UF Herbert Wertheim College of Engineering
UNIVERSITY of FLORIDA

ENGAGED QUALITY INSTRUCTION THROUGH PROFESSIONAL DEVELOPMENT
EQuIPD

AN EXPLORATORY STUDY ON POST-SECONDARY STEM MENTORSHIP WITHIN STUDENT ORGANIZATIONS

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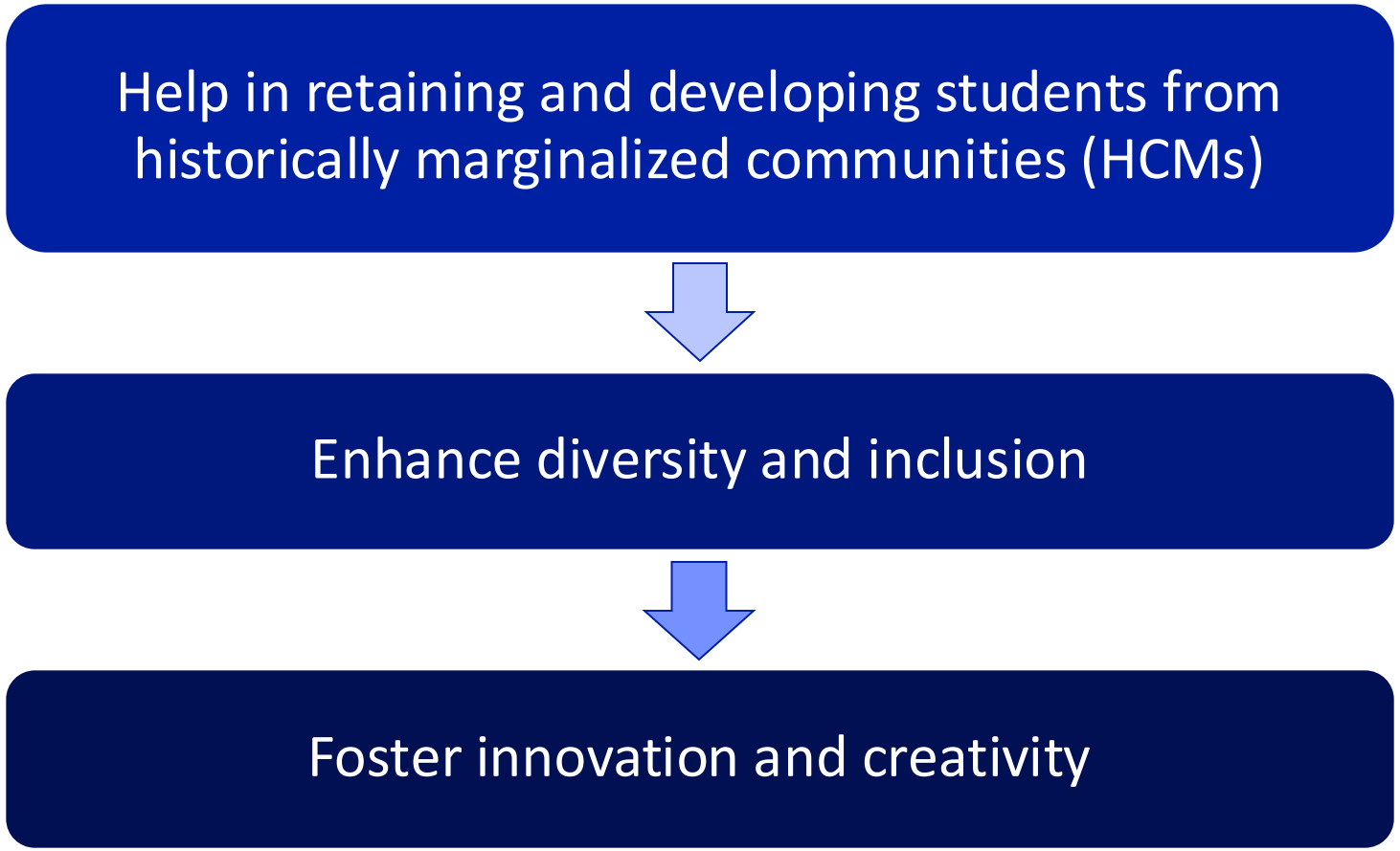
AGENDA

