



UNIVERSITY OF DELAWARE
ADVANCE INSTITUTE

TOTAL NUMBER OF PHD COMPLETIONS

% WOMEN

AND

% DOMESTIC UNDER-REPRESENTED MINORITIES

2013-15, 2015-17 & 2017-20

FOR UD AND TEN COMPARATOR INSTITUTIONS

COLLEGE OF ENGINEERING.

With IPEDS data obtained from UD Office of Institutional Research and Effectiveness (IRE) for PhD completions and corresponding proportion of males, females and domestic under-represented minorities (Dom URMs)[†] over the periods

- i) academic years ending June 2013, 2014 and 2015
- ii) academic years ending June 2015, 2016 and 2017 and
- iii) academic years ending June 2017, 2018, 2019 and 2020

we looked at UD's performance alongside that of ten (10) comparator institutions.

The institutions used for comparison are selected institutions which UD might see as competitors or aspirants, and are shown in Table 1, with their corresponding U.S. News Best National Universities ranking.

Institution	2022 U.S. News Best National Universities Ranking
Brown University	14
Clemson University	75
Pennsylvania State University	63
Purdue University – Main Campus	49
Rutgers University - New Brunswick	63
University of Maryland - College Park	59
University of Massachusetts – Amherst	68
University of Michigan - Ann Arbor	23
University of North Carolina – Chapel Hill	28
Virginia Polytechnic Institute & State University (VPI, Virginia Tech)	75
University of Delaware	93

Table 1. UD and Comparator Institutions and their Ranking - <https://www.usnews.com/best-colleges/rankings/national-universities>
[†] Under-represented Minorities (URM) = Black, Hispanic, Native American Indian, Hawaiian or Other Pacific Islander

Assessment was done for College of Arts & Sciences (CAS Nat Sci), College of Engineering (COE) and College of Earth, Ocean and Environment (CEOE).

Along with showing comparator institutions which are producing high numbers of PhD graduates in particular research areas, the report highlights where women and domestic URM students are being trained, and could be useful in various ways:

- As a recruitment tool, as we seek to diversify our faculty
- For individual departments to get a sense of where they stand with respect to the number and diversity of their PhD recipients, and how that compares with select other programs.

The information may also be useful to departments doing their Academic Program Reviews.

COLLEGE OF ENGINEERING (COE)

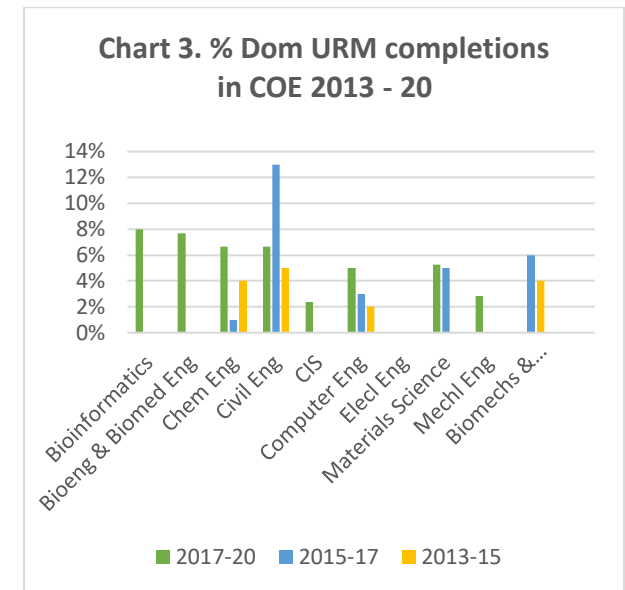
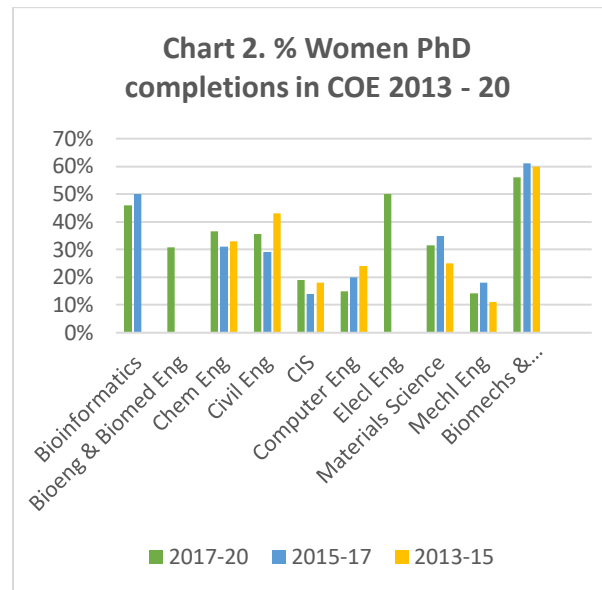
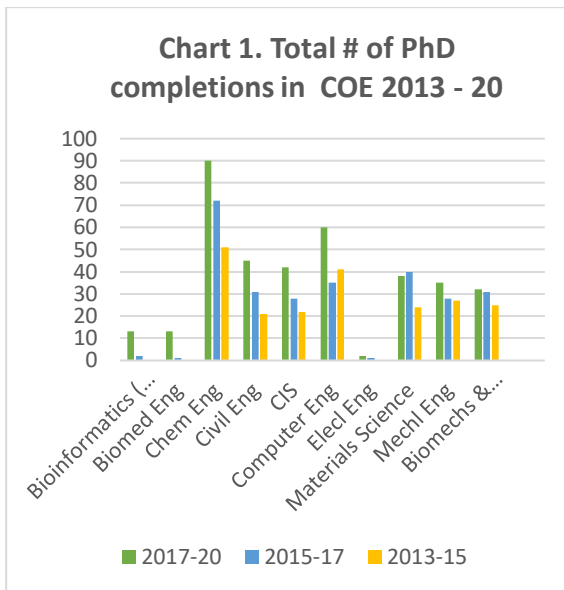
Over the periods 2013-2015, 2015-2017 and 2017-20, PhD completions in UD COE were as shown in Table 2. Total number of PhD graduates in the College of Engineering has risen steadily over the three periods, from 211 graduates in 2013-15 to 370 in 2017-20. [Note that the first two periods under consideration span three academic years each whereas the most recent period spans four years, the last of which was affected by COVID-19.] Since 2015, there have also been PhD completions in Bioinformatics and Biomedical Engineering.

