WREA Spring 2022 Student Survey
Summary Report

Introduction

Findings presented below reveal student responses to the *Education and Career Planning Survey* that was administered in spring 2022 as part of a larger multi-institution research project on 'The Path From Education to the Workforce.' These findings examine students' knowledge about and access to work-related experiential activities (WREAs) relative to their institution's proximity to geographic workforce regions. Junior and senior baccalaureate-level students from five universities in Georgia participated in the spring 2022 survey administration. Participating institutions are Georgia Institute of Technology, Mercer University, The University of Georgia, Savannah State University, and Valdosta State University. This is the second and final annual survey report of the project. More details on this project can be found at https:www.ihe.uga.edu/WREA.

Previous literature confirms the benefits of work-related experiential activities (WREAs) in students' transition to the workforce, but surprisingly little information is available on whether geographic locale hinders students' access to and benefits gained from WREA participation. To provide further insight into these experiential activities, a multi-institution, mixed-methods study is underway to examine the effect of geographic locale on access to WREAs. Information gained from this study will provide unique insights into strategies that facilitate the college-to-work transition for STEM students.

Survey Design and Data Collection

The survey instrument was developed by the researchers with assistance in design from the Carl Vinson Institute of Government (CVIOG) Survey Research and Evaluation Center staff. The instrument was pilot tested and administered in Qualtrics, an online survey hosting software. Each participating institution had a separate survey instrument to accommodate for institution-specific logos and consent language. The PI and her research team received a list of FERPA compliant directory-level student names and email addresses from each institution's IR office. These lists were cleaned and provided to the CVIOG Research Center staff for survey distribution. Survey invitations utilized unique URLs so that each response could be linked to the list of selected students and to ensure respondents participated only once. Survey invitations and reminders were emailed to students according to the schedule (see details shown in the Appendix). Per the IRB-approved procedure, respondents at each institution who wished to be included were included in a gift card drawing. Through a computer-driven random selection, three respondents per institution were chosen and sent an Amazon e-gift card.

Findings

Valid and useable responses were received from 1,318 students. As shown in Tables 1 and 2, 32.2% of the respondents identified as women and 58.4% were students of color. Twenty-four percent said they were receiving need-based financial aid, 62.4% were receiving a merit-based scholarship, and 24.3% were taking on an educational loan. Many respondents said they began thinking about WREAs before or early in their undergraduate education. Overall, 8.5% of the respondents said that their educational program required one or more work-related experiences, but 42% said they had participated in one or more WREAs.

Table 1
Descriptive Statistics

	N	% valid responses*
Gender		
Male	726	67.8
Female	344	32.2
Race		
White	457	41.6
Black or African American	85	7.7
Hispanic	89	8.1
Asian	383	35.0
Other	82	7.5
Attendance Status		
Full-time (>12hrs)	1067	88.9
Part-time (<12hrs)	133	11.1
First Generation		
Yes	160	14.7
No	929	85.3
Major		
Computer Science	422	35.2
Engineering	777	64.8
WREA required by major		
Yes	102	8.5
No	749	62.4
Unsure	349	29.1
Participated in WREA		
Yes	503	42.1
No	691	57.9
Financial Aid		
Need-Based	259	23.9
Merit-Based	668	61.5
Educational Loan	264	24.3
No Financial Aid	286	26.3
Mean Age	21.83 (1.28)	
Mean GPA	3.66	

*Ns include all valid responses to each question; they do not include respondents who did not identify for the category. The total number of survey respondents was N=1,318. Due to rounding, percentages may not total 100.

Table 2
General WREA Activities for Survey Respondents

	N	Percent of valid responses*
More than one WREA		
Yes	300	25.1
No	894	74.9
WREAs completed since entering college		
One	203	17.0
Two	132	11.0
Three	103	8.7
Four	47	3.9
Five or more	18	1.4
Began thinking about WREAs		
Before starting college	241	47.6
Freshman year	177	34.9
Sophomore year	61	12.1
Junior year	22	4.4
Senior year	4	0.4
How you found your WREA**		
Sought on my own	407	80.8
Referred through the Career Center	136	27.0
Online career platform	190	37.8
Academic department	20	4.1
Personal network	209	41.5
Other	29	5.8
Full-time job offer post-graduation***		
Yes, with one of WREA companies	51	25.8
Yes, with another company	67	34.2
No	79	39.9

*Ns include all valid responses to each question. They do not include respondents who did not identify for the category. The total number of survey respondents was N=1,318. Due to rounding percentages may not total 100.

** Respondents could choose more than one category.

***This question only includes students who indicated that they had participated in at least one WREA and planned to graduate in 2022.

NACE Competencies

We explored students' perceptions of how WREAs help prepare them for employment. To do so, we relied on the National Association of Colleges and Employers (NACE) Career Readiness Competencies as the framework for skill development[1]. According to survey respondents and as shown in Table 3, "interacting with others in a professional setting," being guided by a mentor," and "establishing relationships with employers" were the three competencies with highest gain acquired through their WREA while "learning how to write better" received the lowest gain score. Overall, responses emphasized becoming familiar with the workplace and placing value on understanding how respondents fit into the broader company environment.

Table 3

NACE Competencies Gained from WREA Experiences*

	Mean	SD
In your WREA(s), how helpful were the following skills?[a]		
Interacting with others in a professional setting	3.77	.551
Being guided by a mentor	3.59	.689
Establishing relationships with employers	3.58	.730
Learning how to find answers to questions quickly	3.52	.713
Understanding how to connect to the profession	3.51	.734
Improving critical thinking	3.51	.744
Understanding how to utilize digital technology to solve problems	3.51	.776
Learning how to manage time	3.40	.769
Understanding how to advance in my field	3.40	.815
Learning how to work with people of diverse backgrounds	3.26	.868
Developing skills as a leader	3.19	.892
Applying knowledge learned from class	3.06	.914
Learning how to write better	2.71	1.017

*only includes students who responded that they had participated in at least one WREA (N= 503)

[a] 1= not at all helpful, 4= very helpful

[1] For more information on NACE competencies, see: https://www.naceweb.org/career-readiness/competencies/

Survey Results by Institution

Due to low response rates at two sites, institutional comparisons were limited to three institutions. As shown in Tables 4 and 5, overall, few survey items revealed significant differences by institution. However, differences were seen in the geographic portion of the questions, with respondents from Georgia Institute of Technology (Georgia Tech) on average, valuing an urban setting for a WREA (F=6.647, p<.01) and access to public transportation (F=7.391, p<.001) more so than students from UGA and Mercer. Also shown in Table 4, there were some differences in the skills that students said they developed from their WREA experiences by institution. Compared to respondents from the University of Georgia (UGA) and Georgia Tech, on average, Mercer students reported that WREAs were most helpful with "applying knowledge learned in class."

