



## **WREA Spring 2021 Student Survey Summary Report**

### **Introduction**

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 access to WREAs and strategies that facilitate the college-to-work transition for STEM students.

Findings presented below reveal student responses to the *Education and Career Planning Survey* that was administered in spring 2021 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 2021 survey administration. Participating institutions are Georgia Institute of Technology, Mercer University, The University of Georgia, Savannah State University, and Valdosta State University.

### **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 sample list and ensure respondents participated only once. Survey invitations and reminders were emailed to identified 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, five respondents were chosen and sent an Amazon e-gift card.

## Findings

Valid and useable responses were received from 1,447 students. As shown in Tables 1 and 2, 44% of the respondents identified as women, 45% were students of color, and 82% were enrolled full-time. Twenty-one percent said they were receiving need-based financial aid, 63% were receiving a merit-based scholarship, 27% were taking on an educational loan, and 22% were not receiving any form of educational loan, aid, or scholarship. When asked, many respondents said they began thinking about WREAs before or early in their undergraduate education. Overall, 11% of the respondents said that their educational program required one or more work-related experiences, but 45% said they had participated in one or more WREAs.

**Table 1**  
*Descriptive Statistics*

	N	Percent of valid responses*
Gender		
Male	677	54.9
Female	548	44.4
Race		
White	590	47.0
Black or African American	98	7.8
Hispanic	102	8.1
Asian	373	29.7
Other	93	7.4
First Generation		
Yes	192	15.5
No	1046	84.5
Major		
Computer Science	404	30.7
Engineering	914	69.3
WREA required by major		
Yes	162	11.3
No	873	61.1
Unsure	394	27.6
Participated in WREA		
Yes	643	45.4
No	774	54.6
Financial Aid		
Need-Based	260	20.9
Merit-Based	788	63.4
Educational Loan	334	26.9
No Financial Aid	278	22.4
Mean Age	21.9 (2.45)	
Mean GPA	3.55 (.45)	

\*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=1,447. 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	643	45.4
No	774	54.6
WREAs completed since entering college		
One	258	40.6
Two	213	33.5
Three	106	16.7
Four	38	6.0
Five	21	3.3
Began thinking about WREAs		
Before starting college	261	41.6
Freshman year	244	38.9
Sophomore year	92	14.7
Junior year	26	4.1
Senior year	4	0.6
How you found your WREA**		
Sought on my own	452	76.6
Referred through the Career Center	167	28.3
Online career platform	181	30.7
Academic department	17	2.9
Personal network	216	36.6
Other	39	6.6
Full-time job offer post-graduation***		
Yes, with one of WREA companies	59	29.2
Yes, with another company	55	27.2
No	88	43.6

\*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=1,447. 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 2021.

## NACE Competencies

An important goal of this project was to explore students' perceptions of how WREAs help prepare them for employment. We relied on the National Association of Colleges and Employers (NACE) Career Readiness Competencies as the framework for skill development<sup>1</sup>. According to survey respondents and as shown in Table 3, “interacting with others in a professional setting”, “establishing relationships with employers,” and “understanding how to connect with the profession” were the three competencies with highest gain acquired through their WREA and “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? <sup>a</sup>		
Interacting with others in a professional setting	3.82	.493
Establishing relationships with employers	3.70	.593
Understanding how to connect to the profession	3.56	.696
Learning how to find answers to questions quickly	3.50	.693
Improving critical thinking	3.50	.747
Understanding how to utilize digital technology to solve problems	3.50	.744
Being guided by a mentor	3.49	.760
Learning how to manage time	3.47	.744
Understanding how to advance in my field	3.40	.799
Developing skills as a leader	3.25	.849
Learning how to work with people of diverse backgrounds	3.25	.894
Applying knowledge learned from class	3.13	.913
Learning how to write better	2.69	.962

\*only includes students who responded that they had participated in at least one WREA (N= 495)

<sup>a</sup> 1= not at all helpful, 4= very helpful

<sup>1</sup> For more information on NACE competencies, see: <https://www.nacweb.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 that 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) and Mercer University (Mercer) on average, valuing an urban setting for a WREA more so than students from UGA ( $F=5.481$ ,  $p<.01$ ). Also shown in Table 4, there were differences in the skills that students said they developed from their WREA experiences by institution. Georgia Tech students placed the highest value on an urban setting, and compared to respondents from the University of Georgia (UGA) and Georgia Tech, on average, Mercer students reported that WREAs were most helpful with the following skills: “learning how to manage time,” “developing skills as a leader,” and “learning how to work with people from diverse backgrounds.”

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

Dependent Variables	Georgia Tech		University of Georgia		Mercer University		F
	M	SD	M	SD	M	SD	
Number of WREAs completed	1.97	1.039	1.94	1.050	2.53	1.506	2.156
When considering a WREA, how important were the following items? <sup>a</sup>							
Time it takes to get to the WREA site	2.25	1.005	2.45	.957	2.60	.986	2.203
Ability to work from home	1.67	.911	1.64	.960	2.00	1.134	1.011
Rural setting	1.40	.761	1.30	.619	1.40	.737	.802
Urban setting	2.24	1.054	1.85	1.047	2.00	1.069	5.481**
Access to public transportation	1.93	1.005	1.72	1.031	1.73	.884	1.800
Access to parks and recreation	1.98	.990	1.83	1.023	1.93	.961	.916
Access to shopping	1.84	.940	1.70	.902	2.00	1.069	1.165
Close to family and friends	2.28	1.026	2.56	1.022	2.27	1.100	2.970
In your WREAs, how helpful were the following skills? <sup>b</sup>							
Learning how to manage time	3.43	.768	3.65	.602	3.67	.500	3.271*
Applying knowledge learned from class	3.11	.919	3.21	.894	3.22	.833	.413
Interacting with others in a professional setting	3.81	.507	3.85	.425	3.78	.441	.231

*Table 4, cont.*

Developing skills as a leader	3.21	.874	3.45	.681	3.63	.744	3.358*
Learning how to write better	2.69	.969	2.58	.884	3.33	1.118	2.463
Learning how to find answers to questions quickly	3.49	.710	3.55	.619	3.78	.441	.936
Being guided by a mentor	3.49	.781	3.51	.669	3.56	.527	.045
Establishing relationships with employers	3.68	.609	3.76	.518	3.78	.441	.567
Improving critical thinking	3.48	.771	3.59	.636	3.78	.441	1.338
Understanding how to connect to the profession	3.52	.718	3.74	.553	3.67	.500	3.127*
Understanding how to advance in my field	3.41	.793	3.34	.857	3.75	.463	.988
Understanding how to utilize digital technology to solve problems	3.48	.764	3.57	.660	3.78	.441	1.083
Learning how to work with people of diverse backgrounds	3.20	.913	3.44	.785	3.78	.441	4.035*
How helpful will the WREA be in finding full-time employment?	3.56	.710	3.67	.617	3.50	.972	.776

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

<sup>a</sup> 1= not important, 4= very important; <sup>b</sup> 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's respondents were more likely to be First Generation students (37%) than UGA (22.1%) and Georgia Tech (11.9%). 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 2% of respondents at Mercer University. 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 4 shows that 45% of Georgia Tech students said they were thinking of WREAs before high school, compared to 22% for UGA and 33% for Mercer. Interestingly, Georgia Tech students also reported a higher use of both the Career Center and online career platforms to find their WREAs. Overall, about half of Georgia Tech students had participated in at least one WREA by the time of this survey, compared to 36% for UGA and 27% for respondents from Mercer University. Although a number of respondents at all three institutions were not sure if a WREA was required for their academic program, participation in a WREA did not seem to influence the percentage of respondents who had employment offers, with Mercer (66% with offers) and UGA (45%) outpacing Georgia Tech students (22%).

