Successes and Challenges of College-Wide Mentorship Programs

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Abstract

This Complete Evidence-based Practice paper presents the analysis of data collected over a three-year period from a mentorship program and provides inferences and insights about its effectiveness. Mentorship programs have been adopted by colleges of engineering in either formal or informal formats to support student success and transition to careers. The College of Engineering at the University of New Haven initiated formal mentoring programs in fall 2020 to support student retention and career readiness. The program has two components, a peer mentorship program and a career mentorship program. The peer mentorship program is designed for students entering the university as incoming first year or transfer students and pairs them with current student mentors (usually sophomores or juniors). The career mentorship program pairs current juniors and seniors with alumni or industry mentors. Both mentorship programs use the Mentor Collective platform which includes web-based dashboards, mentor/mentee training and matching support, and tools for tracking various metrics of program engagement. Initial results of the peer mentorship program published after the first year suggested a higher retention rate for students choosing to participate in the program than for those who did not opt-in to the program. Additionally, female and Black students who participated in the peer mentorship program had significantly stronger retention than white males. This paper analyzes long term data to determine if the original observations are sustained. Insights obtained through mid-year participant surveys are also discussed. Participation in the career mentorship program declined significantly over the years. The reasons for this decline based on student survey responses are discussed. The observations from our mentorship programs should be of interest to other universities that have or are thinking of similar mentoring efforts.

Introduction

Mentorship programs have been adopted by colleges of engineering in either formal or informal formats to support student success and transition to careers. The College of Engineering at the University of New Haven initiated formal mentoring programs in spring 2020. The program has two components, a peer mentorship program and a career mentorship program. The peer mentorship program is designed for students entering the university as incoming first year or transfer students and pairs them with current student mentors (usually sophomores or juniors). The career mentorship program pairs current juniors and seniors with alumni or industry mentors. We partnered with a for-profit company named Mentor Collective to scale the mentorship programs and both programs use a web-based platform which includes dashboards, mentor/mentee training and matching support, and tools for tracking various metrics of program engagement.

The peer mentorship program was launched primarily to support student retention. This study reports on the effectiveness of the peer mentorship program by investigating the following questions: “Does the peer mentorship program help improve student retention?” and “Does gender or race/ethnicity have an impact on student retention for those who participated in the

peer mentorship program?". Initial results of the peer mentorship program published after the first year suggested a higher retention rate for students choosing to participate in the program than for those who did not opt-in to the program [1]. Additionally, female and Black students who participated in the peer mentorship program had significantly stronger retention than white males. This study analyzes data over a three-year period. The retention of three first-year cohorts who joined the university in the fall of 2020, 2021 and 2022 is analyzed for students who did and did not opt-in to the peer mentorship program.

The career mentorship program was initiated to support career readiness. However, unlike the peer mentorship program, the career mentorship program did not reach expected participation rates after the first year. Participation in the career mentorship program declined significantly from 123 students in 2020-21 to just 27 students in 2022-23. An online survey was administered to seniors and juniors in the college and the survey data was analyzed to help identify the reasons for the declining interest in the career mentorship program.

In the following sections, we first present literature on mentorship programs. This is followed by the description of the two programs including descriptive statistics on overall participation rates, and breakdown of mentees and mentors by gender and race/ethnicity. Retention analysis on the peer mentorship program and the survey results for the career mentorship program are presented next. Summary and conclusions are provided in the last section.

Background

Mentorship programs have been used by engineering programs to support diverse student populations [2-8]. Programs are often customized for specific student audiences, with different structures and aims for programs targeting first year students and sophomores than those supporting juniors and seniors. Programs range in their level of formality, with some creating a formal matched one-to-one or one-to-many relationship, while others create informal mentorship opportunities through course teaching assistants who focus on more than just academics. Many programs focus on in-person mentorship, while others are specifically tailored to include or exclusively use virtual or e-mentoring [4,9,10].

Programs that support first year students often aim to promote a sense of belonging, academic readiness, and retention. These programs can incorporate mentorship through summer bridge experiences [2-5,7,11], course-integration where peer-assistants or peer-leaders serve as mentors [5,12,13,14,15], faculty mentorship [3,7,14], organized events or seminars [6,9,16], and through learning communities or residential support [2,7,9]. Results by Kulkarni et al. highlighted that even in curricular based mentorship programs, peer mentors are often providing psychosocial and professional community support, alongside supporting technical skill development [15]. While most of these early-support programs focus on peer or faculty support, some programs have integrated industry mentors [17,18]. Use of industry or alumni mentors can be an exciting way to help students build their connection to the profession, but some believe the industry professionals are too removed from the first-year student experience to be helpful [19]. The mentorship program at West Virginia University transitioned away from industry mentors for first-year students as they reflected that first-year students were not yet ready to interact with experienced industry professionals [11].

Success in the early mentorship programs is often evaluated with surveys for self-efficacy, identity, social community, and/or sense of belonging [2,3,5,7,8,20], or with analysis of academic grades or retention in the program [5,8,16]. While mentorship programs are often toted as successful anecdotally, the data is not always as clear to indicate the benefits when compared to those students not participating. Sense of belonging and self-efficacy survey data by Fomunung et al. suggested no statistically significant difference from pre-program to mid-program results between various populations [20]. Statistical significance was not commented on but results by Slater et al. reported first-year students participating in the mentoring program had higher GPAs than the average of the general college of engineering student body [5]. Results by Marra et al. reported statistically significant differences in retention rates between mentor program participants and non-participants, but no statistically significant difference between pre and post survey results [8]. Some studies do not focus on comparative metrics between mentored students and students without mentors, instead evaluating specific characteristics of the mentorship experience itself [7].

Other mentorship within engineering programs is designed to support career or industry mentoring, usually for upper-level students. While industry mentors focusing on technical and project mentorship through capstone projects is sometimes considered mentorship [21,22], mentorship programs with less curricular integration often focus on broader career readiness. Industry mentors are sometimes expected to assist with helping students find internships and jobs [3] or to develop professional skills that aren't usually taught as a part of the engineering curriculum [23]. Evaluation of these programs is often driven by surveys and may explore which career-readiness topics are being discussed rather than by evaluating academic progress or career placement [17].