Table 4
Participation in and Benefits from WREAs, Comparisons by Institution

	Georgia Tech		University of Georgia		Mercer University		
Dependent Variables	**M**	**SD**	**M**	**SD**	**M**	**SD**	***F***
Number of WREAs completed	2.12	1.13	1.85	1.30	2.44	1.87	2.555
When considering a WREA, how important were the following items?[a]							
Time it takes to get to the WREA site	2.51	.988	2.66	1.100	2.79	1.057	1.711
Ability to work from home	2.11	1.075	2.34	1.095	2.23	1.171	1.197
Rural setting	1.45	.823	1.43	.811	1.58	.849	.440
Urban setting	2.44	1.147	2.02	1.134	1.86	1.049	6.647**
Access to public transportation	2.23	1.076	1.74	1.139	1.73	1.153	7.391***
Access to parks and recreation	2.19	1.012	1.78	.999	2.04	1.259	3.877*
Access to shopping	2.10	1.063	1.72	.898	1.97	1.081	3.265*
Close to family and friends	2.39	1.099	2.52	1.045	2.62	.969	1.009
In your WREAs, how helpful were the following skills?[b]							
Learning how to manage time	3.38	.778	3.45	.728	3.55	.723	.721
Applying knowledge learned from class	3.00	.921	3.29	.873	3.49	.707	5.352**
Interacting with others in a professional setting	3.77	.564	3.73	.486	3.79	.519	.154

Table 4, cont.

Developing skills as a leader	3.17	.892	3.23	.917	3.35	.865	.537
Learning how to write better	2.66	1.018	2.93	1.020	2.97	.971	2.175
Learning how to find answers to questions quickly	3.52	.701	3.42	.824	3.58	.699	.532
Being guided by a mentor	3.59	.691	3.64	.702	3.54	.667	.180
Establishing relationships with employers	3.56	.728	3.68	.779	3.69	.682	.857
Improving critical thinking	3.47	.763	3.66	.634	3.65	.628	1.804
Understanding how to connect to the profession	3.51	.738	3.46	.757	3.62	.648	.423
Understanding how to advance in my field	3.40	.821	3.40	.780	3.44	.829	.041
Understanding how to utilize digital technology to solve problems	3.49	.782	3.66	.667	3.49	.862	.866
Learning how to work with people of diverse backgrounds	3.22	.874	3.42	.834	3.57	.784	2.838
How helpful will the WREA be in finding full-time employment?	3.54	.768	3.64	.705	3.30	.834	1.649

* p <.05, ** p <.01

[a] 1= not important, 4= very important; [b] 1=not at all helpful, 4= very helpful

Table 5 highlights individual characteristics, curricular requirements for WREAs, and sources for WREA options by institution. Differences were found across many variables. For example, Mercer (25.6%) and UGA's (28.2%) respondents were more likely to be First Generation students than Georgia Tech (11.7%). Financial aid status also differed across the three institutions, most notably that a little more than a quarter of Georgia Tech students reported having no financial aid, compared to less than 10% of respondents at Mercer and UGA. Additional inquiry may be helpful to better understand the difference in financial aid status and how that affects student participation in WREAs.

Variations were also found in respondents' considerations about work-related experiences. Table 5 shows that 51.6% of Georgia Tech students said they were thinking of WREAs before college, compared to 28.3% for UGA and 31.4% for Mercer. Interestingly, Georgia Tech and UGA students also reported a higher use of the Career Center to find their WREAs. Overall, similar percentages of students had participated in at least one WREA by the time of this survey across all institutions. Lastly, there was a higher proportion of students at Mercer with an employment offer (61.6%) than students at GT (33.4) and UGA (28.9).

Table 5

Respondent Characteristics and WREA Knowledge, Comparisons by Institution

Variables	Georgia Tech %	University of Georgia %	Mercer University %	X^2
First Generation student	11.7	28.2	25.6	31.436***
Financial Aid Status				
Merit-based	57.2	82.1	81.1	39.718***
Need-based	20.1	30.8	51.4	41.109***
Loan	22.2	28.2	40.5	13.681**
None	31.2	2.6	9.5	55.317***
When did you begin thinking about WREAs?				38.469***
Before college	51.6	28.3	31.4	
Freshman year	35.0	34.0	31.4	
Sophomore year	9.6	22.6	25.7	
Junior or Senior year	3.9	15.1	11.5	
Participated in at least one WREA	42.9	39.7	39.1	.876
How did you find your WREA?				
Sought it on my own	83.1	76.9	62.9	9.238*
Referred via career center	18.0	18.9	25.7	2.028
Online career platform	39.3	38.5	22.9	3.696
Assigned by academic dept.	3.4	3.8	11.4	5.456
Personal network	41.1	50.0	34.3	2.330
WREA required by major?				157.904***
Yes	4.5	35.1	11.2	
No	67.3	29.8	57.3	
Unsure	28.1	35.1	31.5	
Do you currently have an offer for full-time employment?				9.728*
Yes, with WREA company	14.9	13.3	23.1	
Yes, with another company	18.5	15.6	38.5	
No	66.6	71.1	38.5	

* p <.05, ** p <.01, *** p <.001

Findings by Major

For differences by major, we found three significant differences in the importance of specific considerations during the WREA planning process. As shown in Table 6, compared to engineering majors, peers in computer science placed a higher value on the ability to work from home, the urban setting of a WREA, and having access to public transportation. In terms of the skills gained through WREA participation, engineering respondents said they found WREAs significantly more helpful ($p < .05$) in learning how to interact in a personal setting. Conversely, computer science majors reported that they believe WREAs were significantly more likely to help them find full-time employment after graduation. While caution is urged due to sample size differences, taken together, these differences might highlight the different working environments, ability to complete tasks remotely, and skillsets required in each major field.[2]

Despite a few differences noted above, analyses by major generally revealed fewer and less distinct differences by major. Shown in Table 7, many engineering and computer science majors said that they thought about and/or considered WREAs. However, engineering students were more likely to have reported participating in at least one more WREA than their computer science counterparts (44.5% vs. 37.5%). it appeared that students found their WREAs through different sources; computer science students said they utilized online career platforms at significantly higher rates than engineering students. Further, computer science students were more likely to have a WREA required by their major (11.1% vs. 7.1%). We note that differences seen in respondents' use of or sources from which they learn about WREA opportunities may, in part, be due to curricular requirements for WREA participation. Despite these differences, responses indicated no significant variation overall in job offers between the two majors at the three institutions included in this analysis.

[2] It is important to note that due to sample size and response rates, caution is urged in assuming generalizability.

