

Gender Balance in Mars Exploration: Lessons Learned from the Mars Science Laboratory

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Supplementary Materials

Table 1. Female postdoctoral appointees in science, engineering and health (ALL) in all institutions (ALL) or in Academic institutions (Uni), in postdoctoral appointees in EPG (Engineering, Earth, atmospheric, and ocean sciences and Physical sciences) and Women as a percentage of science and engineering doctorate holders employed in academia, by position: Selected years, 1973–2015. Source(s): National Science Foundation, National Center for Science and Engineering Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering. NSF table GSS2015_DST_32 and GSS2015_DST_33. Source(s): Table 5-14. National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2017) of the 2003 and 2015 Survey of Doctorate Recipients (SDR).

| Group Category | Year | Total Sample | Female | Women (%) |
|----------------------------|------|--------------|--------|-----------|
| NSF Postdocs ALL/ALL | 2010 | 63.439 | 24.570 | 38,7 |
| NSF Postdocs ALL/ALL | 2011 | 62.639 | 24.472 | 39,1 |
| NSF Postdocs ALL/ALL | 2012 | 62.851 | 24.685 | 39,3 |
| NSF Postdocs ALL/ALL | 2013 | 61.942 | 24.357 | 39,3 |
| NSF Postdocs ALL/ALL | 2014 | 63.593 | 25.102 | 39,5 |
| NSF Postdocs ALL/ALL | 2015 | 63.861 | 25.295 | 39,6 |
| NSF Postdocs EPG/ALL | 2010 | 16.292 | 3.765 | 23,1 |
| NSF Postdocs EPG/ALL | 2011 | 16.050 | 3.777 | 23,5 |
| NSF Postdocs EPG/ALL | 2012 | 16.489 | 3.994 | 24,2 |
| NSF Postdocs EPG/ALL | 2013 | 16.335 | 4.008 | 24,5 |
| NSF Postdocs EPG/ALL | 2014 | 16.645 | 4.079 | 24,5 |
| NSF Postdocs EPG/ALL | 2015 | 17.143 | 4.191 | 24,4 |
| NSF Doctoral ALL/Uni | 1973 | – | – | 14.3 |
| NSF Doctoral ALL/Uni | 1983 | – | – | 30.1 |
| NSF Doctoral ALL/Uni | 1993 | – | – | 30.8 |
| NSF Doctoral ALL/Uni | 2003 | – | – | 38.0 |
| NSF Doctoral ALL/Uni | 2015 | – | – | 42.7 |
| NSF Senior Faculty ALL/Uni | 1973 | – | – | 5.8 |
| NSF Senior Faculty ALL/Uni | 1983 | – | – | 9.3 |
| NSF Senior Faculty ALL/Uni | 1993 | – | – | 14.2 |
| NSF Senior Faculty ALL/Uni | 2003 | – | – | 22.8 |
| NSF Senior Faculty ALL/Uni | 2015 | – | – | 30.9 |

According to the NSF studies, Physical sciences covers the areas of Astronomy and astrophysics, Chemistry, Physics and other Physical sciences. Earth, atmospheric, and ocean sciences covers the areas of Atmospheric sciences, Geosciences, Ocean sciences Earth, atmospheric, and other. Engineering covers the areas of Aerospace engineering, Agricultural engineering, Architecture,

Biomedical engineering, Chemical engineering, Civil engineering, Electrical engineering, Engineering science, mechanics, and physics Industrial and manufacturing engineering, Mechanical engineering, Metallurgical and materials engineering Mining engineering, Nuclear engineering, Petroleum engineering and other Engineering.