The Mentorship Programs and the Platform

The mentorship programs at University of New Haven are open to all undergraduate students, and participation is voluntary. The sign-up process for mentees involves completing a brief profile online and indicating preferences regarding the characteristics sought in a mentor. Students are invited to the peer mentorship program through multiple paths including advertising the program during Accepted Student Days, encouraging sign up for the program during summer and fall orientations, promoting the program in first-year courses and sending e-mails to all first-year students. Mentors for the peer program, who are recruited mostly from sophomores, are invited via emails, through advisors and through instructors of sophomore courses. The sign-up process for mentors involves mentor training in addition to creating an online profile. The training requires completion of a 30-minute online module on how to be effective mentors.

Invitation to the career mentorship program is similar to mentor recruitment for the peer program, via email, through advisors and through instructors of junior and senior classes. Mentors for the career program are recruited from professionals in industry, among the alumni within 10 years of graduation, and the members of the various advisory boards in the college and its departments. The signup process for mentees and mentors in the career program are the same as in the peer mentorship program. The program Mentor Collective a web-based platform, is used to connect mentees with mentors. It allows text messaging and emails. Participants may choose to interact at any frequency desired (though program materials encourage meeting once a month) and can communicate in person or via digital methods. More details about the programs and the platform can be found in [1].

Results

Statistics of Mentees

The data over a three-year period shows that the peer mentorship program is steady with an average participation rate of 61.7%. The individual participation rates for 2020, 2021 and 2022 were 53.1%, 72.7% and 60.4%, respectively, as shown in Table 1. Our partner Mentor Collective has indicated that this rate is high in comparison to the many universities that they work with. The interest in the career mentorship program, on the other hand, does not show a similar trend. The average participation rate over a three-year period is 21.8%. The individual participation rates, in Table 1 shows a strong decline in interest over the years.

Table 1. Participation Rates in the Mentorship Programs

Program	No. of Students Who Participated	No. of Eligible Students	Participation Rate
Peer '20	95	179	53.1%
Peer '21	120	165	72.7%
Peer '22	137	227	60.4%
Career '20	123	192	64.1%
Career '21	54	270	20.0%
Career '22	27	264	10.2%

Table 2 shows the mentee funnels and summarizes the numbers of people who were invited, registered, completed the matching survey, were matched with a mentor, and the percent yield. The number invited in Table 2 and the number of eligible students in Table 1 for the peer mentorship programs differ because the invited number in the peer mentorship program includes all students who were accepted to the college, but not all of them enrolled. The invited number in the career mentorship program includes all juniors and seniors.

Table 2. Mentee "Funnels"

	Peer '20	Peer '21	Peer '22	Career '20	Career '21	Career '22
Invited	220	478	233	192	270	264
Registered	105	136	146	135	86	39
Completed Survey	96	120	138	130	67	27
Matched	95	120	137	123	54	27
Yield	91.4%	88.2%	94.5%	96.3%	77.9%	69.2%

The number matched reports all students who were matched with a mentor and stayed in the program until the end of the academic year. Exit from the program due to various reasons (change of major outside engineering, transfer to another institution, etc.) is possible and happens occasionally. This is the main reason for the differences, if any, between the number of students who completed the survey and the number matched.

The yield reflects the proportion of students who participated in the program after their initial registration. It is calculated as the ratio of the number matched to the number registered, and therefore does not include exits. The yield for the peer mentorship program is steady and high. The results suggest that students who show initial interest in the program tend to follow through. However, the same is not observed for the career mentorship program as the percent yield shows a decline over the years.

The breakdown of the number of mentees by gender and race/ethnicity is shown in Table 3 and Figures 1 and 2. Of the mentees, 69-80% were male and 20-30% were female. Over the three-year period a similar male and female ratio is observed in the peer mentorship program (see Figure 1). The career mentorship program, on the other hand, shows a steady growth in the

proportion of female participants (see Figure 1). This, however, is most likely due to declining overall participation numbers in the career mentorship program rather than an increase in interest in the program by the female population.

Those who reported their ethnicity as Asian constituted the smallest population ranging between 2-15% among all programs over the three years. The other categories in the order of increasing proportion were Latinx with 6-16%, Black 11-19% and White 33-61%. (see Figure 2)

Table 3. Breakdown of Mentee Counts by Gender and Race/Ethnicity

	Peer '20	Peer '21	Peer '22	Career '20	Career '21	Career '22
Gender						
Female	26	35	32	25	12	8
Male	67	83	99	98	41	19
Unreported/Other	2	2	6	0	1	0
Race/Ethnicity						
White	47	64	54	56	33	9
Black	14	15	22	13	7	5
Latinx	12	19	15	18	3	4
Asian	7	9	8	7	1	4
Unreported/Other*	15	13	38	29	10	5
All	95	120	137	123	54	27