Table 6
Comparisons by Major

	Computer Science		Engineering		
Dependent Variables	**M**	**SD**	**M**	**SD**	***t***
Number of WREAs completed	2.06	1.20	2.15	1.22	-.747
When considering a WREA, how important were the following items? [a]					
Time it takes to get to the WREA site	2.54	1.048	2.55	.989	-.095
Ability to work from home	2.41	1.093	2.02	1.056	3.813***
Rural setting	1.47	.844	1.45	.825	.199
Urban setting	2.55	1.115	2.27	1.157	2.588**
Access to public transportation	2.37	1.044	2.04	1.115	3.106**
Access to parks and recreation	2.13	1.000	2.13	1.052	.071
Access to shopping	2.15	1.063	2.01	1.047	-.1.403
Close to family and friends	2.39	1.069	2.42	1.094	-.293
In your WREAs, how helpful were the following skills? [b]					
Learning how to manage time	3.42	.711	3.39	.794	-.420
Applying knowledge learned from class	3.08	.901	3.05	.921	.359
Interacting with others in a professional setting	3.68	.617	3.81	.515	-2.056*
Developing skills as a leader	3.13	.909	3.21	.885	-.859
Learning how to write better	2.63	1.051	2.74	1.002	-1.018
Learning how to find answers to questions quickly	3.52	.720	3.51	.712	.144
Being guided by a mentor	3.62	.671	3.58	.697	.507
Establishing relationships with employers	3.54	.742	3.60	.724	-.731
Improving critical thinking	3.43	.797	3.54	.718	-1.379
Understanding how to connect to the profession	3.51	.725	3.51	.739	.006
Understanding how to advance in my field	3.41	.817	3.40	.815	.207
Understanding how to utilize digital technology to solve problems	3.59	.672	3.47	.816	1.560
Learning how to work with people of diverse backgrounds	3.18	.837	3.30	.880	1.311
How helpful will the WREA be in finding full-time employment?	3.67	.633	3.48	.813	2.709**

* p <.05, ** p <.01, *** p <.001

[a] 1= not important, 4= very important; [b] 1=not at all helpful, 4= very helpful

Table 7
Comparisons by Major

Variables	Computer Science %	Engineering %	X^2
First Generation student	15.3	14.2	.206
Financial Aid			
Merit-based	60.2	62.1	.412
Need-based	22.2	24.9	.985
Loan	22.4	25.3	1.094
None	26.9	26.0	.109
When did you begin thinking about WREAs?			3.058
Before college	49.1	47.1	
Freshman year	30.8	37.0	
Sophomore year	13.2	11.6	
Junior or Senior year	7.0	4.4	
Participated in at least one WREA	37.5	44.5	5.514*
How did you find your WREA?			
Sought it on my own	83.3	79.8	.883
Referred via career center	21.7	29.5	3.351
Online career platform	49.7	32.4	13.770***
Assigned by academic dept.	5.8	3.2	1.886
Personal network	37.2	43.6	1.848
WREA required by major?			7.897*
Yes	11.1	7.1	
No	58.1	64.7	
Unsure	30.8	28.2	
Do you currently have an offer for full-time employment?			.582
Yes, with WREA company	16.9	14.4	
Yes, with another company	19.9	19.1	
No	63.2	66.6	

* p <.05, ** p <.01, *** p <.001

Results by Need-based Financial Aid Status

Available literature on student success affirms the importance of examining WREAs in by students' socioeconomic status. Using need-based financial aid (self-reported) as a proxy for low-income status, we compared the results and uncovered some significant differences. Overall, perceived helpfulness and importance of WREAs were reasonably similar across respondents by financial aid status. However, as shown in Table 8, respondents who received need-based aid reported that WREAs were more useful in helping them to learn how to utilize digital technologies more effectively to solve problems (t=-1.912, p<.05).

As shown in Table 9, analyses to examine difference by financial aid category also revealed potential barriers that low-income students may face in the WREA participation. Almost 35 percent of need-based financial aid respondents identified themselves as first generation, compared to only 8.3% of the remaining respondents. The need-based aid students were also more than three times more likely to be receiving loans (50.2% vs. 16.2%). Furthermore, lower-income students said they were more unsure of whether a WREA was required by their major (35.1% vs. 27.0%). These differences carried through to WREA experiences themselves, with students receiving need-based aid participating at a significantly lower rate (34.2%) than their counterparts not receiving need-based aid (41.0%). Despite these potential barriers, responses did not reveal significant differences in job offers by financial aid status.

Table 8
Comparisons by Need-Based Aid Status

Variables	Receiving Need-Based Aid M	Receiving Need-Based Aid SD	Not Receiving Need-Based Aid M	Not Receiving Need-Based Aid SD	*t*
Number of WREAs completed	2.04	1.10	2.00	1.13	.295
When considering a WREA, how important were the following items? [a]					
Time it takes to get to the WREA site	2.49	1.032	2.56	.984	-.574
Ability to work from home	2.14	1.044	2.10	1.093	.305
Rural setting	1.48	.823	1.44	.828	.332
Urban setting	2.24	1.169	2.39	1.152	-1.055
Access to public transportation	2.28	1.142	2.11	1.097	1.276
Access to parks and recreation	2.22	1.096	2.13	1.025	.664
Access to shopping	2.14	1.127	2.08	1.047	.537
Close to family and friends	2.50	1.065	2.39	1.079	.848
In your WREAs, how helpful were the following skills? [b]					
Learning how to manage time	3.39	.879	3.40	.728	-.143
Applying knowledge learned from class	3.11	.883	3.04	.916	.643
Interacting with others in a professional setting	3.74	.585	3.79	.521	-.849
Developing skills as a leader	3.19	.902	3.20	.885	-.033
Learning how to write better	2.70	.964	2.71	1.027	-.034
Learning how to find answers to questions quickly	3.48	.786	3.53	.680	-.586
Being guided by a mentor	3.49	.769	3.63	.646	-1.548
Establishing relationships with employers	3.51	.770	3.61	.704	-1.243
Improving critical thinking	3.42	.843	3.54	.707	-1.166
Understanding how to connect to the profession	3.48	.752	3.54	.716	-.716
Understanding how to advance in my field	3.42	.784	3.41	.813	.079
Understanding how to utilize digital technology to solve problems	3.37	.851	3.56	.731	-1.912*
Learning how to work with people of diverse backgrounds	3.25	.858	3.27	.869	-.186
How helpful will the WREA be in finding full-time employment?	3.51	.833	3.55	.738	-.432

* p <.05, ** p <.01, *** p <.001

[a] 1= not important, 4= very important; [b] 1=not at all helpful, 4= very helpful

Table 9

Comparisons by Need-Based Aid Status

Variables	Receiving Need-Based Aid %	Not Receiving Need-Based Aid %	X^2
First Generation student	34.7	8.3	110.040***
Receiving a loan	50.2	16.2	123.840***
When did you begin thinking about WREAs?			8.538
Before college	41.6	49.7	
Freshman year	31.5	36.2	
Sophomore year	19.1	9.7	
Junior or Senior year	7.8	4.4	
Participated in at least one WREA	34.2	41.0	3.841*
WREA required by major?			10.503**
Yes	10.0	7.1	
No	54.8	65.9	
Unsure	35.1	27.0	
How did you find your WREA?			
Sought it on my own	76.1	82.5	1.845
Referred via Career Center	28.1	27.9	.001
Online career platform	41.6	38.0	.383
Assigned by academic dept.	6.7	3.6	1.760
Personal network	34.8	43.0	1.950
Do you currently have an offer for full-time employment?			4.645
Yes, with WREA company	7.9	16.3	
Yes, with another company	23.6	18.0	
No	68.5	65.7	

* p <.05, ** p <.01, *** p <.001

Findings by Gender

Analyses by gender revealed that both men and women perceived WREA experiences in similar ways, with only the occasional difference. When considering a WREA, men and women respondents placed similar emphasis on many of the geographic and environmental features of the experience. However, as shown in Table 10, women responded that WREAs were more helpful in developing their skills as a leader than male respondents.

