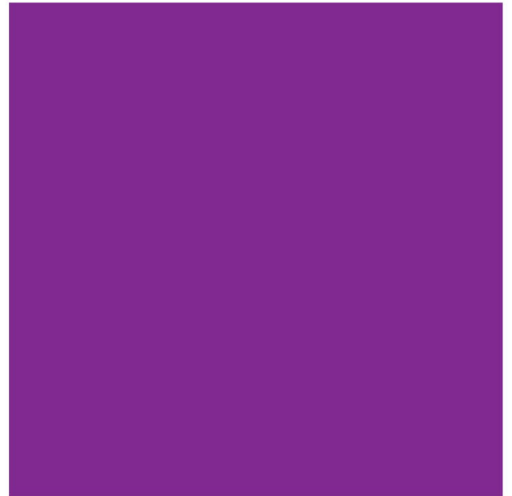**women in CYBERSECURITY**

**WiCyS**

Aleria

# EXECUTIVE SUMMARY:
## THE STATE OF INCLUSION OF WOMEN IN CYBERSECURITY

**2023**

Numerous previous studies have reported that the representation of women in cybersecurity is not where it should be, but it is not as clear why this continues to be the case, or how matters can be improved in this regard. In collaboration with the DEI firm Aleria, WiCyS has launched a pioneering study to gain insight into the real causes of disparities in the career experiences of women in cybersecurity, and how best to identify the barriers that keep women from being recruited, retained and advanced at the same rate as men.

Starting in February of 2023, a series of workshops were conducted attended by over 300 women. Workshop participants were given the opportunity to take part in an interactive Measuring Inclusion activity using Aleria's confidential, online platform. Each participant anonymously entered information about themselves and their work experiences.   The study reveals that to this date women continue to face numerous unfavorable workplace experiences that contribute to their overall feeling of exclusion, and, consequently negatively impact their rates of satisfaction, productivity, and retention.

In particular, we find that **women are especially impacted by lack of respect and by lack of career opportunities**. We also find that workplace experiences result most frequently from leadership and direct managers, but that peers also play a significant role, particularly in terms of being disrespectful. Lastly, the results show clearly that women who work for WiCyS partner organizations enjoy higher levels of inclusion than women who work for non-partners.

## Quantifying inclusion: what is happening and why it is happening

During the workshop, attendees were invited to share specific uncomfortable workplace experiences, and then specify each shared experience with "Categories of Experiences" and "Sources of Experiences" (see Table 1) that best fit them. lead to exclusion.

| Categories of Experiences | Sources of Experiences |
|---|---|
| • Access & Participation | • Policy |
| • Career & Growth | • Leadership |
| • Compensation & Benefits | • Direct Manager |
| • Communications and Information Sharing | • Peers |
| • Respect | • Reports |
| • Recognition & Appreciation | • External: Customers, Partners, Suppliers… |
| • Skills Use & Assignments | |
| • Work-Life Balance | |

**Table 1:** List of the Categories (left) and Sources (right) of experiences.

Using the collected data we calculate the exclusion score, a numerical value that combines prevalence (the proportion of participants who shared at least one experience), severity (the average number of experiences shared per person) and frequency (one-time or recurring). The exclusion score can be calculated at any level of analysis, from the entire dataset down to specific Categories, Sources, Traits, or combinations of these dimensions. At any of these levels, higher exclusion scores pinpoint more problematic areas, and therefore the greatest opportunities to create more inclusive workplaces by reducing or eliminating experiences that lead to exclusion.

The combination of qualitative (verbal descriptions) and quantitative (categorization) data provided powerful insights into the state of inclusion of women in cybersecurity. To illustrate, we show a rank-ordering of the Categories of Experiences to quantify what is happening to women in cybersecurity, and a rank-ordering of Sources of Experiences to quantify why it is happening.

In terms of what is happening, the left side of Figure 1 shows that **Respect is the category with the highest exclusion score**. Unfortunately lack of respect is a common problem, and previous studies have shown that it is particularly acute for women in technology companies.

