Research Analytics Maturity Model & HERD

Transforming Tomorrow by Using Data to Drive Decisions

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Research Funding Acknowledgement

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Research Analytics Using the Higher Education Research and Development Survey (HERD) to Impact Institutional Strategy (Grant #2215223)

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Sr. Research Associate: Kat Robershaw

Research Adviser: Shannon Sampson

Survey Respondents

Note: Map is not to scale, modified to include Hawaii and Puerto Rico

Overview

Research Analytics & HERD - Introduction and Scope

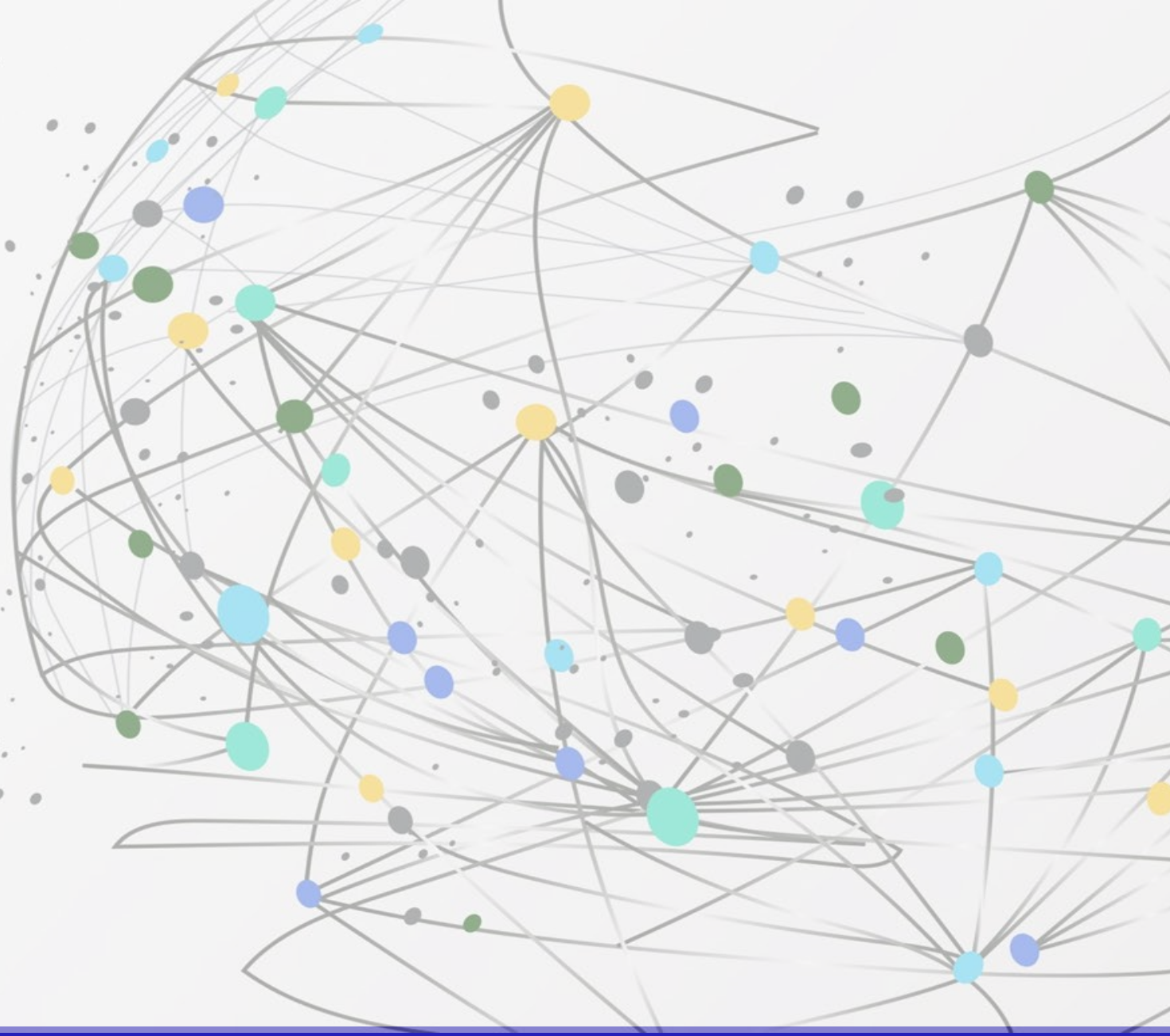
Research Analytics Capabilities (RAC) Maturity Model

A study about HERD Survey Data Collection

Preliminary Results

Research Analytics and HERD

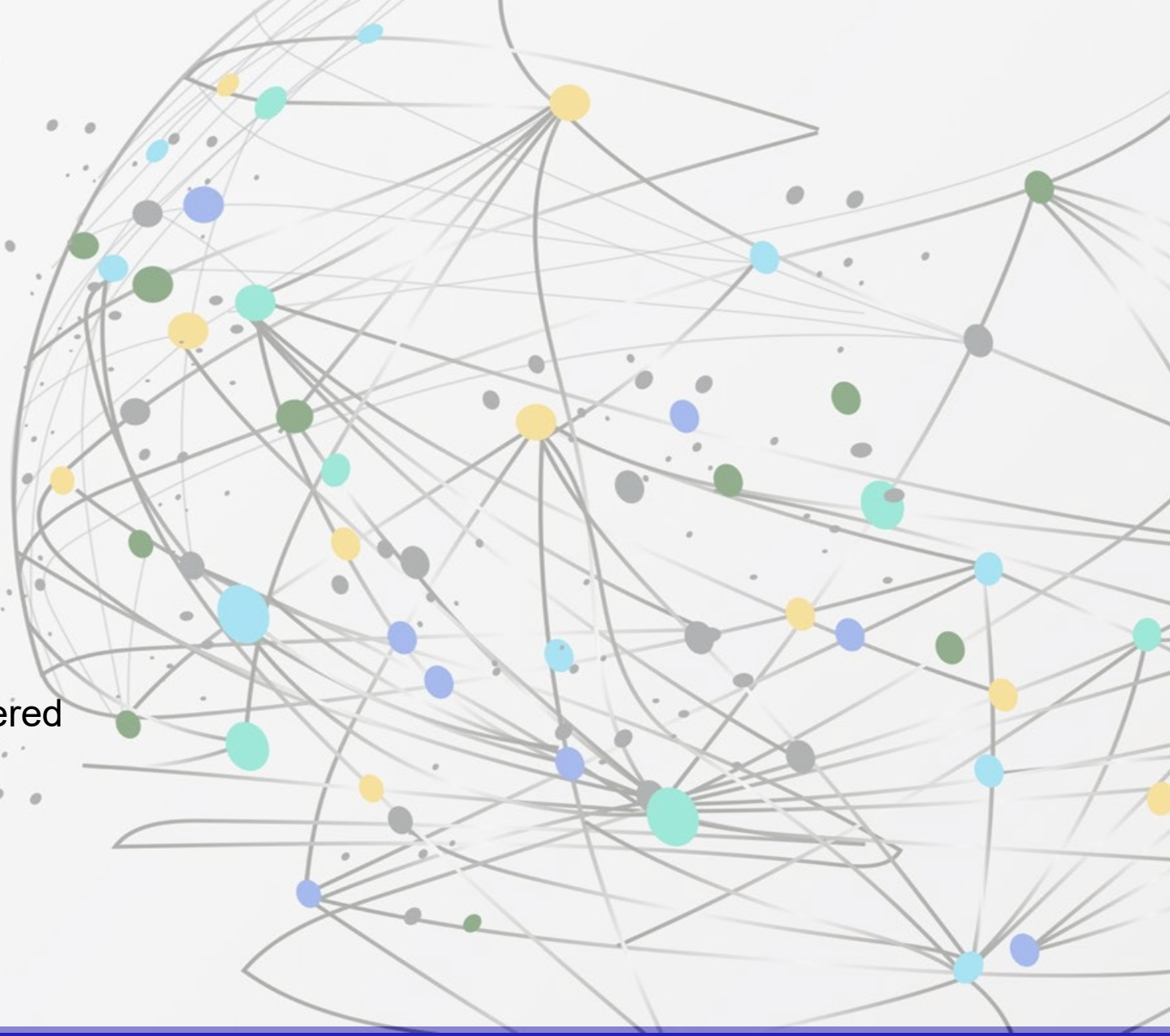
Introduction and Scope



Research Analytics and HERD

Introduction and Scope

- **What is research analytics**
- **Why research analytics**
- The NSF Project
  - Rationale
  - Timeline
    - What we have done and discovered
    - Where we are now
    - Where we are heading

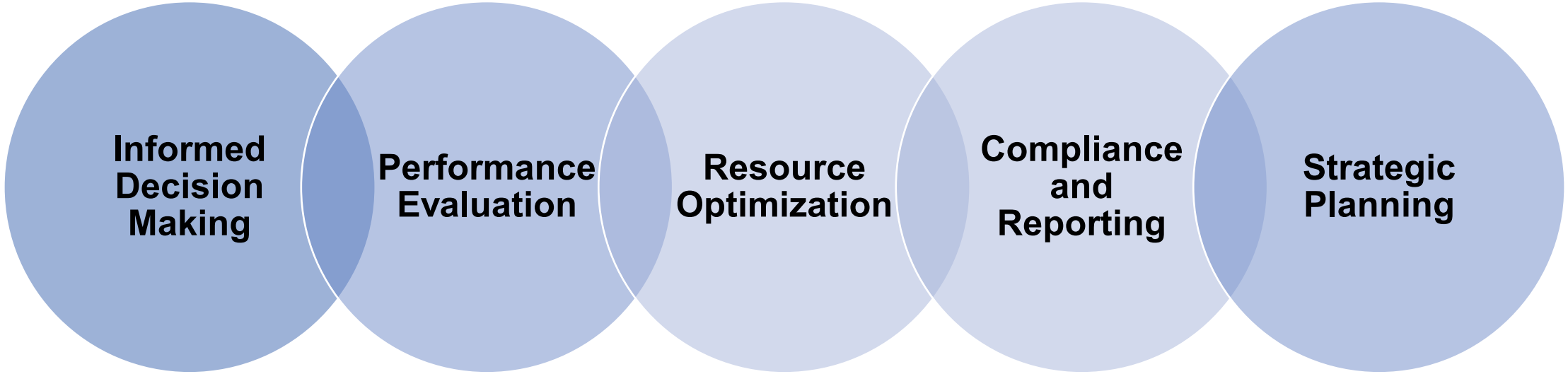


What is Research Analytics?

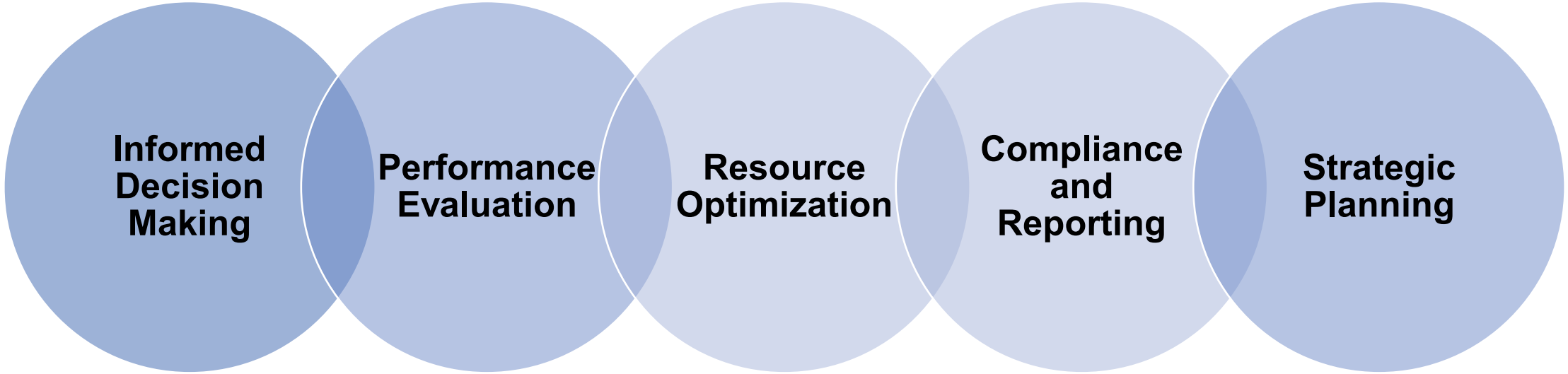
"Research analytics is the science of analyzing data to make data-informed decisions for **strategic planning**, **research and development** and **business processes** related to research administration functions."

Robershaw, Katherine and Wolf, Baron, Research Analytics: A Systematic Literature Review (February 18, 2023). Available at SSRN: https://ssrn.com/abstract=4363262 or http://dx.doi.org/10.2139/ssrn.4363262

Why Research Analytics?