*"Other" in race/ethnicity category includes two or more races

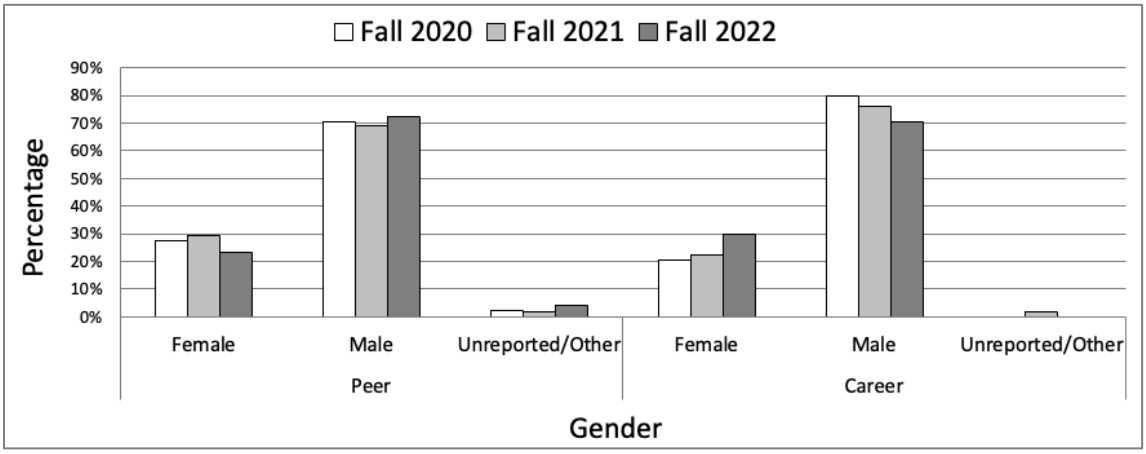

Figure 1. Mentee percentages by gender

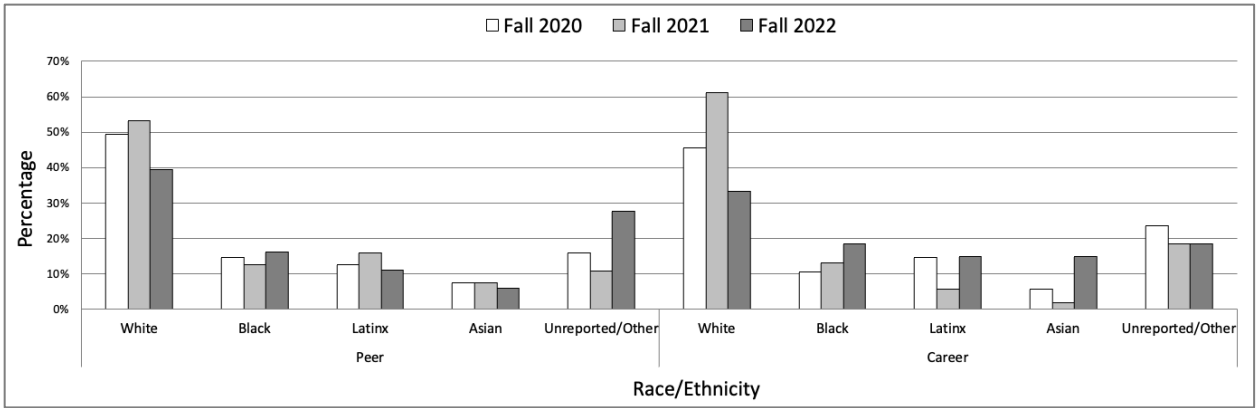

Figure 2. Mentee percentages by race/ethnicity

Figures 3 and 4 show the demographics for all students in the college. When comparing college and program participant demographics, the increased participation by female and Black students in the mentorship programs stand out. Females represent 17-20% of all students (see Figure 3), but their representation in the mentorship program across all three years and in both programs is higher (see Figure 1). A similar trend is observed in the Black student population but only in the career mentorship program. Black students represent 7-14% of the junior and senior population, while 11-19% of mentees were Black in the career program.

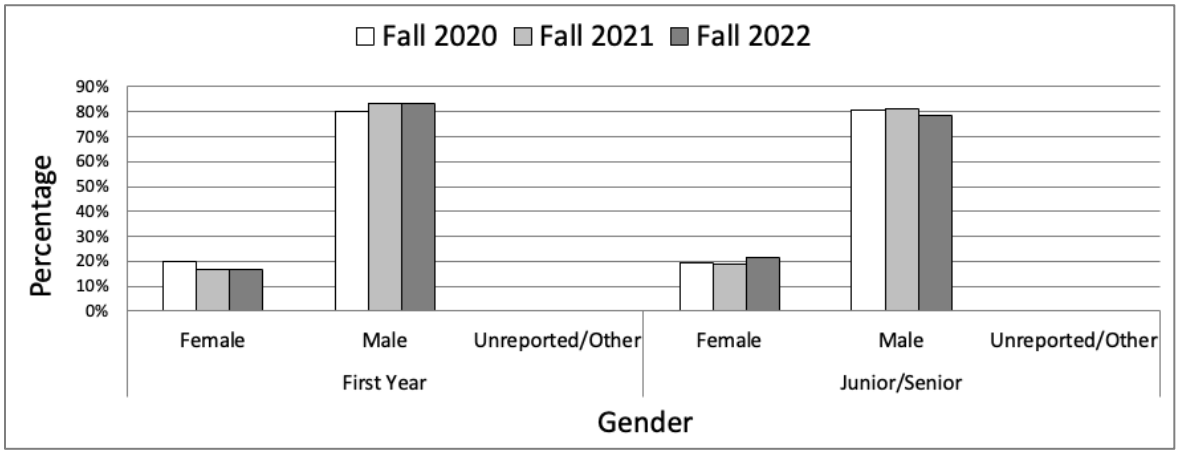

Figure 3. Student percentages by gender – College

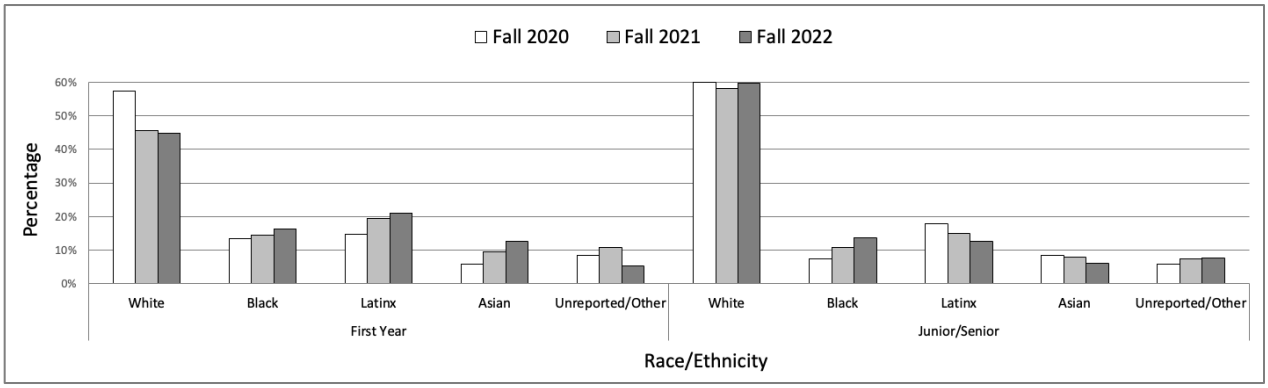

Figure 4. Student percentages by race/ethnicity – College

Statistics of Mentors

The breakdown of mentors by gender and by race/ethnicity are reported in Tables 4 and 5 and Figures 5 and 6. The following observations are made:

- Males represented 56-74% of the student mentors in the peer mentorship program, and 53-91% of the professional mentors in the career mentorship program.
- Females represented 21-36% of the student mentors in the peer mentorship program, and 9-38% of the professional mentors in the career mentorship program. The percentage of female mentors in the peer program shows a consistent increase; the trend is in the opposite direction in the career program.
- Those who reported their race as Black represented 10-24% of the mentors.
- Those who reported their race as Asian represented 4-18% of the mentors.
- No one reported their ethnicity as Latinx in the 2021 and 2022 career program. Their representation ranged from 7-22% in all other programs.

Table 4. Mentor "Funnels"

	Peer '20	Peer '21	Peer '22	Career '20	Career '21	Career '22
Invited	307	278	267	4227	4230	1170
Registered	56	160	60	55	61	36
Completed Survey	37	122	55	37	52	29
Matched	34	70	36	34	30	11

Table 5. Breakdown of Mentor Counts by Gender and Race/Ethnicity

	Peer '20	Peer '21	Peer '22	Career '20	Career '21	Career '22
Gender						
Female	7	20	13	13	3	1
Male	25	50	20	18	27	10
Unreported/Other	2	0	3	3	0	0
Race/Ethnicity						
White	16	44	11	13	21	5
Black	5	7	6	8	4	2
Latinx	6	5	8	5	0	0
Asian	3	3	5	3	2	2
Unreported/Other	4	11	6	5	3	2
All	34	70	36	34	30	11

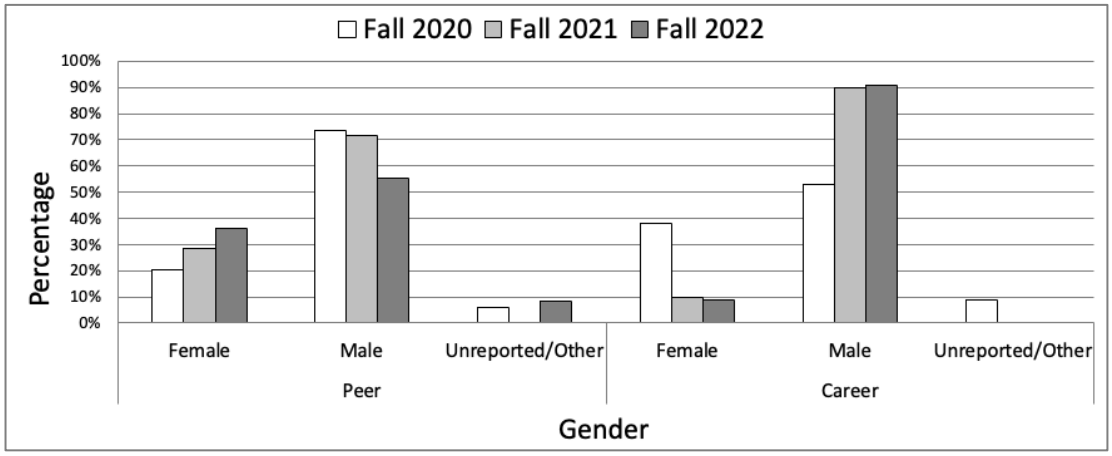

Figure 5. Mentor percentages by gender

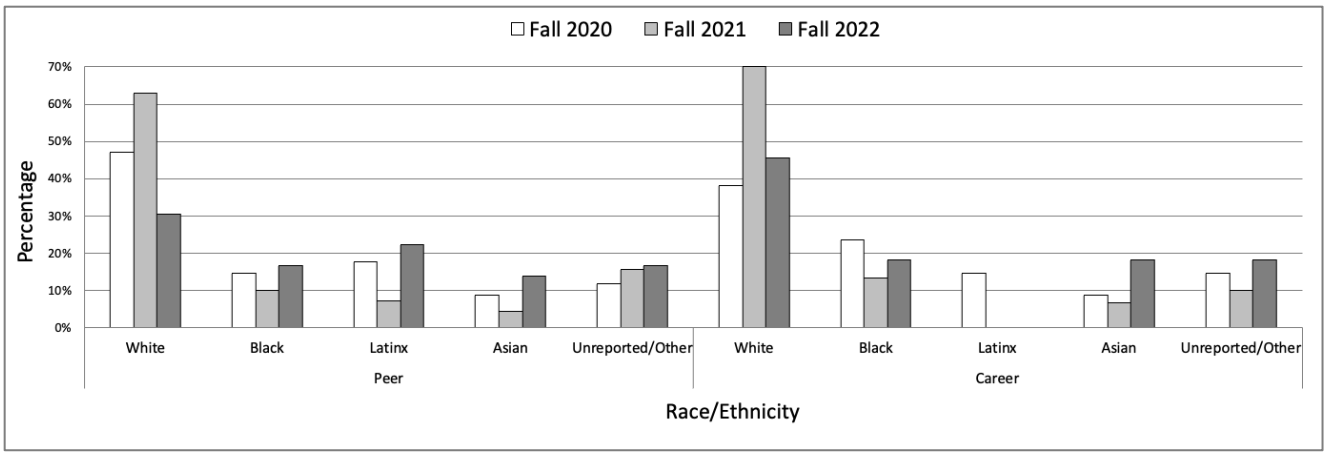

Figure 6. Mentor percentages by race/ethnicity

The summary statistics between mentee and mentor interactions over the three-year period are shown in Table 6. The Mentor Collective platform counts the number of SMS exchanged using the text relay, but also allows for conversations to be logged by participants. Participants (both mentors and mentees) are prompted to log conversations on a monthly basis, with the survey collecting information on the number of conversations, participant satisfaction with the program, and self-reporting of topics discussed. The data presented is based only on the self-reported conversations; it is possible additional conversations took place but were not reported, especially in-person or via email for which there is no concrete method of tracking. While the total numbers differ, the number of conversations and SMS exchanges per participant are similar across the years. The total number of flags exhibit differences which is most likely due to a change in its use related to an update of categories.

