



National Center for Science and
Engineering Statistics

InfoBrief

Baccalaureate Origins of U.S. Research Doctorate Recipients

NSF 22-321 | March 2022

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Baccalaureate education plays a key role in the educational pathways of research doctorate recipients. Most doctoral students earning research doctorates in the United States received their baccalaureate from institutions in the Carnegie Classification group R1: doctoral universities (very high research activity) or from foreign academic institutions. However, on a per capita basis, more graduates from Carnegie-classified baccalaureate colleges: arts and sciences focus earn a doctoral degree in science and engineering (S&E) than their peers at other types of Carnegie Classification of institutions. This InfoBrief examines the top producing baccalaureate-origin institutions of research doctorate recipients in S&E and non-S&E fields over the past decade, updating and augmenting the analysis reported in two earlier InfoBriefs.¹

Baccalaureate Origins by Institution Type

In 2020, just over 34.4% of the 55,283 U.S. research doctorate recipients earned their baccalaureate from a non-U.S. institution ([table 1](#)). This represented a 4.4% percentage-point increase in the number of doctorate recipients with foreign bachelor's degrees since 2010 and parallels the growth of temporary visa holders earning doctorates in the United States.² Foreign bachelor's degrees were more common among doctorate recipients in S&E fields than non-S&E fields across all years, accounting for 38.0% of S&E doctorate recipients and 22.2% of non-S&E doctorates in 2020.

Among research doctorate recipients in 2020 with bachelor's degrees from U.S. institutions, R1: doctoral universities were the most common baccalaureate-origin institutions, followed by other doctoral universities, master's colleges and universities, and baccalaureate colleges in the Carnegie Classification. This pattern can be seen in each year from 2010 through 2020 for all research doctorate recipients, and similar patterns are observed within S&E and non-S&E fields. Overall, a higher percentage of non-S&E doctorate recipients earned their baccalaureate from other Carnegie-class doctoral institutions, master's colleges and universities, and baccalaureate colleges than S&E doctorate recipients ([table 1](#)).

Table 1**Doctorate recipients, by field of doctorate and type of baccalaureate-origin institution: 2010–20**

(Number and percent)

Year and field	All baccalaureate-origin institutions	Baccalaureate institutions in the United States					Foreign baccalaureate institutions	Unknown
		R1: doctoral universities	Other doctoral universities	Master's colleges and universities	Baccalaureate colleges	All other colleges		
All doctorate recipients								
2010	48,028	31.0	10.5	10.1	9.0	0.9	30.0	8.4
2011	48,909	31.3	10.9	9.5	9.1	0.9	30.8	7.5
2012	50,943	30.6	10.5	9.9	9.2	1.0	30.3	8.5
2013	52,703	31.0	10.4	9.6	9.4	1.0	30.9	7.8
2014	53,986	30.2	10.3	9.5	8.9	0.9	30.4	9.8
2015	54,886	30.8	10.7	9.4	8.8	0.8	30.5	9.0
2016	54,809	31.2	10.9	9.7	9.0	0.9	31.2	7.1
2017	54,552	31.2	10.8	9.8	8.8	0.8	32.1	6.4
2018	55,085	31.1	11.2	9.7	8.9	0.8	32.7	5.6
2019	55,614	31.0	10.9	9.9	8.5	0.8	34.3	4.5
2020	55,283	30.3	10.9	9.9	8.4	0.8	34.4	5.4
Science and engineering ^a								
2010	34,997	31.3	9.1	8.0	8.1	0.7	34.4	8.3
2011	36,331	31.3	9.4	7.9	8.2	0.7	34.8	7.7
2012	37,846	30.6	9.2	8.1	8.4	0.8	34.4	8.5
2013	39,031	31.1	9.2	8.0	8.4	0.8	34.9	7.6
2014	40,630	29.9	9.3	8.0	7.9	0.8	34.4	9.7
2015	41,175	30.8	9.4	7.8	7.9	0.7	34.6	8.8
2016	41,240	31.2	9.6	8.2	8.2	0.7	35.2	6.9
2017	41,288	31.6	9.5	8.2	8.0	0.6	36.1	6.0
2018	42,150	31.4	9.9	8.2	8.1	0.6	36.5	5.3
2019	42,904	31.5	9.8	8.5	7.8	0.6	37.5	4.2
2020	42,622	30.7	9.6	8.3	7.6	0.6	38.0	5.1
Non-science and engineering								
2010	13,031	30.3	14.5	15.8	11.4	1.3	18.2	8.5
2011	12,578	31.2	15.3	14.4	11.9	1.4	19.0	6.8
2012	13,097	30.6	14.0	15.0	11.5	1.6	18.6	8.7
2013	13,672	30.8	14.1	14.0	12.2	1.7	19.2	8.1
2014	13,356	31.0	13.4	13.9	11.8	1.5	18.4	10.0
2015	13,711	31.0	14.6	14.1	11.7	1.2	17.9	9.5
2016	13,569	31.1	14.6	14.3	11.5	1.5	19.3	7.7
2017	13,264	30.0	14.9	15.1	11.4	1.3	19.8	7.5
2018	12,935	29.9	15.4	14.5	11.8	1.4	20.3	6.7
2019	12,710	29.3	14.7	14.6	11.1	1.4	23.4	5.5
2020	12,661	28.7	15.2	15.0	11.0	1.5	22.2	6.4

^a Science and engineering includes health fields.**Note(s):**

Baccalaureate-origin institutions in the United States are classified using the 2018 Basic Carnegie Classification. R1: doctoral universities are a single category of institution in the Carnegie Classification with very high research activity. Other doctoral universities include the R2: doctoral universities with high research activity and doctoral/professional universities. Master's colleges and universities include smaller, medium, and larger programs. Baccalaureate colleges include baccalaureate colleges: arts and sciences focus, baccalaureate colleges: diverse fields, and baccalaureate/associate's colleges. All other institutions include special focus institutions, tribal colleges, and unclassified institutions.

Source(s):

National Center for Science and Engineering Statistics, Survey of Earned Doctorates.

Table 2 and **table 3** list the top 50 U.S. baccalaureate-origin institutions for S&E and non-S&E doctorate recipients from 2010 to 2020, respectively. These top 50 baccalaureate-origin institutions produced about one-fifth of total U.S. doctorate recipients, and R1: doctoral universities accounted for a large majority of these institutions. For those with S&E doctorates, 49 of the top 50 baccalaureate institutions were R1: doctoral universities. Among non-S&E doctorate recipients, 46 of the top 50 baccalaureate institutions were R1: doctoral universities. Brigham Young University, notably, was the only institution from R2: doctoral universities (high research activity) among the top 50 U.S. baccalaureate institutions for doctorate recipients in S&E fields (**table 2**) and was the top ranked U.S. baccalaureate institution for those in non-S&E fields (**table 3**). Public institutions accounted for 32 of the top 50 baccalaureate-origin institutions for the doctorate recipients in S&E and 34 of the top 50 for those in non-S&E.