As in 2015-17, % women graduates for 2017-20 was 30%, up from 22% for 2013-15. Over these three corresponding periods, there was a gradual rise in % domestic URM students, with 2.4% for 2013-15, 3.7 % for 2015-17, and 5% (2017-20).

CIP Code	Research Area	Total # 2017-20	Total # 2015-17	Total # 2013-15
11.0101	Computer & Information Sciences (CIS)	42	28	22
14.0501	Biomedical Engineering	13	1	---
14.0701	Chemical Engineering	90	72	51
14.0801	Civil Engineering	45	31	21
14.0901	Computer Engineering	60	35	41
14.1001	Electrical Engineering	2	1	---
14.1901	Mechanical Engineering	35	28	27
15.1599 then 26.0913	Biomechanics	32	31	25
26.1103	Bioinformatics	13	2	---
40.1001	Materials Science	38	40	24
		370	269	211

Table 2. Total Number of PhD completions in UD COE, 2017-20, 2015-17 and 2013-15, by Research Area

Charts 1 – 3 show total number of PhD graduates, % women and % domestic URMs respectively, in each research area over the three periods 2013-15, 2015-17 and 2017-20. There are many areas and periods where there have been no Domestic URM PhD graduates in COE.

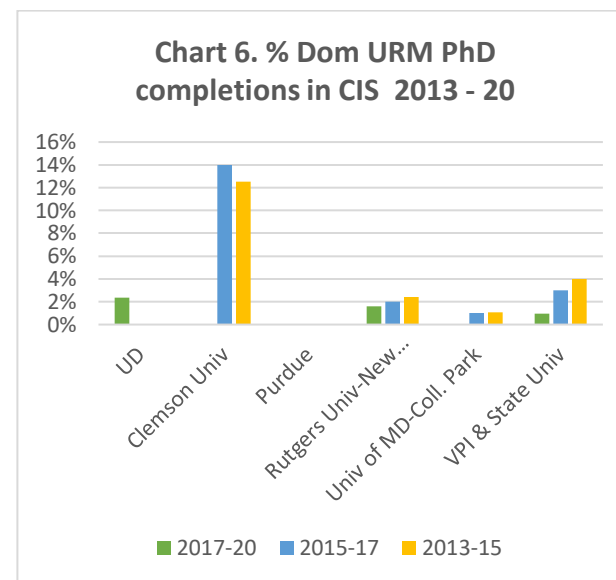
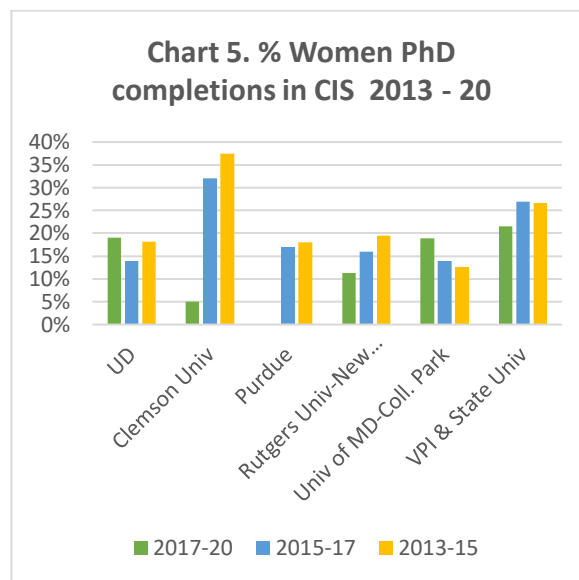
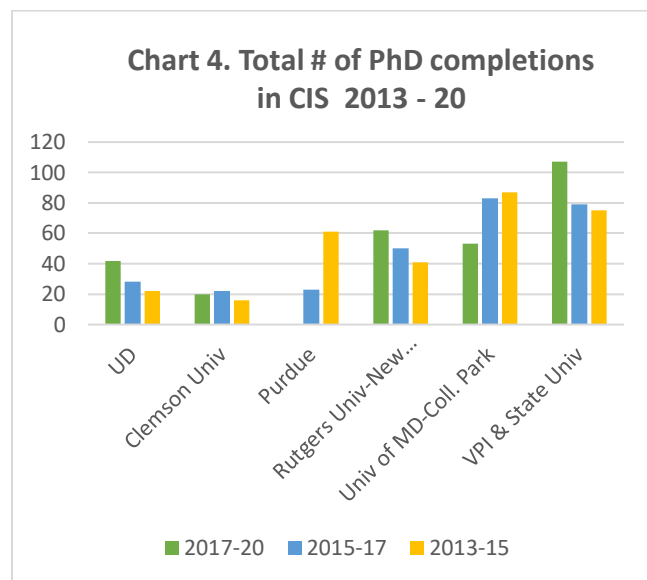


A closer look at the different areas of Engineering and how UD COE is performing alongside our comparator institutions with regards to women and domestic URM graduates is given below (see Charts 4 – 24 and Tables 3 and 4). Research areas at UD where there were < 3 graduates in 2017 – 20 have not been included in this report. Not every comparator institution had PhD completions in the same research area (with the same CIP Code) as UD. The comparison was done for UD and the institutions listed, using the CIP code of the degree. **UD data is shown at the first point on each chart.**

[NOTE: Penn State 2017-2020 data includes its 2020 numbers in which all its campuses were aggregated together whereas the Penn State data for the previous periods—2013-15 and 2015-17-- represent data only from its Main campus.]

Computer and Information Sciences (CIS), CIP Code 11.0101

Among the institutions being assessed, University of Maryland and Virginia Tech had the largest number of PhD completions in CIS over the period, with about 25% of the Virginia Tech class over the years being women. URM percentages were highest at Clemson (~13%) for the first two periods but fell to 0% over 2017-20. At UD, there were domestic URM graduates in CIS only over the period 2017-20 (2%), and % women graduates hovered around 17% over the entire period under consideration (Charts 4-6).



Bioinformatics, CIP Code 26.1103

UD had no PhD completions in Bioinformatics over 2013-15, two graduates over 2015-17 and thirteen (13) over 2017-20. Over the more recent two periods, % domestic URM graduates has been highest at UNC Chapel Hill (9% for 2015-17, 11% for 2017-20) and % women graduates there has fallen from 55% to 36% over the periods (Charts 7-9).