1. INTRODUCTION
2. RESEARCH QUESTIONS
3. METHODOLOGY
4. RESULTS AND DISCUSSION
5. CONCLUSIONS AND FUTURE WORK

1. INTRODUCTION

- Effective mentorship plays a crucial role in shaping the future STEM workforce as it can:



[1-3]

1. INTRODUCTION

- Student organizations are ubiquitous on college campuses and can serve as powerful tools for student formation [4-6]
- Participation in student organizations has been shown to:

Improve student satisfaction with the collegiate experience

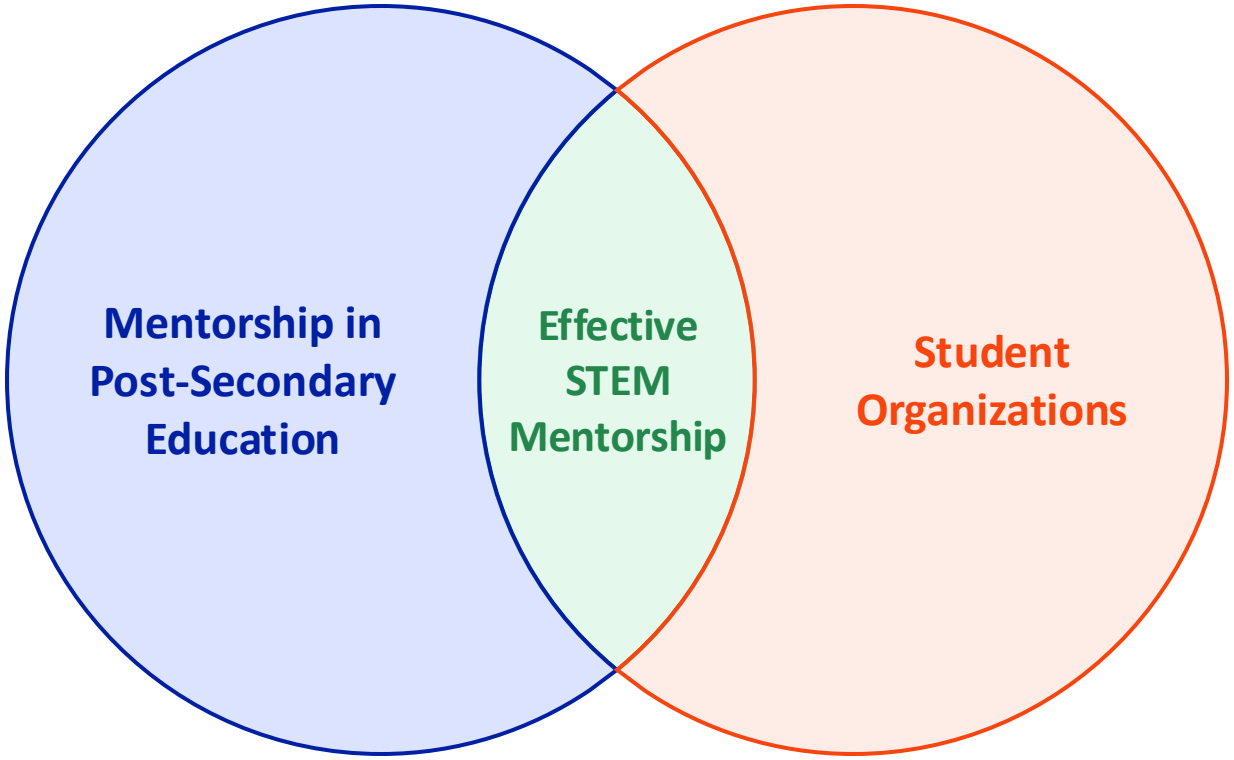
Increase on-campus involvement

Promote student development

… especially for HMC students [3-5]

