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Abstract

As many science, technology, engineering, and mathematics (STEM) fields continue to suffer a lack of participation of women and many traditionally-underrepresented racial and ethnic groups, many studies have been undertaken in an effort to understand why women have not pursued particular career paths in comparison to other STEM careers that used to be male dominated but are no longer so. This research project attempts to synthesize various studies that have tried to explain possible reasons why women aren't involved in engineering as whole to aid in analyzing the statistical increase or decrease of women in specific engineering disciplines. The study will attempt to understand how certain engineering disciplines attract more women in the undergraduate years, in order to provide insight into strategies that may help recruit women to other fields which have either stagnated or decreased the percentage of women participants over time. Using pre-existing data drawn from the Outreach Programs and Science Career Intentions (OPSCI) study as part of the Physics Education Research Group (PERG) at FIU, this study will use the statistical software language and environment "R" and "RStudio" to analyze divergent trends between different engineering majors. The analysis will then be extended to disaggregate by student gender to study the flow of women's interests two and from particular engineering majors. A key visualization tool in this will be Sankey diagrams as well as associated tables, graphs, and inferential statistical tests. This project is intended to bring more insight into how to change the way STEM careers are framed for women in order provide more opportunities for women to become engaged in these pursuits. This project is also meant to influence engineering disciplines to change their traditional ways of teaching to attract and retain females that choose to study engineering.