

# Outcomes and Lessons Learned from Implementing a Diversity, Equity, and Inclusion Program at UCAR/NCAR

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Social Science;  
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**ABSTRACT:** Atmospheric science is male dominated and few students of color matriculate into the field, a trend dating back at least 50 years. UCAR/NCAR Equity and Inclusion (referred to as UNEION), which has trained nearly 200 employees, is the institution's flagship diversity program. UNEION is central to efforts to create a welcoming workplace, engaging participants with peer-led learning to gain knowledge on diversity, equity, and inclusion (DEI) topics, and encouraging participants to implement these learnings through bystander intervention. Evaluation results show that UNEION 1) increases participants' awareness of inequities, 2) encourages participants to feel responsible for DEI, and 3) teaches participants how to intervene in inappropriate situations.

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**D**iversity, equity, and inclusion (DEI) are increasingly featured in organizational strategies. While these terms each have specific meanings [see Baum (2021) for a review], the idea that employees of different backgrounds should be treated fairly and feel a sense of belonging at work are often woven together under the umbrella of workplace DEI strategies. These efforts have been linked to improved team performance (Nielsen et al. 2018), increased job satisfaction in STEM fields (Smith et al. 2018), and even scientific innovation (Hofstra et al. 2020). The atmospheric sciences are dominated by white men (see Acosta et al. 2022). Despite innovative education programs that target this disparity (see Morris et al. 2012), there has been little progress increasing racial diversity in the field (Bernard and Cooperdock 2018). Women make up approximately one-quarter of geoscience faculty, with atmospheric science having the lowest proportion of women among subdisciplines (Ranganathan et al. 2021). Additionally, women geoscience faculty have higher rates of attrition than men, which can be attributed to both hostile institutional policy and culture (Ranganathan et al. 2021).

### About UNEION

The UCAR strategic plan<sup>1</sup> emphasizes that DEI are fundamental to producing our best science, but, like many technical workplaces, we have struggled to recruit and retain women and people of color. One strategy UCAR has implemented to overcome this challenge is a DEI training program called UNEION.<sup>2</sup> UNEION was created by a small group of employees and is now a routinely offered course. Through UNEION, UCAR aims to build inclusive teams, promote a positive workplace culture, and provide a peer-led space for DEI initiatives throughout the organization. More than 200 employees have completed UNEION, and 15 have participated as organizers (called “lead learners”). This study outlines key outcomes from UNEION and documents elements of the training that could be replicated in other scientific organizations.

UNEION is offered every six months and is composed of four modules. Descriptions of each module can be found in the online supplementary material (<https://doi.org/10.1175/BAMS-D-22-0047.2>). Participation is voluntary and any employee can join. Cohorts range from 10 to 25 participants, and the sessions incorporate both discussion and hands-on activities, with “homework” assigned before each session to ensure that participants are arriving with a shared set of touchpoints on the topic. The sessions are developed by “lead learners” who act as peer facilitators to flatten the hierarchy of the learning environment. Each session is tailored to current interests and concerns at UCAR/NCAR (identified through employee engagement surveys). Most lead learners have formal training or personal experience with diversity-related issues, although this is not required. All of them have been prior participants in UNEION and go through a year-long apprenticeship program as part of their training. Lead learners also receive facilitation training from outside experts and support each other through peer feedback. The theory of facilitation and engagement underlying UNEION follows best practice for DEI training in scientific institutions (Young 2016).

