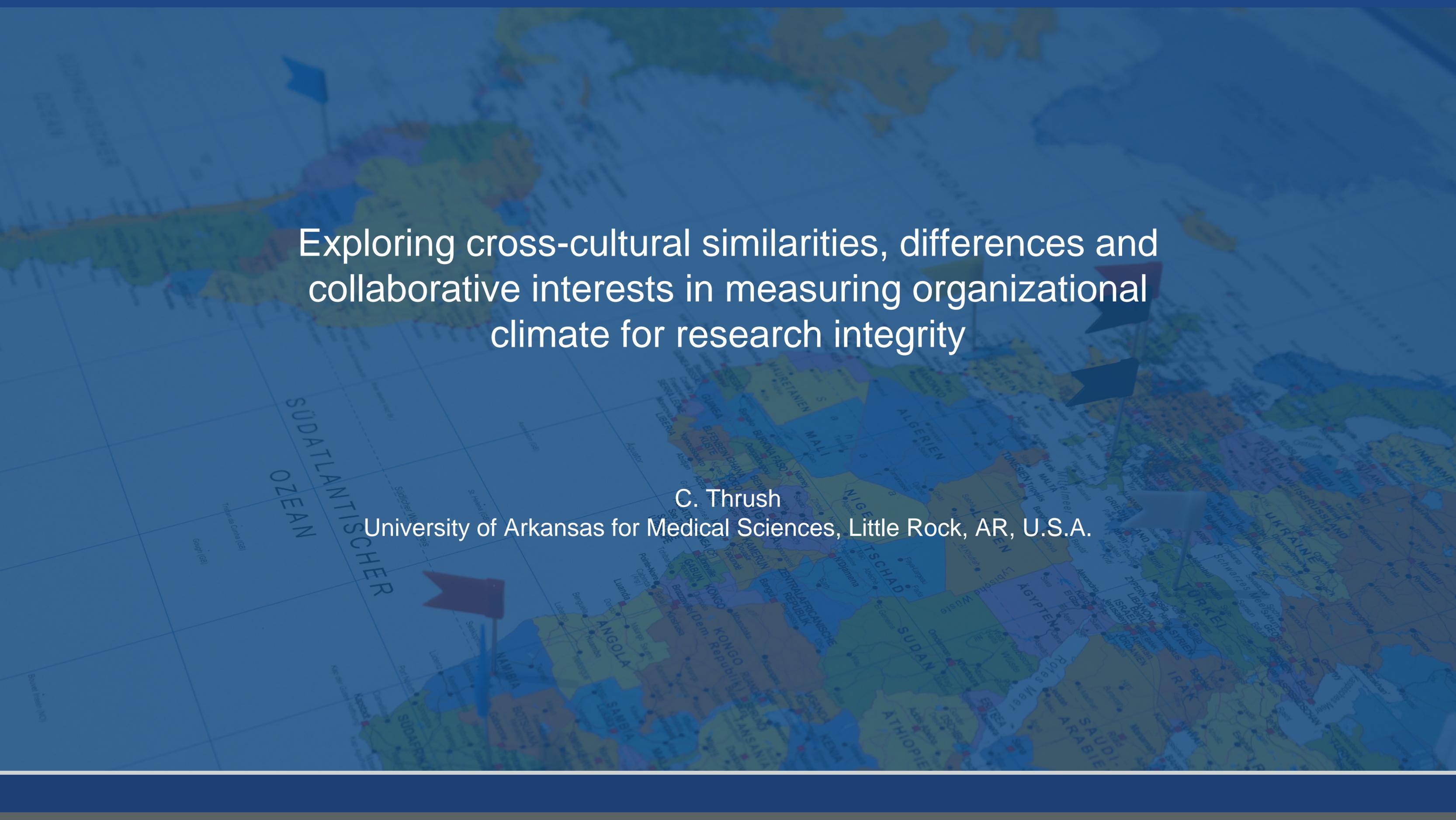
SOURCE  
*Analytics*

Results  
Analysis  
Engine

web: <https://ethicscenter.csl.illinois.edu>  
email: [ethicsctr@illinois.edu](mailto:ethicsctr@illinois.edu)



ILLINOIS  
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN



Exploring cross-cultural similarities, differences and collaborative interests in measuring organizational climate for research integrity

C. Thrush

University of Arkansas for Medical Sciences, Little Rock, AR, U.S.A.

