



# Disproportionate Impact of COVID-19 on Racial-minorities and Women in Academia.

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## Introduction

### Racial and Gender Disparities in Academia

- Women and Underrepresented Minorities (URM) endure unequal treatment, representation, and respect across academia.
- These groups thus face systemic challenges to success over their white and male counterparts, including in selection, promotion, and retention (Liu et al., 2019).

### The Inequitable Impact of COVID-19 on Female and URM scholars

- Racial and Gender disparities in academia have only been exacerbated by the COVID-19 pandemic.
- March-June 2020 saw a disproportionate decline in women's publications, especially in first and sole-authored articles (King & Frederickson, 2021), in part due to inability to defer child and elder care (Oleschuk, 2020).
- The "Motherhood Penalty"- The pandemic had the greatest impact on productivity and stress of black mothers in academia (Staniscuaski et al., 2021).

## Hypotheses

### Impact of COVID-19 by Gender:

- Female academics will experience less productivity and research progress than male academics.<sup>a</sup>
- Female academics will experience greater declines in mental health than male academics.<sup>b</sup>
- Female academics will experience greater increases in caretaking responsibilities than male academics.<sup>c</sup>

### Impact of COVID-19 by Race:

- URM academics will experience less productivity and research progress than white and Asian academics.<sup>2a</sup>
- URM academics will experience greater declines in mental health than white and Asian academics.<sup>2b</sup>
- URM academics will experience greater increases in caretaking responsibilities than White and Asian academics.<sup>2c</sup>

## Methods

### Pilot Study

- International pilot study of N = 193 early-career scholars using Prolific.
- Participants were surveyed about the impacts on their research progress, mental health, and caretaking responsibilities during the COVID-19 pandemic.

### Demographics

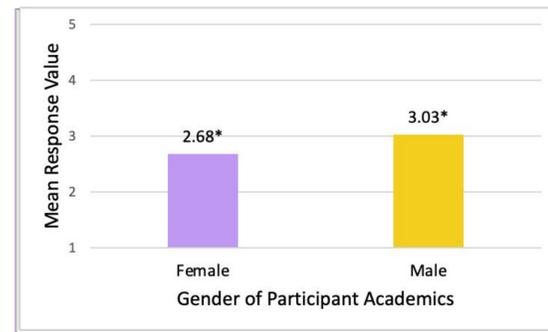
- 120 graduate, 30 postdoc, 25 asst. professor, 17 other
- 58 URM, 46 Asian, 85 White
- 99 male, 89 female

### Analysis

- Two one-way ANOVA tests were conducted using SPSS to examine differences in the impact of COVID-19 between race (URM v. Asian v. White) and gender (male v. female).
- A post hoc test was conducted to analyze where the differences were among the three racial categories.

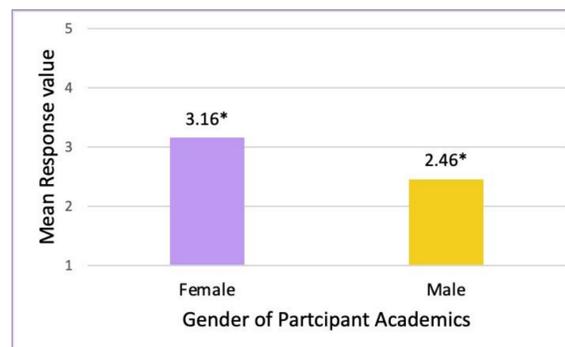
## Results

- Female and URM early-career scholars have suffered disproportionate negative effects of the COVID-19 pandemic on their progress and academic careers.



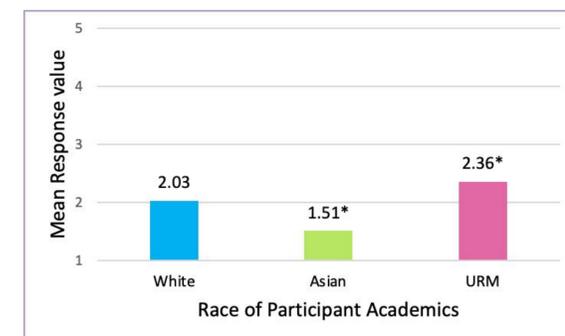
Numerical Value	Response Category (Research Progress...)
5	Greatly increased
4	Somewhat increased
3	Stayed the same
2	Somewhat decreased
1	Greatly decreased

**Figure 1. Average change in research progress due to COVID-19.** While male scholars overall had a mean response of approximately no change in research progress, female scholars on average experienced a significant decrease in progression of their research due to COVID-19 ( $F=4.987, p=0.027$ ).



