

REIMAGINING THE FUTURE OF THE CARNEGIE CLASSIFICATIONS

MARCH 3, 2023

ACE[®] American
Council on
Education[®]



**Carnegie
Foundation**
for the Advancement
of Teaching

CONTEXT ON HOW WE GOT HERE

ACE-CARNEGIE PARTNERSHIP

- ACE and the Carnegie Foundation partnered in February 2022 to:
 - Bring together the universal and elective classifications into one home at ACE
 - Design a new Social and Economic Mobility classification
 - Refine the classification system to better reflect the public purpose, mission, focus, and impact of higher education



Carnegie Foundation
for the Advancement of Teaching

VISION

Redesign the Carnegie Classifications to be more usable and modern, better describing the diverse landscape within higher education and incentivizing actions that benefit students.

WHAT WE HAVE HEARD & LEARNED

- 1 Classifications matter
- 2 Existing classification framework is useful
- 3 It incentivizes scaling up doctoral and research activity – potentially at the cost of other missions – and does not incentivize actions that improve student outcomes
- 4 Current structure captures only a single dimension
- 5 Research methodology is complicated, non-replicable, and does not measure what many assume it measures
- 6 Community Engagement classification has been well received

NEW AND ENHANCED CLASSIFICATIONS

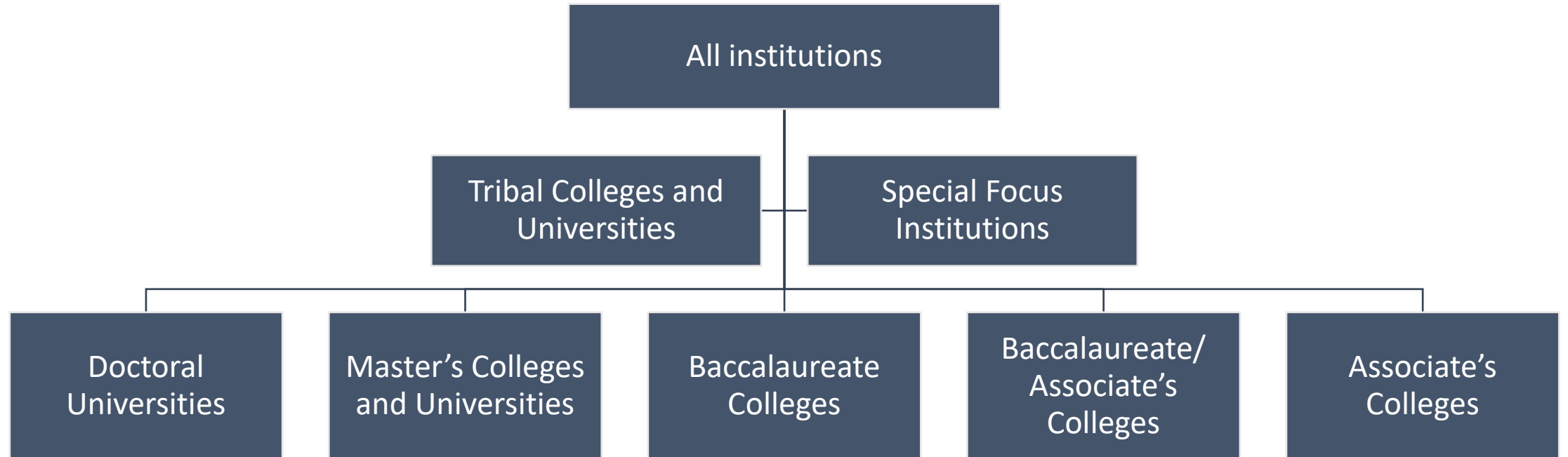
ACE is revisiting the existing methodology and seeking to establish new norms that motivate institutional transformation and learner-centric outcomes

