

SUPPLEMENTARY MATERIALS FOR

ASSESSING DIVERSITY IN US OCEAN SCIENCE INSTITUTIONS

INSIGHTS FROM FIFTEEN YEARS (2007–2021) OF OSER DATA

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TABLE S1. Number of institutions responding to the graduate and faculty survey from 2007 to 2021.

Number of Institutions responding to the surveys

Year	Graduate	Faculty
2007-2008	21	34
2008-2009	20	14
2009-2010	27	17
2010-2011	29	24
2011-2012	34	29
2012-2013	31	30
2013-2014	30	23
2014-2015	37	37
2015-2016	37	41
2016-2017	19	20
2017-2018	25	30
2018-2019	20	20
2019-2020	18	18
2020-2021	20	21
Average	26.4	25.6

TABLE S2. Student recruitment data for US citizens. Green cells indicate a significant uptrend. Orange cells indicate a significant downtrend.

STUDENT RECRUITMENT OF U.S. CITIZENS									
with 2020					without 2020				
Total NW Races	n (per institution)	% of total	SD	p value	Total NW Races	n (per institution)	% of total	SD	p value
App	10.98	18.68%	1.31	0.792	App	10.84	17.22%	1.3	0.776
Offers	3.34	17.33%	0.55	0.015	Offers	3.26	15.73%	0.5	0.06
New Enroll	3.29	19.75%	1.23	0.022	New Enroll	2.94	17.01%	0.54	0.052
Applications	n (per institution)	% of total	SD	p value	Applications	n (per institution)	% of total	SD	p value
Total U.S. Citizens	58.79	12.2	12.2	0.002	Total U.S. Citizens	59.7	12.58	12.58	0.023
White	40.93	69.62%	9.706	0.009	White	41.755	66.36%	9.915	0.015
NW (all races below)	10.98	18.68%	1.31	0.792	NW (all races below)	14.065	17.22%	1.3	0.776
American Indian/Native Alaskan	0.45	0.76%	0.2	0.004	American Indian/Native Alaskan	0.48	0.76%	0.19	0.016
Asian American	4.24	7.21%	0.5	0.976	Asian American	4.22	6.70%	0.52	0.772
Black/African American	1.15	1.96%	0.3	0.891	Black/African American	1.13	1.80%	0.31	0.87
Hispanic/Latino (one or more races) -	3.74	6.37%	0.62	0.705	Hispanic/Latino (one or more races) -	3.7	5.88%	0.64	0.417
Native Hawaiian/Other Pacific Islander	0.22	0.37%	0.12	0.214	Native Hawaiian/Other Pacific Islander	0.2	0.32%	0.12	0.452
Non-Hispanic/Latino (more than one race)	1.18	2.01%	0.63	0.142	Non-Hispanic/Latino (more than one race)	1.11	1.77%	0.62	0.297
Offers	n (per institution)	% of total	SD	p value	Offers	n (per institution)	% of total	SD	p value
Total U.S. Citizens	19.29	3.9	3.9	0.062	Total U.S. Citizens	19.61	4	4	0.104
White	13.64	70.72%	3.42	0.02	White	14.00	67.57%	3.43	0.045
NW (all races below)	3.34	17.33%	0.55	0.015	NW (all races below)	4.36	15.73%	0.50	0.06
American Indian/Native Alaskan	0.12	0.60%	0.07	0.45	American Indian/Native Alaskan	0.1	0.32%	0.05	0.569
Asian American	1.15	5.96%	0.25	0.614	Asian American	1.17	3.85%	0.26	0.823
Black/African American	0.42	2.15%	0.19	0.292	Black/African American	0.41	1.36%	0.2	0.279
Hispanic/Latino (one or more races) -	1.18	6.11%	0.27	0.072	Hispanic/Latino (one or more races) -	1.13	3.71%	0.23	0.072
Native Hawaiian/Other Pacific Islander	0.12	0.60%	0.11	0.108	Native Hawaiian/Other Pacific Islander	0.11	0.36%	0.11	0.154
Non-Hispanic/Latino (more than one race)	0.37	1.92%	0.18	0.007	Non-Hispanic/Latino (more than one race)	0.35	1.14%	0.18	0.023
New Enrollments	n (per institution)	% of total	SD	p value	New Enrollments	n (per institution)	% of total	SD	p value
Total U.S. Citizens	16.65	3.32	3.32	0.741	Total U.S. Citizens	16.22	3.21	3.21	0.23
White	11.87	71.27%	3.057	0.226	White	11.76	68.12%	3.22	0.11
NW (all races below)	3.29	19.75%	1.23	0.022	NW (all races below)	3.97	17.01%	0.54	0.052
American Indian/Native Alaskan	0.12	0.71%	0.08	0.643	American Indian/Native Alaskan	0.11	0.61%	0.1	0.074
Asian American	1.07	6.43%	0.39	0.154	Asian American	1.02	5.89%	0.4	0.377
Black/African American	0.41	2.44%	0.21	0.11	Black/African American	0.37	2.16%	0.2	0.322
Hispanic/Latino (one or more races) -	1.05	6.29%	0.29	0.187	Hispanic/Latino (one or more races) -	0.98	5.68%	0.2	0.752
Native Hawaiian/Other Pacific Islander	0.19	1.15%	0.21	0.825	Native Hawaiian/Other Pacific Islander	0.19	1.08%	0.2	0.9
Non-Hispanic/Latino (more than one race)	0.46	2.74%	0.6	0.017	Non-Hispanic/Latino (more than one race)	0.28	1.59%	0.2	< 0.0001

TABLE S3. Average number of US citizens by racial groupings and by gender across the three focus areas.