1. INTRODUCTION

- This exploratory study sought to explore the markers of **effective STEM mentorship** within the context of **post-secondary student organizations**



1. INTRODUCTION

- This study is part of a larger project that aims to reveal:
  - What types of student organizations have built mentorship into their structures and why have they chosen to do so?
  - What student organization activities support mentorship?
  - How effective is mentorship within student organizations at fostering positive STEM outcomes?
  - What kinds of mentoring relationships exist within student organizations?

1.1 LARGER RESEARCH PROJECT

Stage 1	•Scoping review on the intersection of mentorship and student organizations [7] •Three focus group interviews held with student organization members (unpublished)
Stage 2	•**Campus-level exploration of mentorship in student organizations from the perspective of their executive board members**
Stage 3	•Will explore mentorship in student organizations at the national level by investigating professional organizations with student chapters
Stage 4	•Will synthesize the findings from stages 1 through 3 to produce a culminating overview of the systems that exist for mentoring within student organizations and provide a conceptual mentorship framework

2. RESEARCH QUESTIONS

- What types of student organizations have built mentorship into their structures and why have they chosen to do so?

3. METHODOLOGY

1) One-on-one interviews were conducted on executive board members of STEM student organizations
2) Student organization websites and/or constitutions were examined to reveal additional information
3) Quantifiable data was analyzed via keyword search; other data was summarized in narrative format
4) Study results were compared to scoping review results to determine if this study's findings agree with the literature

3.1 ONE-ON-ONE INTERVIEWS

- Each 10- to 15-minute-long semi-structured interview was guided by the following questions:
  1) ***Do you have a formalized mentorship program? Could you tell me more about it?***
     a) ***Is this program mentioned on your website?***
     b) ***Is this program mentioned in your constitution?***
  2) ***What are the components or activities of the program?***
  3) ***What are the requirements for being a mentor/mentee?***
  4) ***Does your organization have a mentorship officer(s)?***
  5) ***Does your organization collect any documentation of mentorship?***

3.2 EXAMINATION OF WEBSITES AND CONSTITUTIONS

- If participants said “yes” to 1a and/or 1b, the student organization websites/constitutions were reviewed to explore any additional relevant information not directly articulated during the interview

3.2 EXAMINATION OF WEBSITES AND CONSTITUTIONS

- Example: UF's Student Chapter of the Society of Women Engineers
  - **Website**: they "provide an organization that fosters mentoring" [11]

> **Mutual Support:** We provide an organization that fosters mentoring and the development of professional and personal networks.

  - **Constitution**: the Internal Vice President presides over mentoring [12]

> Section 3. The Internal Vice-President (IVP) shall perform all duties of the President in the absence of that officer at her/his request. The IVP shall oversee the issues that are internal to the organization. This includes but is not limited to mentoring, BEC relations, college of engineering relations, and social events.

3.3 NARRATIVE SUMMARY AND QUANTIFICATION

- For questions 1, 2, and 3, responses were summarized and results presented in narrative format
- For questions 1a, 1b, 4, and 5, responses were quantified via keyword search
  - This data was used to explore the level of formalization of mentorship within a given student organization, with the presence of more components indicative of a higher level of formalization

4. RESULTS AND DISCUSSION

- This study was conducted at the University of Florida, a large, public, predominantly white institution (PWI) with very high research activity in the Southeastern United States
- 182 potential participants were invited to participate via email, with an additional unknown number of people forwarded the original email
  - 24 individuals volunteered to participate, resulting in a response rate of 13.2%
- These 24 participants represented a total of 19 different STEM student organizations on campus

4. RESULTS AND DISCUSSION

Table 5. Combination of Table 1 (*Definitions and Examples of the Types of Student Organizations Explored in this Study*) and Table 3 (*Types of Student Organizations Represented in this Study, n = 19*).

