

#TimeIsNow



# Global Aviation Gender Summit

Cape Town, South Africa | 8 to 10 August 2018

## Session 5: STEM Education

9 August 2018

Hosted by



Supported by



In cooperation with



ICAO

In collaboration with



PLANET 50-50  
BY 2030!



# Renetta Garrison Tull, Ph.D.

 [@Renetta\\_Tull](https://twitter.com/Renetta_Tull)

*USM:* Special Assistant to the Senior Vice Chancellor for Academic Affairs, Director of Graduate and Professional Pipeline Development

*UMBC:* Associate Vice Provost for Strategic Initiatives

Professor of the Practice – Engineering & IT

[#ThinkBigDiversity](https://twitter.com/ThinkBigDiversity)



Current PROMISE projects are supported by: Collaborative Research: AGEP - T: PROMISE AGEP Maryland Transformation # 1309290, #1309264, and #1309256. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

# Women who are underrepresented in engineering

Smaller numbers.

In 2016, of 41,355 US citizen/perm. resident women enrolled in graduate programs in engineering in the US:

Hispanic/Latino: 1780 (4.3 %)

African-American: 1069 (2.6%)

American Indian/Alaska Native: 71 (.17%)

Native Hawaiian: 24 (.06%)

Women from Underrepresented Minority Groups COMBINED, only:

**7.1 %**

# Need Faculty Diversity

TABLE 9-25. Science, engineering, and health doctorate holders employed in universities and 4-year colleges, by broad occupation, sex, race, ethnicity, and faculty rank: 2013

Occupation, sex, race, and ethnicity	Total	Professor	Associate professor	Assistant professor	Other faculty	Rank not applicable
Engineer	27,700	10,600	5,800	5,700	1,300	4,300
Female	4,300	800	1,100	1,300	300	800
White	2,400	600	600	700	200	300
Asian	1,400	100	300	500	D	400
Black	100	D	D	100	D	D
Hispanic <sup>a</sup>	300	D	D	100	D	100
American Indian or Alaska Native	D	D	D	D	D	D
Native Hawaiian or Other Pacific Islander	D	D	D	D	D	D
More than one race <sup>b</sup>	D	D	D	D	D	D
Male	23,400	9,800	4,700	4,400	1,000	3,500
White	14,800	6,900	3,300	2,100	700	1,700
Asian	6,700	2,200	1,100	1,900	200	1,400
Black	700	200	200	100	D	100
Hispanic <sup>a</sup>	1,000	400	200	200	D	200
American Indian or Alaska Native	D	D	D	D	D	D
Native Hawaiian or Other Pacific Islander	D	D	D	D	D	D
More than one race <sup>b</sup>	200	D	D	D	D	D

\* = value < 50. D = suppressed to avoid disclosure of confidential information. S = suppressed for reliability; coefficient of variation exceeds publication standards.

# Women Graduate Students in Aerospace Engineering (US citizens): 15%

TABLE 3-1. S&E graduate students, by field, sex, citizenship, ethnicity, and race: 2014

Field and sex	U.S. citizens and permanent residents									
	Not Hispanic or Latino									Temporary visa holders
	Total	Hispanic or Latino <sup>a</sup>	American Indian or Alaska Native	Asian	Black or African American	Native Hawaiian or Other Pacific Islander	White	More than one race	Unknown ethnicity and race	
All S&E graduate students	601,883	35,132	2,112	33,745	30,482	902	245,103	9,335	25,701	219,371
Science	437,395	28,605	1,826	24,039	26,768	784	198,185	7,697	20,595	128,896
Engineering	164,488	6,527	286	9,706	3,714	118	46,918	1,638	5,106	90,475
<b>Aerospace engineering</b>	<b>5,116</b>	<b>291</b>	<b>10</b>	<b>340</b>	<b>69</b>	<b>6</b>	<b>2,379</b>	<b>79</b>	<b>215</b>	<b>1,727</b>
<b>Female</b>	253,493	17,930	1,121	15,008	17,645	454	109,713	4,816	11,720	75,086
Science	213,803	16,245	1,049	12,414	16,549	426	99,627	4,376	10,627	52,490
Engineering	39,690	1,685	72	2,594	1,096	28	10,086	440	1,093	22,596
<b>Aerospace engineering</b>	<b>775</b>	<b>55</b>	<b>2</b>	<b>62</b>	<b>13</b>	<b>2</b>	<b>324</b>	<b>11</b>	<b>29</b>	<b>277</b>
Male	348,390	17,202	991	18,737	12,837	448	135,390	4,519	13,981	144,285
Science	223,592	12,360	777	11,625	10,219	358	98,558	3,321	9,968	76,406
Engineering	124,798	4,842	214	7,112	2,618	90	36,832	1,198	4,013	67,879
<b>Aerospace engineering</b>	<b>4,341</b>	<b>236</b>	<b>8</b>	<b>278</b>	<b>56</b>	<b>4</b>	<b>2,055</b>	<b>68</b>	<b>186</b>	<b>1,450</b>



<sup>a</sup> Includes Hispanic or Latino of one or more races.

NOTES: In 2014, the survey frame was updated following a comprehensive frame evaluation study. The study identified potentially eligible but not previously surveyed U.S. academic institutions with master's- or doctorate-granting programs in science, engineering, or health. A total of 151 newly eligible institutions were added, and two private for-profit institutions offering mostly practitioner-based graduate degrees were determined to be ineligible.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, 2014.

@Renetta\_Tull

#ThinkBigDiversity

Gender Aviation Summit, South Africa, 2018 #TimeIsNow



**“Supply is low”**

URM Women Graduate Students  
in Aerospace Engineering (U.S.)

**1.4%**

# Recommendations

Colleges & Universities

**1.** Increase women  
STEM faculty

Families and Primary Schools

**2.** Invite girls and women  
to engage in STEM  
activities and careers

Employers

**3.** Alter attitudes/policies  
to support lives of  
women within careers