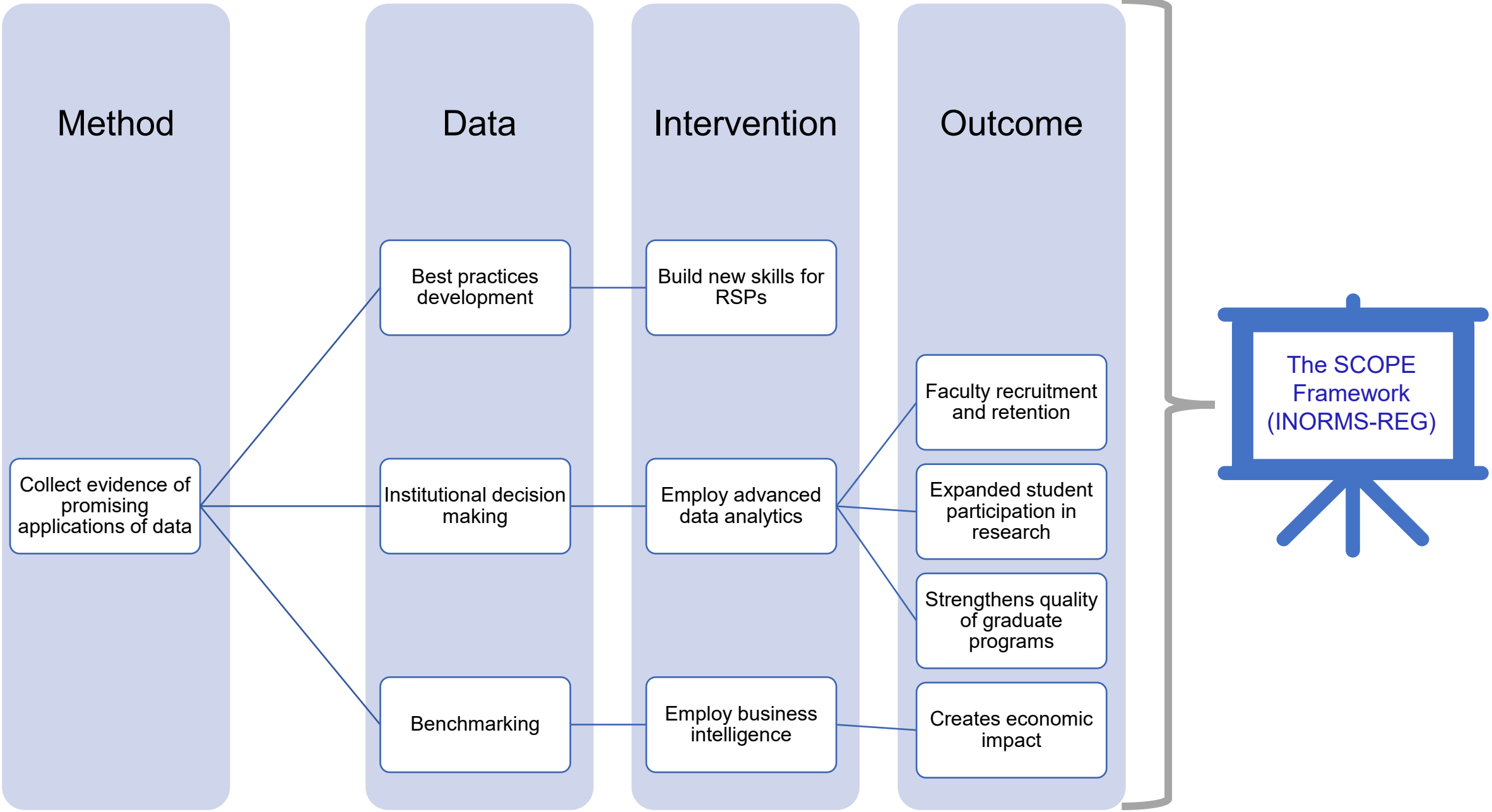
Why Research Analytics?

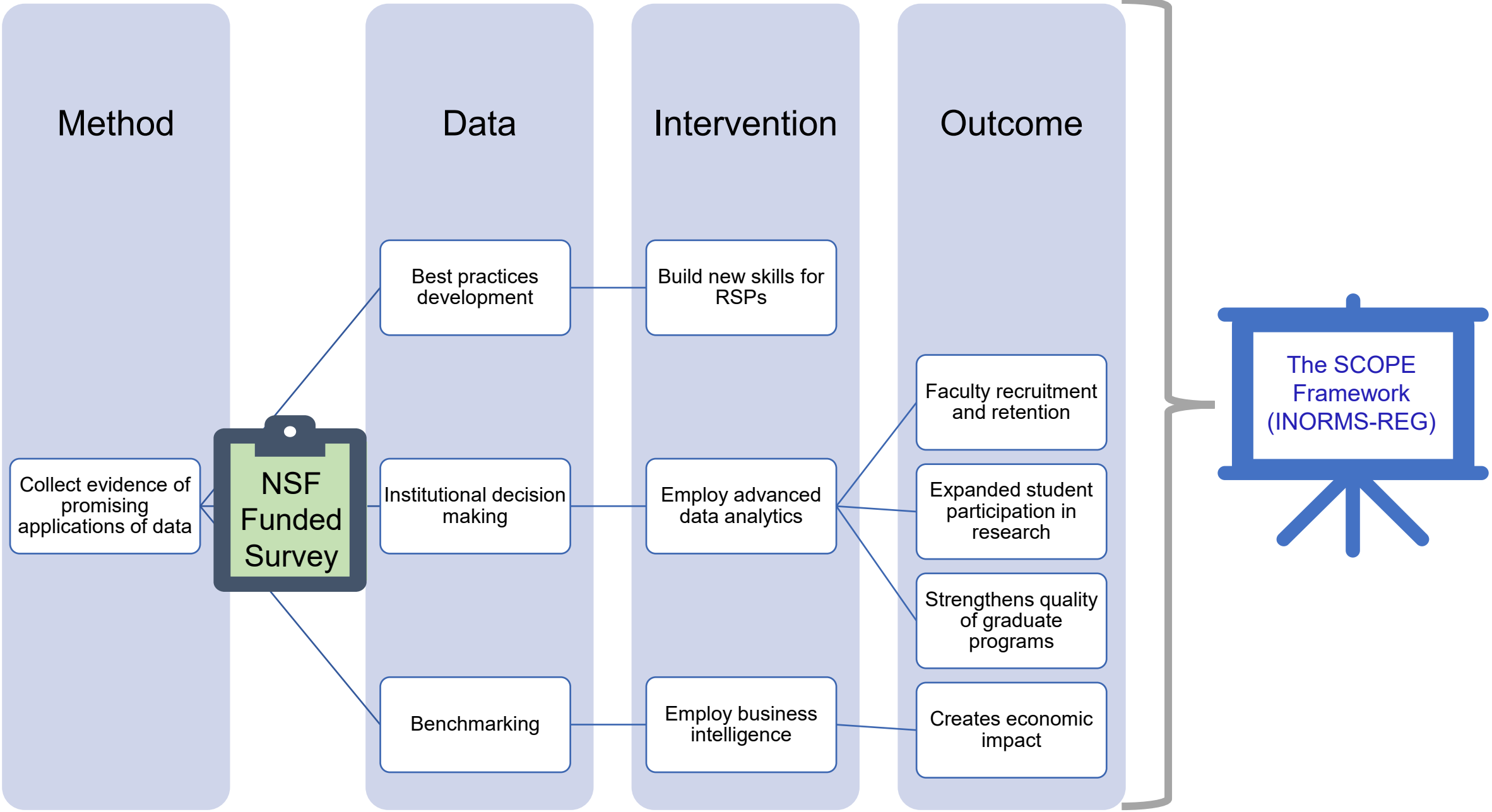


Sustain and Grow the Research Enterprise for New Discoveries & Impact

The Project

Research Analytics and Higher Education Research & Development Survey (HERD)


Method
Data
Intervention
Outcome
Collect evidence of promising applications of data
Best practices development
Institutional decision making
Benchmarking
Build new skills for RSPs
Employ advanced data analytics
Employ business intelligence
Faculty recruitment and retention
Expanded student participation in research
Strengthens quality of graduate programs
Creates economic impact
The SCOPE Framework (INORMS-REG)


Method
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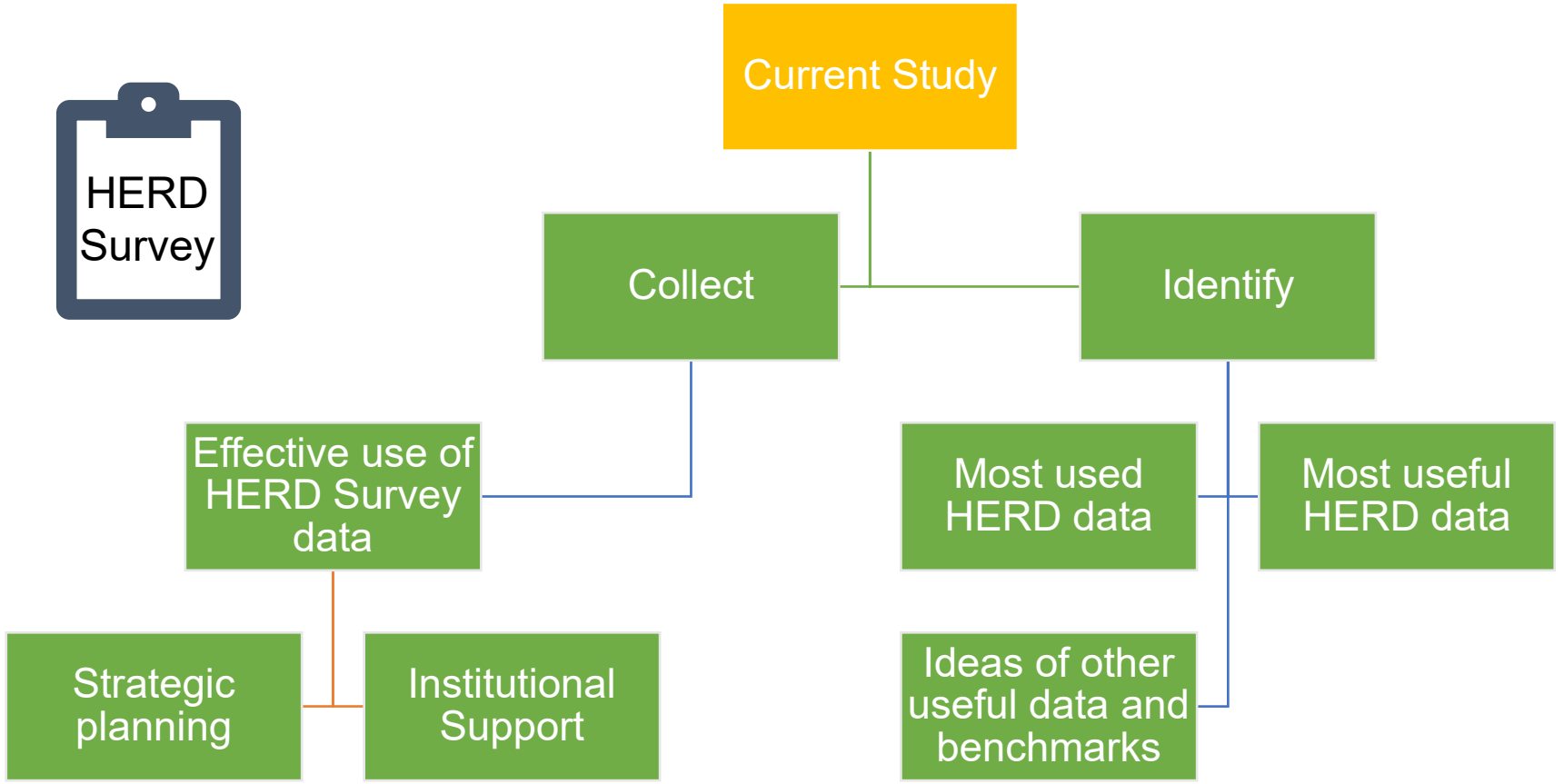
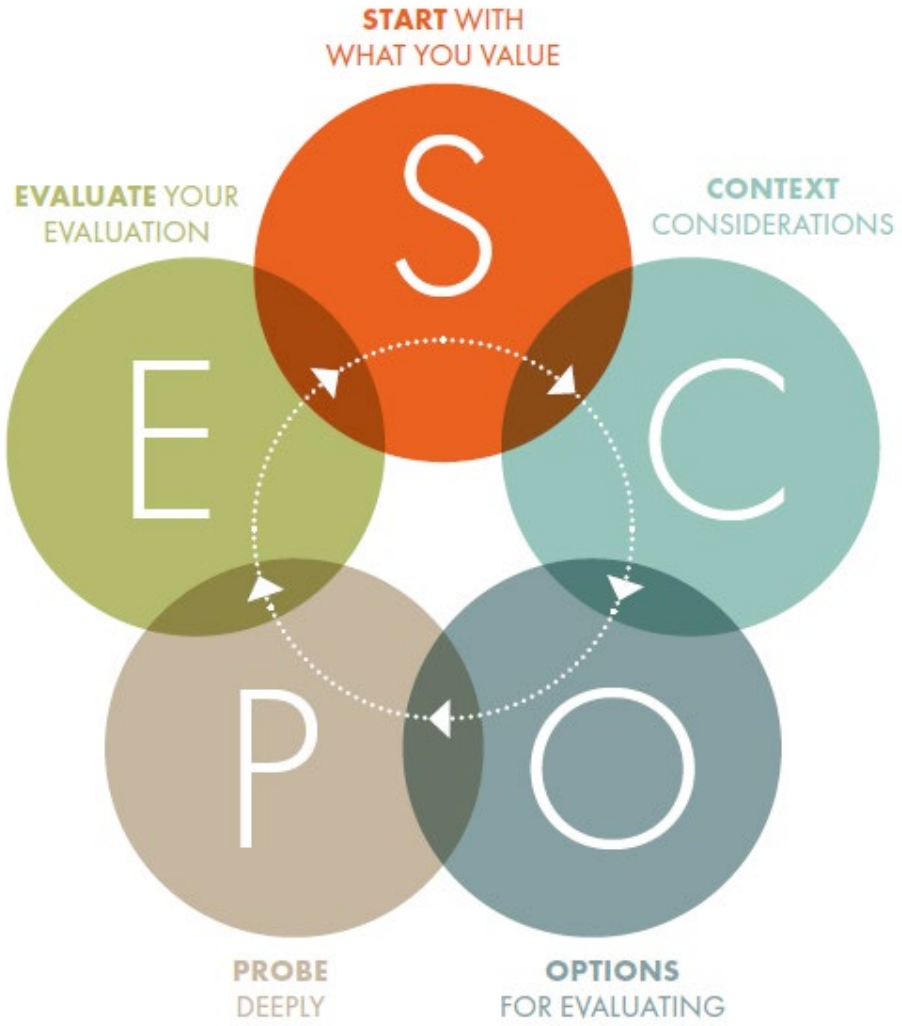
The SCOPE Framework (INORMS-REG)