Types	Example(s)	n	%
Professional student organizations	Student Chapter of IEEE	13	68%
Fraternities and sororities	Sigma Kappa Sorority (SK)	0	0%
Interest student organizations	Engineering design teams	6	32%
Identity-based affinity student organizations	Student Chapters of SWE, oSTEM, SHPE, etc.	5*	26%

*All Identity/Affinity orgs were also Professional orgs for this dataset.

4. RESULTS AND DISCUSSION

Table 2. STEM Fields Represented in this Study Compared to those in the Scoping Review [7]

STEM Field	Study Data (*n* = 26)		Scoping Review (*n* = 11)	
	n	%	*n*	%
Science	4	15%	8	73%
Technology	4	15%	1	9%
Engineering	18	70%	2	18%
Mathematics	0	0%	0	0%
Total	26	100%	11	100%

4. RESULTS AND DISCUSSION

- All organizations explored in this study incorporated some form of formalized mentorship program in their structures

Peer Mentorship Paradigm

- "Mentoring relationships formed between individuals who are at approximately the same stage of career development" [1]
- *Upperclassman mentors are paired with underclassman mentees*

68% All professional student organizations (*n* = 13)

Apprenticeship Model

- Experts train novices in specialized techniques and ways of being [10], often used in engineering to teach professional practice [13]
- *Design team captains train and support team members throughout a design project*

32% All interest student organizations (*n* = 6)

Industry Partnership

- Interviewees were unable to articulate the specifics of this beyond them providing an industry liaison with the contact information for potential student mentees
- *Industry professionals mentor student mentees*

26% Two professional and three interest (*n* = 5)