Numerical Value	Response Category (Mental Health Problems...)
5	Disrupted my work a great deal
4	Quite a bit disrupted my work
3	Somewhat disrupted my work
2	Disrupted my work a little bit
1	Not at all disrupted my work

**Figure 2. Average effect of mental health on disruption of work due to COVID-19.** Female scholars experienced a greater effect of mental health on work disruption, significantly higher than that of their male colleagues ( $F=14.865, p=0.000$ ).



Numerical Value	Response Category (Additional Caretaking Responsibility...)
5	Disrupted my work a great deal
4	Quite a bit disrupted my work
3	Somewhat disrupted my work
2	Disrupted my work a little bit
1	Not at all disrupted my work

**Figure 3. Average effect of additional caretaking responsibility at home on disruption of work due to COVID-19.** URM scholars experienced the greatest work disruption caused by additional caretaking responsibility, in comparison to the mean responses of white and Asian academics ( $F=5.707, p=0.004$ ).

## Discussion and Conclusion

### Summary of Results

- Women reported greater disruptions to research progress and mental health during COVID-19 than men.<sup>a, b</sup>
- No difference was found with gender and additional caretaking responsibilities.<sup>c</sup>
- URM academics reported additional caretaking responsibilities.<sup>2c</sup>
- No differences found between racial categories with research progress or mental health.<sup>2a, 2b</sup>

### Tackling Disparities and Inequity in Academia among Women

- Women continue to have significant limitations to their academic career advancement when compared to men, with the COVID-19 pandemic exacerbating disruptions to research progress.
- The COVID-19 pandemic had greater impacts on mental health disruptions to productivity among women, hindering career advancement compared to male colleagues.
- Mitigating gender barriers at all stages of the academic career and providing supportive environments will lead to overcoming disparities and inequity in academia.

### Caretaking Responsibilities among People of Color (POC)

- With the closing of child and elder care services during the COVID-19 pandemic, POC experienced greater work disruptions due to increases in additional caretaking responsibilities compared to their non-POC colleagues.
- Improvements are needed in academia pertaining to motherhood and inflexibility for early-career scholars who are raising children.

### Limitations and Moving the Needle

- The sample was not randomly selected.
- International sample without knowledge of country representation.
- Additional research conducted into these areas in 1-2 years following return to "normalcy", including turnover rate, could determine if the exacerbated detrimental effects of COVID-19 will be long-lasting in academia.

### CLIMBS-UP: Climate for Inclusion

- This research is a small facet of a much larger project (CLIMBS-UP) seeking to investigate how inclusive work environments affect career outcomes of early-career STEM academics.

## References

1. Liu S. C., Brown S.E. V., & Sabat I. E. (2019). Patching the "leaky pipeline": interventions for women of color faculty in STEM academia. *Archives of Scientific Psychology*, 7(1), 32-39. DOI: [10.1037/arc0000062](https://doi.org/10.1037/arc0000062)
2. King M.M., & Frederickson M.E. (2021). The pandemic penalty: The gendered effects of COVID-19 on scientific productivity. *Socius: Sociological Research for a Dynamic World*, 7(1), 1-24. <https://doi.org/10.1177/2623780231211006977>
3. Oleschuk M. (2020). Gender equity considerations for tenure and promotion during COVID-19. *Canadian Review of Sociology*, 57(3), 502-15. <https://doi.org/10.1111/cars.12295>
4. Staniscuaski F., Kmetzsch L., Soletti R.C., Reichert F., Zandonà E., Ludwig Z.M.C., Lima E.F., Neumann A., Schwartz I.V.D., Mello-Carpes P.B., Tamajusuku A.S.K., Werneck F.P., Ricachenevsky F.K., Infanger C., Seixas A., Staats C.C., & Oliveira L. (2021). Gender, race, and parenthood impact academic productivity during the COVID-19 pandemic: From survey to action. *Frontiers in Psychology*, 12, n.p. <https://doi.org/10.3389/fpsyg.2021.663252>

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