



Profile of Early Career Doctorates: 2015

by Kelly Phou¹

In the U.S. workforce, early career doctorates—persons receiving their first doctorate within the past 10 years—are a diverse group that includes both U.S. and non-U.S. citizens trained either in the United States or abroad. The Early Career Doctorates Survey (ECDS), sponsored by the National Center for Science and Engineering Statistics (NCSES) within the National Science Foundation and by the National Institutes of Health, gathers in-depth information about such individuals who are employed at U.S. master's- and doctorate-granting academic institutions, federally funded research and development centers (FFRDCs), or the National Institutes of Health Intramural Research Program (NIH IRP). The statistics in this report are from the 2015 ECDS pilot study (see the Data Sources and Limitations section for more information about the pilot).

Most of this estimated 228,700 early career doctorates population were employed in academic institutions (96%), and the majority earned their first doctoral degree in the sciences (70%). Approximately 19% earned their first doctoral degree from a foreign academic institution. When asked where they planned to work in the next 10 years, 69% of the early career doctorates planned to work only in the United States, 27% planned to work in both the United States and abroad, and 3% planned to work abroad.

Citizenship Status and Origin of Doctoral Degree

U.S. citizens and permanent residents accounted for 65% of the early career doctorates population in 2015, with 97% earning their first doctorate from a U.S. academic institution. Among the early career doctorates on a temporary visa, 48% were foreign trained. Citizens of Canada, China, India, Germany, and South Korea constituted nearly two-thirds of the U.S.-trained temporary visa holders and 14% of the U.S.-trained early career doctorates (table 1). Of the estimated 43,300 foreign-trained early career doctorates, almost one-half earned their first doctoral degree from academic institutions in Canada, China, England, India, and Germany (figure 1).

Broad Area of Study

The majority of the early career doctorates (70%) earned their first doctoral degree in the various fields of science, with another 10% in engineering and the remaining 20% in non-science and engineering (non-S&E) fields. Women were as likely as men to have earned their first doctorate in science (33% versus 37%), but they were less likely to have earned a doctorate in engineering (2% versus 8%). Foreign-trained early career doctorates were more likely than their U.S.-trained counterparts to hold their first doctoral degree in science (88% versus 65%),

but they had similar rates in engineering (8% versus 11%) (table 1).

Position Type

The majority of the early career doctorates held faculty positions (54%) or postdoctoral appointments (31%) in 2015, with the remainder (15%) employed in all other staff positions. Foreign-trained early career doctorates mostly held postdoctoral appointments (64%), followed by faculty positions (20%) and all other staff positions (16%). By contrast, among U.S.-trained early career doctorates, the majority (62%) held faculty positions, followed by postdoctoral appointments (24%) and all other staff positions (14%) (table 1).

Career Location Plans

Plans to work outside the United States in the next 10 years varied substantially by citizenship and origin of doctoral degree, with U.S. citizen and permanent resident and U.S.-trained early career doctorates more likely to pursue work exclusively in the United States. Overall, just under 70% of early career doctorates planned to work only in the United States, while 27% planned to work both in the United States and abroad. However, 82% of U.S. citizens and permanent residents planned to pursue work only in the United States versus 44% of temporary visa holders. Similarly, just over three-fourths of U.S.-trained early career doctorates planned to work only in the United

TABLE 1. Early career doctorates, by origin of doctoral degree, citizenship, sex, other degree information, and position
(Percent distribution)

