2024 ERC END OF YEAR REPORT

NSF Engineering Research Centers

i. 16 ERCs Referenced in Slides 1–5

ERC for Advancing Sustainable and Distributed Fertilizer Production (CASFER) (Class: 2022; AY: 2022 – 2024; RY: 2022 – 2024)*	NSF Engineering Research Center for the Internet of Things for Precision Agriculture (IoT4Ag) (Class: 2020; AY: 2020 – 2024; RY: 2020 – 2024)*
NSF Nanosystems Engineering Research Center for Advanced Self-Powered Systems of Integrated Sensors and Technologies (ASSIST) (Class: 2012; AY: 2012 – 2024; RY: 2012 – 2024)*	Nanosystems Engineering Research Center for Nanotechnology Enabled Water Treatment Systems at Rice University (NEWT) (Class: 2015; AY: 2015 – 2024; RY: 2015 – 2024)*
Engineering Research Center for Bio-mediated and Bioinspired Geotechnics at Arizona State University (CBBG) (Class: 2015; AY: 2015 – 2024; RY: 2015 – 2024)*	ERC for Precise Advanced Technologies and Health Systems for Under-resourced Populations at Texas A&M University (PATHS-UP) (Class: 2017; AY: 2017 – 2024; RY: 2017 – 2024)*
ERC for Directed Multiscale Assembly of Cellular Metamaterials with Nanoscale Precision at Boston University (CELL-MET) (Class: 2017; AY: 2017 – 2024; RY: 2017 – 2024)*	ERC for Power Optimization for ElectroThermal Systems at University of Illinois (POETS) (Class: 2015; AY: 2015 – 2024; RY: 2015 – 2024)*
ERC for Innovative and Strategic Transformation of Alkane Resources at Purdue University (CISTAR) (Class: 2017; AY: 2017 – 2024; RY: 2017 – 2024)*	ERC for Precision Microbiome Engineering (PreMiEr) (Class: 2022; AY: 2022 – 2024; RY: 2022 – 2024)*
ERC for Cell Manufacturing Technologies at Georgia Institute of Technology (CMaT) (Class: 2017; AY: 2017 – 2024; RY: 2017 – 2024)*	NSF Engineering Research Center for Quantum Networks (CQN) (Class: 2020; AY: 2020 – 2024; RY: 2020 – 2024)*
NSF Engineering Research Center for Advancing Self-Sufficiency through Powered Infrastructure for Roadway Electrification (ASPIRE) (Class: 2020; AY: 2020 – 2024; RY: 2020 – 2024)*	ERC for Smart Streetscapes (CS3) (Class: 2022; AY: 2022 – 2024; RY: 2022 – 2024)*
NSF Engineering Research Center for Advanced Technologies for Preservation of Biological Systems (ATP-Bio) (Class: 2020; AY: 2020 – 2024; RY: 2020 – 2024)*	ERC for Hybrid Autonomous Manufacturing Moving from Evolution to Revolution (HAMMER) (Class: 2022; AY: 2022 – 2024; RY: 2022 – 2024)*

**AY and RY denotes the Award Year and Reporting Year Range*

ii. “Annualized ERCs” on slides 1–5 include the 16 ERCs from the previous slide and the following additional 6 ERCs

NSF Nanosystems Engineering Research Center for Nanomanufacturing Systems for Mobile Computing and Mobile Energy Technologies at University of Texas (NASCENT) (Class: 2012; AY: 2012 – 2023; RY: 2012 – 2023)*	ERC for Ultra-wide-area Resilient Electric Energy Transmission Networks at University of Tennessee (CURENT) (Class: 2011; AY: 2011 – 2021; RY: 2011 – 2021)*
Center for Neurotechnology at University of Washington (CNT) (Class: 2011; AY: 2011 – 2021; RY: 2011 – 2021)*	ERC for Re-inventing the Nation's Urban Water Infrastructure (ReNUWIt) (Class: 2011; AY: 2011 – 2021; RY: 2011 – 2021)*
Nanosystems Engineering Research Center for Translational Applications of Nanoscale Multiferroic Systems at University of California Los Angeles (TANMS) (Class: 2012; AY: 2012 – 2023; RY: 2012 – 2023)*	ERC for Quantum Energy and Sustainable Solar Technologies at Arizona State University (QESST) (Class: 2011; AY: 2011 – 2022; RY: 2011 – 2022)*

**AY and RY denotes the Award Year and Reporting Year Range*

1 | ERC Products of Innovation, FY 1985–2024*

	FY 2024 (16 ERCs)		FY 2019–2023 Annualized		FY 1985–2024 (73 ERCs)
Intellectual Property Transaction	*Total*	*Per Center*	*Total*	*Per Center*	*Total*
Inventions Disclosed	53	3	64	4	2,823
Patent Applications Filed (Provisional and Full)	95	6	80	5	2,593
Patents Awarded	17	1	21	1	972
Licenses Issued	15	1	8	< 1	1,416
Economic Development	*Total*	*Per Center*	*Total*	*Per Center*	*Total*
Spinoff Companies	4	< 1	6	< 1	257
Spinoff Employees	35	2	46	3	1,679

** Does not include centers from the Earthquake Technology Sector*

2 ERC Influence on Curriculum, FY 1985–2024*

	FY 2024 (16 ERCs)		FY 2019–2023 Annualized		FY 1985–2024 (73 ERCs)
Degrees	*Total*	*Per Center*	*Total*	*Per Center*	*Total*
New Full-Degree Programs Based on ERC Research	3	< 1	1	< 1	61
New Degree Minors Based on ERC Research	3	< 1	4	< 1	52
New Certificate Programs Based on ERC Research	1	< 1	1	< 1	49
Courses	*Total*	*Per Center*	*Total*	*Per Center*	*Total*
New Courses Based on ERC Research	29	2	35	2	1,234
Ongoing Courses With ERC Content	188	12	196	12	4,181
Course Modules Based on ERC Research	24	2	35	2	880
Textbooks	*Total*	*Per Center*	*Total*	*Per Center*	*Total*
New Textbooks Based on ERC Research	1	< 1	2	< 1	192
New Textbook Chapters Based on ERC Research	0	< 1	3	< 1	113

** Does not include centers from the Earthquake Technology Sector*

3 ERC Information Dissemination, FY 1985–2024*

	FY 2024 (16 ERCs)		FY 2019–2023 Annualized		FY 1985–2024 (73 ERCs)
Peer-Reviewed Publications (Total)	*Total*	*Per Center*	*Total*	*Per Center*	*Total*
Journals**	651	41	734	44	27,632
Conference Proceedings**	204	13	295	17	19,393
Trade Journals	60	4	16	1	772
Coauthored With ERC Students	547	34	428	25	14,816
Education and Outreach	*Total*	*Per Center*	*Total*	*Per Center*	*Total*
Education and Colloquia	686	43	625	37	19,923
Workshops, Short Courses, and Webinars	210	13	366	22	7,224

** Does not include centers from the Earthquake Technology Sector*

*** Includes publications that result from center support, associated projects, and sponsored projects*

4 | Curricular Impact of ERCs, FY 2007–2024*

	FY 2024 (16 ERCs)		FY 2019–2023 Annualized		FY 2007–2024 (47 ERCs)
New and Ongoing Courses, Workshops, Short Courses, Webinars, and Textbooks Based on ERC Research	*Total*	*Per Center*	*Total*	*Per Center*	*Total*
With Engineered-System Focus	171	11	234	14	4,823
With Multidisciplinary Content	180	11	223	13	4,365
Offered at Undergraduate Level	142	9	199	12	3,218
Offered at Graduate Level	189	12	250	15	4,298
Used at More Than One ERC Institution	40	3	134	8	1486
Team Taught by Faculty in More Than One Department	46	3	102	6	1302

** Does not include centers from the Earthquake Technology Sector*

*** Data collection of curricular impacts started in 2007*

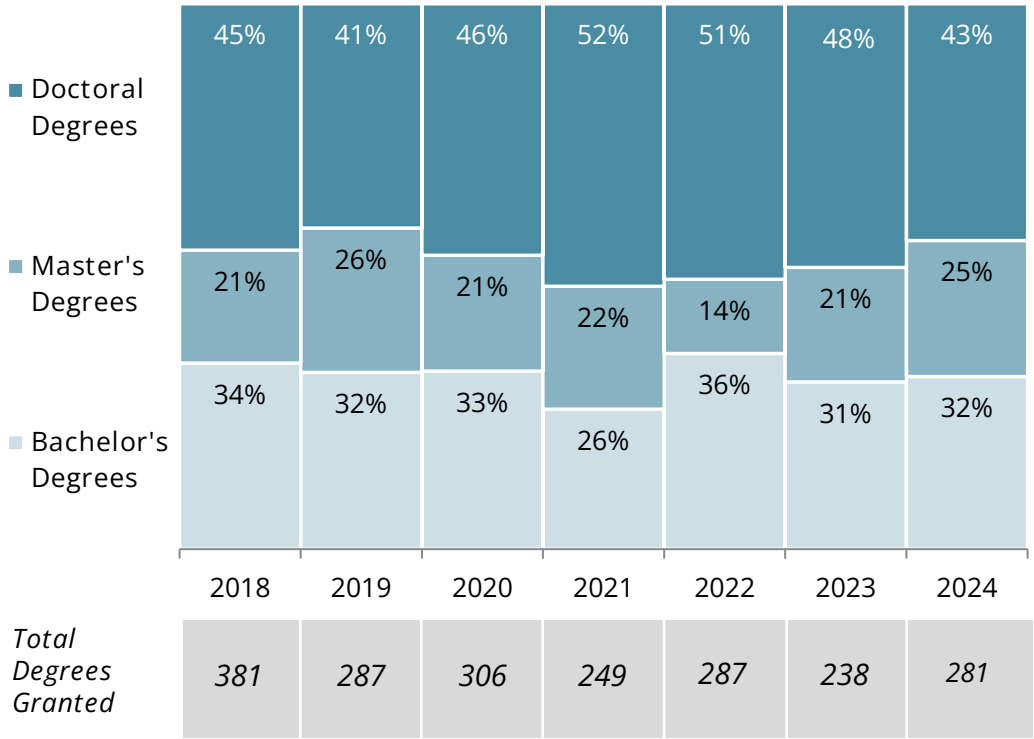
5 ERC Student Degrees, FY 1985–2024*

	FY 2024 (16 ERCs)		FY 2019–2023 Annualized		FY 1985–2024 (73 ERCs)
Degree Type	*Total*	*Per Center*	*Total*	*Per Center*	*Total*
Bachelor's	89	6	87	5	4,936
Master's	70	4	57	3	4,594
Doctoral	122	8	130	8	5,732
Total	*281*	*18*	*273*	*16*	*15,262*

** Does not include centers from the Earthquake Technology Sector*

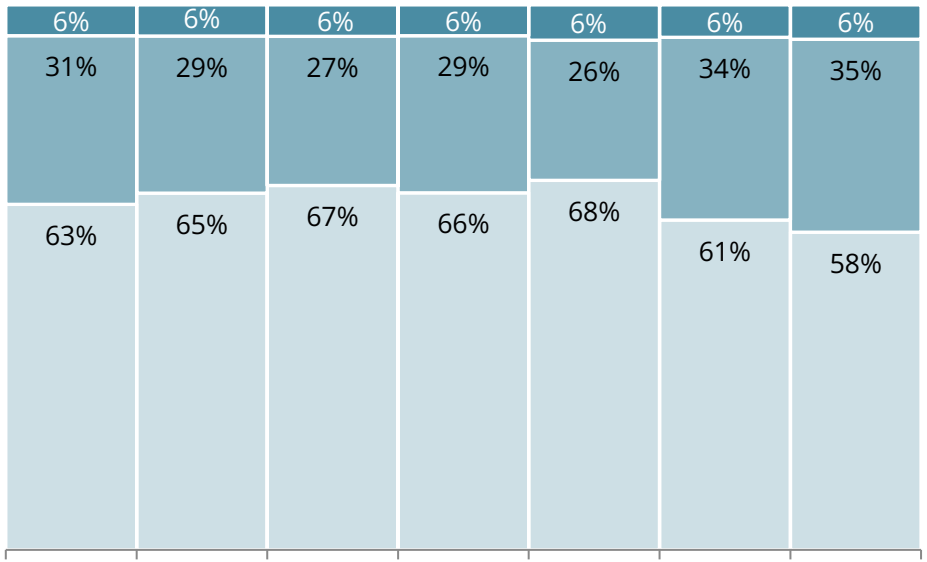
6 Degrees Granted to ERC Students vs. All U.S. Engineering Graduates, FY 2018–2024

Degrees Granted to ERC Students*
(Domestic and Foreign Students)



	2018	2019	2020	2021	2022	2023	2024
Total Degrees Granted	*381*	*287*	*306*	*249*	*287*	*238*	*281*

Degrees Granted From All U.S. Engineering Schools
(Domestic and Foreign Students)

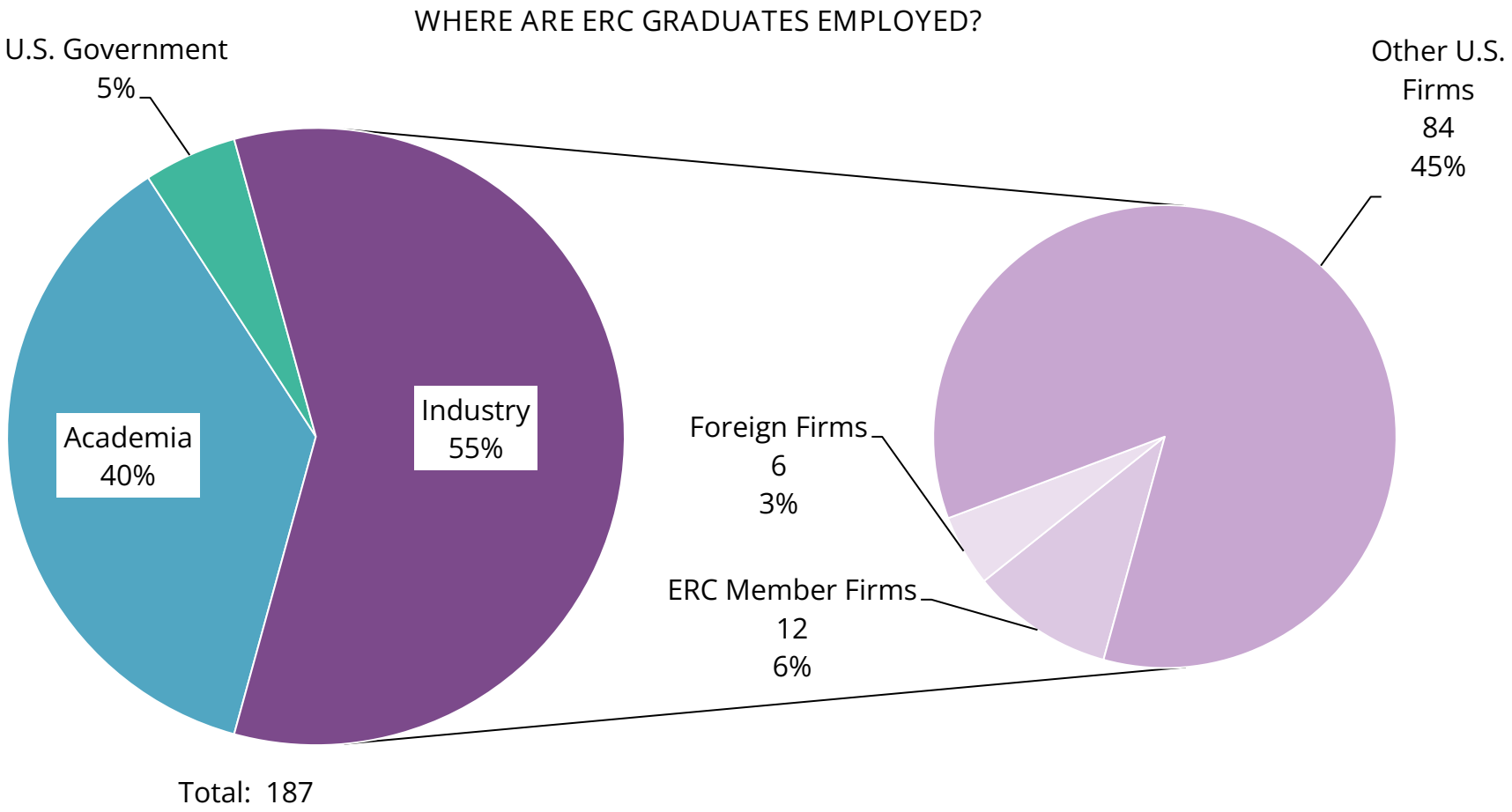


	2018	2019	2020	2021	2022	2023	2024
Total Degrees Granted	*214698*	*216298*	*218310*	*218472*	*205738*	*214902*	*196372*

** Does not include centers from the Earthquake Technology Sector*

Data Source: American Society for Engineering Education (ASEE) (http://edms.asee.org)

ERC Graduate Employment (16 Centers), FY 2024



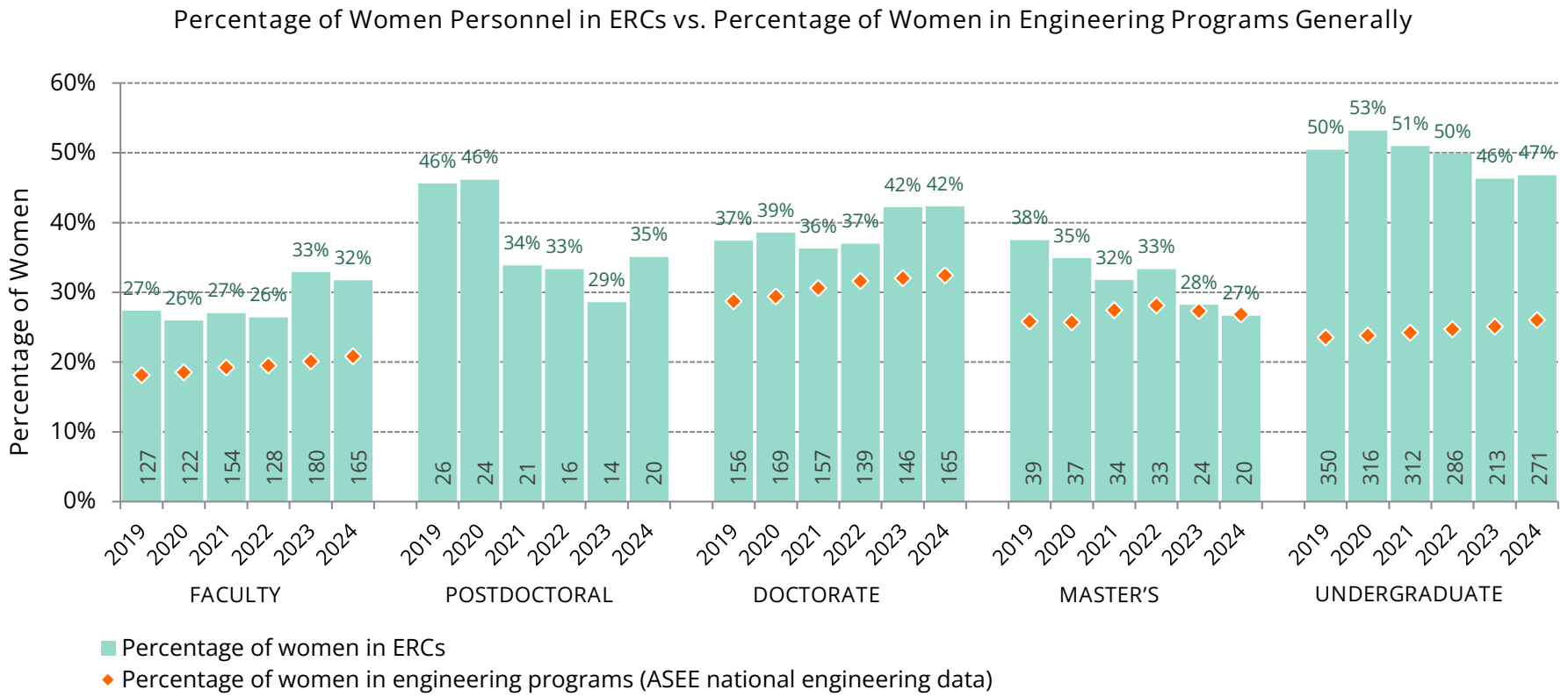
ERC Research and Education Personnel, by Underrepresented Group and Citizenship Status, FY 2024

