

Workforce and Diversity Annual Report

Calendar Year 2018





Workforce and Diversity Annual Report

Calendar Year 2018

Over the past ten years, AURA has devoted significant effort to build a diverse and inclusive workforce and provide opportunities for members of under-served communities to have access to the world-class observatories and staff that comprise AURA. The following report demonstrates some of the progress that AURA has made with respect to these efforts. Although improvement is noted in a number of areas, there is still work to do. AURA is deeply committed to building a diverse and inclusive workforce now and for the future. The following guidelines set ten years ago continue to drive our focus. We focus continuously on enhancing our efforts in these areas in order to reach our goal.

A Diverse Cross-section of Individuals Employed as AURA Staff: we will strive to achieve a diverse and inclusive collection of individuals and groups who bring varied human characteristics such as origins, backgrounds, interests, skill characteristics, and perspectives to enrich the workforce.

A Future Workforce: we will orient our outreach programs and partnerships to create opportunities for under-represented minorities, women, and persons with disabilities for the purpose of increasing the flow of undergraduates, graduates, and post-docs into the fields of astronomy and related technologies.

A More Diverse Institutional Participation: we will reach out to institutions that have not had a history of involvement in AURA's activities, especially smaller institutions and institutions with high percentages of under-represented groups.

A More Diverse Geographic Participation: we will identify and establish a greater presence in geographic areas that have not had the opportunity to contribute to AURA's mission and the overall field of astronomy.

AURA STAFF DEMOGRAPHICS

AURA classifies its staff in five major disciplines. They include the following:

- Science: This includes our astronomers who are engaged in active scientific research and provide scientific insight and support to the operations of our observatories as well as the astronomical community.
- Engineering: This includes engineers who contribute to the scientific productivity of our facilities in a variety of disciplines including software development/computer science as well as systems, mechanical, electrical, optical engineering, etc.
- Science Support: This includes a variety of disciplines including those involved in telescope operations, data management and research support.
- **Technical:** This includes individuals involved in IT services as well as web development and observatory support.
- Administrative: This includes the broad spectrum of individuals who provide business support to the operations of our Centers including finance, accounting, procurement, contract management, human resources, and outreach.

Annually, AURA compiles statistics on the demographics of its workforce to evaluate its progress toward appro-

priate representation of women and under-represented minorities. We use this information to identify strategies for diversity and inclusion to improve areas where representation in our workforce lags industry indicators. We review individual center demographics as well as the aggregate organization in order to establish goals for improvement. Statistics are presented for the following categories: men and women, Asian Americans and aggregated Under-Represented Minorities (URM) which includes Black/African-American, Latinx, Native Hawaiian/ Pacific Islander, Native American/Alaska Native and those who identify as Two or More Races as categorized by government reporting standards. All classifications are based on employee self-identification. Although AURA employs a number of individuals who identify their gender as other than the traditional binary male/female classifications (estimated at approximately 3-5%), requirements for government reporting only provide for binary classification. Asian-Americans, who according to most current census data comprise approximately 5.6% of the U.S. population, are considered fully represented based on the comparison of percentage representation in the STEM workforce to the percentage of the U.S. population and as such are called out separately. Other URM are aggregated to preserve individual identification.



Figure 1: Total AURA Staff by Discipline (N=1273)

Figure 1 provides an overview of the composition of AURA staff by discipline in 2018. Current overall representation of women employed with AURA is 36%. Asian-Americans make up 7% of our workforce and URM represent 16% of our workforce.

Science and engineering staff represent special categories of employees relevant to the NSF and NASA diversity goals. Figure 2 and Figure 3 illustrate the gender and race/ ethnicity breakdowns by AURA Center for our primary STEM disciplines, Engineering and Scientific Research, respectively.

Engineering staff tend to reflect local pools to a greater extent than science staff. However, other factors such as engineering sub-discipline (e.g., software engineers, mechanical engineers) also affect the demographics.



Figure 2: AURA Engineering Staff by Center



Figure 3: AURA Scientific Research Staff by Center

NATIONAL BENCHMARKS

AURA compares its demographic makeup to the set of organizations that are required by the Equal Employment Opportunity Commission to report under the classification NAICS 54171, Private Sector Physical, Engineering, and Life Sciences¹. Additionally, data is collected from reports generated by the National Science Foundation (NSF), Women, Minorities, and Persons with Disabilities in Science and Engineering. Data provided by the American Astronomical Society and the American Institute of Physics are also reviewed. As seen in Figure 4 and Figure 5, in 2018 women and minorities in AURA lag slightly compared with the national percentages for organizations in our category. Representation of Minorities and Women has been slowly increasing over the past three years; with the representation of women in the organization increasing from 35% in 2016, to 35% in 2017 and to 36% in 2018; the representation of Asian-Americans and other URM increasing from 22% in 2016, 22% in 2017 and to 23% in 2018.