**Table 5**  
***Respondent Characteristics and WREA Knowledge, Comparisons by Institution***

Variables	Georgia Tech %	University of Georgia %	Mercer University %	$X^2$
First Generation student	11.9	22.1	37.0	34.433***
Financial Aid Status				
Merit-based	59.0	77.3	83.0	37.413***
Need-based	17.9	25.4	44.7	24.548***
Loan	23.3	33.0	51.1	24.937***
None	27.4	8.3	2.1	54.350***
When did you begin thinking about WREAs?				52.575***
Before college	45.5	22.0	33.3	
Freshman year	39.6	36.0	40.0	
Sophomore year	11.6	31.0	10	
Junior or Senior year	3.3	11.0	13.4	
Participated in at least one WREA	49.4	36.0	27.3	24.452***
How did you find your WREA?				
Sought it on my own	78.1	73.1	60.0	3.562
Referred via career center	31.5	14.0	20.0	12.240**
Online career platform	32.3	26.9	6.7	5.272
Assigned by academic dept.	2.1	5.4	13.3	8.987*
Personal network	35.4	40.9	46.7	1.673
Other	5.0	12.9	13.3	9.252*
WREA required by major?				208.253***
Yes	5.9	29.0	23.6	
No	71.0	30.0	45.5	
Unsure	23.1	41.1	30.9	
Do you currently have an offer for full-time employment?				29.991***
Yes, with WREA company	10.3	28.2	44.4	
Yes, with another company	12.0	16.7	22.2	
No	77.8	55.1	33.3	

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

## Findings by Major

When examining findings across majors, we found two 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 and have 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 improving leadership, establishing relationships with employers, and understanding how to connect with the profession. Conversely, computer science majors reported that WREAs were significantly more helpful in teaching students how to find answers to questions quickly. While caution is urged due to sample size differences, taken together, these differences might highlight the different working environments and skillsets required in each major field.<sup>2</sup>

Despite some differences, analyses by major generally revealed fewer and less distinct differences by major other than other comparisons discussed above. 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 (50.4% vs. 39.2%). Interestingly, it appeared that students found their WREAs through different sources; Computer science students said they utilized online career platforms and information obtained from their own academic department at significantly higher rates than engineering students. Further, computer science students were more likely to have a WREA required by their major (16.1% vs. 9.5%). 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 in job offers between the two majors at the three institutions included in this analysis.

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<sup>2</sup> It is important to note that due to sample size and response rates, caution is urged in assuming generalizability.



**Table 6**  
**Comparisons by Major**

Dependent Variables	Computer Science		Engineering		<i>t</i>
	M	SD	M	SD	
Number of WREAs completed	1.93	.978	2.03	1.087	-.984
When considering a WREA, how important were the following items? <sup>a</sup>					
Time it takes to get to the WREA site	2.25	1.026	2.33	.985	-.820
Ability to work from home	1.96	1.021	1.58	.879	4.263***
Rural setting	1.41	.738	1.39	.746	.266
Urban setting	2.26	1.050	2.13	1.049	1.329
Access to public transportation	2.14	1.012	1.80	.990	3.450***
Access to parks and recreation	1.97	1.031	1.95	.986	.235
Access to shopping	1.79	.956	1.83	.933	-.396
Close to family and friends	2.30	1.051	2.36	1.020	-.598
In your WREAs, how helpful were the following skills? <sup>b</sup>					
Learning how to manage time	3.41	.786	3.52	.708	-1.397
Applying knowledge learned from class	3.28	.891	3.11	.907	1.760
Interacting with others in a professional setting	3.76	.574	3.85	.439	-1.402
Developing skills as a leader	3.05	.921	3.33	.807	-3.100**
Learning how to write better	2.56	.980	2.73	.955	-1.632
Learning how to find answers to questions quickly	3.68	.605	3.47	.697	3.044**
Being guided by a mentor	3.54	.758	3.50	.736	.409
Establishing relationships with employers	3.59	.640	3.73	.567	-2.021*
Improving critical thinking	3.45	.766	3.54	.712	-1.109
Understanding how to connect to the profession	3.43	.754	3.62	.646	-2.325*
Understanding how to advance in my field	3.32	.904	3.46	.761	-1.506
Understanding how to utilize digital technology to solve problems	3.62	.647	3.49	.749	1.746
Learning how to work with people of diverse backgrounds	3.24	.930	3.28	.861	.336
How helpful will the WREA be in finding full-time employment?	3.52	.745	3.61	.669	1.141

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

<sup>a</sup> 1= not important, 4= very important; <sup>b</sup> 1=not at all helpful, 4= very helpful

**Table 7**  
*Comparisons by Major*

Variables	Computer Science %	Engineering %	$\chi^2$
First Generation student	18.8	13.6	5.123*
Financial Aid			
Merit-based	66.7	62.3	1.985
Need-based	22.7	20.4	.804
Loan	23.6	27.5	1.948
None	20.4	22.9	.852
When did you begin thinking about WREAs?			4.197
Before college	37.3	43.3	
Freshman year	39.9	38.2	
Sophomore year	18.3	13.8	
Junior or Senior year	4.6	4.7	
Participated in at least one WREA	39.2	50.4	14.024***
How did you find your WREA?			
Sought it on my own	77.9	76.3	.145
Referred via career center	22.1	30.0	3.259
Online career platform	40.0	27.2	8.123**
Assigned by academic dept.	5.7	2.1	4.692*
Personal network	32.9	37.6	1.006
Other	9.3	5.9	1.965
WREA required by major?			19.610***
Yes	16.1	9.5	
No	53.2	65.0	
Unsure	30.7	25.5	
Do you currently have an offer for full-time employment?			2.612
Yes, with WREA company	12.4	14.0	
Yes, with another company	17.7	11.8	
No	69.9	74.1	

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

## Results by Need-based Financial Aid Status

Existing literature on student success affirms the importance of examining WREAs in relation to students' socioeconomic status. Using need-based financial aid (self-reported) as a proxy for low-income, 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 placed higher emphasis on access to public transportation when considering a WREA ( $t=2.291$ ,  $p<.05$ ). Students in this category also reported that WREAs were more useful in helping them to learn how to manage their time better ( $t=2.821$ ,  $p<.01$ ) and how to utilize digital technologies more effectively to solve problems ( $t=2.076$ ,  $p<.05$ ).