### Method

Participants in UNEION are asked to complete both a pre- and postcourse survey online. The survey asks questions about attitudes toward DEI issues, workplace experiences, and the

<sup>1</sup> [www.ucar.edu/sites/default/files/documents/related-links/2020-12/ODEI\\_StrategicPlan\\_Final.pdf](http://www.ucar.edu/sites/default/files/documents/related-links/2020-12/ODEI_StrategicPlan_Final.pdf)

<sup>2</sup> See the following link for a list of example training resources used in UNEION: [www.ucar.edu/who-we-are/diversity-inclusion/community-resources/uneion-101](http://www.ucar.edu/who-we-are/diversity-inclusion/community-resources/uneion-101).

ability to have an impact on workplace culture. It was based on research by Samuels (2014) and adapted by lead learners to fit the context of UNEION. The survey questions contain a series of forced-choice Likert-scale questions (i.e., there is no neutral option) to agree or disagree with specific statements and questions asking the frequency that the respondent sees certain events occur at UCAR/NCAR.

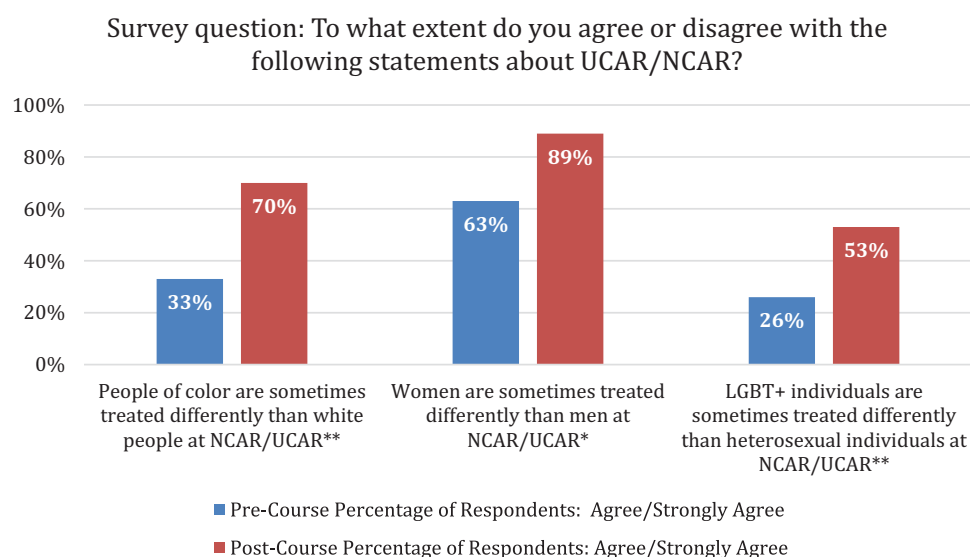
The surveys are matched through a participant-created unique identifier. Due to the small size of cohorts, no demographic information is collected to ensure anonymity of responses. The data in this study are from 57 respondents, representing all matched surveys from spring 2017 (cohort 3) to fall 2019 (cohort 10).<sup>3</sup> There was a total of 188 participants in these cohorts, with an overall survey completion rate of 48%. To test for statistically significant changes, levels of awareness, responsibility and empowerment, and ability to act were compared before and after completing UNEION using a sign-ranked test and chi-square test of independence. Significant results at  $p = 0.05$  or lower are marked with an asterisk (\*) in the charts below.

<sup>3</sup> UNEION has been continuously offered since 2017. This analysis ended in 2019, after which UNEION was fully online due to COVID. UCAR/NCAR Office of ODEI is continuing evaluation of UNEION, including understanding any changes in participant experience and outcomes with the online curriculum.

## Results

**Awareness.** To be organizational change agents, employees must recognize inequity. In the first three sessions of UNEION, participants learn about different identities and implicit biases. The homework is designed to build awareness of ways unequal treatment manifests. Sample resources used in UNEION can be found in the syllabus included as supplementary material. Discussion can include examples of differential treatment within UCAR/NCAR, personal stories, and reactions to the larger societal and research data presented. As noted by Acosta et al. (2022), DEI conversations in geoscience institutions can be challenging due to pervasive white-dominated culture in the discipline. UNEION mitigates harm that can come from openly discussing these topics through establishing “group agreements” around respect and equal treatment, practicing “calling in” to educate those that may cause harm, and teaching participants intervention techniques that protect the target of harmful actions.