Table 2**Top 50 U.S. baccalaureate-origin institutions of S&E doctorate recipients from 2010–20, by institutional control and 2018 Carnegie Classification**

(Number)

Rank	Baccalaureate-origin institution	S&E doctorate recipients	Institutional control	2018 Carnegie Classification
	All institutions	440,214	na	na
	Foreign institutions	156,656	na	na
	Unknown institutions	31,054	na	na
1	U. California, Berkeley	4,586	Public	R1: doctoral universities
2	Cornell U.	3,262	Private	R1: doctoral universities
3	U. Michigan, Ann Arbor	3,106	Public	R1: doctoral universities
4	U. Wisconsin-Madison	2,748	Public	R1: doctoral universities
5	U. Illinois, Urbana-Champaign	2,634	Public	R1: doctoral universities
6	U. Florida	2,614	Public	R1: doctoral universities
7	U. California, Los Angeles	2,517	Public	R1: doctoral universities
8	Pennsylvania State U., University Park and Hershey Medical Center	2,404	Public	R1: doctoral universities
9	U. Texas, Austin	2,328	Public	R1: doctoral universities
10	Massachusetts Institute of Technology	2,309	Private	R1: doctoral universities
11	U. California, San Diego	2,259	Public	R1: doctoral universities
12	Brigham Young U., Provo	2,177	Private	R2: doctoral universities
13	U. California, Davis	2,119	Public	R1: doctoral universities
14	U. Washington, Seattle	2,000	Public	R1: doctoral universities
15	U. Maryland, College Park	1,916	Public	R1: doctoral universities
16	Harvard U.	1,864	Private	R1: doctoral universities
17	U. Minnesota, Twin Cities	1,816	Public	R1: doctoral universities
18	Ohio State U., Columbus	1,796	Public	R1: doctoral universities
19	Purdue U., West Lafayette	1,783	Public	R1: doctoral universities
20	Texas A&M U., College Station and Health Science Center	1,748	Public	R1: doctoral universities
21	Stanford U.	1,716	Private	R1: doctoral universities
22	Michigan State U.	1,686	Public	R1: doctoral universities
23	U. Virginia, Charlottesville	1,622	Public	R1: doctoral universities
24	U. North Carolina, Chapel Hill	1,564	Public	R1: doctoral universities
25	Virginia Polytechnic Institute and State U.	1,559	Public	R1: doctoral universities
26	U. Arizona	1,530	Public	R1: doctoral universities
27	Rutgers, State U. New Jersey, New Brunswick	1,500	Public	R1: doctoral universities
28	U. Chicago	1,462	Private	R1: doctoral universities
29	North Carolina State U.	1,460	Public	R1: doctoral universities
30	Georgia Institute of Technology	1,459	Public	R1: doctoral universities
31	U. Pennsylvania	1,447	Private	R1: doctoral universities
32	Brown U.	1,391	Private	R1: doctoral universities
33	U. Colorado Boulder	1,382	Public	R1: doctoral universities
34	Boston U.	1,353	Private	R1: doctoral universities

Table 2**Top 50 U.S. baccalaureate-origin institutions of S&E doctorate recipients from 2010–20, by institutional control and 2018 Carnegie Classification**

(Number)

Rank	Baccalaureate-origin institution	S&E doctorate recipients	Institutional control	2018 Carnegie Classification
34	Princeton U.	1,353	Private	R1: doctoral universities
36	Duke U.	1,336	Private	R1: doctoral universities
37	U. California, Santa Barbara	1,282	Public	R1: doctoral universities
38	U. California, Irvine	1,264	Public	R1: doctoral universities
39	Columbia U. in the City of New York	1,248	Private	R1: doctoral universities
40	Arizona State U.	1,229	Public	R1: doctoral universities
41	Yale U.	1,226	Private	R1: doctoral universities
42	Johns Hopkins U.	1,221	Private	R1: doctoral universities
43	U. Pittsburgh, Pittsburgh	1,191	Public	R1: doctoral universities
44	Washington U., St. Louis	1,168	Private	R1: doctoral universities
45	Iowa State U.	1,167	Public	R1: doctoral universities
46	U. California, Santa Cruz	1,152	Public	R1: doctoral universities
47	Northwestern U.	1,148	Private	R1: doctoral universities
48	Carnegie Mellon U.	1,123	Private	R1: doctoral universities
49	U. Rochester	1,103	Private	R1: doctoral universities
50	U. Georgia	1,102	Public	R1: doctoral universities

na = not applicable; S&E = science and engineering (includes health fields).

Note(s):

Institutions with the same number of doctorate recipients are listed alphabetically. R1: doctoral universities are those with very high research activity. R2: doctoral universities are institutions with high research activity.

Source(s):

National Center for Science and Engineering Statistics, Survey of Earned Doctorates.

Table 3**Top 50 U.S. baccalaureate-origin institutions of non-S&E doctorate recipients from 2010–20, by institutional control and 2018 Carnegie Classification**

(Number)

Rank	Baccalaureate-origin institution	Non-S&E doctorate recipients	Institutional control	2018 Carnegie Classification
	All institutions	144,584	na	na
	Foreign institutions	28,380	na	na
	Unknown institutions	11,277	na	na
1	Brigham Young U., Provo	1,138	Private	R2: doctoral universities
2	U. California, Berkeley	1,102	Public	R1: doctoral universities
3	U. Texas, Austin	908	Public	R1: doctoral universities
4	U. Michigan, Ann Arbor	893	Public	R1: doctoral universities
5	U. California, Los Angeles	833	Public	R1: doctoral universities
6	Harvard U.	791	Private	R1: doctoral universities
7	U. Florida	781	Public	R1: doctoral universities
8	U. Wisconsin-Madison	750	Public	R1: doctoral universities
9	U. North Carolina, Chapel Hill	723	Public	R1: doctoral universities
10	U. Illinois, Urbana-Champaign	700	Public	R1: doctoral universities
11	U. Virginia, Charlottesville	669	Public	R1: doctoral universities
12	New York U.	664	Private	R1: doctoral universities
13	Yale U.	649	Private	R1: doctoral universities

Table 3**Top 50 U.S. baccalaureate-origin institutions of non-S&E doctorate recipients from 2010–20, by institutional control and 2018 Carnegie Classification**

(Number)

Rank	Baccalaureate-origin institution	Non-S&E doctorate recipients	Institutional control	2018 Carnegie Classification
14	Pennsylvania State U., University Park and Hershey Medical Center	637	Public	R1: doctoral universities
15	Florida State U.	625	Public	R1: doctoral universities
15	U. Georgia	625	Public	R1: doctoral universities
17	Ohio State U., Columbus	623	Public	R1: doctoral universities
18	Michigan State U.	607	Public	R1: doctoral universities
19	Texas A&M U., College Station and Health Science Center	595	Public	R1: doctoral universities
20	Indiana U., Bloomington	584	Public	R1: doctoral universities
21	Brown U.	574	Private	R1: doctoral universities
22	Columbia U. in the City of New York	571	Private	R1: doctoral universities
23	Cornell U.	565	Private	R1: doctoral universities
24	U. Chicago	550	Private	R1: doctoral universities
25	U. Pennsylvania	512	Private	R1: doctoral universities
26	Rutgers, State U. New Jersey, New Brunswick	511	Public	R1: doctoral universities
27	Stanford U.	482	Private	R1: doctoral universities
28	U. Washington, Seattle	473	Public	R1: doctoral universities
29	U. Minnesota, Twin Cities	468	Public	R1: doctoral universities
30	Northwestern U.	456	Private	R1: doctoral universities
31	Arizona State U.	454	Public	R1: doctoral universities
32	U. Arizona	447	Public	R1: doctoral universities
33	C. of William and Mary	444	Public	R2: doctoral universities
34	Princeton U.	440	Private	R1: doctoral universities
35	U. Maryland, College Park	424	Public	R1: doctoral universities
35	U. Notre Dame	424	Private	R1: doctoral universities
37	Boston U.	412	Private	R1: doctoral universities
38	U. Iowa	408	Public	R1: doctoral universities
39	U. Colorado Boulder	405	Public	R1: doctoral universities
40	U. Missouri, Columbia	398	Public	R1: doctoral universities
41	U. California, San Diego	391	Public	R1: doctoral universities
42	U. Kansas	380	Public	R1: doctoral universities
43	U. California, Santa Barbara	376	Public	R1: doctoral universities
44	U. South Florida, Tampa	374	Public	R1: doctoral universities
45	Oberlin C.	365	Private	Baccalaureate colleges: arts and sciences focus
45	U. Tennessee, Knoxville	365	Public	R1: doctoral universities
47	Texas Tech U.	364	Public	R1: doctoral universities
48	U. California, Davis	362	Public	R1: doctoral universities
49	U. California, Santa Cruz	360	Public	R1: doctoral universities
50	Baylor U.	358	Private	R2: doctoral universities

na = not applicable; S&E = science and engineering.

Note(s):

Institutions with the same number of doctorate recipients are listed alphabetically. R1: doctoral universities are institutions with very high research activity and R2: doctoral universities are institutions with high research activity.

Source(s):

National Center for Science and Engineering Statistics, Survey of Earned Doctorates.