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. Forty percent (40%) of need-based financial aid respondents identified themselves as first generation, compared to only 8.9% of the remaining respondents. The need-based aid students were also more than two times more likely to be receiving loans (49.6% vs. 20.9%). Furthermore, lower-income students said they were more unsure of whether a WREA was required by their major (35% vs. 25%). These differences carried through to WREA experiences themselves, with students receiving need-based aid participating at a significantly lower rate (29.0%) than their counterparts not receiving need-based aid (41.7%). 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		Not Receiving Need-Based Aid		<i>t</i>
	M	SD	M	SD	
Number of WREAs completed	1.96	.965	1.93	1.019	2.63
When considering a WREA, how important were the following items? <sup>a</sup>					
Time it takes to get to the WREA site	2.46	1.038	2.25	.983	1.659
Ability to work from home	1.76	.964	1.62	.890	1.291
Rural setting	1.49	.739	1.33	.699	1.743
Urban setting	2.14	1.092	2.14	1.058	.019
Access to public transportation	2.11	1.066	1.82	.979	2.291*
Access to parks and recreation	2.00	.980	1.95	.998	.394
Access to shopping	1.95	.937	1.79	.915	1.383
Close to family and friends	2.24	1.057	2.31	1.030	-.576
In your WREAs, how helpful were the following skills? <sup>b</sup>					
Learning how to manage time	3.65	.584	3.43	.760	2.821**
Applying knowledge learned from class	3.22	.870	3.10	.929	.985
Interacting with others in a professional setting	3.83	.450	3.82	.505	.154
Developing skills as a leader	3.34	.810	3.23	.861	.996
Learning how to write better	2.72	.974	2.66	.962	.498
Learning how to find answers to questions quickly	3.49	.694	3.50	.700	-.023
Being guided by a mentor	3.50	.692	3.49	.777	.116
Establishing relationships with employers	3.75	.524	3.69	.609	.840
Improving critical thinking	3.54	.673	3.49	.768	.478
Understanding how to connect to the profession	3.60	.721	3.55	.698	.550
Understanding how to advance in my field	3.42	.865	3.40	.793	.260
Understanding how to utilize digital technology to solve problems	3.65	.635	3.47	.764	2.076*
Learning how to work with people of diverse backgrounds	3.41	.828	3.20	.910	1.760
How helpful will the WREA be in finding full-time employment?	3.55	.755	3.59	.692	-.434

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

<sup>a</sup> 1= not important, 4= very important; <sup>b</sup> 1=not at all helpful, 4= very helpful

**Table 9**  
***Comparisons by Need-Based Aid Status***

<b>Variables</b>	<b>Receiving Need-Based Aid</b>	<b>Not Receiving Need-Based Aid</b>	<b>X<sup>2</sup></b>
	<b>%</b>	<b>%</b>	
First Generation student	40.3	8.9	153.303***
Receiving a loan	49.6	20.9	86.365***
When did you begin thinking about WREAs?			
Before college	38.2	43.5	3.329
Freshman year	36.8	37.9	
Sophomore year	18.4	14.9	
Junior or Senior year	6.6	3.6	
Participated in at least one WREA	29.0	41.7	13.964***
WREA required by major?			19.164***
Yes	14.6	9.9	
No	50.4	65.2	
Unsure	35.0	24.9	
How did you find your WREA?			
Sought it on my own	71.1	78.2	1.876
Referred via career center	27.6	29.1	.067
Online career platform	30.3	31.3	.032
Assigned by academic dept.	3.9	2.7	.362
Personal network	30.3	39.1	2.140
Other	9.2	6.8	.535
Do you currently have an offer for full-time employment?			3.677
Yes, with WREA company	9.3	14.7	
Yes, with another company	18.7	11.8	
No	72.0	73.5	

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

## Findings by Gender

Analyses by gender revealed some areas of similarity as well as others with difference. When considering a WREA, women respondents placed significantly more emphasis ( $p < .05$ ) on many of the geographic and environmental features of the experience. Shown in Table 10, women respondents placed significantly more emphasis on the ability to work from home, being in an urban setting, having access to public transportation, and having access to parks and recreation. Women also said they gained different skills than male peers during their WREAs. 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.

However, analyses related to planning for and knowledge about WREAs revealed far fewer differences by gender. In fact, only one variable was significantly different at the  $p < .05$  confidence level. Shown in Table 10, women were more likely to utilize their career center in finding their WREA than men (33.6% vs. 24.5%). Although findings did not reach the level of statistical significance, findings may be of interest. Of note, almost 10% more men were considering WREAs before their freshman year of college. However, this did not appear to impact the outcome variables (WREA participation, job offer) in the long run (see Table 11). Further inquiry into WREA differences by gender may be included in spring 2022 student interviews.

## 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. Students in the underrepresented minority category placed significantly more emphasis ( $p < .01$ ) on the ability to work from home access to public transportation, and access to shopping than the other groups. At the same time, Asian students placed significantly more emphasis on rural and urban settings (than the other two groups). Underrepresented students also reported that WREAs were significantly more helpful to them in developing skills as a leader and learning how to write more effectively. 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 (41.9% and 43.9%, respectively), Asian students had a 30.8% participation rate. Potentially related, White students could use their personal network to connect with WREA opportunities at a much higher rate (42.9%) than the other groups (around 31%). Once again, however, these initial differences did not appear to play a role in the job offer rate. All three race categories revealed about one quarter of the students with a full-time job offer.

**Table 10**  
**Comparisons by Gender**

Dependent Variables	Female		Male		<i>t</i>
	M	SD	M	SD	
Number of WREAs completed	1.87	.964	1.98	1.060	-1.207
When considering a WREA, how important were the following items? <sup>a</sup>					
Time it takes to get to the WREA site	2.26	1.017	2.30	.976	-.399
Ability to work from home	1.75	.955	1.54	.840	2.453*
Rural setting	1.35	.710	1.36	.714	-.107
Urban setting	2.28	1.056	2.05	1.055	2.351*
Access to public transportation	2.03	1.070	1.73	.910	3.244**
Access to parks and recreation	2.07	.979	1.87	1.003	2.146*
Access to shopping	1.86	.913	1.77	.924	1.077
Close to family and friends	2.32	1.006	2.28	1.047	.438
In your WREAs, how helpful were the following skills? <sup>b</sup>					
Learning how to manage time	3.46	.713	3.46	.766	.002
Applying knowledge learned from class	3.08	.944	3.16	.888	-.971
Interacting with others in a professional setting	3.85	.452	3.81	.508	.932
Developing skills as a leader	3.32	.790	3.18	.901	1.727
Learning how to write better	2.76	.931	2.58	.980	2.064*
Learning how to find answers to questions quickly	3.58	.658	3.42	.727	2.570*
Being guided by a mentor	3.56	.755	3.43	.774	1.780
Establishing relationships with employers	3.75	.530	3.66	.633	1.787
Improving critical thinking	3.52	.715	3.48	.782	.675
Understanding how to connect to the profession	3.62	.643	3.50	.749	1.885
Understanding how to advance in my field	3.46	.761	3.36	.824	1.364
Understanding how to utilize digital technology to solve problems	3.54	.696	3.46	.794	1.142
Learning how to work with people of diverse backgrounds	3.38	.784	3.11	.973	3.257**
How helpful will the WREA be in finding full-time employment?	3.60	.653	3.58	.744	.241

