

Diversity Benchmarking Report for Underrepresented Groups in Engineering

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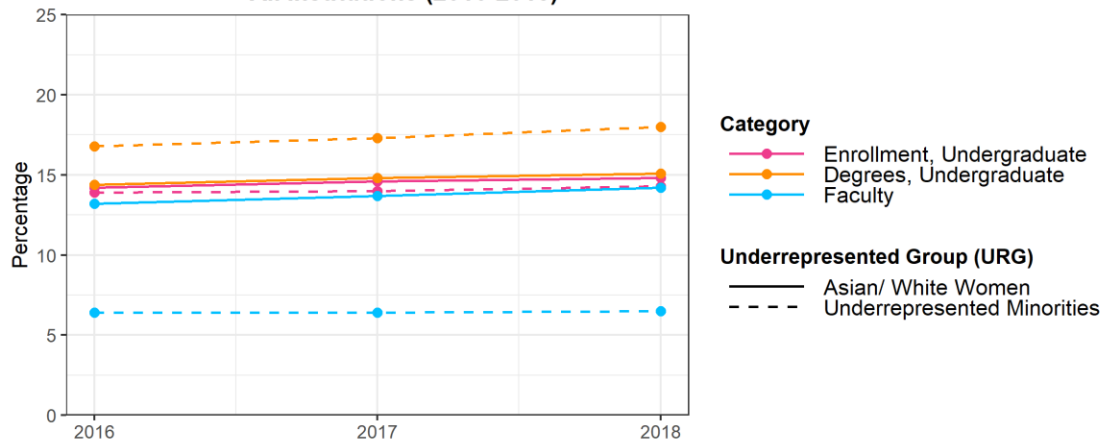
The Diversity Benchmarking Report for Underrepresented Groups in Engineering is part of ASEE's effort to capture the dispersion of underrepresented groups (URG) and provide national benchmarks of engineering programs. In this framework, underrepresented groups are partitioned into two subsets: A) underrepresented minorities (URM), including Black/ African American, Hispanic/ Latino, American Indian/ Alaska Native, and Native Hawaiian/ Other Pacific Islander and B) Asian women and White women (AWW). As a condition to capture racial and ethnic representation in a national context, this dataset excludes Non-Resident Aliens. The primary focus of this benchmarking report aims to provide a snapshot of the population percentage of both underrepresented groups, rather than establish a projection of future trends, for undergraduate full-time *enrollment*, undergraduate *degrees* attained, and full-time tenured/ tenure-track *faculty* from 2016 to 2018. Following an analysis for the national totals, each category will be further broken down by 1) Institution Type: Doctoral, Masters, Baccalaureate, 2) Carnegie Size: Large, Medium, and Small, and 3) Bureau of Economic Analysis (BEA) Region, to assess both underrepresented groups across various measures.

All data is sourced from the *ASEE Survey of Engineering & Engineering Technology Colleges*, an annual survey which profiles over 350 participating institutions. As of the release of this report, 2019 data collection is ongoing and not available. Supplemental tables are provided in the Appendix section. For more information, please contact Charles Stuppard in ASEE's Department of Institutional Research and Analytics by phone (202) 350-5718 or by email c.stuppard@asee.org.

Analysis for All Institutions

The percentage of both underrepresented minorities (URM) and Asian women and White women (AWW) decreased further along the academic pipeline; enrollment exhibited the highest percentage of representation, followed by bachelor's degrees and faculty. The percentage of AWW remained consistent across all three categories, ranging from 13-15 percent. Conversely, the decline in the percentage of URM between enrollment and faculty is substantial. While URM accounted for 17.9 percent of undergraduate enrollment in 2018, higher than that of AWW, the percentage of underrepresented minorities in faculty drops to 6.5 percent. *Figure 1* shows the percentage of each group by category.

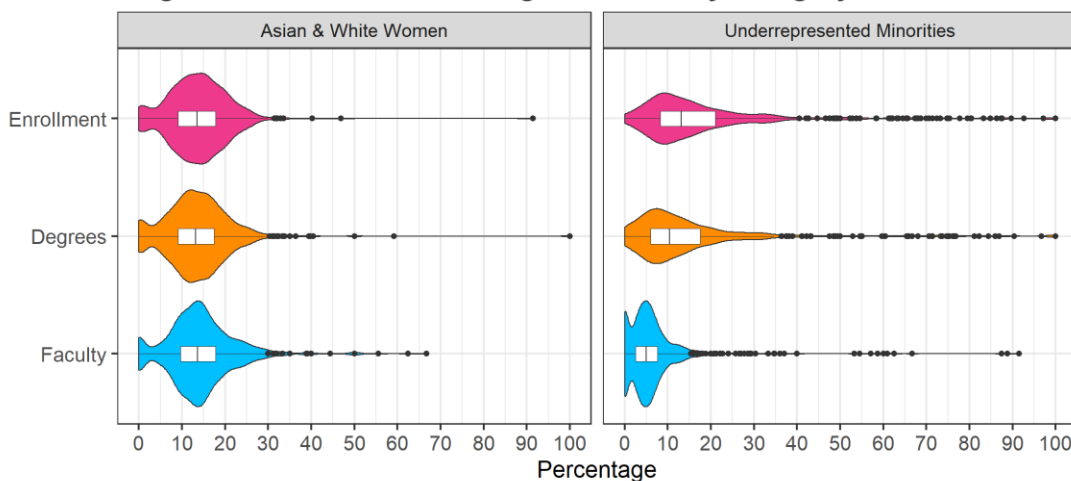
Figure 1: Percentage of Underrepresented Groups by Category, All Institutions (2016-2018)



Data source: ASEE Survey of Engineering & Engineering Technology Colleges

The distribution of 2018 percentages for all institutions is shown in *Figure 2* and embedded with a summary box plot showing the minimum, maximum, first and third quartiles, median, and outliers. Wider sections show a higher density of percentages whereas narrower sections have a lower density. The shape and density peaks for AWW are aligned for all three categories. They exhibit a peak at zero, followed by a valley, a peak about a 13 percent median, and the maximum stretches to 30 percent with various outliers. The shape and density peaks for undergraduate enrollment and degrees are similar for URM. The peak of the distribution is near the first quartile and steadily decreases through the maximum, with outliers ranging to 100 percent. URM faculty reflects that of AWW – the peak at zero is followed by a larger peak around median.

