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## UMass ADVANCE STEM vs Non-STEM Findings 2022

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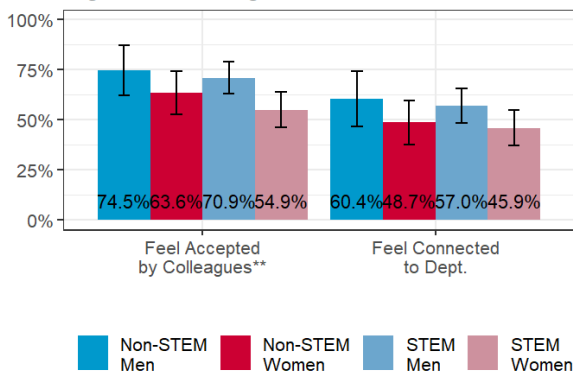
## Comparing STEM and Non-STEM Faculty Experiences

The UMass ADVANCE program works to ensure greater equity among faculty through the power of collaboration. In the 2022 ADVANCE survey, 453 UMass faculty responded and 273 of them are STEM faculty. We define STEM following NSF practices as faculty from College of Information and Computer Sciences, College of Natural Sciences, College of Social & Behavioral Sciences, and College of Engineering. All other faculty are coded as “non-STEM.”



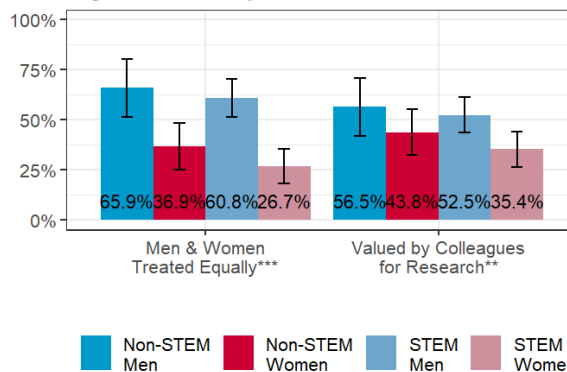
In this research brief, we focus on **patterns between STEM faculty and non-STEM faculty by gender**<sup>1</sup> in the areas of inclusion, shared decision-making, and research collaboration. While the findings in this brief indicate similar patterns for women faculty in both STEM and non-STEM fields, there are some differences between these fields. UMass ADVANCE interventions develop systemic and sustainable approaches to equity and inclusion in STEM, particularly for women, but interventions support greater equity across campus.

Figure 1: Feelings of Inclusion



Notes: \*p<0.10. \*\*p<0.05. \*\*\*p<0.01  
If no notation, there were no significant differences.

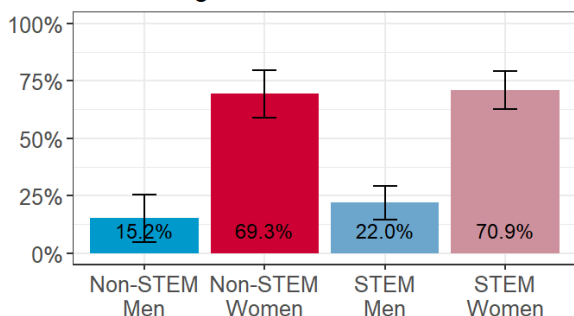
Figure 2: Perceptions of Treatment



Notes: \*p<0.10. \*\*p<0.05. \*\*\*p<0.01  
If no notation, there were no significant differences.

Feelings of inclusion and perceptions of treatment among UMass faculty are shaped by gender and field. **Compared to men faculty, women faculty in both STEM and non-STEM fields feel less accepted by their colleagues, less connected to their department (as shown in Figure 1), and less valued by their colleagues (as shown in Figure 2).** In addition, women are less likely to perceive men and women as being treated equally. Among

Figure 3: Demands Associated with Identity Have a Negative Effect on Career Goals\*\*\*



Notes: \*p<0.10. \*\*p<0.05. \*\*\*p<0.01  
If no notation, there were no significant differences.