Chart 7. Total # of PhD completions in Bioinformatics 2013 - 20

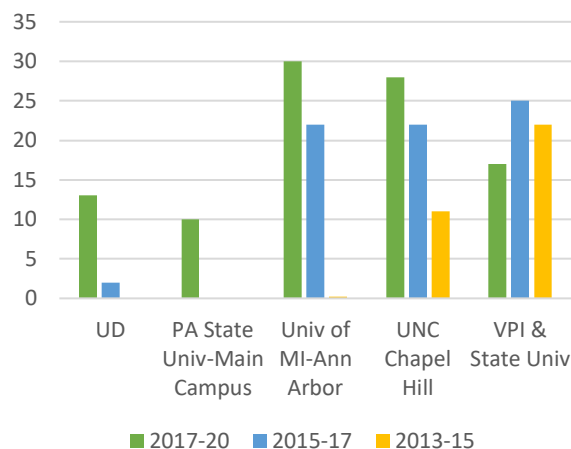


Chart 8. % Women completions in Bioinformatics 2013 - 20

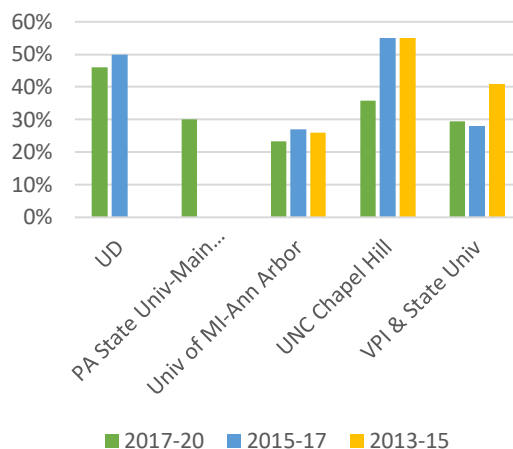
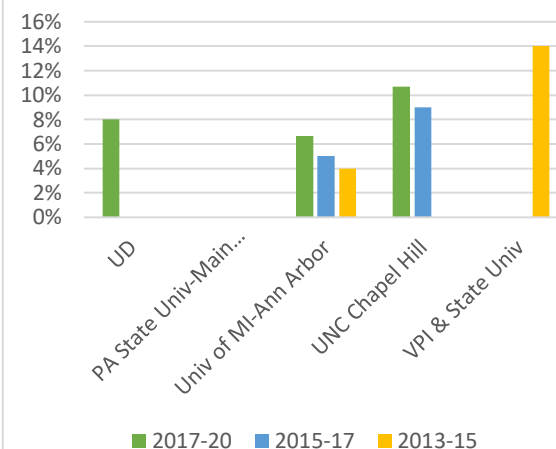


Chart 9. % Dom URM completions in Bioinformatics 2013 - 20



Biomedical Engineering, CIP Code 14.0501

Over the periods being considered, UD had one PhD graduate in Biomedical Engineering for 2015-17, and 13 over 2017-20. University of Michigan consistently had the highest number of graduates and Rutgers consistently had >10% domestic URM graduates. Over 2017-20, % women graduates ranged from 27% at UNC Chapel Hill to 51% at Virginia Tech. Over this period, UD had 31% female graduates and 8% domestic URM graduates.