HERD Survey Study



The SCOPE Framework

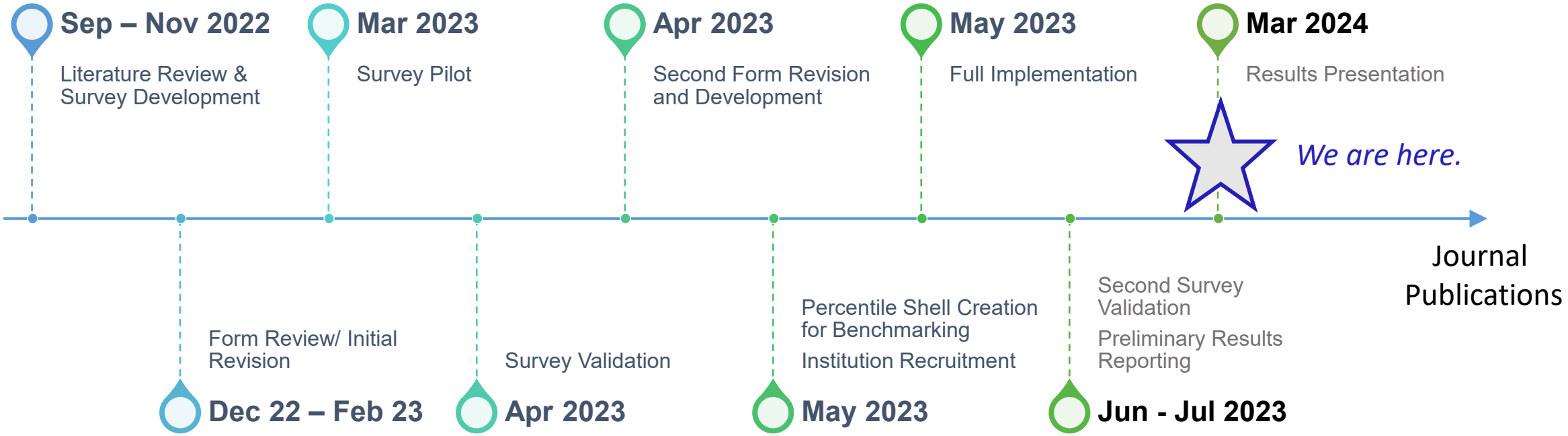


scope inorms research evaluation group

- Expand metrics of research evaluation
- Make better decisions on research funding strategies
- Training Workshop
  - Predictive analytics
  - Analytical tools
  - Data visualizations
  - Network analysis

https://inorms.net/scope-framework-for-research-evaluation/

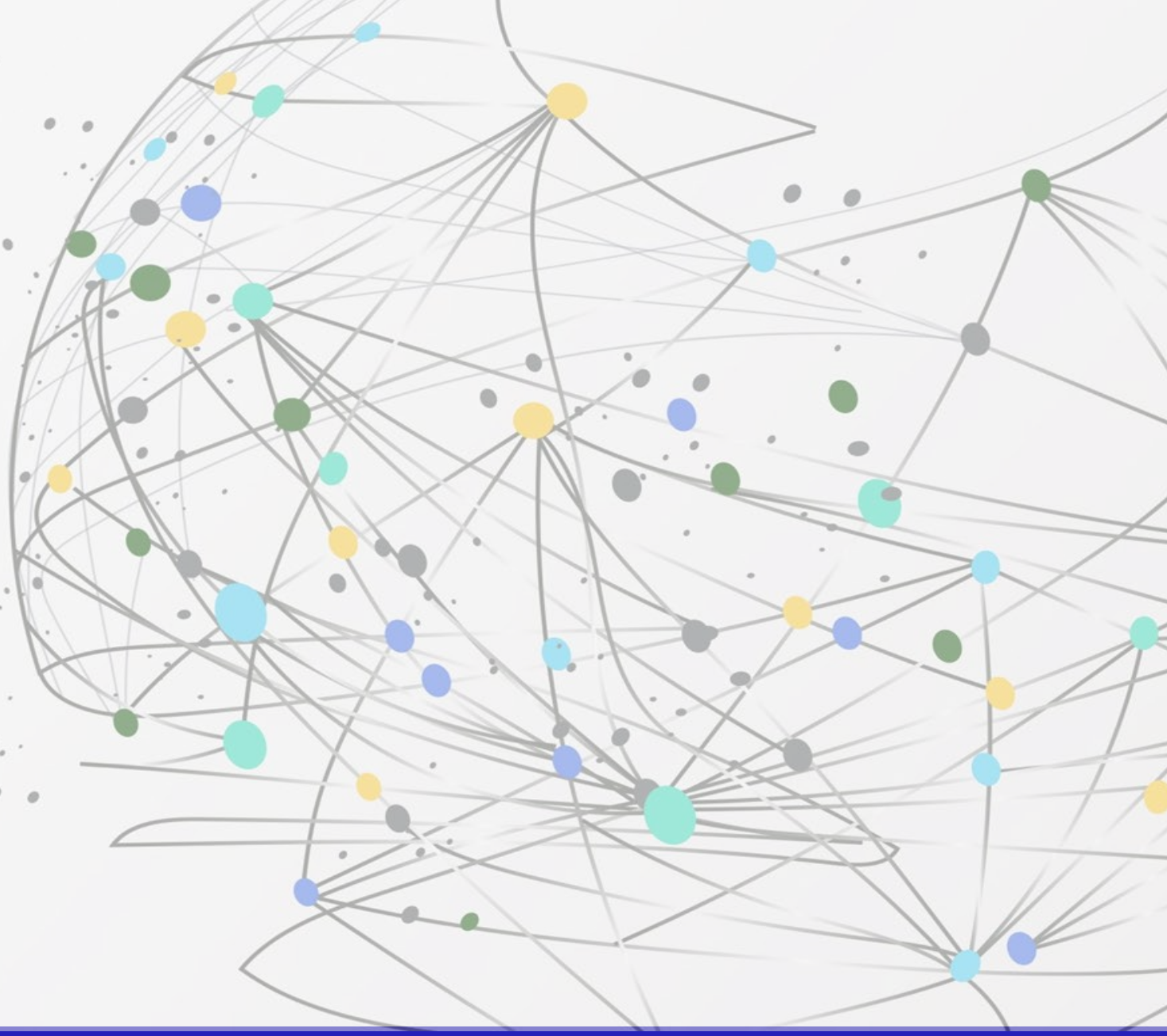
Project Timeline



Research Analytics Capabilities (RAC)

RAC Maturity Model

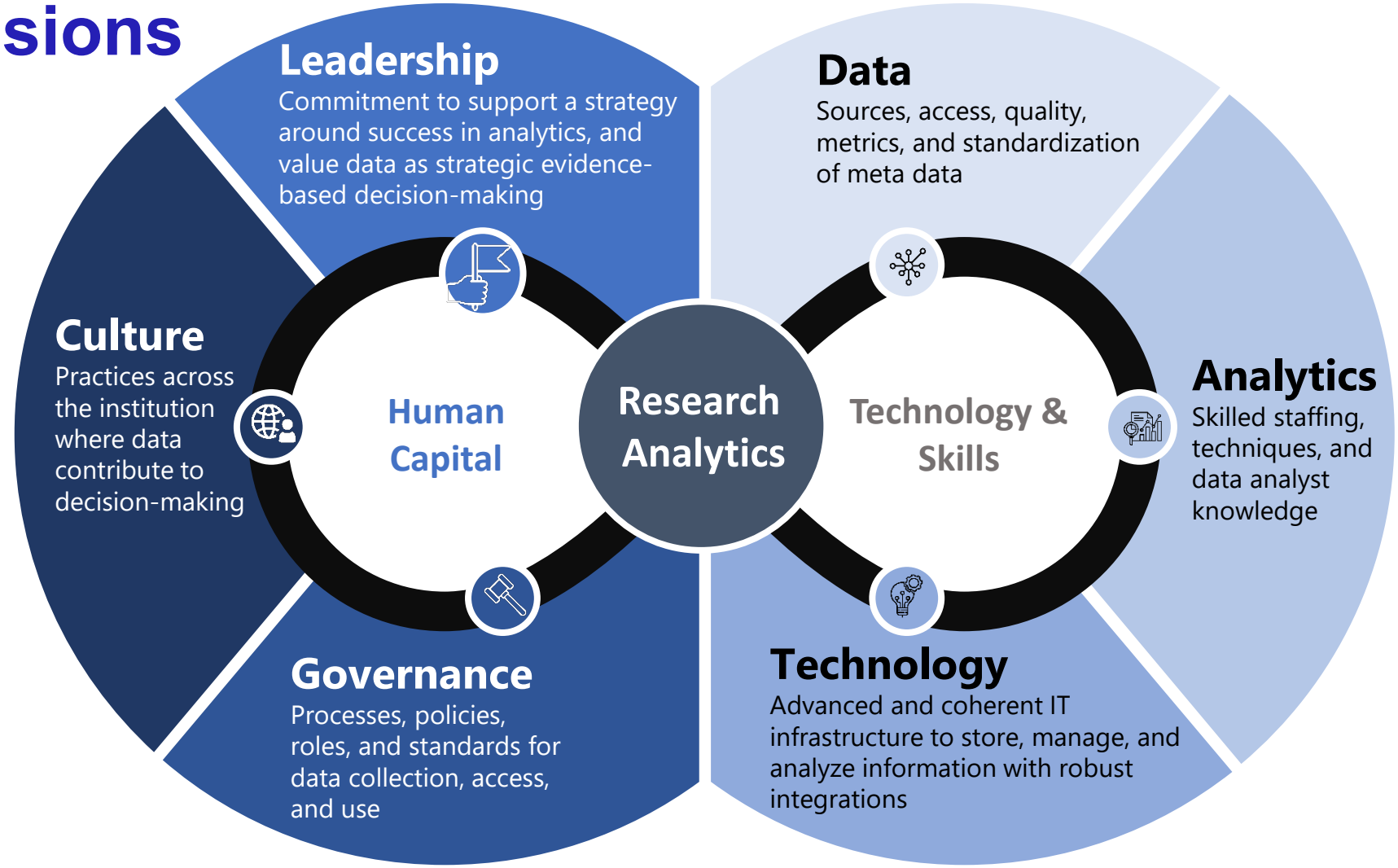
RAC Workforce Survey



Objective

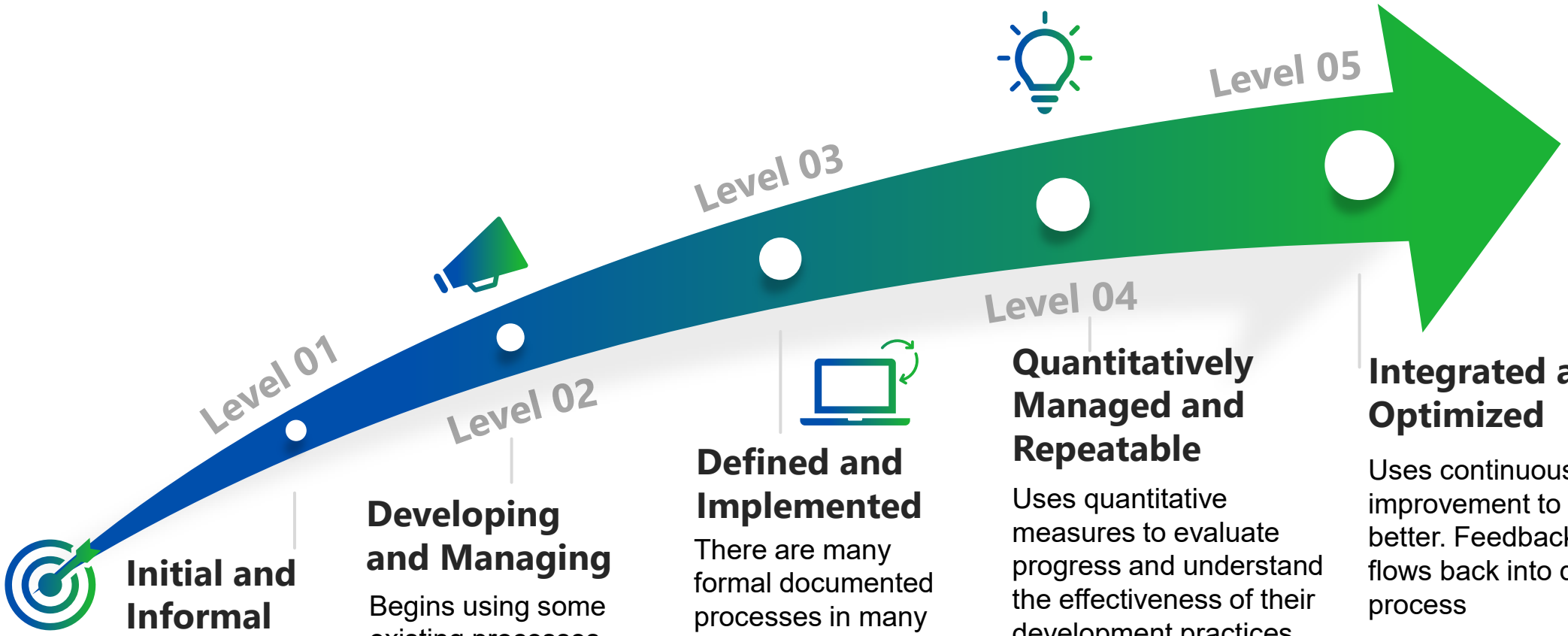
- **Provide tools to help research administration offices:**
  - *Identify areas of focus and improvement*
  - *Set goals and priorities*
  - *Influence and justify resource allocation*
  - *Improve strategic planning and business operations*
  - *Track key aspects of an effective research analytics program*

Dimensions



Conceptual Framework of *Research Analytics Capabilities* (RAC)

RAC Maturity Assessment Arc



Initial and Informal

Work gets done, but is subject to delays and budget overrun

Developing and Managing

Begins using some existing processes, such as reusing codes between projects

Defined and Implemented

There are many formal documented processes in many service areas

Quantitatively Managed and Repeatable

Uses quantitative measures to evaluate progress and understand the effectiveness of their development practices

Integrated and Optimized

Uses continuous process improvement to always get better. Feedback from projects flows back into development process