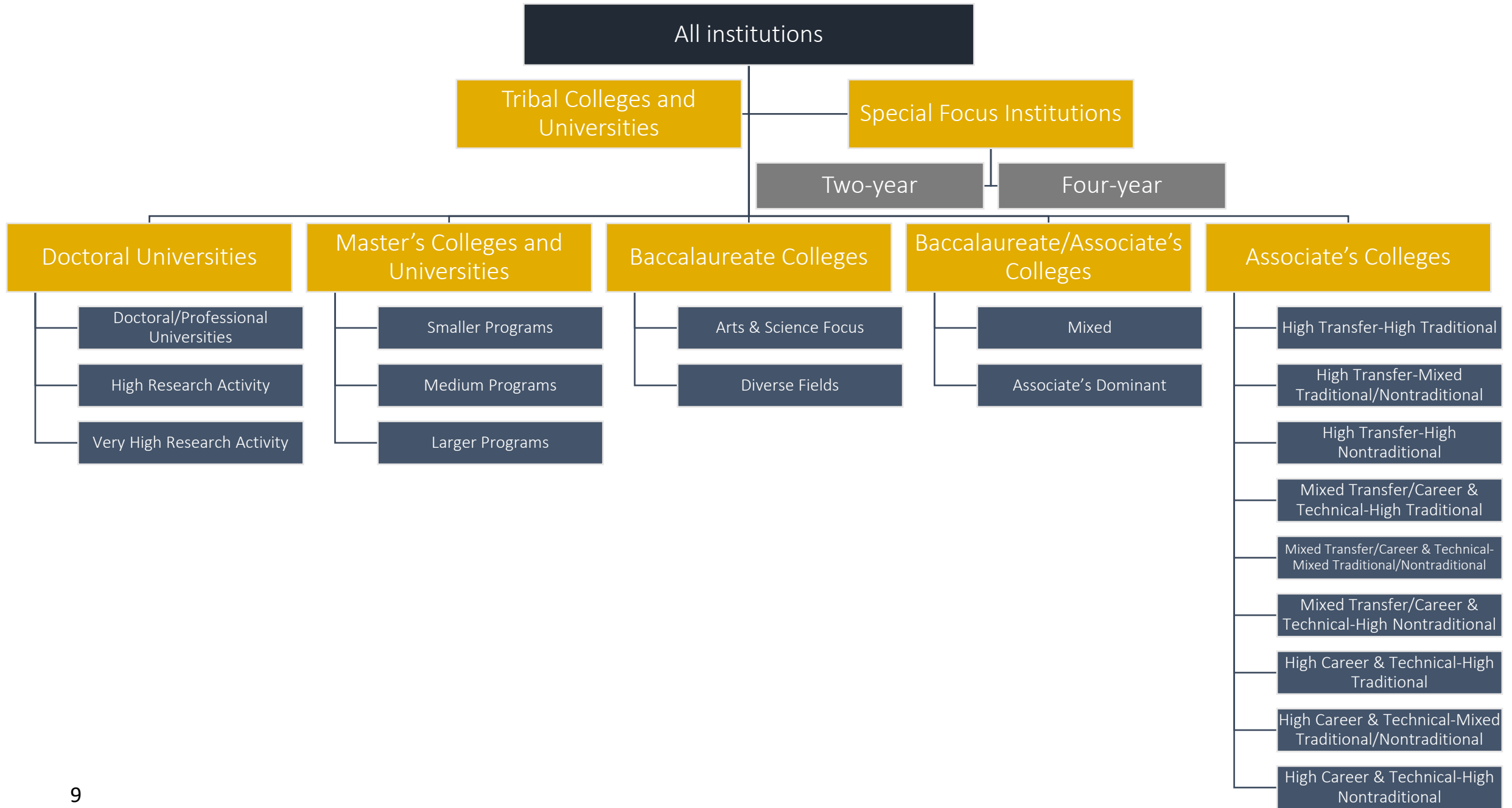


FRAMEWORK FOR THE BASIC CLASSIFICATION AND RESEARCH METHODOLOGY

STRUCTURE FOR THE BASIC CLASSIFICATION

IN TOTAL, THERE ARE 33 CLASSIFICATIONS





CLASSIFICATIONS CAPTURE ONLY THE HIGHEST DEGREE OFFERED

CLASSIFICATION WAS DESIGNED WHEN DEGREE ATTAINMENT WAS A LADDER

University of Kentucky

- Bachelor's: 5,638
- Master's: 1,324
- Doctor's – research: 334
- Doctor's – PP: 586
- **Classification: Doctoral: Very High Research (R1)**

Cal State - Long Beach

- Bachelor's: 8,914
- Master's: 1,714
- Doctor's – research: 34
- Doctor's – PP: 36
- **Classification: Doctoral: High Research (R2)**

Liberty University

- Associate's: 1,122
- Bachelor's: 9,621
- Master's: 8,971
- Doctor's – research: 418
- Doctor's – PP: 198
- **Classification: Doctoral/Prof Univ.**

Bryn Mawr College

- Bachelor's: 419
- Master's: 94
- Doctor's – research: 8
- **Classification: Bacc A&S (exception from Master's Medium)**