Table 4 presents the top 10 U.S. baccalaureate-origin institutions of doctoral recipients from 2010 to 2020 by eight broad fields of doctorate, spanning both S&E (life sciences, physical sciences and earth sciences, mathematics and computer sciences, psychology and social sciences, and engineering) and non-S&E (education, humanities and arts, and other) fields. As in **table 2** and **table 3**, R1: doctoral universities predominate the list, with only 1 institution—Brigham Young University—from R2: doctoral universities. Only 29 institutions are represented in the top 10 baccalaureate-origin institution lists across eight broad fields of doctorate, and 16 appear in more than one list. The University of Michigan, Ann Arbor is ranked in the top 10 for all eight broad fields of doctorate, while Cornell University; the University of California, Berkeley; and the University of Illinois, Urbana-Champaign are ranked in the top 10 for six broad doctorate fields. Public institutions constitute the majority of the top 10 lists in all but two broad fields: mathematics and computer science (7 of the top 10 institutions are private) and humanities and arts (6 of the top 10 are private).

Table 4

Top 10 U.S. baccalaureate-origin institutions of doctorate recipients from 2010–20, by broad field of doctorate, institutional control, and 2018 Carnegie Classification

(Number)

Rank	Broad field and baccalaureate-origin institution	Doctorate recipients	Institutional control	2018 Carnegie Classification
Life sciences ^a				
1	U. California, Berkeley	1,506	Public	R1: doctoral universities
2	U. Wisconsin-Madison	1,320	Public	R1: doctoral universities
3	Cornell U.	1,245	Private	R1: doctoral universities
4	U. California, Davis	1,073	Public	R1: doctoral universities
5	U. Michigan, Ann Arbor	951	Public	R1: doctoral universities
6	U. California, Los Angeles	923	Public	R1: doctoral universities
7	U. California, San Diego	919	Public	R1: doctoral universities
8	U. Illinois, Urbana-Champaign	911	Public	R1: doctoral universities
9	U. Florida	866	Public	R1: doctoral universities
10	Pennsylvania State U., University Park and Hershey Medical Center	841	Public	R1: doctoral universities
Physical sciences and earth sciences				
1	U. California, Berkeley	742	Public	R1: doctoral universities
2	Cornell U.	502	Private	R1: doctoral universities
3	Massachusetts Institute of Technology	421	Private	R1: doctoral universities
4	U. Michigan, Ann Arbor	370	Public	R1: doctoral universities
5	California Institute of Technology	350	Private	R1: doctoral universities
5	Pennsylvania State U., University Park and Hershey Medical Center	350	Public	R1: doctoral universities
7	U. Illinois, Urbana-Champaign	349	Public	R1: doctoral universities
8	U. Wisconsin-Madison	335	Public	R1: doctoral universities
9	U. Washington, Seattle	310	Public	R1: doctoral universities
10	U. California, San Diego	305	Public	R1: doctoral universities
Mathematics and computer sciences				
1	U. California, Berkeley	392	Public	R1: doctoral universities
2	Massachusetts Institute of Technology	322	Private	R1: doctoral universities
3	Carnegie Mellon U.	227	Private	R1: doctoral universities
4	Harvard U.	223	Private	R1: doctoral universities
5	Princeton U.	200	Private	R1: doctoral universities
6	U. Chicago	199	Private	R1: doctoral universities
7	Cornell U.	198	Private	R1: doctoral universities
8	U. Michigan, Ann Arbor	196	Public	R1: doctoral universities
9	Brigham Young U., Provo	191	Private	R2: doctoral universities
10	U. Illinois, Urbana-Champaign	190	Public	R1: doctoral universities
Psychology and social sciences				

Table 4**Top 10 U.S. baccalaureate-origin institutions of doctorate recipients from 2010–20, by broad field of doctorate, institutional control, and 2018 Carnegie Classification**

(Number)

Rank	Broad field and baccalaureate-origin institution	Doctorate recipients	Institutional control	2018 Carnegie Classification
1	U. California, Berkeley	1,036	Public	R1: doctoral universities
2	U. Michigan, Ann Arbor	827	Public	R1: doctoral universities
3	U. California, Los Angeles	733	Public	R1: doctoral universities
4	Harvard U.	663	Private	R1: doctoral universities
5	U. Florida	638	Public	R1: doctoral universities
6	Brigham Young U., Provo	635	Private	R2: doctoral universities
7	Cornell U.	613	Private	R1: doctoral universities
8	U. Texas, Austin	606	Public	R1: doctoral universities
9	New York U.	564	Private	R1: doctoral universities
10	U. Wisconsin-Madison	532	Public	R1: doctoral universities
Engineering				
1	U. California, Berkeley	910	Public	R1: doctoral universities
2	Massachusetts Institute of Technology	834	Private	R1: doctoral universities
3	Georgia Institute of Technology	808	Public	R1: doctoral universities
4	U. Michigan, Ann Arbor	762	Public	R1: doctoral universities
5	U. Illinois, Urbana-Champaign	761	Public	R1: doctoral universities
6	U. Florida	721	Public	R1: doctoral universities
7	Purdue U., West Lafayette	708	Public	R1: doctoral universities
8	Cornell U.	704	Private	R1: doctoral universities
9	Pennsylvania State U., University Park and Hershey Medical Center	614	Public	R1: doctoral universities
10	U. Texas, Austin	581	Public	R1: doctoral universities
Education				
1	Brigham Young U., Provo	379	Private	R2: doctoral universities
2	U. Florida	362	Public	R1: doctoral universities
3	U. Texas, Austin	350	Public	R1: doctoral universities
4	Texas A&M U., College Station and Health Science Center	325	Public	R1: doctoral universities
5	Pennsylvania State U., University Park and Hershey Medical Center	319	Public	R1: doctoral universities
6	U. Michigan, Ann Arbor	317	Public	R1: doctoral universities
7	U. Illinois, Urbana-Champaign	300	Public	R1: doctoral universities
8	Michigan State U.	296	Public	R1: doctoral universities
8	Ohio State U., Columbus	296	Public	R1: doctoral universities
10	U. Georgia	293	Public	R1: doctoral universities
Humanities and arts				
1	U. California, Berkeley	722	Public	R1: doctoral universities
2	Harvard U.	557	Private	R1: doctoral universities
3	Yale U.	515	Private	R1: doctoral universities
4	U. California, Los Angeles	462	Public	R1: doctoral universities
5	Columbia U. in the City of New York	438	Private	R1: doctoral universities
6	New York U.	435	Private	R1: doctoral universities
7	U. Chicago	416	Private	R1: doctoral universities
8	Brigham Young U., Provo	389	Private	R2: doctoral universities
8	U. Michigan, Ann Arbor	389	Public	R1: doctoral universities
10	U. Texas, Austin	375	Public	R1: doctoral universities
Other ^b				
1	Brigham Young U., Provo	370	Private	R2: doctoral universities
2	U. Michigan, Ann Arbor	187	Public	R1: doctoral universities
3	U. Texas, Austin	183	Public	R1: doctoral universities

Table 4**Top 10 U.S. baccalaureate-origin institutions of doctorate recipients from 2010–20, by broad field of doctorate, institutional control, and 2018 Carnegie Classification**

(Number)

Rank	Broad field and baccalaureate-origin institution	Doctorate recipients	Institutional control	2018 Carnegie Classification
4	U. Florida	179	Public	R1: doctoral universities
5	U. Illinois, Urbana-Champaign	171	Public	R1: doctoral universities
6	Pennsylvania State U., University Park and Hershey Medical Center	166	Public	R1: doctoral universities
7	U. Pennsylvania	153	Private	R1: doctoral universities
8	Cornell U.	144	Private	R1: doctoral universities
9	U. Wisconsin-Madison	141	Public	R1: doctoral universities
10	Michigan State U.	140	Public	R1: doctoral universities

^a Includes agricultural sciences and natural resources, biological and biomedical sciences, and health sciences.

^b Includes other non-science and engineering fields not shown separately.

Note(s):

Institutions with the same number of doctorate recipients are listed alphabetically. R1: doctoral universities are institutions with very high research activity and R2: doctoral universities are institutions with high research activity.

Source(s):

National Center for Science and Engineering Statistics, Survey of Earned Doctorates.