	Student Recruitment								
	Applications			Offers			New Enrollments		
	Male	Female	Unreported	Male	Female	Unreported	Male	Female	Unreported
American Indian/Alaska Native	0.05	0.24	0	0.14	0.29	0	0	0.1	0.29
Asian-American	1.9	5.14	0.14	0.38	1.24	0	0.43	0.76	1.29
Black/African American	0.57	1.48	0	0.14	0.48	0	0.14	0.19	0.71
Hispanic/Latino	2.29	4.29	0.14	1.19	1.43	0.05	0.57	0.76	1.24
Native Hawaiian/Other Pacific Islander	0.29	0.29	0	0.14	0.14	0	0.05	0.14	0.19
Non-Hispanic/Latino	1.19	1.71	0	0.33	0.62	0	1.67	1.67	0
White	20.33	32.05	0.57	6.14	9.62	0.19	5.43	7.29	6.29
Ethnicity unknown	3.38	3.95	0.43	1.38	1.48	0.14	0.52	0.9	0.38
NW Total	6.29	13.15		2.32	4.2		2.86	3.62	

	Student Retention								
	In Residence			Master's			PhD		
	Male	Female	Unreported	Male	Female	Unreported	Male	Female	Unreported
American Indian/Alaska Native	0.05	0.29	0.05	0	0	0	0	0	0
Asian-American	1.29	2.38	0	0.19	0.33	0	0.29	0.05	0
Black/African American	0.38	0.95	0	0.05	0.1	0	0.05	0	0
Hispanic/Latino	1.43	2.86	0	0.1	0.14	0	0.33	0.33	0
Native Hawaiian/Other Pacific Islander	0.24	0.33	0	0	0.1	0	0	0	0
Non-Hispanic/Latino	0.76	1.57	0	0	0.24	0	0	0.1	0
White	19.95	23.86	0	2.76	4.19	0.05	1.62	2.14	0
Ethnicity unknown	1.48	3.19	0.14	0	0.1	0	0.05	0.05	0
NW Total	4.15	8.38		0.34	0.91		0.67	0.48	

	Academic Positions		
	Male	Female	Unreported
American Indian/Alaska Native	0	0.05	0.05
Asian-American	1.77	0.27	0.23
Black/African American	0.14	0.14	0
Hispanic/Latino	0.41	0.27	0.05
Native Hawaiian/Other Pacific Islander	0	0	0
Non-Hispanic/Latino	0	0.05	0.05
White	12.64	5.23	1.86
Ethnicity unknown	2.23	1.18	0.18
NW Total	2.32	0.78	

TABLE S4. Total US citizens and percentage of non-White US citizens by subdiscipline across the three focal areas for 2020–2021.

	Applications		Offers		New Enrollments		In Residence		Master's		PhD		Academic Positions	
	Total	NW %	Total	NW %	Total	NW %	Total	NW %	Total	NW %	Total	NW %	Total	NW %
Marine Biology	19.43	24.8%	6.95	30.8%	11.00	24.7%	20.29	24.9%	2.62	23.6%	1.67	25.7%	5.4	8.5%
Marine Chemistry	4.19	25.0%	1.81	60.5%	4.33	34.1%	5.24	21.8%	0.48	20.0%	0.62	30.8%	2.2	12.2%
Marine Geology	2.10	25.0%	1.76	21.6%	3.52	20.3%	4.24	19.1%	0.38	25.0%	0.52	45.5%	4.1	7.8%
Physical Oceanography	5.00	33.3%	2.38	24.0%	3.05	34.4%	4.76	19.0%	0.81	23.5%	0.62	15.4%	2.5	16.4%
Ocean Engineering	1.76	2.7%	1.76	5.4%	2.90	19.7%	2.00	7.1%	0.62	7.7%	0.29	16.7%	1.3	13.8%
Marine Policy	1.52	28.1%	1.38	17.2%	1.05	18.2%	2.05	7.0%	0.95	15.0%	0.29	16.7%	0.3	0.0%
Other Ocean Sciences	10.10	12.3%	4.71	19.2%	7.90	23.5%	12.95	9.9%	1.90	7.5%	1.00	23.8%	5.5	13.9%

TABLE S5. Total US citizens by racial groupings by subdiscipline across the three focal areas for 2020–2021.