Figure 4: Total AURA Staff by Gender Compared to National Indices



Figure 5: Total AURA Staff by Race/Ethnicity Compared to National Indices

1. See http://www1.eeoc.gov/eeoc/statistics/employment/jobpat-eeo1/2015/index.cfm and https://www.nsf.gov/statistics/2017/nsf17310/data.cfm

AURA LEADERSHIP

AURA has focused on the recruiting and retention of women and minorities in its top management ranks. Figure 6 shows the 2018 gender demographics for the highest employment classification, Executive and Senior Management. AURA outperforms the national average for percentage of women. Over the past ten years, the percentage of women in AURA senior management has grown from 26% to 39%.

Figure 7 shows the 2018 race demographics for the highest employment classification, Executive and Senior Management. The racial makeup of our leadership teams

has been slow to progress and continues to lags the national averages for Asian Americans as well as other URM. Leadership vacancies do not open often, but when they do, specific efforts are being made to pro-actively recruit diverse candidates to improve the composition of our applicant pools and improve our opportunity to hire excellent candidates from under-represented groups. Additionally, we are focused on the retention, training and development of existing staff to ensure that a more diverse representation of our staff are prepared to assume, and are selected for, leadership opportunities in the future.



Figure 6: AURA Senior Leadership by Gender Compared to National Indices



Figure 7: AURA Senior Leadership by Race/Ethnicity Compared to National Indices

Another key indicator is the representation of women and minorities in our governance bodies. AURA has sought to increase diversity within its governance, which includes our Board of Directors, Center oversight councils (SOC, STIC, AOC-G & AMCL), Nominating Committee and the Workforce and Diversity Committee (http://www.aura-astronomy.org/). Of the 88 individuals serving on these committees in 2018, 38 of them were women.

In 2008, AURA set an informal goal to maintain at least 30% women and minorities in its governance. This goal was intended to lead the astronomy community in general, where such participation rates historically lag in governance participation. As seen in Figure 8, over the past years, this fraction has fluctuated. AURA governance choices are often highly constrained by a variety of factors (e.g., the need to include representatives from certain institutions, the need to include specific international representatives, the need to gain specific scientific and management expertise, etc.).

In the past ten years, with the exception of 2012 and 2013, the AURA goal for the representation of women has been met or exceeded. Figure 8 shows that representation of women in governance has increased to 43%, up from 40% in 2017 and 37% in 2016. Figure 9 provides a break-down of female representation by committee in 2018.

We do not have statistics with respect to the racial/ethnicity composition of our councils. This information is not collected from members. This is also difficult due to the international membership of our governance bodies.²



Figure 8: AURA Women in Governance



Figure 9: AURA Women in Governance by Committee

2. Current representation is estimated to be less than the goal. AURA continues to evaluate an appropriate and accurate method for collecting this information.

Association of Universities for Research in Astronomy

HIRING

Figures 10 and 11 provide an overview in trends in hiring over the last 5 years. Representation of women and minorities being hired has fluctuated, hovering between approximately 36% to 41% for women; a low of 3% to almost 11% for Asian Americans and wavering between 15% and 23% for other URM. Although the current hiring level is more in line with industry indices and at or above our current representation, additional efforts will continue to be taken to increase representation of women and under-represented groups in our workforce. To address these concerns, AURA continues to:

- · Expand and diversify our recruitment sources.
- Take a proactive approach to sourcing under-represented candidates.
- Require diversity representation in all hiring committees.
- Train on best practices for managing implicit bias in all selection processes. It is increasingly recognized that the diversity of search/selection committees is not always sufficient to achieve a more diverse workforce due to implicit biases held by both men and women and people of all races and ethnicities. AURA includes within its processes a Recruitment Guide for search committees³ and has instituted a policy of briefing

search committees and hiring managers on managing implicit bias. Training on implicit bias has been a priority throughout the AURA organization, not only for search committees but also for all areas where selections occur.