A Study of the HERD Survey

Purpose

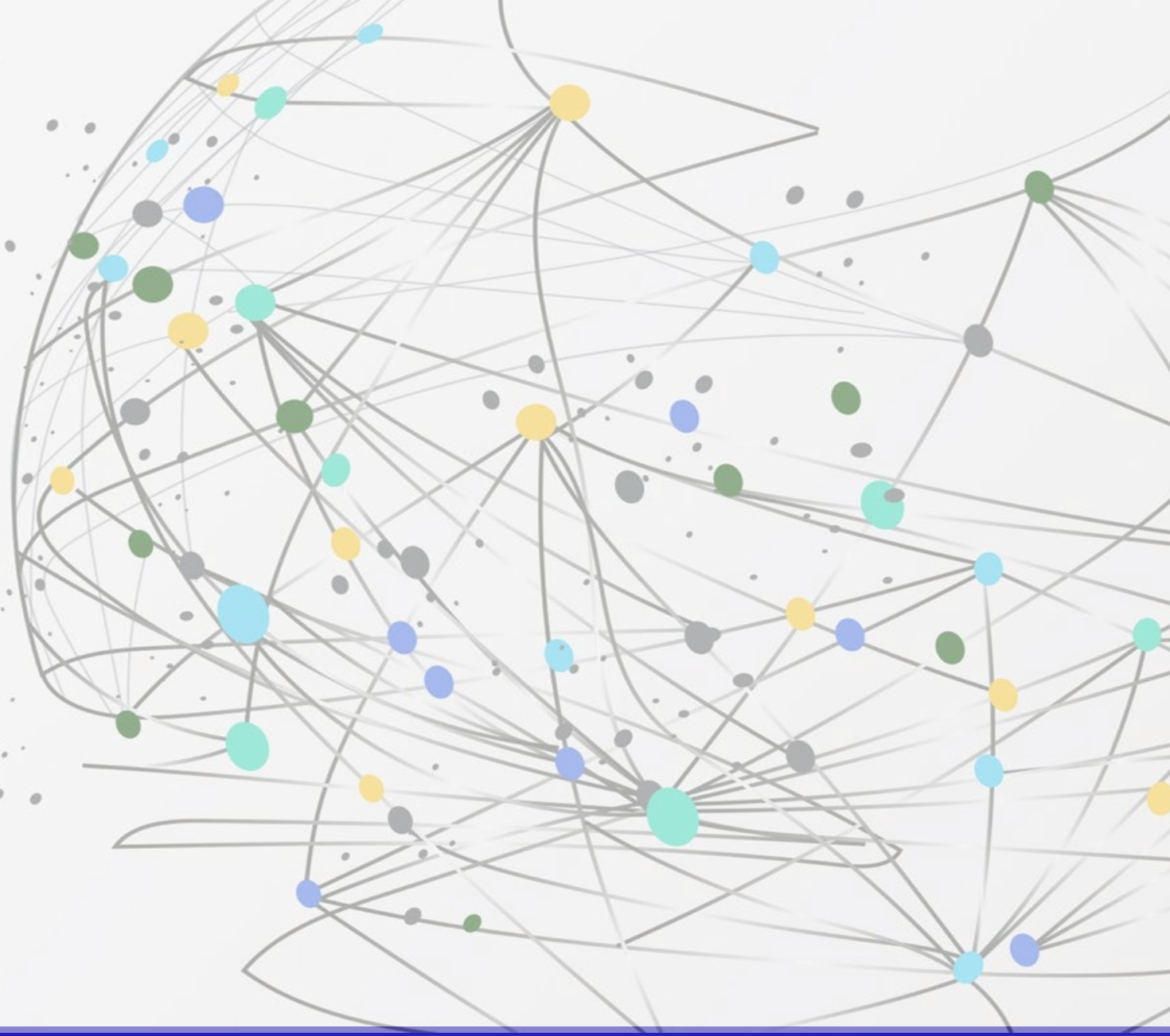
- Gather information on institutions' utilization of HERD Survey results
- Propose best practices to collect data for the HERD Survey

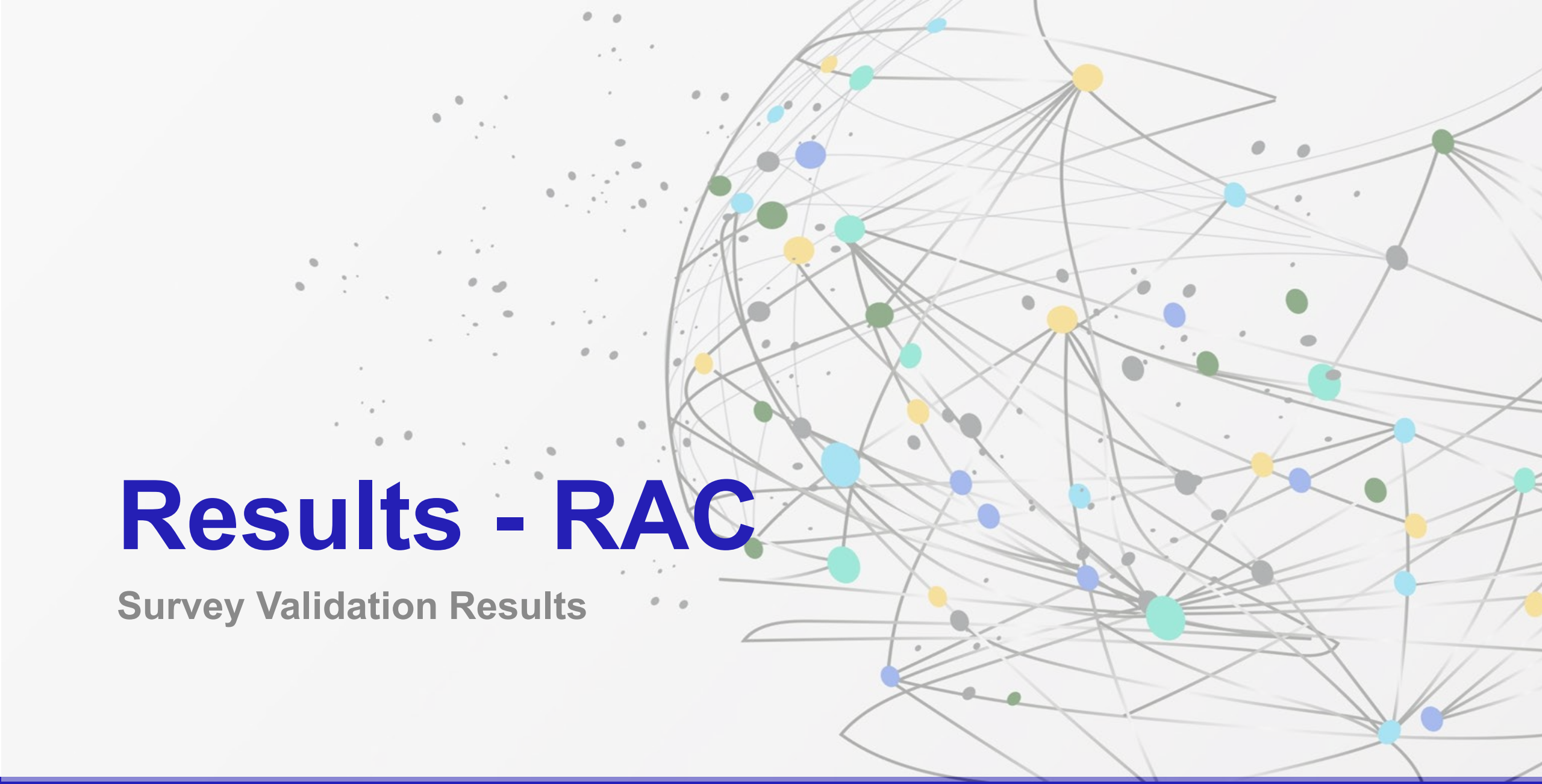
Questions

- Relative ease to complete and usefulness of 16 HERD Survey Questions
- Difficulty of capturing expenses
- Difficulty of calculating responses to questions

Results

- Quality of the RAC scale
- Quantitative survey results
  - RAC survey
  - HERD survey
    - Results utilization
    - Data collection
- Qualitative comment analysis





Results - RAC

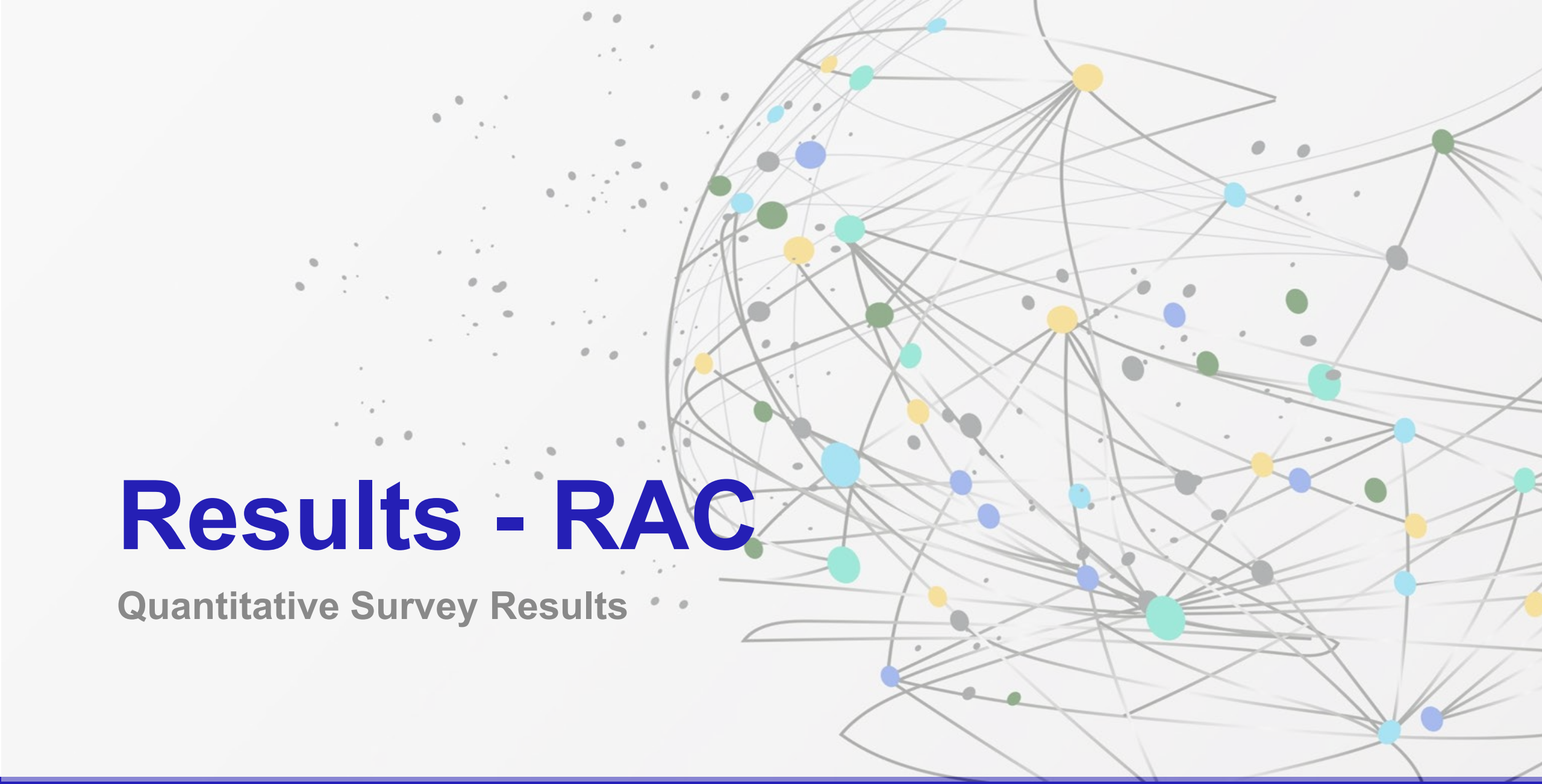
Survey Validation Results

Survey Respondents

Note: Map is not to scale, modified to include Hawaii and Puerto Rico

Survey Validation Results

- High reliability (persons: 0.92; items: 0.98)
- Presence of a second dimension (eigenvalue: 4.45)
- But dimensions are highly correlated (lowest disattenuated correlation: 0.64)
- A simplified rating scale is recommended
- All survey items function properly



Results - RAC

Quantitative Survey Results

RAC - Respondent Demographics

211
respondents

90
comments

The **University of Kentucky Research Analytics Capabilities** (UK RAC) survey was conducted in June 2023.

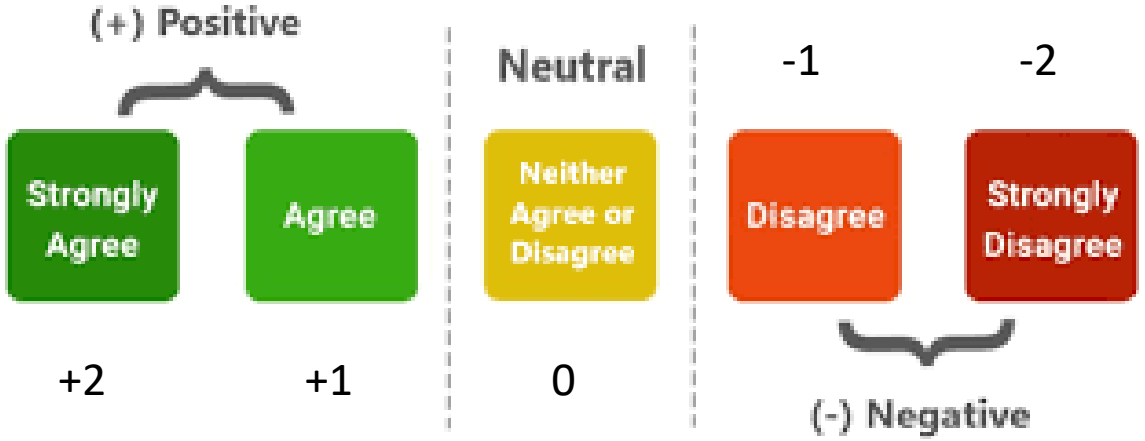
The UK RAC survey was administered through an anonymous online link.

211 research administration professionals responded to the UK RAC survey.

90 (42.7%) of your respondents provided improvement feedback in the comments section.