Chart 10. Total # PhD completions in Biomed. Eng. 2013 - 20

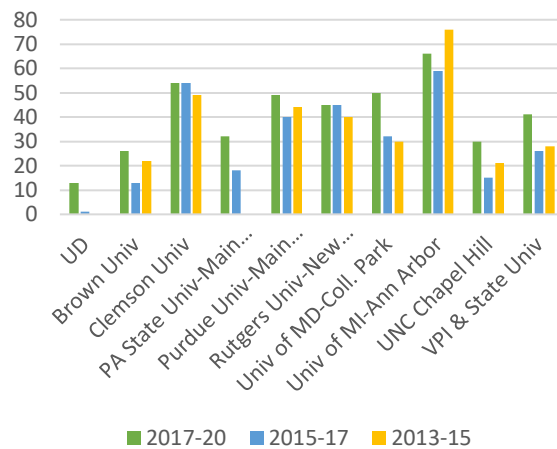


Chart 11. % Women PhD completions in Biomed. Eng. 2013 - 20

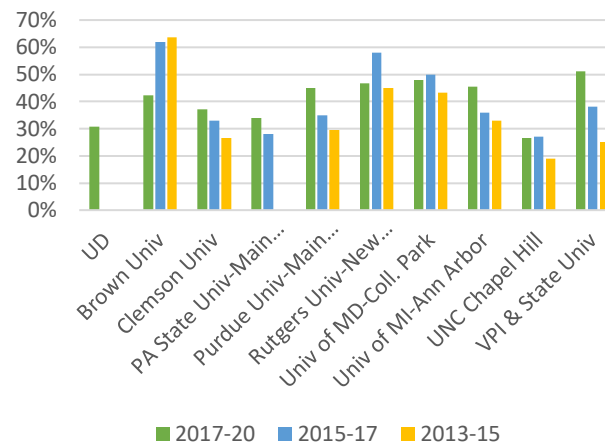