Analyses related to planning for and knowledge about WREAs revealed even greater similarities between male and female responses. Although the responses did not reach the level of statistical significance, findings may be of interest. Of note, women were less likely to find WREA opportunities themselves or utilize online career platforms than male students. At the same time, they reported higher use of the Career Center in securing WREAs. However, this did not appear to impact the outcome variables (WREA participation, job offer) in the long run (see Table 11).

Findings by Race

To examine differences by race/ethnicity, respondents were grouped into White, Asian, and underrepresented minority, comprised of Black, Hispanic, American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, and Nonresident Alien. Shown in Table 12, many of the geographic and environmental factors were significantly different across the three groups. Asian students and students in the underrepresented minority category both placed significantly more emphasis ($p<.05$) on the ability to work from home, the urban setting of a WREA, and access to shopping than White students. At the same time, Asian students placed significantly more emphasis on access to public transportation than the other two groups. Interestingly, there were no significant differences reported in terms of the skills developed during the WREA. See details in Table 12.

Additional differences between the groups were also found. As shown in Table 13, respondents from underrepresented racial groups were more likely to rely on need-based aid and loans than the other racial categories, while White students were far more likely to rely on merit-based aid. While underrepresented minorities and white students reported participating in WREAs at about the same rate (34.7% and 36.4%, respectively), White students had a 44.4% participation rate. Potentially related, White students could use their personal network to connect with WREA opportunities at a much higher rate (47.8%) than the other students. Once again, however, these initial differences did not appear to play a role in the job offer rate. All three race categories showed about 35% of the students with a full-time job offer.

Table 10
Comparisons by Gender

	Female		Male		
Dependent Variables	**M**	**SD**	**M**	**SD**	***t***
Number of WREAs completed	2.14	1.09	1.93	1.13	1.797
When considering a WREA, how important were the following items? [a]					
Time it takes to get to the WREA site	2.66	1.030	2.49	.972	1.673
Ability to work from home	2.05	1.044	2.15	1.099	-.886
Rural setting	1.44	.794	1.45	.848	-.106
Urban setting	2.50	1.147	2.28	1.156	1.803
Access to public transportation	2.16	1.071	2.12	1.123	.310
Access to parks and recreation	2.25	1.050	2.09	1.033	1.528
Access to shopping	2.17	1.042	2.03	1.076	1.277
Close to family and friends	2.39	1.042	2.44	1.094	-.455
In your WREAs, how helpful were the following skills? [b]					
Learning how to manage time	3.45	.738	3.38	.775	.838
Applying knowledge learned from class	3.09	.952	3.06	.881	.387
Interacting with others in a professional setting	3.84	.445	3.76	.551	1.643
Developing skills as a leader	3.38	.791	3.11	.912	2.942**
Learning how to write better	2.85	.986	2.65	1.023	1.916
Learning how to find answers to questions quickly	3.53	.651	3.52	.726	.161
Being guided by a mentor	3.66	.645	3.56	.700	1.357
Establishing relationships with employers	3.62	.705	3.57	.730	.618
Improving critical thinking	3.55	.694	3.50	.757	.681
Understanding how to connect to the profession	3.61	.680	3.48	.745	1.696
Understanding how to advance in my field	3.44	.807	3.40	.805	.482
Understanding how to utilize digital technology to solve problems	3.48	.828	3.54	.728	-.807
Learning how to work with people of diverse backgrounds	3.33	.844	3.24	.874	1.022
How helpful will the WREA be in finding full-time employment?	3.50	.788	3.55	.746	-.625

* p <.05, ** p <.01, *** p <.001

[a] 1= not important, 4= very important [b] 1=not at all helpful, 4= very helpful

Table 11
Additional Comparisons by Gender

Variables	Female %	Male %	X^2
First Generation student	15.9	14.2	.573
Financial Aid status*			
Merit-based	62.9	60.7	.468
Need-based	27.6	22.0	4.066*
Loan	24.7	24.2	.032
None	24.7	27.1	.692
When did you begin thinking about WREAs?			.973
Before college	46.5	49.1	
Freshman year	38.0	33.6	
Sophomore year	10.6	12.0	
Junior or Senior year	4.9	5.3	
Participated in at least one WREA	41.3	38.9	.567
How did you find your WREA?[a]			
Sought it on my own	76.8	82.9	2.310
Referred via career center	33.8	24.9	3.708
Online career platform	34.3	41.3	1.962
Assigned by academic dept.	4.9	3.9	.224
Personal network	40.8	42.7	.134
WREA required by major?			1.845
Yes	6.4	8.5	
No	63.1	63.4	
Unsure	30.5	28.1	
Do you currently have an offer for full-time employment?			3.475
Yes, with WREA company	16.8	13.5	
Yes, with another company	23.1	17.4	
No	60.1	69.1	

* p <.05, ** p <.01, *** p <.001

a Respondents could select more than one category

Table 12
Comparisons by Race

	Underrepresented Minority		Asian		White		
Dependent Variables	**M**	**SD**	**M**	**SD**	**M**	**SD**	***F***
Number of WREAs completed	2.01	1.25	1.96	1.04	2.04	1.12	.132
When considering a WREA, how important were the following items? [a]							
Time it takes to get to WREA site	2.40	1.022	2.49	.947	2.59	1.016	.573
Ability to work from home	2.17	1.131	2.27	1.023	1.98	1.086	3.199*
Rural setting	1.50	.891	1.48	.848	1.39	.776	.740
Urban setting	2.57	1.167	2.58	1.166	2.11	1.101	8.884***
Access to public transportation	2.23	1.195	2.56	1.048	1.83	1.013	19.571***
Access to parks and recreation	2.22	1.129	2.19	1.020	2.08	1.018	.724
Access to shopping	2.27	1.101	2.26	1.095	1.89	.994	6.990**
Close to family and friends	2.42	1.003	2.31	1.046	2.48	1.126	.991
In your WREAs, how helpful were the following skills? [b]							
Learning how to manage time	3.43	.765	3.41	.755	3.38	.782	.157
Applying knowledge from class	3.15	.962	3.04	.927	3.02	.883	.654
Interacting with others in a professional setting	3.65	.725	3.81	.493	3.80	.490	2.714
Developing skills as a leader	3.20	.951	3.19	.865	3.19	.887	.005
Learning how to write better	2.78	1.028	2.84	1.035	2.59	.991	2.634
Learning how to find answers to questions quickly	3.56	.762	3.59	.678	3.45	.708	1.745
Being guided by a mentor	3.57	.702	3.59	.740	3.60	.654	.047
Establishing relationships with employers	3.57	.712	3.52	.789	3.63	.691	1.034
Improving critical thinking	3.61	.682	3.49	.775	3.47	.752	1.190
Understanding how to connect to the profession	3.49	.795	3.56	.691	3.50	.732	.372
Understanding how to advance in my field	3.34	.861	3.37	.855	3.46	.759	.865
Understanding how to utilize digital technology to solve problems	3.47	.772	3.51	.826	3.54	.729	.205
Learning how to work with people of diverse backgrounds	3.33	.909	3.29	.828	3.23	.872	.503
How helpful will the WREA be in finding full-time employment	3.49	.739	3.47	.872	3.61	.691	1.585

* p <.05, ** p <.01, *** p <.001

[a] 1= not important, 4= very important; [b] 1=not at all helpful, 4= very helpful

