

Examining the Nature of Participation in NREUPs: Narratives of Racially Minoritized Students

Christopher C. Jett
Georgia State University

Gulden Karakok
University of Northern Colorado

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The Mathematical Association of America's (MAA) National Research Experience for Undergraduates Program (NREUP) provides opportunities for racially minoritized students to collaborate with faculty in the mathematical sciences on summer research projects at a diverse range of institutions. Through a rigorous and accessible research experience, NREUP's goals are to increase undergraduate degree completion rates and ignite students' interest in obtaining graduate degrees and embarking upon careers in the mathematical sciences.

Since 2003, the NREUP has supported approximately 100 faculty members and 768 students, with about half of them identifying as Black/African American and about 35% as Latinx/Hispanic. In this poster presentation, we will share results of the analysis of follow-up interview data from students who participated in the NREUPs during the summers of 2019-2024. This work focused on this time frame as part of evaluative efforts examining the grant project's five-year period. Of the 151 former NREUP students, one third did not provide information about their post-undergraduate whereabouts, and the remaining students were placed into two distinct categories — (1) those who were attending graduate school in the mathematical sciences and (2) those who were pursuing careers in the mathematical sciences.

We randomly selected 10 students from each category to capture the longitudinal impact of the program. Ten students from category 1 participated in the study; however, only eight students from category 2 did so. The reason why we did not reach our target number of participants from category 2 during the given time frame (until August 31, 2025) was because we did not have access to the working professionals' email addresses. As a result, our total sample size consisted of 18 former NREUP students from racially minoritized groups. Our research question was: What is the nature of NREUP participants' experiences from diverse institutions?

This qualitative study was evaluative in nature (Patton, 2015). We conducted online, semi-structured interviews that lasted about 50 minutes. Sample interview questions included: In what ways did the program shape your decision about whether or not to attend graduate school? In what ways did the program shape your decision about your future career? Each researcher read through the individual transcripts to engage in preliminary analysis and highlight the positive aspects and areas of improvement for NREUPs. Then, we used open coding to perform data analysis and to extract overarching themes (Saldaña, 2021). Next, we explored math identity work and mapped our findings onto this theoretical frame (McGee, 2015; Voigt et al., 2023).

Across both categories, students consistently reported gains in knowledge about the research process, the benefits of having formal and informal mentors to learn more about discipline-based opportunities, and the advantages of collaborating with undergraduate and graduate student peers. Students also praised the structure of the program and expressed that it led to increased confidence as emerging scholars within the mathematical sciences. Given this, we highlight potential avenues for future RUME work that considers different programmatic structures and mentoring approaches associated with NREUPs. In all, our study extends prior work regarding undergraduate research experiences (Castillo-Garsow & Castillo-Chavez, 2016; Sturner et al., 2017) by following up with participants from racially minoritized groups who participated in NREUPs.

References

- Castillo-Garsow, C., & Castillo-Chavez, C. (2016). Why REUs matter. In M. A. Peterson & Y. A. Rubinstein (Eds.), *Directions for mathematics research experience for undergraduates* (pp. 125–145). World Scientific Publishing Company.
- McGee, E. O. (2015). Robust and fragile mathematical identities: A framework for exploring racialized experiences and high achievement among Black college students. *Journal for Research in Mathematics Education*, 46(5), 599–625.
<https://doi.org/10.5951/jresmetheduc.46.5.0599>
- Patton, M. Q. (2015). *Qualitative research & evaluation methods: Integrating theory and practice* (4th ed.). Sage.
- Saldaña, J. (2021). *The coding manual for qualitative researchers* (4th ed.). Sage.
- Sturner, K. K., Bishop, P., & Lenhart, S. M. (2017). Developing collaboration skills in team undergraduate research experiences. *PRIMUS*, 27(3), 370–388.
<https://doi.org/10.1080/10511970.2016.1188432>
- Voigt, M., Wynn, L., Bjorkman, K., & Lo, S. M. (2023). Illustrating student mathematics identities through a network of identity frameworks. *PRIMUS*, 33(5), 487–501.
<https://doi.org/10.1080/10511970.2022.2082614>