TABLE 9-6

Engineering research doctorate recipients, postgraduation plans by sex and major field of doctorate: 2023

(Number and percent)

Characteristic	All engineering fields	Aerospace, aeronautical, astronautical, and space engineering	Biological, biomedical, and biosystems engineering	Chemical and petroleum engineering	Civil, environmental, and transportation engineering	Electrical and computer engineering	Engineering technologies	Industrial engineering and operations research	Materials and mining engineering	Mechanical engineering	Engineering, other
Doctorate recipients reporting postgraduation status (number)	9,654	522	1,207	1,136	1,151	1,910	381	563	821	1,385	578
Definite postdoctoral training plans	22.2	20.3	30.3	21.6	26.4	14.2	21.0	14.2	27.0	23.0	25.1
Definite employment plans	51.1	58.0	35.5	51.4	45.1	63.2	49.6	61.6	48.1	49.3	48.8
Seeking employment or study	24.6	20.3	30.0	25.4	25.8	21.2	26.8	22.6	23.3	25.9	24.4
Other status[a]	2.0	1.3	4.1	1.7	2.6	1.4	2.6	1.6	1.6	1.7	1.7
Definite postdoctoral training plans (%)[b]											
Postdoc fellowship or research associateship	95.9	100.0	92.3	98.8	97.7	93.0	97.5	90.0	98.2	96.9	95.9
Other training or unknown[c]	4.1	0.0	7.7	1.2	2.3	7.0	2.5	10.0	1.8	3.1	4.1
Definite employment plans (%)[d]											
Academe	11.8	D	10.3	5.3	17.7	9.4	D	22.5	4.8	12.7	16.0
In tenure track faculty position (%)	43.9	36.2	11.4	45.2	43.5	65.8	D	51.3	D	37.9	35.6
Not in tenure track position (%)	52.8	D	88.6	51.6	51.1	32.5	54.2	43.6	D	59.8	57.8
Government	6.5	17.8	3.0	2.7	10.4	4.4	4.2	8.1	6.6	5.0	12.1
Industry or business[e]	76.9	57.8	81.6	89.6	66.5	81.7	80.4	64.3	85.3	76.3	65.6
Nonprofit organization	3.3	D	3.7	1.4	3.3	3.0	D	4.3	1.8	4.1	5.0
Other or unknown[f]	1.5	2.3	1.4	1.0	2.1	1.5	0.5	0.9	1.5	1.9	1.4
Primary activity[g]											
Research and development	67.2	74.7	68.1	75.3	32.3	76.1	63.4	54.3	75.7	71.5	63.8
Teaching	6.7	D	3.1	3.2	12.5	5.8	6.5	14.5	D	D	8.1
Management or administration	1.6	D	1.9	1.6	2.0	0.6	4.3	3.0	D	D	3.0
Professional services and other	24.5	17.5	26.9	20.0	53.2	17.4	25.8	28.2	20.8	20.4	25.1
Secondary activity[g]											
Research and development	16.0	14.0	10.0	D	31.7	14.0	19.4	22.8	D	14.2	17.3
Teaching	3.4	5.5	D	3.1	3.6	2.6	6.5	7.4	D	3.7	5.2
Management or administration	13.9	9.6	18.6	20.0	12.9	9.6	8.6	13.9	17.9	13.6	17.0
Professional services and other	12.5	15.4	12.4	12.6	11.4	11.5	12.4	13.4	12.9	12.7	13.7
No secondary activity	54.3	55.5	56.0	54.9	40.4	62.3	53.2	42.4	57.5	55.9	46.9
Activity unknown	3.4	3.6	2.1	2.4	3.3	3.5	1.6	2.9	4.1	5.1	3.9
Postgraduation location (%)[h]											
United States[i]	92.8	95.6	96.2	92.2	90.8	91.5	89.2	91.6	92.9	93.7	95.1
Midwest	14.3	14.9	14.0	15.3	15.3	9.8	14.1	14.3	12.3	19.8	16.2
Northeast	19.5	15.9	32.1	23.9	15.4	14.2	13.4	23.2	19.6	18.9	18.7
South	24.8	30.1	22.5	22.0	33.0	23.6	25.7	30.4	20.1	21.5	25.5
West	34.0	33.7	27.4	31.0	26.5	43.6	35.7	23.0	40.5	33.5	34.7
Outside the United States	7.1	4.4	3.8	7.8	9.2	8.5	10.8	8.2	7.1	6.3	4.7