Table 13
Additional Comparisons by Race

Variables	Under-represented Minority %	Asian %	White %	X^2
First Generation student	23.0	15.9	9.0	26.112***
Financial Aid status[a]				
Merit-based	60.1	51.0	71.0	35.133***
Need-based	39.8	23.3	15.8	50.973***
Loan	41.0	16.0	22.2	53.081***
None	18.5	38.6	20.2	46.634***
When did you begin thinking about WREAs?				6.554
Before college	44.4	49.3	49.0	
Freshman year	34.4	32.9	37.1	
Sophomore year	13.3	12.9	9.4	
Junior or Senior year	7.8	5.0	4.5	
Participated in at least one WREA	34.7	36.4	44.4	8.639*
How did you find your WREA?				
Sought it on my own	82.0	82.7	79.3	.708
Referred via career center	29.5	30.9	24.6	1.832
Online career platform	34.8	49.6	33.0	10.345**
Assigned by acad. dept.	6.8	4.3	2.5	3.138
Personal network	42.7	30.9	47.8	9.751**
WREA required by major?				23.637***
Yes	10.5	7.0	7.2	
No	51.4	63.7	69.4	
Unsure	38.1	29.2	23.4	
Do you currently have an offer for full-time employment?				4.134
Yes, with WREA company	10.3	15.7	15.8	
Yes, with another company	25.3	15.7	19.2	
No	64.4	68.6	65.0	

* p <.05, ** p <.01, *** p <.001

[a] Respondents could select more than one category

Responses to Open-Ended Questions

The Spring 2022 administration of the *Education and Career Planning Survey* included three open-ended questions asking students about the most helpful skill developed, the least beneficial experience, and their suggestions for improving their WREA. The analysis of the 2022 responses used the coding scheme developed during the 2021 survey administration. During the 2021 survey analysis, three coders individually and inductively coded 25% of each question with open and axial codes. They then met to discuss the developed codes and to agree on code definitions for the axial codes to support intercoder agreement. The coding scheme for the first question used the NACE Competencies (NACE Center, 2021). For questions 2 and 3, the coders created thematic areas based on the discussion of their codes. After agreeing on definitions, each coder coded one question. For the 2022 open-ended question analysis, one coder who participated in the original code development coded the three questions. A response could have multiple skills or ideas mentioned and be coded multiple times with different or the same axial codes. Below, Figures 1-3 show the number of respondents whose response was coded with a particular code (not the number of times a code was used due to the possibility of representing a duplication).

In the first open-ended question, students were asked, "What is the Most Helpful Skill you Developed During Your WREA(s)?" Students frequently reported gains in Professionalism, Communication, Technical Skills, and Critical Thinking.

Professionalism was cited by 46.8% of respondents. Various professional skills were mentioned, including adaptability, attention to detail, independence, professional interactions, strong work ethic, and organization—two of the most frequent areas covered learning how to operate in a professional environment and time management.

Communication was named by 45.1% of respondents. Students who discussed communication suggested that they grew in oral or written communication, giving presentations or public speaking, and help-seeking behaviors (communicating when they needed help or were stuck). Frequently, respondents here simply suggested they grew in communication skills.

Technical Skills was mentioned by 30.1% of respondents. Technical Skills covers various skills and knowledge that are unique to the industry. Responses here referenced the use of specific programs that were highly technical, such as computer-assisted drafting programs, or were more general about a skill used within their fields, such as computer coding or lab work.

Critical Thinking was included in 27.3% of respondents. Responses here came in many forms, from proper resource allocation to application of school knowledge to more general responses of "critical thinking." The two most common subcategories within Critical Thinking were "critical thinking" and "problem-solving."

Some respondents who wrote at greater length said:

"Communicating with a team and superiors at work, understanding project objectives and developing a framework to create a solution, then producing the solution. The workflow and abilities are very different from coursework when it comes to homework and exam problems, and group projects." (Communication, Critical Thinking, and Professionalism)

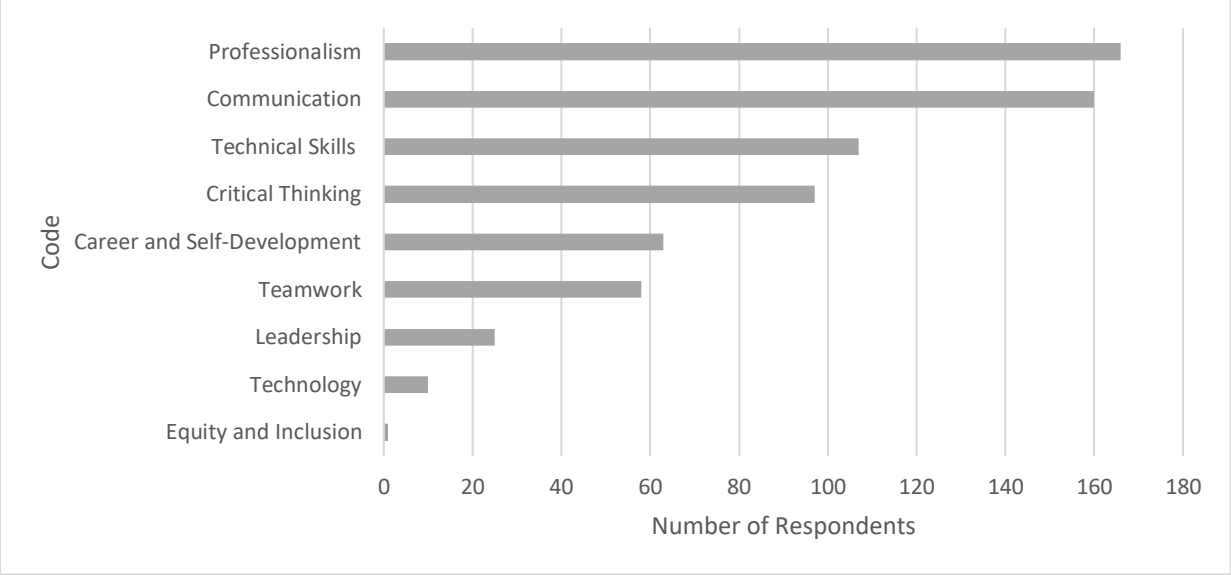
"Communication and professional relationship building. The interactions I had with coworkers and lab partners were different than the interactions I'd had in other environments (in class, clubs, friends, etc.) and it was important to recognize the value of those connections before

entering a full-time professional environment." (Communication, Professionalism, and Career and Self Development).

"One of the most helpful skills I developed during my WREA was being fast and accurate when solving problems. The environment I was working in at the time was very fast-paced and intensive. I learned to act quickly and to think critically about each problem before devoting time towards what would have been an otherwise wasteful effort." (Critical Thinking and Professionalism)

Figure 1

Responses to Survey Question "What is the Most Helpful Skill you Developed During Your WREA(s)?"



Note. Valid responses (N=355) could have multiple codes. "Technical Skills" was added by the researchers to capture skills (e.g., "AutoCAD") specific to the student's WREA work and may account for the small number of responses coded as "Technology."