Netherlands  
is 0.27 times as  
big as Arkansas



Population ~17 million

England  
is 0.95 times as  
big as Arkansas



Population ~53 million

Arkansas  
THE NATURAL STATE



Population ~3 million



## Fast facts

- Only comprehensive medical school / AHC in Arkansas
- ~3,000 students / residents
- ~1,500 faculty members
- Research funding \$110+ million
- Top 18% of all U.S. universities in research funding from federal government



# Words and Context Matter

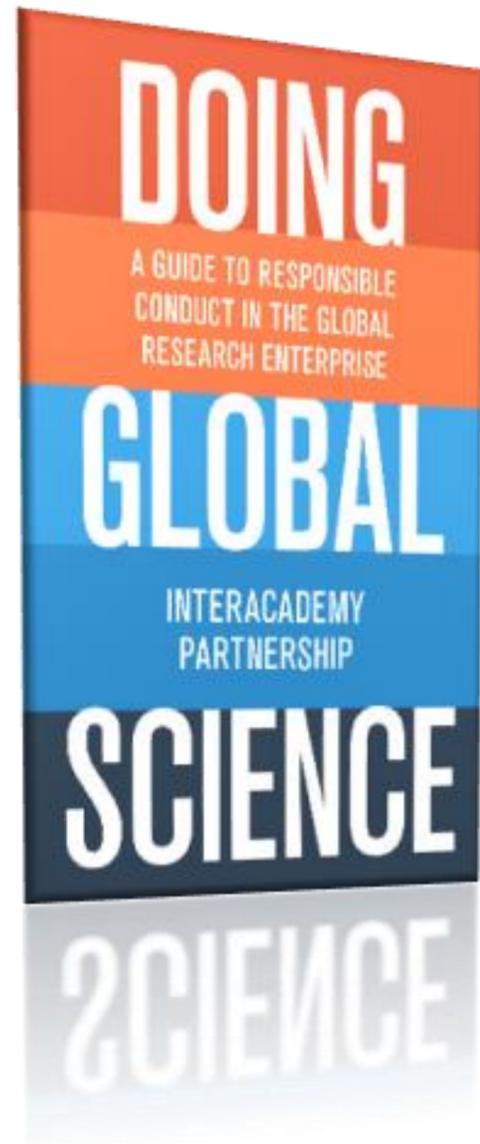
Scientific Term	General Meaning / Perception	Better Choice
Abstract	Vague, intangible	Summary, take home message
Significant	Meaningful, important	Less than 5% chance of being wrong
Study	Cram for a test	Set of experiments
Values	Ethics, monetary value	Numbers, quantity

Adapted from: "Communicating the Science of Climate Change," Richard C. J. Somerville & Susan Joy Hassol, October 2011, Physics Today, page 48.

Does the term “Research Integrity” translate well into your native language?

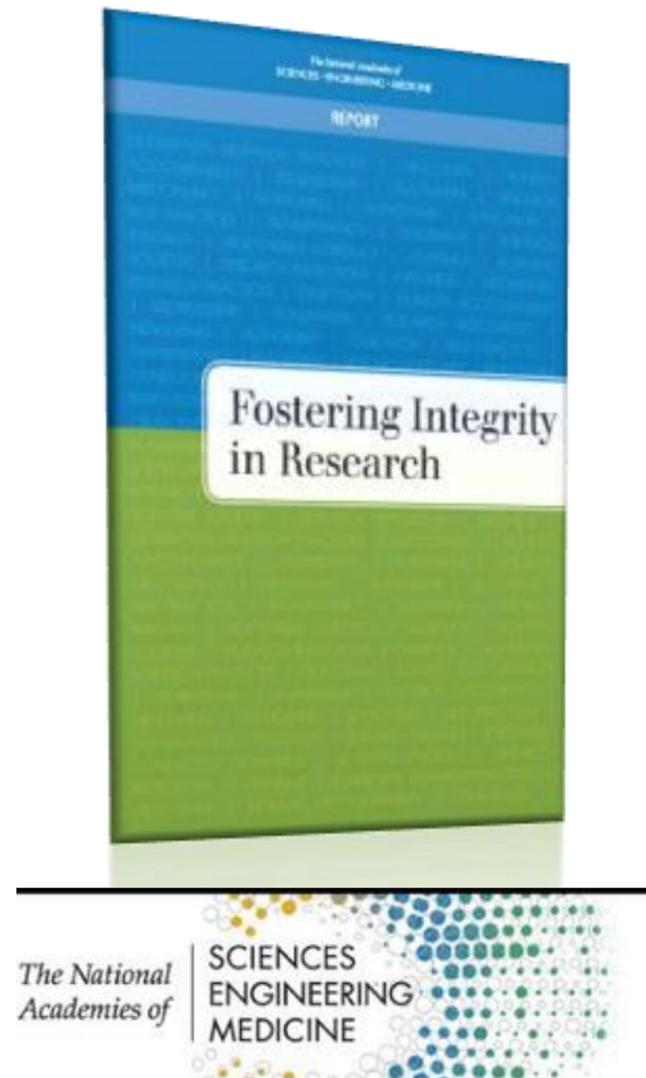
# Is RCR a universal concept?

