

Justice, Equity, Diversity, and Inclusion

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My presence in academia is multifaceted – I am a teacher, a researcher, and a member of a broad scientific community. In each of these facets, I benefit from considerable privilege. I am a White, heterosexual, cis-gendered man in an environment in which these identities are implicitly treated as default. My father was a professor of physics, and I grew up with the conviction that, if I worked hard, I could have a successful academic career. Many students and scholars face unjust barriers to their success that I never encountered. I believe that all members of the academic community—especially those who have benefitted from such privilege as I have—hold a responsibility to actively work to dismantle these barriers.

As a teacher, I bring explicit justice, equity, and inclusion lens to my interactions with students. I do this via two questions. First, I ask: *how can I offer my students a just, equitable, and inclusive experience?* My answer to this question comes through my course design, and is described in my Teaching Statement. As noted there, evidence suggests that my equity-focused introductory course successfully narrows gender gaps in interest and confidence. Second, I ask: *how can I help my students grow as agents of justice, equity, and inclusion?* To this end, I bring explicit emphasis to my teaching on the social responsibilities of scientists and programmers. In PIC16A, I devote a day of lecture, several homework problems, and one exam problem to the topic of algorithmic bias and the disparate harms of machine learning on marginalized communities. Instead of common data science tasks which serve the interests of power, wealth, and control—like credit risk assessment, facial recognition, or recommender systems—I instead choose examples that emphasize social goods. My students have estimated the mean rate of global warming, replicated the findings of a recent study on bias in a healthcare recommender system [1], and visualized gender representation of artists over time in the Tate Modern.

As a researcher, I draw motivation from inequity, segregation, and polarization in several ongoing research streams. In [2], I developed a suite of tools for analyzing complex patterns of spatial segregation, which recently resulted in a new collaboration on racial disparities in air pollution [3]. In [4], my collaborators and I proposed a model of hierarchy formation and used it to study several social and biological data sets. In recent and ongoing work in opinion dynamics [5], I study the conditions of opinion-based polarization models of social network evolution. I also work directly on mission-driven data science projects. Ben Brill (UCLA) is a summer research student working with me to acquire and analyze data on gender representation in mathematical subfields, using data from the Mathematics Genealogy Project. Hinal Jajal (UCLA) will be extending her recent course project with me to analyze racial disparities in a state court system this Fall. At the time of writing, I am working with several collaborators through the Institute for the Quantitative Study of Inclusion, Diversity, and Equity (QSIDE) on an analysis of the use of certain criminal codes in low-income neighborhoods in Puerto Rico. This analysis will be a component of an amicus brief in a case before the U.S. Supreme Court.

As a member of the scientific community, I work to build a culture of equity and inclusion in the spaces around me. Most of my recent effort focuses on the UCLA Mathematics Department. I was recently delegated by the Chair to research implicit bias trainings to be recommended to the entire faculty and graduate student body. Within the Program in Computing, I am collaborating with the Director to identify trainings on inclusive, evidence-based teaching practices.

The work is never done, and there are several areas in which I intend continued growth and action. I will continue to learn about the obstacles that hold back minoritized students, and to grow my skills as a practitioner of inclusive pedagogy. I will do this through my ongoing participation in MAA Project NExT, critical assessment of my courses, and independent research. As I advance in my career and participate more in the organization of events, I will actively work toward creating more venues for minoritized scholars to share their work. I hope that these efforts will help to reduce and remove barriers to inclusion for my students, my colleagues, and my communities.

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