Table 6. Counts of Mentee/Mentor Interactions

	Peer '20	**Peer '21**	**Peer '22**	**Career '20**	**Career '21**	**Career '22**
Conversations (Total / # per participant)	592 / 6	622 / 5	542 / 4	724 / 6	575 / 11	147 / 5
SMS exchanged using text relay (Total / # per participant)	3384 / 36	2582 / 22	2412 / 18	2679 / 22	741 / 14	575 / 21
All Flags (Total / # per 100 participants)	16 / 17	16 / 13	28 / 20	47 / 38	40 / 74	9 / 33
Flags with immediate support request (Total / # per 100 participants)	16 / 17	11 / 9	1 / 1	47 / 38	11 / 20	3 / 11

The results of conversation topics in Tables 7 and 8 show that in addition to getting to know each other, mentees and mentors spent a significant amount of time discussing academics. In the peer mentorship program, school life was another area that was a focus in the conversations. After the first year of the programs, the flags were categorized based on support priority needed. The categories are Immediate and Not Needed. In the peer mentorship program *academic struggles* and in the career mentorship program *difficulty finding a job or internship* were the areas that had the highest number of flags throughout all years (Figures 7 and 8).

Table 7. Proportion of Peer Program Mentees Who Discussed Each Topic with Mentors

Topics	**Peer '20**	**Peer '21**	**Peer '22**
Academics	30.6%	21.1%	25.6%
Activities	7.4%	10.1%	4.7%
Career	4.6%	3.7%	11.6%
Getting to Know Each Other	20.4%	18.4%	18.6%
School Life	25.9%	16.5%	11.6%
Staying Balanced	7.4%	8.3%	9.3%
Other	3.7%	22.0%	18.6%

Table 8. Proportion of Career Program Mentees Who Discussed Each Topic with Mentors

Topics	Career '20	Career '21	Career '22
Academics	14.3%	19.3%	13.8%
Activities	5.7%	4.8%	10.3%
Career	7.5%	2.4%	6.9%
Career Fairs	2.6%	4.8%	3.4%
Getting to Know Each Other	12.0%	15.7%	10.3%
Graduate School	5.7%	4.8%	3.4%
Interviewing	4.6%	3.6%	3.4%
LinkedIn	2.9%	4.8%	6.9%
Networking	6.6%	6.0%	10.3%
Research Opportunities	2.3%	3.6%	0.0%
Resumes	7.5%	8.4%	10.3%
School Life	6.0%	4.8%	0.0%
Staying Balanced	6.0%	1.2%	6.9%
Other	16.3%	15.7%	13.8%

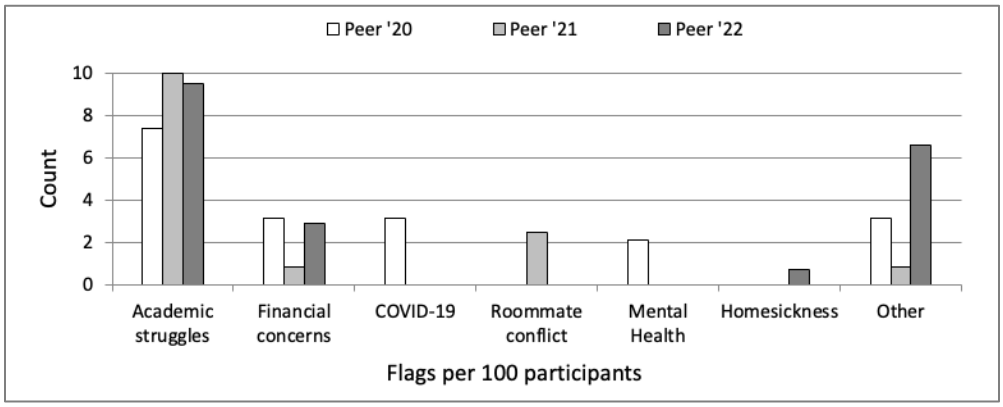

Figure 7. Number of flags raised on various issues - Peer program

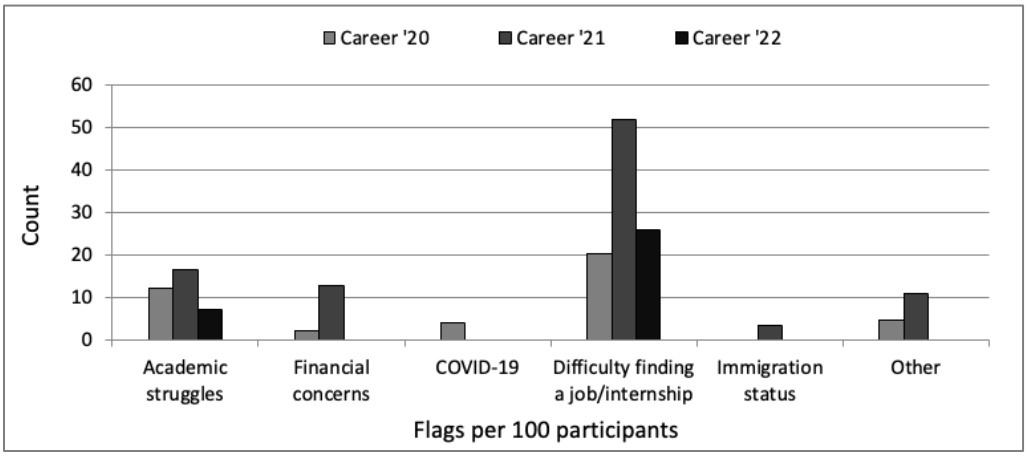

Figure 8. Number of flags raised on various issues - Career program

Retention Analysis

The impact of the mentorship program on student retention was evaluated by comparing first-year students who did and did not opt-in to the peer mentorship program. We looked at one-year, two-year and three-year retention rates both within the College of Engineering and within

the university. The one-year retention rate was calculated using Peer '20, Peer '21 and Peer '22 data, the two-year retention was measured using Peer '20 and Peer '21 data, and the three-year retention rate was calculated using Peer '20 data.