## Fundamental Values of Research



- Objectivity
- Honesty
- Openness
- Accountability
- Fairness
- Reliability
- Skepticism

# Fundamental Values of Research



- Objectivity
- Honesty
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- Skepticism

# Is research misconduct a universal concept?

*Account Res.* 2015 ; 22(5): 249-266. doi:10.1080/08989621.2014.958218.

## **An International Study of Research Misconduct Policies**

**David B. Resnik, J.D., Ph.D.<sup>1</sup>, Lisa M. Rasmussen, Ph.D.<sup>2</sup>, and Grace E. Kissling, Ph.D.<sup>1</sup>**

<sup>1</sup>National Institute of Environmental Health Sciences, National Institutes of Health, Research Triangle Park, North Carolina, USA

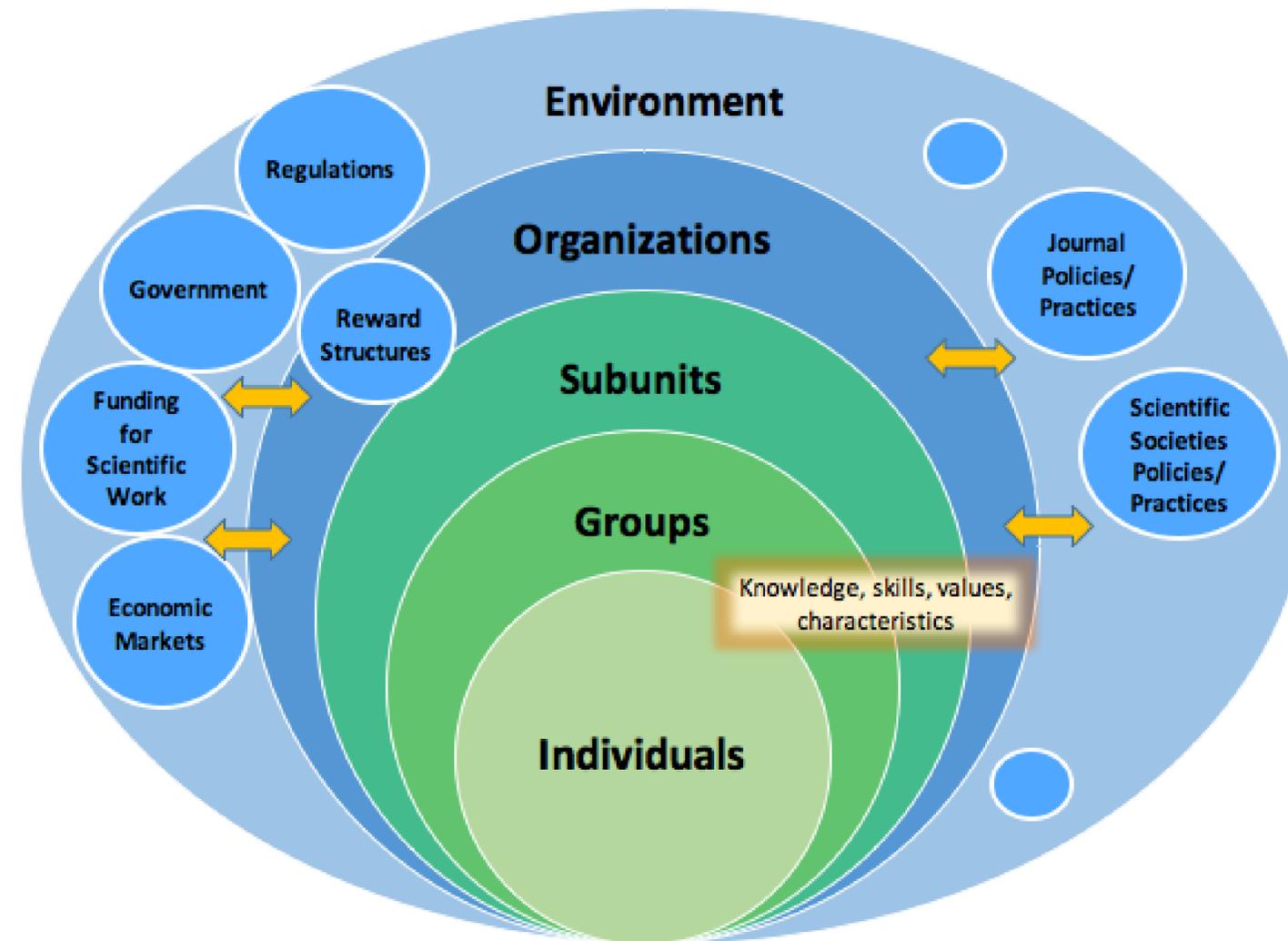
<sup>2</sup>University of North Carolina at Charlotte, Charlotte, North Carolina, USA