Somewhat surprising relative to other studies is that **Career & Growth is the second-highest exclusion score**. This result suggests that women in cybersecurity frequently experience situations that impact their ability to grow and to advance in their careers—problems that are strongly linked to satisfaction and to retention rates. Another unusual finding is the **low ranking of Compensation & Benefits**, suggesting that this category is less of an issue than has been found in other industries.
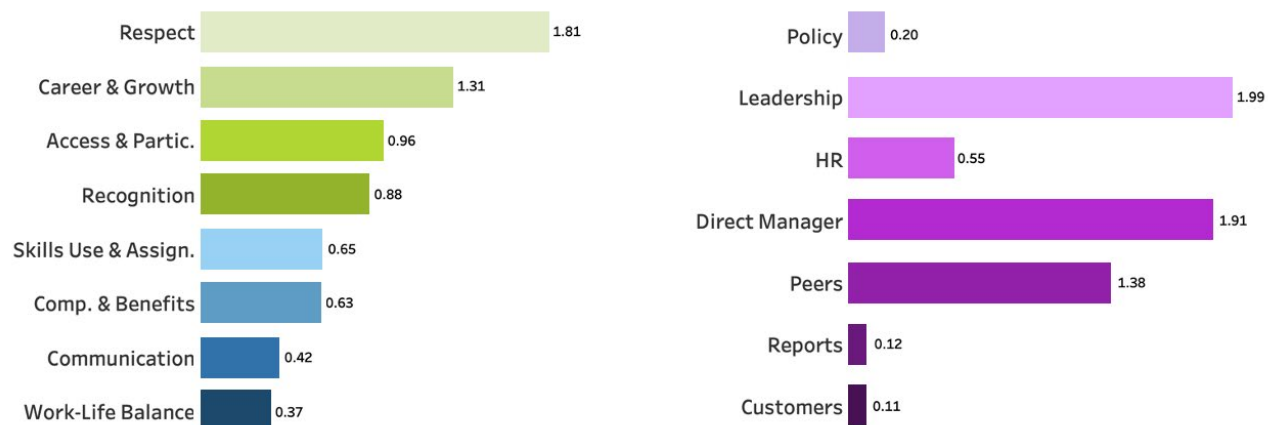
**Figure 1:** Rank-ordering of Categories (left) and Sources (right). Larger values represent higher exclusion scores.

As to why these experiences happen, the right side of the chart confirms a universal truth about exclusion: **people, not policies, are the most common sources of experiences of exclusion**. Specifically, we see that Leadership and Direct Managers are the top two sources. Our analysis revealed that Peers, which rank third, are most closely linked to the Respect category. Together, the data in Figure 1 reveal that women experience significant workplace exclusion, much of it due to the actions of their coworkers.

## The Day-to-Day Experiences of Women in Cybersecurity

Beyond the statistics, the detailed experiences shared by participants offer poignant examples of the kinds of day-to-day workplace experiences that impact individuals. To provide some examples, Table 2 shows two representative "sharable" experiences drawn from each of the top four categories.

| | |
|---|---|
| **Respect** | "After introducing myself, I have had individuals ask to speak to a 'guy who works in IT' instead of me."<br><br>"Colleagues would play pornographic movies as I arrived to meetings. One time a colleague played a movie like this when we were meeting with a customer." |
| **Career & Growth** | "I was told that there was not a need for someone of my career level on a large customer account. Three months later promoting a male was an "imperative" to serving that account."<br><br>"I am not given opportunities to advance into a leadership role due to age." |
| **Access & Participation** | "Male peers would have important work conversations at lunch when I was not with them… ignoring my absence, hence my potential contribution."<br><br>"I was not invited to lunch, whereas other white colleagues were included." |
| **Recognition & Appreciation** | "When you come up with an idea, it's met with silence, then someone else repeats your idea and everyone gets all over it."<br><br>"My male peers received more pats on the back for far lesser accomplishments than me." |

**Table 2:** Sample shared experiences organized by category. We only include examples that participants gave explicit permission to share as part of reports such as this one.

These are but a small sample of the experiences shared by participants. Overall, the study collected over 420 experiences, with more than 360 included explicit permission to be shared. **Some of these experiences described specific situations that should never be tolerated and, if made public, would lead to immediate termination of the offending party.** Beyond the more egregious examples, shared experiences provide invaluable insights into the kinds of workplace interactions that are at the heart of exclusion.