- Monitor the demographics of candidate pools and the selection processes to ensure adequate representation. This practice has been incorporated for hiring and is being implemented in other selection processes as well.
- Participate in a broad range of career fairs targeting under-represented groups such as the American Astronomical Society, the Society of Women Engineers, National Society of Black Physicists, National Society of Black/Hispanic Engineers, Society for the Advancement of Chicanos and Native Americans in STEM, Out to Innovate, etc. and developed pipeline partnerships with Historically Black Colleges and Universities, Minority Serving Institutions, the Fisk-Vanderbilt Bridge Program, the IINSPIRE program and the National Astronomy Consortium. Although progress is slow, we are seeing results in awareness of AURA as an "Employer of Choice" in these communities.



Figure 10: AURA Trend in Hiring – Gender

3. http://www.aura-astronomy.org/diversity/documents/AURA Recruitment Guide - Final.pdf



Figure 11: AURA Trend in Hiring – Race/Ethnicity

ADVANCEMENT AND ATTRITION

Although a great deal of attention has been placed on recruiting staff into our Centers, an equal amount of attention has been placed on the inclusiveness of our culture and the career development of our staff. These aspects of the organization are critical to retaining the diverse staff that we are successful in recruiting. We periodically (every 3-4 years) conduct climate surveys of the entire organization to measure organizational engagement and satisfaction. The results these surveys are provided to the staff and objectives and actions are established to address any areas of concern. The last survey was done in 2017.

We monitor two significant metrics: advancement (promotions) and voluntary termination (attrition). Figure 12 represents the distribution of promotions in 2018 for AURA staff. The numbers generally reflect the current composition of our workforce for women at 43% of promotions. Numbers for Asian Americans (5%) and URM (12%) are slightly less than current representation and processes are being identified to understand any underlying reasons. This includes monitoring all selection processes, gathering information in exit interviews and ensuring that all staff are aware of career development opportunities and how to access them. We recognize that we need to be intentional about developing our talent in under-represented groups and need to be sure that opportunities for development, visibility and mentorship/advocacy are available. We continue to look at internal programs and manager capabilities to determine programs, processes and/or training that may support these needs.



Figure 12: AURA 2018 Promotions (N = 126)

Figure 13 provides a breakdown of terminations from AURA over 2018. These include voluntary resignations and retirements. AURA's overall voluntary turnover rate is approximately 5% annually. Attrition figures by group generally are at or less than current representation in our workforce. However, the attrition rate for URM is disproportionately higher than for White employees. We are working to understand what may be driving this higher attrition. We have reviewed past survey data and have found that engagement response rates were not materially different. Despite this, we remain concerned about the reasons behind the disparity and continue to look for ways to understand this issue better.



Figure 13: AURA 2018 Attrition (N = 89)

This is the first year that this information has been collected and reported publicly. We will continue to monitor both advancement and attrition going forward and provide trend data over time in future reports.

WORKFORCE DIVERSITY AND DEVELOPMENT ACTIVITIES

For AURA, the numbers are just the beginning of our story. As stated in the introduction, AURA is deeply committed to building a diverse and inclusive workforce now and for the future. We recognize that to do this will take concerted effort. We focus on three major areas as we work to meet our goals. First, is our commitment to improving the diversity in our recruitment practices and outcomes. Second, we work to develop an inclusive and engaging workplace culture that attracts, develops and retains this diverse talent. Lastly, we work to broaden participation in astronomy and engineering by creating opportunities for the next generation of the STEM workforce to participate in and learn about who we are and what we do so that one day they will be prepared to join us.

In 2008, AURA established a permanent Workforce and Diversity Committee (WDC) that reports to the AURA President. This committee is comprised of both external members and internal AURA staff and has made great strides in promoting awareness of diversity and inclusion as well as assisting in the development of solutions in addressing AURA's challenges.

The external members serve as consultants to AURA,

providing the benefit of their experience and expertise in diversity and inclusion issues related to AURA's workforce. Internal members include individuals within its Centers appointed as "Diversity Advocates" as well as the Human Resources heads on both the NASA- and NSF-funded sides of AURA's activities. The Center Diversity Advocates work within their organizations to further diversity and inclusion and serve as liaisons with the external members of the WDC. The WDC meets twice per year, alternating among the AURA observatory locations. In 2018, the WDC met twice. The spring meeting was held at the National Center for Atmospheric Research (NCAR). NCAR allowed committee members to engage in a day of diversity training developed by the NCAR Office of Diversity and Inclusion. The fall meeting was held in Chile where the committee was provided an opportunity to learn about the culture in our Chilean locations and about diversity and inclusion issues in Chile.