Characteristic	Total	U.S. degree		Non-U.S. degree	
		Number	Percent	Number	Percent
Total	228,700	185,400	81.1	43,300	18.9
Citizenship					
U.S. citizens and permanent residents	149,600	144,500	96.6	5,100	3.4
Temporary visa holders	79,100	40,900	51.7	38,100	48.2
China	22,900	14,200	62.0	8,700	38.0
India	9,100	4,900	53.8	4,200	46.2
Canada	5,600	2,400	42.9	3,200	57.1
Germany	4,900	1,400	28.6	3,600	73.5
South Korea	4,900	3,900	79.6	1,000	20.4
Italy	2,900	1,000	34.5	1,900	65.5
France	1,800	S	S	1,500	83.3
Japan	1,700	800	47.1	900	52.9
Brazil	1,600	900	56.3	800	50.0
England	1,500	300	20.0	1,200	80.0
All other countries	22,000	10,900	49.5	11,000	50.0
Sex and citizenship					
Female	106,600	93,000	87.2	13,600	12.8
U.S. citizens and permanent residents	81,400	78,700	96.7	2,700	3.3
Temporary visa holders	25,100	14,300	57.0	10,800	43.0
Male	122,100	92,400	75.7	29,700	24.3
U.S. citizens and permanent residents	68,200	65,800	96.5	2,400	3.5
Temporary visa holders	53,900	26,600	49.4	27,300	50.6
Years since degree					
Less than 2	46,200	36,900	79.9	9,300	20.1
2–5	92,800	75,200	81.0	17,600	19.0
6–10	89,700	73,300	81.7	16,400	18.3
Doctoral degree type					
Professional degree	28,100	22,800	81.1	5,300	18.9
Research degree	200,600	162,700	81.1	37,900	18.9
Field of doctoral study					
Science	159,100	121,100	76.1	38,000	23.9
Biological sciences	51,000	31,700	62.2	19,300	37.8
Health sciences	36,200	29,700	82.0	6,500	18.0
Physical sciences	20,900	14,000	67.0	6,900	33.0
Psychology	12,500	12,100	96.8	S	S
Social sciences	17,500	16,700	95.4	700	4.0
Other sciences	21,100	17,000	80.6	4,100	19.4
Engineering	23,500	19,900	84.7	3,600	15.3
Non-science and engineering	46,100	44,400	96.3	1,600	3.5
Position type ^a					
Faculty	123,500	114,800	93.0	8,700	7.0
Full time	96,400	89,300	92.6	7,100	7.4
Other	27,100	25,500	94.1	1,600	5.9
Postdoc	71,600	43,800	61.2	27,800	38.8
All other	33,600	26,800	79.8	6,800	20.2

S = suppressed for reliability; the coefficient of variation exceeds publication standards.

^a Full-time faculty includes assistant professors, associate professors, and full professors who work 35 or more hours per week. Other faculty includes all other faculty positions, such as instructors, lecturers, and adjuncts. Postdoc positions are temporary positions awarded in academe, industry, government, or a nonprofit organization primarily for gaining additional education and training in research. All other positions are diverse but are typically nonfaculty scientists, engineers, and research assistants; clinical staff; and administrators.

NOTES: Numbers are rounded to the nearest 100. Percentages are rounded to the nearest 10th of a percent. Detail may not add to total because of rounding.

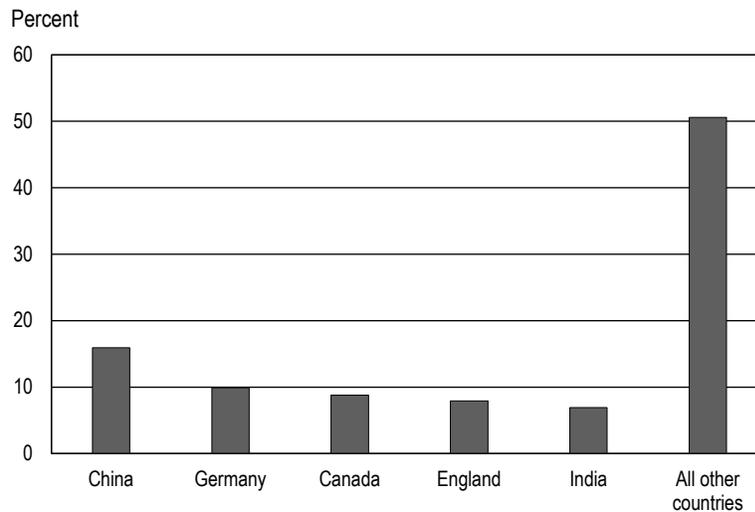
SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Early Career Doctorates Survey pilot study, 2015.

States, whereas more than one-half of foreign-trained early career doctorates planned to pursue a career both in the United States and abroad in the next 10 years (figure 2).