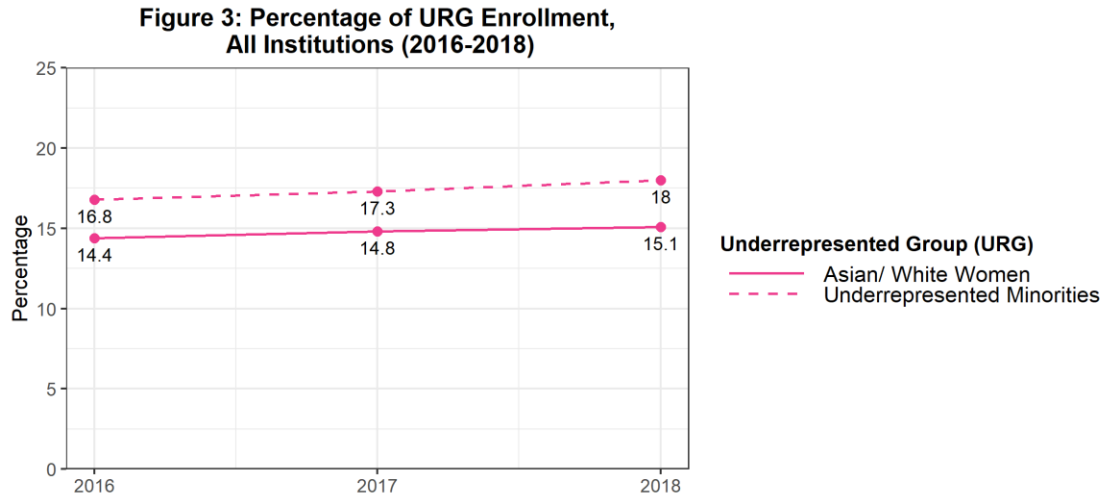
Figure 2: 2018 URG Percentage Densities by Category, All Institutions



Data source: ASEE Survey of Engineering & Engineering Technology Colleges

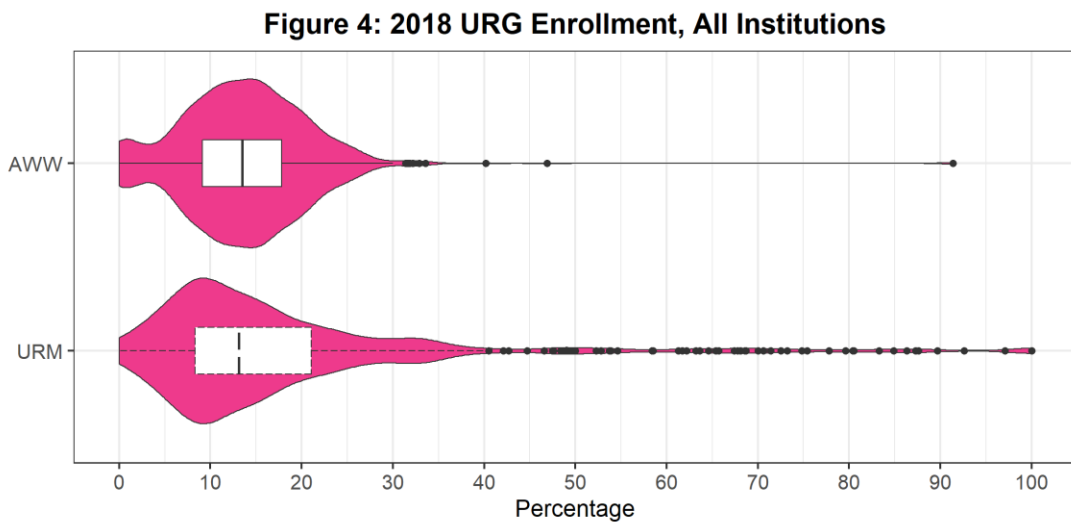
Undergraduate Enrollment

According to data submitted to the ASEE Profiles Survey from 2016 and 2018, undergraduate full-time enrollment of AWW increased from 88,813 to 93,679 and from 103,051 to 110,611 for URM. Excluding Non-Resident Aliens, there were 618,244 full-time undergraduate students enrolled in 2018. Underrepresented minorities accounted for 17.9 percent of students enrolled, while Asian women and White women accounted for 15.2 percent. As seen in *Figure 3*, URM and AWW enrollment increased by 1.1 percent and 0.7 percent, respectively, compared to 2016.



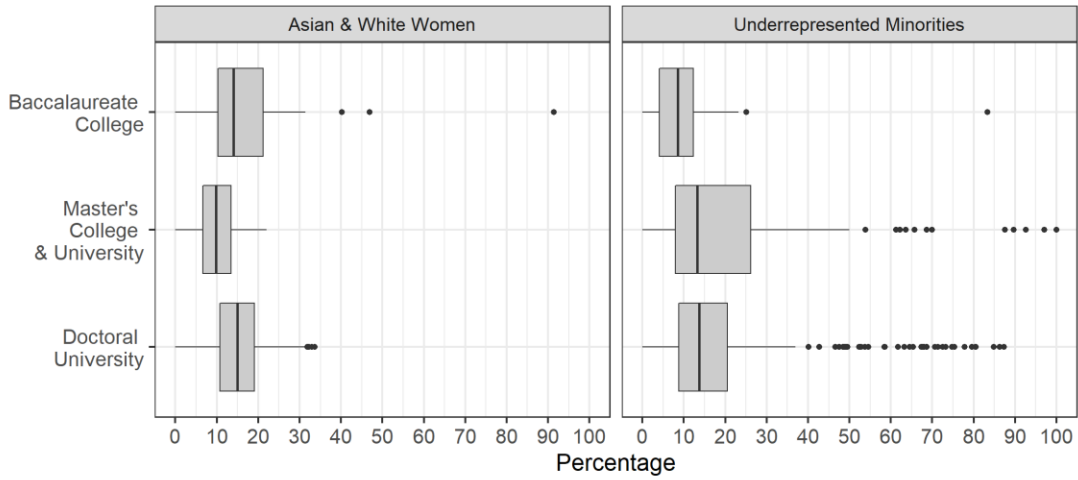
Data source: ASEE Survey of Engineering & Engineering Technology Colleges