Institutional-Yield Ratio for the Baccalaureate Origins of Doctorate Recipients

While the number of undergraduates at a particular institution or group of institutions who go on to earn their doctorate is a valuable statistic, it may underestimate the role of smaller institutions in the preparation of future doctoral researchers. Of the 2,414 institutions conferring 2,059,095 bachelor's degrees in 2020, 131 R1: doctoral universities awarded 673,485 of those degrees ([table 5](#)). In other words, about 5.0% of the U.S. bachelor's-granting institutions were responsible for more than 30.0% of bachelor's degrees conferred. In comparison, baccalaureate colleges are far larger in number but confer far fewer bachelor's degrees. For example, the 230 institutions described in the 2018 Carnegie Classification as baccalaureate colleges: arts and sciences focus were 9.5% of all U.S. bachelor's degree-granting institutions but conferred only 3.8% of all bachelor's degrees in 2020. Other Carnegie-class baccalaureate colleges represented 15.7% of all U.S. bachelor's degree-granting institutions in 2020 and conferred 4.6% of all bachelor's degrees ([table 5](#)).

Table 5**Bachelor's degrees conferred by U.S. postsecondary institutions, by 2018 Carnegie Classification: 2020**

(Number and percent)

2018 Carnegie Classification	All Title IV postsecondary institutions		Bachelor's degrees conferred	
	Count	Percent of institutions	Count	Percent of bachelor's degrees
All Institutions	2,414	100.0	2,059,095	100.0
R1: doctoral universities	131	5.4	673,485	32.7
Other doctoral universities	270	11.2	503,908	24.5
Master's colleges and universities	649	26.9	632,799	30.7
Baccalaureate colleges: arts and sciences focus	230	9.5	77,975	3.8
Other baccalaureate colleges	378	15.7	93,867	4.6
Special focus and tribal colleges	544	22.5	68,177	3.3
Associate's and 2-year colleges	148	6.1	6,944	0.3
Not in Carnegie classification	64	2.7	1,940	0.1

Note(s):

Data include all postsecondary institutions in the United States (including outlying areas) participating in Title IV federal financial aid programs. Carnegie Classification is based on the 2018 Basic Classification. R1: doctoral universities are a single category of institution in the Carnegie Classification with very high research activity. Other doctoral universities include the R2: doctoral universities with high research activity and doctoral/professional universities. Master's colleges and universities include smaller, medium, and larger programs. Baccalaureate colleges include baccalaureate colleges: arts and sciences focus, baccalaureate colleges: diverse fields, and baccalaureate/associate's colleges. All other institutions include special focus institutions, tribal colleges, and unclassified institutions. Associate's and 2-year colleges include all high transfer, mixed transfer, and high career and technical associate's colleges, special focus 2-year institutions, and associate's dominant colleges.

Source(s):

Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), IPEDS Fall 2020 Completions Survey.

Because R1: doctoral universities confer so many bachelor's degrees, rankings of baccalaureate-origins based solely on the absolute number of doctorate recipients reporting their undergraduate institutions overemphasize the role of larger institutions and understate the contributions of smaller baccalaureate colleges or master's colleges and universities in the production of doctorate recipients. The institutional-yield ratio (IYR) metric was created to address this disparity. The IYR for a baccalaureate-origin institution is calculated as the number of baccalaureate graduates who earned a research doctorate in a given time period (2010–20 in this analysis), divided by the number of baccalaureate graduates from that institution for the time period 9 years prior to the doctorate award (2001–11). This figure is then multiplied by 100 to express the term as a percentage, or ratio. For example, if an institution has an IYR of 5.0 from 2010 to 2020, it is estimated that 5.0% of that institution's baccalaureate recipients (5 out of every 100) went on to earn a research doctorate 9 years later.

Once the data are normalized in this way, a different picture emerges. [Table 6](#) and [table 7](#) present the top 50 baccalaureate-origin institutions for S&E and non-S&E doctorate recipients, respectively, by IYR. When ranked this way, both Carnegie-class baccalaureate colleges (arts and sciences focus as well as diverse fields) represent 25 of the top 50 baccalaureate-origin institutions for S&E doctorate recipients, including five women's colleges (Bryn Mawr, Wellesley, Mount Holyoke, Smith, and Scripps), and R1: doctoral universities constitute 21 of the top 50 institutions ([table 6](#)). For non-S&E doctorate recipients, nearly three-quarters of the top 50 institutions were Carnegie-class baccalaureate colleges, including nine women's colleges (Bryn Mawr, Barnard, Wellesley, Spelman, Smith, Scripps, Mount Holyoke, Agnes Scott, and Mills), whereas R1: doctoral universities represent only 8 of the top 50 institutions ([table 7](#)).

Table 6**Top 50 U.S. baccalaureate-origin institutions of S&E doctorate recipients from 2010–20, by institutional-yield ratio, institutional control, and 2018 Carnegie Classification**

(Number and ratio)

Rank	Baccalaureate-origin institution	S&E doctorate recipients		Institutional control	2018 Carnegie Classification
		Number	Institutional-yield ratio		
1	California Institute of Technology	977	40.9	Private	R1: doctoral universities
2	Harvey Mudd C.	535	28.7	Private	Baccalaureate colleges: arts and sciences focus
3	Massachusetts Institute of Technology	2,309	17.8	Private	R1: doctoral universities
4	Swarthmore C.	628	15.7	Private	Baccalaureate colleges: arts and sciences focus
5	Reed C.	494	15.0	Private	Baccalaureate colleges: arts and sciences focus
6	Carleton C.	768	14.7	Private	Baccalaureate colleges: arts and sciences focus
7	Grinnell C.	478	12.1	Private	Baccalaureate colleges: arts and sciences focus
8	U. Chicago	1,462	12.0	Private	R1: doctoral universities
9	Haverford C.	367	11.3	Private	Baccalaureate colleges: arts and sciences focus
10	Pomona C.	471	11.3	Private	Baccalaureate colleges: arts and sciences focus
11	Rice U.	924	10.9	Private	R1: doctoral universities
12	Princeton U.	1,353	10.8	Private	R1: doctoral universities
13	Williams C., Williamstown	586	10.3	Private	Baccalaureate colleges: arts and sciences focus

Table 6**Top 50 U.S. baccalaureate-origin institutions of S&E doctorate recipients from 2010–20, by institutional-yield ratio, institutional control, and 2018 Carnegie Classification**

(Number and ratio)

Rank	Baccalaureate-origin institution	S&E doctorate recipients		Institutional control	2018 Carnegie Classification
		Number	Institutional-yield ratio		
14	Case Western Reserve U.	881	9.7	Private	R1: doctoral universities
15	Harvard U.	1,864	9.5	Private	R1: doctoral universities
16	Stanford U.	1,716	9.1	Private	R1: doctoral universities
17	Cornell U.	3,262	9.0	Private	R1: doctoral universities
18	New Mexico Institute of Mining and Technology	177	8.6	Public	M3: master's institutions - smaller program
19	Yale U.	1,226	8.4	Private	R1: doctoral universities
20	Cooper Union for the Advancement of Science and Art	183	8.4	Private	Baccalaureate colleges: diverse fields
21	Brown U.	1,391	8.4	Private	R1: doctoral universities
22	Macalester C.	402	8.4	Private	Baccalaureate colleges: arts and sciences focus
23	U. Rochester	1,103	8.3	Private	R1: doctoral universities
24	Amherst C.	393	8.3	Private	Baccalaureate colleges: arts and sciences focus
25	Whitman C.	323	8.1	Private	Baccalaureate colleges: arts and sciences focus
26	Bryn Mawr C.	274	8.1	Private	Baccalaureate colleges: arts and sciences focus
27	Carnegie Mellon U.	1,123	8.0	Private	R1: doctoral universities
28	Duke U.	1,336	7.9	Private	R1: doctoral universities
29	Wellesley C.	510	7.8	Private	Baccalaureate colleges: arts and sciences focus
30	Oberlin C.	587	7.8	Private	Baccalaureate colleges: arts and sciences focus
31	Johns Hopkins U.	1,221	7.8	Private	R1: doctoral universities
32	Hendrix C.	187	7.4	Private	Baccalaureate colleges: arts and sciences focus
33	Wesleyan U.	582	7.3	Private	Baccalaureate colleges: arts and sciences focus
34	Kalamazoo C.	233	7.3	Private	Baccalaureate colleges: arts and sciences focus
35	Dartmouth C.	847	7.3	Private	R1: doctoral universities
36	Rose-Hulman Institute of Technology	300	7.1	Private	Special focus four-year institution: engineering
37	Rensselaer Polytechnic Institute, Troy	923	7.1	Private	R1: doctoral universities
38	Vassar C.	476	7.0	Private	Baccalaureate colleges: arts and sciences focus
39	Mount Holyoke C.	421	7.0	Private	Baccalaureate colleges: arts and sciences focus
40	Colorado School of Mines	418	6.8	Public	R2: doctoral universities
41	Bowdoin C.	319	6.7	Private	Baccalaureate colleges: arts and sciences focus
42	Washington U., St. Louis	1,168	6.6	Private	R1: doctoral universities
43	Brandeis U.	567	6.6	Private	R1: doctoral universities
44	Columbia U. in the City of New York	1,248	6.4	Private	R1: doctoral universities
45	Worcester Polytechnic Institute	443	6.4	Private	R2: doctoral universities
46	Smith C.	495	6.3	Private	Baccalaureate colleges: arts and sciences focus
47	Colby C.	338	6.3	Private	Baccalaureate colleges: arts and sciences focus
48	U. California, Berkeley	4,586	6.2	Public	R1: doctoral universities
49	Lawrence U.	200	6.1	Private	Baccalaureate colleges: arts and sciences focus
50	Scripps C.	133	6.0	Private	Baccalaureate colleges: arts and sciences focus