Figures 9 and 10 show retention by gender within the college and within the university, respectively. The retention rates are consistently higher in all years for all student groups who participated in the mentorship program except for the two-year retention among the male population within the college. The mentorship program was most effective in retaining female students; the largest impact on retention is seen in this population within the college followed by within the university.

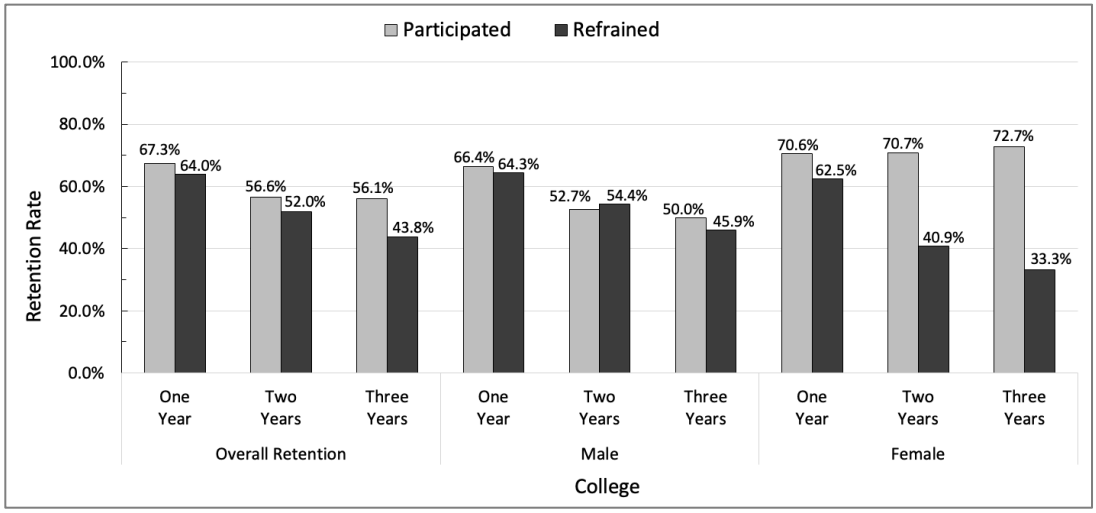

Figure 9. Retention in the college by gender

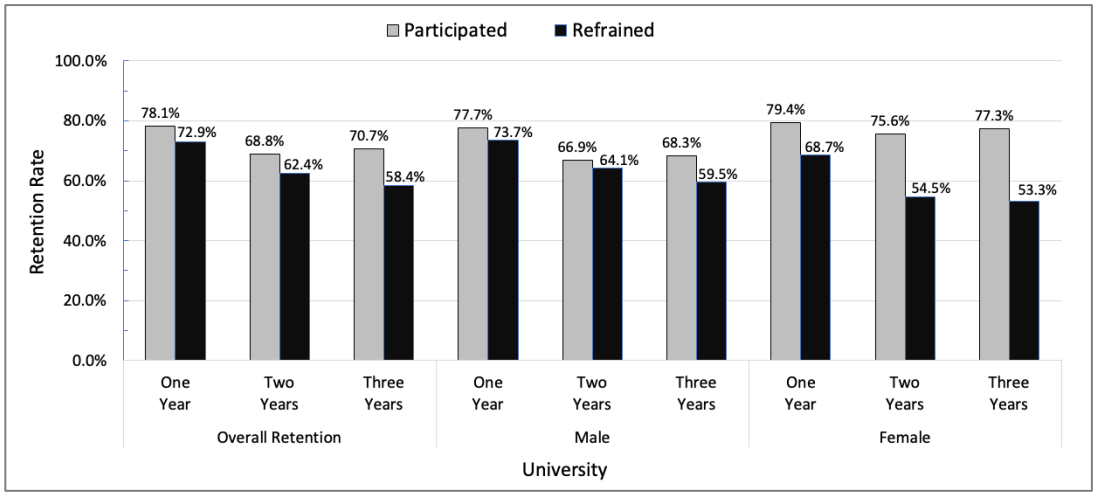

Figure 10. Retention in the university by gender

Retention by race/ethnicity within the college and within the university are shown in Figures 11 and 12. The retention rates are consistently higher for White and Black populations who participated in the mentorship program compared to those who refrained. The mentorship program was most effective in retaining Black students with trends similar to those observed for

female students. The program does not seem to be effective in improving the one-year retention of Latinx students, but improved retention rates are observed after two and three years among this group.