In 2018, the median percentage of URG for all institutions was 13.1 percent for URM and 13.5 percent for AWW (*Figure 4*). While the breakdown by institution type and size are similar, there is more variance in the regional breakdown (*Figures 5-7*).



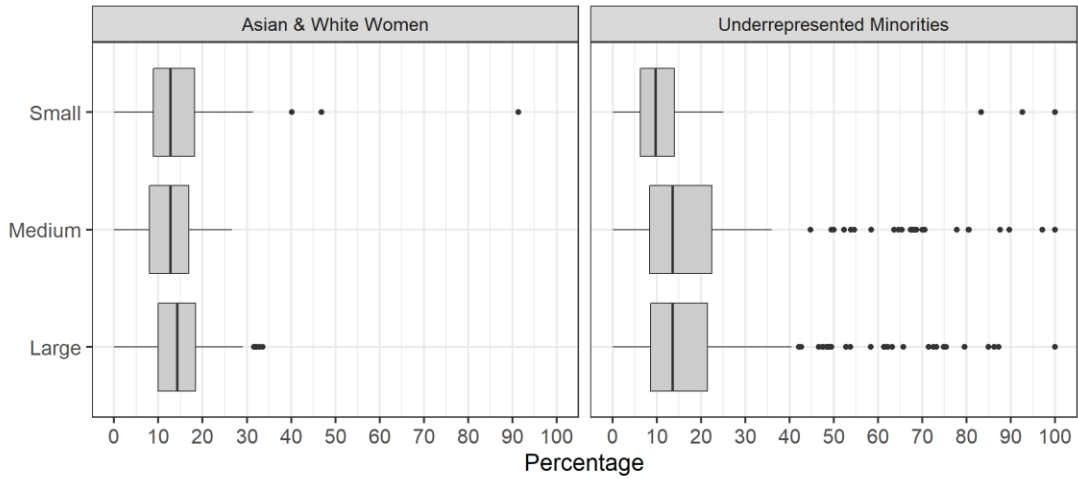
Data source: ASEE Survey of Engineering & Engineering Technology Colleges

Figure 5: 2018 URG Enrollment, by Institution Type



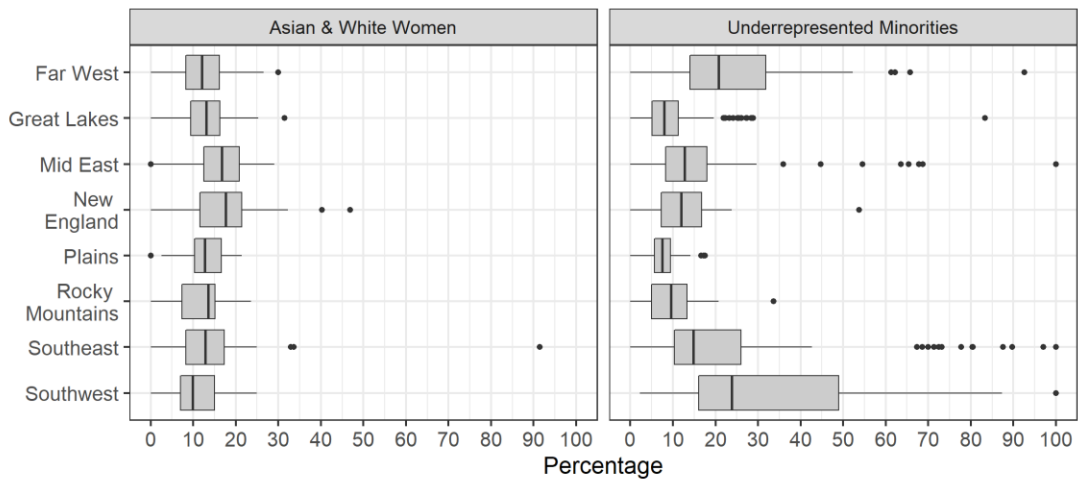
Data source: ASEE Survey of Engineering & Engineering Technology Colleges