Personnel Category	Total	Total U.S. Citizens and Permanent Residents	Women*		Underrepresented Racial Minorities*		Hispanic*		Foreign	
			Number	%	Number	%	Number	%	Number	%
Faculty										
Total	623	520	165	32%	43	8%	46	9%	57	9%
Graduate Students										
Postdocs	197	57	20	35%	3	5%	15	26%	121	61%
Graduate Students	1,124	465	185	40%	59	13%	65	14%	493	44%
Doctoral	933	390	165	42%	49	13%	54	14%	430	46%
Master's	191	75	20	27%	10	13%	11	15%	63	33%
Total**	1,321	522	205	39%	62	12%	80	15%	614	46%
Undergraduate Students										
ERC Undergraduate Students (Research Assistants, Non-REU Students)	621	404	177	44%	58	14%	78	19%	42	7%
NSF REU Site Award Students	53	53	27	51%	13	25%	20	38%	0	0%
Center Funding Students	159	146	83	57%	37	25%	34	23%	7	4%
Other NSF Supplemental Funding Students	28	28	15	54%	10	36%	11	39%	0	0%
Total**	806	579	271	47%	102	18%	126	22%	46	6%
Community College										
Participants in RET Program	4	4	1	25%	2	50%	0	0%	0	0%
K–12 Teachers										
K–12 RET	88	85	51	60%	21	25%	18	21%	0	0%
K–12 Non-RET	41	35	21	60%	6	17%	10	29%	0	0%
Total	129	120	72	60%	27	23%	28	23%	0	0%
Young Scholars										
Total	210	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
*Grand Total****	*3,111*	*1,761*	*727*	*41%*	*239*	*14%*	*284*	*16%*	*717*	*25%*

** U.S. citizens and permanent residents only*
*** The sum of the number of personnel for each row may exceed the total because personnel may belong to multiple categories*
**** Leadership/Administration Directors, Research Thrust Leaders, and Engineering Workforce Development Program Leaders are included in the Grand Total. For the Grand Total row, all columns exclude Young Scholars, except the Total column*
NOTE: For years in which the center entered demographic data by institution rather than per person, data are not included

Participants Impacted by ERC Engineering Education Activities, FY 2024

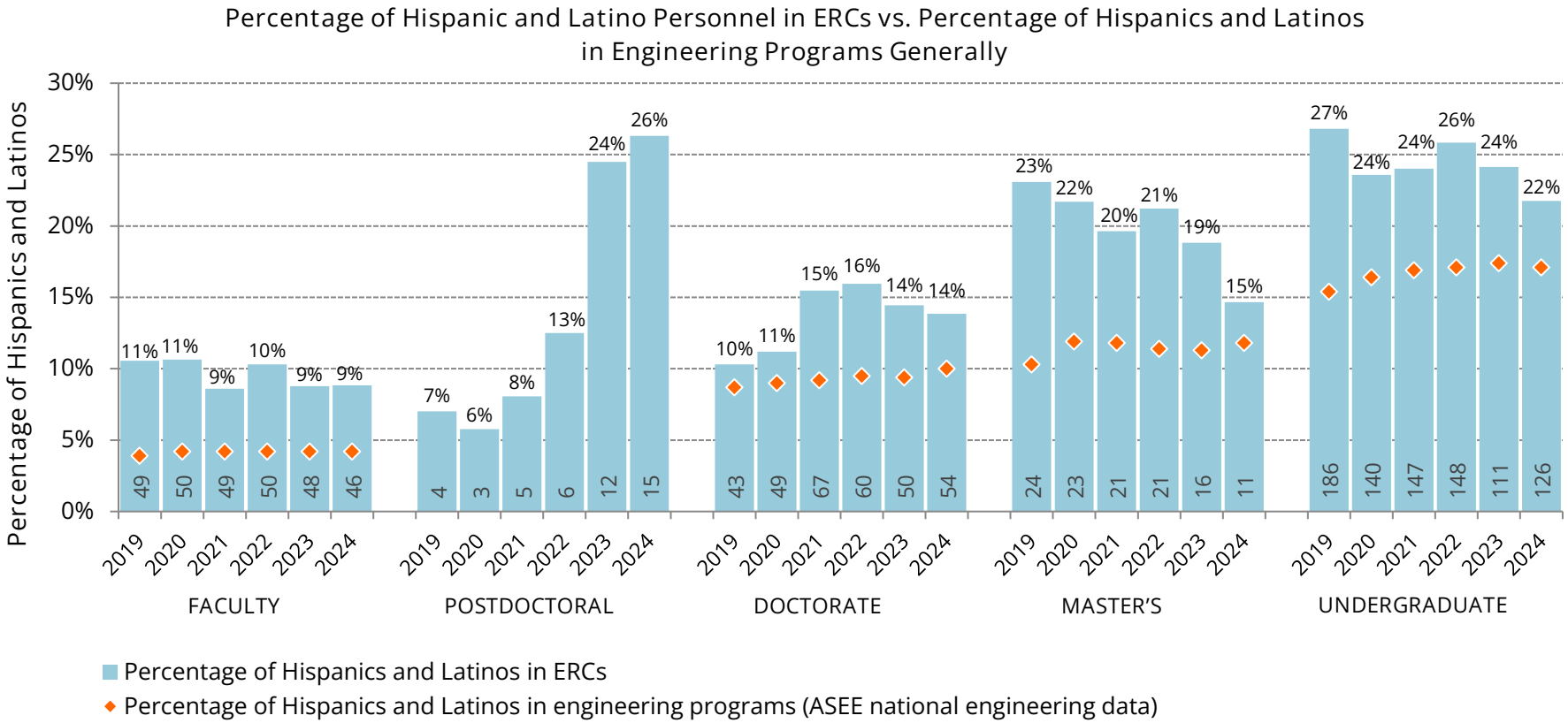
Outreach Participants	Total
Community College Events	
Faculty Who Attended ERC-Sponsored Educational Outreach Events	66
Students Who Attended ERC-Sponsored Educational Outreach Events	639
Total	705
K–12 Events	
Pre-college K–12 Teachers	2,373
K–12 Students	31,975
Total	34,348
Grand Total	*35,053*



NOTES:

- *Data from centers are not included for years in which the center entered demographic data by institution rather than per person*
- *Both ERC data and National statistics are for U.S. citizens and permanent residents only*
- *Undergraduates include REU students*
- *The percentages of women are calculated out of the total number of U.S. citizens and permanent residents, including personnel who did not report gender*
- *ASEE data were not collected postdoctoral for 2019 – 2024*
- *The percentages of personnel who did not report gender are as follows: 2019: 10.95%, 2020: 9.94%, 2021: 10.36%, 2022: 10.62%, 2023: 11.80%, 2024: 11.68%*

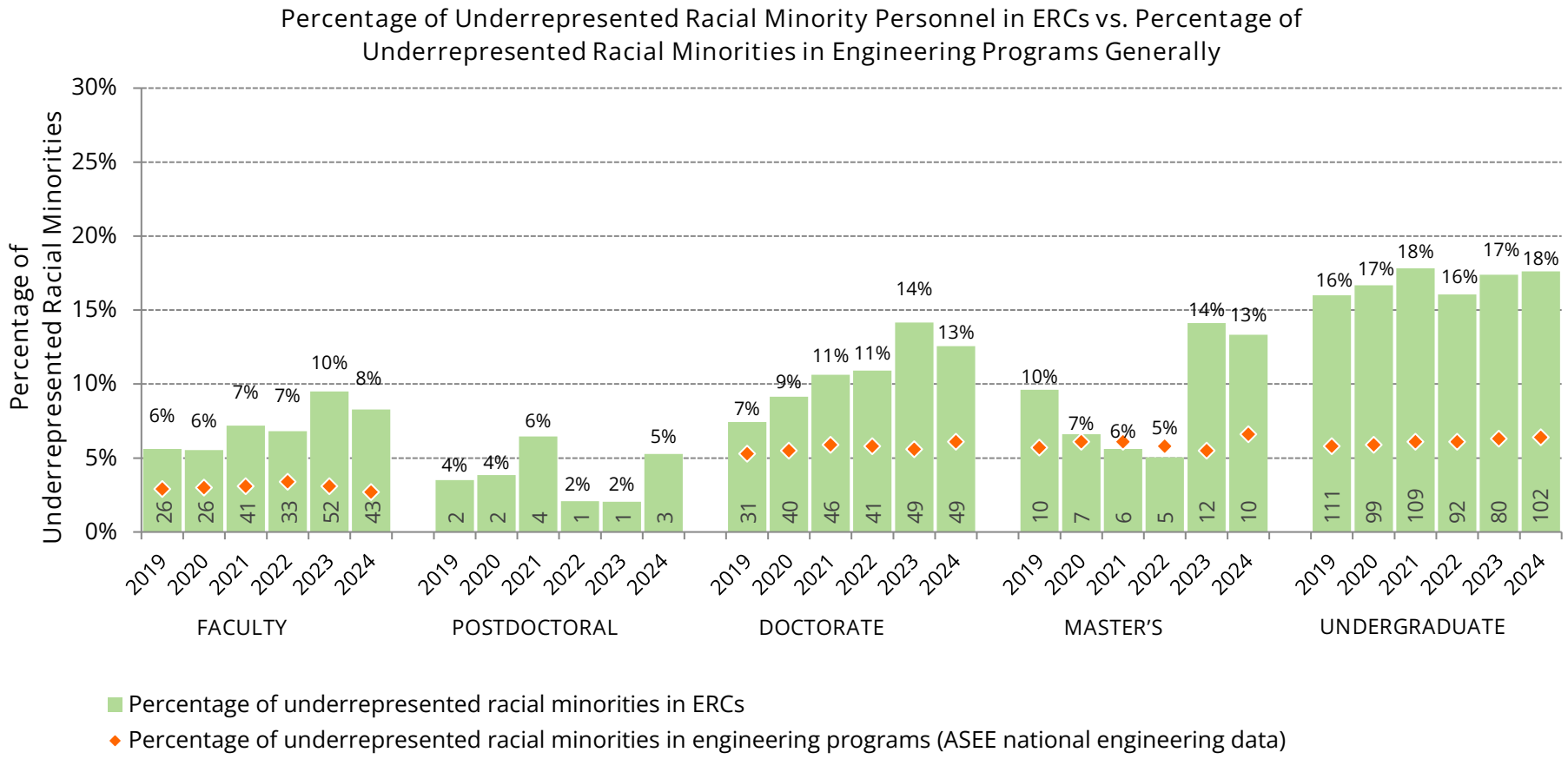
Hispanics and Latinos in ERCs, FY 2019–2024



NOTES:

- *Data from centers are not included for years in which the center entered demographic data by institution rather than per person*
- *Both ERC data and National statistics are for U.S. citizens and permanent residents only*
- *Undergraduates include REU students*
- *The percentages of Hispanics and Latinos are calculated out of the total number of U.S. citizens and permanent residents, including personnel who did not report ethnicity*
- *ASEE data were not collected postdoctoral for 2019–2024*
- *The percentages of personnel who did not report ethnicity are as follows: 2019: 15.57%, 2020: 15.11%, 2021: 14.17%, 2022: 16.18%, 2023: 16.74%, 2024: 16.85%*

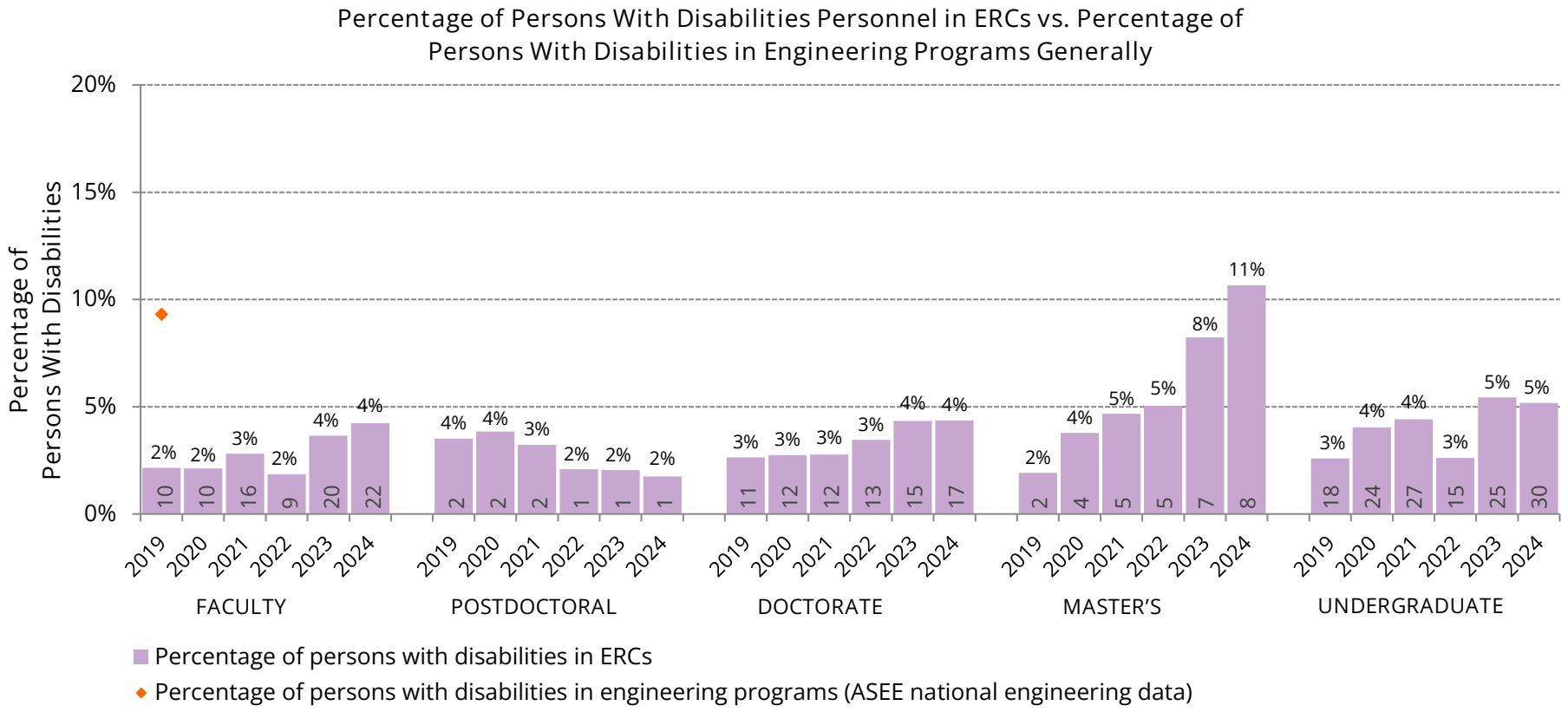
Underrepresented Racial Minorities in ERCs, FY 2019–2024



NOTES:

- *Data from centers are not included for years in which the center entered demographic data by institution rather than per person*
- *Both ERC data and National statistics are for U.S. citizens and permanent residents only*
- *Undergraduates include REU students*
- *The percentages of underrepresented racial minorities are calculated out of the total number of U.S. citizens and permanent residents, including personnel who did not report race*
- *ASEE data were not collected for postdoctoral for 2019–2024*
- *The percentages of personnel who did not report race are as follows: 2019: 17.68%, 2020: 16.37%, 2021: 16.46%, 2022: 19.12%, 2023: 19.79%, 2024: 20.18%*

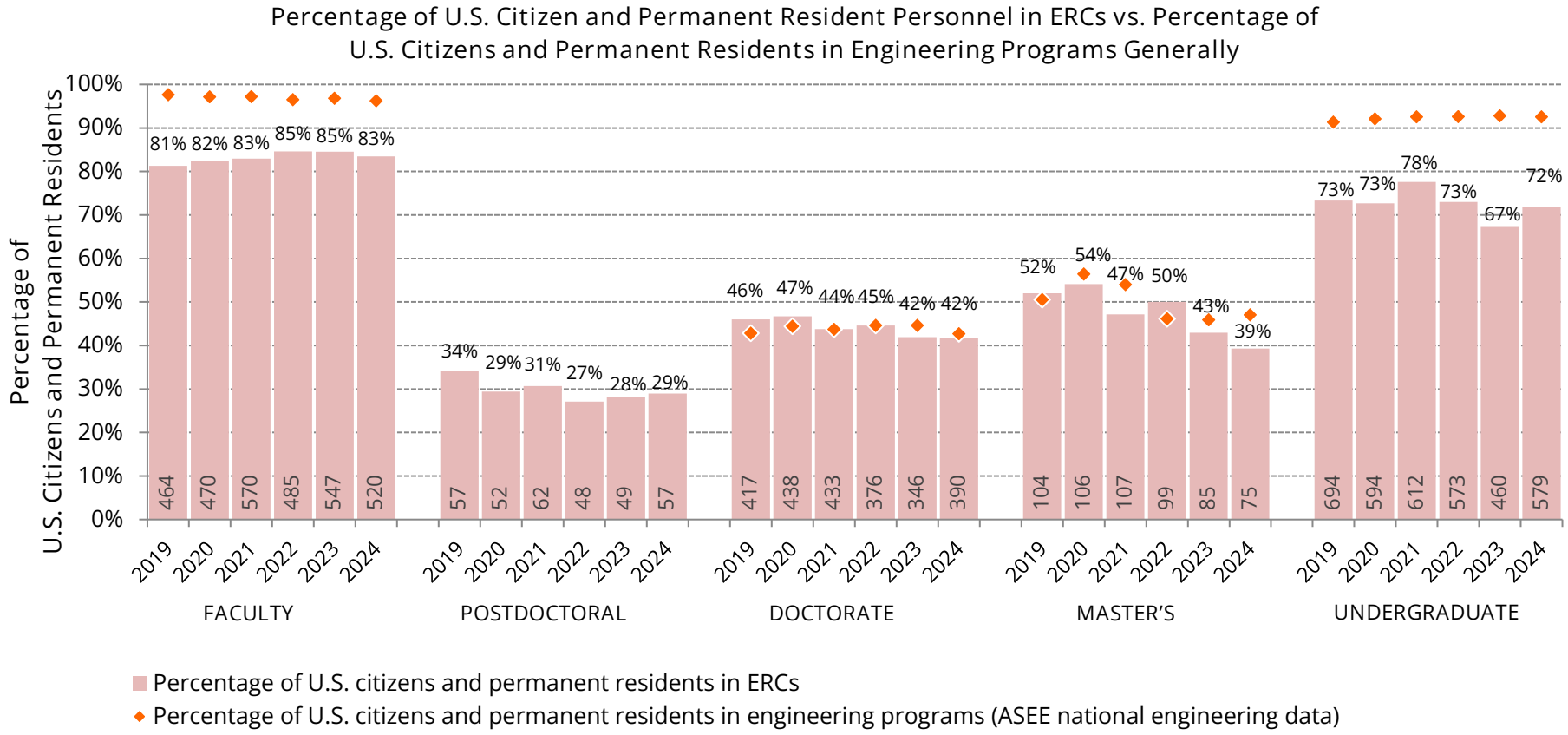
Persons With Disabilities in ERCs, FY 2019–2024



NOTES:

- *Data from centers are not included for years in which the center entered demographic data by institution rather than per person*
- *Undergraduates include REU students*
- *The percentages of persons with disabilities are calculated out of the total number of U.S. citizens and permanent residents, including personnel who did not report disability status*
- *The national percentages for persons with disabilities are for all persons, regardless of citizenship. The national percentages for doctoral students with disabilities and master's students with disabilities are from the national percentages for graduate students (master's and doctoral students combined)*
- *ASEE data are only available for faculty for 2019*
- *The percentages of personnel who did not report disability status are as follows: 2019: 21.66%, 2020: 18.34%, 2021: 17.21%, 2022: 17.31%, 2023: 19.21%, 2024: 22.84%*