AURA recognizes that diversity and inclusion efforts are an ongoing process and supports and encourages employees to take an active role. There are numerous activities undertaken at all of our centers throughout the year. This section highlights some of those efforts.

EXPANDING OUR NETWORK

A critical component of our goals to improve the diversity of our workforce relies on proactively reaching out to a variety of different organizations, associations and institutions serving under-represented groups and building relationships and networks. In 2018, AURA had a strong presence at key diversity and inclusion conferences and meetings. This included the following:

- · Society of Women Engineers (SWE)
- Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS)
- American Astronomical Association
- Out to Innovate
- National Society of Black and Hispanic Engineers
- SPIE

NOAO represented AURA at the Astronomical Society of the Pacific's Annual meeting, entitled, "Advancing Astronomy for All – Conference on Education, Communication and Diversity in Science" and presented on stereotype thread for a panel called, "Barriers to equity, inclusion and diversity." Twelve LSST project members attended the Skillpath Conference for Women, This conference provided support and development for women leaders and staff. The attendees participated in sessions on communication, conflict management, assertiveness, learning to lead, and managing difficult people

The STScI Diversity in Astronomy group created and presented a workshop entitled "Concrete Steps to Make Your Workplace More Inclusive", This was first presented at the Women in Astronomy Conference in 2017 and then at the January 2018 AAS meeting in Washington, DC. The workshop is also presented routinely at STScI and has been packaged to be able to be presented at and/or used by other organizations.

Gemini South connected with Cerro Negro and MESA Calidad de Vida to coordinate events targeting women in industry.



Diversity Advocate, Gemini South, Alysha Shugart presenting at the SPIE Conference, Austin, TX – June 2018



SACNAS AND SWE, 2018

AURA was represented at the SACNAS conference in San Antonio in October, 2018 (left) and at the SWE conference in Minneapolis in November, 2018 (below) by a team of professionals in STEM fields. Not only did they provide conference attendees with a glimpse of what opportunities at AURA looked like, they were able to represent the communities we serve. Not only were we able to expand the awareness of AURA, but our attendees were also able to benefit from participation in conference sessions.



Association of Universities for Research in Astronomy
11

PREPARING THE FUTURE WORKFORCE



SASP Program Participants Summer, 2018, STsCI

Each year, AURA Centers host students and provide research experience in science and technology.

Gemini, LSST, NOAO and NSO host students and interns through a variety of programs including the Research Experience for Undergraduates program. In 2018, these Centers provided opportunities for 16 students: 14 of whom were women and 10 (3 Asian and 7 URM) of whom identified from under-represented groups. The Centers also partner with the Akamai Program (internships in science and engineering) sponsored through UC, Santa Cruz, as well as the IINSPIRE program – the Iowa, Illinois and Nebraska Lewis Stokes Alliance for Minority Participation by providing internships and research opportunities.

STScl hosts a cohort of students each summer in its Space Astronomy Summer Program (SASP) as well as other interns throughout the year. The STScl SASP program also collaborates with the National Astronomy Consortium (NAC) sponsored by the National Radio Astronomical Observatory, Howard University and the National Society of Black Physicists. The NAC seeks to provide intern opportunities to individuals from under-represented groups and under-represented institutions. In 2018, STScl hosted 18 student interns, of which 10 were women, 8 (4 Asian and 4 URM) identified from under-represented minority groups. The projects that the interns participate in are closely aligned with the full range of jobs at STScl, and several student interns have become full-time STScl staff.

HIGH SCHOOL PROGRAMS

NOAO has designed an innovative out of school education program entitled the Teen Astronomy Café to connect research astronomers to science talented youth using astronomical big data and data tools. Eighty-nine students registered during the 2017-2018 school year from two dozen schools. One third of the schools participating in the program are considered to be underperforming schools. Participation was equally divided between male and female students. This program demonstrates the valuable connections that can be made to encourage our next generation of astronomers.

STScl entered the 10th year of its Youth for Astronomy and Engineering Program. Middle and high school age students in the Baltimore and Washington, D.C. are able to participate in 5 different events throughout the year targeting an area of astronomy or engineering. Each event features a speaker and activities designed to engage the students. The program has always had a strong focus on young girls, particularly young girls of color in and around Baltimore City. Each event draws anywhere from 150-200 participants.