4. RESULTS AND DISCUSSION

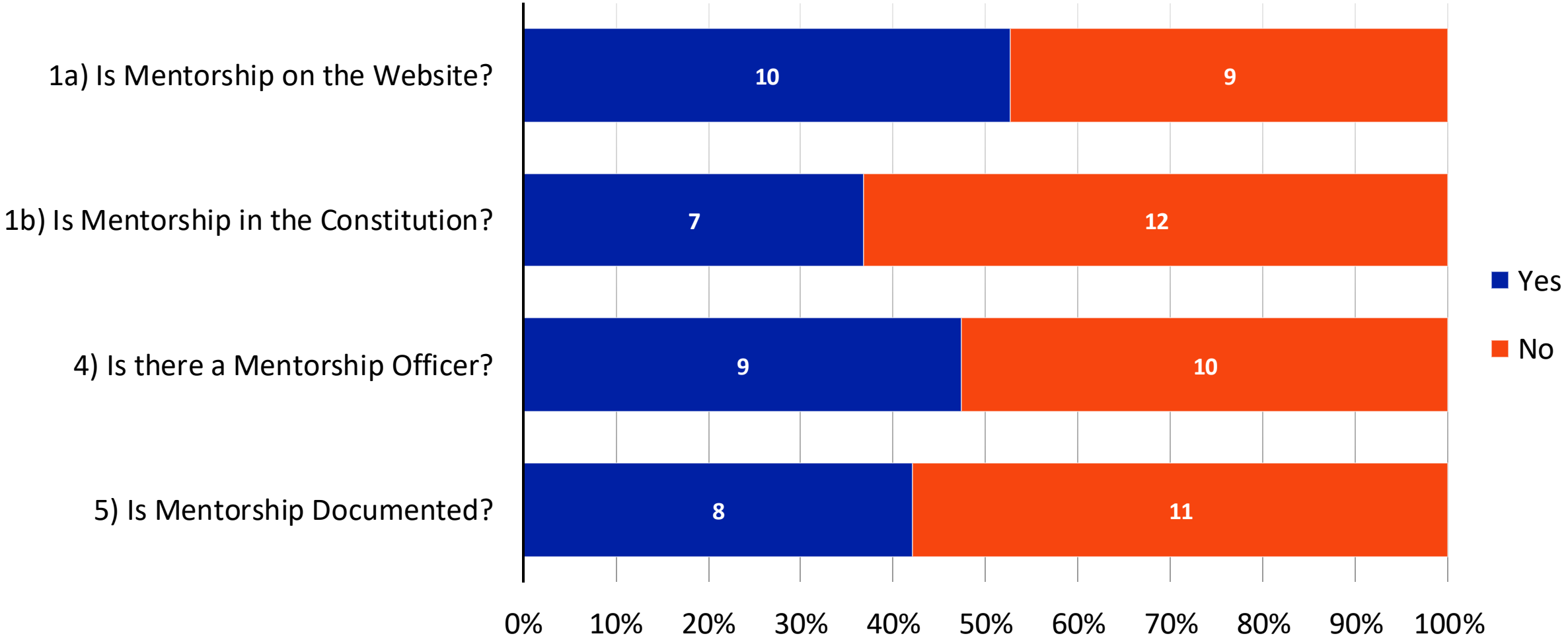
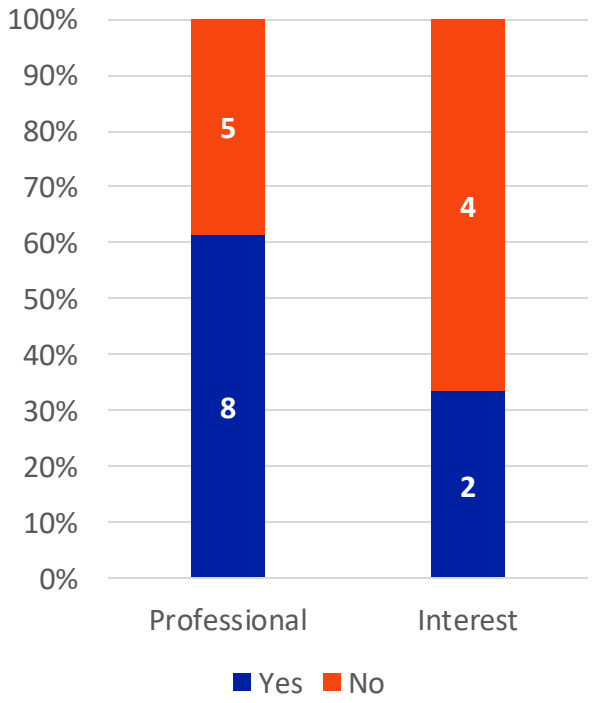


Figure 2. Aggregated Participant Responses to Questions 1a, 1b, 4, and 5 (*n* = 19)

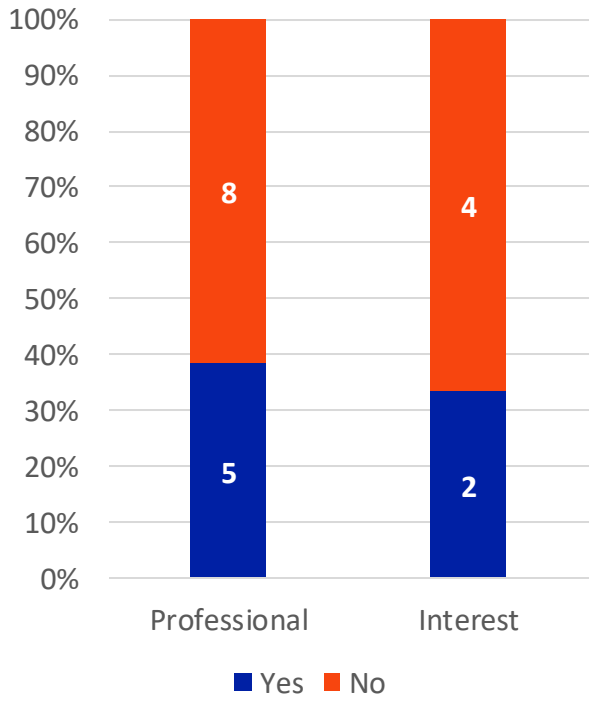
4. RESULTS AND DISCUSSION

- Except for 1b, professional student organizations (*n* = 13) had higher levels of formalization than interest student organizations (*n* = 6)