RAC - Average Response Scores

This survey report includes summaries and demographic comparisons of the UK RAC survey dimensions and statements using average response scores. The average response scores for the 36 statements range from -2 to +2. Their corresponding response options are listed below (for positively-phrased items):



RAC - Overall and Six Dimension Results

RAC Overall (ARS)

*ARS = Average Response Score

Data Dimension ARS

Analytics Dimension ARS

Technology Dimension ARS

Governance Dimension ARS

Culture Dimension ARS

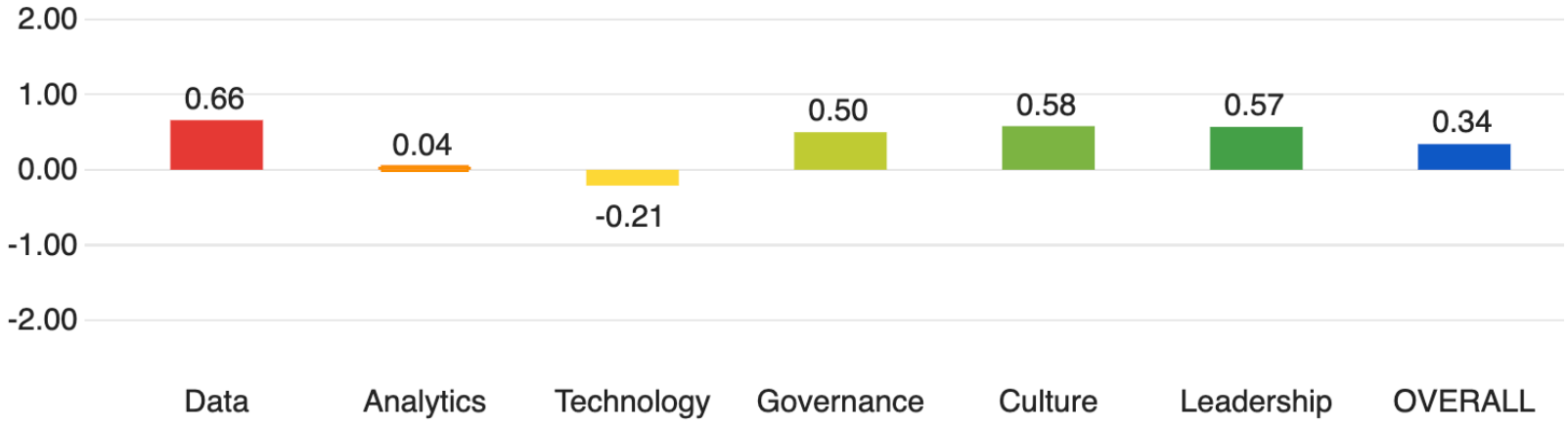
Leadership Dimension ARS

RAC - Overall and Six Dimension Results

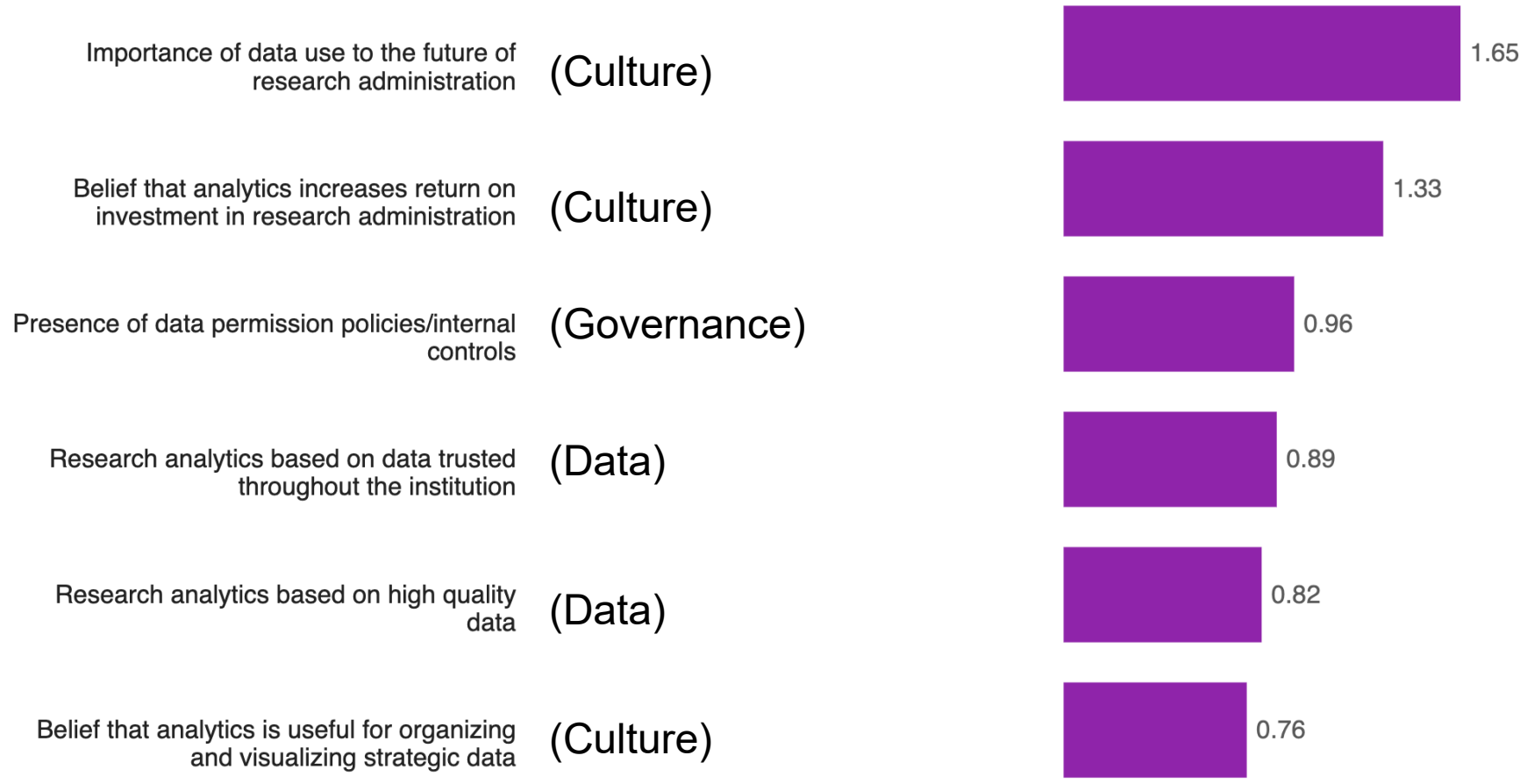
RAC Overall (ARS)

*ARS = Average Response Score

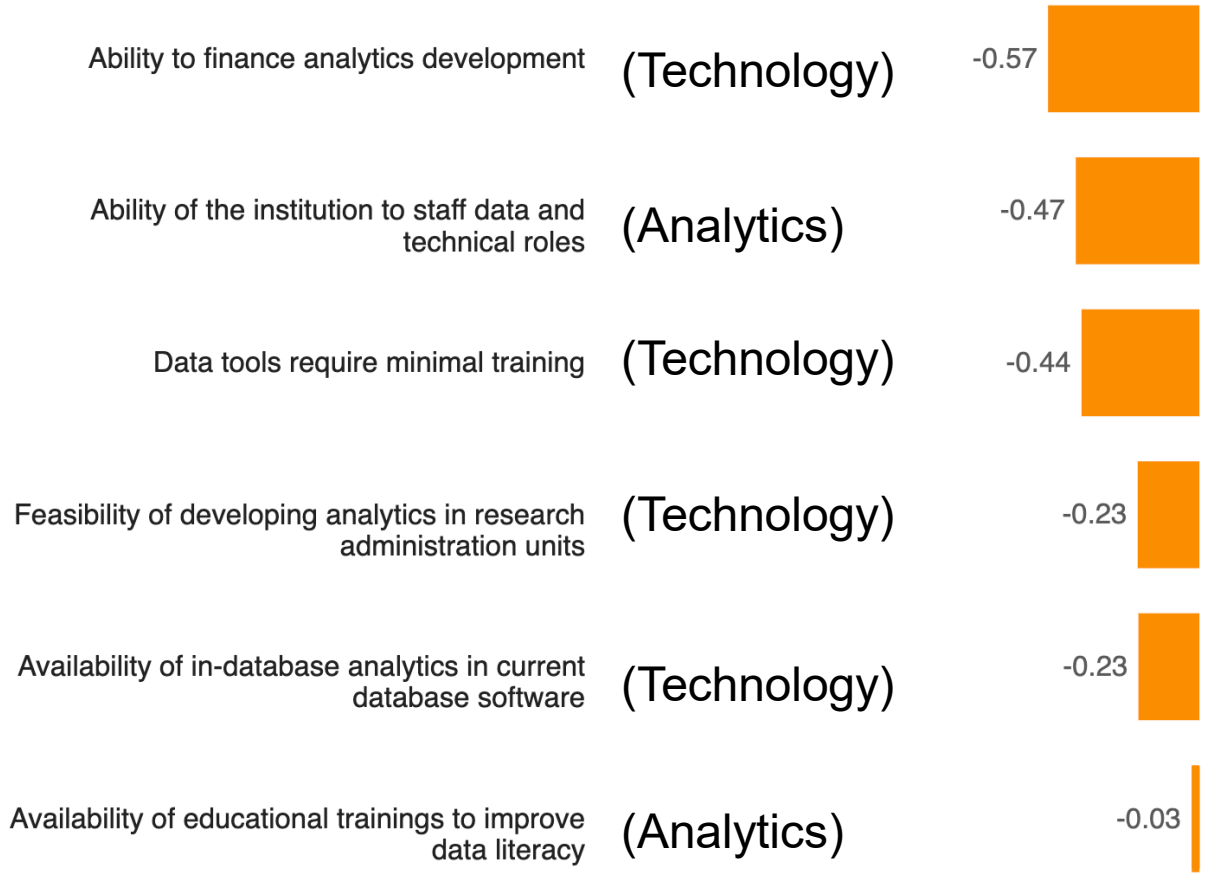
Overall and Six Dimensions Average Response Scores (ARS)