To determine if these differences are statistically significant two-sample proportion tests with a 0.05 significance level was run. The hypothesis tested was:

H_0: Retention rate for students who participated in the program ≤ Retention rate for students who did not participate in the program

H_1: Retention rate for students who participated in the program > Retention rate for students who did not participate in the program

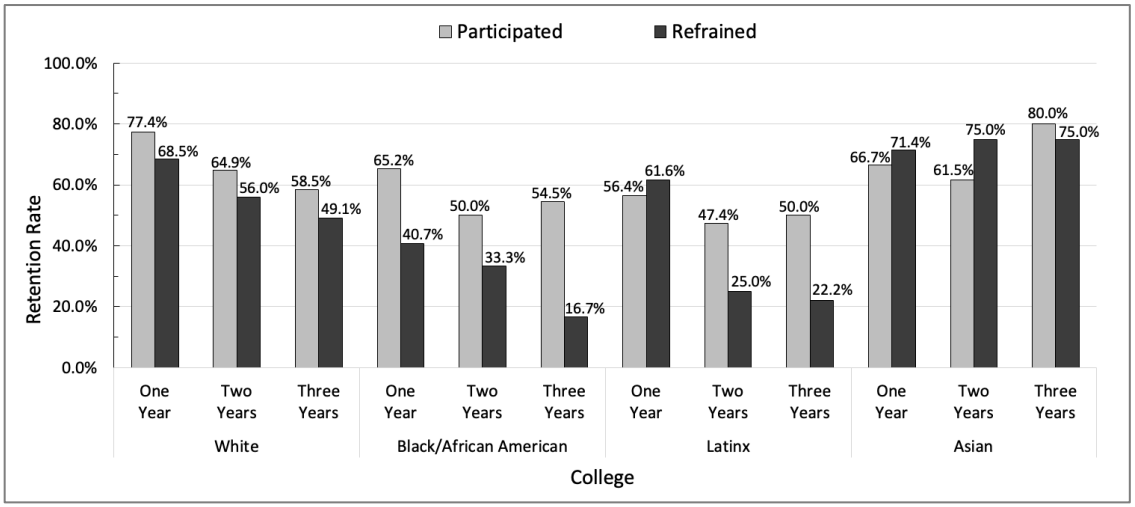

Figure 11. Retention in the college by race/ethnicity

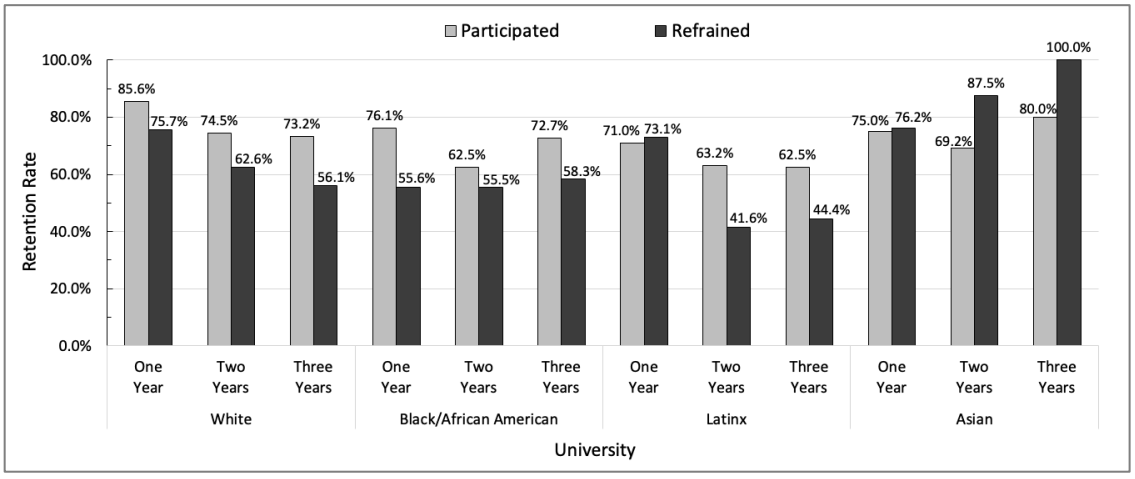

Figure 12. Retention in the university by race/ethnicity

The results of the hypothesis tests are shown in Tables 9 and 10. Comparisons with small sample sizes that led to a power of the test less than 0.75 were omitted. Samples sizes for all groups are shown in Table 9 and are not specified again in Table 10 since both comparisons use the same samples. The improvement in retention in the college is not statistically significant for all students and for males. For female and Black students for whom the mentorship program was

most effective in improving retention (see Figures 11 and 12), the statistical comparison was not meaningful because of the small sample sizes. Statistical significance can only be ascertained when more data becomes available in the future.

The improvement in three-year retention in the university is statistically significant for all students. While this may seem an unusual result since improvements in one and two-year retention do not show statistical significance, this outcome may be related to the cohorts in the study period. The three-year retention is available only for the 2020 peer mentorship program. This group is the first cohort impacted by Covid-19. It is plausible that the mentorship program was more valuable for this group and had a long-term impact. The improvement in retention of White students within the university is statistically significant in all three years.

Table 9. Two Sample Proportion One-Sided Z Test for Significance – College

Group	**Difference in College Retention Significant?**		
	One-year	Two-year	Three-year
All students	No (p = 0.222) n_1=306, n_2=203	No (p = 0.211) n_1=189, n_2=125	No (p = 0.054) n_1=82, n_2=89
Male	No (p = 0.333) n_1=238, n_2=110	No (p = 0.603) n_1=148, n_2=56	No (p = 0.320) n_1=60, n_2=34
Female	No (p = 0.209) n_1=68, n_2=20	N/A n_1=41 n_2=9	N/A n_1=22, n_2=5
White	No (p = 0.054) n_1=146, n_2=76	No (p = 0.120) n_1=94, n_2=42	No (p = 0.178) n_1=41, n_2=28
Black	N/A n_1=46, n_2=11	N/A n_1=24, n_2=6	N/A n_1=11, n_2=2
Latinx	N/A n_1=62, n_2=16	N/A n_1=38, n_2=3	N/A n_1=16, n_2=2
Asian	N/A n_1=24, n_2=15	N/A n_1=13, n_2=6	N/A n_1=5, n_2=3

N/A: Sample size too small – Power of test < 0.75

Table 10. Two Sample Proportion One-Sided Z Test for Significance – University

Group	**Difference in University Retention Significant?**		
	One-year	Two-years	Three-years
All students	No (p = 0.089)	No (p = 0.121)	**Yes (p = 0.047)**
Male	No (p = 0.172)	No (p = 0.322)	No (p = 0.144)
Female	No (p = 0.122)	N/A	N/A
White	**Yes (p = 0.021)**	**Yes (p = 0.049)**	**Yes (p = 0.042)**
Black	N/A	N/A	N/A
Latinx	N/A	N/A	N/A
Asian	N/A	N/A	N/A

N/A: Sample size too small – Power of test < 0.75

Feedback from Surveys

An online survey was administered to seniors and juniors in the college to help identify the reasons for the declining interest in the career mentorship program. There were 81 responses, corresponding to a 31.0% response rate. Of these 81 responses, 73 were seniors and 8 were

juniors with individual response rates of 45.9% and 7.8%, respectively. All majors in the college were represented with the Cybersecurity and Networks and Chemical Engineering programs having the largest number of participants. Table 11 shows the breakdown of responses by gender and race/ethnicity.