## Factors That Influence Exclusion

As part of the activity, each participant had the option to specify a number of individual characteristics (role, tenure and age) as well as characteristics of their employer organization (size, type and WiCyS partnership status). We begin with an analysis of how individual characteristics impact exclusion, shown in Figure 2.
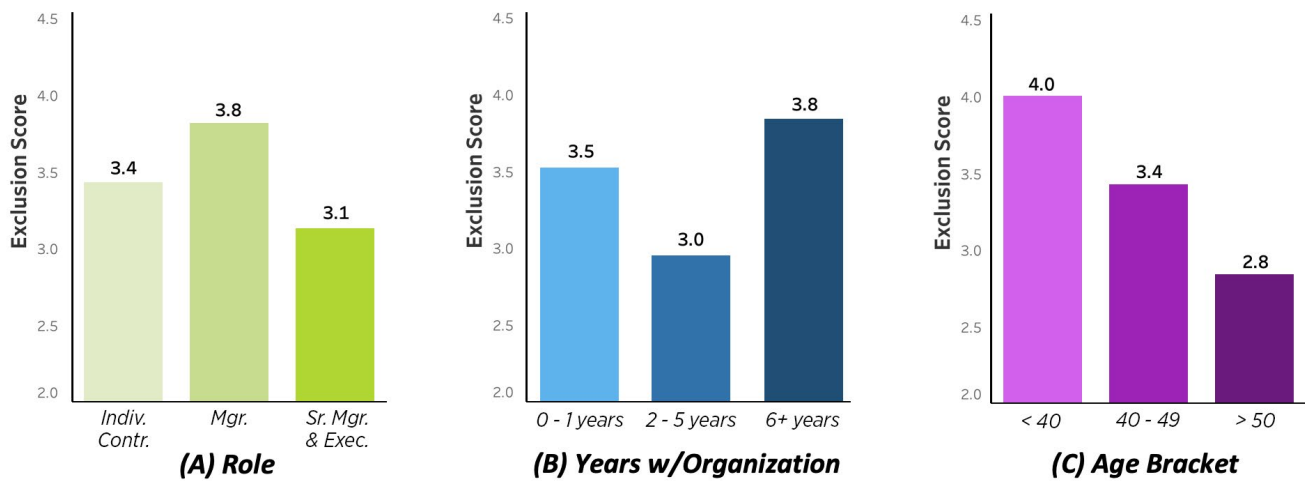
**Figure 2:** The impact of individual characteristics on exclusion scores.

Several observations are apparent:

- **Managers bear the brunt of exclusion**, reporting exclusion levels (chart A) 12% higher than those of individual contributors, and 23% higher than those reported by senior managers and executives.
- **New hires struggle with exclusion**, reporting exclusion levels (chart B) 17% higher than women who have been with the organization 2-5 years, however…
- **…women experience a "glass ceiling"** of sorts, showing the highest exclusion after 6+ years with the same organization (also chart B)[1].
- **Age seems to help**, as shown by the steadily declining pattern in chart C. In reviewing the shared experiences, several women described situations in which they were not taken seriously because of their young age. This suggests a sort of reverse-ageism.

Next, the impact of factors related to the participant's organization is presented, as shown in Figure 3. Several additional observations are warranted:
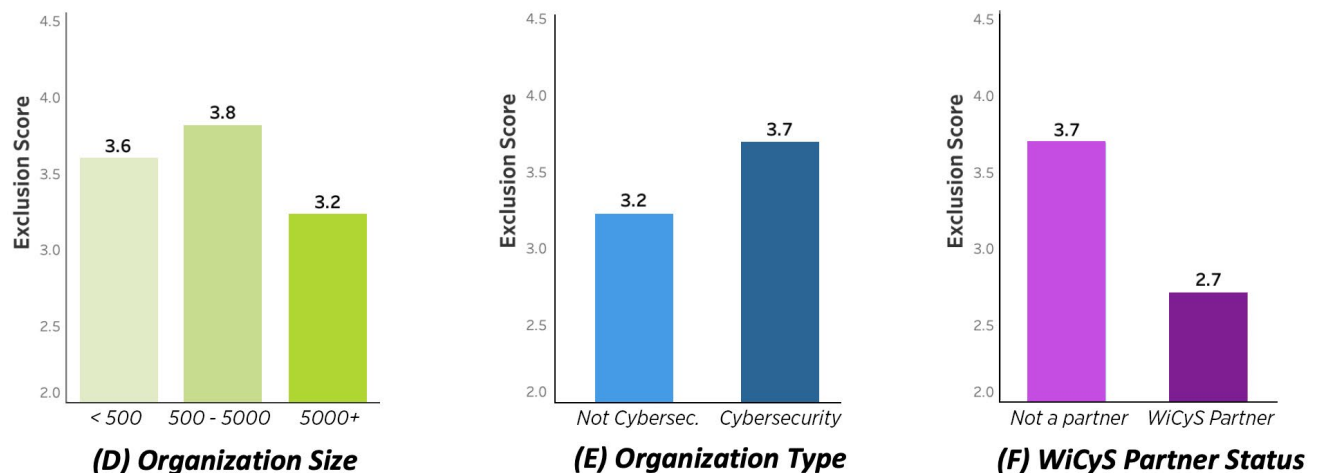


**Figure 3:** Impact of employer characteristics on exclusion scores.

- **Larger organizations (5,000 or more employees) seem to be more inclusive** (i.e., have lower exclusion score) than smaller companies, as seen in chart D.
- **Cybersecurity organizations have a significantly higher level of exclusion than non-cybersecurity organizations**, as seen in chart E. This finding aligns with similar studies showing that technology companies tend to have higher overall exclusion scores than companies in other sectors, especially for women.
- **WiCyS partner organizations practice greater inclusion.** Chart F shows that organizations that are not WiCyS partners exhibit a level of exclusion that is 36% higher than organizations that are WiCyS partners.