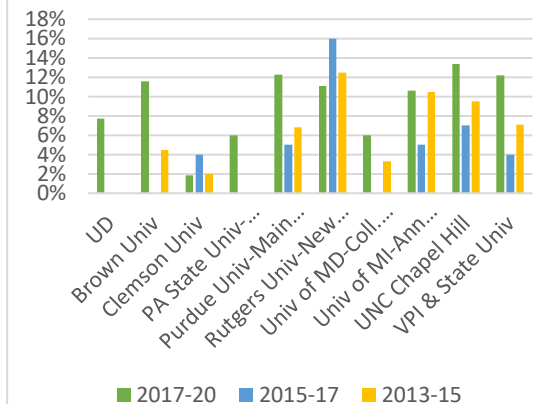
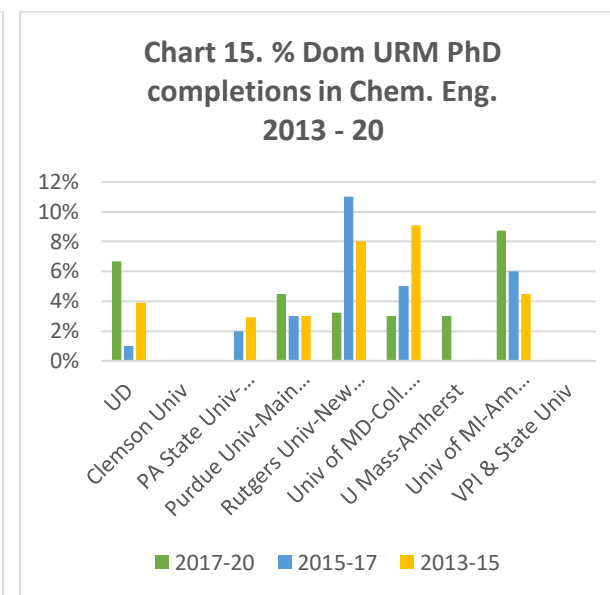
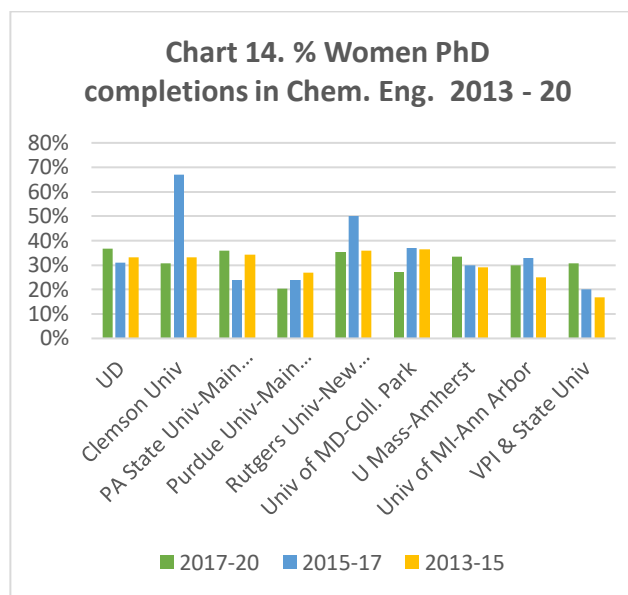
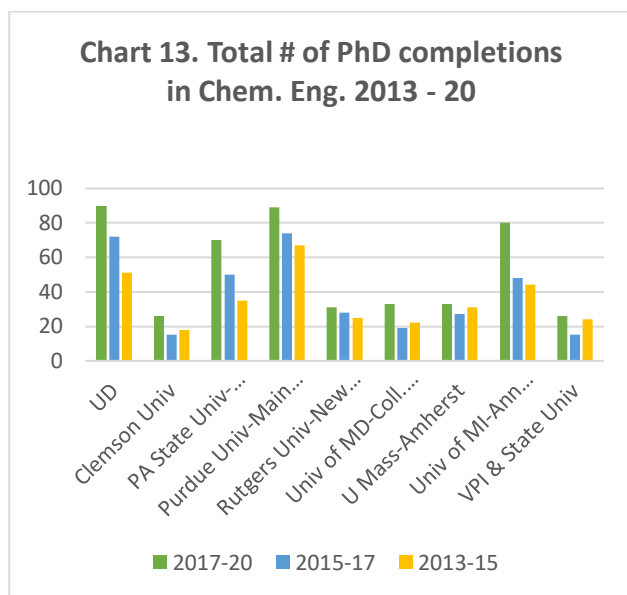