### **Abstract**

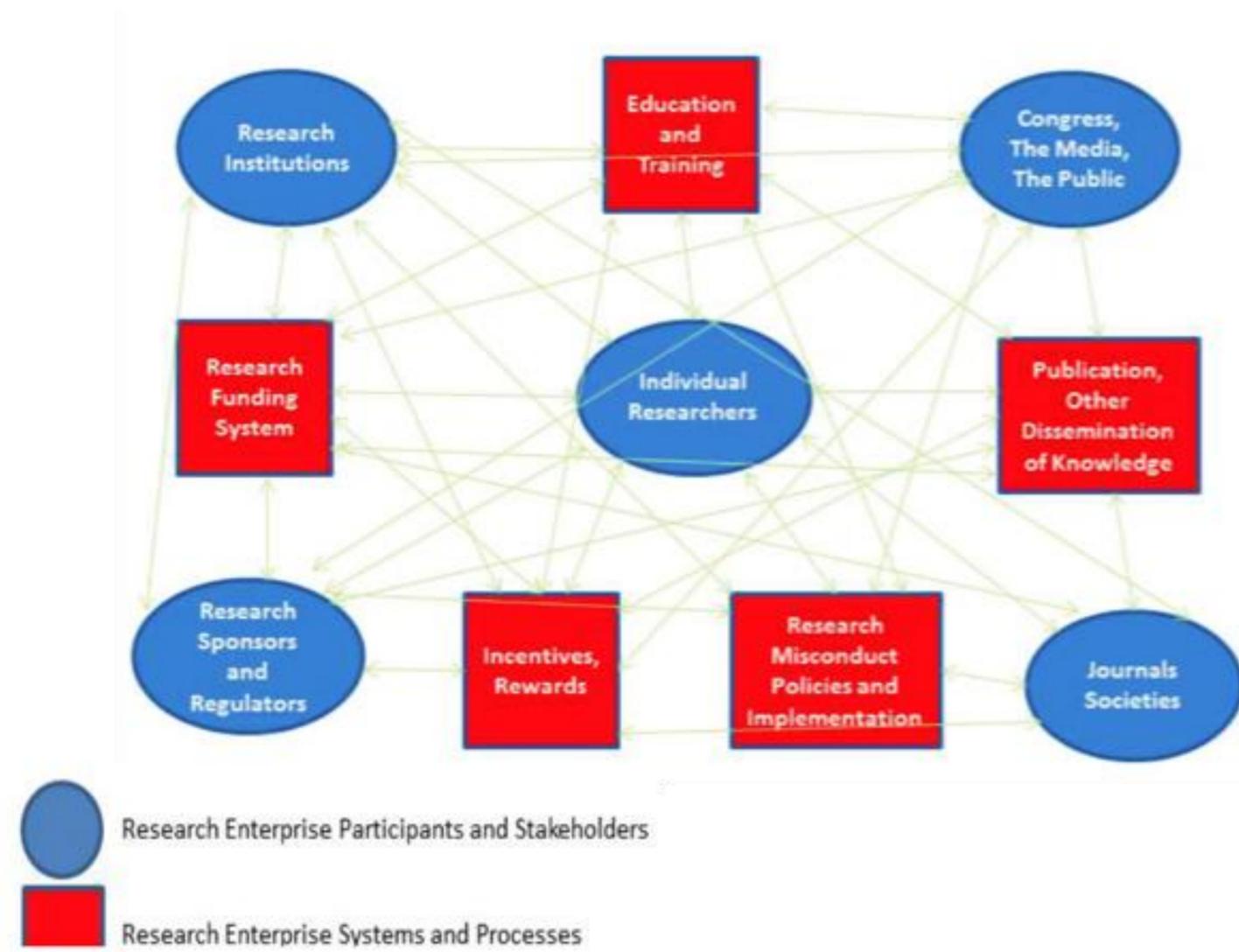
Research misconduct is an international concern. Misconduct policies can play a crucial role in preventing and policing research misconduct, and many institutions have developed their own policies. While institutional policies play a key role in preventing and policing misconduct, national policies are also important to ensure consistent promulgation and enforcement of ethical standards. The purpose of this study was to obtain more information about research misconduct policies across the globe. We found that twenty-two of the top forty research and development