S&E = science and engineering (includes health fields).

Note(s):

Institutional-yield ratio is the number of S&E doctorate recipients per 100 bachelor's degrees awarded in all fields 9 years earlier. Only institutions from which 50 or more baccalaureate recipients received S&E doctorate degrees between 2010 and 2020 were included in the analysis. Institutions are ranked on unrounded ratios. Institutions with the same number of doctorate recipients are listed alphabetically. R1: doctoral universities are institutions with very high research activity and R2: doctoral universities are institutions with high research activity.

Source(s):

National Center for Science and Engineering Statistics, Survey of Earned Doctorates; Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table 7**Top 50 U.S. baccalaureate-origin institutions of non-S&E doctorate recipients, by institutional-yield ratio, institutional control, and 2018 Carnegie Classification: 2010–20**

(Number and ratio)

Rank	Baccalaureate-origin institution	Non-S&E doctorate recipients		Institutional control	2018 Carnegie Classification
		Number	Institutional- yield ratio		
1	St. John's C., Annapolis	78	7.0	Private	Baccalaureate colleges: arts and sciences focus
2	Swarthmore C.	274	6.8	Private	Baccalaureate colleges: arts and sciences focus
3	New England Conservatory	57	6.4	Private	Special focus 4 year: arts, music and design
4	Reed C.	179	5.4	Private	Baccalaureate colleges: arts and sciences focus
5	Oberlin C.	365	4.8	Private	Baccalaureate colleges: arts and sciences focus
6	Bryn Mawr C.	161	4.7	Private	Baccalaureate colleges: arts and sciences focus
7	U. Chicago	550	4.5	Private	R1: doctoral universities
8	Yale U.	649	4.5	Private	R1: doctoral universities
9	Grinnell C.	172	4.4	Private	Baccalaureate colleges: arts and sciences focus
10	Vassar C.	294	4.3	Private	Baccalaureate colleges: arts and sciences focus
11	Sarah Lawrence C.	137	4.3	Private	Baccalaureate colleges: arts and sciences focus
12	Haverford C.	138	4.3	Private	Baccalaureate colleges: arts and sciences focus
13	Williams C., Williamstown	236	4.1	Private	Baccalaureate colleges: arts and sciences focus
14	Carleton C.	214	4.1	Private	Baccalaureate colleges: arts and sciences focus
15	Harvard U.	791	4.0	Private	R1: doctoral universities
16	Amherst C.	188	4.0	Private	Baccalaureate colleges: arts and sciences focus
17	Wesleyan U.	302	3.8	Private	Baccalaureate colleges: arts and sciences focus
18	Wheaton C., Wheaton	246	3.7	Private	Baccalaureate colleges: arts and sciences focus
19	Kenyon C.	164	3.7	Private	Baccalaureate colleges: arts and sciences focus
20	Barnard C.	240	3.7	Private	Baccalaureate colleges: arts and sciences focus
21	Macalester C.	174	3.6	Private	Baccalaureate colleges: arts and sciences focus
22	Pomona C.	150	3.6	Private	Baccalaureate colleges: arts and sciences focus
23	Bard C.	134	3.6	Private	Baccalaureate colleges: arts and sciences focus
24	Princeton U.	440	3.5	Private	R1: doctoral universities
25	Brown U.	574	3.5	Private	R1: doctoral universities
26	Hampshire C.	108	3.4	Private	Baccalaureate colleges: arts and sciences focus
27	Wellesley C.	213	3.3	Private	Baccalaureate colleges: arts and sciences focus
28	Spelman C.	163	3.2	Private	Baccalaureate colleges: arts and sciences focus
29	U. Dallas	87	3.2	Private	M1: master's institution - larger programs
30	Smith C.	244	3.1	Private	Baccalaureate colleges: arts and sciences focus
31	Scripps C.	68	3.1	Private	Baccalaureate colleges: arts and sciences focus
32	Mount Holyoke C.	185	3.1	Private	Baccalaureate colleges: arts and sciences focus
33	Davidson C.	145	3.0	Private	Baccalaureate colleges: arts and sciences focus
34	Earlham C.	79	3.0	Private	Baccalaureate colleges: arts and sciences focus
35	Columbia U. in the City of New York	571	2.9	Private	R1: doctoral universities
36	Bowdoin C.	140	2.9	Private	Baccalaureate colleges: arts and sciences focus
37	Dartmouth C.	341	2.9	Private	R1: doctoral universities
38	C. of William and Mary	444	2.9	Public	R2: doctoral universities
39	Middlebury C.	191	2.7	Private	Baccalaureate colleges: arts and sciences focus
40	Hendrix C.	69	2.7	Private	Baccalaureate colleges: arts and sciences focus
41	Agnes Scott C.	54	2.7	Private	Baccalaureate colleges: arts and sciences focus
42	Kalamazoo C.	85	2.7	Private	Baccalaureate colleges: arts and sciences focus
43	Stanford U.	482	2.6	Private	R1: doctoral universities
44	Andrews U.	93	2.6	Private	D/PU: doctoral/professional universities
45	Centre C.	72	2.6	Private	Baccalaureate colleges: arts and sciences focus
46	Mills C.	57	2.5	Private	M2: master's institutions - medium programs
47	St. Olaf C.	190	2.5	Private	Baccalaureate colleges: arts and sciences focus

Table 7**Top 50 U.S. baccalaureate-origin institutions of non-S&E doctorate recipients, by institutional-yield ratio, institutional control, and 2018 Carnegie Classification: 2010–20**

(Number and ratio)

Rank	Baccalaureate-origin institution	Non-S&E doctorate recipients		Institutional control	2018 Carnegie Classification
		Number	Institutional- yield ratio		
48	Asbury U.	74	2.4	Private	M3: master's institution - smaller programs
49	Lawrence U.	79	2.4	Private	Baccalaureate colleges: arts and sciences focus
50	Millsaps C.	61	2.4	Private	Baccalaureate colleges: arts and sciences focus

S&E = science and engineering.

Note(s):

Institutional-yield ratio is the number of S&E doctorate recipients per 100 bachelor's degrees awarded in all fields 9 years earlier. Only institutions from which 50 or more baccalaureate recipients received S&E doctorate degrees between 2010 and 2020 were included in the analysis. Institutions are ranked on unrounded ratios. Institutions with the same number of doctorate recipients are listed alphabetically. R1: doctoral universities are institutions with very high research activity and R2: doctoral universities are institutions with high research activity.

Source(s):

National Center for Science and Engineering Statistics, Survey of Earned Doctorates; Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

In the top baccalaureate-origin institutions ranked by IYR, public institutions nearly disappear from the table: for S&E doctorate recipients, public institutions represent only 3 of the top 50 institutions ([table 6](#)), while for non-S&E doctorate recipients, only 1 public institution—the College of William and Mary—made the top 50 ([table 7](#)).

