# BARRIERS & RECOMMENDED STRATEGIES FOR RECRUITING, RETAINING, AND UPSKILLING BLACK AND LATINA WOMEN IN STEM

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## BACKROUND

The paucity of minoritized women in Science, Technology, Engineering, and Mathematics (STEM) fields and its causes have been well documented since the mid-20th century.[1] In 2023, we are still failing to effectively recruit and retain women in STEM at all points of the so-called leaky pipeline, from elementary school through post-secondary education and the workplace, a pattern that has not changed in over two decades of reporting.[2] While this underrepresentation exists for all women, the disparity is especially pronounced for Black/African American and Hispanic/Latina women.[3] Barriers that these women face in STEM mirror those faced in society:[4] social forces like gender inequality, racial inequality, ethnic inequality, and their intersections form the societal backdrop upon which interactions among individuals and institutions in STEM occur. Because of this social context, individual women in STEM and their potential employers are limited by the same barriers when attempting to improve recruitment, retention, and upskilling.

## PURPOSE

To better understand these barriers and the underlying barriers preventing these women from being upskilled, recruited, and retained in STEM in Wake County, a literature review was conducted as the basis for future focus groups and interviews of Black/African American and Hispanic/Latina women in Wake County.

## BARRIERS

Barriers to improving the representation of Black/African American and Hispanic/Latina women exist from the societal to the individual level and do not exist in isolation; individual

[1] Malcom, Hall, Brown, 1976; Weisgram & Diekman, 2014
[2] Hall et al., 2018; National Science Foundation, 2021; Walsh & Simon, 2022; Yamaguchi & Burge, 2019
[3] Rice & Alfred, 2014; Cantor, 2014; Hall et al., 2018; National Science Foundation, 2021; UNESCO, 2018; Yamaguchi & Burge, 2019
[4] For a discussion of the gender equity gaps in representation and wages in STEM in Wake County see Ashton, et al., 2020

and interactional factors impact organizational cultures and vice-versa, and all the above will vary based on institutional and governmental policies and social context.

Societal Barriers:

- gender and racial-ethnic stereotypes and the "double dose" of discrimination at their intersection[5]
- the leaky pipeline that poorly trains girls in STEM from education to industry[6]

Organizational Barriers:

- feeble organizational human resources policies and/or their enforcement[7]
- a chilly climate or organizational culture that isolates minoritized employees in STEM[8]
- flexibility stigma when employees using their benefits are not seen as ideal workers
- the maternal wall limiting promotion and advancement for mothers[9]
- the absence of support networks for minoritized employees in organizations

Interpersonal & intrapersonal barriers among employees from dominant groups:[10]

- implicit biases against members of minoritized groups
- microaggressions, or subtle, everyday words and actions that reveal this implicit bias
- harassment

Barriers for Black/African American and Hispanic/Latina women:[11]

- identity shifting to fit in with the dominant culture
- social identity threat or feeling devalued for their identity
- less psychological safety or ability to be assertive and take risks
- social isolation.

## EFFECTIVE STRATEGIES FOR EMPLOYERS

Employing strategies to address these barriers and effectively recruit, retain, and upskill Black/African American and Hispanic/Latina women into STEM has financial benefits for employees and employers. Businesses with more diversity build more innovative products,

[5] Linnaberry et al., 2014, p.541
[6] Glass et al., 2013; Makarova et al., 2016; Mattheis et al., 2022; Weisgram & Diekman, 2014
[7] Mattheis et al. 2022; Alfred et al., 2019; Yamaguchi & Burge, 2019
[8] Cech, Blari-Loy & Rogers, 2018; Wynn & Correll, 2018
[9] Cech & Blair-Loy, 2014; Williams et al., 2016, p.17
[10] Charleston et al., 2014; Funk & Parker, 2018; Gewin, 2015; Krivkovich et al., 2022; Mattheis et al., 2022; Williams et al., 2016; Yamaguchi & Burge, 2019
[11] Charleston et al., 2014; Dickens & Chavez, 2018; Hall et al.,2019; Steele, Spencer, & Aronson, 2002; Travis & Thorpe-Moscon, 2018; Yamaguchi & Burge, 2019

and companies with women in leadership showed a better financial performance compared to those who did not.[12]

Upskilling

The literature is limited terms of upskilling, but some case studies provide emerging employer practices for upskilling that include:

- Apprenticeship programs that make intentional effort to recruit members of minoritized groups and include training, work-based learning, and mentorship[13]
- "Returnship" programs that target tech employees that have left the workforce, most of whom are women[14]
- Use of data analysis tools for market benchmarking to identify potentially eligible workers in the region that could transition into tech with upskilling
- Identifying "skill adjacencies", "bridge skills", and "last-mile skills" that existing employees need to transition into technical roles[15]
- Providing training in partnership with existing human resource development programs.[16]