Figure 6: 2018 URG Enrollment, by Institution Size



Data source: ASEE Survey of Engineering & Engineering Technology Colleges

Figure 7: 2018 URG Enrollment, by Region

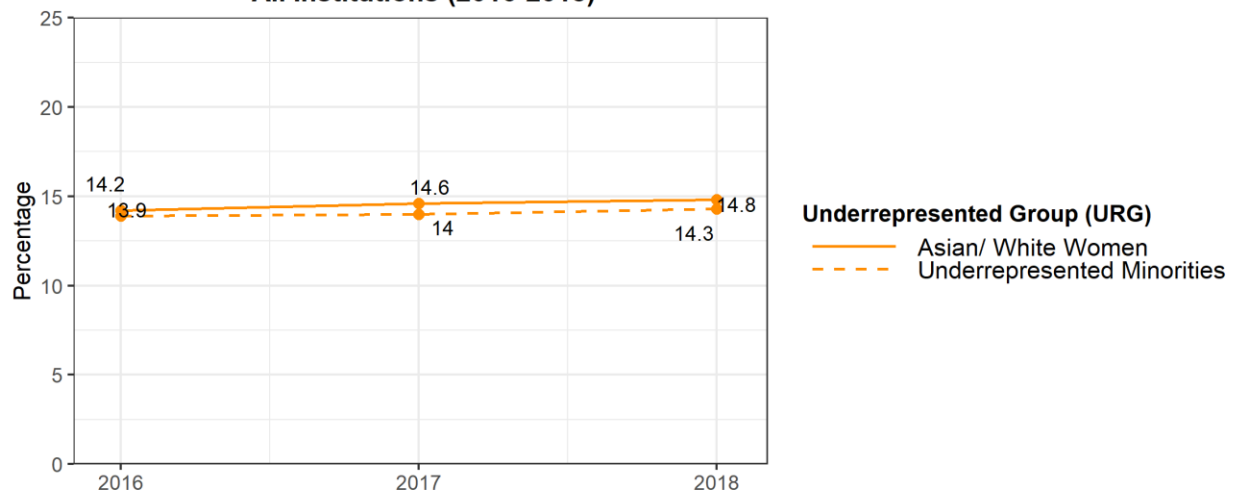


Data source: ASEE Survey of Engineering & Engineering Technology Colleges

Undergraduate Degrees

From 2016 and 2018, undergraduate degrees awarded to AWW increased from 16,254 to 19,435 and from 15,946 to 18,674 for URM. Excluding Non-Resident Aliens, there were 130,947 undergraduate degrees awarded in 2018. Underrepresented minorities accounted for 14.3 percent of bachelor's degrees attained, while Asian women and White women accounted for 14.8 percent. As seen in *Figure 8*, the percentage of bachelor's degrees awarded to URM and AWW enrollment increased by 0.4 percent and 0.6 percent, respectively, compared to 2016.

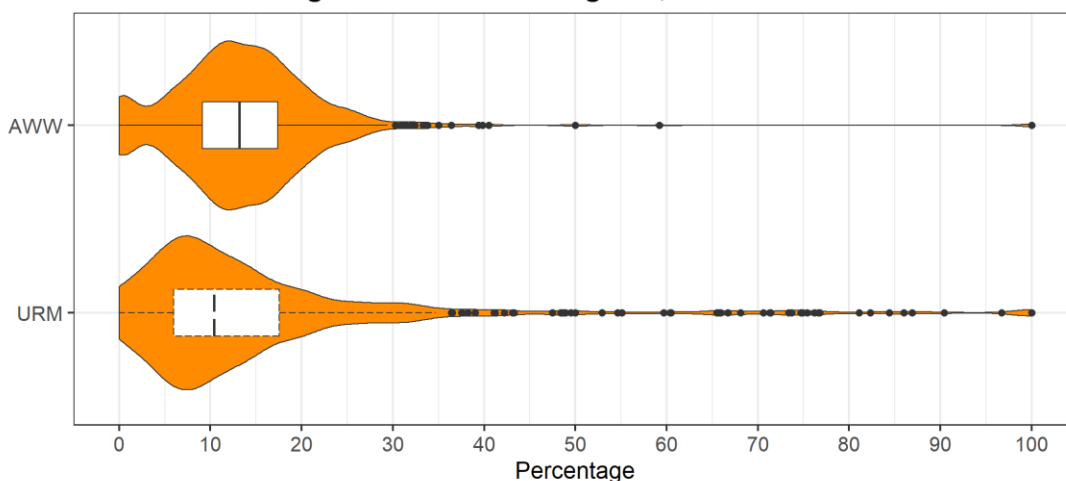
Figure 8: Percentage of URG Degrees, All Institutions (2016-2018)



Data source: ASEE Survey of Engineering & Engineering Technology Colleges

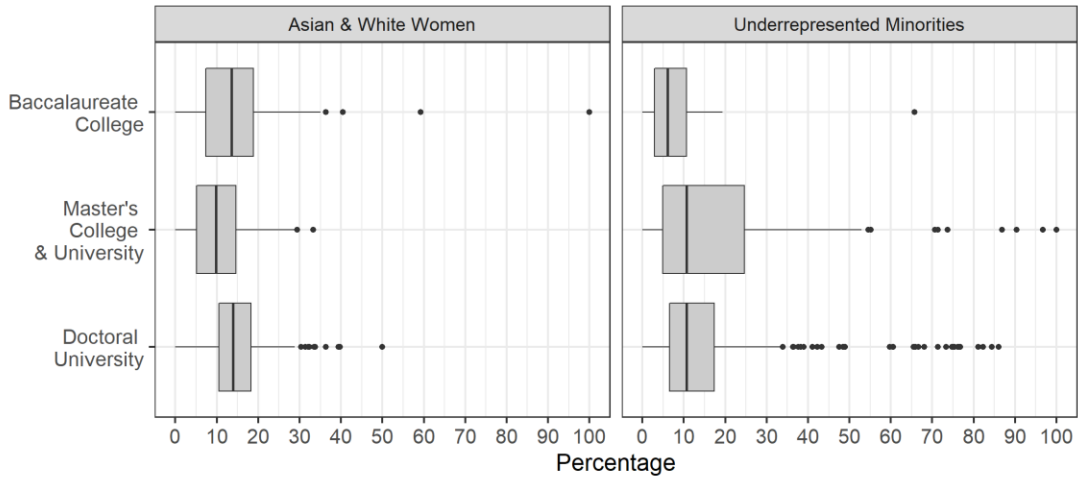
The median percentage of degrees awarded for all institutions in 2018 was 13.5 % for AWW and 13.1 % for URM (*Figure 9*). *Figures 10-12* show the breakdown by institution type, size, and region.