TABLE 9-6

Engineering research doctorate recipients, postgraduation plans by sex and major field of doctorate: 2023

(Number and percent)

Characteristic	All engineering fields	Aerospace, aeronautical, astronautical, and space engineering	Biological, biomedical, and biosystems engineering	Chemical and petroleum engineering	Civil, environmental, and transportation engineering	Electrical and computer engineering	Engineering technologies	Industrial engineering and operations research	Materials and mining engineering	Mechanical engineering	Engineering, other
Location unknown	*	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.2
Postgraduation location in same state as doctorate institution (%)	37.0	34.0	43.9	32.4	42.6	34.9	32.7	38.4	35.0	37.2	35.6
Male doctorate recipients reporting postgraduation status (number)	7,113	440	686	813	780	1,562	300	393	583	1,141	415
Definite postdoctoral training plans	21.7	20.2	28.6	21.9	26.0	13.8	20.7	16.0	27.6	23.8	24.6
Definite employment plans	52.3	58.4	35.1	51.5	48.2	64.2	50.0	60.1	47.2	48.5	51.3
Seeking employment or study	24.0	19.8	31.9	24.7	23.1	20.6	26.7	22.4	23.7	26.2	22.9
Other status[a]	2.0	1.6	4.2	1.8	2.6	1.4	2.7	1.5	1.5	1.6	1.2
Definite postdoctoral training plans (%)[b]											
Postdoc fellowship or research associateship	96.1	D	91.3	100.0	97.5	93.1	96.8	93.7	98.1	96.3	96.1
Other training or unknown[c]	3.9	D	8.7	0.0	2.5	6.9	3.2	6.3	1.9	3.7	3.9
Definite employment plans (%)[d]											
Academe	10.8	14.0	12.0	D	17.8	9.1	8.7	19.9	D	11.8	D
In tenure track faculty position (%)	42.9	30.6	D	D	44.8	64.8	38.5	51.1	D	32.3	D
Not in tenure track position (%)	53.3	66.7	D	40.0	49.3	34.1	53.8	42.6	D	64.6	56.0
Government	6.6	18.7	2.5	2.6	9.3	4.6	D	8.1	6.5	4.9	D
Industry or business[e]	78.0	59.1	80.5	90.7	68.1	81.8	85.3	66.9	87.3	77.4	69.0
Nonprofit organization	3.1	5.8	3.7	D	2.4	3.1	D	4.2	D	4.2	4.2
Other or unknown[f]	1.5	2.3	1.2	1.2	2.4	1.5	0.7	0.8	1.5	1.8	0.9
Primary activity[g]											
Research and development	69.5	76.9	75.1	76.1	30.9	76.4	68.7	55.4	77.1	74.9	69.1
Teaching	6.1	D	D	D	D	D	D	D	D	D	D
Management or administration	1.4	D	D	D	D	D	D	D	D	D	D
Professional services and other	23.0	15.8	19.8	19.0	54.1	17.4	24.5	29.0	20.7	17.9	23.0
Secondary activity[g]											
Research and development	15.5	13.4	6.8	D	32.3	14.2	17.0	23.4	D	12.6	D
Teaching	3.2	D	D	D	D	2.4	D	6.9	D	3.4	D
Management or administration	14.3	D	D	21.2	12.4	10.0	D	16.9	19.5	14.1	16.2
Professional services and other	12.8	15.4	15.2	12.7	10.8	10.9	12.2	13.4	15.0	13.0	15.7
No secondary activity	54.2	56.3	53.6	52.9	40.6	62.5	55.1	39.4	57.0	47.5	47.5
Activity unknown	3.4	3.9	1.7	2.1	3.7	3.7	2.0	2.1	3.3	5.1	4.2
Postgraduation location (%)[h]											
United States[i]	92.1	94.8	96.1	91.0	89.1	91.1	89.2	91.0	92.2	93.4	95.2
Midwest	14.5	15.0	13.3	14.6	16.6	10.6	13.7	15.1	11.2	20.0	17.1
Northeast	18.4	15.9	31.1	23.3	13.8	13.2	14.2	22.1	20.4	18.8	18.1
South	24.6	30.3	23.6	20.8	32.1	23.9	24.5	31.1	19.0	22.1	24.4