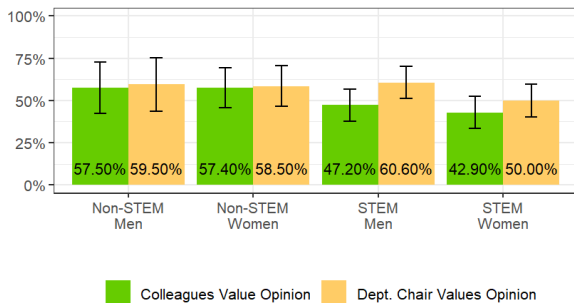
all groups, women from STEM fields are the least likely to perceive acceptance connection, and equal treatment.

**Women faculty are also much more likely to report experiencing negative effects on their career goals because of demands related to their identity than men faculty, as shown in Figure 3,** though here non-STEM and STEM women are more comparable, while men in STEM report greater negative effects than men outside of STEM. Overall, we found gendered feelings of inclusion across different fields on campus.

<sup>1</sup> 60.3% of survey respondents are in STEM disciplines. Faculty are grouped by non-STEM men (n=48), non-STEM women (n=78), STEM men (n=129) and STEM women (n=124).

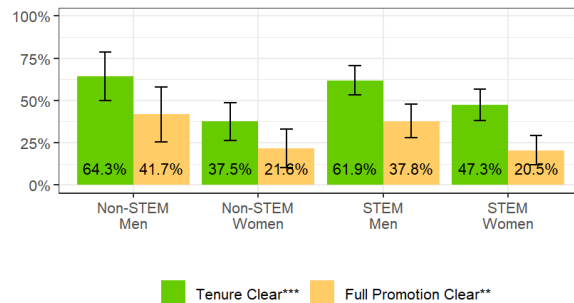
## Comparing STEM and Non-STEM Faculty Experiences

Figure 4: Experiences with Decision-Making



Notes: \*p<0.10. \*\*p<0.05. \*\*\*p<0.01  
If no notation, there were no significant differences.

Figure 5: Perceptions of Personnel Processes

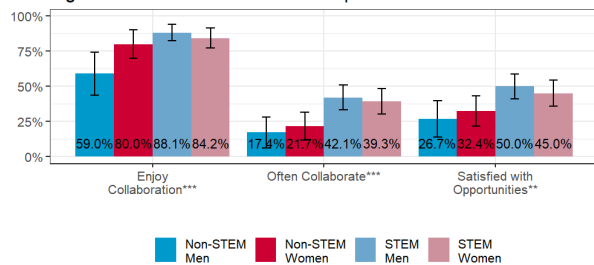


Notes: \*p<0.10. \*\*p<0.05. \*\*\*p<0.01  
If no notation, there were no significant differences.

We do not find significant differences in decision-making experiences by gender and field, as shown in Figure 4. However, **STEM women report that their opinions are least valued by their colleagues (42.9%) and chairs (50%)**. In Figure 5, we also examine group differences in perceptions of personnel processes. **Again, we find the gendered perceptions across disciplines: compared to men, fewer assistant women find the tenure processes clear, and even fewer tenured women find promotion to Full processes clear.** Women from non-STEM fields are the least clear on tenure. As for the promotion to Full Professors processes, only a small percentage of women believe that those processes are clear: 21.6% of women from non-STEM fields and 20.5% of women from STEM fields.

In the context of research collaboration, UMass faculty across disciplines report enjoying collaborations in general, though this is least true for men outside of STEM. **However, non-STEM faculty collaborate less frequently and are less satisfied with collaboration opportunities, compared to STEM faculty.** Among all groups, non-STEM men are least likely to report enjoying collaboration, often collaborating, and are least satisfied with collaboration opportunities.

Figure 6: Research Collaboration Experiences



Notes: \*p<0.10. \*\*p<0.05. \*\*\*p<0.01  
If no notation, there were no significant differences.

Next steps: There are many gender differences in the data, suggesting that ADVANCE's work on intersectional gender equity remains critical to campus, including for both STEM and non-STEM faculty. There is important work needed aimed at creating more equitable and inclusive department climates, and reducing the negative impacts of identity demands on women faculty. At the same time, women faculty at all ranks need better information about tenure and promotion expectations. Finally, helping create a more open environment for collaboration is also important. [UMass ADVANCE tools](#) on equitable practices in research collaboration, faculty governance and inclusive communities can provide a place to start for faculty and leaders who want to address these key issues for faculty equity.

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