Figure 9: 2018 URG Degrees, All Institutions



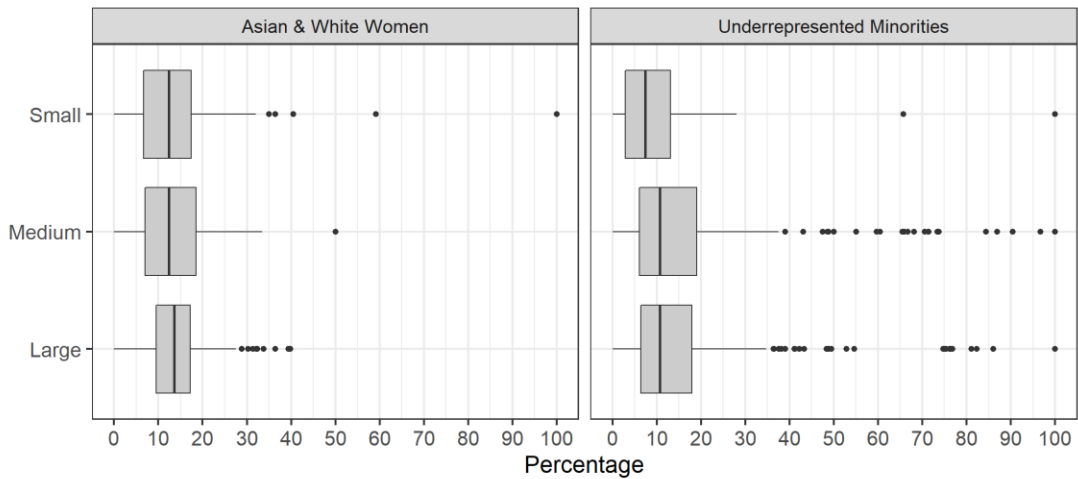
Data source: ASEE Survey of Engineering & Engineering Technology Colleges

Figure 10: 2018 URG Degrees, by Institution Type



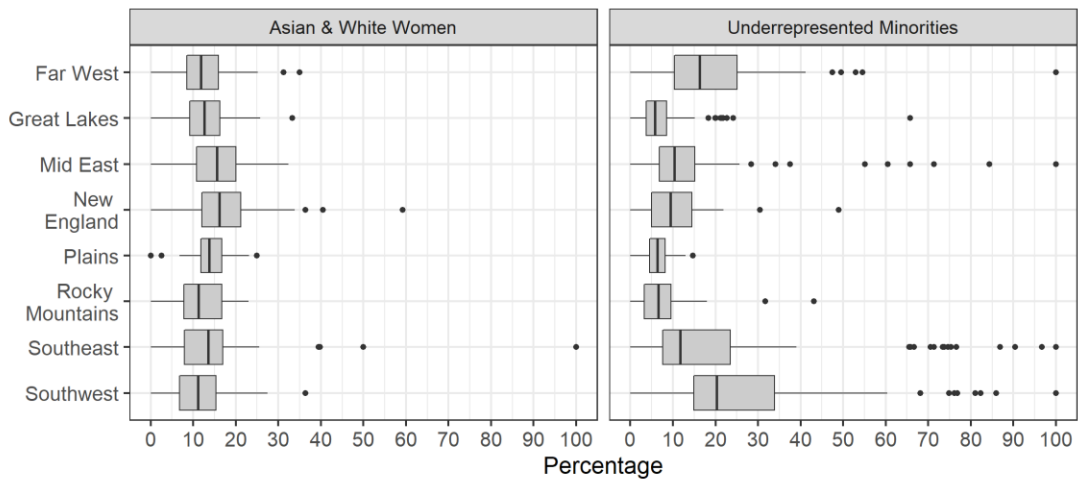
Data source: ASEE Survey of Engineering & Engineering Technology Colleges

Figure 11: 2018 URG Degrees, by Institution Size



Data source: ASEE Survey of Engineering & Engineering Technology Colleges

Figure 12: 2018 URG Degrees, by Region

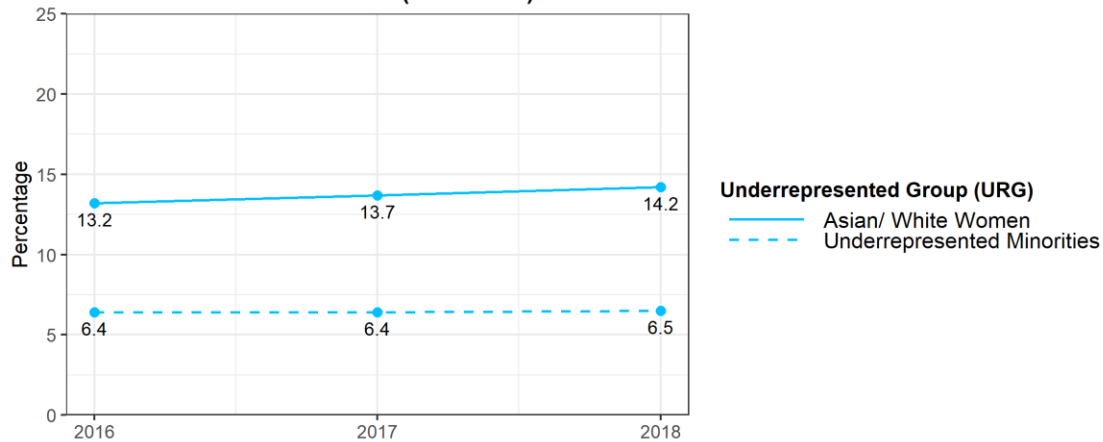


Data source: ASEE Survey of Engineering & Engineering Technology Colleges

Faculty

From 2016 and 2018, full-time tenure-track faculty increased from 3,643 to 3,872 for AWW and from 1,829 to 1,762 for URM. Excluding Non-Resident Aliens, there were 27,088 full-time tenure-track faculty in 2018. Underrepresented minorities accounted for 6.5 percent of faculty, while Asian women and White women accounted for 14.3 percent. As seen in *Figure 13*, the percentage of faculty for URM decreased by 0.1 percent, whereas AWW increased by 1.1 percent, compared to 2016.