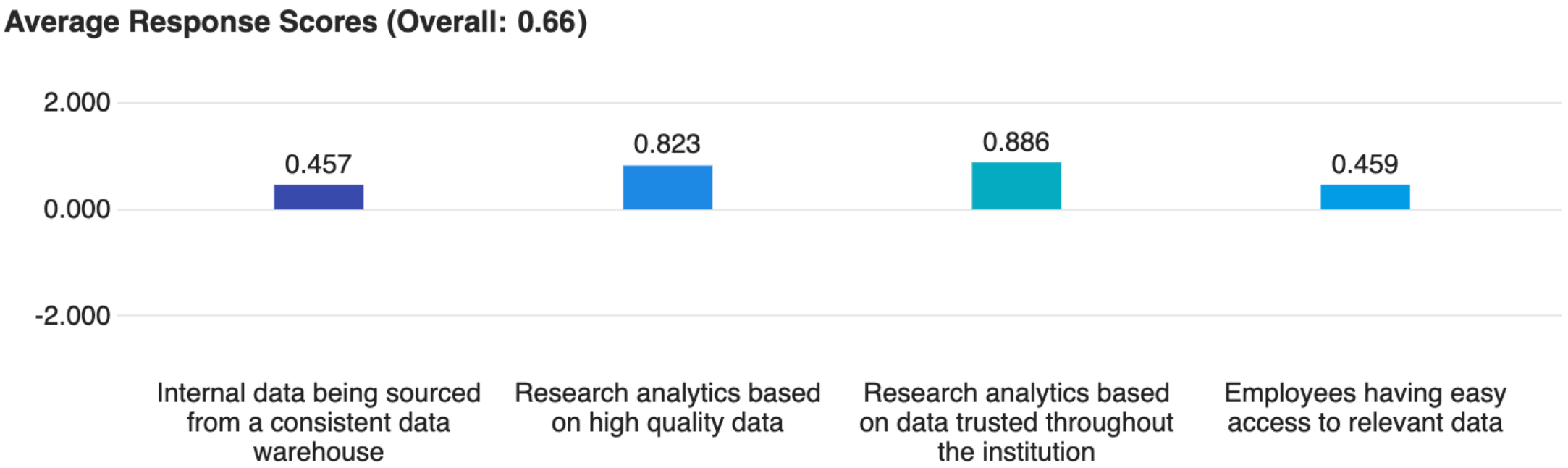
RAC - Top Strengths



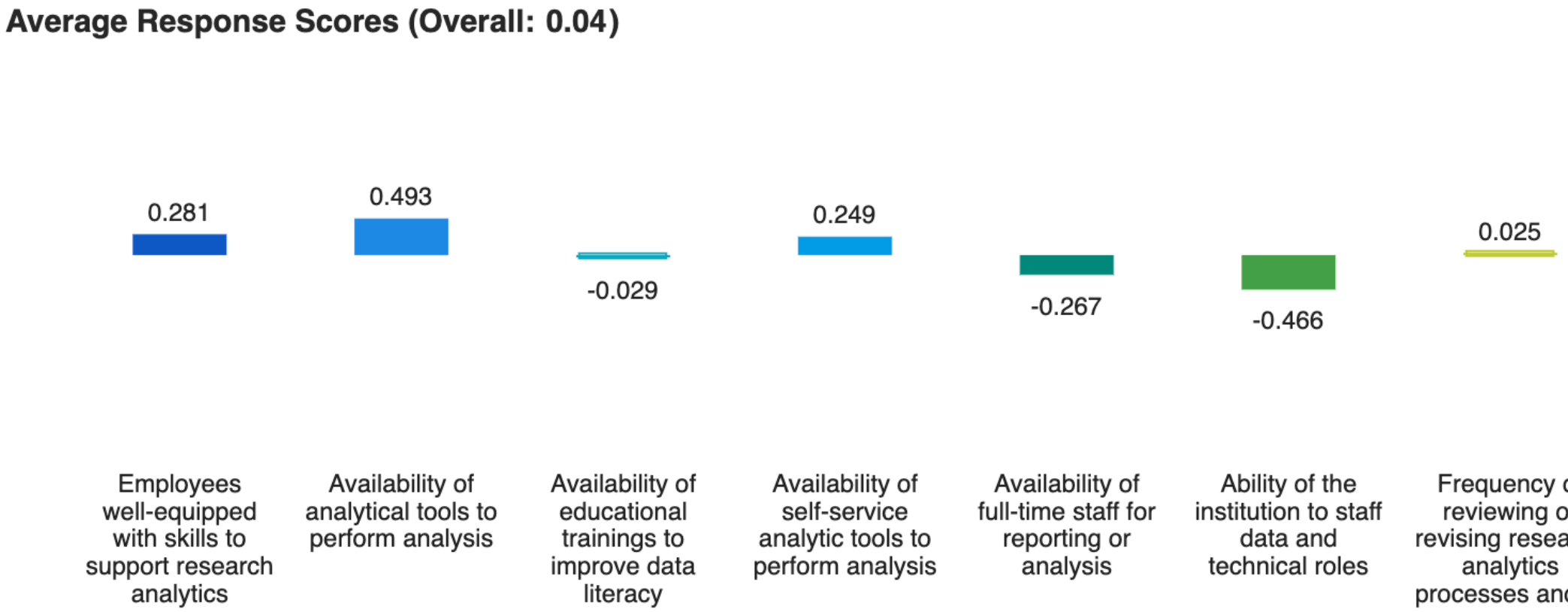
RAC - Growth Priorities



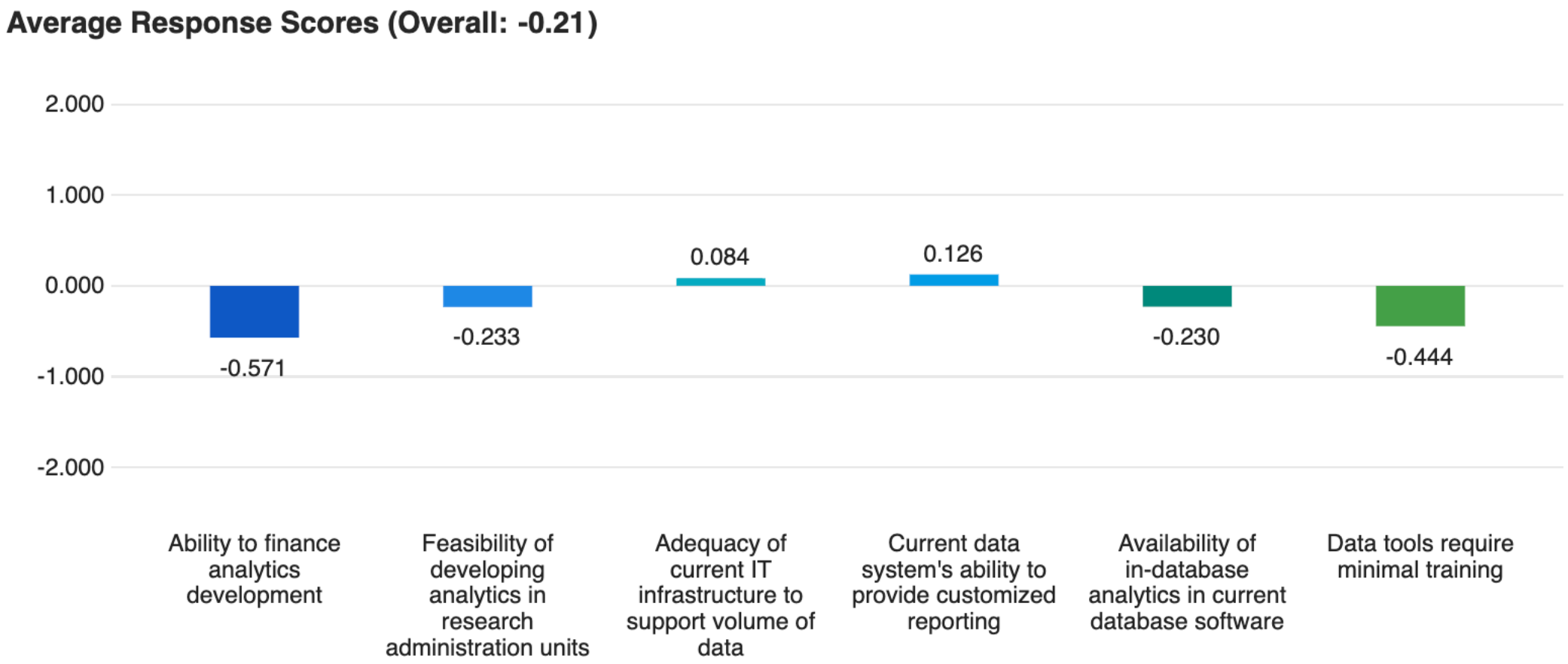
RAC - Data Dimension Results



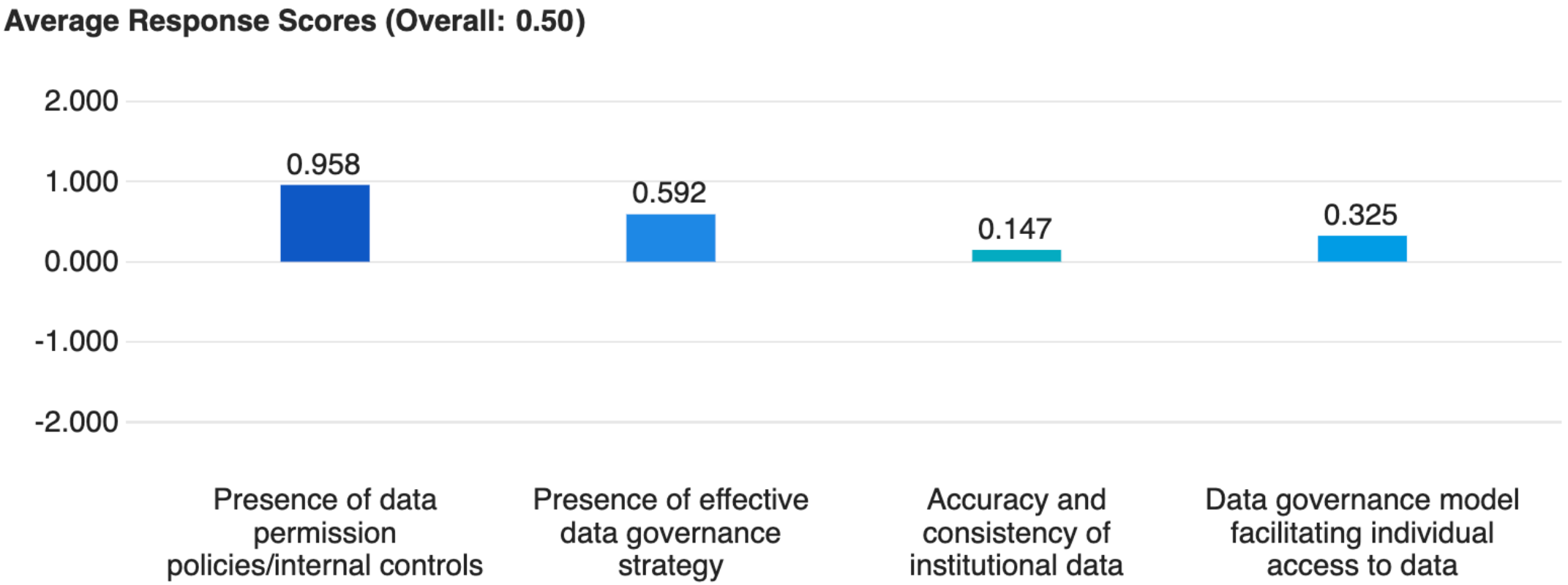
RAC - Analytics Dimension Results



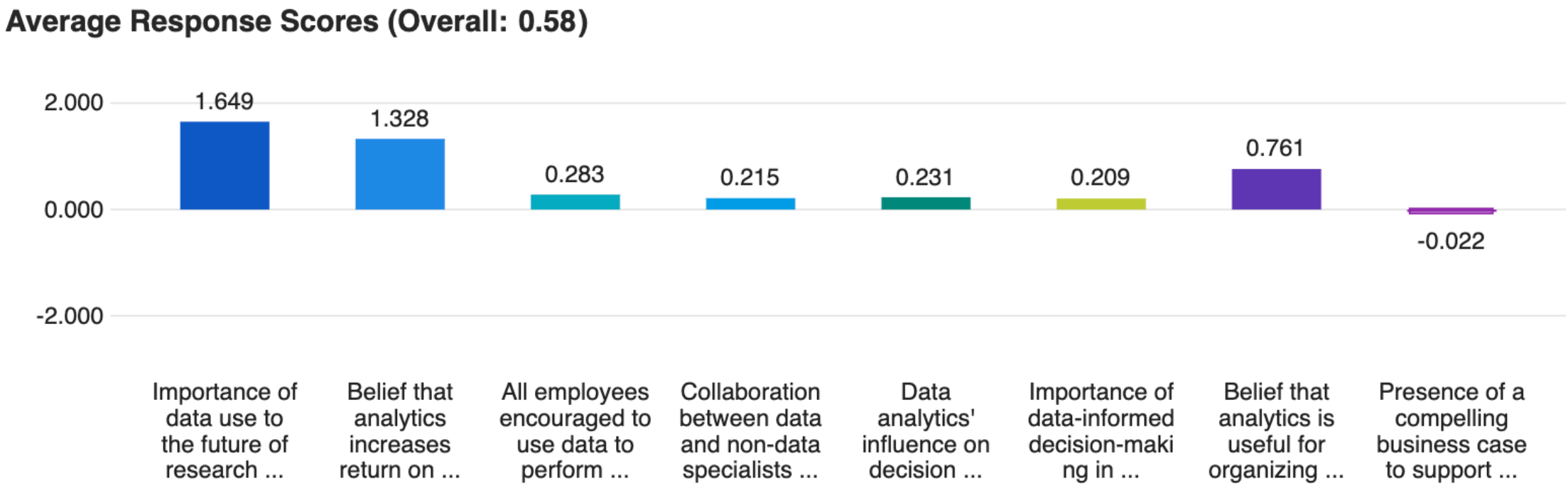
RAC - Technology Dimension Results



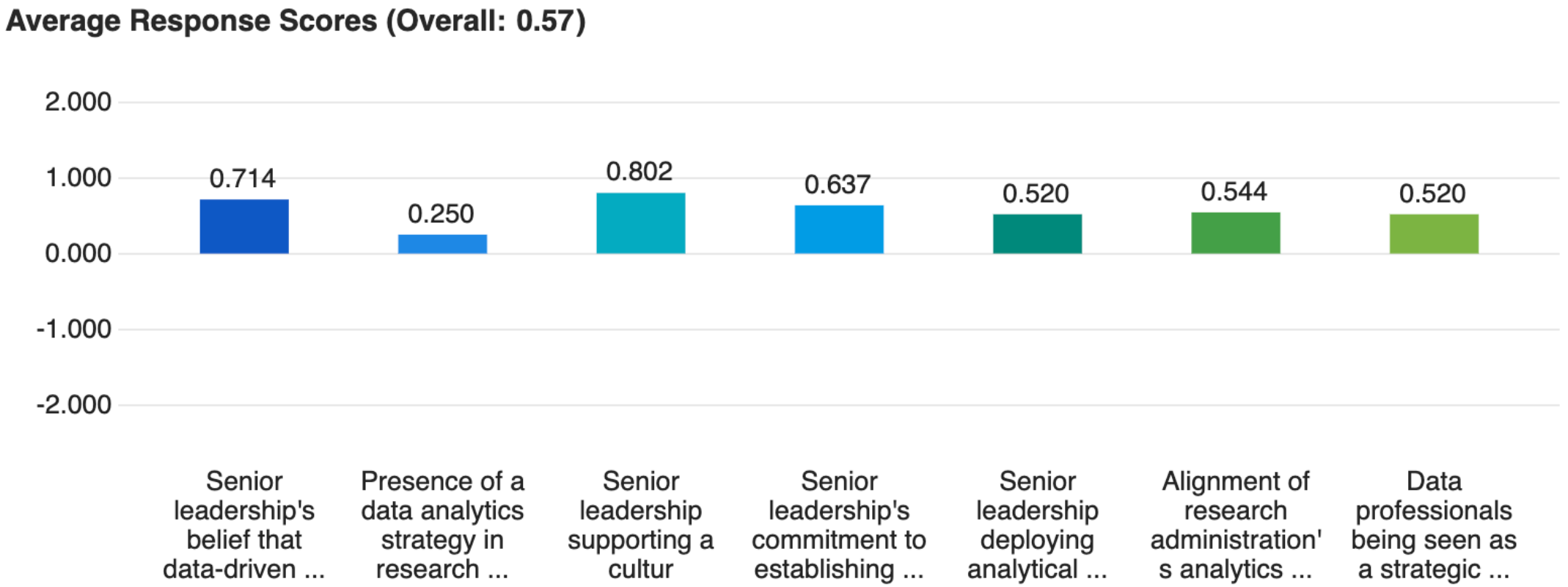
RAC - Governance Dimension Results



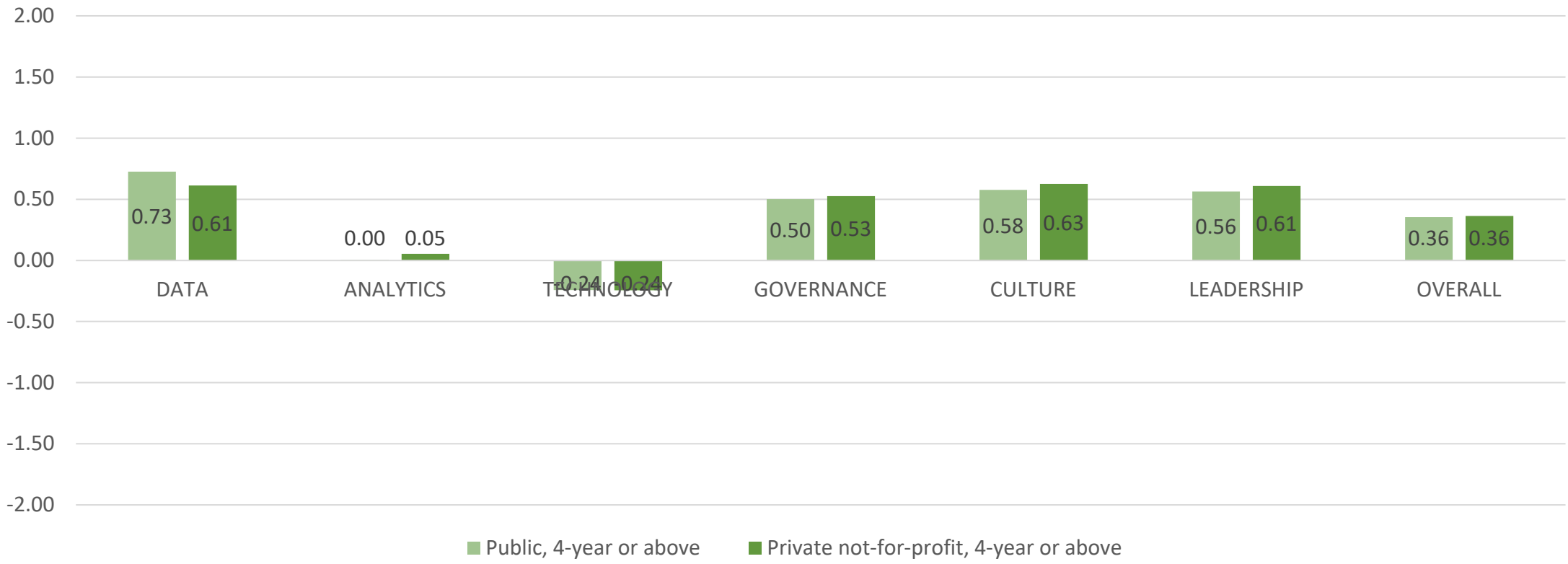
RAC - Culture Dimension Results