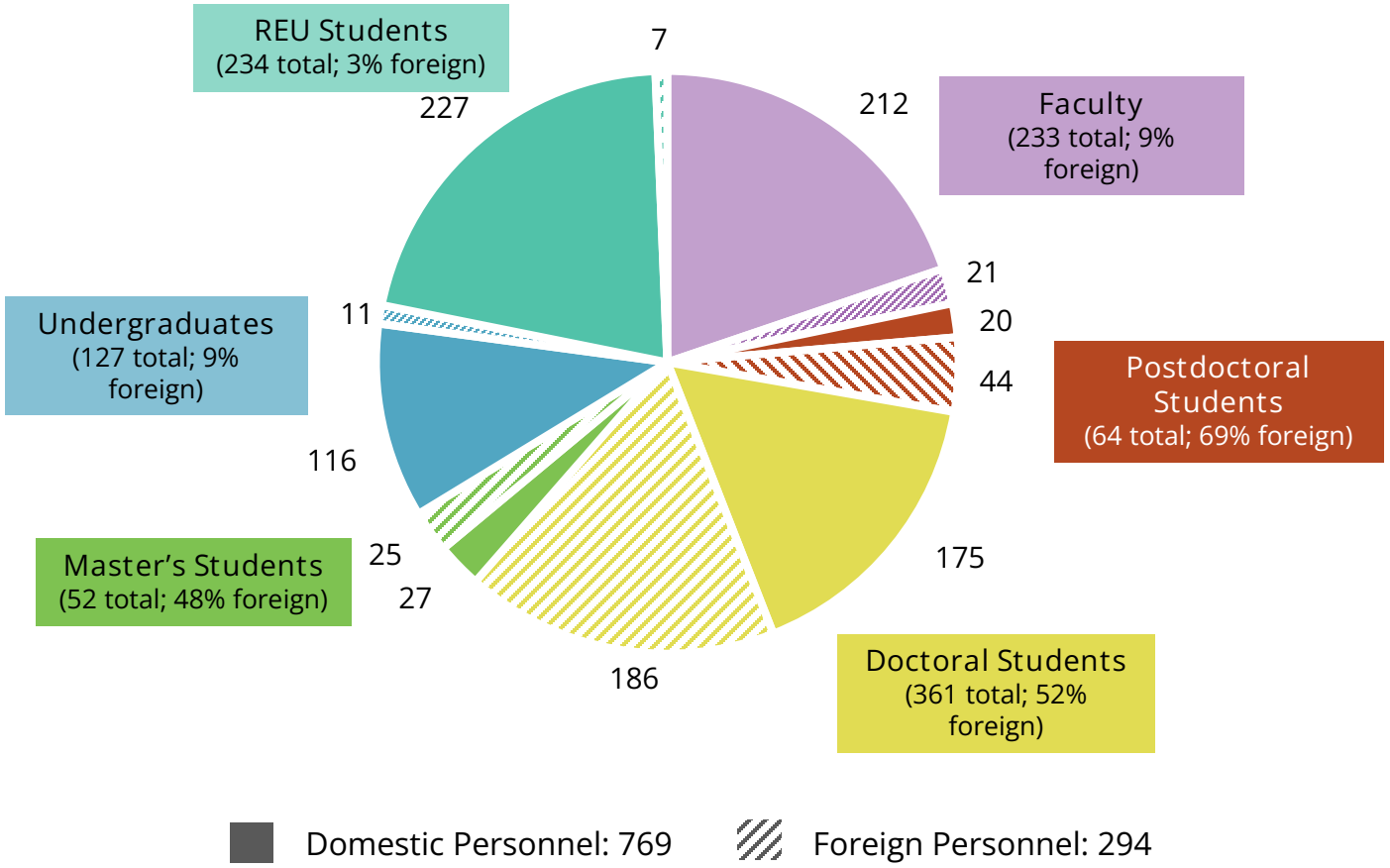
U.S. Citizens and Permanent Residents in ERCs, FY 2019–2024



NOTES:

- *Data from centers are not included for years in which the center entered demographic data by institution rather than per person*
- *Undergraduates include REU students*
- *The percentages of U.S. citizens and permanent residents are calculated out of the total number of personnel, including personnel who did not report citizenship*
- *ASEE data are not available for postdoctoral for 2019-2024*
- *The percentages of personnel who did not report citizenship are as follows: 2019: 12.73%, 2020: 12.64%, 2021: 12.12%, 2022: 14.63%, 2023: 15.47%, 2024: 14.31%*

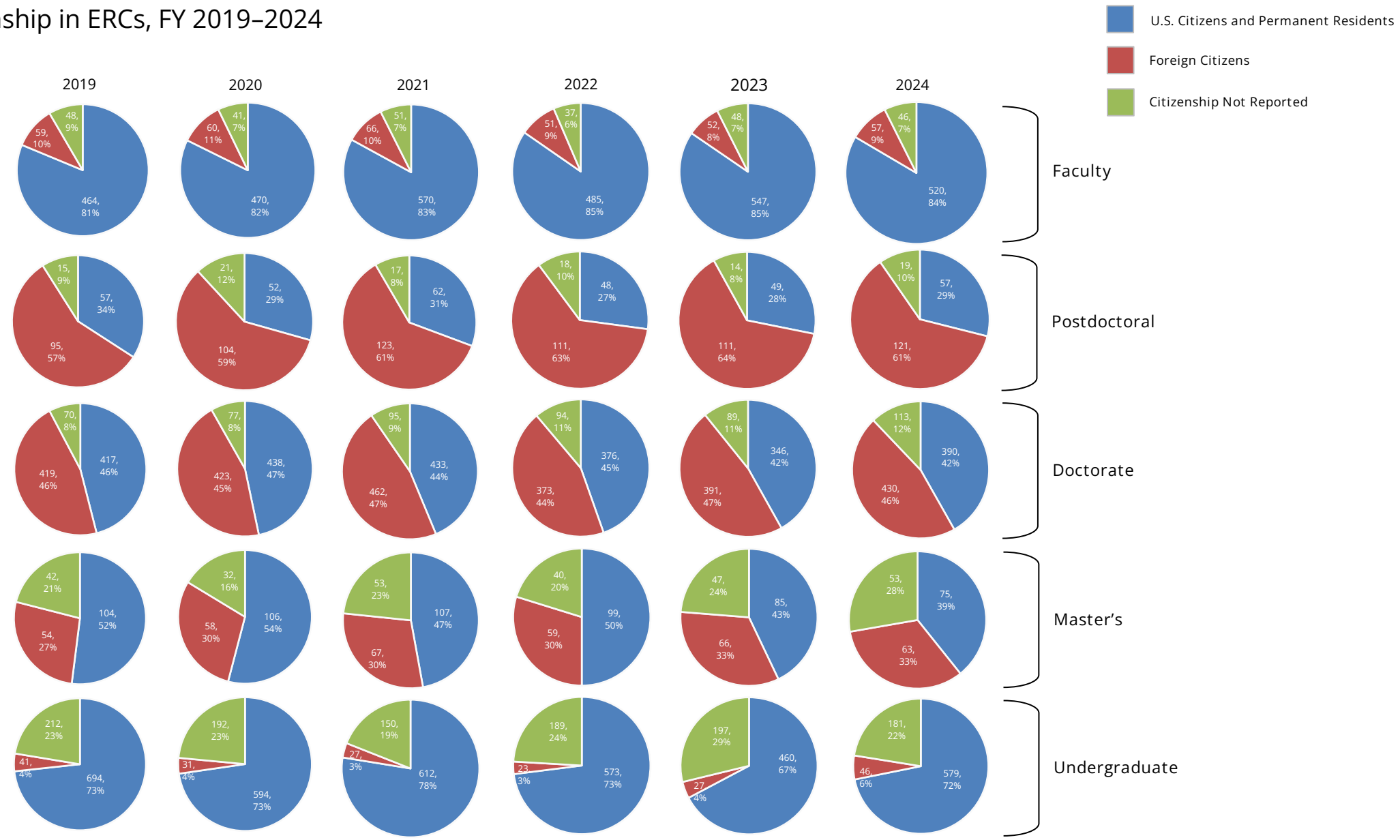
Personnel Conducting ERC Research, FY 2024



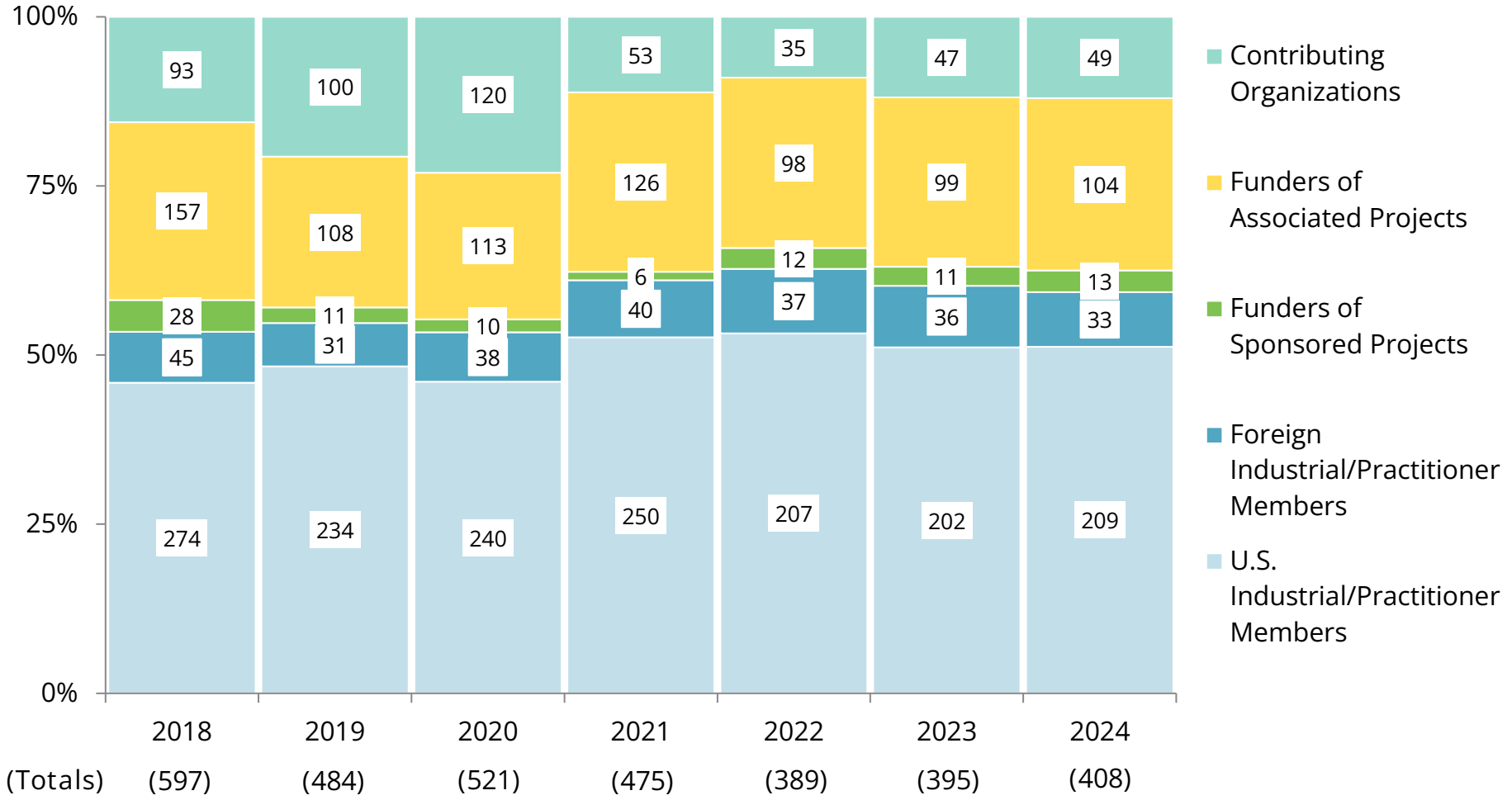
NOTES:

- *The sum of the number of personnel for each category may exceed the total number of personnel because personnel may belong to multiple categories*
- *Percentage of foreign personnel is calculated out of domestic and foreign personnel, excluding personnel who did not report citizenship*

Citizenship in ERCs, FY 2019–2024



ERC Industrial/Practitioner Members and Supporting Organizations, FY 2018–2024*



** Does not include centers from the Earthquake Technology Sector*

ERC Industrial/Practitioner Members and Supporting Organizations, FY 2018–2024*

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Organization Type							
Contributing Organizations	93	100	120	53	35	47	49
Funders of Associated Projects	157	108	113	126	98	99	104
Funders of Sponsored Projects	28	11	10	6	12	11	13
Foreign Industrial/Practitioner Members	45	31	38	40	37	36	33
U.S. Industrial/Practitioner Members	274	234	240	250	207	202	209
Total Number of Organizations	*597*	*484*	*521*	*475*	*389*	*395*	*408*
Total Number of Centers	*19*	*19*	*15*	*18*	*15*	*18*	*16*
Average Number of Organizations per Center	*31*	*25*	*35*	*26*	*26*	*22*	*26*

** Does not include centers from the Earthquake Technology Sector*

19 Industrial/Practitioner Member Support by Year, FY 2018–2024*

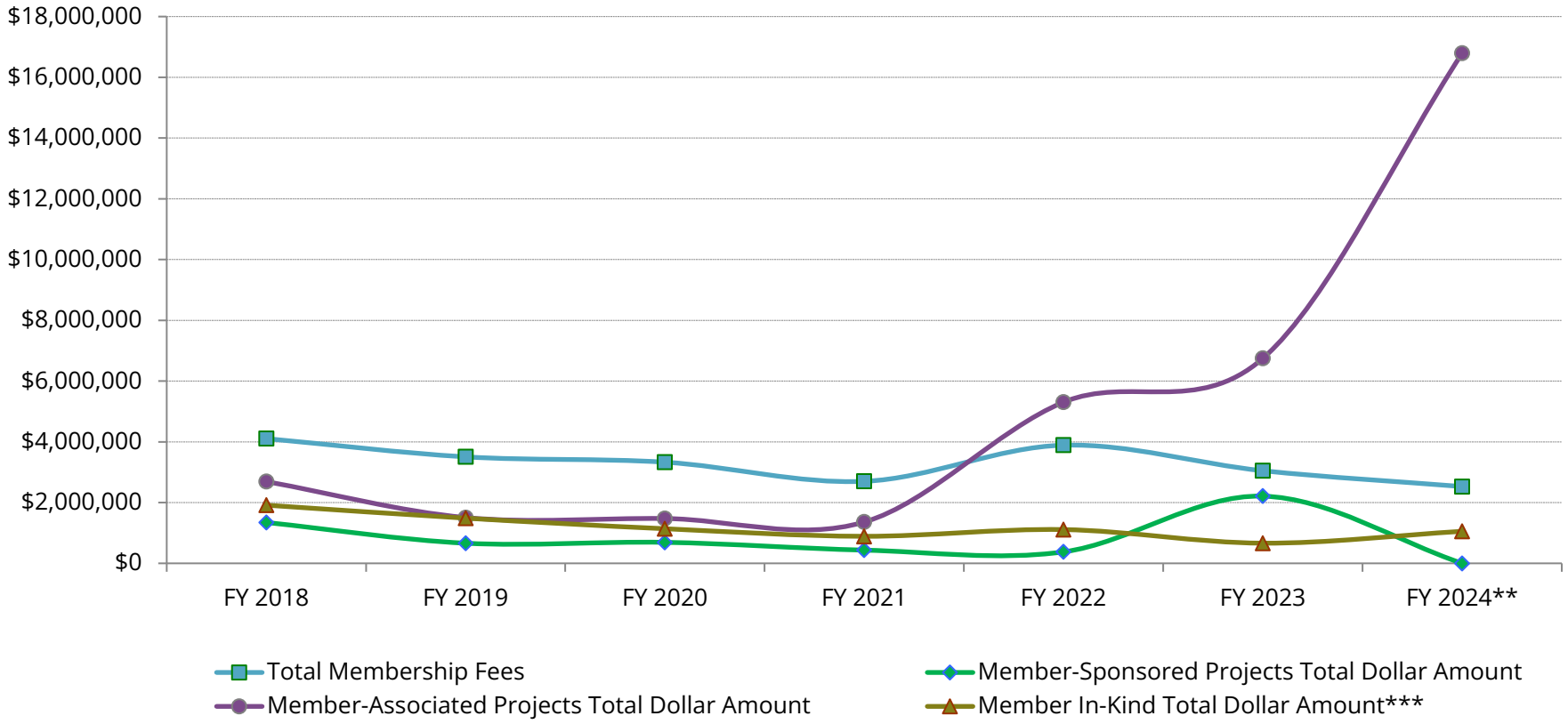
	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024**
Type of Support							
Total Membership Fees	$4,105,519	$3,505,352	$3,329,864	$2,699,714	$3,889,583	$3,048,429	$2,527,623
Member-Sponsored Projects Total Dollar Amount	$1,344,913	$662,354	$691,321	$434,796	$376,869	$2,212,408	$0
Member-Associated Projects Total Dollar Amount	$2,690,570	$1,506,932	$1,475,615	$1,359,434	$5,305,913	$6,747,291	$16,792,303
Member In-Kind Total Dollar Amount***	$1,914,975	$1,486,785	$1,139,124	$890,196	$1,110,903	$663,716	$1,054,097
Total Dollar Amount, Industrial/Practitioner Member Support to Center	*$10,055,977*	*$7,161,423*	*$6,635,924*	*$5,384,140*	*$10,683,268*	*$12,671,844*	*$20,374,023*

** Does not include centers from the Earthquake Technology Sector*

*** Support received by the end of the current reporting year. Includes data for centers that have entered partial data during a no-cost extension (NCE)*

**** Data for this row are from the In-Kind Support reported in the Organizations section*

Industrial/Practitioner Member Support by Year, FY 2018–2024*

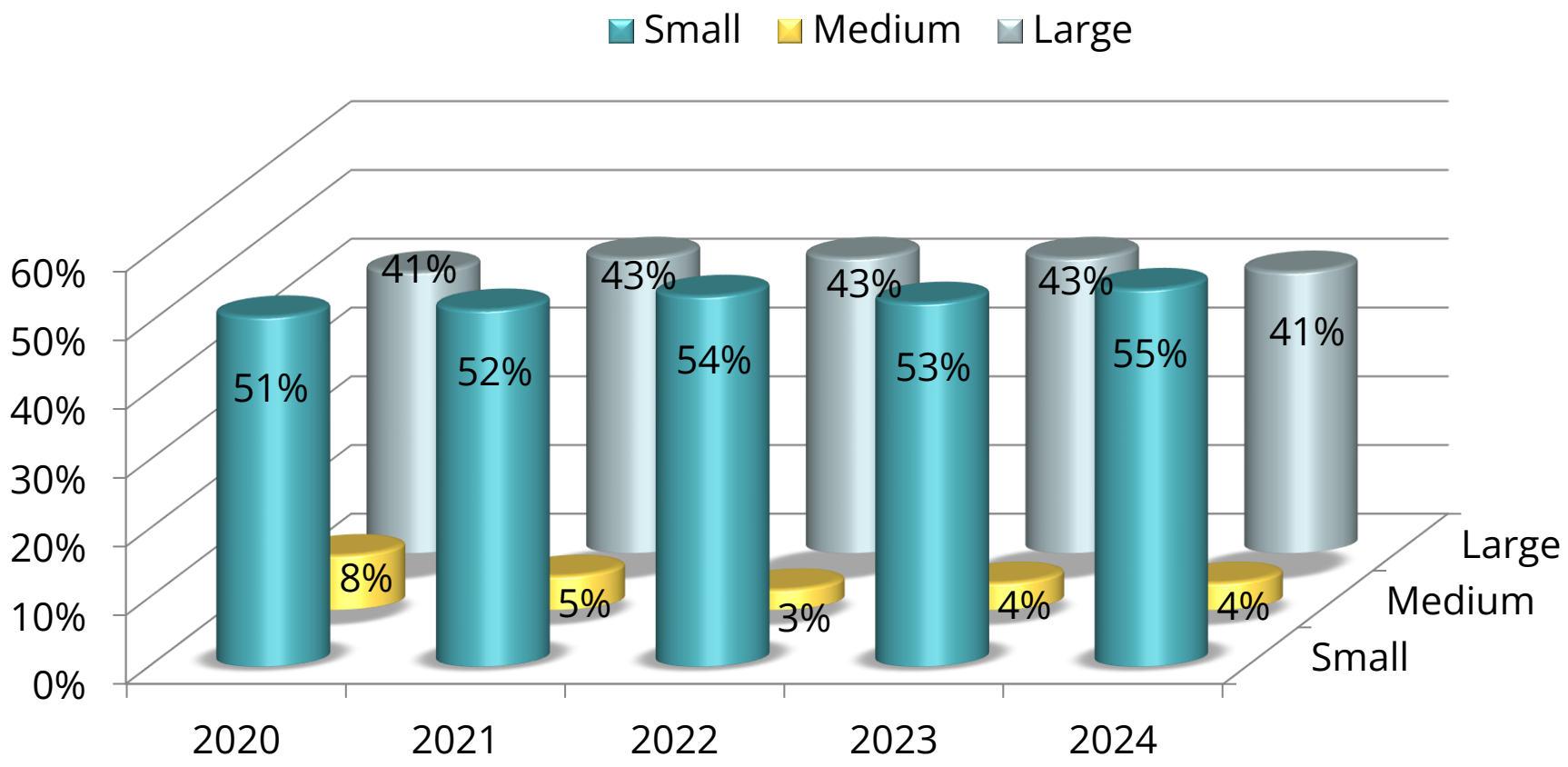


** Does not include centers from the Earthquake Technology Sector*

*** Support received by the end of the current reporting year. Includes data for centers that have entered partial data during a no-cost extension (NCE)*