The survey asks questions related to awareness of inequality at UCAR/NCAR (Fig. 1). Prior to UNEION, less than one-third of respondents agreed that people of color and LGBT+ individuals were treated differently. More respondents agreed that women were treated



**Fig. 1. Pre- and postcourse perceptions of the treatment of protected classes. One asterisk (\*) indicates statistical significance at  $p = 0.05$ ; two asterisks (\*\*) indicate statistical significance at  $p = 0.01$ .**

differently in the organization. After UNEION, there was a significant increase in respondents' awareness of protected classes being treated differently. This type of awareness draws attention to elements of workplace culture that must change for UCAR/NCAR to be an inclusive organization.

**Responsibility and empowerment.** As UNEION seeks to create awareness of harmful behaviors, the program also aims to increase the responsibility employees feel to improve workplace culture. Workplace culture overall is improved when there is an inclusive climate that all employees contribute to and feel a sense of commitment to improving the workplace (Creary et al. 2021). The vast majority of UNEION participants felt it was their responsibility to make UCAR/NCAR employees feel like they belong prior to the training (Fig. 2). This may be due to a selection effect, where employees who felt strongly about creating belonging were more likely to sign up for the training. Still, the proportion of respondents who were empowered to make change increased after completing UNEION, as did the proportion of respondents who felt they could impact inclusiveness, though these changes were not statistically significant.

**Ability to act.** UNEION concludes with bystander intervention training, a term for when people recognize a harmful situation and take action to promote a positive outcome. While these situations may be uncomfortable, research has shown that when employees speak up it promotes greater engagement, reduces turnover, and improves workplace efficiency (Burriss et al. 2020). The ADVANCEGeo program teaches bystander intervention and has found the model empowers participants from scientific organizations to care for others and promotes policies that identify harmful behaviors (Marín-Spiotta et al. 2022). Like ADVANCEGeo, UNEION teaches multiple strategies for intervention. Participants apply these tools to a series of case studies based on real instances of discrimination and harassment at UCAR/NCAR. Such simulated conversations have been shown to increase participants' ability to identify harmful situations and confidence to intervene in geoscience settings (Chen et al. 2021). Participants also explore their own emotions related to intervening and identify things that can help them feel more confident in doing so. After completing UNEION, respondents reported increased ability to intervene in harmful situations at all levels of the organization (Fig. 3). These changes were statistically significant.

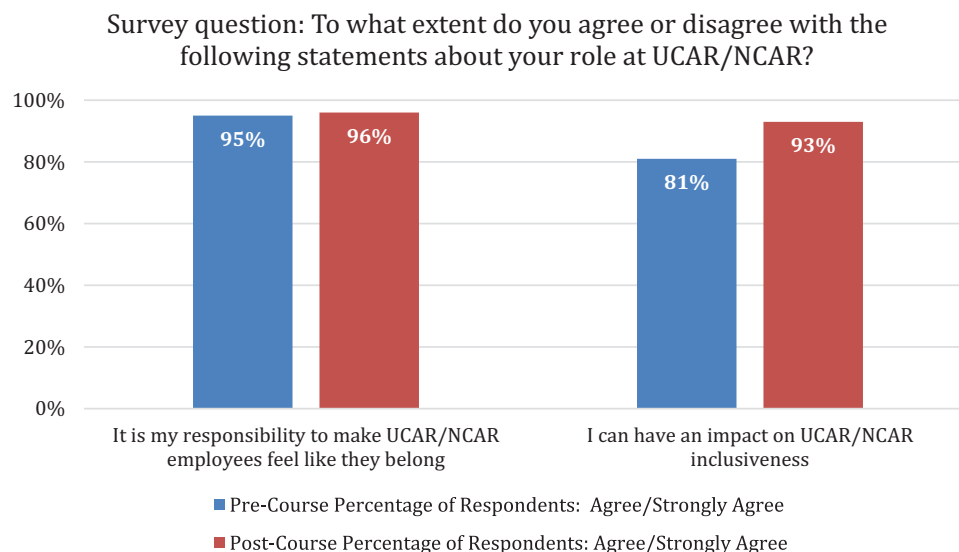


Fig. 2. Pre- and postcourse responsibility and empowerment.

