

# Does ABET Accreditation Influence the Representation of Women in CS Programs?

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## Background

### RESEARCH QUESTIONS:

- 1) How does ABET affect the representation of women?
- 2) What is the impact of ABET on curricular complexity?

### Curricular Complexity

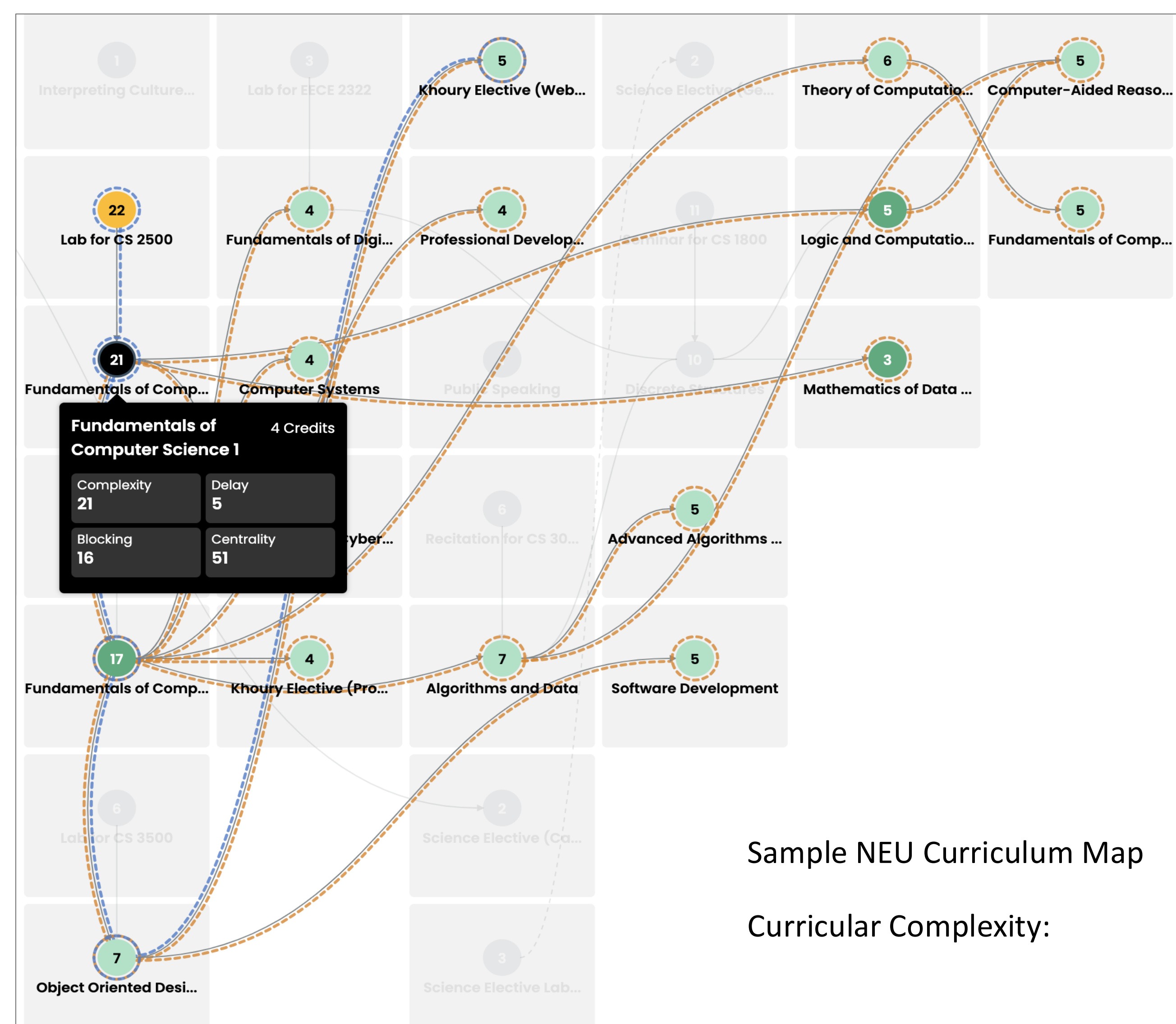
A curriculum can be represented as a directed, acyclic graph.