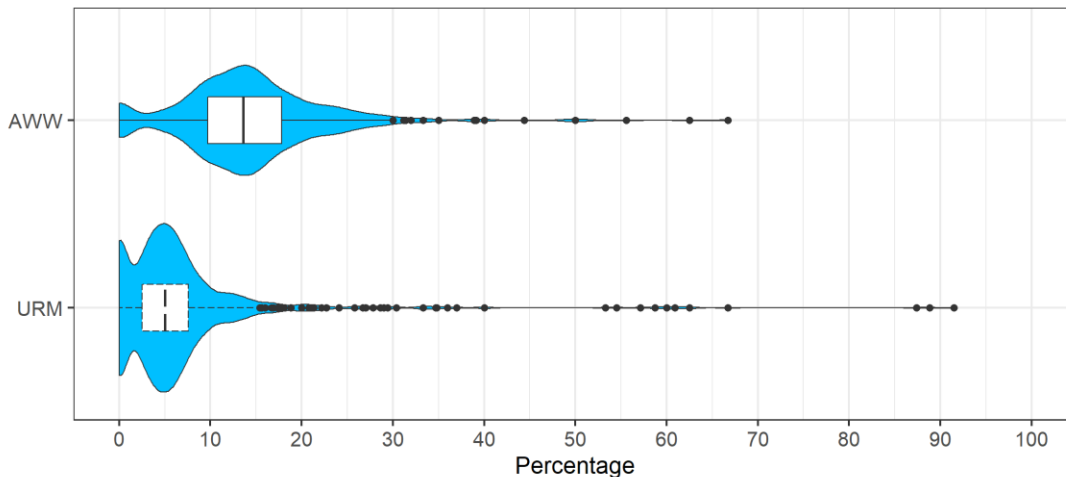
Figure 13: Percentage of URG Faculty, All Institutions (2016-2018)



Data source: ASEE Survey of Engineering & Engineering Technology Colleges

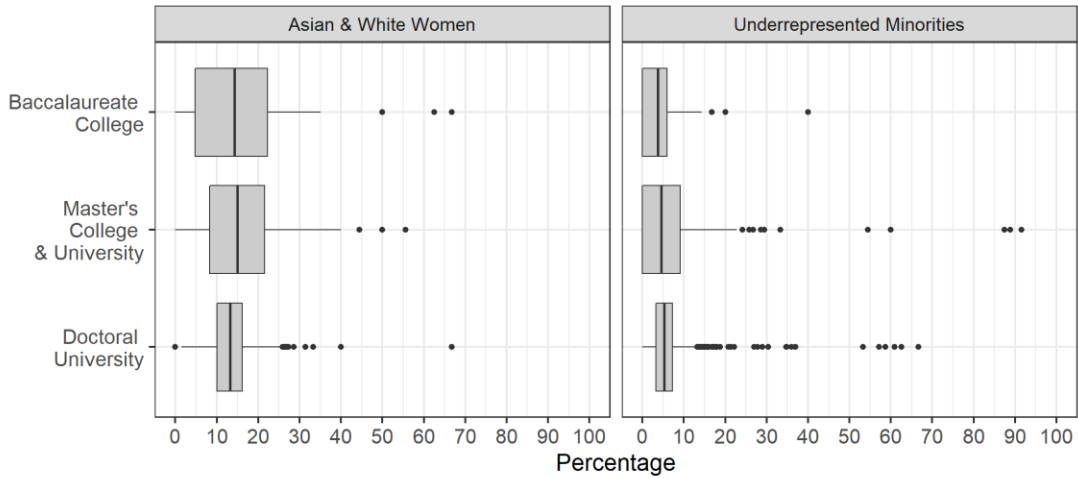
The median percentage of degrees awarded for all institutions in 2018 was 13.6 percent for AWW and 5.0 percent for URM (*Figure 14*). *Figures 15-17* show the breakdown by institution type, size, and region.

Figure 14: 2018 URG Faculty, All Institutions



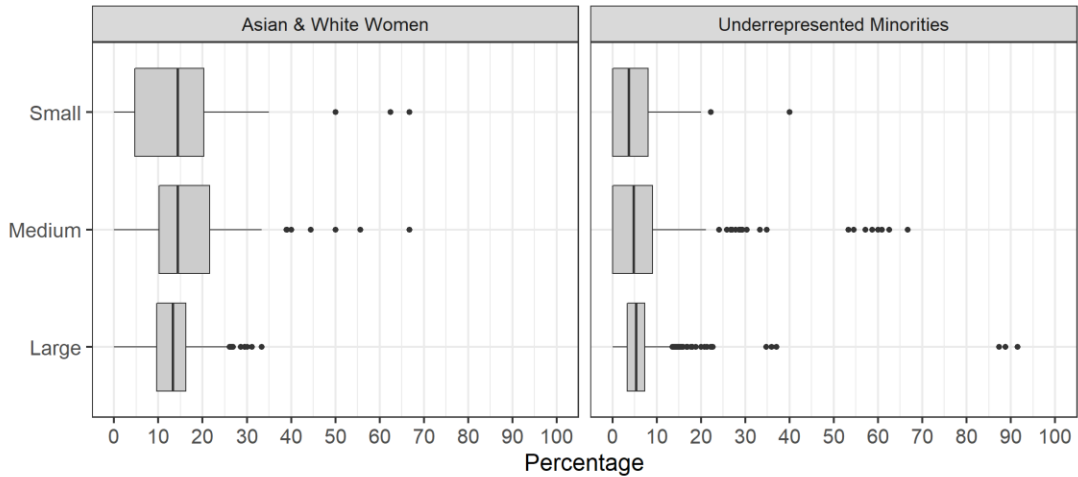
Data source: ASEE Survey of Engineering & Engineering Technology Colleges