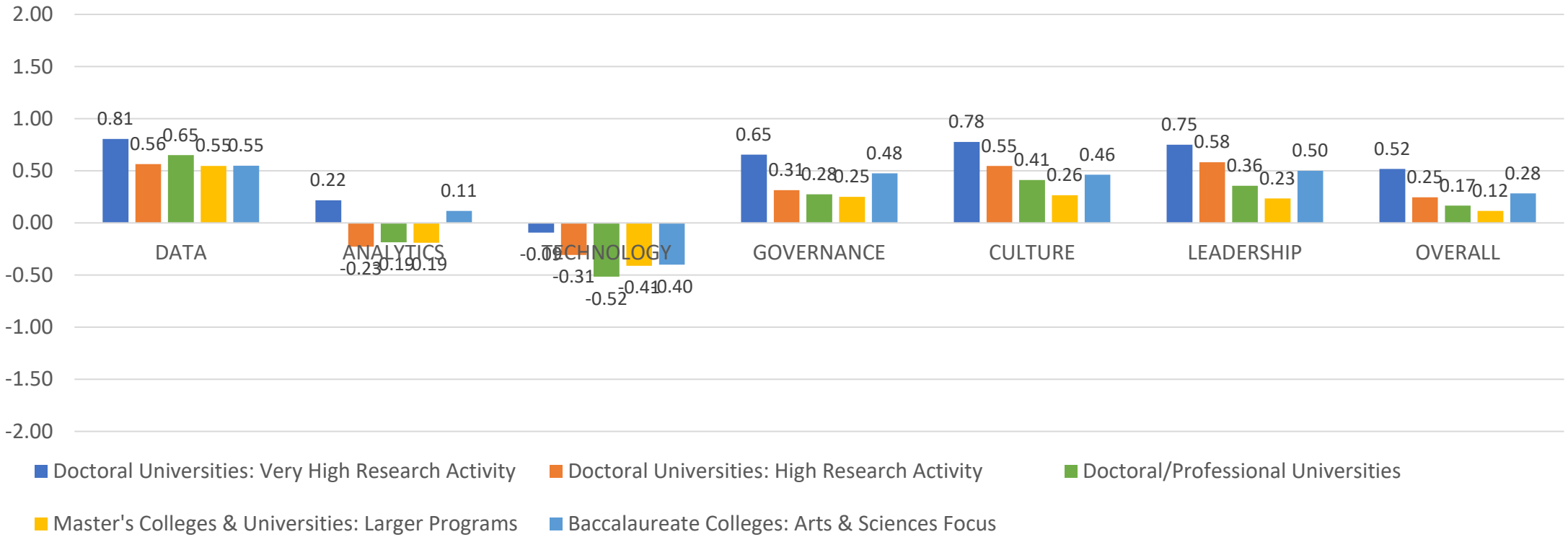
RAC - Leadership Dimension Results



RAC - Comparison by Sector



RAC - Comparison by Carnegie Classification 2021



Respondent Comments

Centralized database

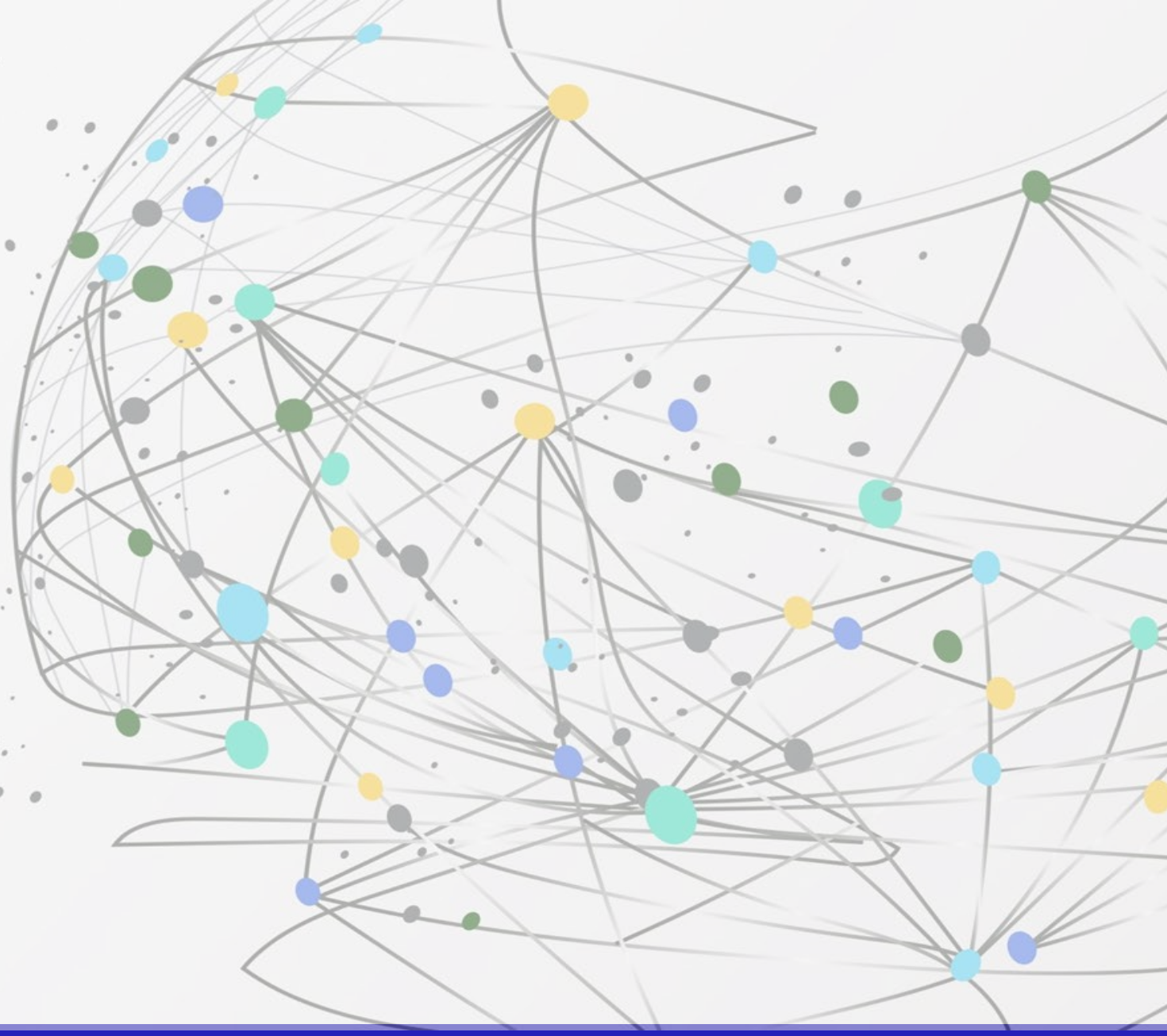
Robust staffing in data analytics

An ERA system and implementation

Leadership buy-in

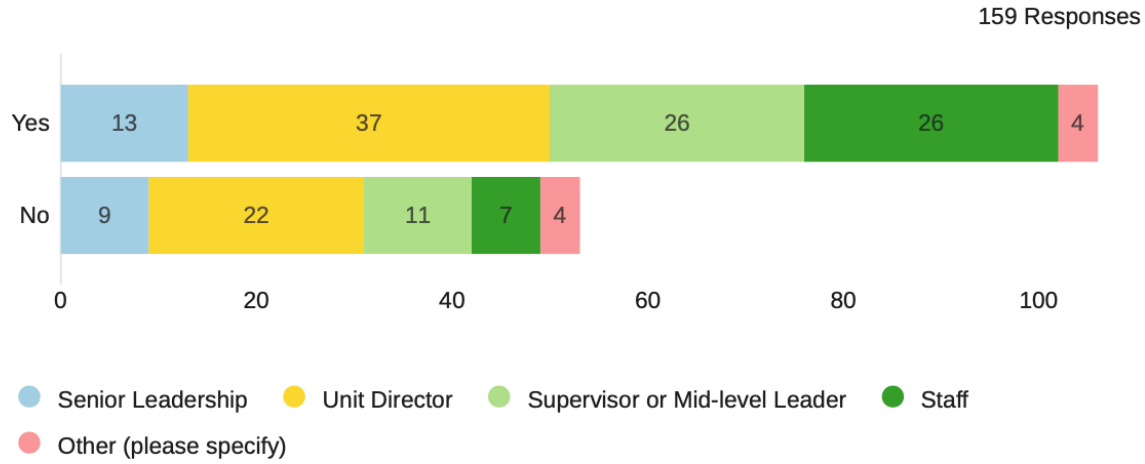
Results - HERD

Quantitative Survey Results



HERD - Descriptive Statistics

Is *data collection* for HERD Survey part of your position duties?