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

<sup>a</sup> 1= not important, 4= very important <sup>b</sup> 1=not at all helpful, 4= very helpful

**Table 11**  
*Additional Comparisons by Gender*

Variables	Female %	Male %	$\chi^2$
First Generation student	15.7	15.4	.022
Financial Aid status*			
Merit-based	65.0	61.7	1.354
Need-based	21.8	20.3	.413
Loan	27.5	27.0	.041
None	20.4	24.0	2.334
When did you begin thinking about WREAs?			7.751
Before college	37.3	46.4	
Freshman year	42.7	34.5	
Sophomore year	17.3	13.8	
Junior or Senior year	2.8	5.4	
Participated in at least one WREA	40.0	38.6	.258
How did you find your WREA? <sup>a</sup>			
Sought it on my own	75.9	77.8	.235
Referred via career center	33.6	24.5	4.848*
Online career platform	33.2	30.3	.469
Assigned by academic dept.	1.8	3.4	1.206
Personal network	36.4	38.7	.277
Other	8.6	5.7	1.517
WREA required by major?			5.849
Yes	8.8	12.7	
No	64.8	59.5	
Unsure	26.5	27.8	
Do you currently have an offer for full-time employment?			1.323
Yes, with WREA company	12.0	15.4	
Yes, with another company	12.9	13.5	
No	75.1	71.0	

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

<sup>a</sup> Respondents could select more than one category



**Table 12**  
**Comparisons by Race**

Dependent Variables	Underrepresented Minority		Asian		White		F
	M	SD	M	SD	M	SD	
Number of WREAs completed	2.07	1.129	1.76	.923	1.96	1.007	2.965
When considering a WREA, how important were the following items? <sup>a</sup>							
Time it takes to get to WREA site	2.41	1.039	2.13	.987	2.30	.974	2.334
Ability to work from home	1.80	1.022	1.79	.969	1.52	.809	5.741**
Rural setting	1.44	.780	1.49	.810	1.28	.643	3.971*
Urban setting	2.27	1.072	2.37	1.030	2.00	1.057	5.839**
Access to public transportation	2.19	1.104	2.18	1.014	1.59	.852	23.944***
Access to parks and recreation	1.98	.983	2.04	.986	1.91	1.010	.702
Access to shopping	2.00	1.000	1.91	.960	1.68	.856	5.737**
Close to family and friends	2.22	.963	2.31	1.038	2.34	1.059	.620
In your WREAs, how helpful were the following skills? <sup>b</sup>							
Learning how to manage time	3.53	.702	3.46	.802	3.44	.728	.658
Applying knowledge from class	3.23	.848	3.10	.977	3.08	.916	1.127
Interacting with others in a professional setting	3.79	.473	3.74	.599	3.87	.453	2.627
Developing skills as a leader	3.47	.724	3.12	.916	3.20	.856	5.454**
Learning how to write better	2.82	.940	2.76	1.013	2.57	.940	3.152*
Learning how to find answers to questions quickly	3.54	.581	3.58	.695	3.44	.741	1.935
Being guided by a mentor	3.55	.655	3.50	.796	3.46	.790	.533
Establishing relationships with employers	3.71	.560	3.67	.608	3.70	.609	.159
Improving critical thinking	3.53	.703	3.42	.793	3.51	.756	.712
Understanding how to connect to the profession	3.55	.718	3.51	.757	3.58	.666	.326
Understanding how to advance in my field	3.45	.773	3.44	.814	3.36	.807	.654
Understanding how to utilize digital technology to solve problems	3.51	.693	3.51	.747	3.48	.775	.130
Learning how to work with people of diverse backgrounds	3.30	.865	3.25	.962	3.19	.883	.594
How helpful will the WREA be in finding full-time employment	3.57	.732	3.50	.769	3.63	.655	1.369

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

<sup>a</sup> 1= not important, 4= very important; <sup>b</sup> 1=not at all helpful, 4= very helpful

**Table 13**  
*Additional Comparisons by Race*

Variables	Under-represented Minority	Asian	White	X <sup>2</sup>
	%	%	%	
First Generation student	22.0	22.6	8.0	48.987***
Financial Aid status <sup>a</sup>				
Merit-based	58.7	55.8	70.5	24.551***
Need-based	29.5	22.6	15.6	23.319***
Loan	39.9	19.1	25.6	35.828***
None	18.1	31.5	18.7	25.436***
When did you begin thinking about WREAs?				6.876
Before college	43.1	41.7	42.5	
Freshman year	35.8	37.4	39.4	
Sophomore year	16.3	16.5	14.7	
Junior or Senior year	4.9	4.3	3.5	
Participated in at least one WREA	41.9	30.8	43.9	17.212***
How did you find your WREA?				
Sought it on my own	75.6	77.4	77.6	.197
Referred via career center	27.6	35.7	25.9	3.804
Online career platform	32.5	39.1	27.8	4.797
Assigned by acad. dept.	4.1	3.5	1.9	1.627
Personal network	31.7	30.4	42.9	7.387*
Other	8.9	6.1	6.6	.930
WREA required by major?				16.976**
Yes	10.2	10.7	11.2	
No	54.9	60.1	66.6	
Unsure	34.8	29.2	22.2	
Do you currently have an offer for full-time employment?				1.903
Yes, with WREA company	12.7	10.7	15.5	
Yes, with another company	14.4	12.5	12.8	
No	72.9	76.8	71.7	