Figure 15: 2018 URG Faculty, by Institution Type



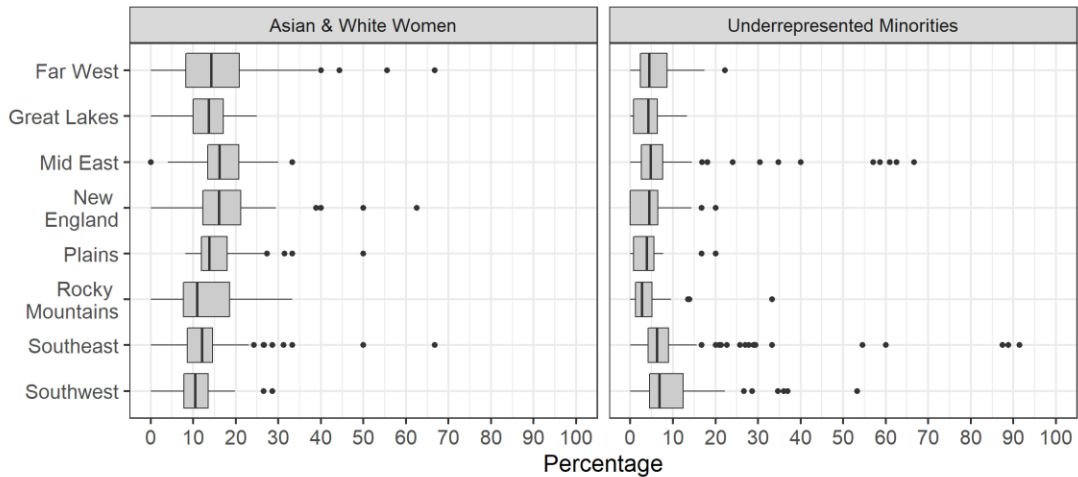
Data source: ASEE Survey of Engineering & Engineering Technology Colleges

Figure 16: 2018 URG Faculty, by Institution Size



Data source: ASEE Survey of Engineering & Engineering Technology Colleges

Figure 17: 2018 URG Faculty, by Region



Data source: ASEE Survey of Engineering & Engineering Technology Colleges

Appendix of Supplemental Table Data

Percentage of URG Enrollment, All Institutions 2016-2018, Figure 3

Year	Underrepresented Group	Total	URG Total	Percentage
2016	AWW	609,498	88,065	14.4
2017	AWW	613,227	90,823	14.8
2018	AWW	613,555	92,941	15.1
2016	URM	609,498	102,260	16.8
2017	URM	613,227	105,873	17.3
2018	URM	613,555	110,152	18.0

2018 URG Enrollment, All Institutions, Figure 4

	AWW	URM
Minimum	0.0	0.0
Lower Quartile	9.1	8.3
Median	13.5	13.1
Upper Quartile	17.8	21.1
Maximum	30.0	40.1

2018 AWW Enrollment, by Institution Type, Figure 5

	Baccalaureate College	Master's College & University	Doctoral University
Minimum	0.00	0.0	0.0
Lower Quartile	10.20	6.6	10.7
Median	14.05	9.8	15.0
Upper Quartile	21.40	13.4	19.1
Maximum	31.40	22.0	31.6

2018 URM Enrollment, by Institution Type, Figure 5

	Baccalaureate College	Master's College & University	Doctoral University
Minimum	0.00	0.00	0.00
Lower Quartile	4.00	7.95	8.75
Median	8.55	13.25	13.65
Upper Quartile	12.30	26.45	20.60
Maximum	23.20	53.90	37.00

2018 AWW Enrollment, by Institution Size, Figure 6

	Small	Medium	Large
Minimum	0.00	0.0	0.0
Lower Quartile	8.90	8.0	10.0
Median	12.65	12.7	14.2
Upper Quartile	18.25	16.9	18.4
Maximum	31.40	26.7	29.1

2018 URM Enrollment, by Institution Size, Figure 6

	Small	Medium	Large
Minimum	0.00	0.0	0.0
Lower Quartile	6.20	8.4	8.6
Median	9.75	13.5	13.5
Upper Quartile	14.10	22.4	21.4
Maximum	25.10	35.9	40.5

2018 AWW Enrollment, by BEA Region, Figure 7

	Far West	Great Lakes	Mid East	New England	Plains	Rocky Mountains	Southeast	Southwest
Minimum	0.0	0.0	0.3	0.0	2.50	0.0	0.0	0.0
Lower Quartile	8.3	9.4	12.5	11.6	10.30	7.4	8.3	7.0
Median	12.0	13.1	16.7	17.6	12.75	13.5	12.8	9.9
Upper Quartile	16.2	16.3	20.8	21.4	16.65	15.1	17.3	15.0
Maximum	26.5	25.3	29.1	32.2	21.40	23.6	24.9	25.0

2018 URM Enrollment, by BEA Region, Figure 7

	Far West	Great Lakes	Mid East	New England	Plains	Rocky Mountains	Southeast	Southwest
Minimum	0.0	0.0	0.0	0.0	0.00	0.0	0.0	2.2
Lower Quartile	14.0	5.1	8.3	7.3	5.60	5.0	10.4	16.1
Median	20.7	8.0	12.7	11.9	7.50	9.5	14.8	23.8
Upper Quartile	31.8	11.2	18.0	16.7	9.45	13.3	26.0	48.9
Maximum	52.3	19.6	29.6	23.8	14.10	20.7	42.7	87.3

Percentage of URG Degrees, All Institutions 2016-2018, Figure 8

Year	Underrepresented Group	Total	URG Total	Percentage
2016	AWW	113,735	16,101	14.2
2017	AWW	122,778	17,916	14.6
2018	AWW	129,984	19,279	14.8
2016	URM	113,735	15,821	13.9
2017	URM	122,778	17,200	14.0
2018	URM	129,984	18,607	14.3

2018 URG Degrees, All Institutions, Figure 9

	AWW	URM
Minimum	0.00	0.00
Lower Quartile	9.10	6.00
Median	13.15	10.40
Upper Quartile	17.40	17.55
Maximum	29.40	34.70

2018 AWW Degrees, by Institution Type, Figure 10

	Baccalaureate College	Master's College & University	Doctoral University
Minimum	0.0	0.00	0.00
Lower Quartile	7.3	5.15	10.50
Median	13.6	9.80	13.95
Upper Quartile	18.8	14.65	18.30
Maximum	35.0	28.70	28.80