**Delay Factor:** Number of courses in the longest path that includes the given course.

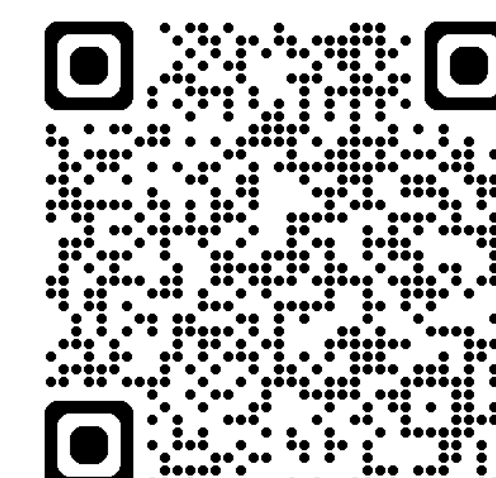
**Blocking Factor:** Number of courses reachable from the given course.

**Complexity:** Delay Factor + Blocking Factor

**Curricular Complexity:** Sum of the complexities for all courses in a curriculum.



Link to Paper:



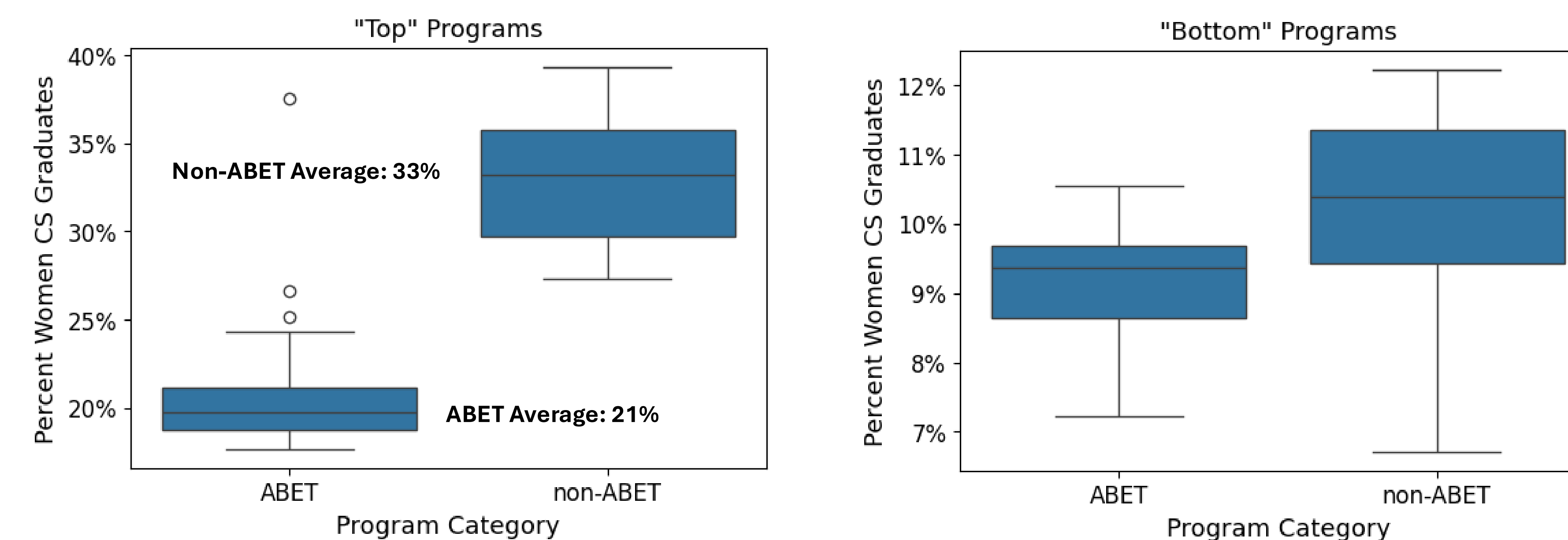
## Methods

- For both the ABET and non-ABET programs, the 20 programs with the highest percent women CS graduates ("top") and the 20 programs with the lowest percent women CS graduates ("bottom") were evaluated.
- Percentages were normalized relative to the university population overall and scaled that ratio to the theoretical 50/50 gender split.