Recruitment and Hiring

To meet long-term goals for representative recruitment, employers can simultaneously address hiring practices now and attempt to expand the applicant pool in the future. Best practices include:

- *Addressing the Leaky Pipeline* by recognizing the positive impact of K-12 and pre-college programs, gender balanced promotional materials, financial aid, like-role models, and structured mentorship for students[17]
- *Using Data Informed Recruitment by* collecting data on current representation, attrition, and leadership by race and gender to set data-based goals for improvement[18]

[12] Alfred et al., 2019; Ashton et al. 2020; Floyd, 2021; Moss-Racusin et al., 2021, Noland et al., 2016
[13] Krivkovich et al., 2022, p.48
[14] Krivkovich et al., 2022; Zerrenner, 2022
[15] Walsh & Simon, 2022, p.14
[16] Walsh & Simon, 2022, p.14
[17] Illumoka et al., 2017; Johnston et al., 2021; Kamm et al., 2020; Moss-Rascusin et al., 2021; Rice & Alfred, 2014; Swafford & Anderson, 2020; Weisgram & Diekman, 2014; Yamaguchi & Burge, 2019
[18] Krivkovich et al., 2022; Williams et al., 2016

- *Intentionally and explicitly recruiting* Black/African American and Hispanic/Latina women, using diverse and inclusive advertising and job boards,[19] and frequently communicating their commitment to diversity, equity, and inclusion[20]
- *Creating equitable candidate evaluations* by avoiding identifying information on applications and reminding hiring managers to be mindful of implicit biases.[21]

Retention

Effective strategies for retention of diverse candidates, including Black/African American and Hispanic/Latina women, focus on organizational culture, policies, and building social capital. Strategies for recruitment and retention are not mutually exclusive, as improving the organizational culture will both attract and retain valuable talent.

In seeking to *promote an inclusive workplace culture and policies*, best practices include:

- Abandoning a color-blind approach to human resource management in favor of explicitly valuing diversity and inclusion[22]
- Creating a transparent code of conduct that supports inclusion and emphasizes a zero-tolerance attitude towards harassment[23]
- Allowing flexible schedules, hybrid and remote options, and paid leave in tandem with fostering a culture absent of flexibility stigma, where employees are comfortable using their benefits[24]
- Encouraging employees in dominant groups to actively participate in confronting and taking ownership of their implicit biases[25]
- Managers that support and affirm minoritized employees and model best practices[26]
- Requiring quality, research-based, and reinforced implicit bias training[27]
- Examining the equitable distribution of labor on teams and in departments[28]

Finally, employers can *build employee social capital and develop leadership* by using best and emerging practices that include:

[19] Graham, 2022
[20]; Moss-Racusin et al., 2021; Walsh & Simon, 2022; Williams et al., 2016; Wynn & Correll, 2018
[21] Kong et al., 2020; Shein, 2018; Williams et al., 2016
[22] Olund, 2017
[23]Alfred et al., 2019; Kamm et al., p. 103, 2020
[24] Cech & Blair-Loy, 2014; Kong et al., 2020; Krivkovich et al., 2022, Alfred et al., 2019
[25] Mattheis et al., 2022
[26] Alfred et al., 2019; Cech & Blair-Loy, 2014; Hall et al., 2018; Kamm et al., 2020, Krivkovich et al., 2022; Mattheis et al., 2022; Weisgram & Diekman, 2014; Wynn & Correll, 2018
[27] Alfred et al., 2019; Krivokvich et al., 2022; Williams et al., 2016
[28] Williams et al., 2016

- Creating Employee Resource Groups as a part of a larger effort to promote equity[29]
- Building quality, strengths-based mentorship programs and peer network support in the workplace, including those specifically for women of color[30]
- Training managers to recognize leadership potential and sponsor minoritized employees[31]
- Creating data-based and intentional leadership programs to improve Black/African American and Hispanic/Latina women's advancement within the organization, created with their input.[32]

## FURTHER READING

Full report:

MacDonald, J., Madsen, R., McManus, L., Niles, B. (2023). Barriers and Recommended Strategies for Recruiting, Retaining, and Upskilling Black and Latina Women in STEM. Wake Technical Community College.

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[29] Casey, 2021; Krivkovich et al., 2022

[30] Alfred et al., 2019; Buzzanell et al., 2015, Dickens & Chavez, 2018; Kamm et al., 2020; Krivkovich et al., 2022; Rockinson-Szapkiw et al., 2021

[31] Rice & Alfred, 2014

[32] Dickens & Chavez, 2018; Rice & Alfred, 2014; Krivkovich et al., 2022