Data Sources and Limitations

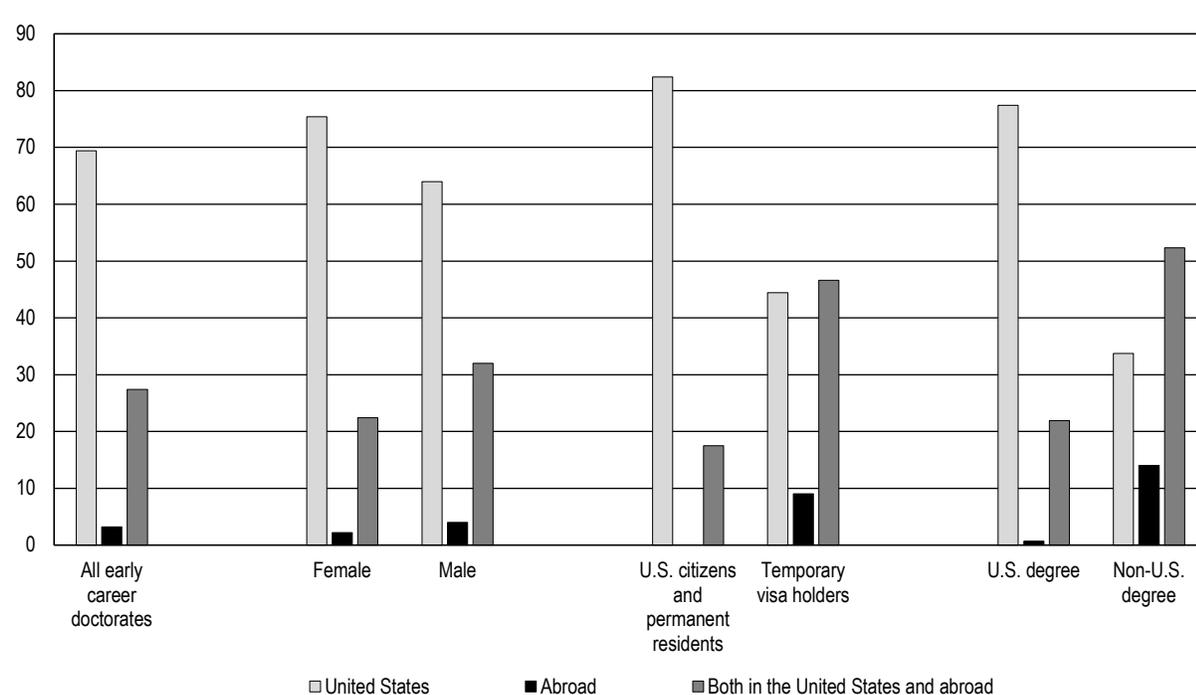
The ECDS aims to fill gaps in data on individuals who earned their first doctoral degree from foreign academic institutions but are now in the United States. The survey's target population covers both non-U.S. citizens and U.S. citizens and permanent residents in the United States who have received their first doctorate or doctorate-equivalent degree within the past 10 years (between 2004 and 2014). The 2015 ECDS pilot study is a representative two-stage

FIGURE 1. Origin of doctoral degree among non-U.S. degree early career doctorates: 2015



SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Early Career Doctorates Survey pilot study, 2015.

FIGURE 2. Career location plans of early career doctorates in the next 10 years, by sex, citizenship, and origin of doctoral degree: 2015



SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Early Career Doctorates Survey pilot study, 2015.

cross-sectional sample survey of establishments and of individuals in three employment settings: U.S. master's- and doctorate-granting academic institutions, FFRDCs, and the NIH IRP. This survey does not cover early career doctorates employed in the nonprofit and for profit sectors.

For the ECDS pilot study, the first stage is a stratified sample of institutions in the three sampled employment settings. Of the sampled institutions, 84.7% participated in the pilot study and provided lists of all early career doctorates working at their institution. The total sample size

for the second stage was 6,827 potential early career doctorates (5,120 from institutions in the Survey of Graduate Students and Postdoctorates in Science and Engineering, 1,457 from FFRDCs, and 250 from the NIH IRP). The overall individual response rate was 66%. The ECDS pilot study estimated 228,700 early career doctorates overall, with 218,800 working at U.S. master's- and doctorate-granting academic institutions, 7,500 at FFRDCs, and 2,400 at the NIH IRP.

Data Availability

The full set of detailed tables from the 2015 ECDS pilot study will be avail-

able in the forthcoming report *Characteristics of Early Career Doctorates: 2015* at <https://nsf.gov/statistics/srvyecd/>. Individual detailed tables may be available in advance of the full report. For more information, please contact the author.

Note

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Erratum: The National Institutes of Health (NIH) was inadvertently excluded as a co-sponsor of the Early Career Doctorates Survey. This has been corrected, and NIH is now appropriately credited.

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