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

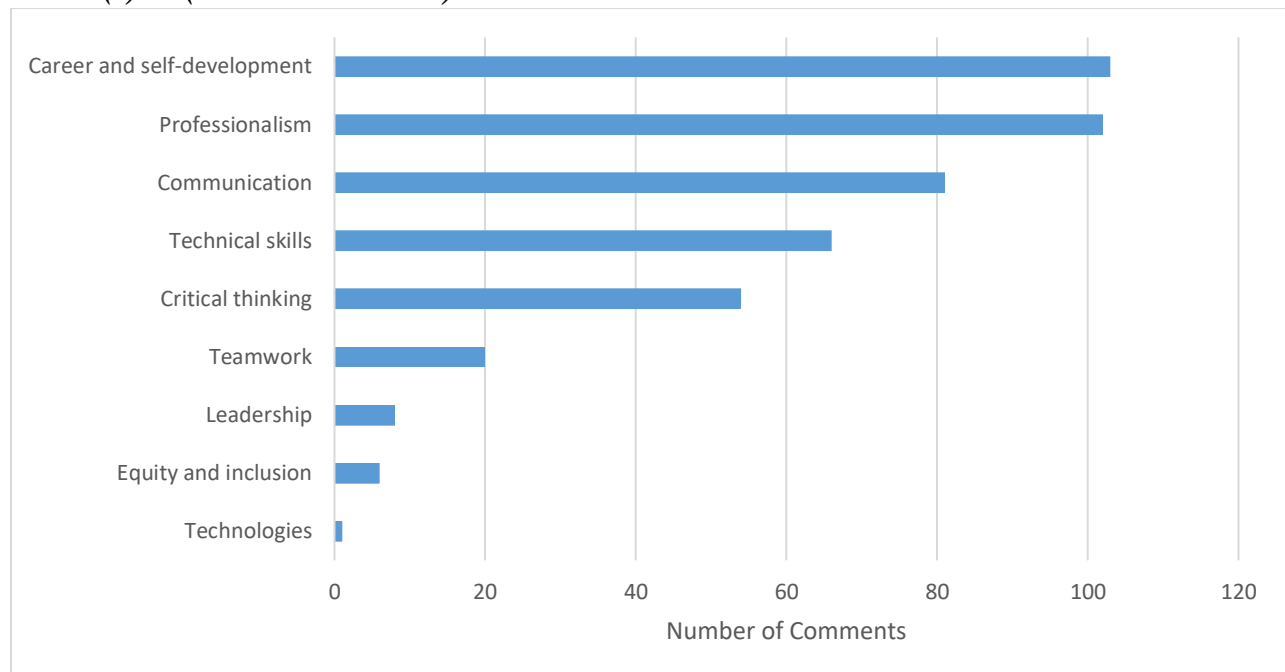
<sup>a</sup> Respondents could select more than one category

## Responses to Open-Ended Questions

Three questions on the survey provided open-ended responses. To further probe into student experiences during their WREAs, we conducted an iterative coding process. Drawing on NACE competencies, three researchers inductively analyzed 25% of the responses for each question, creating primary and secondary codes. These researchers then met to review, create, and define a series of codes that would be used for the remaining responses and ensure coder agreement. After agreeing on about definitions, with particular attention to secondary codes for questions 2 and 3, the questions were divided up among the researchers, with each coder analyzing one question. Figures 1-3 show the secondary code categories. In the first open-ended question, respondents were asked to describe the most helpful skill they developed during their WREA experiences. As shown in Figure 1 below, the data analysis revealed five distinct skill categories that were mentioned by at least 13% of the respondents (keeping in mind that students could mention multiple categories). These categories are broken down in further detail below.

**Figure 1**

**Responses for Survey question: “What is the most helpful skill you developed during your WREA(s)?” (N = 397 comments)**



As shown in Figure 1, **Career and Self-Development** was mentioned by 25.9% of respondents. Students were seemingly very pleased with how WREAs allowed them to grow and develop as a person and as a future entrant into the workforce. They referenced enhanced networking opportunities, increased self-awareness, confidence, and inquisitiveness, and knowing when to ask questions about their work.

**Professionalism** was mentioned by 25.7% of respondents. Students reported that the exposure to professional work settings was one of their most important takeaways. This allowed them to understand office dynamics in a hands-on way. Additionally, there were countless mentions of building time management skills and the prioritization of multiple tasks.

**Communication** was mentioned by 20.4% of respondents. Communication skill-building was reported in many forms. Students mentioned growth in interpersonal dialogue, written communication, digital communication, presentation of ideas, and communication across teams.

**Technical Skills** was mentioned by 16.6% of respondents. Technical skills were grouped separately from the soft skills contained within the other categories. Here, students generally reported major-specific technical skills that ranged from programming languages to industry standards in engineering.

**Critical Thinking** was mentioned by 13.6% of respondents. Students who developed critical thinking gains frequently mentioned that their WREA helped them to apply the concepts learned in the classroom to real-world situations. Additionally, students found themselves in situations where they were forced to creatively solve problems that popped up during their experience.

Respondent quotes provide additional information:

*“I was able to develop a basic sense of professional workflow and problem-solving, such as reaching out to another team for permissions or help explaining the project.”* (Professionalism)

*“The most helpful skill I developed on my own was challenging myself and working through these challenges. My work experience allowed me to know when to ask for help and also helped me to figure out what I do and don't like in my field.”* (Critical Thinking)

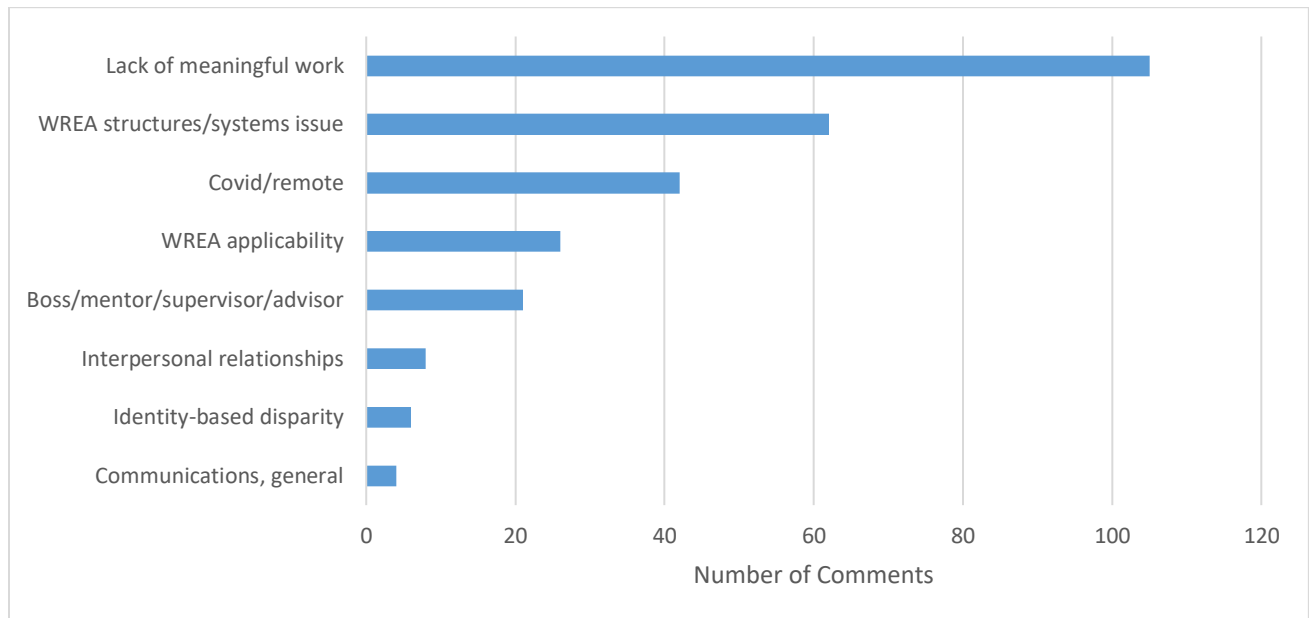
*“Communication skills were the most helpful because they can be carried from job to job no matter what industry it is.”* (Communication)