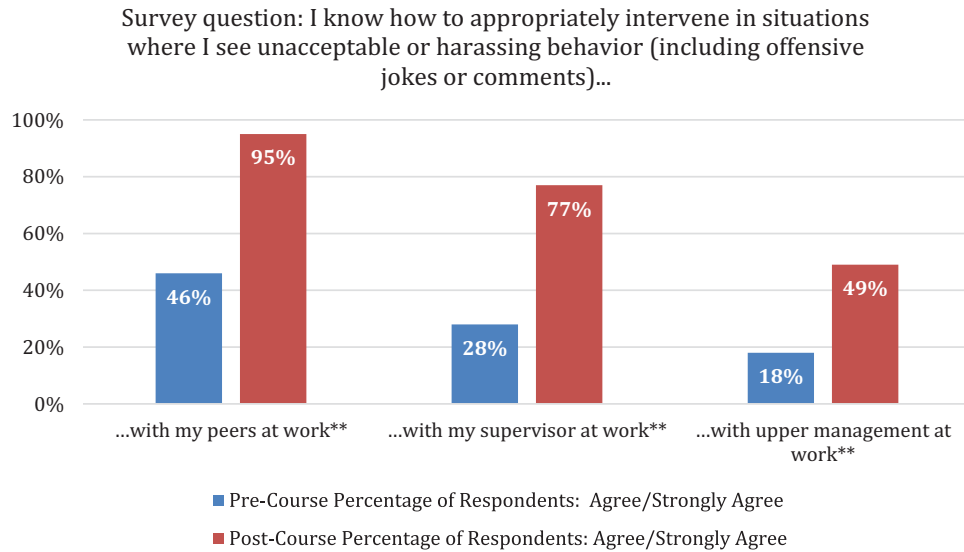


Fig. 3. Pre- and postcourse ability to act. Two asterisks (\*\*) indicate statistical significance at  $p = 0.01$ .

### Impacts at UCAR/NCAR

Every four years, UCAR/NCAR conducts an all-staff workplace culture survey, administered by an outside contactor to maximize the anonymity of respondents and to provide objective analysis and recommendations. One goal of this process is to learn how to create a more inclusive culture and to measure the effectiveness of the strategies put in place. While UNEION is not the only program UCAR/NCAR has implemented to DEI goals, it is a mainstay of the overall organizational improvement strategy. Changes from the 2017 to 2021 culture surveys, which includes the period of UNEION evaluation presented here, indicate progress related to DEI at the organizational, division (e.g., laboratory), and supervisory levels. Figure 4 shows the average change, which were rated on a scale of 1–4, where a higher number indicated more agreement that these items were occurring at UCAR/NCAR.<sup>4</sup>

<sup>4</sup> These changes were not statistically tested due to limitations in a third party providing data.