Siena College

- Bachelor's: 769
- Master's: 61
- **Classification: Master's Small**

Holy Cross College

- Associate's: 72
- Bachelor's: 91
- **Classification: Bacc A&S**

Miami Dade College

- Associate's: 10,700
- Bachelor's: 1,200
- **Classification: Bacc/Asso: Asso Dominant**

HOW THE CARNEGIE CLASSIFICATIONS ARE USED BY US NEWS

Doctoral Universities

National Universities

Master's Colleges and Universities

Regional Universities

Baccalaureate Colleges: Arts and Sciences

National Colleges

Baccalaureate Colleges: Diverse Fields

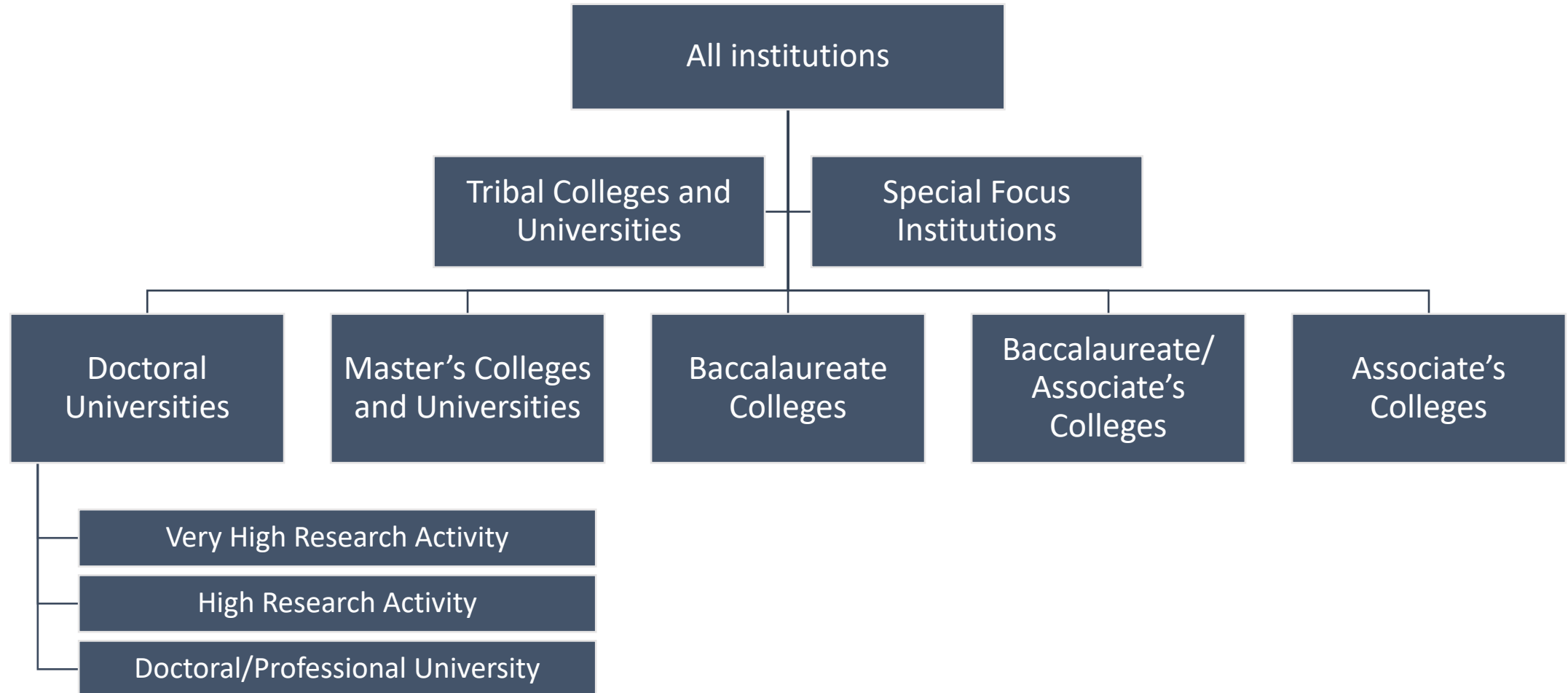
Baccalaureate/Associate's Colleges: Mixed
Baccalaureate/Associate's Colleges