Chart 12. % Dom URM PhD completions in Biomed. Eng. 2013 - 20



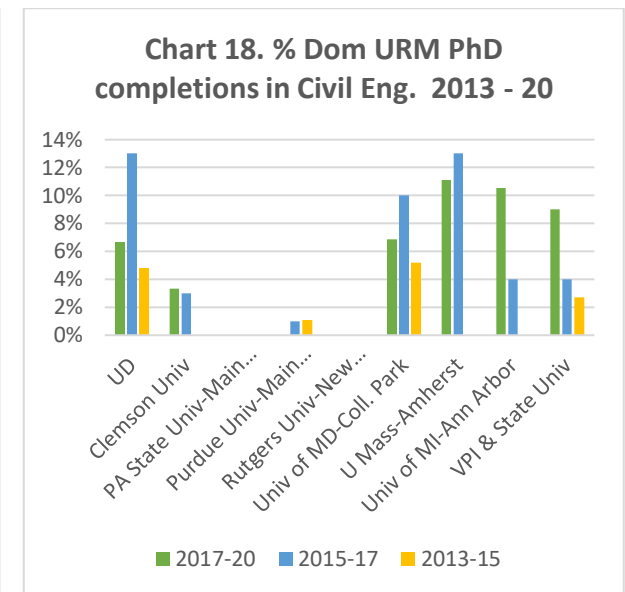
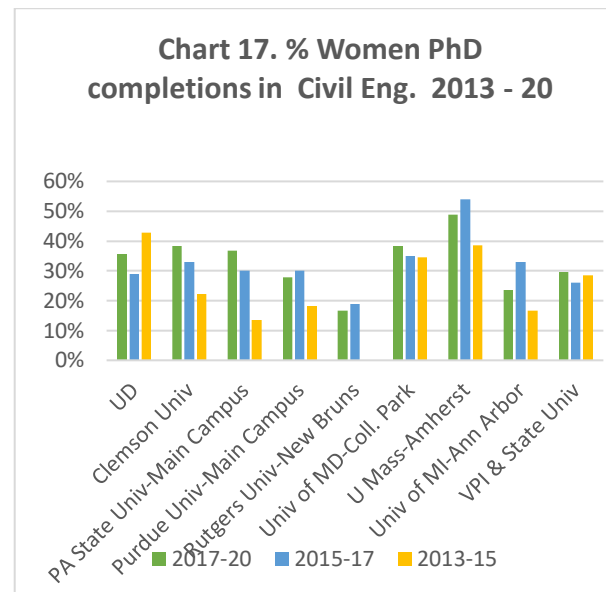
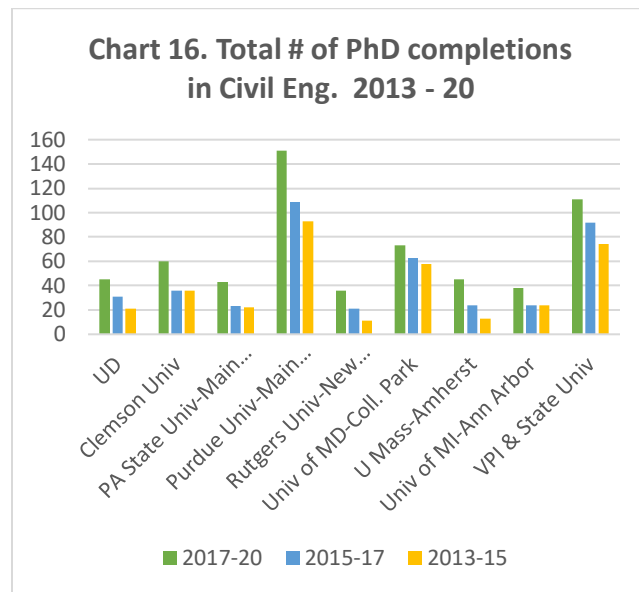
Chemical Engineering, CIP Code 14.0701

UD and Purdue had the largest numbers of PhD completions in all three periods with UD % female graduates ranging from 31% - 37% and Purdue ~25%. For the period 2017-20 domestic URM graduates ranged from 0% - 9% with Univ of Michigan having the highest percentage in this group (Charts 13-15).