The second question allowed students to express aspects of their WREA that were not helpful in their development. Question 2 asked, "what is the least helpful experience you had during your WREA(s)?" Students here most frequently shared issues related to the work or to structures relating to the design (or lack thereof) of the WREA. Figure 2 shows the most frequent codes for Question 2. "Lack of Meaningful Work/Task" was reported in 43.8% of responses to this question. Within these responses, students suggested that they often had downtime because they lacked work. They also discussed issues with the quality of the work they did, believing it was below their skill level or less helpful in their development. Students also described that, beyond the work, there were structural issues within their WREAs. "WREA Structural/Systems Issues" were discussed by 24.3% of respondents and included many ideas. Some more common points were concerns with trainings they believed were irrelevant, WREAs that lacked the structure for their development, issues with commuting, and material support, such as pay, housing, or transportation. The only other substantial category was "Covid/Remote" which 12.1% of respondents mentioned. The other coded categories covered issues with a lack of mentorship or

support, transferability of skills or experiences from the WREA, interpersonal conflict, sexism or diversity issues, and general communication issues.

Some longer example responses include:

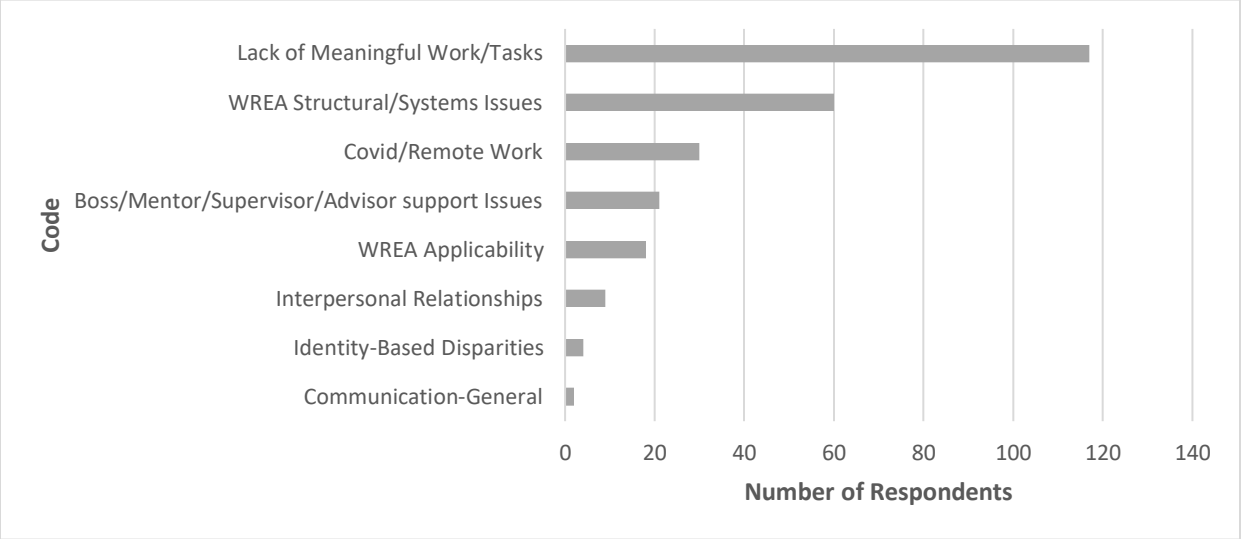
"In each role, there was a small, but not inconsequential, amount of time I spent not being able to do much and getting paid. I know this is common among internships, but I found it very frustrating and often there was nothing I could to remedy it." (Lack of Meaningful Work/Tasks)

"Because my WREAs were less curated I had to push more for projects and guidance which was helpful, but as a new, inexperienced hire I would appreciate more guidance." (WREA Structure/System Issues)

"My manager was gone (not his fault, he had major family emergencies) and the entire team was online. I really didn't get to interact with anyone so I didn't form any personal connections. This was disappointing employment-wise and also socially ☹ [sad face emoticon]*"* (Boss/Mentor/Supervisor/Advisor Support and Covid/Remote)

Figure 2

Responses to Survey Question "What is the Least Helpful Experience you had During Your WREA(s)?"



Note. Valid responses (N=248) could have multiple codes.

The final open-ended question asked students to "please use the space below to provide any suggestions on how to improve WREAs for students in the future." The greatest number of respondents here (48.8%) discussed changes coded as "WREA Structure of Processes." Students provided suggestions to alleviate some of the concerns raised in Question 2 around the lack of meaningful work, encouraging greater structure to the WREA, and for greater involvement of a mentor in their development. Students (28.9% of respondents) frequently provided "Comments on Career Center/Career Platform/Finding WREAs." Most often, these were suggestions about improving support in finding WREAs. A smaller group of students (18.1% of respondents) suggested changes that worked toward "Expanding Opportunities" through increases in pay,

support in housing or transportation, or expanding communication around WREA opportunities. Other code categories included responses with specific advice respondents wanted to provide to other students, a need for help with making informed decisions related to WREA engagement, and requests for support in career development.

Some example responses include:

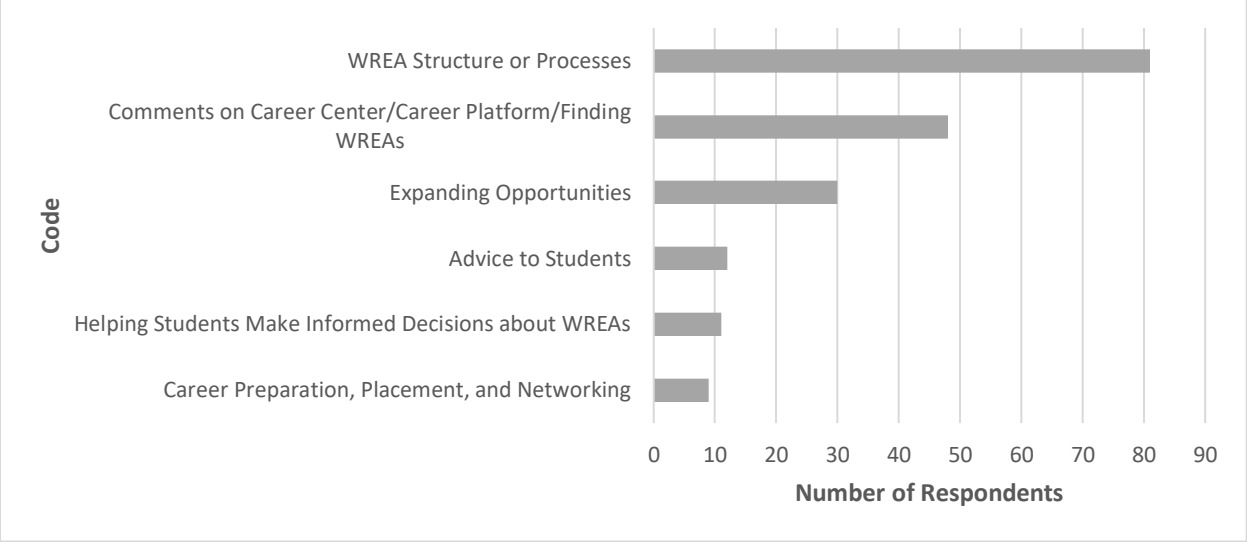
"I found a structured program with mentors in addition to managers, defined project objectives that you could call your own by the end of your term, and events/ meetings with your manager to discuss how to advance in your career, their personal experiences, know-how in the industry and breadth of exposure, as well as a cohort of other interns to really enrich my experience as far as taking away important workplace skills and providing clarity for what I want to do in the future" (WREA structure or Processes)

"I think the quality varies vastly based on who your supervisor is. I've had some short lived WREAs not listed that were generally unhelpful because the supervisor was not an effective mentor and we weren't given meaningful work to do. Having an actually meaningful project as well as having a supervisor able to provide support and opportunities for growth are what made my WREAs very effective." (WREA structure or Processes)

"Providing paid internships and housing and transportation would diversify and expand the number of students who can apply and work." (Expanding Opportunities)

Figure 3

Responses to Survey Question "Please use the Space below to Provide any Suggestions on how to Improve WREAs for Students in the Future"



Note. Valid responses (N=166) could have multiple codes.