211

Total no. of responses

116

Responded to HERD Survey Data Collection Section

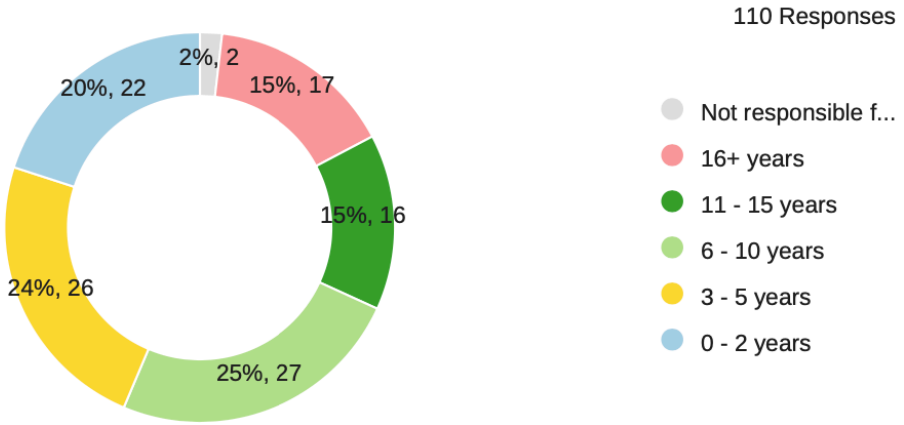
125+

Participating Institutions

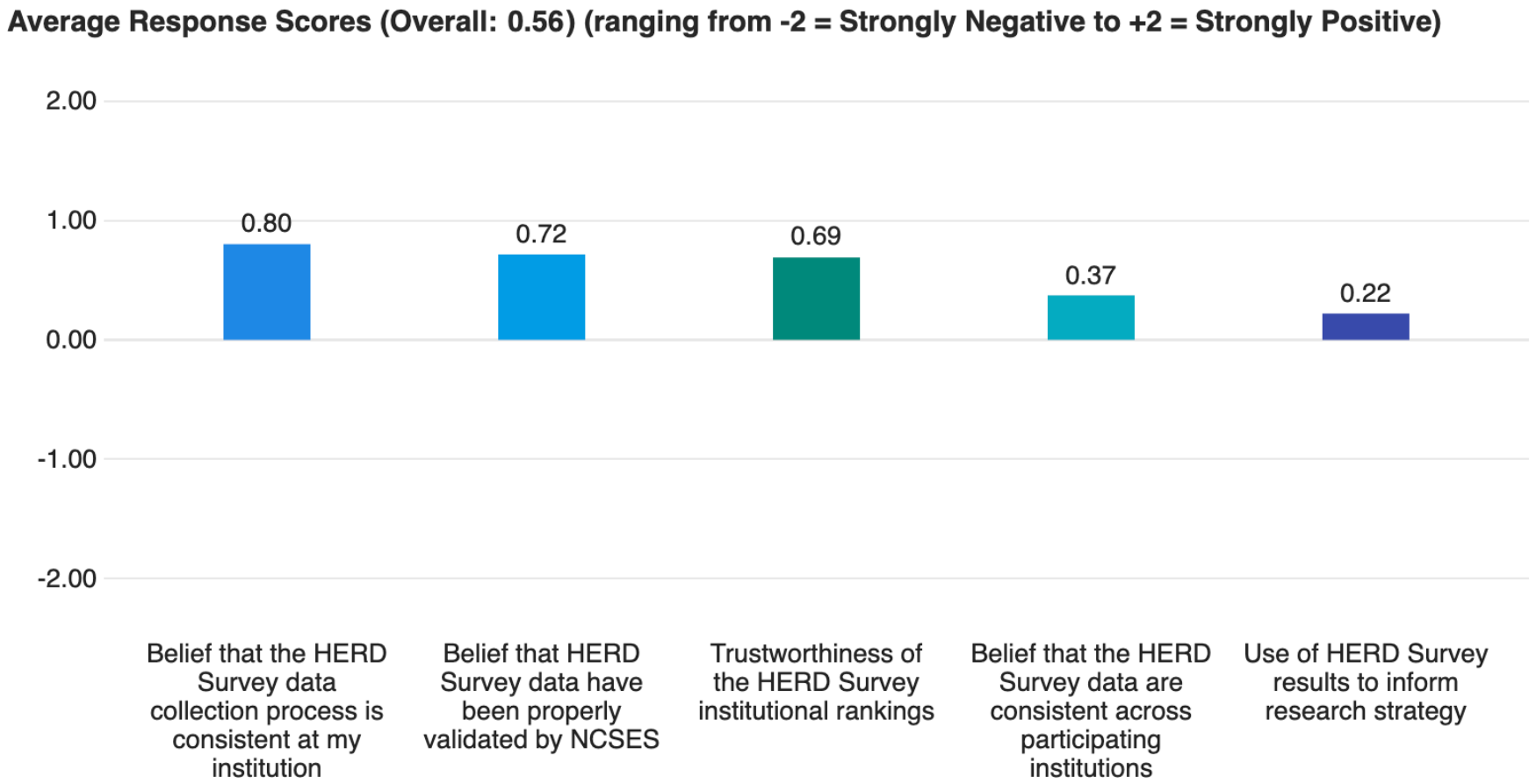
41

US States (incl. DC) Surveyed

Respondents' Years of Experience with HERD Survey Data Collection



HERD - Results Utilization

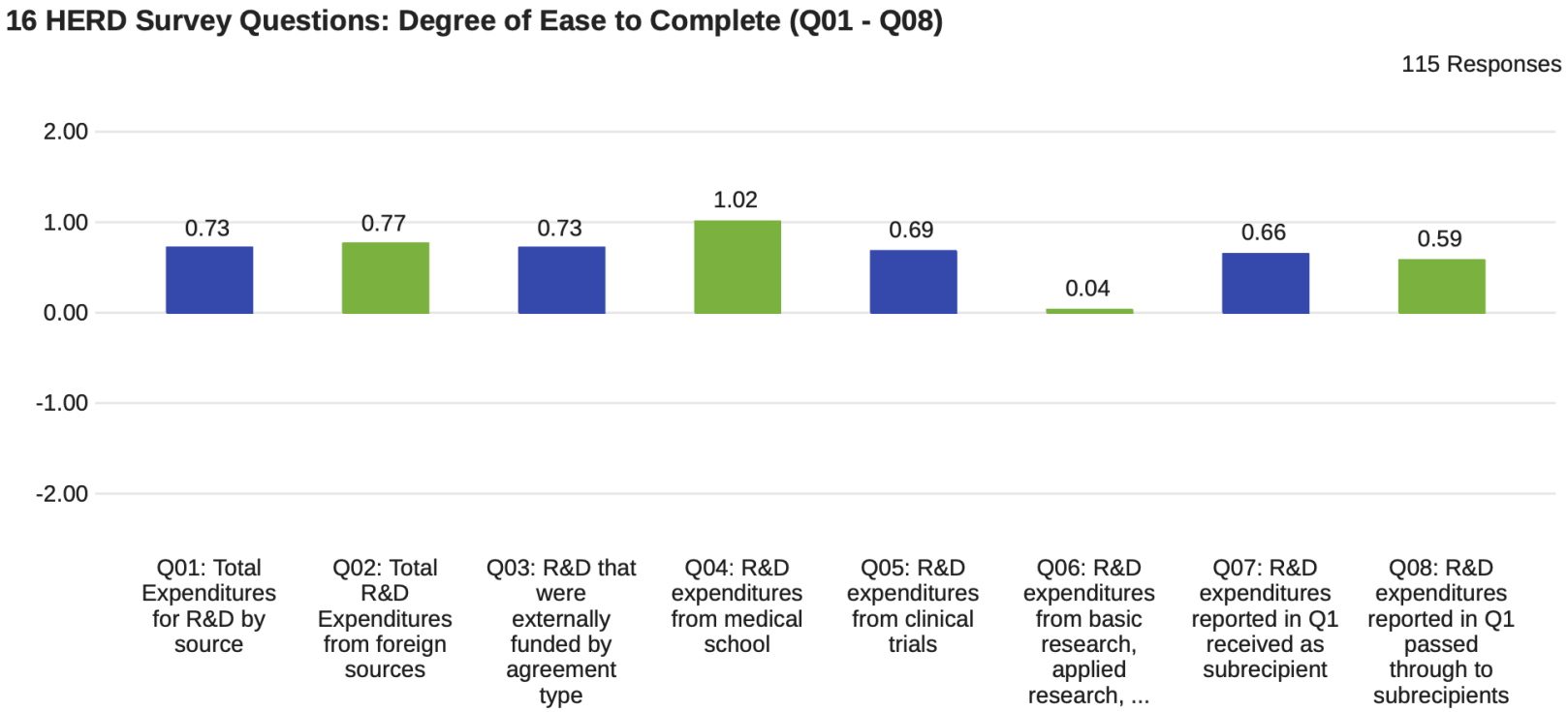


HERD - Data Collection

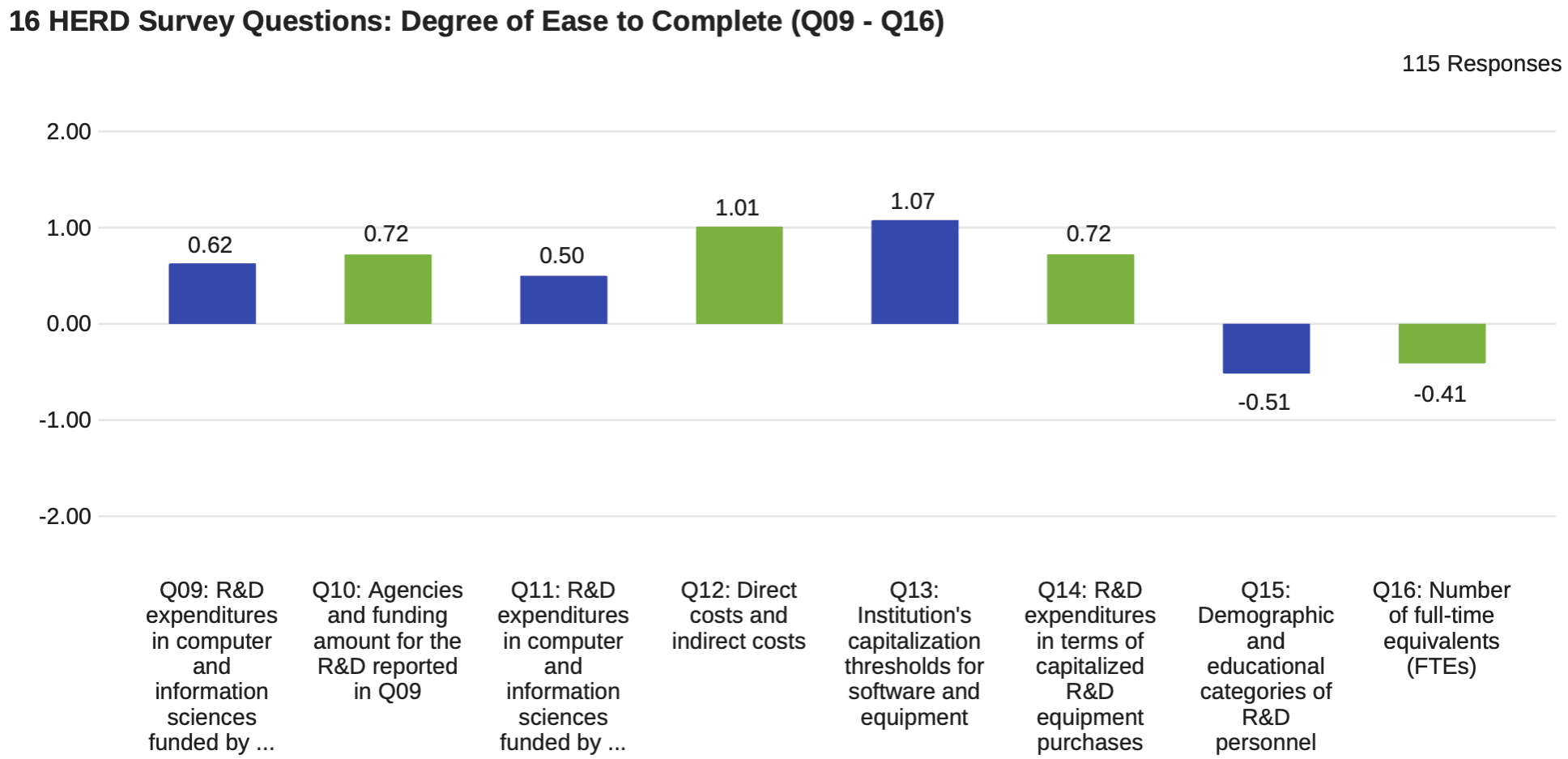
Average Response Scores (Overall: 0.34) (ranging from -2 = Strongly Negative to +2 = Strongly Positive)

Field	Mean
HERD data collection form provides clear definitions of key terms	0.76
Institutions' accounting system effective differentiating between R&D and non R&D expenditures	0.73
Senior leadership placing high priority in compiling accurate responses for HERD Survey	0.72
Institution's accounting system effectively documenting institutional funds and cost sharing	0.68
Primary data system allowing for accurate dollar amount calculations	0.66
The work of HERD Survey data collection personnel valued by institution	0.57
HERD data collection staff having the right data analytics tools to gather the data	0.53
Collaborations between units to provide and evaluate comprehensive responses for HERD questions	0.44
NCSES providing adequate training and support for HERD Survey data collection	0.35
Data allowing for ease and accuracy of unrecovered indirect cost calculations	0.22
Accessibility of HERD data from the primary data system	0.21
Accessibility of the data required for completing the HERD Survey	-1.07

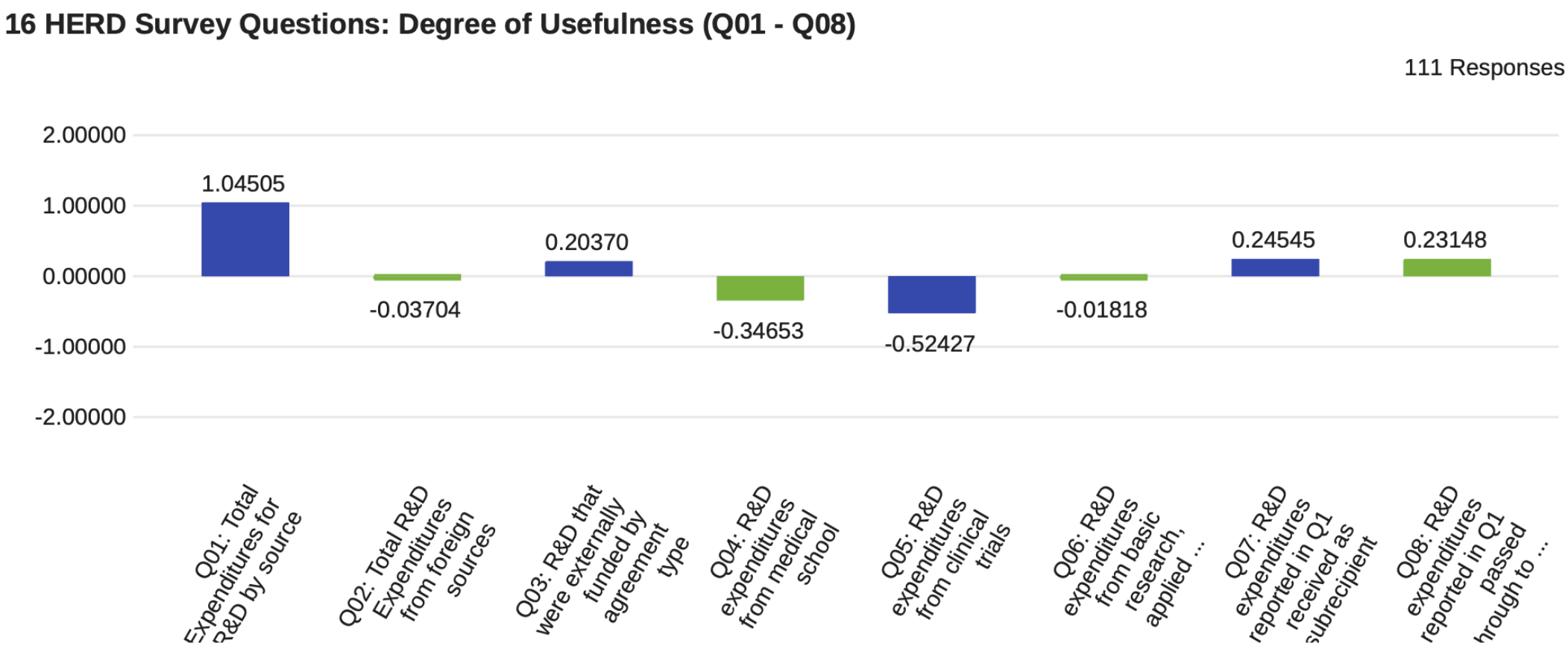
HERD - Ease to Complete (Q01 - Q08)



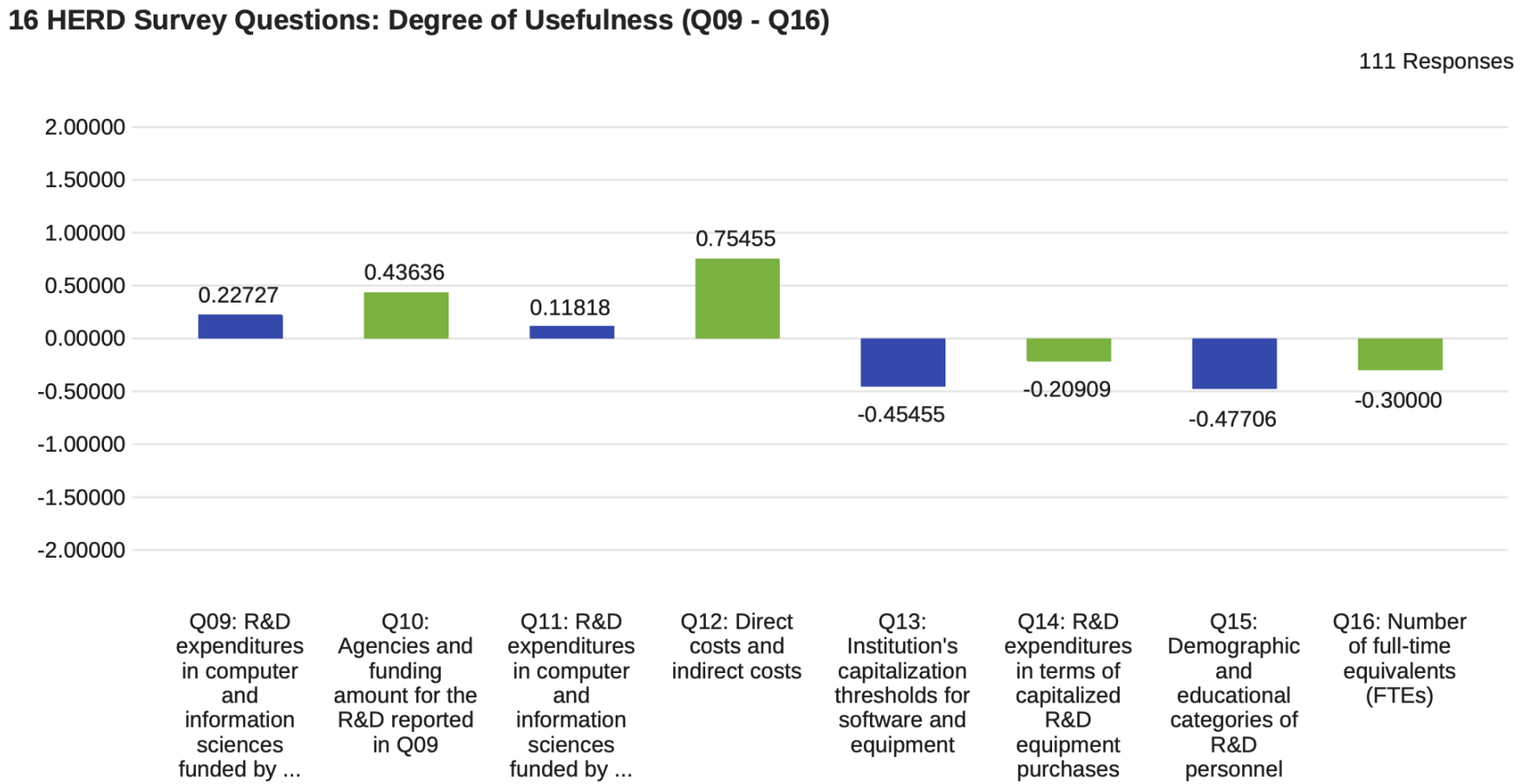
HERD - Ease to Complete (Q09 - Q16)



HERD - Usefulness (Q01 - Q08)



HERD - Usefulness (Q09 - Q16)



Thank you!

Any questions?

Q and A

Contact

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