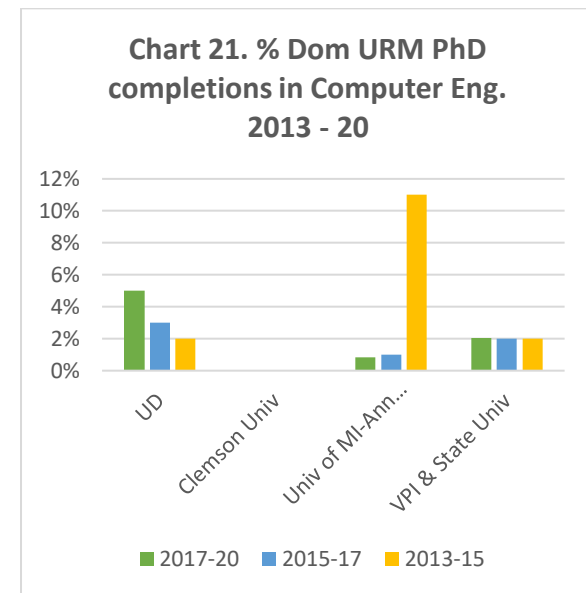
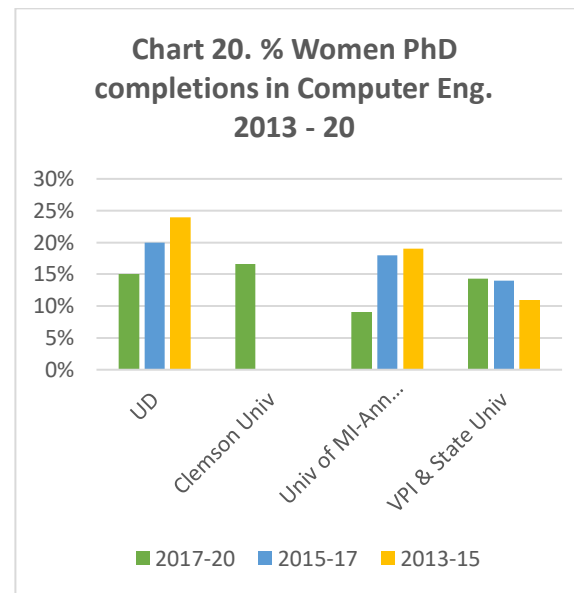
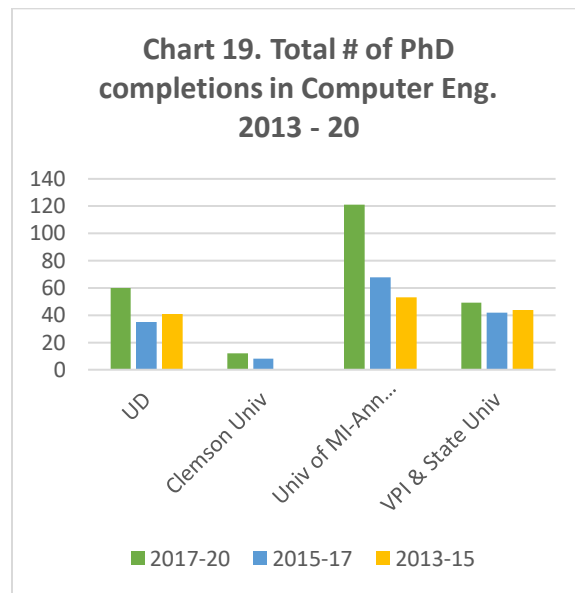
Civil Engineering, CIP Code 14.0801

Purdue had the largest number of PhD completions in Civil Engineering over all three periods (increasing from 93 to 109 to 151 over time), with Virginia Tech and Univ of Maryland having the next largest numbers. For 2017-20, % women ranged from 17% at Rutgers to 49% at UMass Amherst. For 2017-20, domestic URM proportion was highest at UMass-Amherst, Univ of Michigan and Virginia Tech (11%, 11% and 9% respectively), with UD at 7% domestic URM (Charts 16-18).