$$\text{Percent Women (Normalized)} := \frac{\text{Percent Women CS Graduates}}{\text{Percent Women Graduates Overall}} = \frac{\mathcal{X}}{50\%}$$

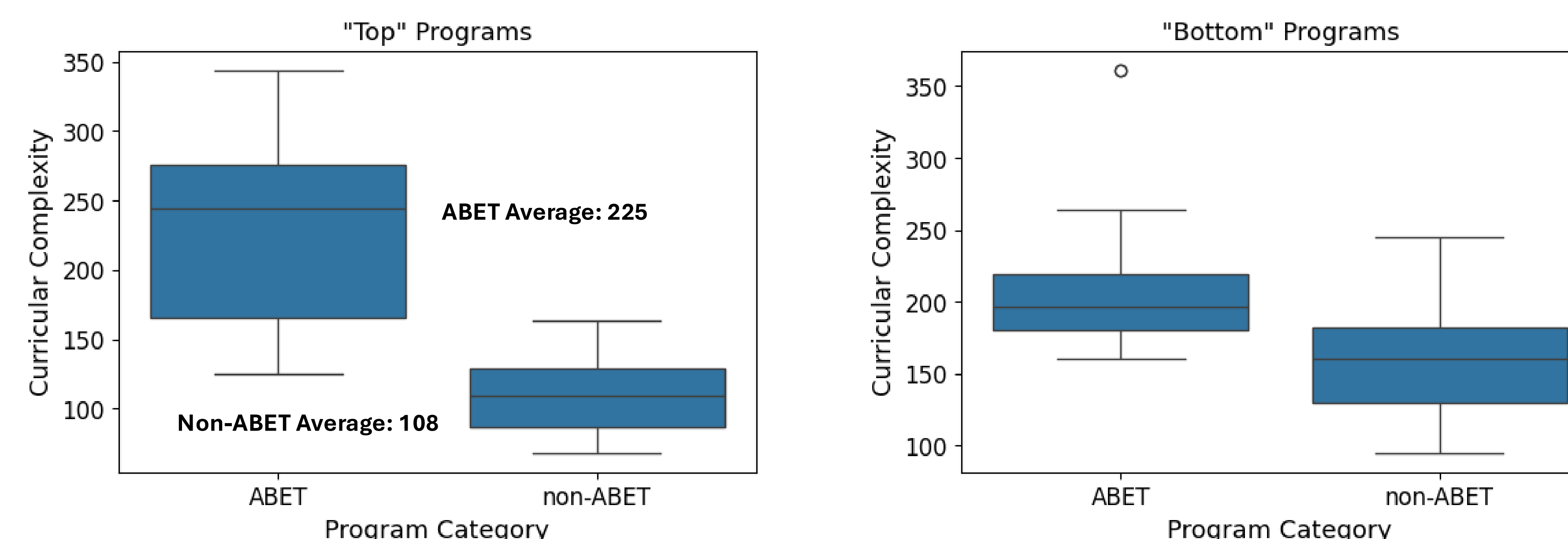
