CS Department Placement and Female Representation

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Background

- Researchers previously noticed that non-ABET computer science programs tended to have a higher percentage of women.
- However, ABET is more/less common in certain types of schools.

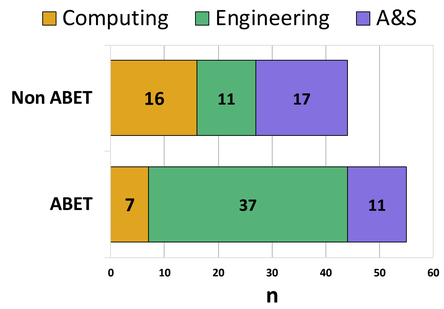
Research Question:

Does ABET or college type have a significant impact on the representation of women in Computer Science?

Methods

- Initial dataset of over 1,000 universities.
  - Removed any with less than 150 students in their CS program.
- Randomly sampled 100 universities from the remaining 288 schools.
- Recorded which college, school, or department within the university offered a CS degree.
  - Removed any universities that had CS degrees in multiple schools.
  - Removed any schools with CS degrees that were not a BA or BS.
- Replaced first round of removals with universities randomly selected from a short list of Computing colleges.
  - This was done to compensate for initial sample not having enough Computing colleges to analyze.

Methods continued



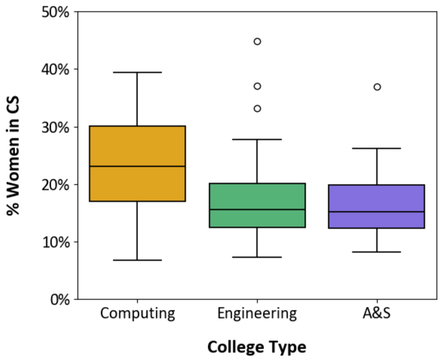
Three main categories for college type:

1. Engineering
- Has engineering anywhere in the title of the college.

2. Computing
- College that is only for CS and Tech.

3. Arts and Sciences
- Liberal arts colleges, science colleges, and interdisciplinary colleges.

Results



College type had a statistically significant effect on the percentage of women in a CS program. Computing colleges had the highest sample mean for % women.

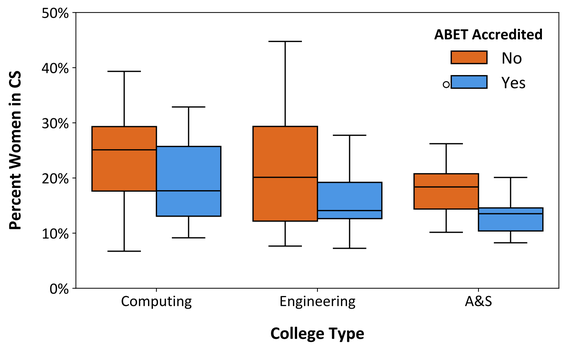
ANOVA Analysis: f(2, 96) = 5.43, p = 0.0058

Tukey-Kramer Analysis:
- % women in Computing colleges was significantly higher than in Engineering colleges (p = 0.013).
- Computing colleges had a marginally significant difference from A&S colleges (p = 0.09).
- Engineering colleges and A&S colleges did not differ significantly from each other (p = 0.892).

Within each college type, the sample means for the ABET programs were lower, but not to a statistically significant level.

However, looking only at ABET across the entire dataset showed that ABET programs had significantly less women than non-ABET ones.

T – Test: t(69) = -3.727, p = 0.0004



Discussion

- Given that within each college type there was no significant difference from ABET, it's likely that there's something unique about college types that is causing this effect.
  - Women may be less likely to enroll in certain college types due systemic barriers or societal factors.
- ABET significantly increases curricular complexity[1], which in turn has been found to negatively impact representation of women in CS[2].
  - This could partially or wholly explain the impact seen from ABET.

Unanswered Questions:

What differences between college types caused the disparity in representation?

Is there something else about ABET that could be impacting representation?

Future Work

- Further statistical analysis to determine if ABET or college type has a stronger impact on the representation of women in CS.
- Collect more data so the sample sizes for each college type are less uneven.
- Look at CS rankings and other possible confounding factors

Acknowledgements

Stefanie Colino*, Khoury College of Computer Sciences, Northeastern University*

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[1] Stefanie Colino Dube and Albert Lionelle. 2025. Does ABET Accreditation Influence the Representation of Women in CS Programs?. In Proceedings of the56th ACM Technical Symposium on Computer Science Education V. 2 (SIGCSETS 2025), February 26-March 1, 2025, Pittsburgh, PA, USA. ACM, New York, NY, USA, 2 pages. https://doi.org/10.1145/3641555.3705168

[2] Albert Lionelle, Mckenna Quam, Carla Brodley, and Catherine Gill. 2024. Does Curricular Complexity in Computer Science Influence the Representation of Women CS Graduates? SIGCSE 2024: Proceedings of the 55th ACM Technical Symposium on Computer Science Education 1, (March 2024), 729–735. DOI:https://doi.org/10.1145/3626252.3630835