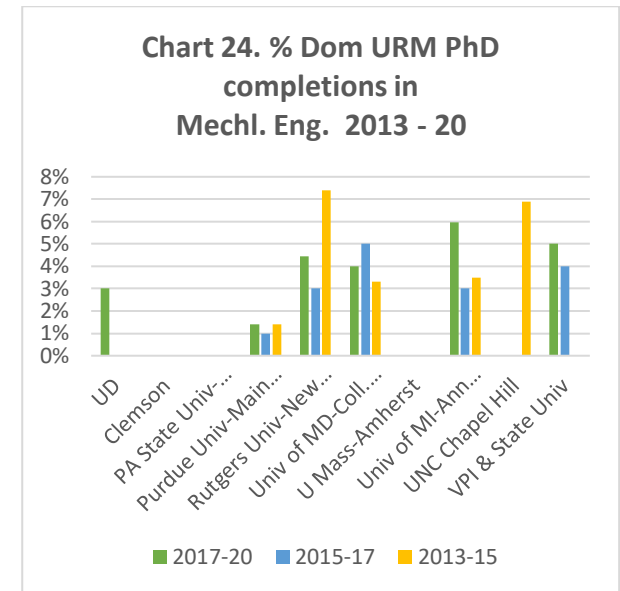
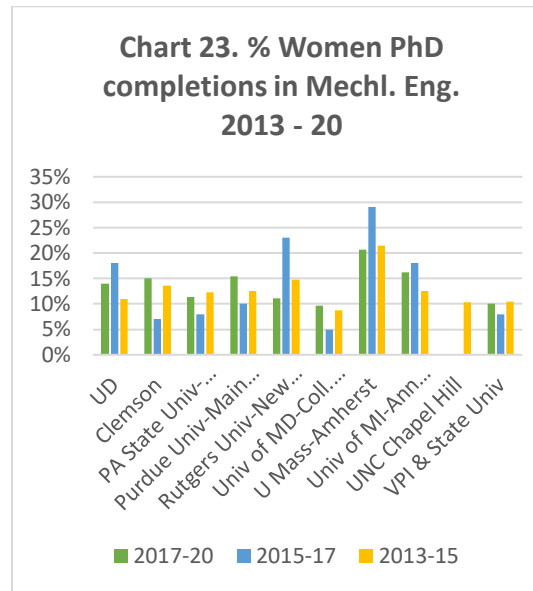
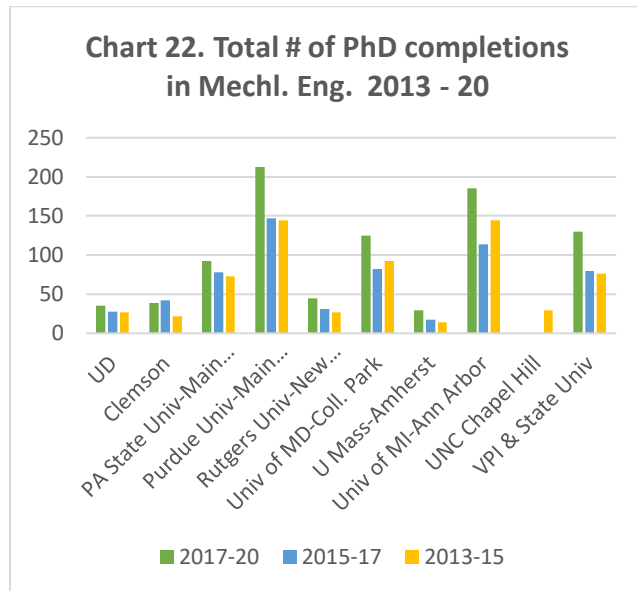
Computer Engineering, CIP Code 14.0901

Three of our comparator institutions had PhD graduates in this program over the periods being considered. University of Michigan had most completions over each period with a high of 121 in 2017-20. For 2017-20, % women ranged from 9% (Univ of Michigan) to 17% (Clemson) with UD at 15%. Proportion of domestic URMs for 2017-20 ranged from 0% (Clemson) to 5% (UD). See Charts 19-21.



Mechanical Engineering, CIP Code 14.1901

Purdue and Univ of Michigan had highest numbers of PhD completions over each period with numbers at 213 and 185 respectively for the period 2017-20, and % women graduates at 15% and 16% respectively. For 2017-20, % domestic URM students was 1% at Purdue and 6% at University of Michigan. At UD, total number of PhD completions in Mechanical Engineering increased from 27 to 35 over the periods, with 14% women, and 3% domestic URM students for 2017-20 (Charts 22-24). There were no completions from UNC Chapel Hill over the periods 2015-17 and 2017-20.



Biomechanics, CIP Code 15.1599 then 26.0913

Only one of our comparator institutions, Clemson University, had PhD graduates in this program over the periods under consideration. The data are shown in Table 3.

	2017 – 2020		2015 – 2017		2013 - 2015	
	UD	Clemson	UD	Clemson	UD	Clemson
Total # of graduates	32	11	31	6	25	--
% Women graduates	56%	82%	61%	50%	60%	--
% Dom URM graduates	0%	0%	6%	0%	4%	--

Table 3. Total # of PhD completions, % women and % Dom. URM in Biomechanics & Movement Sci at UD and Comparator Institutions for 2017-20, 2015-17 and 2013-15.

Materials Science, CIP Code 40.1001

Only two of our comparator institutions had PhD graduates in this program over the periods under consideration. UNC Chapel Hill had graduates in 2017-20 and 2015-2017. Penn State had 2 graduates in 2015-17. UD had most graduates, with % women ranging from 25 – 35% and % domestic URM from 0 – 5%. The data are shown in Table 4.

	2017 – 2020			2015 – 2017			2013 - 2015		
	UD	UNC Chapel Hill	Penn State	UD	UNC Chapel Hill	Penn State	UD	UNC Chapel Hill	Penn State
Total # of graduates	38	17	--	40	12	2	24	--	--
% Women graduates	32%	29%	--	35%	42%	100%	25%	--	--
% Dom URM graduates	5%	12%	--	5%	17%	0%	0%	--	--

Table 4. Total # of PhD completions, % women and % Dom. URM in Materials Science at UD and Comparator Institutions for 2017-20, 2015-17 and 2013-15.