

2023

UMass ADVANCE STEM Research Collaboration Findings 2022

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Recommended Citation

Liu, Shuyin, Joya Misra, and Laurel Smith-Doerr. 2023. "UMass ADVANCE Faculty Survey Report: Research Collaboration Findings."

DOI:<https://doi.org/10.7275/gp36-dd29>

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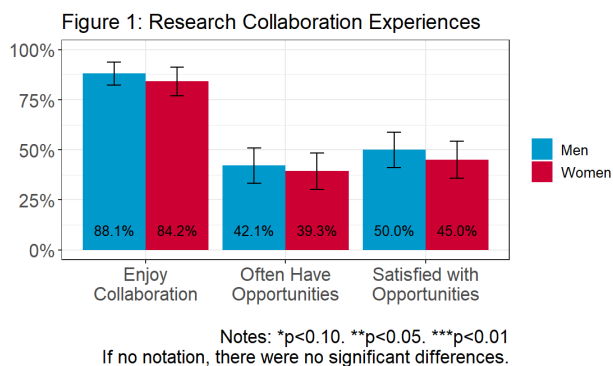
UMass ADVANCE Faculty Survey Research Collaboration Findings

Research collaboration, including working together on grant proposals, papers, patents, or other outputs, is critical to 21st century STEM faculty careers. Collaboration drives funding and productivity for many STEM researchers. Yet, most research finds that collaboration patterns differ by race and gender, in ways that disadvantage women and members of racially minoritized groups. In addition, the pandemic has interrupted opportunities to connect with colleagues. How do STEM researchers at UMass see collaboration in the current moment?



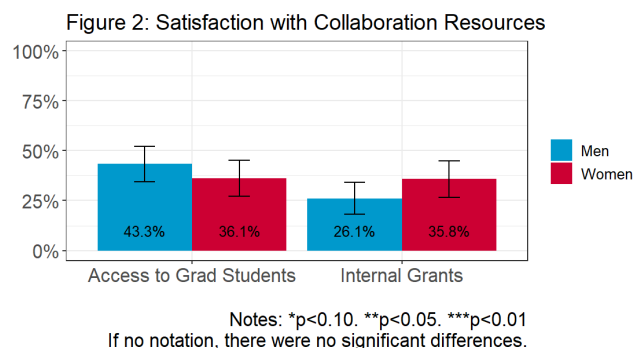
In the 2022 ADVANCE survey, 273 UMass faculty from 32 STEM departments in CICS, CNS, College of Engineering, and CSBS responded. In this research brief, we describe some of the key findings from this survey, focusing on patterns among STEM faculty by gender.

We explored differences by college, and found that there are not many differences among colleges around research collaboration. However, CICS faculty enjoy collaboration most and are most satisfied with their collaboration opportunities, though they report that they are less likely to have frequent opportunities for collaboration. Engineering faculty are more likely to report that they often have opportunities to collaborate with colleagues. By rank, we found that the differences in collaboration experiences are driven by the differences between non-tenure-track faculty and tenure-track faculty. There are no substantial differences among tenure-track faculty. In addition, we also compare experiences faculty who joined before and since 2019. We observe that faculty joining since 2019 report fewer collaboration opportunities and less access to graduate students, likely due to the pandemic.



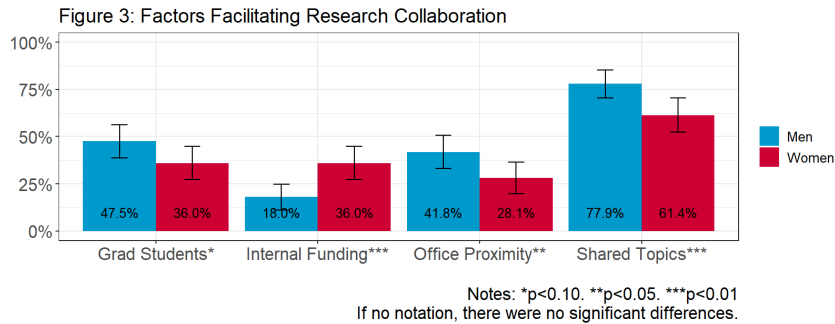
Most UMass STEM faculty members enjoy research collaborations with others. As shown in Figure 1, both women and men **enjoy collaborating** with their colleagues. However, they are less satisfied with opportunities to collaborate. Yet, the good news is that we do not observe statistically significant gender differences in experiences with research collaboration, clear progress since the 2018 survey.

The survey also asks whether faculty are satisfied with the resources for collaboration. As shown in Figure 2, there are no significant gender differences in satisfaction levels. However, both women and men show relatively **low satisfaction** levels regarding collaboration resources, especially opportunities for **internal grants** to fund collaborative research and **access to graduate students**.



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Further, the survey asked UMass faculty to identify factors facilitating research collaborations with their colleagues. There are no significant gender differences in most factors. For example, both women and men believe that collaborations are facilitated by complementarity in research topic (73%). Shared external funding (47%), social connections (35%), referrals by colleagues (19%), shared teaching (17%), or committee service (19%), play a relatively smaller role. Physical proximity of social spaces, physical resources on campus, or Zoom meetings also do not appear to operate differently by gender.



Yet, as shown in Figure 3, some factors appear to facilitate collaboration differently by gender. For example, **men are significantly more likely to consider shared research topics ($p < 0.05$) and physical proximity of offices and lab spaces ($p < 0.05$) as factors**

facilitating collaborations with colleagues on campus. In comparison, **shared internal funding plays a significantly more important role in facilitating women's collaboration ($p < 0.05$)**, although there are no significant gender differences in satisfaction towards internal funding (as shown in Figure 2). Furthermore, even though both women and men report low satisfaction in access to grad students, **men are marginally more likely to see shared graduate students as a factor to facilitate collaboration.**

Implications for Intervention: The pandemic has impacted faculty collaborations in a number of ways. It is possible that both the pandemic and the interventions of the ADVANCE team have led to fewer gender differences in collaboration experiences at the university when comparing the 2022 survey to the 2018 survey. Yet, clearly, there remain important challenges to collaboration on campus, that require continued intervention. Thus, key interventions might include helping facilitate intellectual connections among faculty that can lead to collaboration, as well as providing additional opportunities for internal funding, particularly because women appear to benefit from internal funding. ADVANCE has developed important [interventions and tools](#) available on our website for how to create equitable collaborations. Collaborative relationships require continuing assessment and attention to equity.

Through the power of collaboration UMass ADVANCE provides knowledge driven research and solutions for faculty equity. ADVANCE cultivates faculty equity, inclusion and success by providing the resources, recognition and relationship building that are critical for equitable and successful collaboration in the 21st century academy. UMass ADVANCE is funded by the National Science Foundation (NSF), which is advancing gender and racial equity for faculty in science and engineering. For more information on UMass ADVANCE go to: <https://www.umass.edu/advance/home>

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