Student Recruitment										
Applications	American Indian / Alaska Native	Asian American	Black/African American	Hispanic/Latino	Native Hawaiian / Other Pacific Islander	Non-Hispanic/Latino	Non-White (Column B + G)	White	Ethnicity unknown or not stated	TOTAL
Marine Biology	0.05	1.57	0.38	1.29	0.24	1.29	4.81	13.33	1.29	19.43
Marine Chemistry	0	0.48	0.1	0.38	0.1	0	1.05	3.1	0.05	4.19
Marine Geology	0	0.05	0.05	0.19	0	0.24	0.52	1.38	0.19	2.1
Physical Oceanography	0	0.24	0.14	0.62	0.33	0.33	1.67	3.1	0.24	5
Ocean Engineering	0	0	0	0	0	0.05	0.05	0.67	1.05	1.76
Marine Policy	0	0.19	0	0.05	0	0.19	0.43	1.05	0.05	1.52
Other Ocean Sciences	0.05	0.19	0.19	0.19	0.05	0.57	1.24	7.76	1.1	10.1
Offers	American Indian / Alaska Native	Asian American	Black/African American	Hispanic/Latino	Native Hawaiian / Other Pacific Islander	Non-Hispanic/Latino	Non-White (Column B + G)	White	Ethnicity unknown or not stated	TOTAL
Marine Biology	0.05	0.71	0.19	0.76	0.19	0.24	2.14	3.9	0.9	6.95
Marine Chemistry	0.05	0.14	0	0.43	0.48	0	1.1	0.67	0.05	1.81
Marine Geology	0.14	0.1	0.05	0.1	0	0	0.38	1.14	0.24	1.76
Physical Oceanography	0.05	0.14	0.14	0.24	0	0	0.57	1.62	0.19	2.38
Ocean Engineering	0	0.05	0	0	0	0.05	0.1	0.71	0.95	1.76
Marine Policy	0	0.05	0	0.05	0	0.14	0.24	0.86	0.29	1.38
Other Ocean Sciences	0	0.19	0.1	0.24	0.05	0.33	0.9	3.67	0.14	4.71
New Enrollment	American Indian / Alaska Native	Asian American	Black/African American	Hispanic/Latino	Native Hawaiian / Other Pacific Islander	Non-Hispanic/Latino	Non-White (Column B + G)	White	Ethnicity unknown or not stated	TOTAL
Marine Biology	0.05	1	0.38	0.81	0.14	0.33	2.71	7.67	0.62	11
Marine Chemistry	0	0.38	0.14	0.57	0.1	0.29	1.48	2.71	0.14	4.33
Marine Geology	0	0.29	0.1	0.14	0.05	0.14	0.71	2.71	0.1	3.52
Physical Oceanography	0	0.33	0.19	0.38	0	0.14	1.05	1.81	0.19	3.05
Ocean Engineering	0	0.29	0.05	0.14	0	0.1	0.57	2.29	0.05	2.9
Marine Policy	0	0	0	0.14	0	0.05	0.19	0.57	0.29	1.05
Other Ocean Sciences	0	1.29	0.1	0.19	0.05	0.24	1.86	5.76	0.29	7.9
Student Retention										
In Residence	American Indian / Alaska Native	Asian American	Black/African American	Hispanic/Latino	Native Hawaiian / Other Pacific Islander	Non-Hispanic/Latino	Non-White (Column B + G)	White	Ethnicity unknown or not stated	TOTAL
Marine Biology	0.24	1.38	0.38	1.52	0.38	1.14	5.05	13.29	1.95	20.29
Marine Chemistry	0	0.33	0.24	0.43	0.1	0.05	1.14	3.76	0.33	5.24
Marine Geology	0	0.38	0.1	0.19	0.05	0.1	0.81	3.1	0.33	4.24
Physical Oceanography	0	0.24	0.14	0.52	0	0	0.9	3.33	0.52	4.76
Ocean Engineering	0	0.05	0.05	0.05	0	0	0.14	1.86	0	2
Marine Policy	0	0.05	0	0.1	0	0	0.14	1.1	0.81	2.05
Other Ocean Sciences	0.1	0.33	0.1	0.38	0	0.38	1.29	11.1	0.57	12.95
Master's	American Indian / Alaska Native	Asian American	Black/African American	Hispanic/Latino	Native Hawaiian / Other Pacific Islander	Non-Hispanic/Latino	Non-White (Column B + G)	White	Ethnicity unknown or not stated	TOTAL
Marine Biology	0	0.19	0.1	0.14	0.05	0.14	0.62	2	0	2.62
Marine Chemistry	0	0.1	0	0	0	0	0.1	0.38	0	0.48
Marine Geology	0	0.05	0	0	0.05	0	0.1	0.29	0	0.38
Physical Oceanography	0	0.14	0	0.05	0	0	0.19	0.62	0	0.81
Ocean Engineering	0	0.05	0	0	0	0	0.05	0.57	0	0.62
Marine Policy	0	0.1	0	0.05	0	0	0.14	0.81	0	0.95
Other Ocean Sciences	0	0.1	0	0	0	0.05	0.14	1.67	0.1	1.9
PhD	American Indian / Alaska Native	Asian American	Black/African American	Hispanic/Latino	Native Hawaiian / Other Pacific Islander	Non-Hispanic/Latino	Non-White (Column B + G)	White	Ethnicity unknown or not stated	TOTAL
Marine Biology	0	0.24	0	0.14	0	0.05	0.43	1.19	0.05	1.67
Marine Chemistry	0	0.1	0.05	0	0.05	0	0.19	0.43	0	0.62
Marine Geology	0	0.05	0	0.1	0.1	0	0.24	0.29	0	0.52
Physical Oceanography	0	0.05	0	0	0	0.05	0.1	0.52	0	0.62
Ocean Engineering	0	0.05	0	0	0	0	0.05	0.24	0	0.29
Marine Policy	0	0.05	0	0	0	0	0.05	0.24	0	0.29
Other Ocean Sciences	0	0.05	0	0.14	0.05	0	0.24	0.71	0.05	1
Academic Positions										
	American Indian / Alaska Native	Asian American	Black/African American	Hispanic/Latino	Native Hawaiian / Other Pacific Islander	Non-Hispanic/Latino	Non-White (Column B + G)	White	Ethnicity unknown or not stated	TOTAL
Marine Biology	0	0.05	0.14	0.27	0	0	0.45	4.18	0.73	5.36
Marine Chemistry	0.05	0.14	0.09	0	0	0	0.27	1.5	0.45	2.23
Marine Geology	0.05	0.18	0	0.09	0	0	0.32	3.73	0.05	4.09
Physical Oceanography	0	0.32	0.05	0.05	0	0	0.41	1.5	0.59	2.5
Ocean Engineering	0	0.18	0	0	0	0	0.18	1.09	0.05	1.32
Marine Policy	0	0	0	0	0	0	0	0.27	0	0.27
Other Ocean Sciences	0	0.55	0.09	0.09	0	0.05	0.77	4.32	0.45	5.55

TABLE S6. Student retention data for US citizens. Green cells indicate a significant uptrend. Orange cells indicate a significant downtrend.