Like [table 4](#), [table 8](#) presents the top 10 baccalaureate-origin institutions by broad field of doctorate but ranked by IYR rather than total number of doctorate recipients. Now the Carnegie-class baccalaureate colleges are considerably more prominent in the top baccalaureate-origin institution rankings, representing 47 of the 80 ranked institutions across eight broad fields of doctorate. Carnegie-class baccalaureate colleges represent 9 of the top 10 institutions in psychology and social sciences, 7 of the top 10 in life sciences, and 6 of the top 10 in physical sciences and earth sciences. R1: doctoral universities continue to constitute a substantial number of the top 10 baccalaureate-origin institutions in mathematics and computer sciences, engineering, and other non-S&E fields, representing half of the top 10 institutions.

Table 8**Top 10 U.S. baccalaureate-origin institutions of doctorate recipients from 2010–20, by broad field of doctorate, institutional-yield ratio, institutional control, and 2018 Carnegie Classification**

(Number and ratio)

Rank	Broad field and baccalaureate-origin institution	Doctorate recipients	Institutional-yield ratio	Institutional control	2018 Carnegie Classification
	Life sciences ^a				
1	California Institute of Technology	163	6.8	Private	R1: doctoral universities
2	Reed C.	170	5.1	Private	Baccalaureate colleges: arts and sciences focus
3	Swarthmore C.	200	5.0	Private	Baccalaureate colleges: arts and sciences focus
4	Grinnell C.	188	4.8	Private	Baccalaureate colleges: arts and sciences focus
5	Carleton C.	242	4.6	Private	Baccalaureate colleges: arts and sciences focus
6	Massachusetts Institute of Technology	566	4.4	Private	R1: doctoral universities
7	Haverford C.	132	4.1	Private	Baccalaureate colleges: arts and sciences focus
8	Pomona C.	169	4.1	Private	Baccalaureate colleges: arts and sciences focus

Table 8**Top 10 U.S. baccalaureate-origin institutions of doctorate recipients from 2010–20, by broad field of doctorate, institutional-yield ratio, institutional control, and 2018 Carnegie Classification**

(Number and ratio)

Rank	Broad field and baccalaureate-origin institution	Doctorate recipients	Institutional-yield ratio	Institutional control	2018 Carnegie Classification
9	Harvey Mudd C.	72	3.9	Private	Baccalaureate colleges: arts and sciences focus
10	U. Chicago	456	3.8	Private	R1: doctoral universities
Physical sciences and earth sciences					
1	California Institute of Technology	350	14.6	Private	R1: doctoral universities
2	Harvey Mudd C.	155	8.3	Private	Baccalaureate colleges: arts and sciences focus
3	Carleton C.	221	4.2	Private	Baccalaureate colleges: arts and sciences focus
4	Reed C.	111	3.4	Private	Baccalaureate colleges: arts and sciences focus
5	Massachusetts Institute of Technology	421	3.2	Private	R1: doctoral universities
6	New Mexico Institute of Mining and Technology	59	2.9	Public	M3: master's institutions - smaller programs
7	Haverford C.	81	2.5	Private	Baccalaureate colleges: arts and sciences focus
8	Swarthmore C.	98	2.4	Private	Baccalaureate colleges: arts and sciences focus
9	Colorado School of Mines	148	2.4	Public	R2: doctoral universities
10	Whitman C.	92	2.3	Private	Baccalaureate colleges: arts and sciences focus
Mathematics and computer sciences					
1	Harvey Mudd C.	137	7.4	Private	Baccalaureate colleges: arts and sciences focus
2	California Institute of Technology	173	7.2	Private	R1: doctoral universities
3	Massachusetts Institute of Technology	322	2.5	Private	R1: doctoral universities
4	Swarthmore C.	70	1.7	Private	Baccalaureate colleges: arts and sciences focus
5	U. Chicago	199	1.6	Private	R1: doctoral universities
6	Carnegie Mellon U.	227	1.6	Private	R1: doctoral universities
7	Princeton U.	200	1.6	Private	R1: doctoral universities
8	Carleton C.	71	1.4	Private	Baccalaureate colleges: arts and sciences focus
9	Williams C., Williamstown	77	1.3	Private	Baccalaureate colleges: arts and sciences focus
10	Reed C.	43	1.3	Private	Baccalaureate colleges: arts and sciences focus
Psychology and social sciences					
1	Swarthmore C.	208	5.2	Private	Baccalaureate colleges: arts and sciences focus
2	Reed C.	158	4.8	Private	Baccalaureate colleges: arts and sciences focus
3	Williams C., Williamstown	232	4.1	Private	Baccalaureate colleges: arts and sciences focus
4	U. Chicago	491	4.0	Private	R1: doctoral universities
5	Pomona C.	158	3.8	Private	Baccalaureate colleges: arts and sciences focus
6	Carleton C.	196	3.8	Private	Baccalaureate colleges: arts and sciences focus
7	Grinnell C.	147	3.7	Private	Baccalaureate colleges: arts and sciences focus
8	Wesleyan U.	290	3.6	Private	Baccalaureate colleges: arts and sciences focus

Table 8**Top 10 U.S. baccalaureate-origin institutions of doctorate recipients from 2010–20, by broad field of doctorate, institutional-yield ratio, institutional control, and 2018 Carnegie Classification**

(Number and ratio)

Rank	Broad field and baccalaureate-origin institution	Doctorate recipients	Institutional-yield ratio	Institutional control	2018 Carnegie Classification
9	Wellesley C.	233	3.6	Private	Baccalaureate colleges: arts and sciences focus
10	Haverford C.	113	3.5	Private	Baccalaureate colleges: arts and sciences focus
Engineering					
1	California Institute of Technology	257	10.7	Private	R1: doctoral universities
2	Harvey Mudd C.	153	8.2	Private	Baccalaureate colleges: arts and sciences focus
3	Massachusetts Institute of Technology	834	6.4	Private	R1: doctoral universities
4	Cooper Union for the Advancement of Science and Art	122	5.6	Private	Baccalaureate colleges: diverse fields
5	Rose-Hulman Institute of Technology	178	4.2	Private	Special focus 4 year: engineering
6	Case Western Reserve U.	319	3.5	Private	R1: doctoral universities
7	Colorado School of Mines	213	3.4	Public	R2: doctoral universities
8	Rensselaer Polytechnic Institute, Troy	448	3.4	Private	R1: doctoral universities
9	Illinois Institute of Technology	142	3.1	Private	R2: doctoral universities
10	Rice U.	255	3.0	Private	R1: doctoral universities
Education					
1	Tougaloo C.	28	1.8	Private	Baccalaureate colleges: arts and sciences focus
2	Spelman C.	90	1.8	Private	Baccalaureate colleges: arts and sciences focus
3	Alcorn State U.	57	1.3	Public	M2: master's institutions - medium programs
4	Jackson State U.	117	1.3	Public	R2: doctoral universities
5	Swarthmore C.	49	1.2	Private	Baccalaureate colleges: arts and sciences focus
6	Earlham C.	30	1.1	Private	Baccalaureate colleges: arts and sciences focus
7	Haverford C.	36	1.1	Private	Baccalaureate colleges: arts and sciences focus
8	Andrews U.	40	1.1	Private	D/PU: doctoral/professional universities
9	Bryn Mawr C.	36	1.1	Private	Baccalaureate colleges: arts and sciences focus
10	Berea C.	34	1.1	Private	Baccalaureate colleges: arts and sciences focus
Humanities and arts					
1	New England Conservatory	54	6.1	Private	Special focus four-year: arts, music and design
2	St. John's C., Annapolis	62	5.5	Private	Baccalaureate colleges: arts and sciences focus
3	Swarthmore C.	193	4.8	Private	Baccalaureate colleges: arts and sciences focus
4	Reed C.	157	4.8	Private	Baccalaureate colleges: arts and sciences focus
5	St. John's C., Santa Fe	38	3.8	Private	Baccalaureate colleges: arts and sciences focus
6	Oberlin C.	278	3.7	Private	Baccalaureate colleges: arts and sciences focus
7	Thomas Aquinas C.	28	3.6	Private	Baccalaureate colleges: arts and sciences focus
8	Yale U.	515	3.5	Private	R1: doctoral universities
9	U. Chicago	416	3.4	Private	R1: doctoral universities