**** Data for this line are from the In-Kind Support reported in the Organizations section*

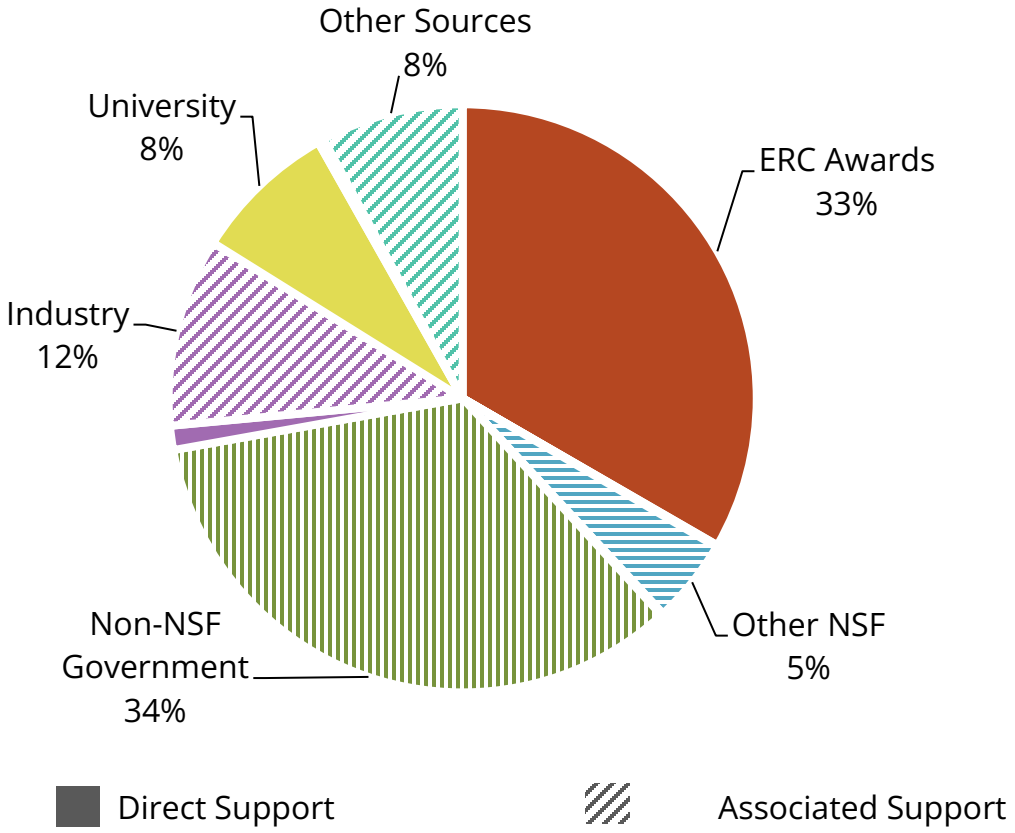
21 | Distribution of Industrial/Practitioner Members by Industry Size, FY 2020–2024



NOTES:

- *The total number of firms is as follows: 2020: 239, 2021: 263, 2022: 229, 2023: 222, 2024: 223*
- *Industry sizes are as follows: Small = <500 employees, Medium = 500–1,000 employees, Large = >1,000 employees*

Total ERC New Cash Support, FY 2024 (16 ERCs)

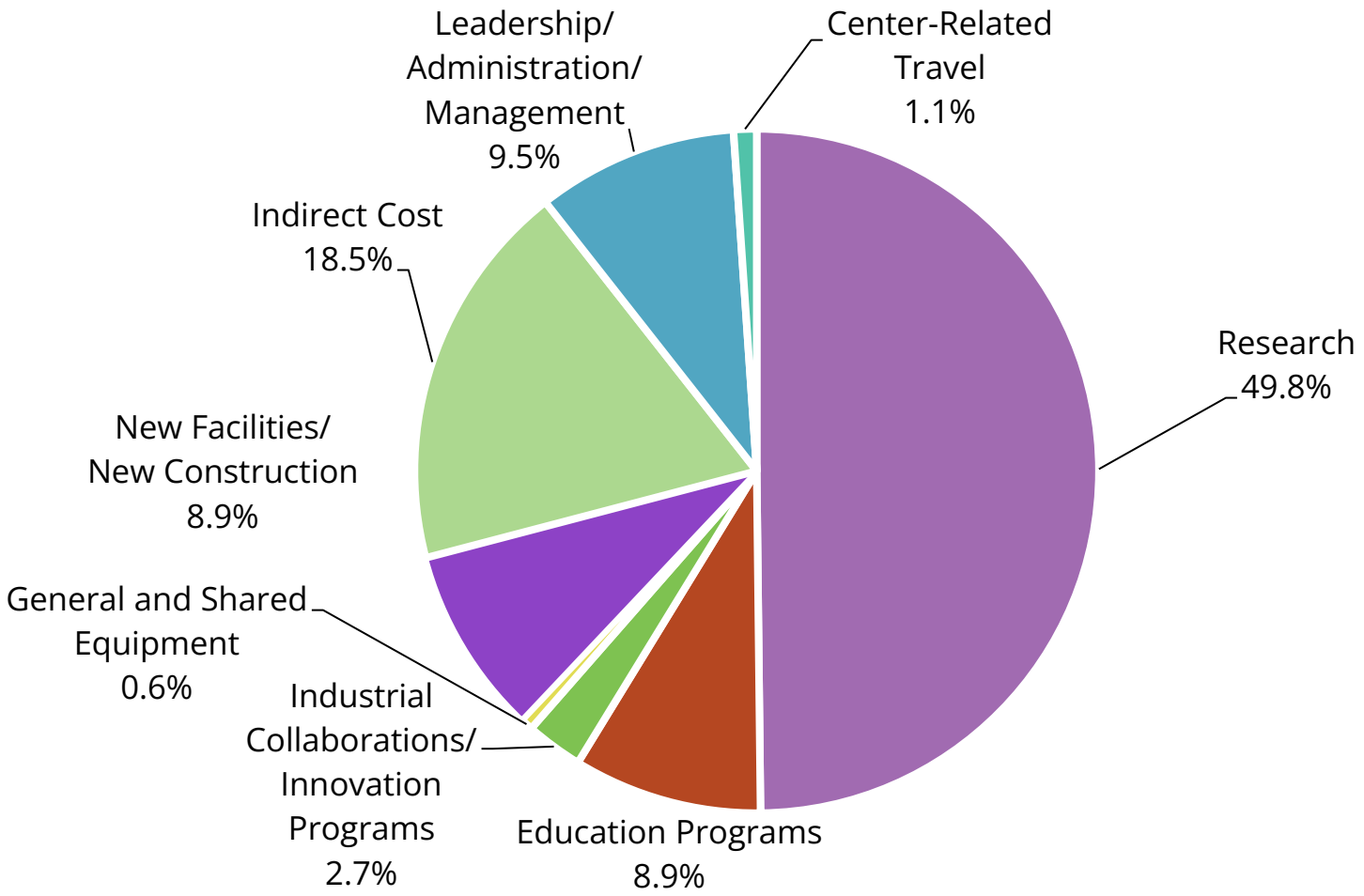


Total value of support: $196 million

NOTES:

- *Percentages shown are Direct Support and Associated Support combined*
- *Non-NSF Government includes U.S. Government (Not NSF), State Government, Local Government, Foreign Government, and Quasi- government Research Organizations*
- *Other Sources include Medical Facilities, Nonprofit Organizations, Private Foundations, Venture Capitalists and Other Sources*

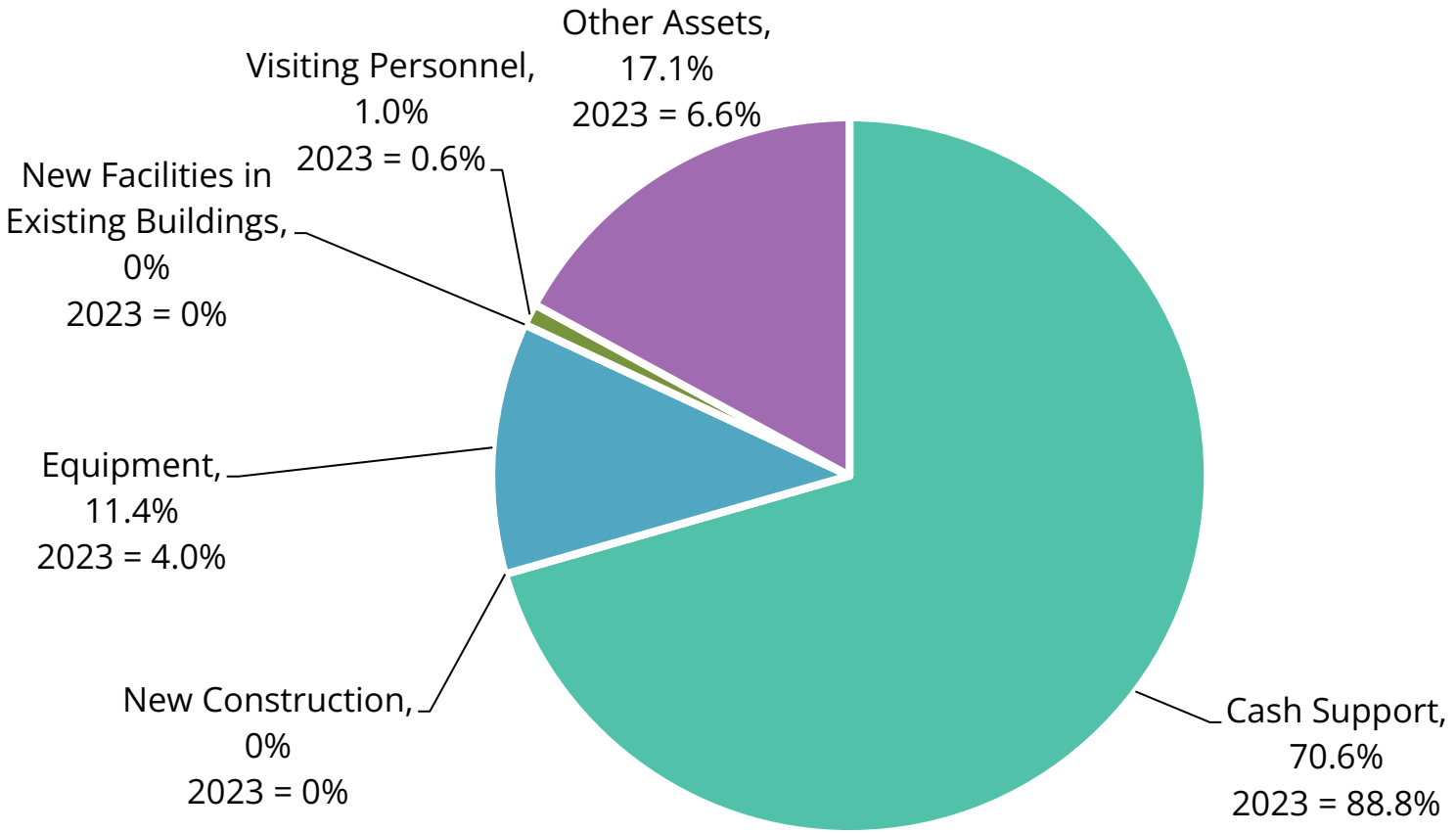
Functional Budgets of ERCs in the Aggregate, FY 2024*



Direct Support total: $93,121,199

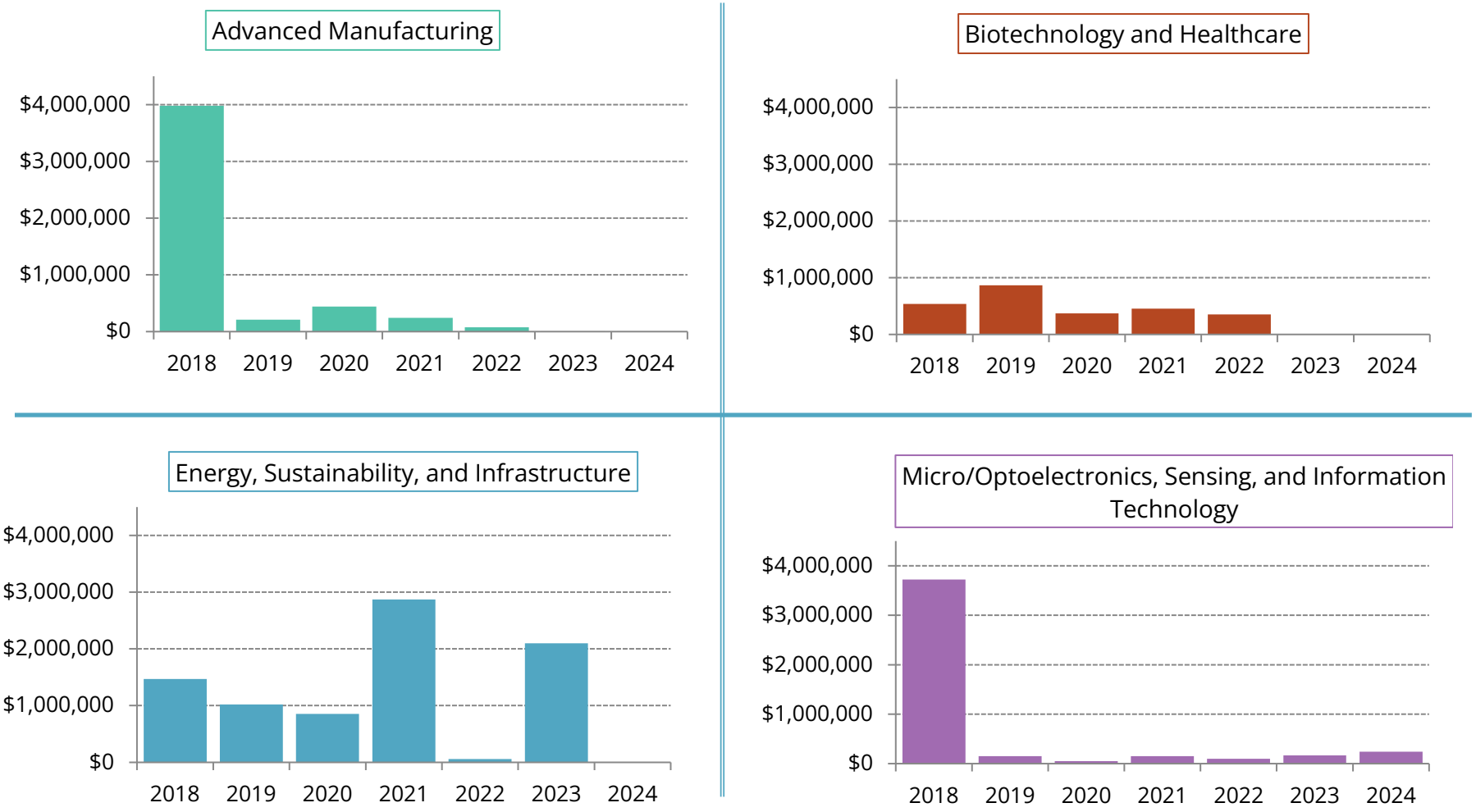
** Includes in-kind support but not residuals*