Geospatial Maps

The use of geospatial mapping improved our visual comprehension of the locations of WREA activities reported by survey respondents. WREA activities were recorded in 38 U.S. states and Puerto Rico in the first year, and in 31 U.S. states in the second. Due to limited responses from Savannah State, Valdosta State, and Mercer University, only Georgia Tech and the University of Georgia are shown on the maps below.

Figures 4 and 5 display the spatial distribution of internships originating from the home campus for Georgia Tech and University of Georgia respondents between 20001and 2022. As shown in the U.S. National map, respondents from Georgia Tech had a geographically wider distribution of WREA locations. Although many are located along the East Coast, WREA activities for Georgia Tech respondents were also located throughout the Midwest and to the West Coast. WREAs connected to respondents from the University of Georgia, however, were predominantly located in the Eastern U.S. and heavily concentrated in and around Georgia.

Within Georgia, both universities show a majority of WREAs located in the metro Atlanta region and a small number in rural or semi-rural locations. Additionally, it should be noted that students from Georgia Tech and the University of Georgia also participated in WREAs located in eight countries including Germany, China, India, Nigeria, Lebanon, South Africa, and The Caribbean. In the second year, eight nations, including China, England, South Africa, Nigeria, Singapore, the Bahamas, and France, recorded WREAs.

Figure 4
WREA Locations for Respondents from Georgia Tech 2021-2022

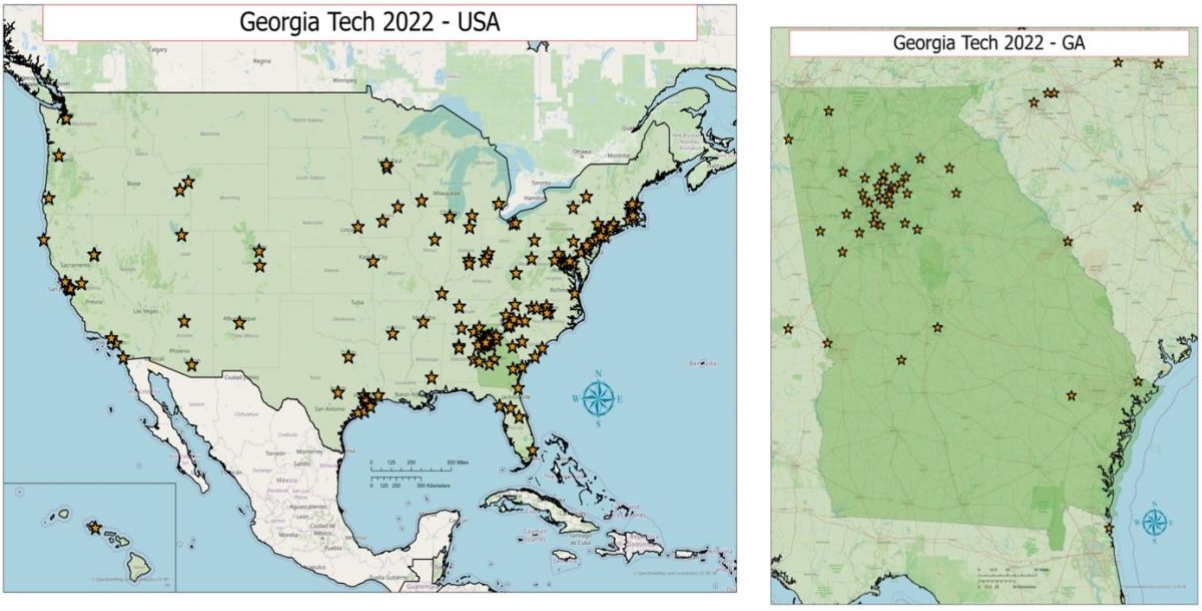
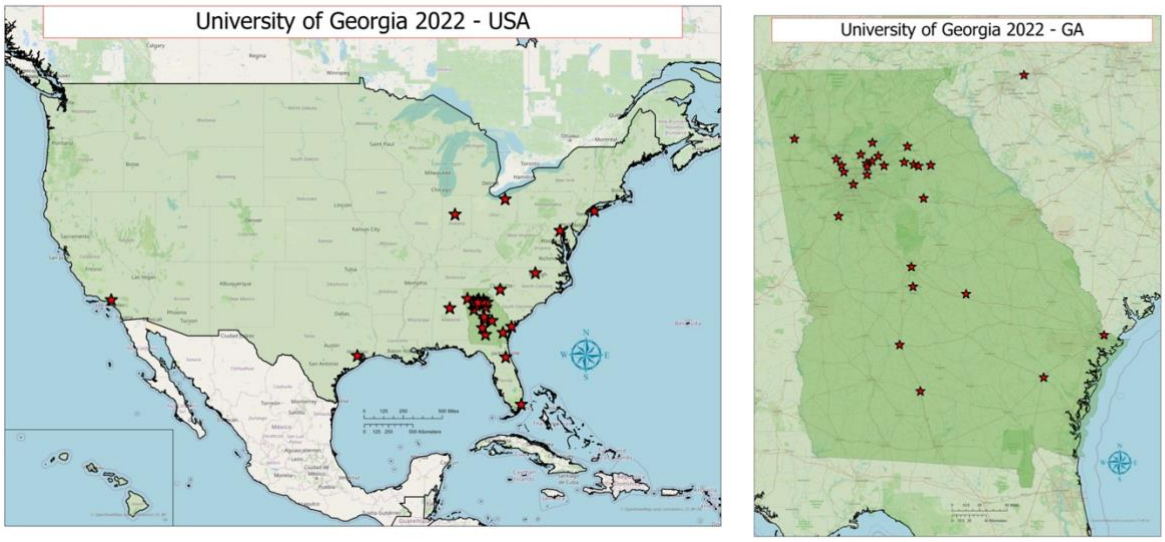


Figure 5
WREA Locations for Respondents from the University of Georgia 2021-2022



Summary

As part of a mixed-methods, multi-institutional project examining the effect of geography on students' access to work-related experiential activities (WREAs), an electronic survey was distributed to junior and senior-level students at five universities in Georgia. Responses from 1,447 students in engineering and computer science majors revealed high levels of engagement in WREA activities. Although only 11% of the respondents said that their educational program required one or more work-related experiences, four times that number, 45%, said they had participated in one or more WREAs. Overall, respondents said their WREA activities took place in 38 U.S. states, Puerto Rico, and eight countries outside the U.S.