While we wanted to learn about the positives that students perceived from their WREAs, another survey question also asked about the aspects of student experiences that did not seem to live up to their expectations. Figure 2 displays experiences that respondents said were least helpful during the WREA. Based on comments included, the largest barrier to a successful WREA was the lack of meaningful work given to students. Almost half (N= 105 or 41%) of respondents indicated that they were given “busy work,” “menial tasks,” or “paperwork/data entry that was only tangentially related to their field.” In these cases, responses indicated that they believed their WREA experience was hampered by the lack of productive tasks assigned by their supervisor.

Responses also indicated concerns with the existing WREA structures and systems (24.2%). This category of critical responses ranged anywhere from specific structural issues during the WREA including meetings, on-boarding, bureaucracy, and safety, to working with the institutional career center throughout the WREA experience.

**Figure 2**

**Responses for Survey question: “What is the least helpful experience you had during your WREA(s)?” (N = 256 comments)**



COVID-19’s prompt to offer remote WREA experiences was commonly critiqued by students, as shown in Figure 2 (N= 42 or 16.4%). Common themes included technical difficulties, feelings of isolation, troubles with virtual onboarding, reduced skill transfer, and an overall diluted experience as companies struggled to adjust to the new format. We hope to explore these comments more in the student interviews in 2022.

Lastly, there were also concerns about the WREA applicability to certain aspects of their career preparation (10.2%). In general, these were separated into two distinct themes. Students either felt that their experiences did not align with the coursework and skills taught at their institution, or they felt as if they were given tasks at their WREA that did not align with their ultimate career goals. This dissonance appeared to cause students to question the meaningfulness of their experiences and reduce their overall fulfillment from the WREA process.

Respondent quotes include:

*“When a summer internship turned into a 3-week virtual experience, I did not end up gaining any technical skills beyond very basic surface level knowledge.”* (COVID/Remote)

*“(I) wasn’t really given tasks that were related to what I wanted to do in the future, a lot of it didn’t require my college education and could have been done by a high schooler.”* (Lack of Meaningful Work)

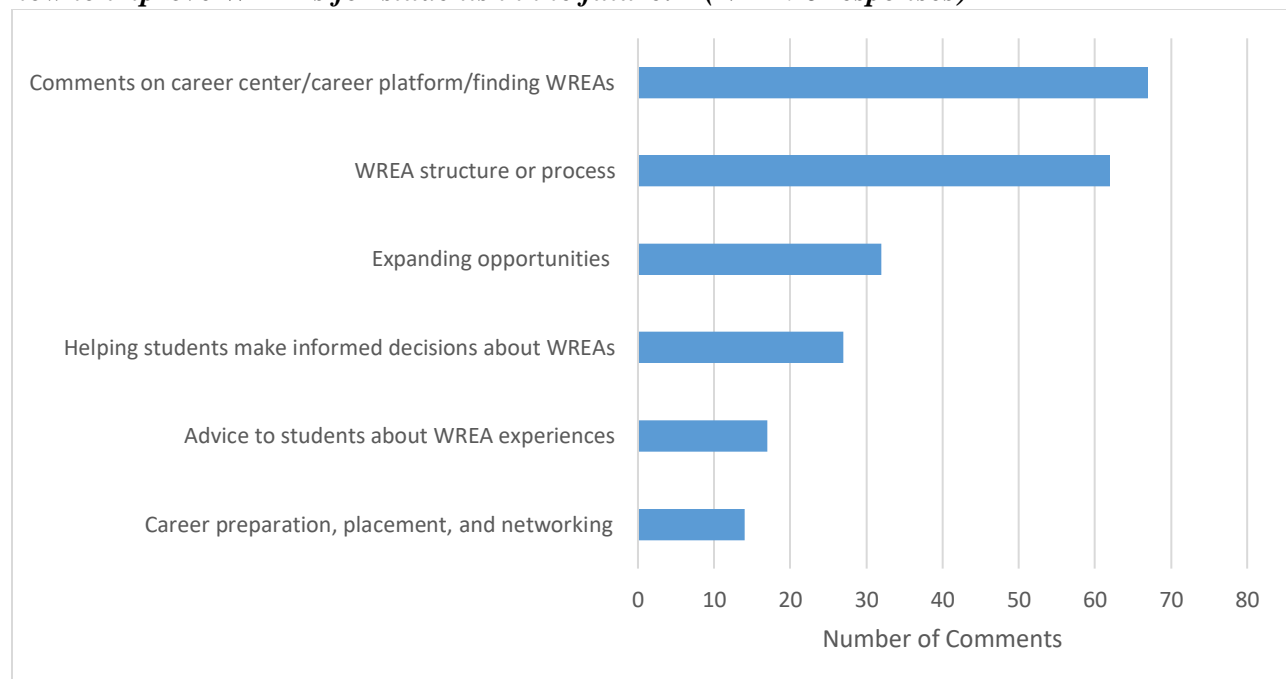
*“Having them during school semesters is almost useless. I have barely any time to dedicate to them, whereas they were very easy to dedicate time to over the summer when I had more time.”* (WREA Structural/Systems Issue)

When asked to provide suggestions on improving WREAs, respondents mainly focused on two distinct themes (see Figure 3). Mentioned most frequently were comments on institutional career centers and career platforms, how students used these means to find WREAs (mentioned by 34.2% of respondents). Many of the students in this category drew on positive experiences during the WREA process and praised the structures in place at their own institutions. Specifically, some respondents mentioned the positive impact that their career center and/or career fairs had on their ability to secure meaningful WREAs. Alternatively, other students offered feedback that identified, among other things, the need for earlier prompts from institution officials for students to get involved, to develop better partnerships between the institutions and employers, and to have more institutional oversight in the WREA process.

Following closely behind, students also commented on the need to improve WREA structures and processes in the future (31.6%). The most prevalent topic in this grouping was the need for strong mentorship during the WREA. Some respondents identified a strong relationship with their mentor as a positive aspect of their own WREA experience, while others cited the lack of a mentor as an area that needed to be addressed. Some respondents expressed the desire for internships to be designed in a cohort-based manner, thus allowing for stronger relationships to form amongst peers. Finally, respondents also stressed the need for companies/supervisors to entrust WREA participants with meaningful tasks that would allow students to draw on their classroom knowledge and apply it to their desired field.