Industrial/Practitioner New Support to 16 ERCs, FY 2024



Total value of support: $3.6 million

Non-NSF Government Support by ERC Technology Sector, FY 2018–2024*,**,***

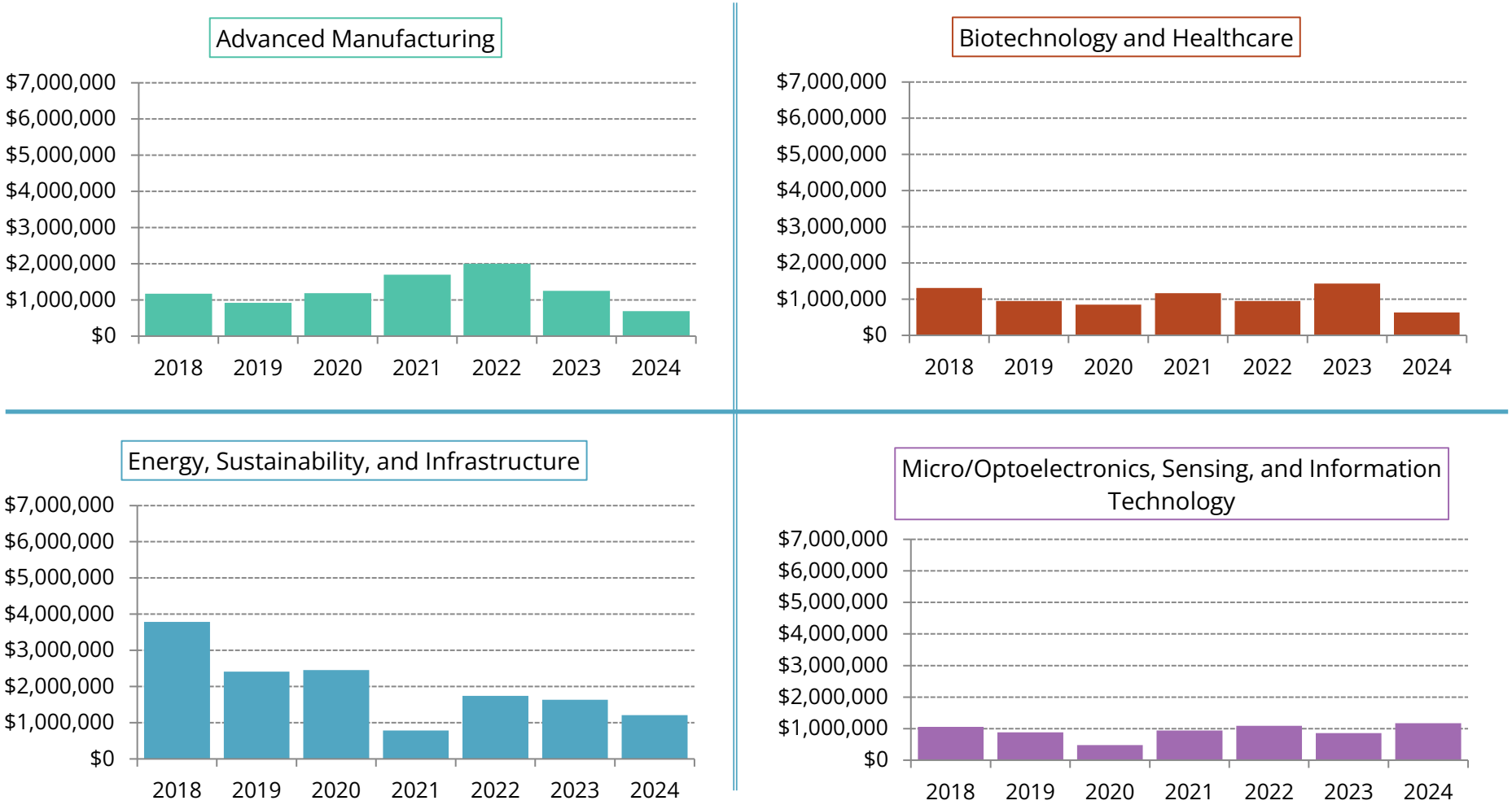


** Does not include centers from the Earthquake Technology Sector*

*** Support includes Unrestricted Cash, Restricted Cash, and In-Kind Support*

**** Includes data for centers that have entered partial data during a no-cost extension (NCE)*

Industry Support by ERC Technology Sector, FY 2018–2024 *,**,***

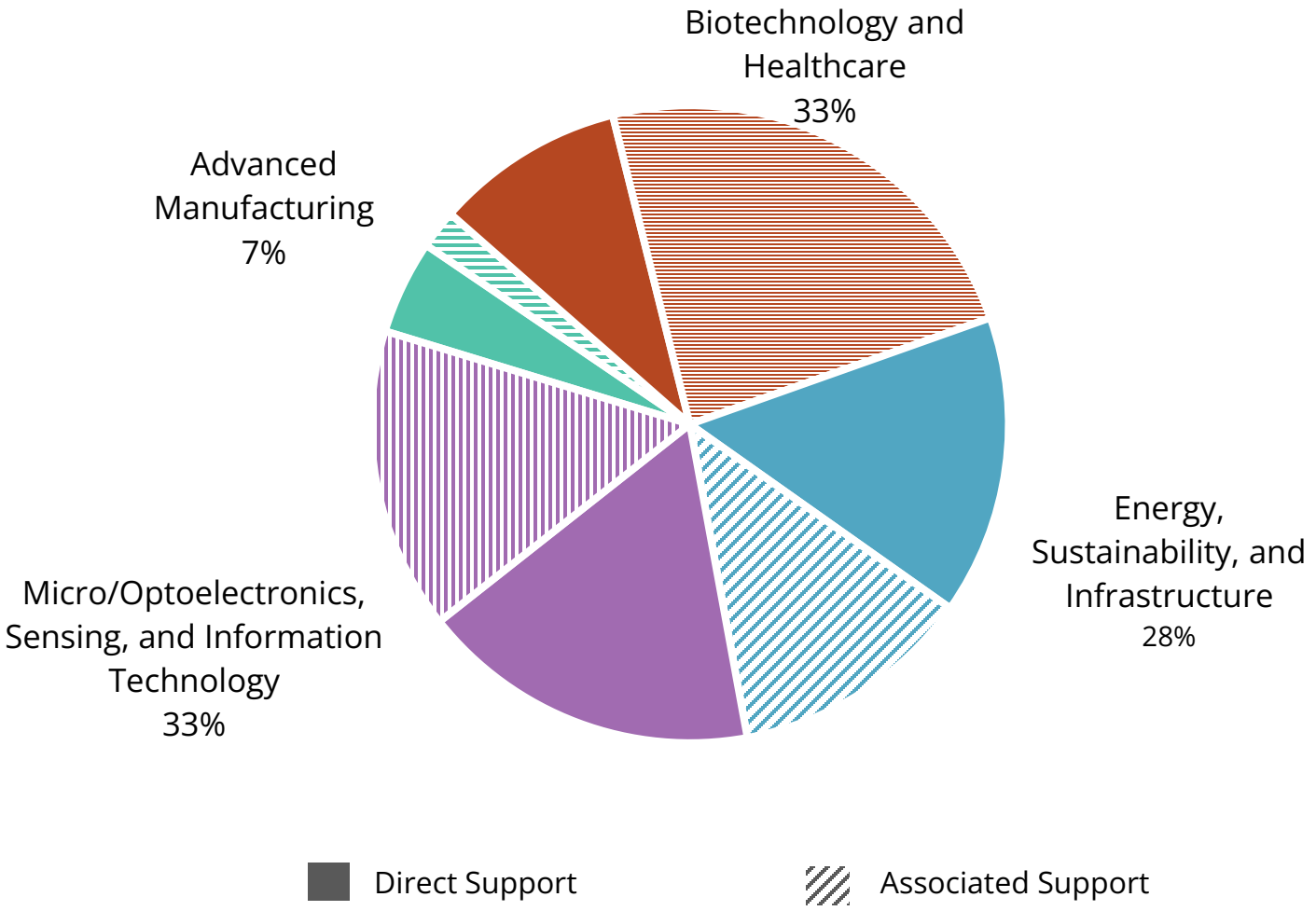


** Does not include centers from the Earthquake Technology Sector*

*** Support includes Unrestricted Cash, Restricted Cash, and In-Kind Support*

**** Includes data for centers that have entered partial data during a no-cost extension (NCE)*

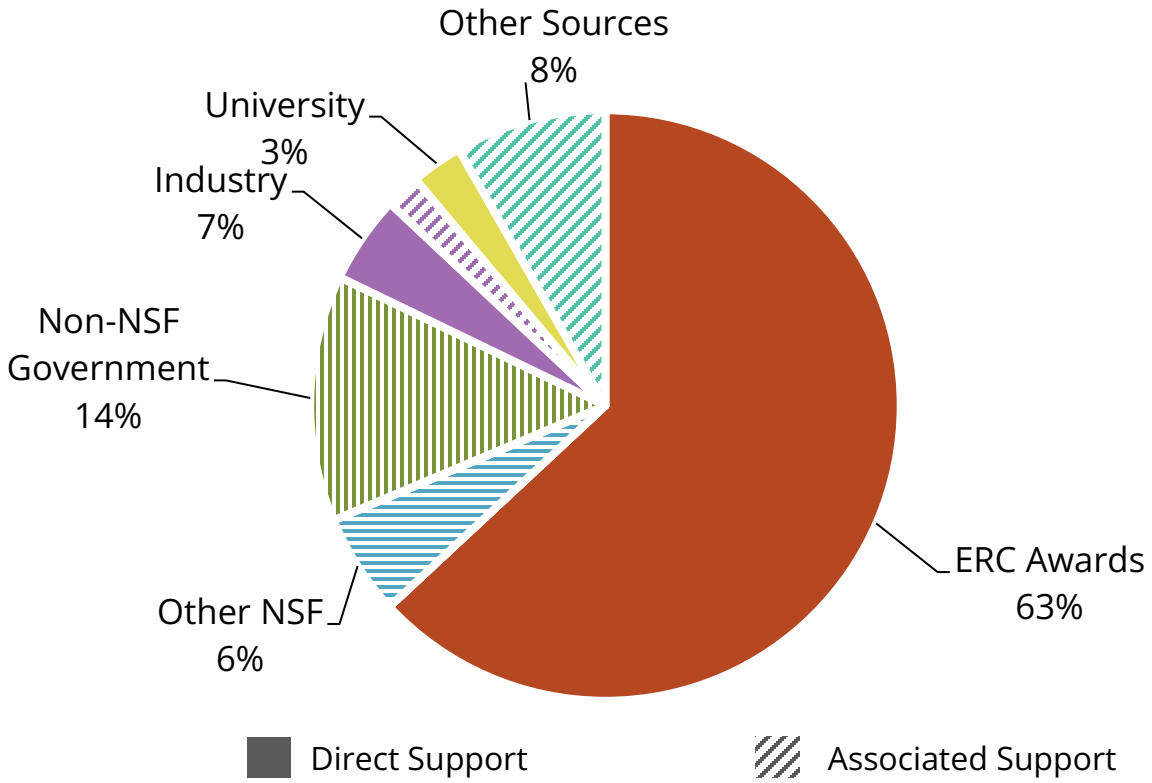
FY 2024 Sources of Support to 16 ERCs, by Technology Sector



Total value of support: $211 million

NOTE: Sources of Support include Unrestricted Cash, Restricted Cash, In-Kind, and Associated Projects. Residuals are not included

FY 2024 Support to ERCs in Advanced Manufacturing Sector: 2 Centers (CMaT, HAMMER)

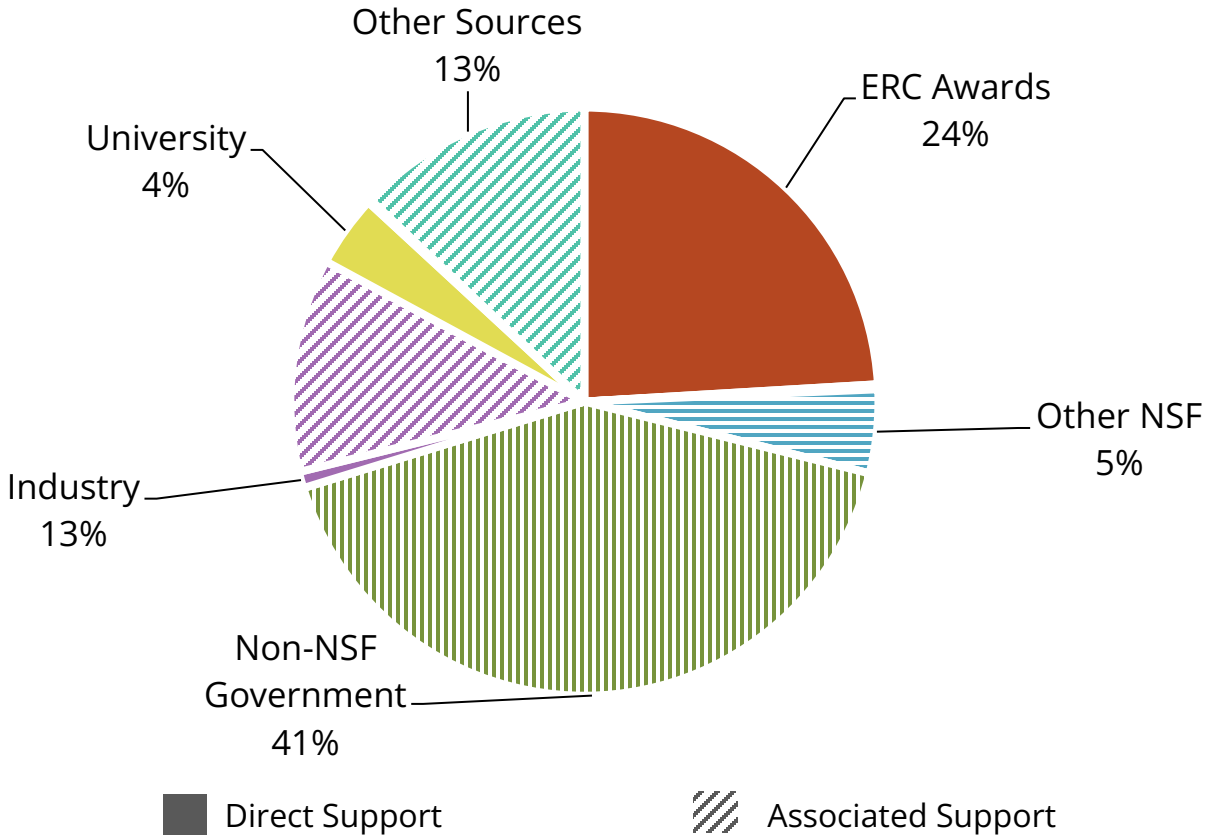


Total value of support: $14.3 million

NOTES:

- *Sources of Support include Unrestricted Cash, Restricted Cash, In-Kind, and Associated Projects. Residuals are not included*
- *Non-NSF Government includes U.S. Government (not NSF), State government, local government, foreign government, and quasi-government research organizations*
- *Other Sources includes medical facilities, nonprofit organizations, private foundations, venture capitalists, and other sources*

FY 2024 Support to ERCs in Biotechnology and Healthcare Sector: 5 Centers (ASSIST, ATP-Bio, CELL-MET, PATHS-UP, PreMiEr)

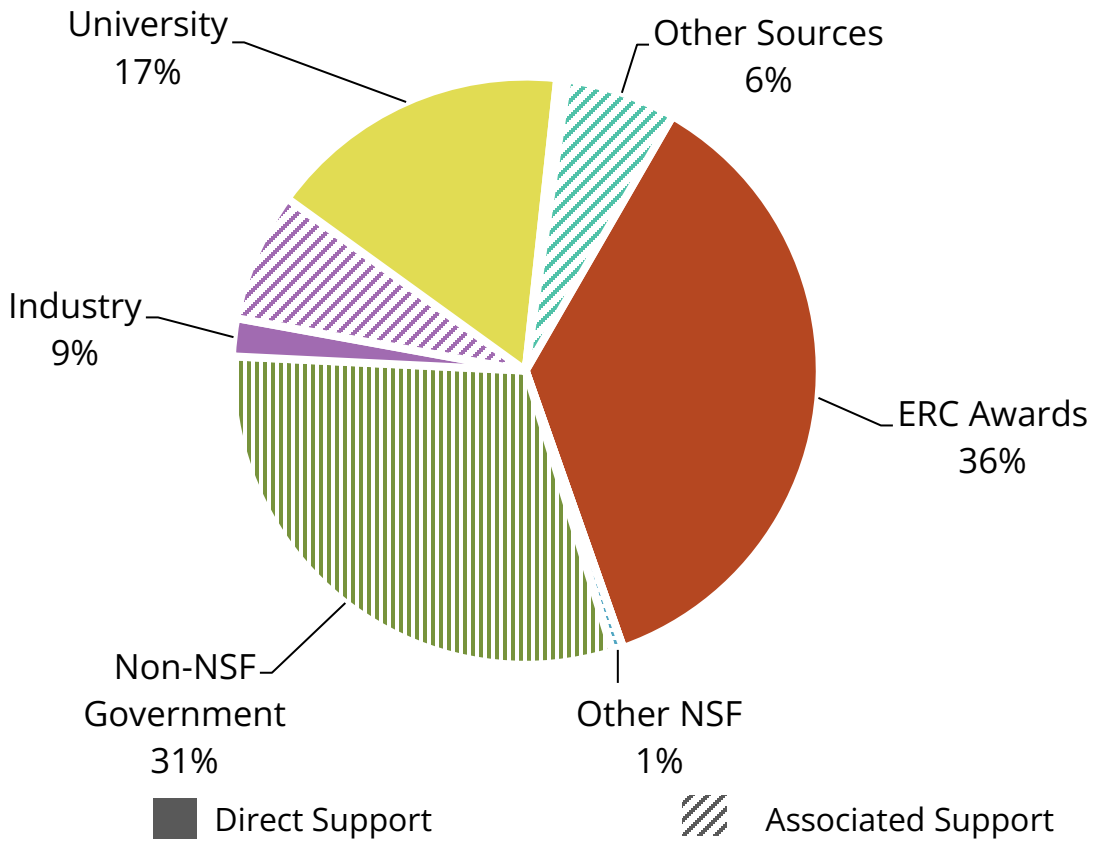


Total value of support: $69.8 million

NOTES:

- *Sources of Support include Unrestricted Cash, Restricted Cash, In-Kind, and Associated Projects. Residuals are not included*
- *Non-NSF Government includes U.S. Government (not NSF), State government, local government, foreign government, and quasi-government research organizations*
- *Other Sources includes medical facilities, nonprofit organizations, private foundations, venture capitalists, and other sources*

FY 2024 Support to ERCs in Energy, Sustainability, and Infrastructure Sector: 5 Centers (ASPIRE, CASFER, CBBG, CISTAR, NEWT)

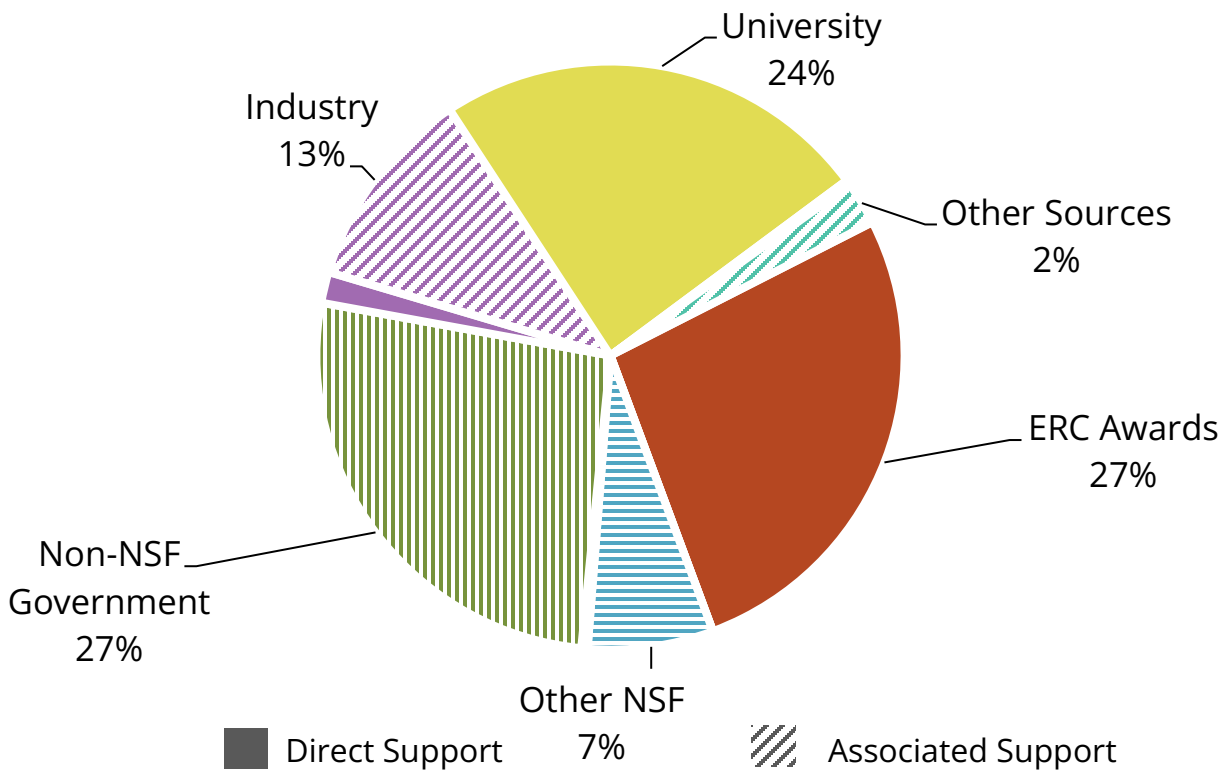


Total value of support: $58.0 million

NOTES:

- *Sources of Support include Unrestricted Cash, Restricted Cash, In-Kind, and Associated Projects. Residuals are not included*
- *Non-NSF Government includes U.S. Government (not NSF), State government, local government, foreign government, and quasi-government research organizations*
- *Other Sources includes medical facilities, nonprofit organizations, private foundations, venture capitalists, and other sources*

FY 2024 Support to ERCs in Micro/Optoelectronics, Sensing, and Information Technology Sector: 4 Centers (CQN, CS3, IoT4Ag, POETS)

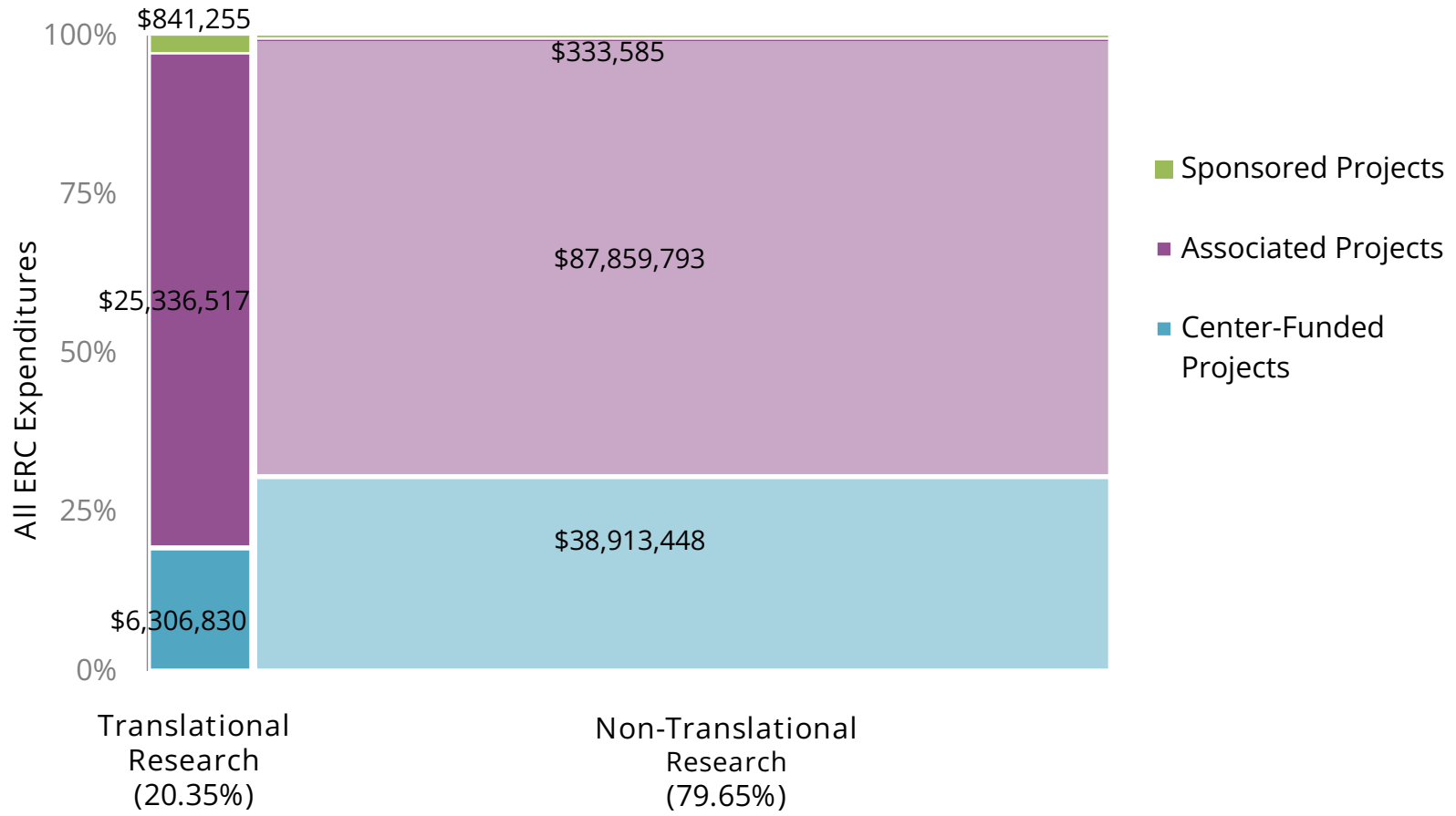


Total value of support: $68.8 million

NOTES:

- *Sources of Support include Unrestricted Cash, Restricted Cash, In-Kind, and Associated Projects. Residuals are not included*
- *Non-NSF Government includes U.S. Government (not NSF), State government, local government, foreign government, and quasi-government research organizations*
- *Other Sources includes medical facilities, nonprofit organizations, private foundations, venture capitalists, and other sources*

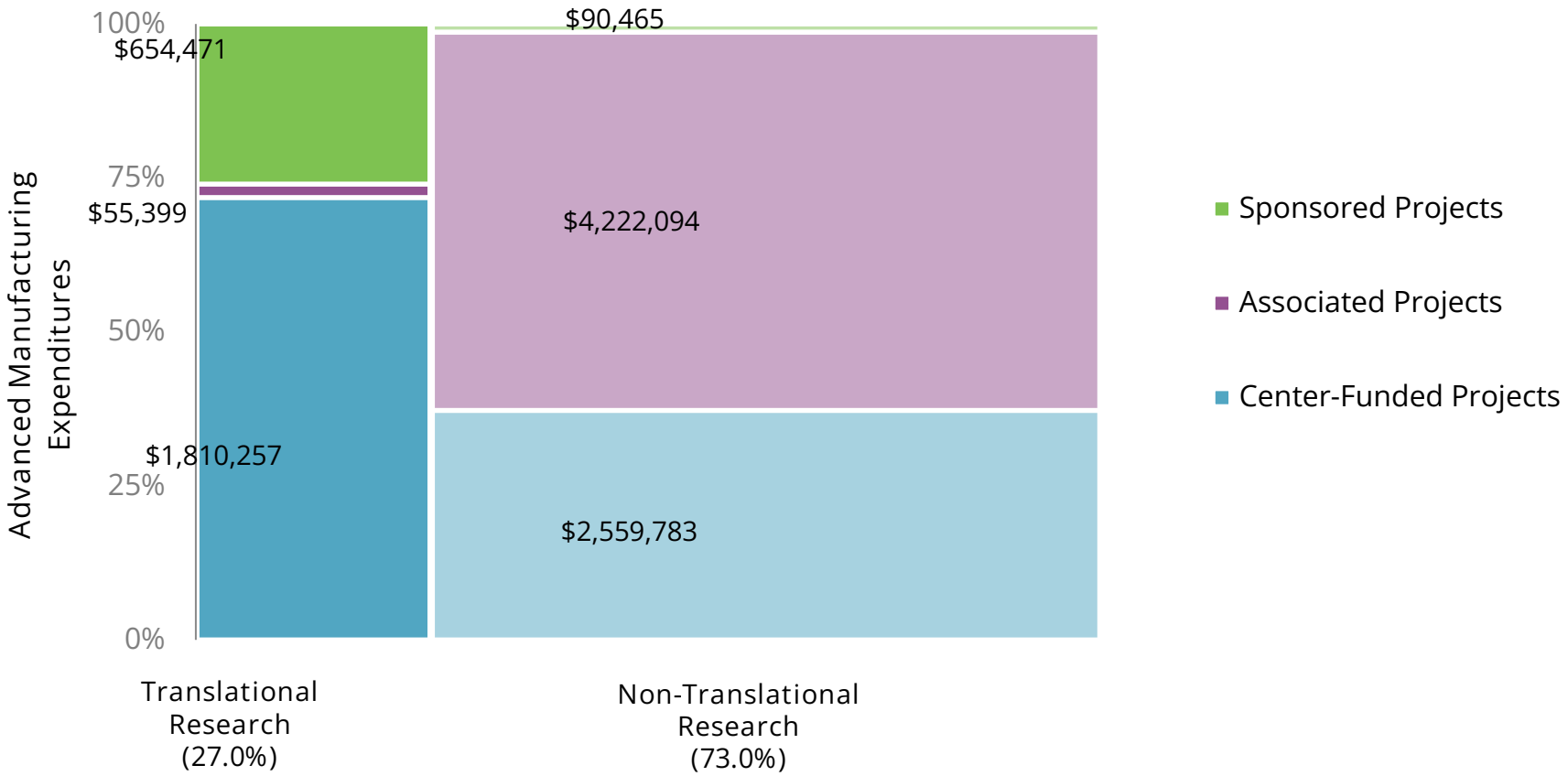
FY 2024 Expenditures by Type of Research: All ERCs



Total value of support: $159.6 million

NOTE: $333,585 corresponds to Sponsored Projects expenditures for Non-Translational Research. Area is not visible due to the small relative size

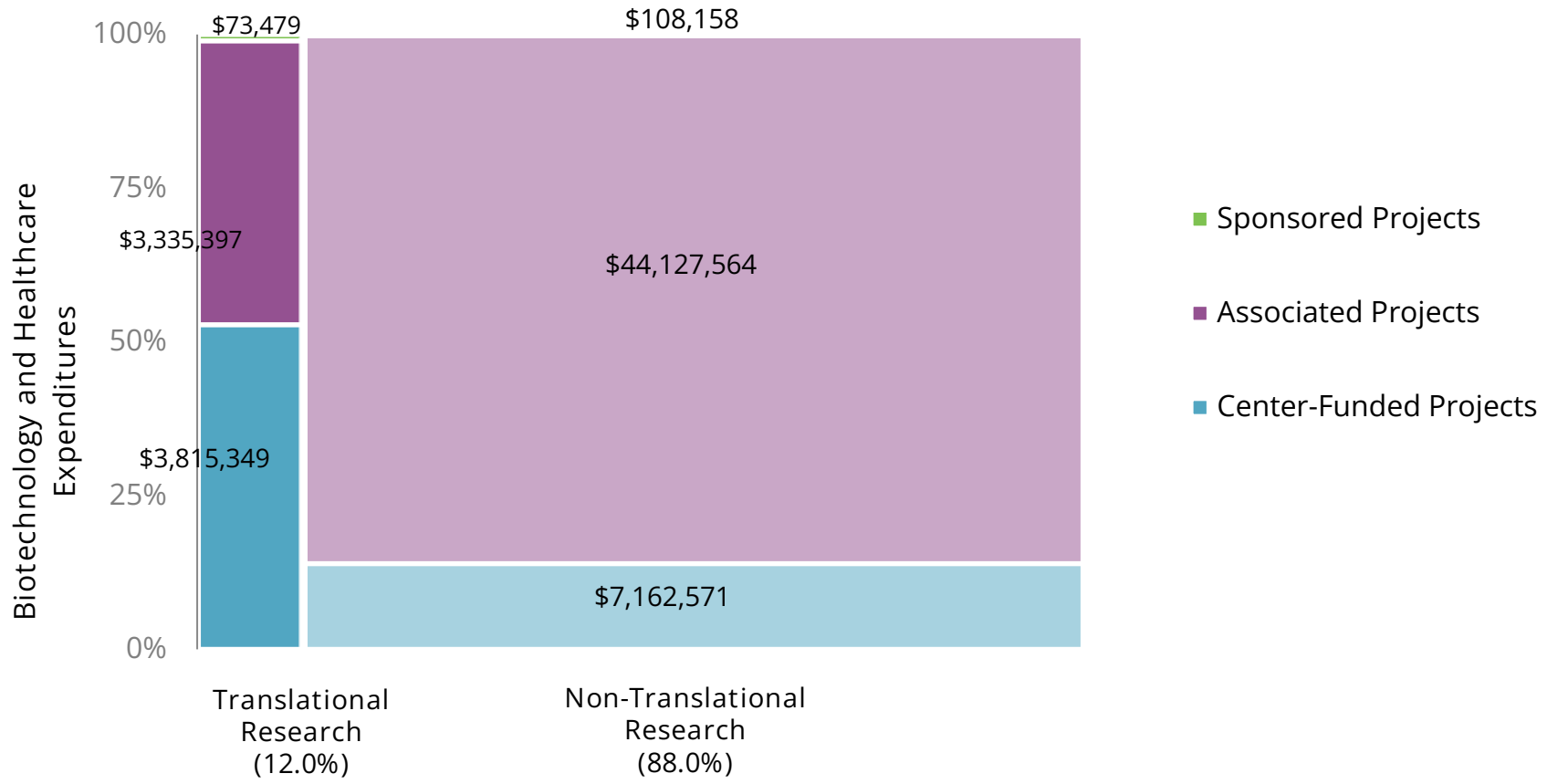
FY 2024 Expenditures by Type of Research: Advanced Manufacturing



Total value of support: $9.4 million

NOTE: $90,465 corresponds to Sponsored Projects expenditures for Non-Translational Research. Area is not visible due to the small relative size

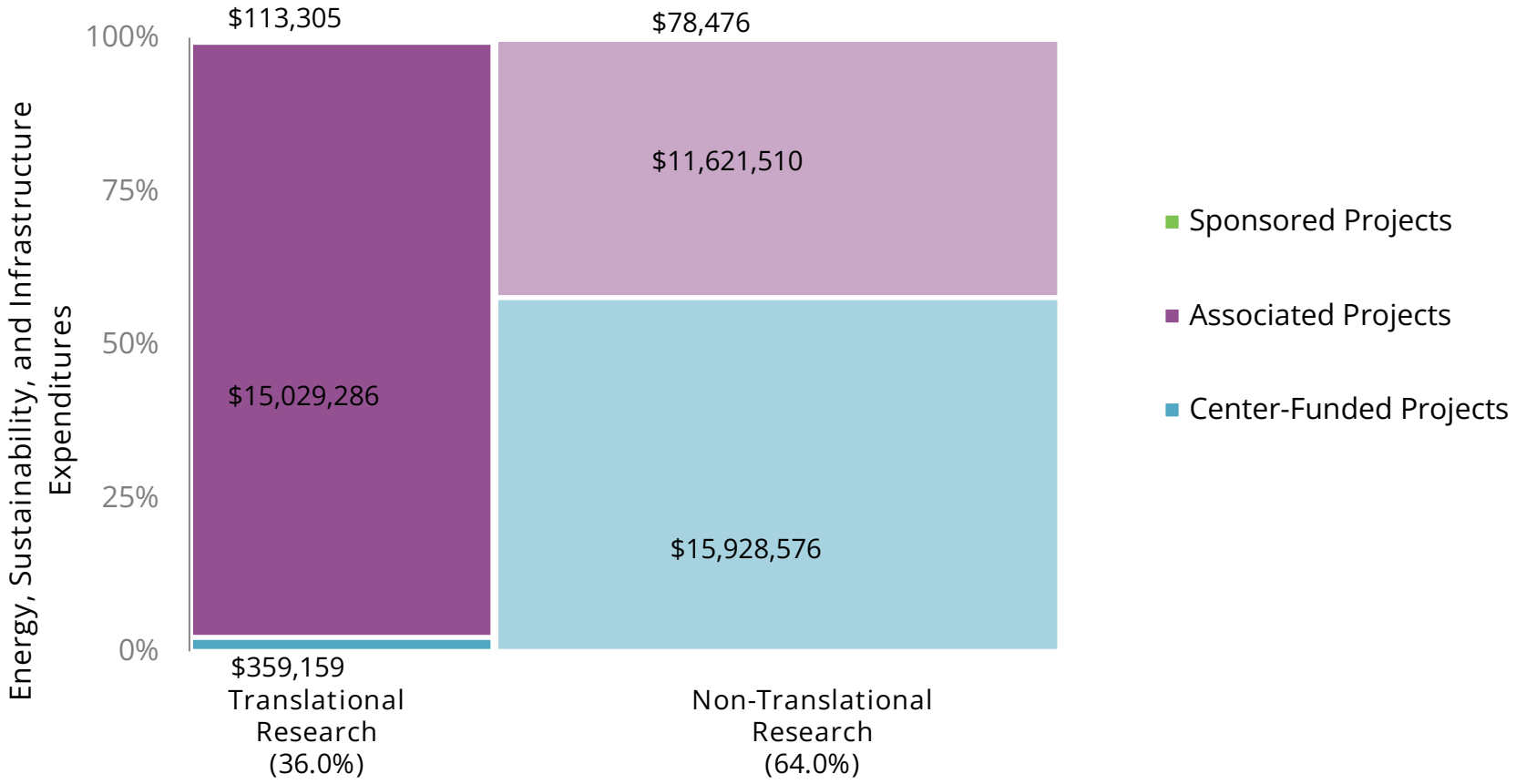
FY 2024 Expenditures by Type of Research: Biotechnology and Healthcare



Total value of support: $58.6 million

NOTE: $73,479 and $108,158 corresponds to Sponsored Projects expenditures for Translational Research and Non-Translational Research. Area is not visible due to the small relative size

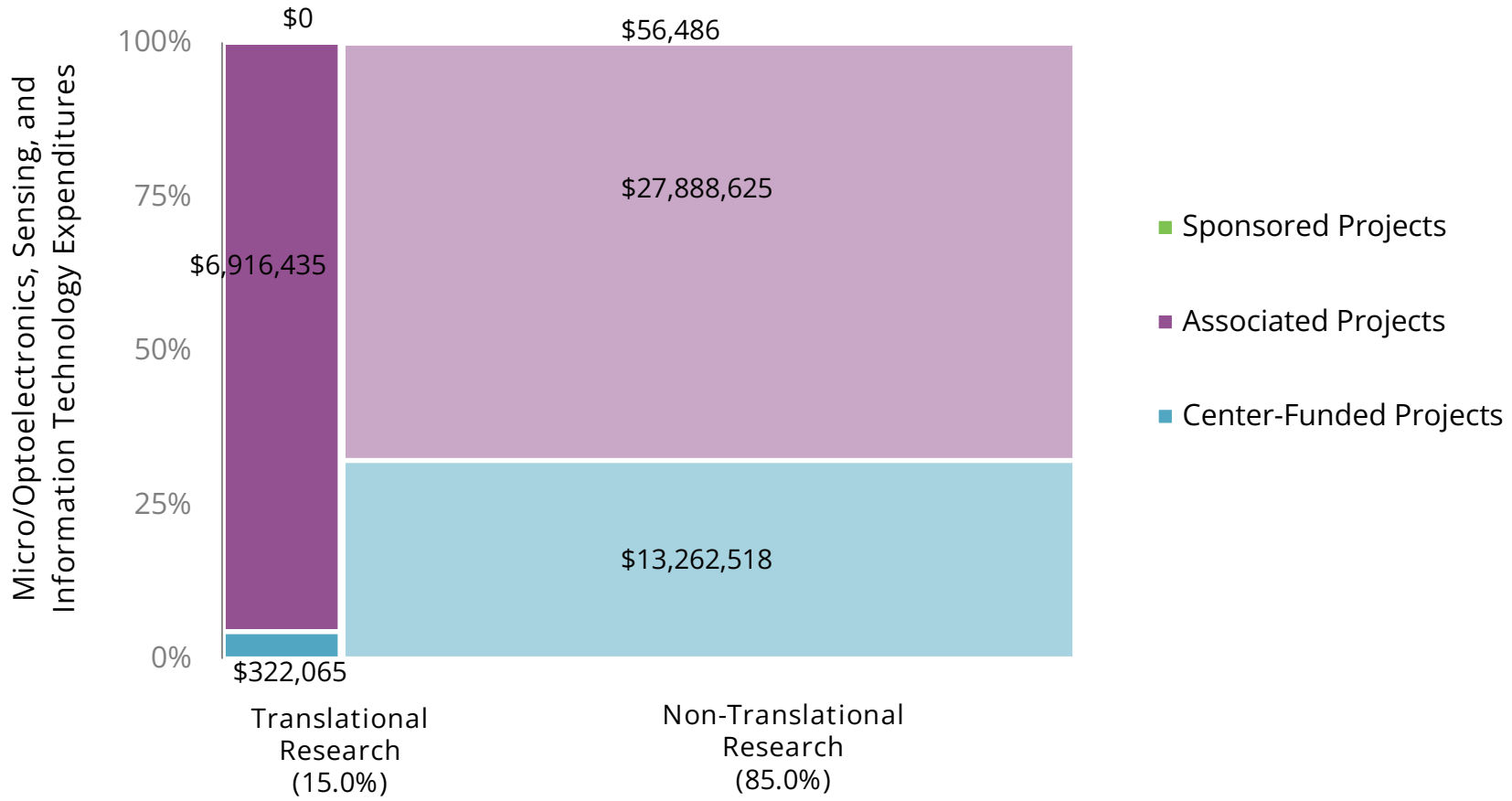
FY 2024 Expenditures by Type of Research: Energy, Sustainability, and Infrastructure



Total value of support: $43.1million

NOTE: $113,305 and $78,476 corresponds to Sponsored Projects expenditures for Translational Research and Non-Translational Research. Area is not visible due to the small relative size.

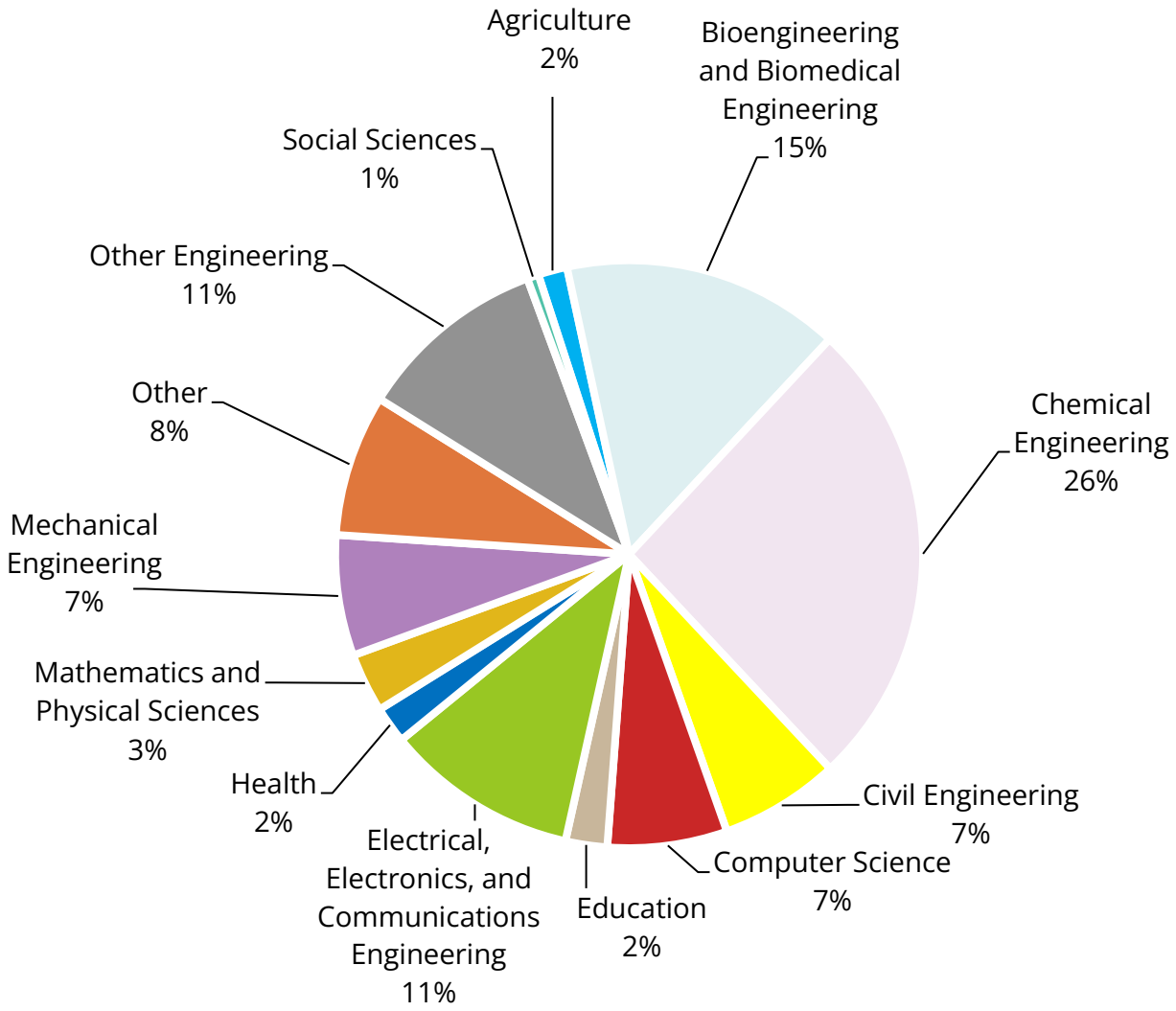
FY 2024 Expenditures by Type of Research: Micro/Optoelectronics, Sensing, and Information Technology