STUDENT RETENTION OF U.S. CITIZENS					STUDENT RETENTION OF U.S. CITIZENS				
with 2020					without 2020				
Total NW Races	n (per institution)	% of total	SD	p value	Total NW Races	n (per institution)	% of total	SD	p value
In-residence	8.18	16.77%	1.29	0.684	In-residence	8.21	16.46%	1.37	0.732
Masters	1.04	13.43%	0.43	0.478	Masters	1.07	13.35%	0.44	0.645
PhD	0.74	17.16%	0.17	0.365	PhD	0.74	16.66%	0.18	0.312
In-Residence	n (per institution)	% of total	SD	p value	In-Residence	n (per institution)	% of total	SD	p value
Total U.S. Citizens	48.78		10.24	0.029	Total U.S. Citizens	46.25		10.26	0.057
White	35.55	72.89%	8.97	0.028	White	36.37	72.97%	9.11	0.054
NW (all races below)	8.18	16.77%	1.29	0.684	NW (all races below)	8.21	16.46%	1.37	0.732
American Indian/Native Alaskan	0.27	0.56%	0.10	0.052	American Indian/Native Alaskan	0.278	0.56%	0.109	0.052
Asian American	2.63	5.40%	0.55	0.226	Asian American	2.67	5.36%	0.564	0.329
Black/African American	0.92	1.88%	0.34	0.666	Black/African American	0.918	1.84%	0.362	0.675
Hispanic/Latino (one or more races) -	2.76	5.65%	0.45	0.577	Hispanic/Latino (one or more races) -	2.761	5.54%	0.475	0.584
Native Hawaiian/Other Pacific Islander	0.24	0.49%	0.24	0.334	Native Hawaiian/Other Pacific Islander	0.229	0.46%	0.254	0.43
Non-Hispanic/Latino (more than one race)	1.36	2.79%	0.77	0.55	Non-Hispanic/Latino (more than one race)	1.35	2.71%	0.814	0.564
Masters	n (per institution)	% of total	SD	p value	Masters	n (per institution)	% of total	SD	p value
Total U.S. Citizens	7.73		1.99	0.01	Total U.S. Citizens	7.62		1.95	0.024
White	5.92	76.50%	1.30	0.002	White	6.05	75.88%	1.30	0.005
NW (all races below)	1.04	13.43%	0.43	0.478	NW (all races below)	1.07	13.35%	0.44	0.645
American Indian/Native Alaskan	0.04	0.57%	0.04	0.14	American Indian/Native Alaskan	0.05	0.61%	0.04	0.314
Asian American	0.37	4.80%	0.09	0.89	Asian American	0.38	4.71%	0.09	0.642
Black/African American	0.10	1.33%	0.06	0.698	Black/African American	0.11	1.32%	0.06	0.568
Hispanic/Latino (one or more races) -	0.29	3.76%	0.14	0.311	Hispanic/Latino (one or more races) -	0.31	3.85%	0.14	0.592
Native Hawaiian/Other Pacific Islander	0.09	1.14%	0.23	0.3	Native Hawaiian/Other Pacific Islander	0.09	1.15%	0.24	0.286
Non-Hispanic/Latino (more than one race)	0.14	1.82%	0.08	0.306	Non-Hispanic/Latino (more than one race)	0.14	1.72%	0.08	0.3
PhD	n (per institution)	% of total	SD	p value	PhD	n (per institution)	% of total	SD	p value
Total U.S. Citizens	4.3		0.75	0.017	Total U.S. Citizens	4.22		0.66	0.067
White	3.24	75.39%	0.66	0.004	White	3.35	75.45%	0.61	0.018
NW (all races below)	0.74	17.16%	0.17	0.365	NW (all races below)	0.74	16.66%	0.18	0.312
American Indian/Native Alaskan	0.02	0.49%	0.03	0.198	American Indian/Native Alaskan	0.02	0.52%	0.03	0.319
Asian American	0.29	6.83%	0.12	0.63	Asian American	0.30	6.85%	0.12	0.314
Black/African American	0.06	1.44%	0.05	0.2	Black/African American	0.07	1.47%	0.05	0.314
Hispanic/Latino (one or more races) -	0.28	6.55%	0.09	0.082	Hispanic/Latino (one or more races) -	0.27	5.98%	0.07	0.343
Native Hawaiian/Other Pacific Islander	0.01	0.28%	0.02	0.664	Native Hawaiian/Other Pacific Islander	0.01	0.29%	0.02	0.872
Non-Hispanic/Latino (more than one race)	0.07	1.58%	0.06	0.338	Non-Hispanic/Latino (more than one race)	0.07	1.56%	0.07	0.25

TABLE S7. Academic positions data for US citizens. Green cells indicate a significant uptrend. Orange cells indicate a significant downtrend.