### Figure 3

**Responses for Survey question: “Please use the space below to provide any suggestions on how to improve WREAs for students in the future.” (N = 196 responses)**



Written comments for this item indicated that respondents were also invested in expanding access to WREAs in the future (16.3%). The suggestions varied, but included discussions on the need for better housing and transportation options, more alignment between class schedules and WREAs, better pay, more career fields, and easier points of entry. These responses revealed students to be invested in bettering the WREA experience for those who follow.

On a similar note, it should also be mentioned that many respondents used this question as an opportunity to describe ways that information plays a role in helping students make decisions about WREAs (13.8%) and general advice to students seeking out future WREAs (8.7%). For the former, respondents mentioned the need for increased transparency in the WREA process and the need for a clearer statement of expectations at all stages (at institutions, by employers, and from supervisors within the WREA). For the latter, students gave advice ranging from key takeaways in their own experience to the need to be proactive and assertive in finding the right WREA in the first place.

Respondent quotes include:

*“I have had an extremely positive experience. I have enhanced my leadership skills, learned so much about healthcare management, and enhanced my technical and communication skills. I think where others have bad experiences is when they do not have enough real work to do and companies give them useless theoretical problems to solve.”* (WREA Structure or Process)

*“Mentors are very helpful as they will often break the ice with many people and drive interpersonal relationships”* (WREA Structure or Process)

*“Give students a list of items/rights that they are entitled to in a job; ergo, respect, reasonable hours, compensation for excessive transportation, etc.”* (Helping Students Make Informed Decisions About WREAs)

## **Geospatial Maps**

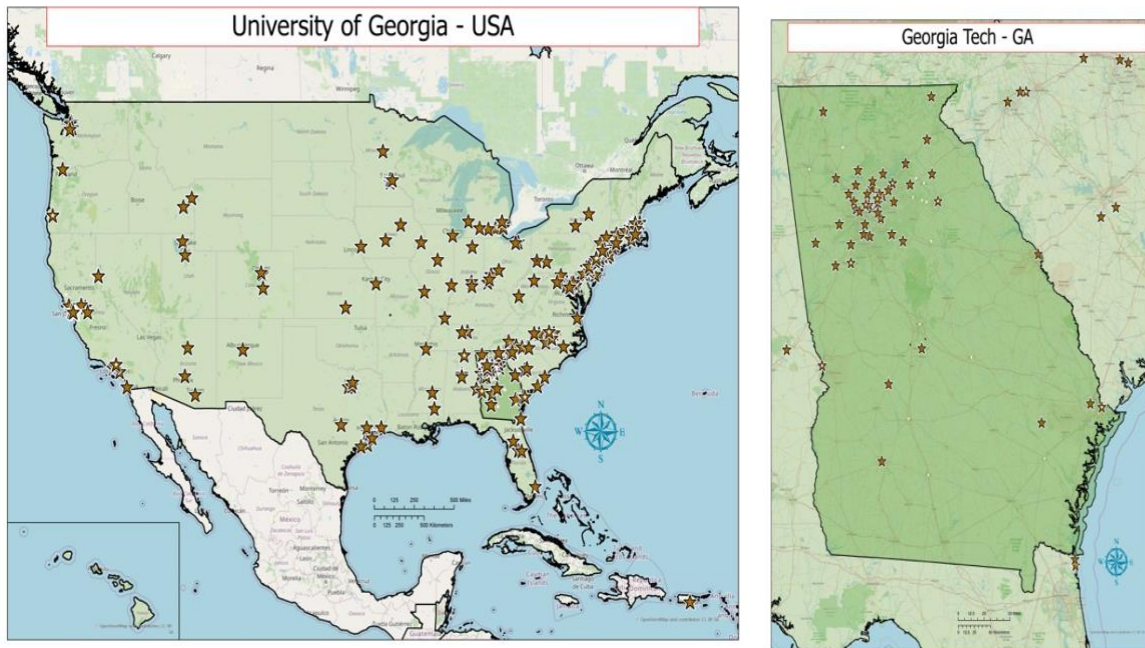
Geospatial mapping allowed us to better understand visually the locations of survey respondents' WREA activities. Out of the 1,447 responses mapped from respondents at the five universities, WREA activities were reported in 38 U.S. states and Puerto Rico. Due to limited responses from Savannah State, Valdosta State, and Mercer University, the maps below show WREA activities for Georgia Tech and the University of Georgia only.

Figures 4 and 5 display the spatial distribution of internships originating from the home campus for Georgia Tech and University of Georgia respondents between 2000 and 2021. 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.

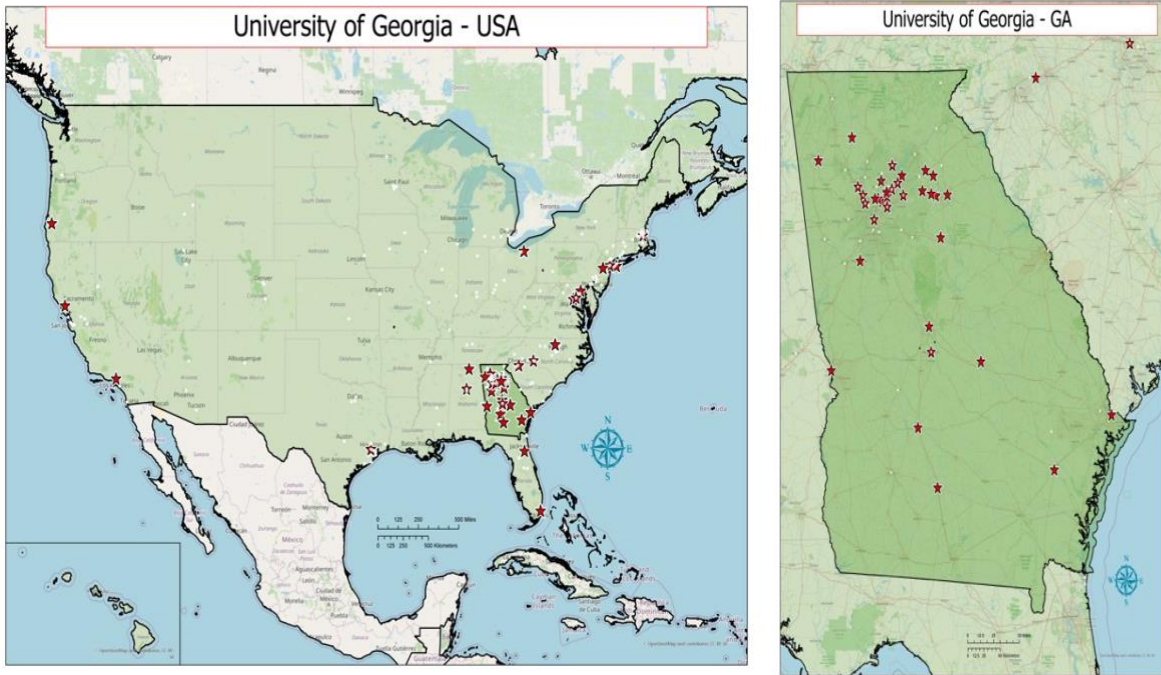
Boxplots shown in Figure 6 highlight the range of internship distances from the institution for students at Georgia Tech, University of Georgia, and Mercer (please note, small respondent size from Mercer University, thus findings may not be representative). In each boxplot, the white box represents the distance from campus for 50% of the WREAs, and the black line shows the median distance. While the median values of Georgia Tech and Georgia are similar, the boxplots illustrate that Georgia Tech respondents travel much further, with the 75th percentile often exceeding 1,000 km from campus and several students travelling more than 2,000 km from campus. On average, respondents from the University of Georgia travelled less than 500 km for their WREA.