Total value of support: $48.4 million

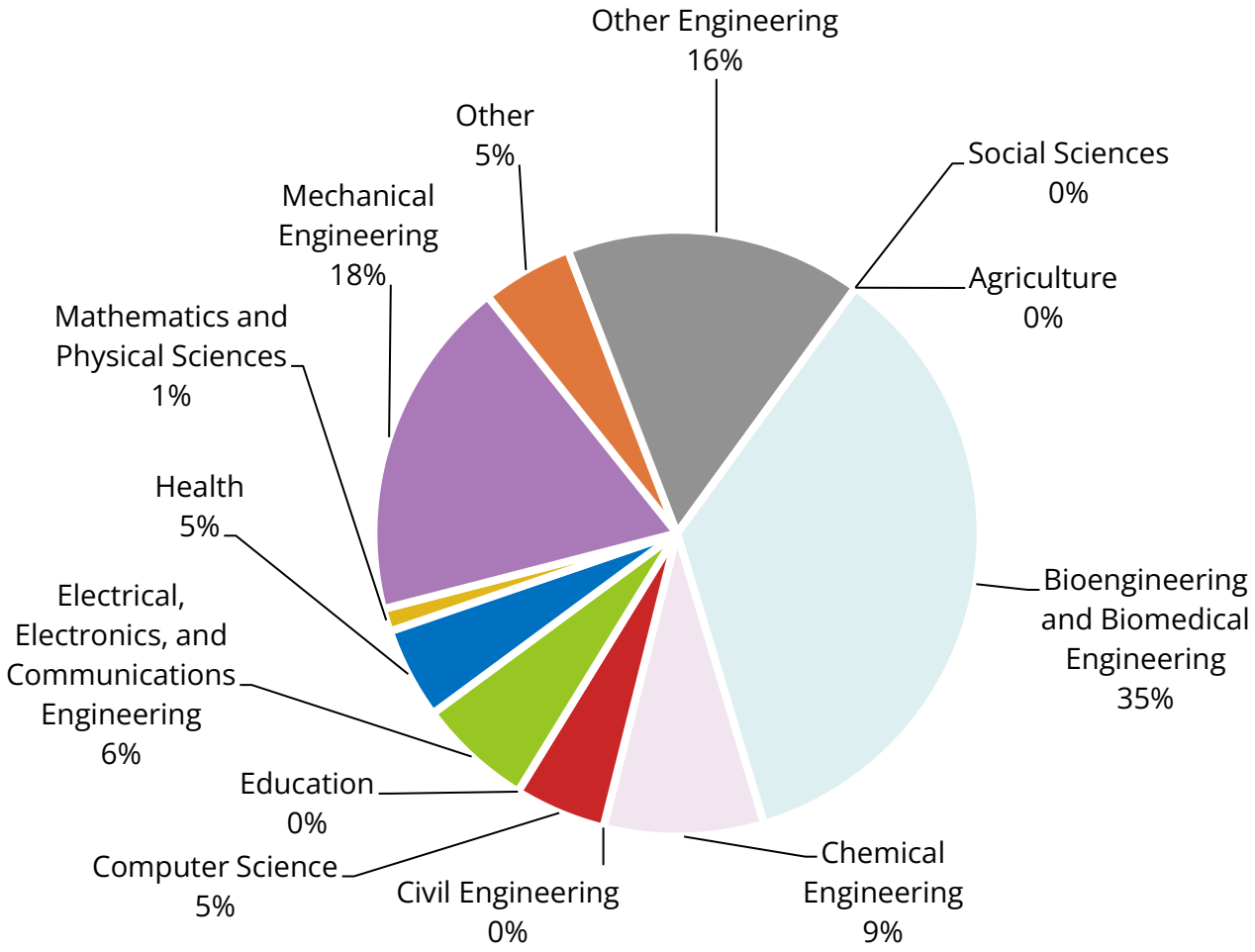
*NOTE: *$56,486 and $0 corresponds to Sponsored Projects expenditures for Non-Translational Research and Translational Research. Area is not visible due to no data or the small relative size.*

All ERC Disciplines, FY 2024



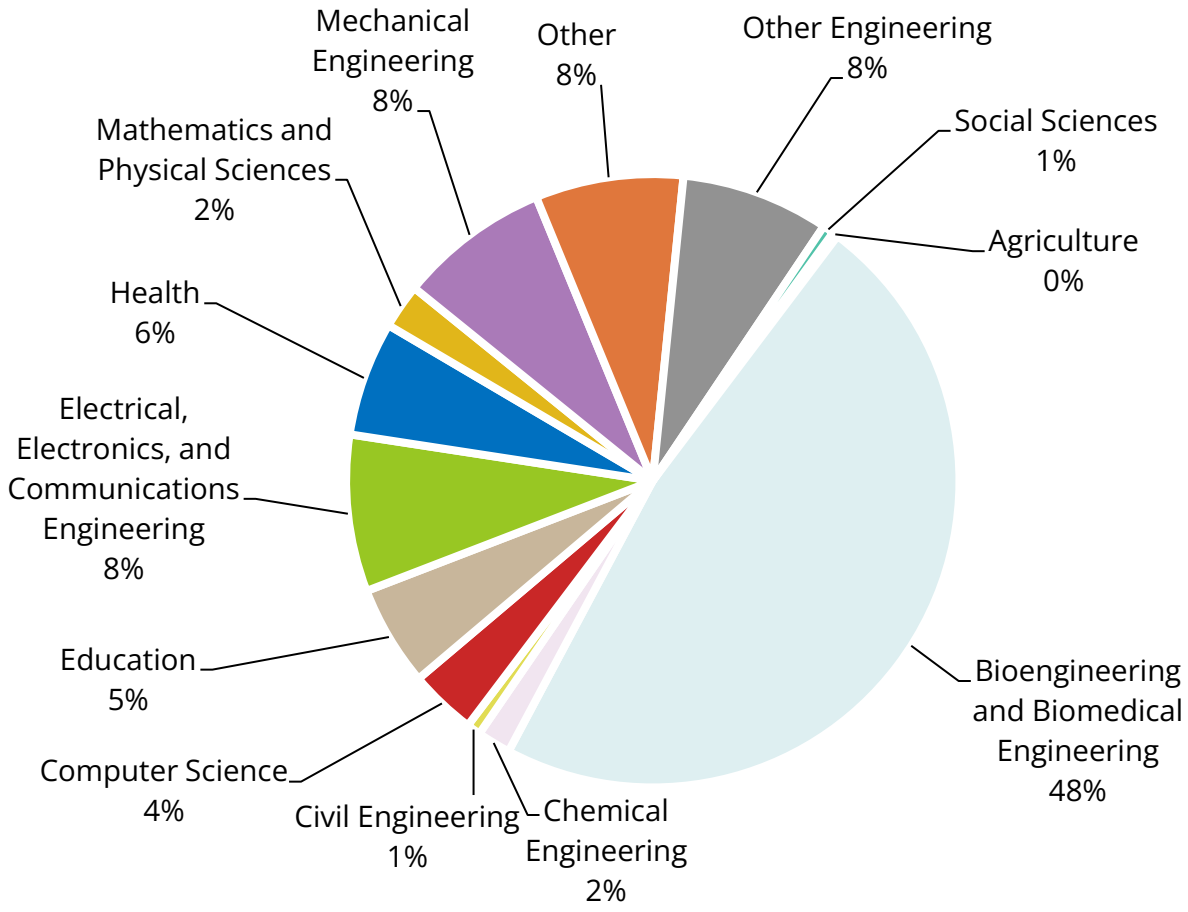
Total number of Project Investigators (PIs): 582

Disciplines by Technology Sector: Advanced Manufacturing, FY 2024



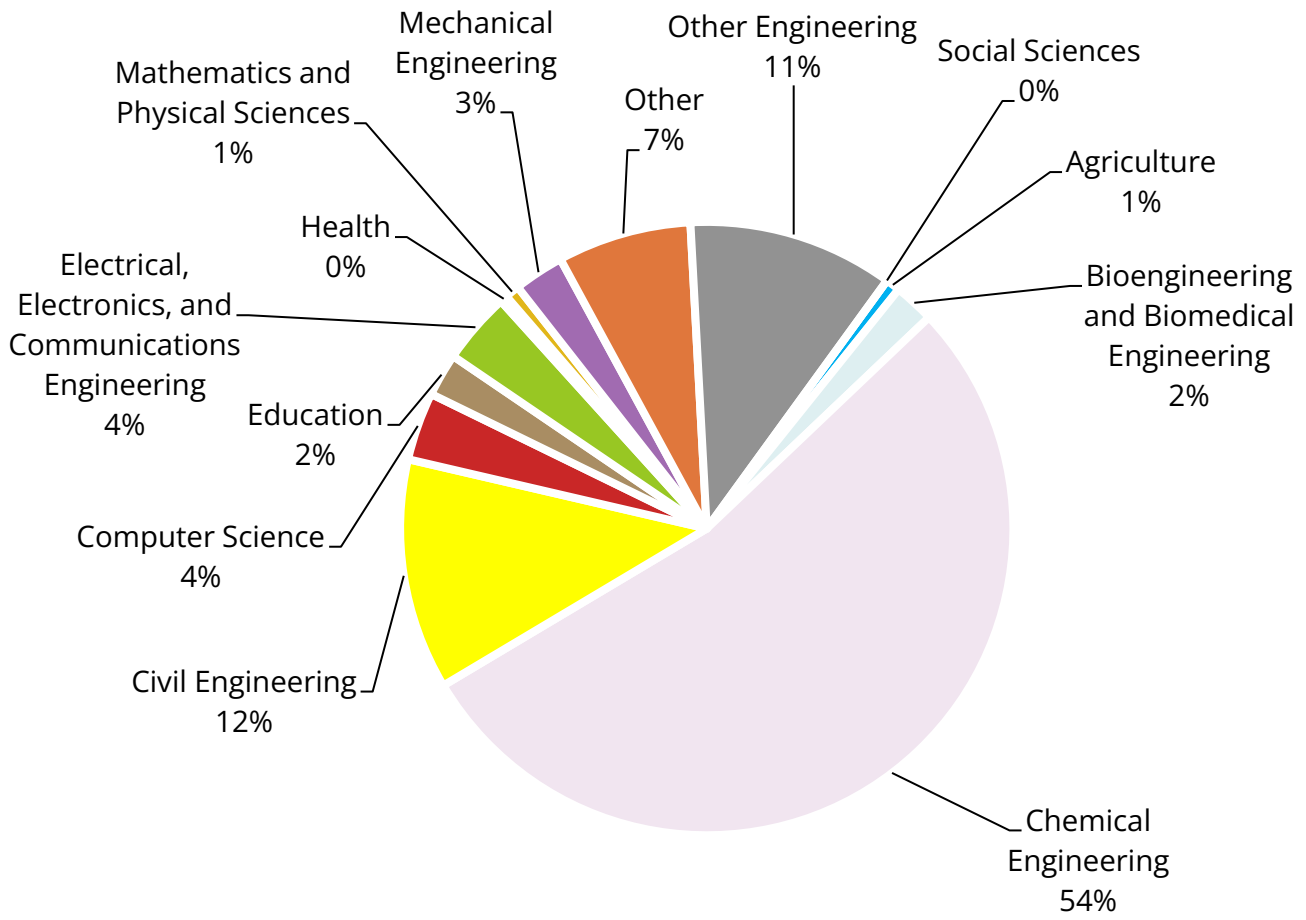
Total number of Project Investigators (PIs): 82

Disciplines by Technology Sector: Biotechnology and Healthcare, FY 2024



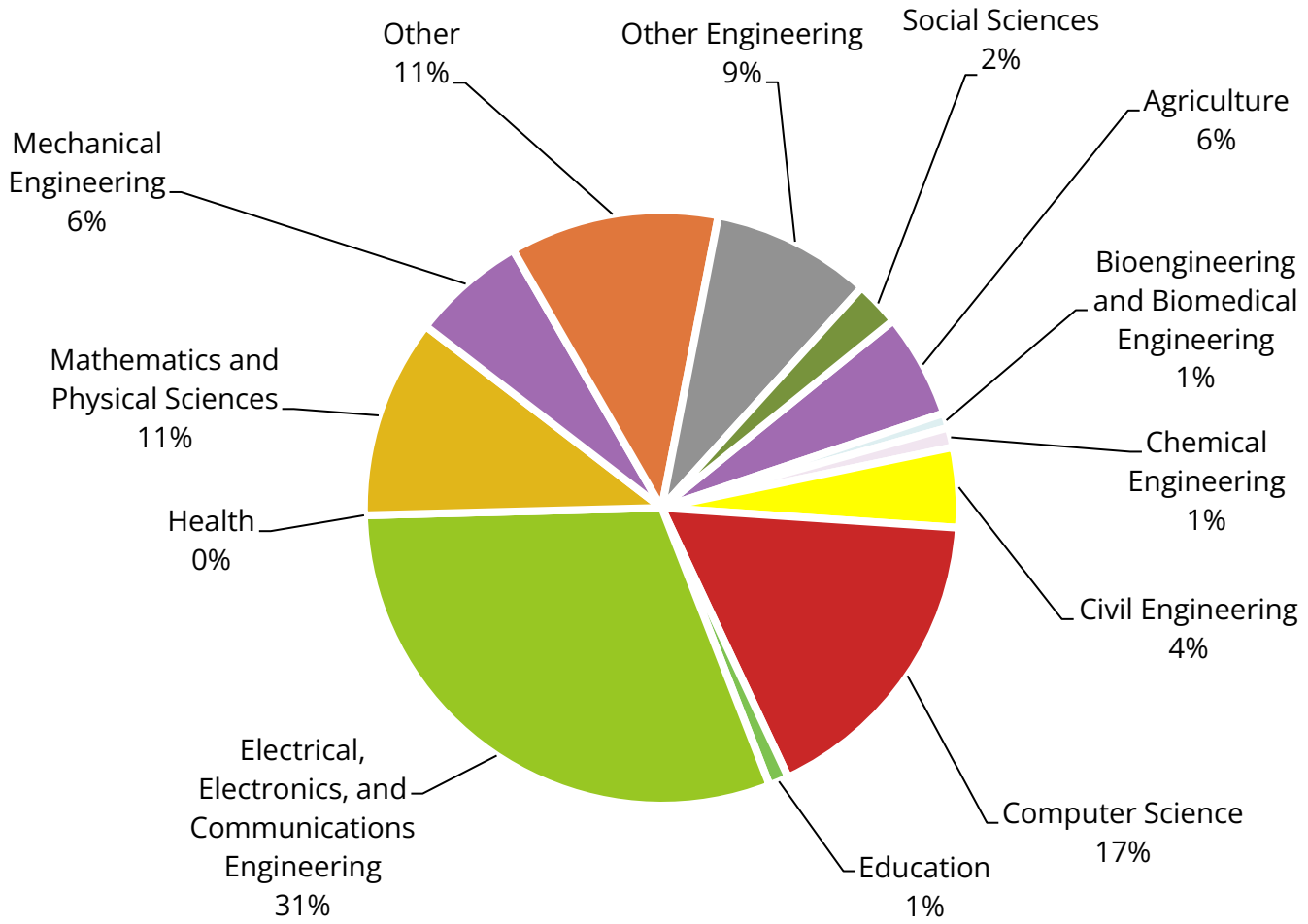
Total number of Project Investigators (PIs): 113

Disciplines by Technology Sector: Energy, Sustainability, and Infrastructure, FY 2024



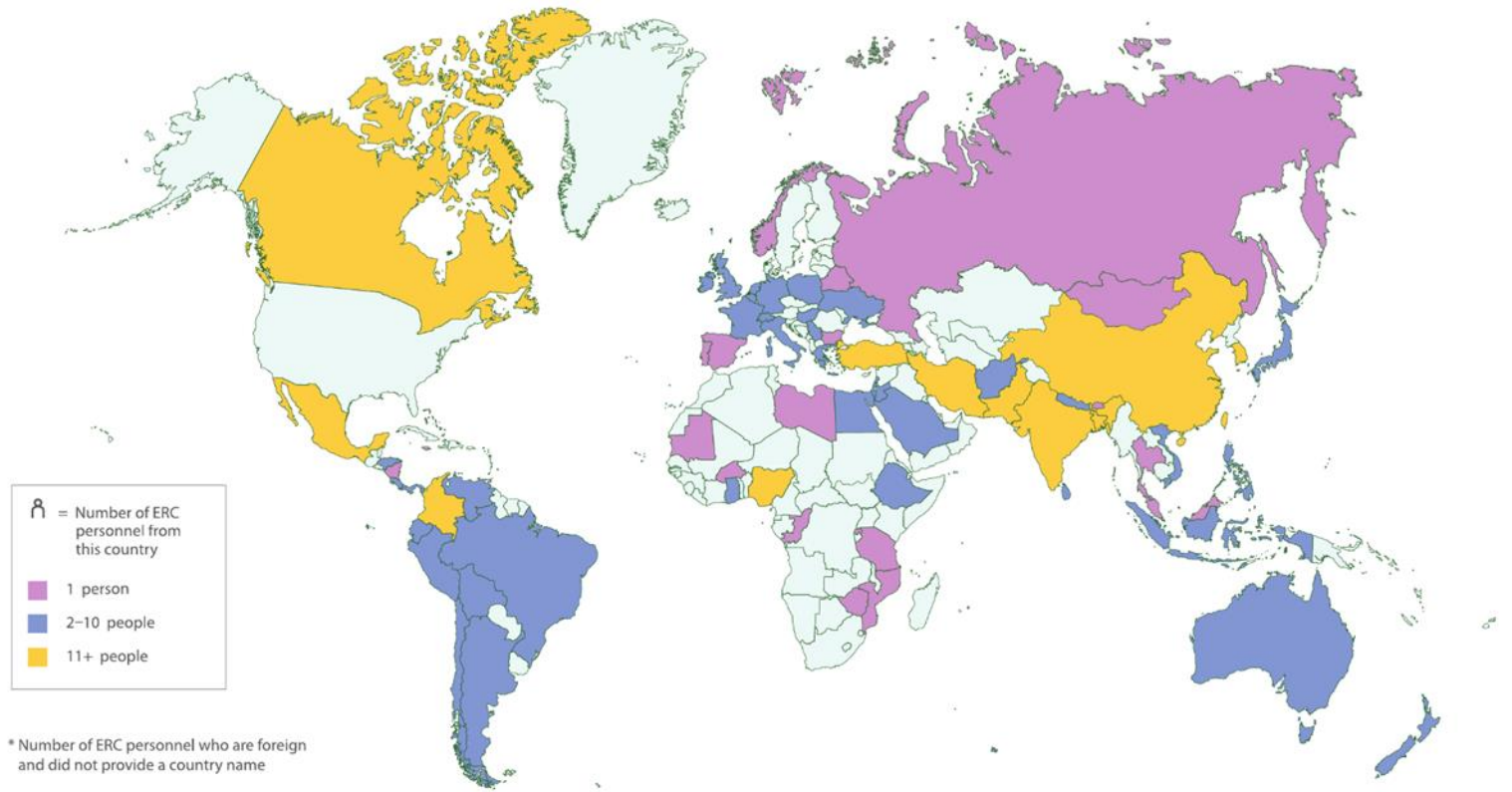
Total number of Project Investigators (PIs): 264

Disciplines by Technology Sector: Micro/Optoelectronics, Sensing, and Information Technology, FY 2024