ACADEMIC POSITIONS FOR U.S. CITIZENS					ACADEMIC POSITIONS FOR U.S. CITIZENS				
with 2020					without 2020				
Postdocs	n (per institution)	% of total	SD	p value	Postdocs	n (per institution)	% of total	SD	p value
Total U.S. Citizens	8.77		2.37	0.163	Total U.S. Citizens	9.28		1.93	0.566
White	5.48	62.46%	1.63	0.03	White	5.81	62.58%	1.39	0.134
NW (all races below)	2.08	23.72%	1.02	0.338	NW (all races below)	2.27	24.43%	0.91	0.837
American Indian/Native Alaskan	0.03	0.40%	0.06	0.481	American Indian/Native Alaskan	0.04	0.42%	0.06	0.652
Asian American	1.19	13.52%	0.56	0.17	Asian American	1.29	13.89%	0.50	0.494
Black/African American	0.10	1.19%	0.07	0.723	Black/African American	0.12	1.27%	0.07	0.618
Hispanic/Latino (one or more races) -	0.56	6.33%	0.26	0.511	Hispanic/Latino (one or more races) -	0.61	6.55%	0.22	0.78
Native Hawaiian/Other Pacific Islander	0.10	1.16%	0.23	0.834	Native Hawaiian/Other Pacific Islander	0.11	1.23%	0.24	0.98
Non-Hispanic/Latino (more than one race)	0.10	1.13%	0.08	0.456	Non-Hispanic/Latino (more than one race)	0.10	1.08%	0.09	0.374
All Other Positions	n (per institution)	% of total	SD	p value	All Other Positions	n (per institution)	% of total	SD	p value
Total U.S. Citizens	37.4		9.21	0.657	Total U.S. Citizens	38.24		9.04	0.193
White	31.13	82.11%	8.02	0.845	White	32.31	83.64%	6.95	0.4
NW (all races below)	5.3	12.68%	2.12	0.001	NW (all races below)	4.60	11.91%	2.06	0.006
American Indian/Native Alaskan	0.1	0.26%	0.11	0.14	American Indian/Native Alaskan	0.1	0.25%	0.12	0.102
Asian American	2.7	7.20%	1.02	0.033	Asian American	2.74	7.08%	1.05	0.007
Black/African American	0.15	0.39%	0.08	0.051	Black/African American	0.14	0.35%	0.08	0.154
Hispanic/Latino (one or more races) -	0.98	2.59%	0.4	0.392	Hispanic/Latino (one or more races) -	1	2.59%	0.41	0.207
Native Hawaiian/Other Pacific Islander	0.92	2.42%	1.49	0.247	Native Hawaiian/Other Pacific Islander	0.53	1.38%	1	0.983
Non-Hispanic/Latino (more than one race)	0.45	1.20%	0.22	0.568	Non-Hispanic/Latino (more than one race)	0.49	1.28%	0.19	0.027

TABLE S8. Student recruitment data for total population and women.

STUDENT RECRUITMENT FOR TOTAL AND WOMEN									
with 2020					without 2020				
Total	n (per institution)	SD	p value		Total	n (per institution)	SD	p value	
App	90.26	10.25	0.686		App	90.88	10.40	0.407	
Offers	30.77	5.14	0.231		Offers	30.75	5.35	0.208	
New Enroll	19.48	3.31	0.608		New Enroll	19.54	3.44	0.504	
Women	n (per institution)	% of total	SD	p value	Women	n (per institution)	% of total	SD	p value
App	49.69	55.05%	6.28	0.958	App	49.92	54.92%	6.48	0.782
Offers	17.54	57.00%	3.05	0.163	Offers	17.45	56.74%	3.15	0.194
New Enroll	10.97	56.35%	2.12	0.405	New Enroll	10.96	56.10%	2.21	0.393

TABLE S9. Student retention data for total population and women. Green cells indicate a significant uptrend.

STUDENT RETENTION FOR TOTAL AND WOMEN									
with 2020					without 2020				
Total	n (per institution)	SD	p value		Total	n (per institution)	SD	p value	
In-residence	75.39	11.13	0.154		In-residence	75.39	11.59	0.123	
Masters	10.48	1.31	0.043		Masters	10.53	1.35	0.008	
PhD	7.13	1.39	0.103		PhD	7.18	1.44	0.039	
Women	n (per institution)	% of total	SD	p value	Women	n (per institution)	% of total	SD	p value
In-residence	40.76	54.07%	5.78	0.085	In-residence	40.60	53.85%	5.98	0.095
Masters	6.15	58.72%	0.66	0.014	Masters	6.16	58.47%	0.69	0.004
PhD	3.70	51.89%	0.92	0.03	PhD	3.72	51.79%	0.95	0.01

TABLE S10. Academic positions data, including new hires, for total population and women. Green cells indicate a significant uptrend.

ACADEMIC POSITIONS FOR TOTAL POPULATION																
with 2020							without 2020									
Total	n (per institution)	SD	p value	n (per institution)	SD	p value	Total	n (per institution)	SD	p value	n (per institution)	SD	p value			
	Total			New Hires				Total			New Hires					
Tenure	25.15	5.42	0.063	0.83	1.5	0.129	Tenure	25.54	5.44	0.006	0.33	0.09	0.893			
Tenure-Track	8.97	2.17	0.118	1.32	0.329	0.061	Tenure-Track	9.36	1.65	0.51	1.34	0.34	0.0001			
Non-tenure Track	7.65	1.27	0.153	0.61	0.701	0.124	Non-tenure Track	7.78	1.21	0.008	0.38	0.18	0.823			
Temporary	1.86	0.97	0.027	0.30	0.358	0.116	Temporary	1.97	0.89	0.1	0.30	0.38	0.075			
Postdocs	12.81	3.41	0.112	Not Collected			Postdocs	13.10	3.36	0.014	Not Collected					
Women	n (per institution)	%	SD	p value	n (per institution)	%	SD	p value	n (per institution)	%	SD	p value	n (per institution)	%	SD	p value
	Women			New hires				Women			New hires					
Tenure	5.06	19.81%	2.10	0.0001	0.33	52.64%	0.50	0.113	1.30	56.84%	0.12	0.704				
Tenure-Track	3.08	34.24%	0.88	0.181	0.60	45.89%	0.24	0.046	0.61	45.25%	0.26	0.008				
Non-tenure Track	2.48	32.42%	0.39	0.44	0.25	40.66%	0.31	0.151	0.15	38.70%	0.08	0.894				
Temporary	0.56	29.94%	0.21	0.088	0.08	27.48%	0.10	0.06	0.09	28.75%	0.11	0.053				
Postdocs	5.65	43.66%	1.73	0.046	Not Collected			Postdocs	5.78	44.11%	1.74	0.002	Not Collected			