Table 11. Breakdown of Survey Response by Gender and Race/Ethnicity

Gender			Race/ethnicity				
Female	Male	Unreported/ Other	White	Black	Latinx	Asian	Unreported/ Other
24.7%	72.8%	2.5%	56.8%	12.4%	11.1%	11.1%	8.6%

When asked about their awareness of the career mentorship program, 77.8% of the responders knew about the program, 19.8% did not, and 2.5% were unsure. Of those who knew about the program 11.1% indicated that they are participating in it, 76.2% said they are not participating, and 12.7% were unsure. Comparing this breakdown with the participation rate reported for the Career '22 program (10.2%), the survey responses are a good representation of the target population to capture student perception toward the career mentorship program.

The students were asked if receiving mentoring is important for their career using a 5-point Likert scale (with 5=extremely important and 1=not at all important) and the average rating was 3.4. On a 5-point Likert scale (with 5=extremely valuable and 1=not at all valuable), their average ratings to the questions about having a mentor from industry and the value of a mentorship program were 3.4 and 3.7, respectively. These ratings indicate that students considered the career mentorship program only slightly important. Table 12 shows the areas the students indicated they might seek guidance in if they were to receive mentoring.

Table 12. Areas Students Seek Guidance from a Professional Mentor

Category	Percentage
To get advice in career planning	15.5%
To polish up my résumé	12.3%
How to network with professionals from industry	11.5%
To gain knowledge of opportunities related to my career interest	10.7%
To know more about the profession related to my major	10.4%
To improve my interviewing skills	10.4%
To learn about work expectations in industry	10.1%
To get general guidance and tips in a specific area of my major	9.3%
To get advice on personal effectiveness (time management, networking, communication, etc.)	8.3%
Other (please specify): Portfolio preparation/creation; To get an internship or job; How to negotiate and talk to employers about important topics that could affects one's career; Get job recommendations	1.6%

The students who are participating in the career mentorship program were asked to rate whether they find the program of value and whether they would recommend it to others using a 5-point Likert scale (with 5=strongly agree and 1=strongly disagree). The average ratings were 3.9 and 4.1, respectively, which suggest that the program is potentially beneficial to students if they participate.

While 62.9% of the students reported they have someone they can count on to provide useful advice in their career planning, 16.1% reported that they are currently participating in a

mentoring program through a source outside the College of Engineering at the University of New Haven, and 44.8% indicated no mentoring experiences in the past outside the college. Only 32.1% reported that they participated as a mentee in the peer mentoring program offered by the college, and 12.4% participated as a mentor. Table 13 below shows the responses of the students who are not currently participating in the program about why they chose to refrain. Not having enough time was the most important factor.

Table 13. Reasons for Not Participating in the Career Mentorship Program

Category	Count	Percentage
Not enough time	13	32.5%
Did not look appealing/Not interested	6	15.0%
Insufficient value/negative experience from the peer mentorship program	6	15.0%
Already have a mentor	5	12.5%
Not worth time investment/not important	5	12.5%
Do not know what it is	2	5.0%
No reason	2	5.0%
Already have an internship	1	2.5%

Summary and Conclusions

Elective peer mentorship and career mentorship programs implemented for over three years in the College of Engineering at the University of New Haven are described and data obtained from the programs are presented. In the peer mentorship program, incoming first-year students are mentored by sophomores. In the career mentorship program, juniors and seniors are mentored by working professionals. The university partnered with Mentor Collective to implement the mentorship program and the web-based platform developed by them was used to train and match mentors with mentees and to track interactions between them.

The data is used to determine the one-, two- and three-year retention rates of the first-year students who participated in the peer mentorship program in academic years 2020-21, 2021-22 and 2022-23. Both retention within the College of Engineering and retention within the university are examined. The descriptive statistics generally show that the retention rate for students who participated in the peer mentorship program was larger than for students who refrained from participation. This is true for all students regardless of gender or race/ethnicity as well as for male, female, White, Black and Latinx groups. The number of Asian students who participated was very small. However, statistical hypothesis testing at the 0.05 significance level indicates that the seemingly improved retention within the college for students who participated in the peer mentorship program is not statistically significant for any group. Only the retention within the university for White students who participated in the peer mentorship program is statistically significant. For all race/ethnicities and for two- and three-year retention of female students, the participant sizes are too small to make meaningful statistical comparisons. We anticipate that as more data is collected over the next few years, the improvement in the retention rates for students who participate in the peer mentorship program can be shown to be statistically significant.

We do acknowledge that there could be a self-selection bias in the improved retention rates observed for the peer mentorship program. Since participation in the program was voluntary, there is a possibility that students who chose to participate were those who were more likely to

persist at the university or had a higher GPA than those who did not. We intend to conduct more detailed analyses to determine if there was a self-selection bias in future studies.

Participation in the career mentorship program declined significantly over three years. A survey conducted amongst seniors and juniors in Spring 2024 revealed that time constraint is the primary factor for students not participating in the program. Furthermore, the results show that while students found receiving mentoring and having a mentor from industry important, they do not find it essential. On the other hand, the students participating in the program found it of value and said they would recommend it to others indicating that the program was beneficial to themselves.

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