Table 8**Top 10 U.S. baccalaureate-origin institutions of doctorate recipients from 2010–20, by broad field of doctorate, institutional-yield ratio, institutional control, and 2018 Carnegie Classification**

(Number and ratio)

Rank	Broad field and baccalaureate-origin institution	Doctorate recipients	Institutional-yield ratio	Institutional control	2018 Carnegie Classification
10	Sarah Lawrence C.	109	3.4	Private	Baccalaureate colleges: arts and sciences focus
	Other ^b				
1	Swarthmore C.	32	0.8	Private	Baccalaureate colleges: arts and sciences focus
2	Harvard U.	129	0.7	Private	R1: doctoral universities
3	U. Chicago	75	0.6	Private	R1: doctoral universities
4	Spelman C.	28	0.6	Private	Baccalaureate colleges: arts and sciences focus
5	U. Pennsylvania	153	0.5	Private	R1: doctoral universities
6	Brigham Young U., Provo	370	0.5	Private	R2: doctoral universities
7	Williams C., Williamstown	26	0.5	Private	Baccalaureate colleges: arts and sciences focus
8	Massachusetts Institute of Technology	58	0.4	Private	R1: doctoral universities
9	Vassar C.	30	0.4	Private	Baccalaureate colleges: arts and sciences focus
10	Brown U.	73	0.4	Private	R1: doctoral universities

^a Includes agricultural sciences and natural resources, biological and biomedical sciences, and health sciences.

^b Includes other non-science and engineering fields not shown separately.

Note(s):

Only institutions from which 25 or more baccalaureate recipients received doctorate degrees between 2010 and 2020 were included in the analysis. Institutions are ranked on unrounded ratios. Institutions with the same number of doctorate recipients are listed alphabetically. R1: doctoral universities are institutions with very high research activity and R2: doctoral universities are institutions with high research activity.

Source(s):

National Center for Science and Engineering Statistics, Survey of Earned Doctorates; Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Swarthmore College is ranked in the top 10 for all the broad fields of doctorate except engineering, while Massachusetts Institute of Technology, Reed College, and the University of Chicago are ranked in the top 10 for five broad doctorate fields. Public institutions are much less prominent in the top 10 baccalaureate-origin institutions ranked by IYR, with only 5 of the 80 institutions across eight broad fields of doctorate. Private institutions accounted for all the top 10 institutions in five of eight broad doctorate fields: life sciences, mathematics and computer sciences, psychology and social sciences, humanities and arts, and other non-S&E fields.

Doctorate-Yield Ratios of Baccalaureate-Origin Institutions by Carnegie Classification

Figure 1 and **figure 2** show the estimated doctorate-yield ratio (DYR) for baccalaureate-origin institutions by year and Carnegie Classification for S&E and non-S&E doctorate recipients, respectively. Like the IYR, the DYR is based on pooled data and is calculated as the total number of research doctorates awarded in a particular year who earned their bachelor's degree from a school in the focal Carnegie Classification, divided by the total number of individuals who earned a bachelor's degree from any school in that Carnegie Classification 9 years earlier.³

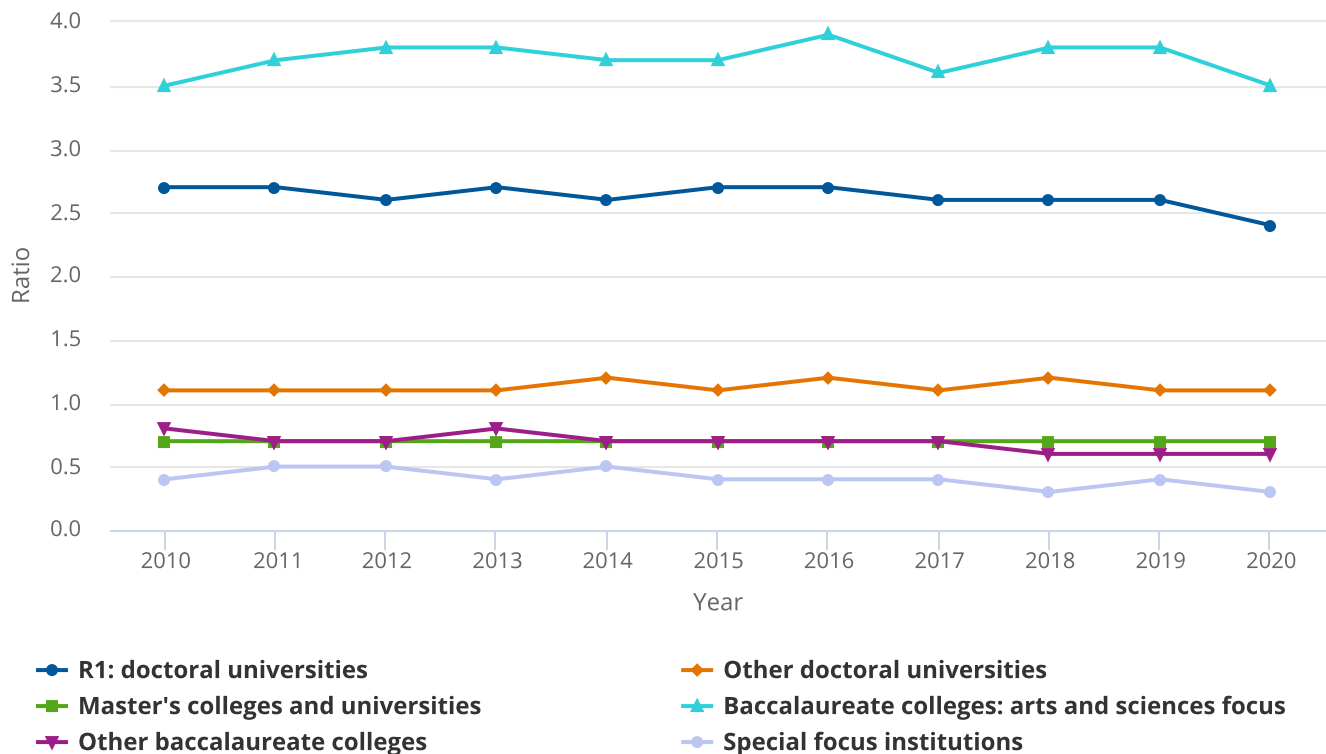
These figures show that graduates of Carnegie-class baccalaureate colleges: arts and sciences focus more often earned a research doctorate in the decade following receipt of their bachelor's degree than their peers who graduated from institutions in another type of Carnegie Classification group. On average for baccalaureate colleges: arts and sciences focus, 4 of every 100 graduates went on to earn a research doctorate in S&E and 2 of every 100 graduates went on to earn a research doctorate in non-S&E fields from a U.S. university in the decade after earning a bachelor's degree.

These figures demonstrate a clear stratification on the type of institutions with baccalaureate colleges: arts and sciences focus yielding research doctorates at a higher rate than R1: doctoral universities across the 2010–20 time frame. The DYR for all Carnegie classes of institutions are generally stable across the decade, although slight declines can be seen for R1: doctoral universities, other Carnegie-class baccalaureate colleges, and special focus institutions over the past decade.

The DYR for non-S&E doctorate recipients are lower for all Carnegie class of institutions than for S&E doctorate recipients due to fewer people pursuing doctorates in these fields. Among non-S&E doctorate recipients, baccalaureate colleges: arts and sciences focus have the highest DYR, but there is a slight decline in the ratio among all of the Carnegie Classification groups over the past decade.