TABLE S11. New hires in academic positions (excluding postdoctoral positions) by total average number and percentage of women and by p-values with and without 2020–2021 data (2007–2021). Shaded cells indicate statistically significant uptrends (p-value <0.05).

		Total			Women		
		Average	P-value	P-value w/o '20	%	P-value	P-value w/o '20
Academic Positions	Tenure-track	1.32	0.061	0.0001	45.89%	0.046	0.008
	Tenure	0.83	0.129	0.893	52.64%	0.113	0.704
	Non-Tenure	0.61	0.124	0.823	40.66%	0.151	0.894
	Temporary	0.3	0.116	0.075	27.48%	0.06	0.053

SUBDISCIPLINARY RESULTS

1. Student Recruitment

Marine biology and other ocean sciences had the highest average total number of applications per institution ($n = 27.5$ and 23.0 , respectively), whereas other ocean sciences and physical oceanography had the highest average for offers ($n = 8.6$ and 7.6 , respectively) and new enrollments ($n = 5.64$ and 5.11 , respectively) (Table S12). Ocean Engineering had significant uptrends for total applications ($p = 0.008$ and 0.006 without 2020–2021 data), offers ($p = 0.001$ and 0.0004 without 2020–2021 data), and new enrollments ($p = 0.038$) (Table S12). Other ocean sciences had significant uptrends for total applications ($p = 0.001$ and <0.0001 without 2020–2021 data) and new enrollments ($p \leq 0.0001$ with and without 2020–2021 data) (Table S12).

Marine biology had the highest percentage of women across all three indicators (64.7% of applications, 67.9% of offers, and 66.3% of new enrollments), followed by marine policy (62.4% of applications, 67.9% of offers, and 64.6% of new enrollments) (Figure S1, Table S12). Marine chemistry had the next highest percentage of women (60.3% of applications, 60.1% of offers, and 58.8% of new enrollments) (Figure S1, Table S12). Other ocean sciences had significant uptrends for female applicants ($p = 0.003$ and 0.001 without 2020–2021 data) and new enrollments ($p = 0.0002$ and <0.0001 without 2020–2021 data) (Table S12). Ocean engineering had significant uptrends for women applicants ($p = 0.021$ and 0.048 without 2020–2021 data) and receiving offers ($p = 0.004$ and 0.003 without 2020–2021 data; Table S12).

2. Student Retention

Across the seven subdisciplines, other ocean sciences had the highest average number of in-residence graduate students ($n = 23.4$) per institution, followed by marine biology ($n = 21.5$) and physical oceanography ($n = 9.5$) (Table S12). Ocean engineering had an uptrend in graduate students ($p = 0.012$), whereas marine policy had a downtrend ($p = 0.001$) (Table S12). All of trends held without 2020–2021 data ($p = 0.006$ and 0.001 , respectively).

For master's degrees awarded, other ocean sciences had the highest average number ($n = 3.3$), followed by marine biology ($n = 2.5$) and marine policy ($n = 1.2$) (Table S12). For PhDs awarded, marine biology ($n = 2.2$) had the highest number per institution, followed by other ocean sciences ($n = 1.5$) and physical oceanography ($n = 1.1$) (Table S12). Ocean engineering had an uptrend in master's degrees awarded with and without 2020–2021 data ($p = 0.011$ and 0.002 without 2020–2021 data). For number of PhDs awarded, ocean engineering and other ocean sciences had uptrends ($p = 0.011$ and 0.025 without 2020–2021 data; $p = 0.001$ and 0.004 without 2020–2021 data, respectively) (Table S12). Physical oceanography had an uptrend without 2020–2021 data ($p = 0.046$).

Women represented 62.0% of all marine biology in-residence students ($n = 13.3$), followed by 61.7% in marine policy ($n = 0.2$), and 60.1% in marine chemistry ($n = 4.7$) (Figure S1, Table S12). Similar to total numbers, ocean engineering had an uptrend in the number of new female graduate students ($p = 0.004$ and 0.004 without 2020–2021 data), whereas marine policy had a downtrend ($p = 0.003$ and 0.004 without 2020–2021 data) (Figure S1, Table S12). Marine chemistry

TABLE S12. Total averages, p-values (with and without 2020–2021 data), and percentages for US citizens (Total, White, and Non-white) and total population (Total and Women) across the three focal areas: student recruitment, student retention, and academic positions. Green cells indicate a significant uptrend. Orange cells indicate a significant downtrend.