Total number of Project Investigators (PIs): 123

Country of Citizenship of ERC Foreign Personnel, FY 2024



* Number of ERC personnel who are foreign and did not provide a country name

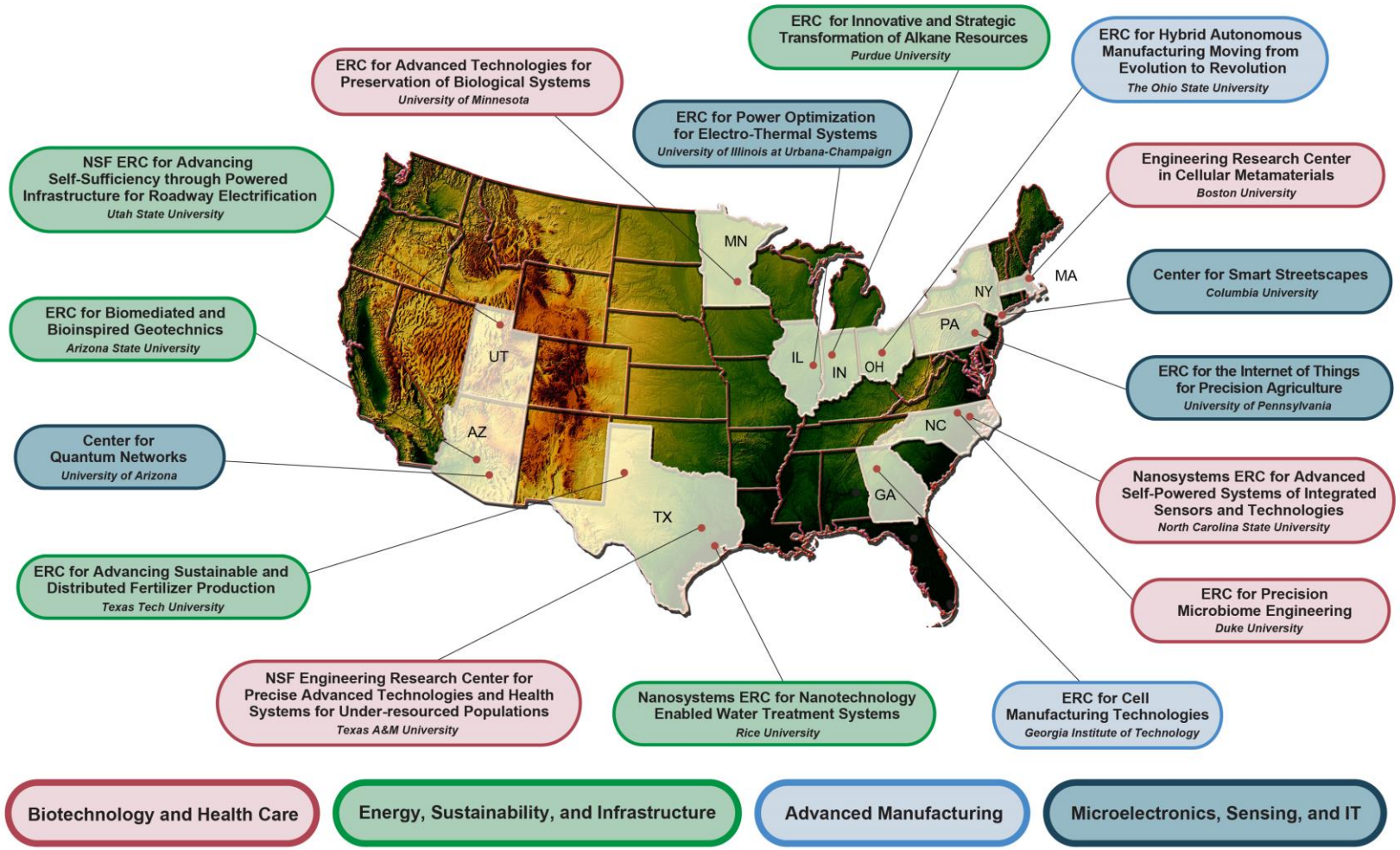
1 person
African Countries, Other
Bahamas, The
Bahrain
Barbados
Belarus
Bhutan
Bulgaria
Burkina Faso
Grenada
Jamaica
Libya
Malaysia
Mauritius
Mongolia
Mozambique
Nicaragua
Norway
Portugal
Republic of the Congo
Russia
Rwanda
Spain
Tanzania
Thailand
Trinidad and Tobago
Zimbabwe

2–10 people				
Afghanistan (2)	Egypt (2)	Indonesia (3)	New Zealand (6)	Switzerland (3)
Argentina (2)	Ethiopia (3)	Ireland (5)	Panama (2)	Ukraine (2)
Australia (3)	France (8)	Israel (3)	Peru (4)	United Kingdom (3)
Belgium (3)	Germany (4)	Italy (4)	Philippines (3)	Venezuela (6)
Bolivia (5)	Ghana (9)	Japan (3)	Poland (2)	Vietnam (6)
Brazil (6)	Greece (6)	Jordan (4)	Saudi Arabia (2)	
Chile (2)	Honduras (3)	Lebanon (8)	Serbia (3)	
Costa Rica (3)	Hong Kong (2)	Nepal (8)	Singapore (3)	
Ecuador (6)	Hungary (3)	Netherlands (5)	Sri Lanka (6)	

11+ people	
Bangladesh	34
Canada	11
China	159
Colombia	21
India	142
Iran	46
Mexico	28
Nigeria	24

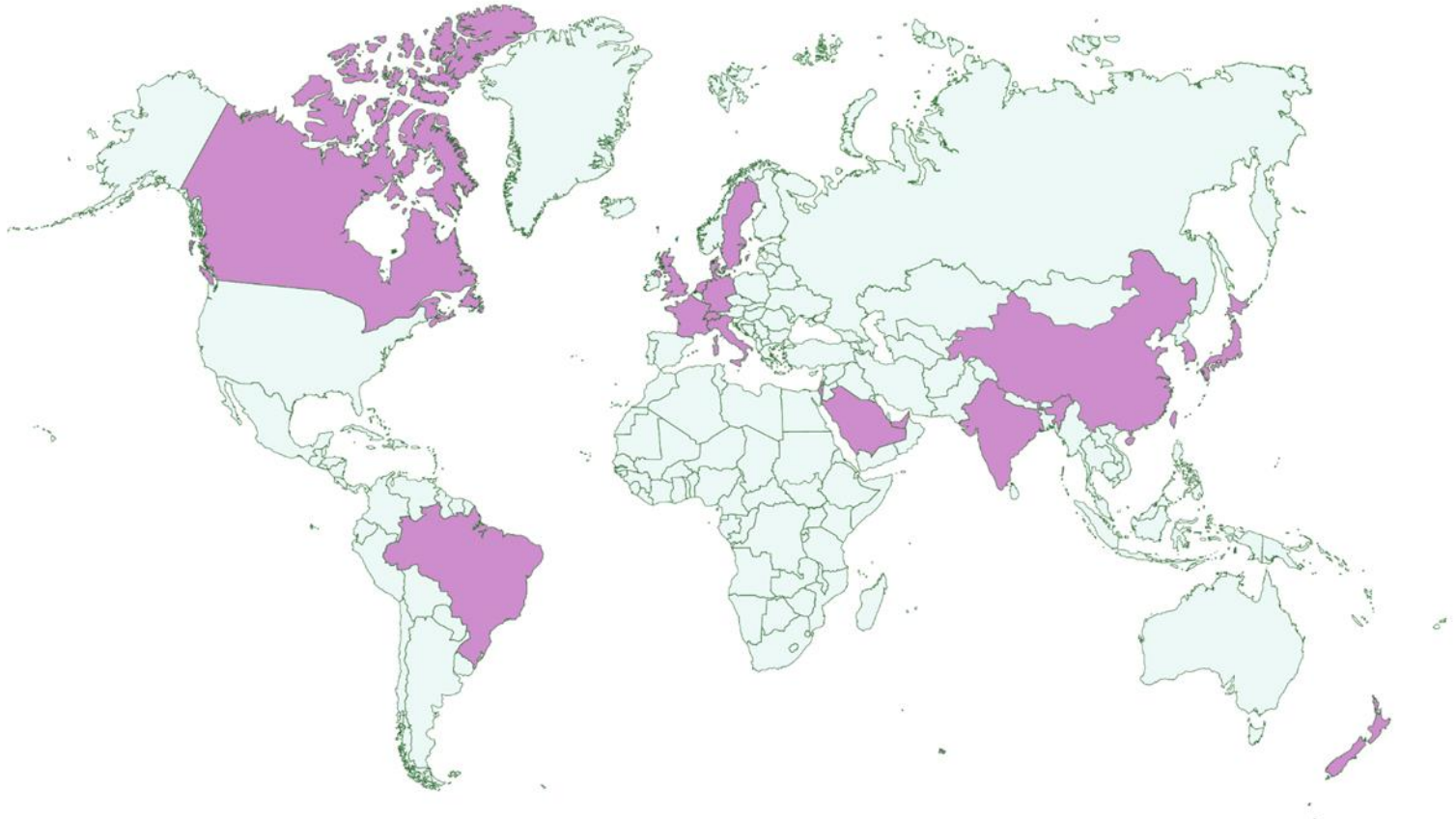
11+ people	
Pakistan	13
South Korea	44
Taiwan	14
Turkey	11
Country Not Reported	12*

Locations of the Active ERCs, FY 2024



Note: All centers are multi-university partnerships; university shown is lead institution.

Locations of Foreign Participating Organizations, FY 2024



Countries with 1- 20 collaborators

Brazil (2)	Italy (1)	Taiwan (1)
Canada (3)	Japan (4)	United Arab Emirates (1)
China (1)	Netherlands (1)	United Kingdom (8)
Denmark (2)	New Zealand (1)	
France (1)	Saudi Arabia (1)	
Germany (6)	South Korea (1)	
India (1)	Sweden (1)	
Israel (1)	Switzerland (4)	

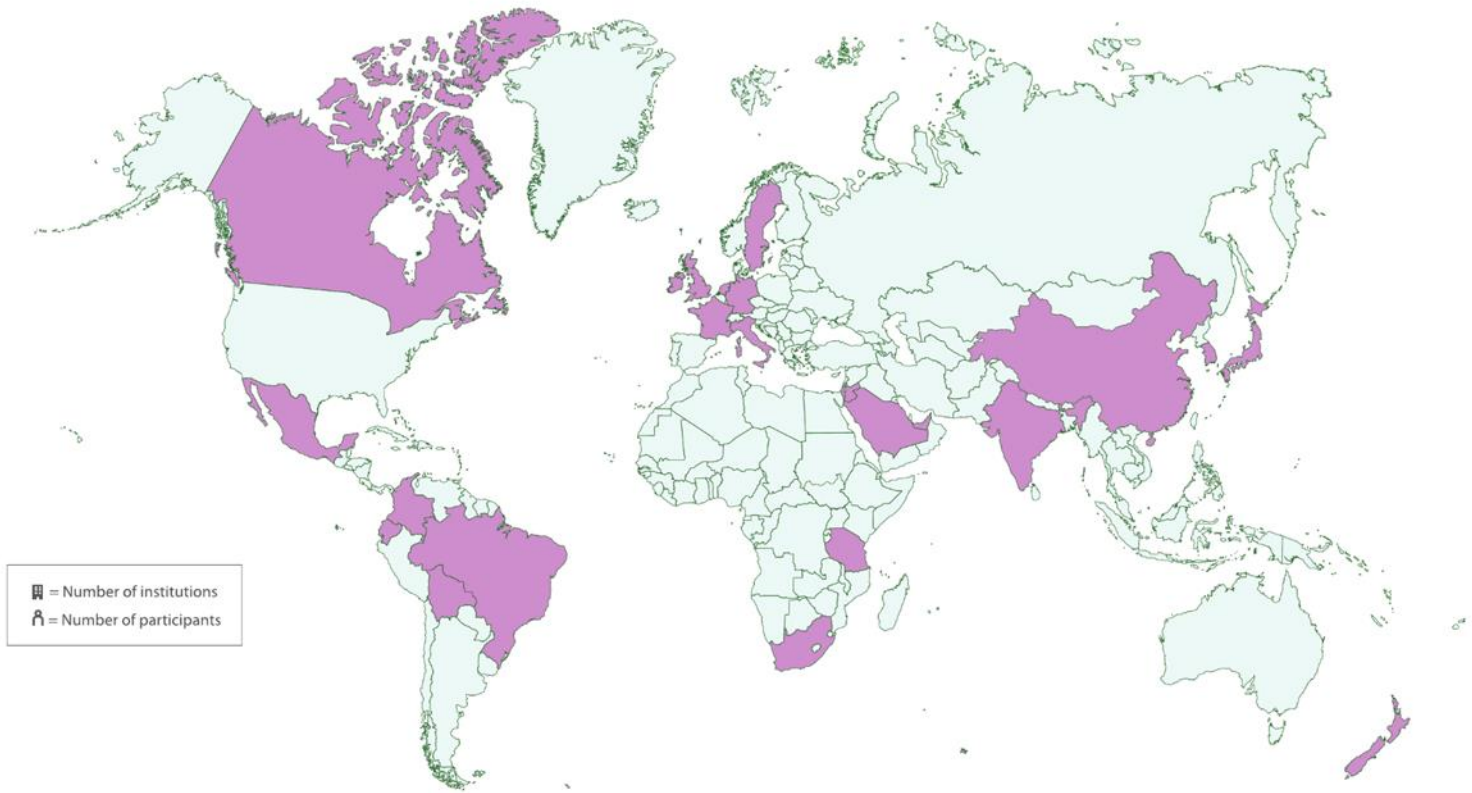
Countries with 21- 40 collaborators

No Countries Reported

Countries with 41+ collaborators

No Countries Reported

Locations of Foreign Participating Institutions, FY 2024



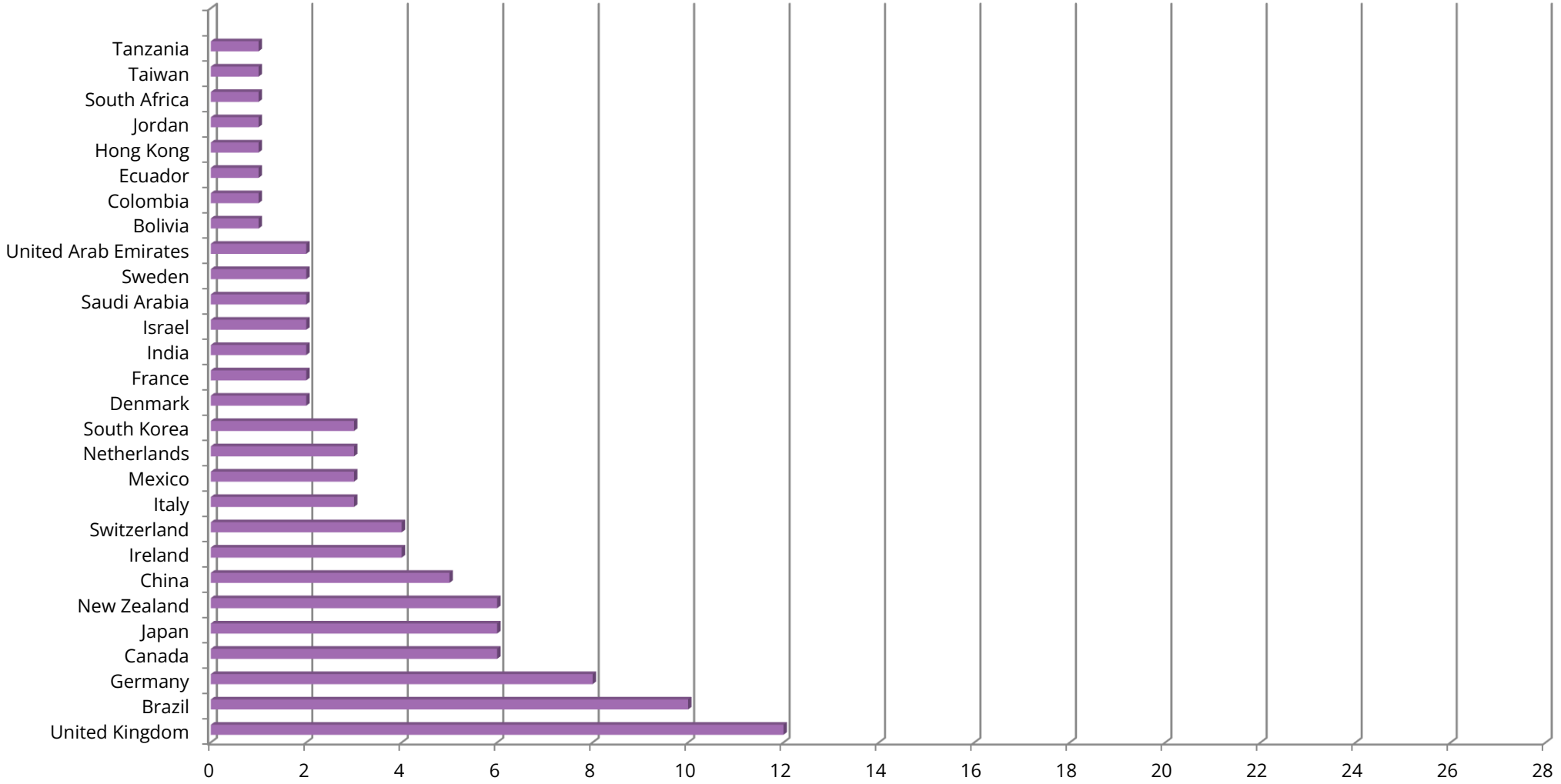
	🏛	👤
Bolivia	1	2
Brazil	8	2
Canada	3	4
China	4	2
Colombia	1	0
Ecuador	1	1
France	1	1
Germany	2	0

	🏛	👤
Hong Kong	1	0
India	1	1
Ireland	4	7
Israel	1	0
Italy	2	0
Japan	2	1
Jordan	1	0
Mexico	3	0

	🏛	👤
Netherlands	2	1
New Zealand	5	36
Saudi Arabia	1	0
South Africa	1	0
South Korea	2	3
Sweden	1	1
Tanzania	1	0
United Arab Emirates	1	0

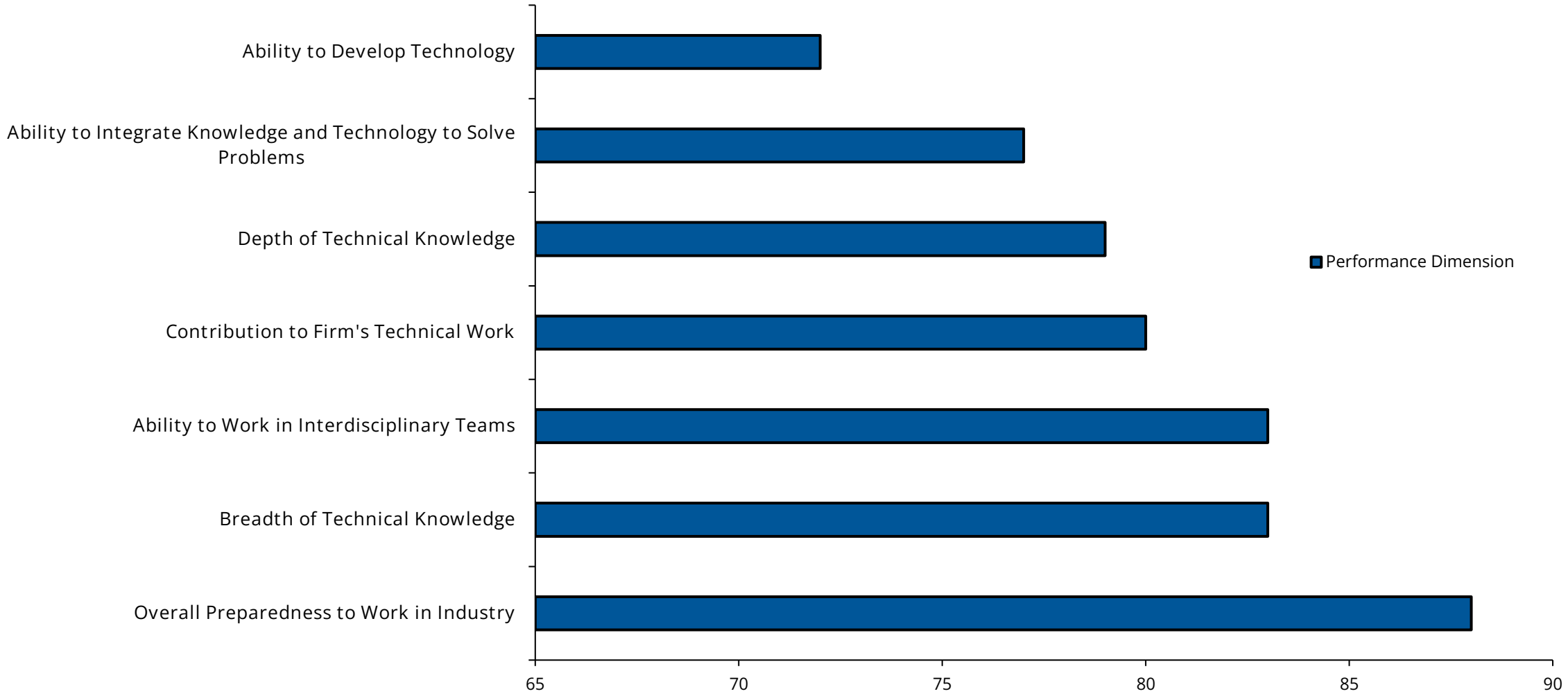
	🏛	👤
United Kingdom	4	1

Number of Institutions and Organizations With Financial Headquarters Abroad Collaborating With ERCs, by Country of Origin, FY 2024*,**



** Displays counts of Industrial/Practitioner members, Funders of Associated Projects, Funders of Sponsored Projects, Contributing Organizations, Collaborating Institutions, Non-ERC Institutions Providing REU Students, and Foreign Partner Institutions*
*** Community college and Pre-college institutions are excluded*

Comparisons by Member Firms of the Performance of ERC Hires vs. Non-ERC Hires*



** Percentage of industrial supervisors rating the former ERC students/graduates hired by their firms as "Better Than" or "Much Better Than" equivalent hires without ERC experience*