Table 2. Proportion and number of researchers by gender within EU, US and Canada (among named and gendered author profiles) for each comparator and subject area, 1996 – 2000 vs. 2011 – 2015. Sources: Scopus, Genderize, NamSor, and Wikipedia. [Elsevier’s Research Intelligence 2017].

| 2011-2015 | | | | | | |
|--------------------|----------------|--------------------|----------------------|------------------|---------------------|--------------|
| Researchers | Country | eng. | phy and astro | chem. | earth/plan. | TOTAL |
| women | EU | 123336 | 87027 | 122524 | 46437 | 379324 |
| men | | 388259 | 262883 | 202089 | 110190 | 963421 |
| women | US | 68444 | 43800 | 53937 | 25790 | 191971 |
| men | | 258025 | 160710 | 122869 | 79486 | 621090 |
| women | Canada | 8689 | 5545 | 7307 | 4149 | 25690 |
| men | | 31555 | 9664 | 16106 | 11559 | 68884 |
| Total women | | 200469 | 136372 | 183768 | 76376 | 596985 |
| Total men | | 677839 | 433257 | 341064 | 201235 | 1653395 |
| Total | | 878308 | 569629 | 524832 | 277611 | 2250380 |
| % | | 22,8 | 23,9 | 35,0 | 27,5 | 26,5 |
| 1996-2000 | | | | | | |
| Researchers | Country | engineering | phy and astro | chemistry | earth planet | TOTAL |
| women | EU | 26360 | 26786 | 44076 | 14560 | 111782 |
| men | | 158271 | 129011 | 103342 | 55708 | 446332 |
| women | US | 28825 | 19083 | 20388 | 11369 | 79665 |
| men | | 183015 | 108649 | 64146 | 56302 | 412112 |
| women | Canada | 2567 | 1771 | 2361 | 1644 | 8343 |
| men | | 16194 | 9635 | 7018 | 8195 | 41042 |
| Total women | | 57752 | 47640 | 66825 | 27573 | 199790 |
| Total men | | 357480 | 247295 | 174506 | 120205 | 899486 |
| Total | | 415232 | 294935 | 241331 | 147778 | 1099276 |
| % | | 13,9 | 16,2 | 27,7 | 18,7 | 18,2 |

Table 3. Women in the Academic S&E Workforce.
<https://www.nsf.gov/statistics/2018/nsb20181/report/sections/academic-research-and-development/doctoral-scientists-and-engineers-in-academia>.

National Science Foundation: The past 40 years have seen 10-fold growth in women's participation in the academic doctoral S&E workforce. In 1973, only about 11,000 U.S.-trained female S&E doctorates were employed in academia, contrasting sharply with about 123,000 in 2015. Over the past two decades alone, academic employment of women with S&E doctorates rose from about 52,000 in 1995 to 123,000 in 2015. Over the four decades, the number of their male counterparts almost doubled, growing from 107,000 to about 206,00.

Tables 5–14

| Women as a Percentage of S&E Doctorate Holders Employed in Academia, by Position,; selected years. 1973–2015 | | | | | |
|---|------|------|------|------|------|
| (Percent) | | | | | |
| Position | 1973 | 1983 | 1993 | 2003 | 2015 |
| All positions | 9,1 | 15,0 | 21,9 | 30,3 | 37,4 |
| Full-time senior faculty | 5,8 | 9,3 | 14,2 | 22,8 | 30,9 |
| Full-time junior faculty | 11,3 | 23,5 | 32,2 | 39,7 | 42,5 |
| Other full-time positions | 14,5 | 23,1 | 30,2 | 34,8 | 43,9 |
| Postdocs | 14,3 | 30,1 | 30,8 | 38,0 | 42,7 |
| Part-time positions | 48,3 | 41,7 | 61,0 | 54,5 | 52,0 |

Note(s): Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, and university research institutes. Senior faculty includes full and associate professors; junior faculty includes assistant professors and instructors in 1973, 1983, and 1993; in 2003 and 2015, junior faculty includes assistant professors. Other full-time positions include positions such as research associates, adjunct appointments, instructors (in 2003 and 2015), lecturers, and administrative positions. Part-time positions exclude those employed part time who are students or retired. Source(s): National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2017) of the 2003 and 2015 Survey of Doctorate Recipients (SDR). *Science and Engineering Indicators 2018*.

Table 4. MSL refereed publications per year and female-lead papers per year.

| Year | Total | Female-lead Papers |
|-------------|--------------|---------------------------|
| 2011 | 14 | 5 |
| 2012 | 21 | 6 |
| 2013 | 21 | 4 |
| 2014 | 49 | 15 |
| 2015 | 44 | 12 |
| 2016 | 58 | 21 |
| 2017 | 69 | 24 |