	Applications		Offers		New Enrollments		In Residence		Master's		PhD		Academic Positions	
	Total	Women %	Total	Women %	Total	Women %	Total	Women %	Total	Women %	Total	Women %	Total	Women %
Marine Biology	27.46	64.7%	7.03	67.9%	5.11	66.3%	21.51	62.0%	2.55	69.9%	2.17	57.8%	10.17	34.5%
Marine Chemistry	8.67	60.3%	3.04	60.1%	1.84	58.8%	7.82	60.2%	0.72	65.5%	0.96	57.6%	4.82	28.7%
Marine Geology	10.19	47.7%	3.49	52.7%	2.00	50.4%	8.08	50.8%	1.01	52.6%	0.91	50.2%	6.57	26.4%
Physical Oceanography	11.49	44.7%	7.64	50.8%	5.40	37.5%	9.52	46.3%	0.91	52.3%	1.12	43.3%	6.91	18.8%
Ocean Engineering	6.02	29.1%	2.58	33.0%	1.54	29.6%	5.07	25.8%	0.80	21.3%	0.40	24.9%	3.27	39.7%
Marine Policy	3.44	62.4%	1.98	67.9%	1.33	64.6%	0.34	61.7%	1.17	64.6%	0.09	62.1%	0.97	58.1%
Other Ocean Sciences	23.02	55.7%	8.60	57.9%	5.64	57.0%	23.43	58.2%	3.32	59.3%	1.46	54.4%	8.72	3.7%

had an uptrend in number of new female graduate students without 2020–2021 data ($p = 0.037$) (Figure S1, Table S12).

For master’s degrees awarded, women made up 69.9% of marine biology master’s degrees ($n = 1.8$), 65.5% of marine chemistry degrees ($n = 0.4$), and 64.6% of marine policy degrees ($n = 0.8$), with no significant trends (Figure S1, Table S12). For PhDs awarded, women made up 62.1% of marine policy degrees ($n = 0.1$), 57.8% of marine biology degrees ($n = 1.3$), and 57.6% of marine chemistry degrees ($n = 0.6$) (Figure S1, Table S12). Ocean engineering and other ocean sciences had significant uptrends ($p = 0.011$ and 0.001) for women receiving PhD degrees (Table S12). Both trends held without 2020–2021 data ($p = 0.025$ and 0.0004). Physical oceanography had an uptrend for women receiving PhD without 2020–2021 data ($p = 0.047$) (see Table S12).

3. Academic Positions

On average, with 10.2 faculty positions per institution, marine biology had the highest number of faculty members across the data set (Table S12). The other ocean sciences category had the second highest overall average number of faculty positions per institution ($n = 8.7$), followed by physical oceanography ($n = 6.9$), marine geology ($n = 6.6$), marine chemistry

($n = 4.8$), ocean engineering ($n = 3.3$), and marine policy ($n = 1.0$). Marine policy faculty positions had a significant downtrend with and without 2020–2021 data ($p = 0.001$ and 0.007) (Table S12).

The overall percentage of women in faculty positions was highest in marine policy (58.1%), followed by ocean engineering (39.7%), marine biology (34.5%), marine chemistry (28.7%), marine geology (26.4%), physical oceanography (18.8%), and other ocean science subdisciplines (3.7%) (Figure S1, Table S12). None of these variables had significant trends, except the number of women in marine biology had a significant uptrend without 2020–2021 data ($p = 0.019$) (Figure S1, Table S12).

4. Conclusions on Subdiscipline Results for Total Population and Women

Only ocean engineering shows consistent uptrend as a subdiscipline across the spectrum of ocean science academia. Applications and offers are increasing, as are all three student retention variables. These trends hold with and without 2020–2021 data, indicating they are not impacted by increased reporting across schools/departments that year or pandemic-related anomalies. We see the same trends for