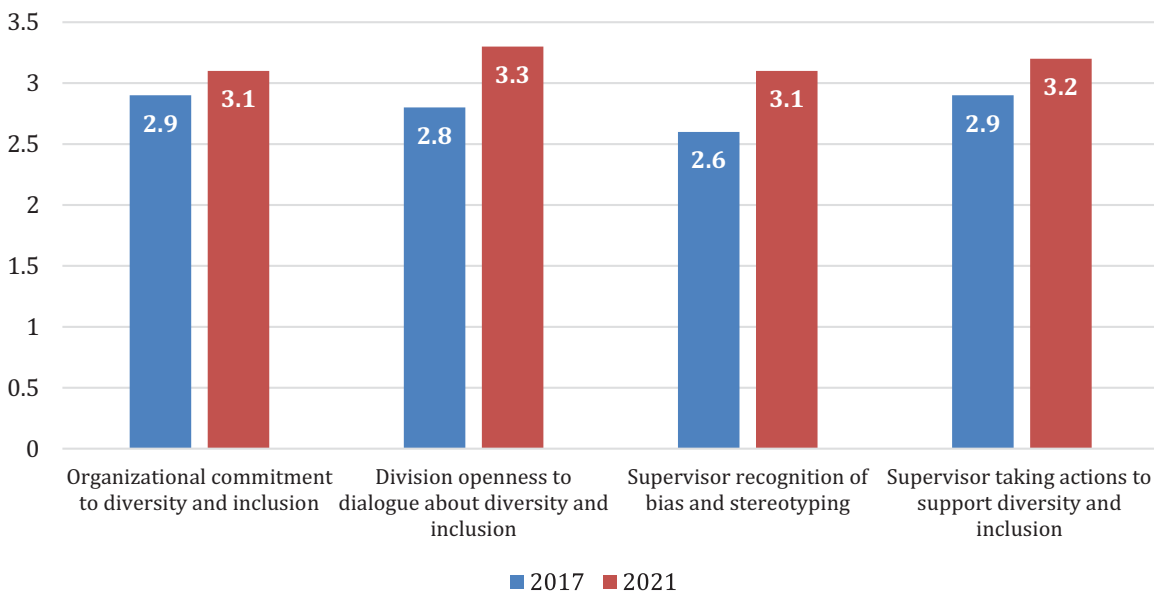


Fig. 4. UCAR/NCAR culture survey results.

## Discussion

This article demonstrated the results from a successful diversity training program at UCAR/NCAR. These results show the program significantly improved fundamental skills necessary to create an inclusive workplace at scientific organizations. First, the curriculum builds awareness of discrimination and harassment taking place. Second, it helps foster a sense of responsibility to improve workplace culture and empowers employees to create inclusive environments at work. Third, it builds the skills necessary for employees to be able to intervene in harmful situations at all levels of the organization. Specifically, UNEION participants had statistically significant increases in their ability to recognize the differential treatment of people of color, women, and LGBT+ individuals at UCAR/NCAR. Additionally, participants' confidence to intervene in harmful situations also significantly improved.

Organizations considering implementing diversity programs should allow participants from all levels and job functions to participate in training with each other. Approximately one-third of UNEION past participants have been research staff, and two-thirds have been administrative employees. Approximately half (40%) of UNEION participants were in management/supervisory roles at the time of the training. UNEION put these different employees in conversation with each other, creating a greater understanding of experiences throughout UCAR/NCAR. Despite these apparent differences, over half of past participants said they formed collaborations with people from their cohort, creating alliances and diverse thinking on how to improve UCAR/NCAR as a workplace and promote inclusion throughout the organization. While this could sometimes pose challenges to ensure there were no direct power relationships within each cohort (e.g., supervisor and direct report), this was often resolved by asking one party to delay enrollment and participate in a later cohort.

Past research shows that successful workplace diversity programs include opportunities for continued engagement, such as task forces and mentoring programs (Dobbin and Kalev 2016). While UNEION promotes collaboration across the organization, it also includes follow-up workshops, informal meetups, and town halls. Many past participants have maintained relationships with the Office of DEI at UCAR after completing the program. While valued, the DEI team can struggle with the volume of requests for support given the relatively small size of staff. This has emphasized the importance of cultivating staff in other areas of the organization who can lead DEI initiatives and provide peer support. These ongoing relationships have supported UNEION alumni to incorporate DEI into their team building activities, outreach efforts, and recruitment and retention plans. The community UNEION produced has informed other training, including supervisory training and mentoring programs, which all contribute to positive changes in workplace culture at UCAR/NCAR.

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**Data availability statement.** To protect the confidentiality of respondents, the survey data included in this article are not publicly available.

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