Of 40 countries examined, about half (55%) had national policy  
Extensive variation; all had fabrication, falsification and plagiarism

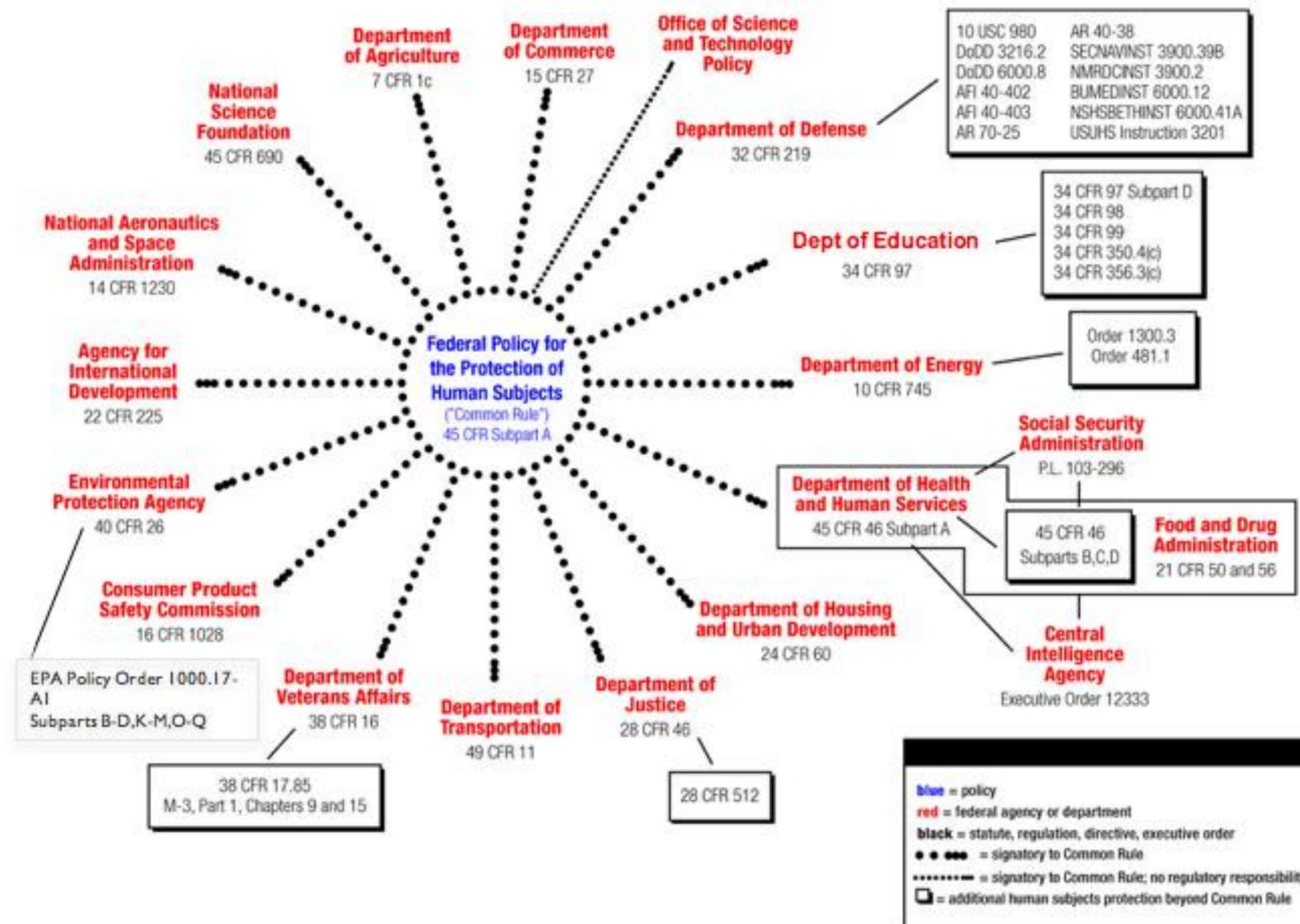
# Research integrity in practice is multidimensional