Regional Colleges

Baccalaureate/Associate's Colleges: Associate's Dominant

STRUCTURE FOR THE BASIC CLASSIFICATION

IN TOTAL, THERE ARE 33 CLASSIFICATIONS



QUICK HISTORY OF THE RESEARCH INDEX METHODOLOGY

- It has changed – a lot – over the years
- To the extent we can tell, the changes were never publicized prior to the release of the classifications
 - In some cases, they were not clearly publicized when the classifications were released

QUICK HISTORY OF THE RESEARCH INDEX METHODOLOGY

1973 &
1976

TOP TIER

R1: Top 50 by federal research grant \$ received (if awarded 50+ Ph.Ds)

R2: Top 100 by federal research grant \$ received (if awarded 50+ Ph.Ds)

1987 &
1994

THRESHOLD

R1: Receive at least \$33.5M (1987) or \$40M (1994) in federal research grants and award 50+ Ph.Ds

R2: Receive \$12.5 – \$33.5M (1987) or \$12.5 - \$40M (1994) in federal research grants and award 50+ Ph.Ds

2000

DEGREE-BASED ONLY

Research – Extensive:
Award 50+ research doctorates across 15+ disciplines

Research – Intensive:
Award 10 research doctorates across 3+ disciplines or 20+ overall

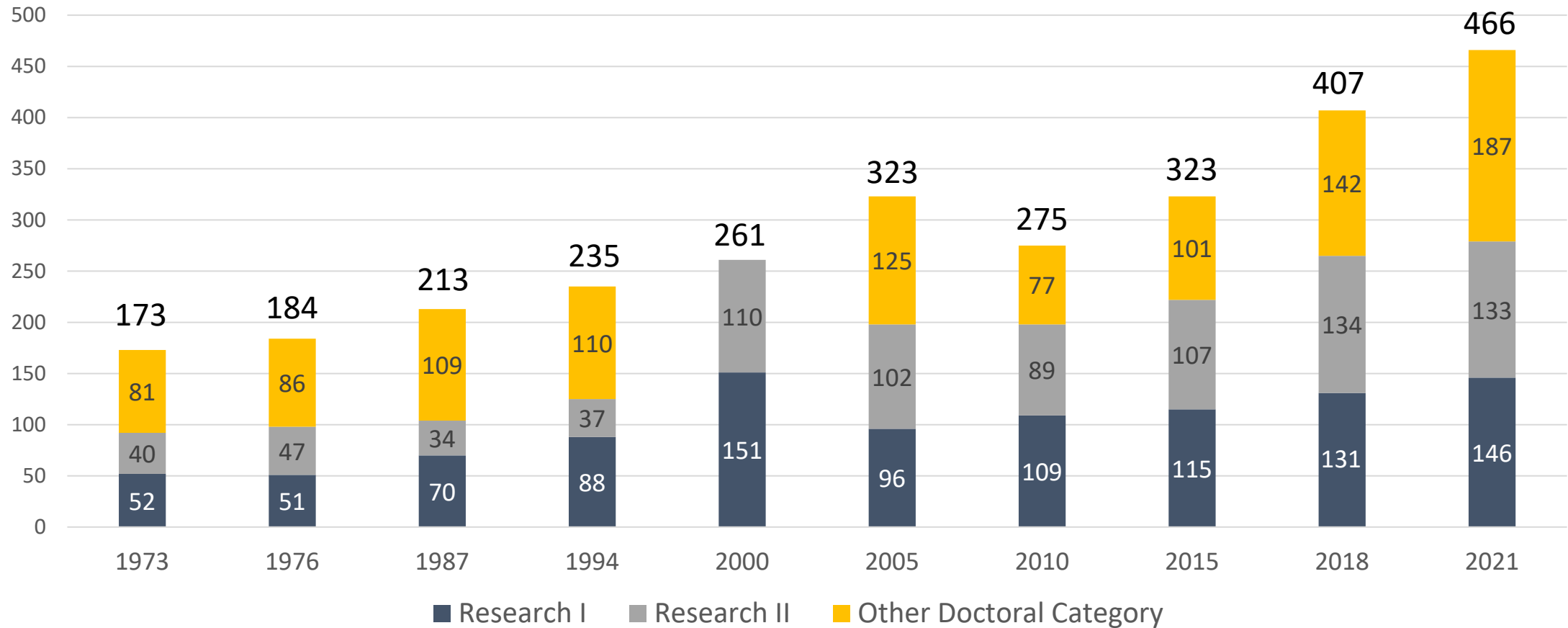
2005 to
today

PCA + FORMULA W/ 10 VARIABLES

Very High Research Activity – in top half of all eligible institutions based on ranked position in methodology; eligible = awarded 20+ research docs (+ spent \$5+ million starting in 2018)