TABLE 9-6

Engineering research doctorate recipients, postgraduation plans by sex and major field of doctorate: 2023

(Number and percent)

Characteristic	All engineering fields	Aerospace, aeronautical, astronautical, and space engineering	Biological, biomedical, and biosystems engineering	Chemical and petroleum engineering	Civil, environmental, and transportation engineering	Electrical and computer engineering	Engineering technologies	Industrial engineering and operations research	Materials and mining engineering	Mechanical engineering	Engineering, other
West	34.3	32.9	28.1	32.3	25.9	43.2	36.8	41.1	32.4	35.6	
Outside the United States	7.8	5.2	3.9	9.0	10.9	8.9	10.8	9.0	7.8	6.6	4.4
Location unknown	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Postgraduation location in same state as doctorate institution (%)	36.9	34.1	44.4	33.2	42.1	35.6	33.0	36.5	33.7	37.9	36.8
Female doctorate recipients reporting postgraduation status (number)	2,541	82	521	323	371	348	81	170	238	244	163
Definite postdoctoral training plans	23.5	20.7	32.6	20.7	27.2	16.1	22.2	10.0	25.6	19.7	26.4
Definite employment plans	47.8	56.1	36.1	51.1	38.5	58.6	48.1	65.3	50.4	53.3	42.3
Seeking employment or study	26.3	23.2	27.4	26.9	31.5	23.9	27.2	22.9	22.3	24.6	28.2
Other status[a]	2.3	0.0	3.8	1.2	2.7	1.4	2.5	1.8	1.7	2.0	3.1
Definite postdoctoral training plans (%)[b]											
Postdoc fellowship or research associateship	95.5	D	93.5	95.5	98.0	92.9	100.0	76.5	98.4	100.0	95.3
Other training or unknown[c]	4.5	D	6.5	4.5	2.0	7.1	0.0	23.5	1.6	0.0	4.7
Definite employment plans (%)[d]											
Academe	14.7	D	8.0	D	17.5	11.3	D	27.9	D	16.9	D
In tenure track faculty position (%)	46.1	54.5	D	D	40.0	69.6	D	51.6	D	54.5	D
Not in tenure track position (%)	51.7	D	D	72.7	56.0	26.1	54.5	45.2	55.6	45.5	60.0
Government	6.2	13.0	3.7	3.0	13.3	3.4	D	8.1	6.7	5.4	D
Industry or business[e]	73.6	50.0	83.0	86.7	62.2	81.4	61.5	58.6	80.8	71.5	55.1
Nonprofit organization	4.1	D	3.7	D	5.6	2.5	D	4.5	D	3.8	7.2
Other or unknown[f]	1.5	2.2	1.6	0.6	1.4	1.5	0.0	0.9	1.7	2.3	2.9
Primary activity[g]											
Research and development	60.3	62.2	59.0	73.1	35.7	74.9	43.6	51.9	72.6	56.9	47.8
Teaching	8.7	11.1	D	D	D	D	D	D	D	12.2	D
Management or administration	1.9	0.0	D	D	D	D	D	D	D	0.0	D
Professional services and other	29.2	26.7	36.1	22.5	50.7	17.6	30.8	26.4	21.2	30.9	31.3
Secondary activity[g]											
Research and development	17.7	17.8	14.2	10.6	30.0	13.1	28.2	21.7	D	21.1	D
Teaching	3.8	D	D	0.0	D	3.5	D	8.5	D	4.9	D
Management or administration	12.5	D	D	16.9	14.3	7.5	D	7.5	14.2	11.4	19.4
Professional services and other	11.7	15.6	8.7	12.5	12.9	14.6	12.8	13.2	8.0	11.4	7.5
No secondary activity	54.3	51.1	59.0	60.0	40.0	61.3	46.2	49.1	61.9	51.2	44.8
Activity unknown	3.3	2.2	2.7	3.0	2.1	2.5	0.0	4.5	5.8	5.4	2.9
Postgraduation location (%)[h]											
United States[i]	94.8	D	96.4	95.3	94.7	93.5	89.5	93.0	94.5	94.9	94.6
Midwest	13.7	14.3	14.8	17.2	12.3	6.2	15.8	12.5	14.9	18.5	13.4