[1] Note that number of years with an organization (chart B) and seniority of role (chart A) are not strictly linked. In fact, of the women who have been with their current organization for 6+ years, only 21% are in a senior management or executive role, 31% are in a managerial role, and 48% are in an individual contributor role.

Regarding the last finding, one might ask whether organizations that join WiCyS are more likely to be inclusive, or organizations that are more inclusive are more likely to join WiCyS. It is observed to be a bit of both: on one hand it makes sense that organizations that care about women are likely to want to join WiCyS as a strategic partner in support of its mission, however, on the other hand, joining WiCyS is likely to provide a boost to the level of inclusion felt by its female employees. WiCyS partnership sends a clear message that leadership cares for them and for inclusion in general by signing up to boost programming that provides specific, tangible opportunities to improve matters for women in cybersecurity.

To explore this point further, Figure 4 compares exclusion scores for WiCyS partner and non-partner organizations across the Respect, Career & Growth, Access & Participation, Skills Use & Assignments categories.
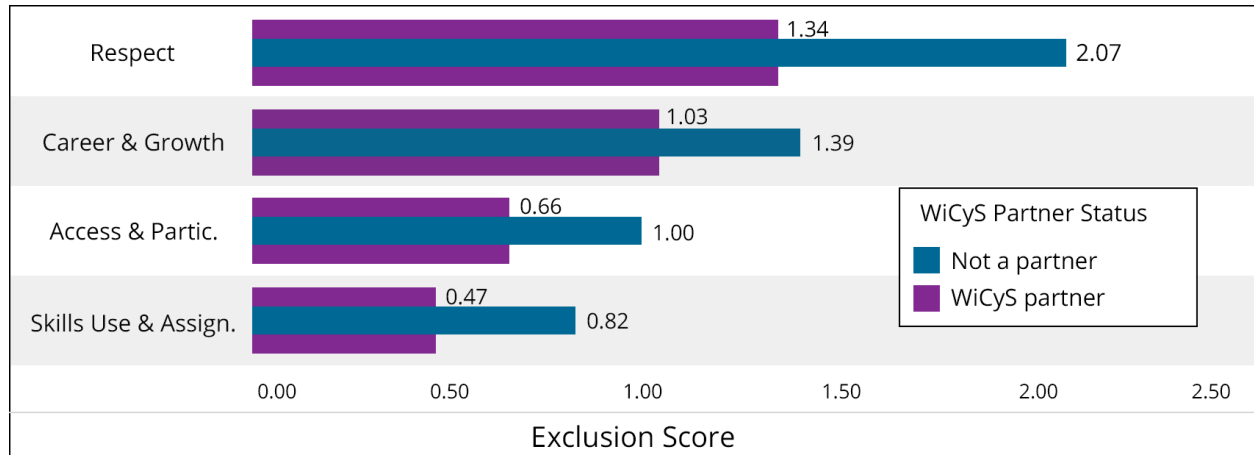


**Figure 4:** Exclusion scores for top categories by WiCyS partner status.

The figure shows clearly that **WiCyS partners have a dramatically lower exclusion score across these important categories:** the exclusion scores for non-partners relative to WiCyS partners is 57% higher for Respect (2.07 vs. 1.34), 35% higher for Career & Growth (1.39 vs. 1.03), 52% higher for Access & Participation (1.00 vs. 0.66), and 75% higher for Skills Use & Assignments (0.82 vs. 0.47).

## Conclusions

This executive summary showed some of the more salient results from the analysis of inclusion data collected during phase 1 of this important study.

The inclusion assessment analysis reveals that Respect and Career & Growth are the areas where organizations have the best opportunity to create greater inclusion, and that organizations should pay special attention to women in leadership roles, as well as women who have been with them for more than 5 years. There is also a strong correlation between being a WiCyS partner and practicing/enjoying greater levels of inclusion. The analysis also confirms that exclusion results from the behaviors of coworkers, not from workplace policies or abstract notions of "company culture."

## Participate in Phase 2:
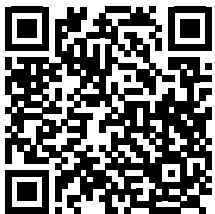


www.wicys.org/initiatives/wicys-state-of-inclusion