High Research Activity – in bottom half of all eligible institutions based on ranked position in methodology; eligible = awarded 20+ research docs (+ spent \$5+ million starting in 2018)

GROWTH OF THE DOCTORAL/RESEARCH CLASSIFICATION



VERY HIGH RESEARCH (R1) & HIGH RESEARCH (R2) ARE BASED ON MEASURES OF RESEARCH ACTIVITY

- Institutions included in these two classifications in 2021:
 - Awarded at least **20 research/scholarship doctoral degrees** during the update year (2019-20 for 2021 classification)
 - *Excludes Special Focus Institutions and Tribal Colleges*

AND

- Reported at least **\$5 million in total research expenditures** through the National Science Foundation (NSF) Higher Education Research & Development Survey (HERD)
- Classification is based on a multi-dimensional formula that incorporates
 - Volume
 - Density/intensity
 - Comprehensiveness

THERE ARE 10 MEASURES INCLUDED

Aggregate index – capturing volume

1. Research & development (R&D) expenditures in science and engineering (S&E)
2. R&D expenditures in non-S&E fields
3. S&E research staff (postdoctoral appointees and other non-faculty research staff with doctorates)
4. Doctoral conferrals in humanities
5. Doctoral conferrals in social science
6. Doctoral conferrals in STEM (science, technology, engineering, and mathematics) fields
7. Doctoral conferrals in other research fields (e.g., business, education, public policy, social work)

Per capita index – capturing density/intensity

1. R&D in S&E divided by the number of full-time faculty within the assistant, associate, and full professor ranks
2. R&D in non-S&E divided by the number of full-time faculty within the assistant, associate, and full professor ranks
3. S&E research staff divided by the number of full-time faculty within the assistant, associate, and full professor ranks

Professional Practice doctorates (MD, JD, PharmD, DDS, DVM, etc.) are not included

“BRIEF” VERSION OF THE 2021 METHODOLOGY

1a. Calculate the aggregate index score:

- Rank each of the 7 measures individually in ascending order, where low = 1
- For each of the 7 measures, multiply the rank by the appropriate PCA coefficient (right) to create a weighted rank
- Sum the weighted ranks to create a single number for each institution
- Create a version of the index that starts at zero (subtract the minimum value from each score)

1b. Calculate the per capita index score:

- Rank each of the 3 measures individually in ascending order, where low = 1
- For each of the 3 measures, multiply the rank by the appropriate PCA coefficient (right) to create a weighted rank
- Sum the weighted ranks to create a single number for each institution
- Create a version of the index that starts at zero (subtract the minimum value from each score so the resulting minimum value is 0)

2. Calculate distance to origin for each index pair

3. Convert to standardized form (subtract overall mean and divide by population standard deviation) **and rank from highest to lowest**

4. Determine cutoff: Largest “gap” between points below median

Aggregate analysis (first principal component explained 70% of the total variance)