2018 URM Degrees, by Institution Type, Figure 10

	Baccalaureate College	Master's College & University	Doctoral University
Minimum	0.0	0.00	0.0
Lower Quartile	2.9	4.85	6.6
Median	6.1	10.70	10.7
Upper Quartile	10.6	24.60	17.3
Maximum	19.3	52.90	33.2

2018 AWW Degrees, by Institution Size, Figure 11

	Small	Medium	Large
Minimum	0.00	0.0	0.0
Lower Quartile	6.70	7.0	9.5
Median	12.40	12.4	13.6
Upper Quartile	17.45	18.5	17.2
Maximum	32.00	33.5	27.5

2018 URM Degrees, by Institution Size, Figure 11

	Small	Medium	Large
Minimum	0.00	0.0	0.0
Lower Quartile	2.90	6.1	6.4
Median	7.35	10.7	10.7
Upper Quartile	13.25	19.0	17.9
Maximum	28.00	37.5	34.7

2018 AWW Degrees, by BEA Region, Figure 12

	Far West	Great Lakes	Mid East	New England	Plains	Rocky Mountains	Southeast	Southwest
Minimum	0.00	0.00	0.00	0.0	6.80	0.0	0.00	0.0
Lower Quartile	8.50	9.15	10.75	12.0	11.70	7.8	7.95	6.8
Median	11.75	12.55	15.55	16.2	13.75	11.2	13.50	11.1
Upper Quartile	16.00	16.30	20.15	21.2	16.75	16.7	16.95	15.4
Maximum	25.20	25.70	32.40	33.8	23.10	23.0	25.50	27.5

2018 URM Degrees, by BEA Region, Figure 12

	Far West	Great Lakes	Mid East	New England	Plains	Rocky Mountains	Southeast	Southwest
Minimum	0.00	0.00	0.00	0.0	0.00	0.0	0.0	0.0
Lower Quartile	10.30	3.65	6.70	5.0	4.45	3.3	7.6	14.9
Median	16.25	5.80	10.40	9.4	6.40	6.6	11.7	20.3
Upper Quartile	25.20	8.55	15.15	14.4	8.20	9.6	23.5	33.9
Maximum	47.50	15.10	25.70	21.9	13.00	18.0	39.0	60.4

Percentage of URG Faculty, All Institutions 2016-2018, Figure 13

Year	Underrepresented Group	Total	URG Total	Percentage
2016	AWW	27,263	3,587	13.2
2017	AWW	26,902	3,696	13.7
2018	AWW	26,823	3,815	14.2
2016	URM	27,263	1,758	6.4
2017	URM	26,902	1,724	6.4
2018	URM	26,823	1,747	6.5

2018 URG Faculty, All Institutions, Figure 14

	AWW	URM
Minimum	0.0	0.0
Lower Quartile	9.7	2.5
Median	13.6	5.0
Upper Quartile	17.8	7.6
Maximum	29.8	15.1

2018 AWW Faculty, by Institution Type, Figure 15

	Baccalaureate College	Master's College & University	Doctoral University
Minimum	0.0	0.0	1.50
Lower Quartile	4.6	8.3	10.00
Median	14.3	15.0	13.25
Upper Quartile	22.2	21.5	16.20
Maximum	35.0	40.0	25.50

2018 URM Faculty, by Institution Type, Figure 15

	Baccalaureate College	Master's College & University	Doctoral University
Minimum	0.00	0.0	0.0
Lower Quartile	0.00	0.0	3.3
Median	3.75	4.5	5.2
Upper Quartile	5.90	9.1	7.2
Maximum	14.30	22.7	13.0

2018 AWW Faculty, by Institution Size, Figure 16

	Small	Medium	Large
Minimum	0.00	0.0	0.0
Lower Quartile	4.65	10.2	9.6
Median	14.30	14.3	13.2
Upper Quartile	20.25	21.7	16.2
Maximum	35.00	38.9	25.5

2018 URM Faculty, by Institution Size, Figure 16

	Small	Medium	Large
Minimum	0.0	0.0	0.0
Lower Quartile	0.0	0.0	3.3
Median	3.7	4.8	5.3
Upper Quartile	8.0	9.1	7.3
Maximum	20.0	21.1	13.3

2018 AWW Faculty, by BEA Region, Figure 17

	Far West	Great Lakes	Mid East	New England	Plains	Rocky Mountains	Southeast	Southwest
Minimum	0.00	0.0	4.00	0.00	8.1	0.0	0.00	0.00
Lower Quartile	8.30	10.0	13.35	12.30	11.9	7.7	8.55	7.85
Median	14.25	13.6	16.20	16.00	13.8	10.9	12.00	10.40
Upper Quartile	20.85	17.1	20.75	21.25	18.0	18.6	14.55	13.50
Maximum	39.10	25.0	30.00	29.40	26.9	33.3	23.10	19.80

2018 URM Faculty, by BEA Region, Figure 17

	Far West	Great Lakes	Mid East	New England	Plains	Rocky Mountains	Southeast	Southwest
Minimum	0.00	0.0	0.00	0.00	0.0	0.0	0.00	0.0
Lower Quartile	2.30	0.7	2.60	0.00	0.8	1.2	4.20	4.5
Median	4.45	4.2	4.80	4.45	3.8	2.7	6.20	6.8
Upper Quartile	8.60	6.3	7.65	6.45	5.6	5.1	9.15	12.4
Maximum	17.40	13.3	14.40	14.30	7.7	9.5	15.60	22.2

Count by Institution Type

Type	(n)
Baccalaureate College	25
Doctoral University	200
Master's College & University	71

Count by Institution Size

Size	(n)
Large	180
Medium	88
Small	28

Count by Region

Region	(n)
Far West Region	48
Great Lakes Region	49
Mid East Region	53
New England Region	27
Plains Region	17
Rocky Mountains Region	16
Southeast Region	60
Southwest Region	26