Figure 1

Doctorate-yield ratios of S&E doctorate recipients, by 2018 Carnegie Classification of U.S. baccalaureate institution: 2010–20



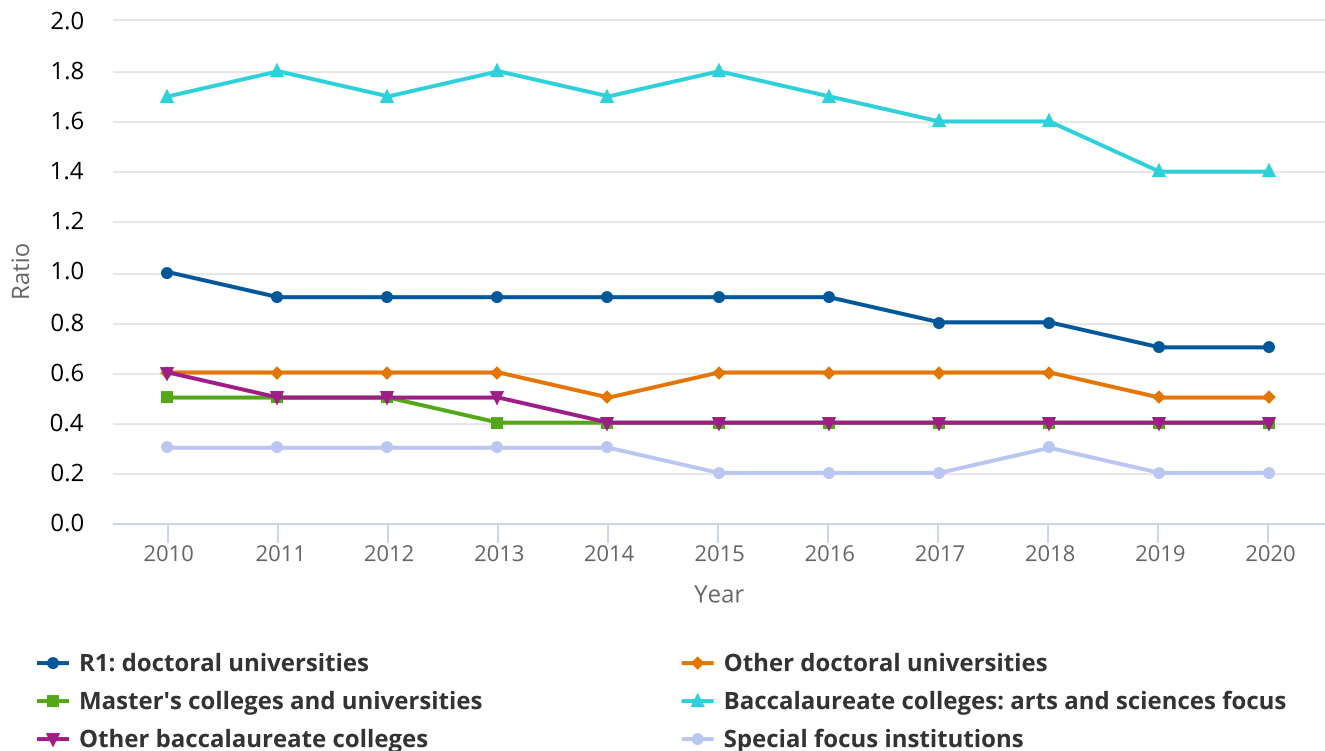
S&E = science and engineering.

Note(s):

Doctorate-yield ratio is calculated as the total number of research doctorates awarded in a particular year who earned their bachelor's from a school in the focal Carnegie Classification, divided by the total number of individuals who earned a bachelor's degree from any school in that Carnegie Classification 9 years earlier. R1: doctoral universities are a single category of institution in the Carnegie Classification with very high research activity. Other doctoral universities include the R2: doctoral universities with high research activity and doctoral/professional universities. Master's colleges and universities include smaller, medium, and larger programs. Baccalaureate colleges include baccalaureate colleges: arts and sciences focus, baccalaureate colleges: diverse fields, and baccalaureate/associate's colleges. All other institutions include special focus institutions, tribal colleges, and unclassified institutions.

Source(s):

National Center for Science and Engineering Statistics, Survey of Earned Doctorates; Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Figure 2**Doctorate-yield ratios of non-S&E doctorate recipients, by 2018 Carnegie Classification of U.S. baccalaureate institution: 2010–20**

S&E = science and engineering.

Note(s):

Doctorate-yield ratio is calculated as the total number of research doctorates awarded in a particular year who earned their bachelor's from a school in the focal Carnegie Classification, divided by the total number of individuals who earned a bachelor's degree from any school in that Carnegie Classification 9 years earlier. R1: doctoral universities are a single category of institution in the Carnegie Classification with very high research activity. Other doctoral universities include the R2: doctoral universities with high research activity and doctoral/professional universities. Master's colleges and universities include smaller, medium, and larger programs. Baccalaureate colleges include baccalaureate colleges: arts and sciences focus, baccalaureate colleges: diverse fields, and baccalaureate/associate's colleges. All other institutions include special focus institutions, tribal colleges, and unclassified institutions.

Source(s):

National Center for Science and Engineering Statistics, Survey of Earned Doctorates; Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Data Sources, Limitations, and Availability

The Survey of Earned Doctorates (SED) data are used to report the numbers of S&E and non-S&E research doctorate recipients between 2010 and 2020. Data from the Department of Education's Integrated Postsecondary Education Data System (IPEDS) Completions Survey provide the numbers of bachelor's degrees awarded between 2001 and 2011 and were downloaded from the [IPEDS Data Center](#). As seen in [2020 SED: Table 31](#), the median time from receipt of bachelor's degree to doctorate for all doctorate recipients between 2010 and 2020 was approximately 9 years (9.3 in 2010 and 8.7 in 2020). Among broad fields in 2020, time to degree was the shortest in physical and earth sciences (7.0 years) and in engineering (7.5 years), and the longest in education (15.0 years).

The 2018 version of the Carnegie Basic Classification for the colleges and universities categorizes academic institutions on the basis of highest degree conferred, level of degree production, and research activity. Institutions that award at least 20 research or scholarship doctoral degrees per year are called doctorate universities and are distributed among three subgroups based on the level of research activity—R1: doctoral universities (very high research activity), R2: doctoral universities (high research activity), and doctoral/professional universities. In this InfoBrief, the latter two subgroups are combined into a single category called “Other doctoral universities.” Master’s colleges and universities are institutions that award at least 50 master’s degrees and fewer than 20 doctoral degrees per year. Baccalaureate colleges are non-tribal colleges that award fewer than 50 master’s degrees or 20 doctoral degrees per year and at which baccalaureate or higher degrees represent at least 50.0% of all degrees. See https://carnegieclassifications.iu.edu/classification_descriptions/basic.php for more information on Carnegie Basic Classification.

Notes

1 Fiegener MK, Proudfoot SL; National Center for Science and Engineering Statistics (NCSES). 2013. *Baccalaureate Origins of U.S.-trained S&E Doctorate Recipients*. InfoBrief NSF 13-323. Arlington, VA: National Center for Science and Engineering Statistics. Available at <https://www.nsf.gov/statistics/infbrief/nsf13323/>. Burrelli J, Rapoport A, Lehming R. 2008. *Baccalaureate Origins of S&E; Doctorate Recipients*. InfoBrief NSF 08-311. Arlington, VA: Division of Science Resources Statistics. Available at <http://www.nsf.gov/statistics/infbrief/nsf08311/>.

2 The proportion of U.S. research doctorates holding temporary visas increased from 28.4% in 2010 to 33.4% in 2020. For more information on doctorate recipients by field of study and citizenship status during this time frame, see 2020 SED: Table 18 (<https://nces.nsf.gov/pubs/nsf22300/data-tables>).

3 The denominator for the DYR is based on the completions data for all institutions in IPEDS in each Carnegie class. The numerator is the total number of research doctorates awarded in a particular year who earned their bachelor’s from a school in the focal Carnegie class. Other doctoral universities include the R2: doctoral universities. Other baccalaureate colleges include baccalaureate colleges: diverse fields and baccalaureate/associate’s colleges. Special focus institutions include all special focus institutions and tribal colleges.

Suggested Citation

Gordon J, Einaudi P, Kang K; National Center for Science and Engineering Statistics (NCSES). 2022. *Baccalaureate Origins of U.S. Research Doctorate Recipients*. InfoBrief NSF 22-321. Alexandria, VA: National Science Foundation. Available at <https://nces.nsf.gov/pubs/nsf22321/>.

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