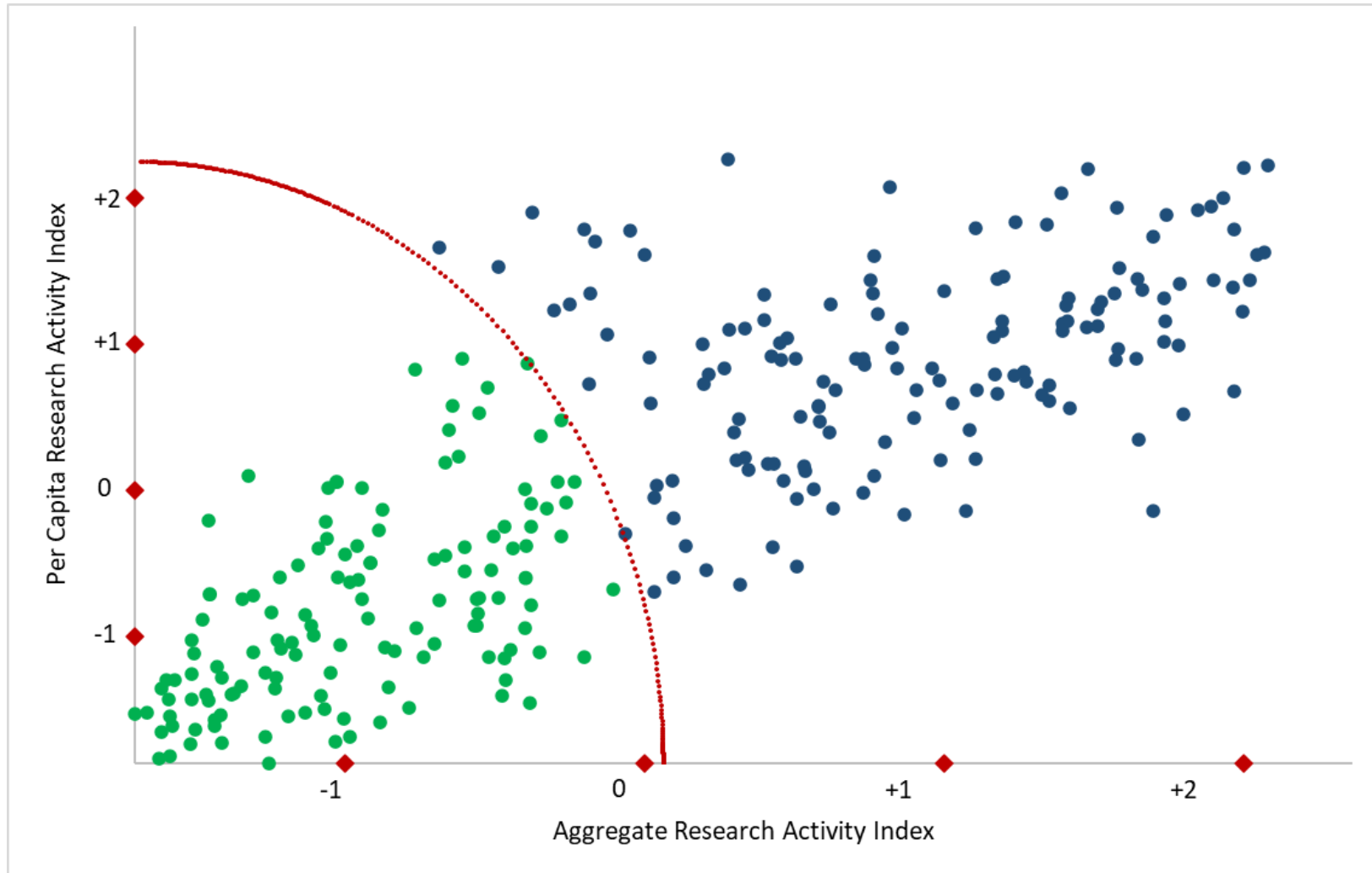
S&E R&D Expenditures	0.905
Non-S&E R&D Expenditures	0.809
S&E Research Staff	0.913
Doctorates: Social Sciences	0.880
Doctorates: Humanities	0.846
Doctorates: STEM	0.920
Doctorates: Other Fields	0.597

Per-capita analysis (first principal component explained 71% of the total variance)

Per-capita S&E R&D Expenditures	0.931
Per-capita Non-S&E R&D Expenditures	0.643
Per-capita S&E Research Staff	0.939

THE RESEARCH ACTIVITY INDEX RESULTS IN A RELATIVE RANKING,
WITH ROUGHLY HALF OF THE INSTITUTIONS IN R1 AND HALF IN R2

WHAT THIS DISTRIBUTION LOOKS LIKE



WHAT IS THE CUTOFF TO “VERY HIGH”?

- There is no single variable that will classify an institution as very high – including expenditures.

Cusp “very high” institutions – institutions on the curve but classified R1

	S&E R&D	Non S&E R&D	Total R&D	S&E Staff	Social science doc	Humanities doc	STEM doc	Other doc	per capita S&E	per capita nonS&E	per capita S&E staff
Institution 1	74,763,000	3,754,000	78,517,000	126	4	0	122	0	342.950	17.220	0.578
Institution 2	79,669,000	4,198,000	83,867,000	185	9	7	57	14	183.569	9.673	0.426
Institution 3	31,313,000	8,452,000	39,765,000	56	17	23	46	72	37.366	10.086	0.067
Institution 4	124,322,000	7,326,000	131,648,000	86	0	0	50	0	467.376	27.541	0.323
Institution 5	42,369,000	9,545,000	51,914,000	63	6	21	57	44	61.762	13.914	0.092
Median	74,763,000	7,326,000	78,517,000	86	6	7	57	14	172.265	16.880	0.198
Mean	70,487,000	6,655,000	77,142,000	103.20	7.20	10.2	66.4	26	144.323	13.626	0.211