**Figure 4**  
*WREA Locations for Respondents from Georgia Tech*

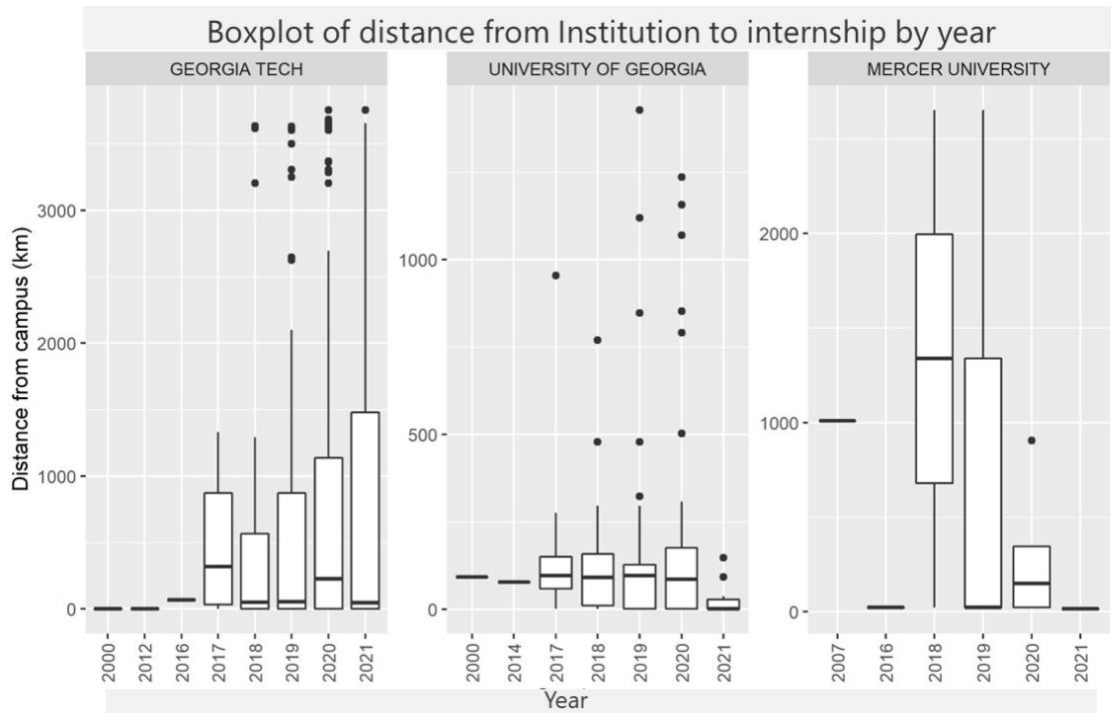




**Figure 5**  
**WREA Locations for Respondents from the University of Georgia**



**Figure 6**  
**WREA Distance from Institution**



## 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. An employment and career planning survey similar to the one described in this report is planned for spring 2022.

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**

## Information About the Survey Administration and Response Rates

**Survey Distribution Timeline by Institution**

	UGA	Georgia Tech	Mercer U.	Valdosta St.	Savannah St.
Initial Invitation	March 16	March 18	March 23	March 23	April 1
First Reminder	March 25	March 30	April 1	March 31	April 7
Second Reminder	March 31*	March 31*	April 7	April 8	April 13
Third Reminder	April 13	April 7	April 21	April 21	April 21
Fourth Reminder	April 21	April 15			
Fifth Reminder		April 21			
Survey Close**	May 18	May 18	May 18	May 18	May 18

\*Reminder emails on March 31, 2021 to UGA and Georgia Tech targeted students included additional language instructing respondents to please only use the unique survey links sent from Qualtrics and not the anonymous preview links shared by school administration. This resulted in an extra reminder sent to the Georgia Tech students the day after a scheduled reminder.

\*\*Although survey reminders instructed participants to complete the survey by April 23, 2021 the survey remained available to collect late responses through May 18, 2021.

**Response Rates**

Overall, 11,270 students were included in the sample lists. After accounting for undeliverable email addresses (N=8), 11,262 students were invited to participate in the survey. Across the five schools, 1,473 responses were collected. Of the 26 cases excluded from analysis, 14 were identified as duplicate responses and 12 were survey preview responses collected prior to IRB approval or from a study team member. A total of 1,447 cases were retained for analysis, resulting in an overall response rate of 12.8%. As seen in Table 2, response rates across institutions ranged from 5.4% (Valdosta State University) to 13.1% (Georgia Tech).

**Sample Size and Response Rates by Institution**

	UGA	Ga. Tech	Mercer U.	Valdosta St.	Savannah St.	Combined
Sample Size	2,300	8,211	520	112	127	11,270
Undeliverable	1	7	0	0	0	8
Adjusted Sample Size	2,299	8,204	520	112	127	11,262
Responses	307	1,084	56	6	20	1,473
Excluded	7	7	1	0	11	26
Valid Responses	300	1,077	55	6	9	1,447
Response Rate	13.0%	13.1%	10.6%	5.4%	7.1%	12.8%

As noted above, non-trackable anonymous survey preview links were erroneously shared with students at UGA and Georgia Tech via their institution administration. When respondents voluntarily provided their name and email contact with their survey response, responses were matched back to the sample frame. However, there were a number of responses that could not be linked back to the sample frame.

Overall, 100 unidentifiable anonymous responses were retained for analyses, 66 from Georgia Tech and 34 from UGA (Table 3). Whereas these 100 responses might be duplicate responses or responses from non-sampled students, the response rates for Georgia Tech and UGA might be overestimated.

**Anonymous Responses by Institution**

	Identified (%)	Anonymous (%)	Total
UGA	266 (88.7%)	34 (11.3%)	300
Georgia Tech	1,011 (93.9%)	66 (6.1%)	1,077
Mercer	55 (100%)	0 (0%)	55
Valdosta	6 (100%)	0 (0%)	6
Savannah	9 (100%)	0 (0%)	9
Total	1,347 (93.1%)	100 (6.9%)	1,447