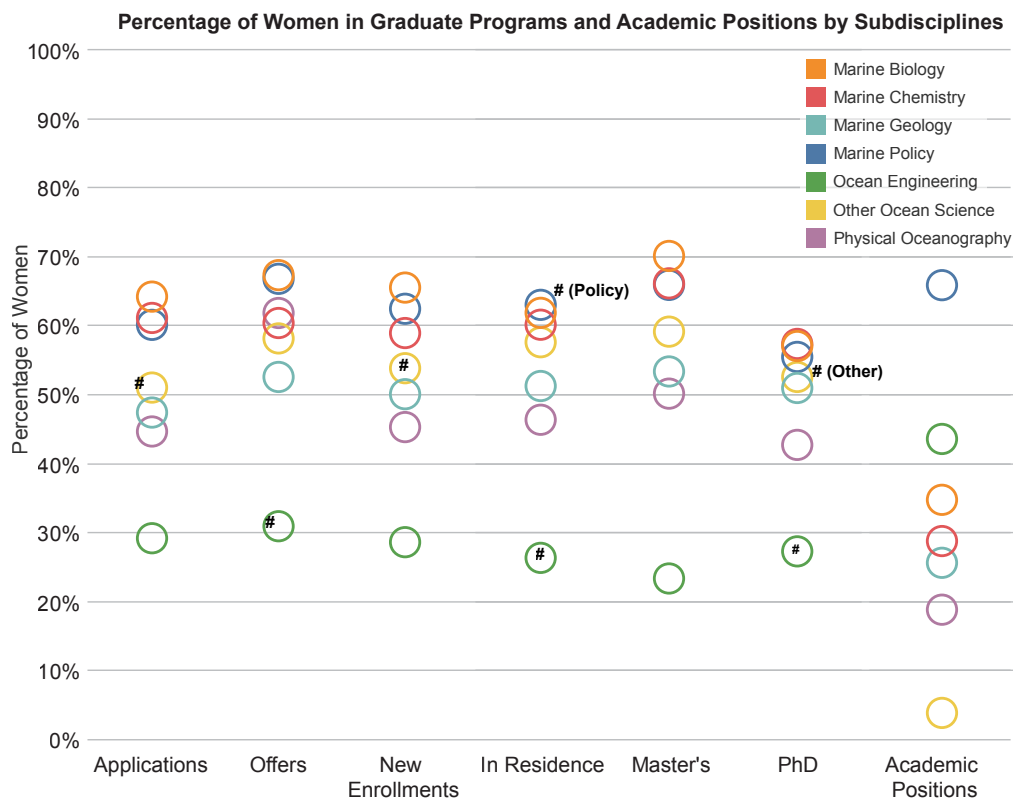


FIGURE S1. Average percentage of women across the stages of graduate programs and academic positions by seven subdisciplines from 2007–2021. Symbols indicate significant trends: * = downtrend; # = uptrend.

women in ocean engineering, except no up trend in master's degrees (Figure S1). There are no notable trends for Ocean Engineering faculty positions.

There are other notable findings that are not as representative of change across an entire subdiscipline. The other ocean sciences category has an uptrend in variables for overall and women for applications, enrollments, and PhD awards. Marine policy shows downtrends in several categories, including overall in-residence graduate students and PhD awards, female in-residence students, and faculty positions. Reporting numbers are typically low for marine policy across all variables (averaging <2 and most often <1 per institution), so these findings could be more relatively impacted by variation in the numbers of reporting institutions from year to year.

Marine biology and other ocean sciences are the most popular subdisciplines overall and for women when it comes to recruitment and retention data. They remain the largest subdisciplines by numbers of faculty; however, the number of female faculty in other ocean sciences drops to the lowest of all subdisciplines. This may indicate that women pursuing these more integrative and applied study areas are leaving academia for positions in other sectors.

TABLE S13. Annual percentage of women in academic positions.

Year	Tenure	Tenure-track	Non-tenure	Temporary	Postdocs
2007-08	15.46%	27.87%	30.23%	29.85%	39.40%
2008-09	13.19%	24.26%	32.65%	30.43%	35.85%
2009-10	13.90%	24.07%	33.05%	28.00%	44.44%
2010-11	12.81%	28.68%	39.89%	22.83%	42.59%
2011-12	12.82%	28.74%	38.89%	31.11%	41.76%
2012-13	18.77%	38.66%	30.33%	26.51%	43.39%
2013-14	18.66%	31.43%	31.22%	24.53%	45.45%
2014-15	20.34%	33.10%	28.73%	28.57%	46.68%
2015-16	20.72%	35.69%	36.91%	30.38%	41.76%
2016-17	22.74%	37.66%	30.46%	26.32%	47.81%
2017-18	22.83%	42.33%	32.34%	51.52%	45.43%
2018-19	25.42%	46.73%	29.95%	28.95%	43.18%
2019-20	25.61%	42.93%	27.38%	66.67%	44.73%
2020-21	28.28%	45.24%	32.31%	57.14%	44.67%

TABLE S14. Annual percentage of White and non-White (NW) US citizens across the focal areas.

Student Recruitment						
Year	Applications		Offers		New Enrollments	
	White %	NW%	White %	NW%	White %	NW%
2011	80.52%	13.51%	81.36%	11.73%	81.09%	12.82%
2012	70.14%	15.91%	71.89%	13.11%	77.93%	12.36%
2013	63.32%	17.10%	62.10%	13.35%	61.90%	18.22%
2014	64.43%	18.36%	70.35%	13.91%	69.88%	17.52%
2015	66.63%	18.05%	69.33%	17.12%	67.46%	17.55%
2016	73.97%	22.10%	73.20%	24.12%	76.26%	20.38%
2017	65.48%	19.17%	68.37%	18.78%	68.37%	20.93%
2018	75.16%	20.00%	72.90%	19.90%	72.39%	23.23%
2019	69.51%	23.37%	69.52%	23.12%	70.14%	24.05%
2020	66.22%	24.30%	63.69%	25.04%	62.75%	31.52%

Student Retention						
Year	In Residence		Master's		PhD	
	White %	NW%	White %	NW%	White %	NW%
2011	80.01%	10.61%	86.87%	8.08%	80.12%	9.36%
2012	72.28%	17.91%	72.19%	18.45%	81.48%	15.34%
2013	60.85%	16.74%	72.03%	12.54%	67.74%	18.71%
2014	71.70%	16.22%	67.16%	9.70%	79.58%	9.86%
2015	69.75%	16.61%	71.39%	12.14%	70.19%	16.77%
2016	75.02%	18.26%	88.17%	8.60%	74.82%	20.86%
2017	75.33%	16.12%	74.00%	15.20%	74.67%	20.00%
2018	77.14%	15.95%	81.46%	15.61%	75.23%	21.10%
2019	71.90%	23.19%	76.96%	19.61%	73.76%	20.57%
2020	71.92%	20.27%	84.57%	14.36%	74.53%	23.58%

Academic Positions		
Year	White %	NW%
2007	89.06%	7.29%
2008	89.07%	7.53%
2009	88.60%	7.89%
2010	88.80%	8.98%
2011	86.64%	11.04%
2012	89.36%	9.08%
2013	78.85%	14.19%
2014	84.62%	13.39%
2015	84.13%	13.35%
2016	79.49%	18.45%
2017	87.29%	11.45%
2018	81.52%	13.63%
2019	77.81%	15.68%
2020	58.67%	27.94%