Cusp “high” institutions– institutions on the curve but classified R2

	S&E R&D	Non S&E R&D	Total R&D	S&E Staff	Social science doc	Humanities doc	STEM doc	Other doc	per capita S&E	per capita nonS&E	per capita S&E staff
Institution A	178,828,000	12,319,000	191,147,000	76	7	0	33	11	312.636	21.537	0.133
Institution B	102,047,000	9,616,000	111,663,000	67	3	4	36	34	196.622	18.528	0.129
Institution C	26,882,000	16,199,000	43,081,000	58	3	12	60	25	55.313	33.331	0.119
Institution D	15,364,000	13,602,000	28,966,000	25	11	24	37	84	22.561	19.974	0.037
Institution E	85,346,000	6,870,000	92,216,000	58	1	0	75	59	186.753	15.033	0.127
Median	85,346,000	12,319,000	92,216,000	58	3	4	37	34	124.209	24.972	0.112
Mean	81,693,400	11,721,200	93,414,000	56.8	5	8	48.2	42.6	148.767	23.820	0.105

HBCU R2S IN COMPARISON TO CUSP R1S IN 2021

Cusp “very high” institutions – institutions on the curve but classified R1

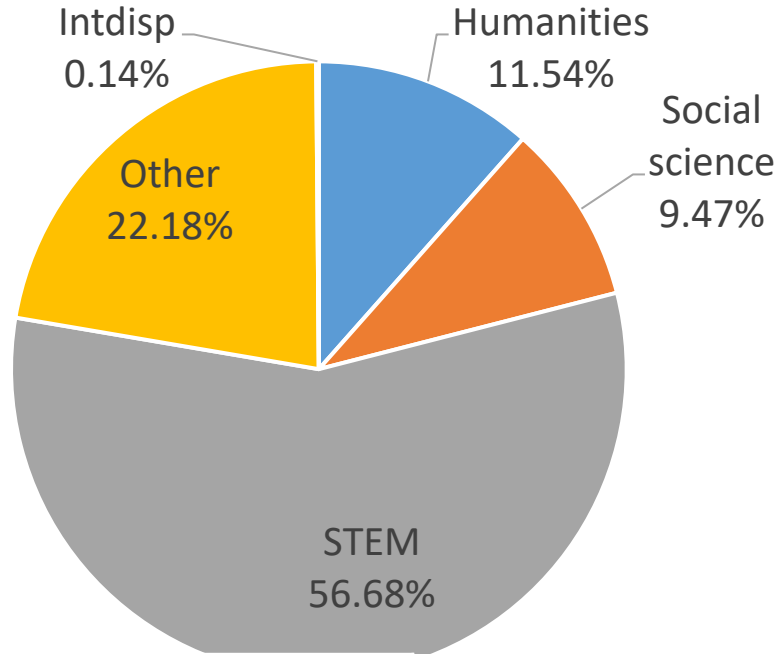
	S&E R&D	Non S&E R&D	Total R&D	S&E Staff	Social science doc	Humanities doc	STEM doc	Other doc	per capita S&E	per capita nonS&E	per capita S&E staff
Institution 1	74,763,000	3,754,000	78,517,000	126	4	0	122	0	342.950	17.220	0.578
Institution 2	79,669,000	4,198,000	83,867,000	185	9	7	57	14	183.569	9.673	0.426
Institution 3	31,313,000	8,452,000	39,765,000	56	17	23	46	72	37.366	10.086	0.067
Institution 4	124,322,000	7,326,000	131,648,000	86	0	0	50	0	467.376	27.541	0.323
Institution 5	42,369,000	9,545,000	51,914,000	63	6	21	57	44	61.762	13.914	0.092
<i>Median</i>	<i>74,763,000</i>	<i>7,326,000</i>	<i>78,517,000</i>	<i>86</i>	<i>6</i>	<i>7</i>	<i>57</i>	<i>14</i>	<i>172.265</i>	<i>16.880</i>	<i>0.198</i>
<i>Mean</i>	<i>70,487,000</i>	<i>6,655,000</i>	<i>77,142,000</i>	<i>103.20</i>	<i>7.20</i>	<i>10.2</i>	<i>66.4</i>	<i>26</i>	<i>144.323</i>	<i>13.626</i>	<i>0.211</i>