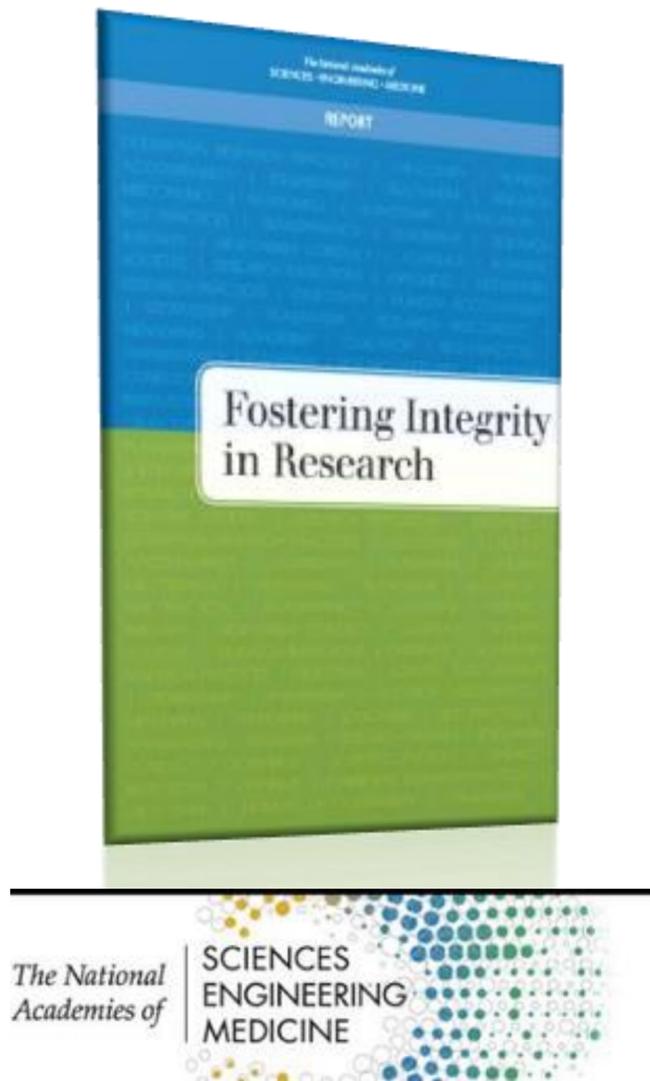


It is also dynamic...and complex



# Current Federal Regulatory Structure





Recommendation Eleven:  
Researchers, research institutions,  
and research sponsors that  
participate in and support  
international collaborations should  
leverage these partnerships to  
foster research integrity through  
mutual learning and sharing of best  
practices, including collaborative  
international research on research  
integrity.

## Sometimes simple transition is not the issue

**Preparing Students to Navigate  
Cross-National Differences in the  
Research Environment**

*The Role of Research Integrity Education*

Elizabeth Heitman and Juleigh Petty<sup>1</sup>

“...standards of research integrity ultimately develop within the profession, established and sustained by researchers themselves, not simply imposed as policy by eternal regulatory authorities.” pg. 212

## Considerations in cross-cultural implementation of SOURCE?

- Using SOURCE in current form may work just fine
- SOURCE content/items may work well, but may need to be translated into native language
- Additional issues unique to the culture/climate of an organization, country, setting, may require addition of new items/content or deletion of others

What drives “how things work around here”

# Interest in SOURCE



\*80 U.S. locations (VAMCs, AHCs) not shown, due to anonymity per research protocol.

## SOURCE - Example 1

### Regulatory Quality (institutional)

How fair to researchers are the regulatory committees or boards that review the type of research you do (e.g. IRB, IACUC, etc.)?

## SOURCE - Example 2

### Departmental expectations

How fair are your department's expectations  
with respect to publishing?

## SOURCE - Example 3

### **Integrity inhibitors (departmental)**

How true is it that people in your department are more competitive with one another than they are cooperative?

## SOURCE - Example 4

### **Advisor /advisee relations (department)**

How respectfully do advisors/supervisors treat advisees/supervisees?

## Global community for organizational climate assessment?

- 
- Interest in creating an international community for collaborating on organizational climate assessment?
  - What would that look like?
  - What kind of resources would be needed?