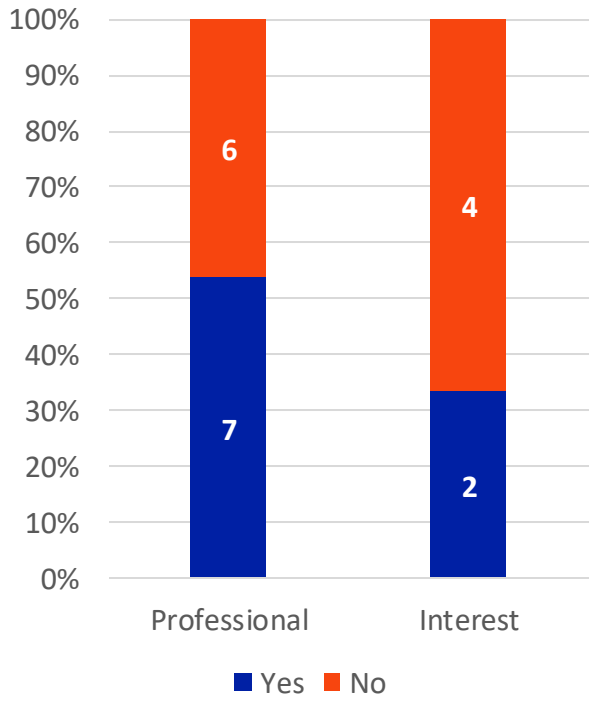
1a) Is Mentorship on the Website?



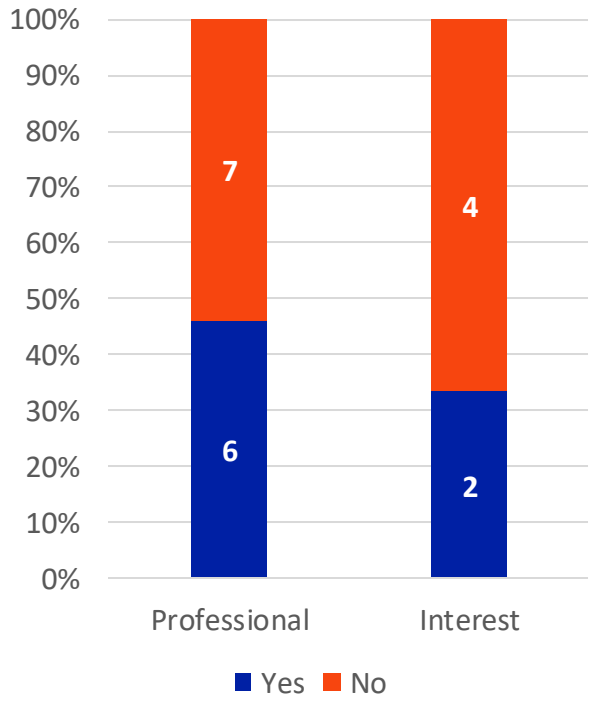
1b) Is Mentorship in the Constitution?



4) Is there a Mentorship Officer?



5) Is Mentorship Documented?



5. CONCLUSIONS AND FUTURE WORK

- Both professional and interest student organizations have integrated some formal mentorship into their organizational structures, with professional organizations having higher levels of formalization
- While the results of this study did not answer the “why” portion of the research question, this will be explored in an expansion of Stage 2 and during Stage 3 of the larger research study
- Ultimately, the findings of the larger study will provide a better understanding of effective STEM mentorship within the context of student organizations, which may inform mentorship practices in other areas towards improved STEM student outcomes

6. ACKNOWLEDGEMENTS

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THANK YOU!

ANY QUESTIONS?

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