## Results

### Representation of Women in CS Programs



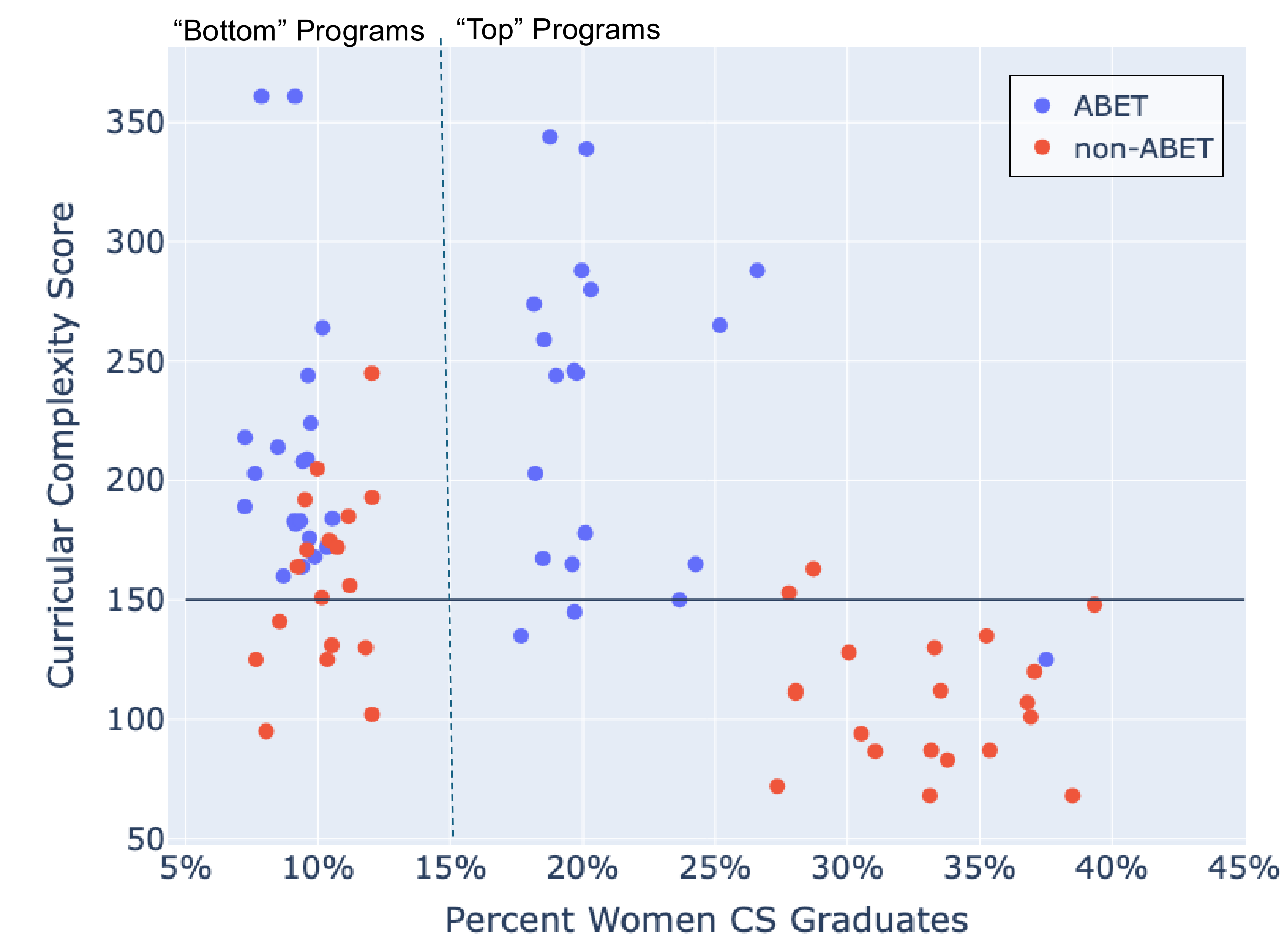
- There is a significantly higher representation of women in the non-ABET category for "top" programs.
- This is not seen in the "bottom" schools.