Consistent with previous literature, students who engaged in one or more WREAs perceived the experience to be helpful in their progression toward career employment. The three most frequently cited gains to career competencies mentioned by the nearly 500 respondents who participated in one or more WREAs were "interacting with others in a professional setting," "establishing relationships with employers," and "understanding how to connect with the profession."

Although some differences were noted, these activities were taken up by both male and female students, across all races, and financial aid statuses. For example, students with need-based aid and Black/African American and other underrepresented minorities reported placing greater emphasis on public transportation than non-need based aid peers and Whites, respectively. Compared to male peers, women said they gained certain work-related skills during their WREA. Women reported that WREAs were significantly more helpful in teaching them how to write, helping them find answers to questions more quickly, and allowing them to work with people from diverse backgrounds.

Although about 12% more respondents from engineering reported having completed one or more WREAs, more computer science majors voiced an understanding of its value. In general, all respondents acknowledged gains acquired from their WREA activities. However, engineering major respondents said they found WREAs more helpful in improving leadership, establishing relationships with employers, and understanding how to connect with the profession.

Geospatial maps provide a visual understanding of the distance traveled by some students for their WREA. Although low response rates do not allow us to visually represent WREA activities across all participating institutions, response data showed that some students traveled beyond Georgia, and some went even beyond U.S. borders to complete their WREA. While the median distances of most respondents were more similar, findings show that respondents in the 75th percentile often travel beyond 1,000 km from campus to participate in their work-related experiential activity. This may be due, in part, to the larger number of international students enrolled at Georgia Tech, but more analysis is required.

This project is supported by NSF Grant # 2000847. Findings, opinions, or recommendations expressed are those of the author(s) and do not necessarily reflect the views of the NSF.

APPENDIX

Table 1. Survey Distribution Timeline

	Year 2 Survey				
	UGA	Georgia Tech	Mercer	Valdosta	Savannah
Initial Invitation	3/15/2022	3/3/2022	3/15/2022	3/3/2022	3/3/2022
First Reminder	3/23/2022	3/9/2022	3/23/2022	3/9/2022	3/9/2022
Second Reminder	3/31/2022	3/15/2022	3/31/2022	3/22/2022	3/22/2022
Third Reminder	4/21/2022	3/31/2022	4/21/2022	3/31/2022	3/31/2022
Fourth Reminder		4/21/2022		4/21/2022	4/21/2022
Survey Close*	4/30/2022	4/30/2022	4/30/2022	4/30/2022	4/30/2022

Response Rates

Overall, 10,868 students were included in the Year 2 spring 2022 sample lists. After accounting for undeliverable email addresses (n=9), 10,859 students were invited to participate in the Year 2 survey. Across the five schools, 1,318 responses were collected, resulting in an overall response rate of 12.1%. As seen in Table 2, response rates across schools ranged from 3.7% (Savannah State University) to 20.3% (Mercer University).

Table 2. Sample Size and Response Rates

	Year 2					
	UGA	Georgia Tech	Mercer	Valdosta	Savannah	Total
Sample Size	1,928	8,238	479	114	109	10,868
Undeliverable	0	9	0	0	0	9
Adjusted Sample Size	1,928	8,229	479	114	109	10,859
Responses*	141	1,069	97	7	4	1,318
Response Rate	7.3%	13.0%	20.3%	6.1%	3.7%	12.1%

*Note: all partial responses, regardless of completeness of data, were retained for calculating response rates.

Data Weighting

To account for survey nonresponse, data weighting was based on race/ethnicity and gender. Researchers obtained the distribution of these demographic variables for each school as seen in Table 3. Whereas the graduate survey sample was comprised from the Year 1 responses, the demographics for that sample were extracted from the Year 1 respondent data by matching the provided sample to the Year 1 data using respondent email.

Table 3. Sample Race/Ethnicity and Gender

	Year 2				
Race/Ethnicity	UGA	Georgia Tech	Mercer	Valdosta	Savannah
White	58.2%	39.6%	53.4%	46.5%	0.9%
Black or African American	7.1%	6.2%	21.9%	24.6%	94.5%
American Indian or Alaska Native	--	0.04%	--	--	--
Asian	21.1%	39.8%	10.6%	6.1%	--
Native Hawaiian or Other Pacific Islander	0.1%	0.02%	0.2%	--	--
Hispanic or Latino	7.8%	8.7%	4.6%	14.9%	--
Two or more	4.4%	4.2%	4.6%	7.9%	0.9%
Unknown	1.5%	1.4%	4.6%	--	3.7%

Table 4. Respondent Race/Ethnicity and Gender

	Year 2				
Race/Ethnicity	UGA	Georgia Tech	Mercer	Valdosta	Savannah
White	71 (60.7%)	341 (38.1%)	34 (45.3%)	3 (42.9%)	0 (0.0%)
Black or African American	8 (6.8%)	59 (6.6%)	17 (22.7%)	2 (28.6%)	3 (100.0%)
American Indian or Alaska Native	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Asian	22 (18.8%)	349 (39.0%)	12 (16.0%)	0 (0.0%)	0 (0.0%)
Native Hawaiian or Other Pacific Islander	0 (0.0%)	1 (0.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Hispanic or Latino	10 (8.5%)	74 (8.3%)	2 (2.7%)	1 (14.3%)	0 (0.0%)
Two or more	2 (1.7%)	39 (4.4%)	4 (5.3%)	1 (14.3%)	0 (0.0%)
Unknown	4 (3.4%)	32 (3.6%)	6 (8.0%)	0 (0.0%)	0 (0.0%)

Table 4. Respondent Race/Ethnicity and Gender

	Year 2				
Gender	UGA	Georgia Tech	Mercer	Valdosta	Savannah
Female	43 (37.1%)	408 (46.0%)	32 (43.2%)	2 (28.6%)	2 (66.7%)
Male	72 (62.1%)	464 (52.4%)	40 (54.1%)	5 (71.4%)	1 (33.3%)
Unknown	1 (0.9%)	14 (1.6%)	2 (2.7%)	0 (0.0%)	0 (0.0%)

As seen in Table 4, no study participants identified as American Indian/Alaska Native or Native Hawaiian/Other Pacific Islander. Additionally, relatively few participants were multiracial or had unknown race and ethnicity. Therefore, the IPEDS racial categories were further condensed into 5 categories: White, Black/African American, Asian, Hispanic, and Other.

Data weights based on race and gender were calculated using the Rake Extension for IBM SPSS Statistics v28.0. Data weights were computed twice – once using the original IPEDS variable and again using the condensed 5-category IPEDS variable. Whereas rake weighting considered both race and gender simultaneously, this method cannot provide a valid weight for cases with unknown race and/or gender. Therefore, after rake weights were computed, cases with unknown race and/or gender were assigned a default weight of 1 to ensure all cases would be included in any weighted analyses. Resulting weights were assessed for outliers. Weights provided using the 5-category IPEDS categorization provided slightly more conservative values; therefore, these weights may be preferable to those based on the full IPEDS variable.