HBCU R2 institutions

	S&E R&D	Non S&E R&D	Total R&D	S&E Staff	Social science doc	Humanities doc	STEM doc	Other doc	per capita S&E	per capita nonS&E	per capita S&E staff
Institution A	16,919,000	274,000	17,193,000	49	0	4	17	57	52.381	0.848	0.152
Institution B	34,194,000	7,125,000	41,319,000	31	0	0	9	17	75.483	15.728	0.068
Institution C	14,979,000	102,000	15,081,000	30	0	0	20	73	58.972	0.402	0.118
Institution D	44,077,000	856,000	44,933,000	28	30	18	46	16	57.692	1.12	0.037
Institution E	31,382,000	4,769,000	36,151,000	19	0	0	59	7	77.678	11.804	0.047
Institution F	6,406,000	3,015,000	9,421,000	6	0	0	11	14	27.852	13.109	0.026
Institution G	8,259,000	193,000	8,452,000	3	4	9	8	15	55.423	1.295	0.02
Institution H	8,092,000	0	8,092,000	1	0	0	13	7	46.506	0	0.006
Institution I	16,103,000	2,620,000	18,723,000	0	0	0	7	14	62.174	10.116	0
Institution J	7,707,000	617,000	8,324,000	0	0	0	10	12	35.353	2.83	0
Institution K	14,913,000	464,000	15,377,000	0	10	0	12	72	48.262	1.502	0

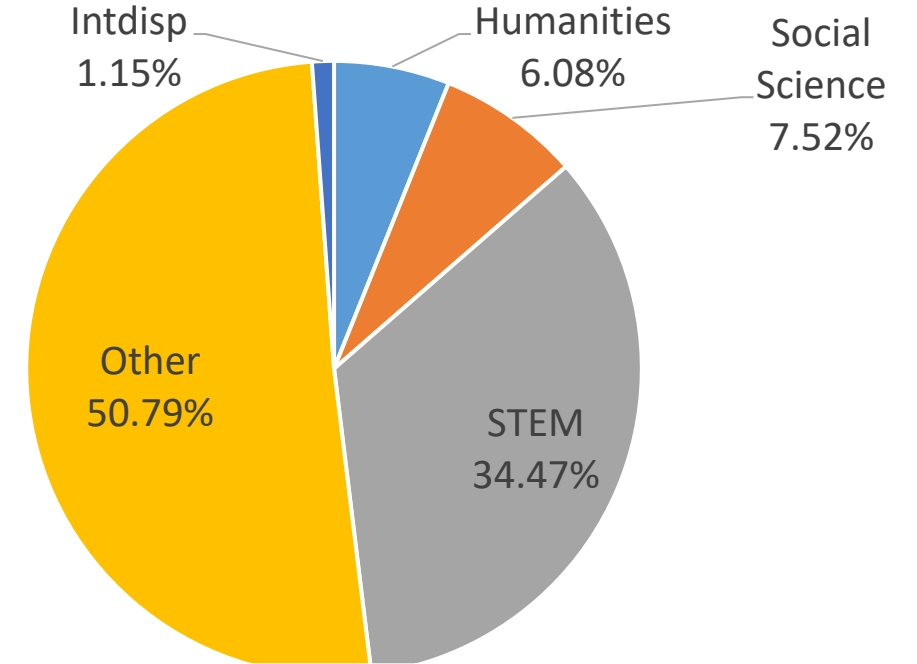
BREAKDOWN OF 2021 RESEARCH DEGREES – R1 v R2

R1 INSTITUTIONS



Subject	Total degrees
Humanities	5,743
Social science	4,712
STEM	28,214
Other	11,041
Interdisciplinary	69
<i>Grand Total</i>	<i>49,779</i>

R2 INSTITUTIONS



Subject	Total degrees
Humanities	549
Social science	679
STEM	3,114
Other	4,589
Interdisciplinary	104
<i>Grand Total</i>	<i>9,035</i>

OTHER CHALLENGES TO SOLVE WITH THE RESEARCH METHODOLOGY

- The R1/R2 chase is real
 - Strategic plans (dozens), institutional goals, and priorities, affecting funding strategies and distorting missions
- Perceived to measure research quality/impact (not the case)
- The methodology is complex, not replicable, and not well understood – even though many researchers and institutions think they understand it
- It rewards comprehensiveness
- Research staff number is unreliable
- R1 cut is normative, relative, and arbitrary – simply splits the group in half
- Does not capture or acknowledge other forms of research (professional, undergraduate, etc.)

LOOKING AHEAD

- We plan to include a research list as part of the 2024 Carnegie Classifications.
- We also are looking to make improvements:
 - More transparent, easy-to-follow and easy-to-replicate information about how the R1 and R2 groups are determined
 - Streamline the methodology where possible
 - We are exploring this now

QUESTIONS?

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