TABLE 9-6

Engineering research doctorate recipients, postgraduation plans by sex and major field of doctorate: 2023

(Number and percent)

Characteristic	All engineering fields	Aerospace, aeronautical, astronautical, and space engineering	Biological, biomedical, and biosystems engineering	Chemical and petroleum engineering	Civil, environmental, and transportation engineering	Electrical and computer engineering	Engineering technologies	Industrial engineering and operations research	Materials and mining engineering	Mechanical engineering	Engineering, other
Northeast	22.7	15.9	33.2	25.4	19.3	18.8	10.5	25.8	17.7	19.1	20.5
South	25.2	28.6	21.2	25.0	35.2	22.3	29.8	28.9	22.7	18.5	28.6
West	32.9	38.1	26.5	27.6	27.9	45.4	31.6	25.8	39.2	38.8	32.1
Outside the United States	5.1	0.0	3.6	4.7	5.3	6.2	10.5	6.3	5.5	5.1	5.4
Location unknown	0.1	D	0.0	0.0	0.0	0.4	0.0	0.8	0.0	0.0	0.0
Postgraduation location in same state as doctorate institution (%)	37.2	33.3	43.3	30.6	43.9	31.5	31.6	43.0	38.1	34.3	32.1

* = value between 0.00% and 0.05%; D = suppressed to avoid disclosure of confidential information.

[a] Other status includes doctorate recipients reporting: no plans to work or study, some other type of postgraduation plans, or definite plans for other full-time degree program.
[b] Definite postdoctoral training plans excludes doctorate recipients reporting plans for other full-time degree program. Percentages are based on the number of doctorate recipients reporting definite postdoctoral plans for study.
[c] Other training includes doctorate recipients who reported definite postdoctoral plans for traineeship, internship or clinical residency, or other study.
[d] Percentages are based on the number of doctorate recipients reporting definite postgraduation plans for employment.
[e] Industry or business includes doctorate recipients reporting self-employment.
[f] Other is mainly composed of elementary and secondary schools.
[g] Percentages are based on the number of doctorate recipients reporting definite postgraduation plans for employment and primary or secondary work activity.
[h] Percentages are based on the number of doctorate recipients reporting definite postgraduation plans and type of plans.
[i] United States includes doctorate recipients with an unknown U.S. region of employment after doctorate; thus, the percentages by regions will not sum to the value for United States. See the "Technical Notes" for states or territories included in regions.

Note(s):
A definite postgraduation commitment includes accepting new employment or a postdoctoral study (postdoc) position or returning to predoctoral employment, while postgraduation employment includes accepting new employment or returning to predoctoral employment that is not a postdoctoral study (postdoc) position. Due to rounding, percentages may not sum to 100. Beginning in 2021, a modified version of the 2020 Classification of Instructional Programs (CIP) codes was used in the survey data collection, and new broad, major, and detailed fields are used in tables reporting data from 2021 to the present; see the field list in table A-4. Therefore, the field of doctorate data prior to 2021 may not be comparable to subsequent years. For more information about the 2021 taxonomy change, see the "Technical Notes."

Source(s):
National Center for Science and Engineering Statistics, Survey of Earned Doctorates.