CULTURE: EMPLOYEE POWERED DIVERSITY AND INCLUSION

STScl's Invision Working Group – an internal, employee-led committee of approximately 16 members from all areas of STScl - has been engaging in multiple activities in support of diversity and inclusion. The group has developed and posted a "Meeting Room Code of Conduct" sign in every meeting room as well as hallway posters celebrating "Women in Science". They have also organized focus groups on several D&I topics, helped STScl develop its first diversity and inclusion statement, strategic plan and goals. The group engages the STScl workforce through town halls, reading groups and special events.

The National Solar Observatory established a Diversity, Inclusion and Respect Working group with a goal of fostering an inclusive environment for a diverse staff. This is done through practices and programs that create a welcoming, inclusive, and productive work environment. The group was established in October 2018 and has grown to over 20 members.



Code of Conduct Poster – Mounted in Meeting Rooms

Affinity Groups

One of the key elements to promoting diversity and inclusion in our workforce is empowering our staff to affiliate to explore issues related to specific segments of our community and identify strategies to increase inclusion and support. There is a growing number of affinity groups in AURA. At STScI, they include Women Empowering Women (WEW), Women in Astronomy Forum and, most recently was STScI's LGBTQ+ Lunch group. Although initiated primarily at one center, other AURA centers are evaluating the model.

Diversity and Inclusion Award

AURA leadership has decided to include an annual AURA Diversity and Inclusion Award as part of the suite of AURA achievement awards. Criteria for the award are in development. Individual centers, such as STScI and NSO are considering offering center-specific awards as well.

Training

LSST launched a management program with a goal to supply managers with tools to enhance their leadership through observation, a framework for decision making in complex systems, and encouragement to conduct behavioral experiments of their management style. Designed as a set of experiential workshops, the program provides discussion points and tools on topics such as communications, models for improving interactions, and activities that foster inclusion, respect and trust.

Additionally, training continues on implicit bias and standards of workplace conduct at all Centers.



Hard Science/Soft Skills, started in 2006, is a talk series aimed at fostering civility and building better interpersonal awareness and competency. Talks are live but available to the public via webcast.

Association of Universities for Research in Astronomy

SERVING THE ASTRONOMY COMMUNITY

For several years, our centers have been exploring methods to control bias in the selection of proposals for telescope time (Telescope Allocation Committee). Until this year, though small, a bias persisted which adversely affected women proposers. This year, STScI conducted its first dual anonymous TAC process. The names and identities of proposers were withheld from the selection committee. Effort was taken to ensure that gender could not be identified in the proposal. The results were favorable, apparently eliminating any gender bias in the selection process. Results of this effort are to be published by Dr. Neill Reid, Associate Director for Science, STScI so that others can review and perhaps adopt this methodology.

In September of 2018, STScI hosted the ".Astronomy" workshop. The .Astronomy conference series aims to build a dynamic and creative community of scientists and educators to exploit the potential offered by modern computing and the Internet in the era of data-driven astronomy. ... How can we leverage our diversity to better understand the Universe?



Building Change in Astronomy

Lauren Chambers and Tom Donaldson, STScI (left) and Dr. Dara Norman, NOAO were presenters for the conference.

SUMMARY

While AURA is proud of its accomplishments around diversity and inclusion, we recognize the need to do more to achieve our desired outcomes. With this in mind, AURA will be launching a search for a Chief Diversity Officer in early 2019. This will allow AURA to take a more systemic approach to improve outcomes in workforce representation, create an inclusive culture for everyone, and accelerate our progress. Over the past ten years, AURA's leadership has focused on building a strong culture of diversity and inclusion. While we had made great strides, we recognize there is still much work that needs to be done.

- AURA will put a more intentional focus on developing our talent in under-represented groups and will work to ensure that opportunities for development, visibility and mentorship/advocacy are available.
- Additional efforts will be made to increase representation of women and under-represented groups in our workforce.
- · Continue in a proactive engagement at national meetings related to diversity.
- AURA will hire a Chief Diversity Officer in 2019 to assist with the development and implementation of an AURA-wide strategic D&I plan.
- Focus on a concentrated effort to understand and address the disproportional attrition rate for under-represented minorities.
- Continue our efforts on proactive diversity recruiting at all levels, coupled with training and mitigation of unconscious bias.
- Continue efforts to minimize, and hopefully, eliminate the impact of implicit bias in selection processes throughout AURA.

Respectfully,

Matt Mountain President, AURA February, 2019



15