### Curricular Complexity of CS Programs



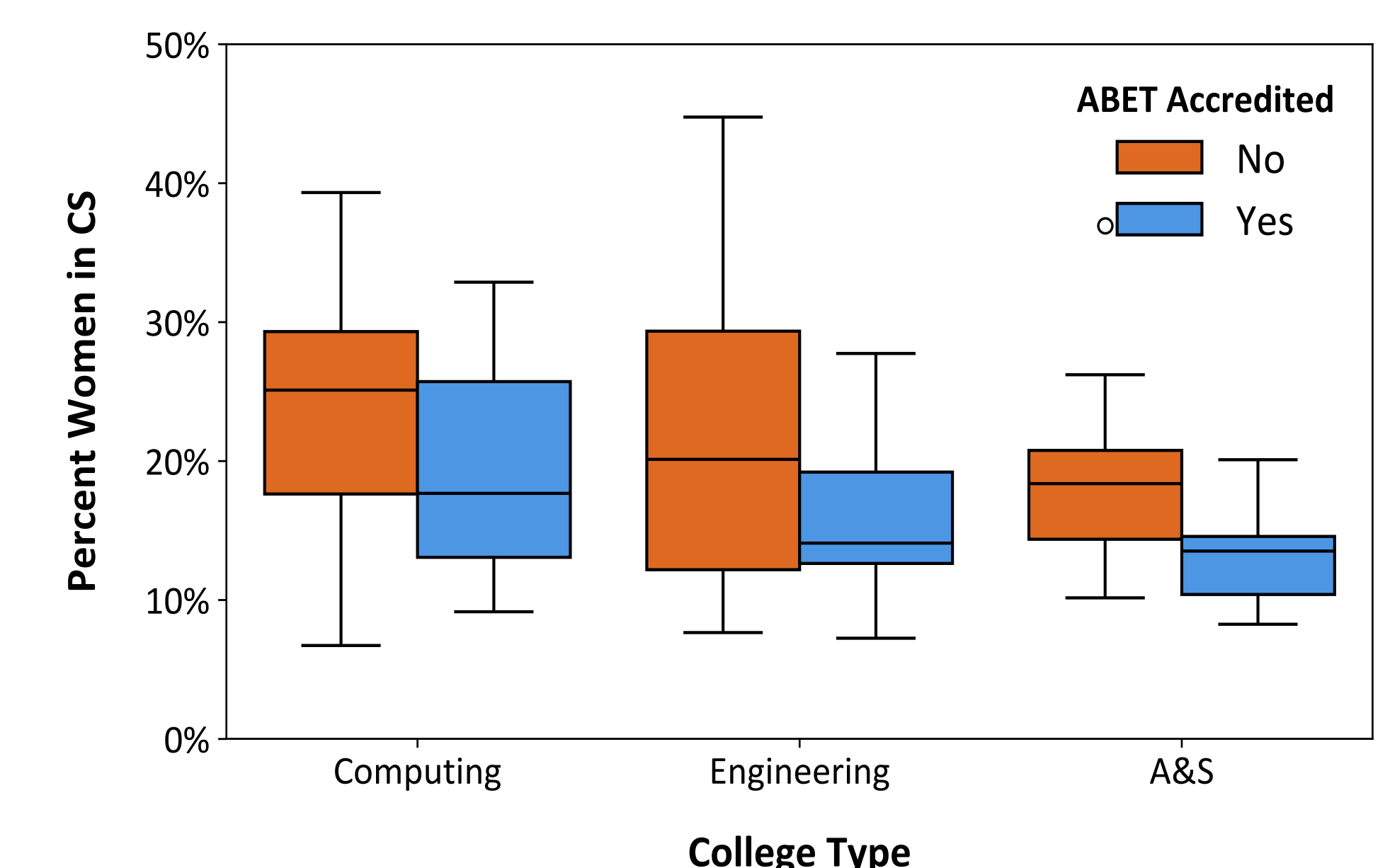
- On average, ABET programs' curriculums are more complex than non-ABET programs.

## ABET programs > 150 Curricular Complexity



- Complexity is based on how programs implement ABET. Outliers demonstrate that implementation is flexible.
- An inverse relationship is seen between complexity and representation of women, especially for "top" programs.

## Future Work



To what extent are these results attributed to college placement of the CS program?

## Acknowledgements

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[1] 2023. Curricular Analytics. <https://www.curricularanalytics.org>.  
[2] ABET. 2021. [abet.com](https://www.abet.org).  
[3] National Center for Education Statistics. 2021. IPEDS: Integrated Postsecondary Education Data System.  
[4] Gregory L. Heileman, Chaouki T. Abdallah, Ahmad Slim, and Michael Hickman. 2018. Curricular Analytics: A Framework for Quantifying the Impact of Curricular Reforms and Pedagogical Innovations. *ArXiv abs/1811.09676* (2018). <https://api.semanticscholar.org/CorpusID:53772840>  
[5] Albert Lionelle, McKenna Quam, Carla Brodley, and Catherine Gill. 2024. Does Curricular Complexity in Computer Science Influence the Representation of Women CS Graduates?. In *Proceedings of the 55th ACM Technical Symposium on Computer Science Education V. 1* (New York, NY, USA). Association for Computing Machinery. <https://doi.org/10.1145/3626252.3630835>