Diversity and OR/MS/Analytics: Deepening the Impact of Our Research, Broadening Access to the Profession

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The United States is facing rapid changes that force us to confront basic questions about our lives and the communities we live in. As our country transitions into one where the majority of children born are nonwhite, where the #MeToo movement has changed norms of acceptable behavior in the workplace and in personal relations, and where animus against religious, racial and ethnic minorities has become normalized, understanding the impact that diversity plays in our lives becomes ever more important. Central to our new awareness of life, work, culture and environment is diversity, or measures of difference at the individual or group level. INFORMS defines diversity as encompassing both externally-identifiable measures, such as age, gender, race and ethnicity, as well as less-visible measures such as sexual orientation, all of which influence our understanding of the world (INFORMS 2019a). As an applied science, operations research, management science and analytics (OR/MS/A) has a central role to play in addressing concerns about diversity, and of related issues of equity and inclusion, to ensure that our discipline, and our profession, reflect the needs and concerns of all who live in this country.

The occasion of the publication of an Editor’s Cut volume on diversity, equity and inclusion is an opportunity to reflect on diversity, equity and inclusion in the profession and the discipline. In this article we will discuss the state of the OR/MS/A profession with respect to diversity, equity and inclusion. We’ll also present different ways that our understanding of diversity, equity and inclusion can improve our research, teaching and practice, including some examples of research that can make our organizations and institutions more welcoming of people of different backgrounds. We’ll conclude by identifying opportunities for innovations in research and practice that (a) can expand the focus of research to address issues of social justice as well as managerial efficiency and (b) increase efforts to make the profession more welcoming and supportive of persons from traditionally-underrepresented groups.

According to its Diversity and Inclusion Statement, “INFORMS values and seeks diverse and inclusive participation within the membership and profession it represents. To achieve this goal, INFORMS is committed to providing an environment that encourages and supports equal opportunity, free expression, freedom from discrimination, harassment and retaliation, full participation in all activities and leadership, and collaboration among people of different backgrounds” (INFORMS 2019b). INFORMS defines inclusion as a strategy to make diversity sustainable by creating environments in which people feel safe, supported, listened to, valued and able to do their personal best. But diversity need not be limited to social characteristics: researchers have grappled with the notion of the diversity of approaches to doing research, for example in information systems research (Benbasat and Weber 1996) and community operational research (Johnson, Midgley and Chichirau 2018) where issues of disciplinary boundaries, appropriate analytic methods and the nature of public engagement are active subjects of inquiry.
INFORMS has multiple communities that reflect the diversity of the profession and work to make it more reflective of our society: Minority Issues Forum, the Forum for Women in OR/MS, the Junior Faculty Interest Group, and, since 2016, the INFORMS Committee on Diversity, Equity and Inclusion, of which we (Michael and Anahita) are members. Our committee has learned what many of us have long understood intuitively: INFORMS, which is about 71% male, about 7% Hispanic and 2.5% Black, is less diverse on these measures than the U.S. population overall (Census 2019a); the U.S. workforce; that part of the workforce employed in STEM occupations; or even workers classified by the U.S. Census as “Operations research analysts” (Bureau of Labor Statistics 2019). Moreover, a recent NSF-funded study on STEM diversity found that within INFORMS, women and racial/ethnic minorities report persistently more negative experiences and feelings of marginalization and exclusion compared to men and white respondents (Cech and Waidzunas 2017). The Chronicle of Higher Education has documented among African-American academics a wide range of testimonies of discrimination, perceptions by whites of undeserved benefits, feelings of inadequacy and lack of institutional support (The Chronicle of Higher Education 2019).

In what ways can we think differently about diversity, equity and inclusion in order to help our society, profession and discipline become more supportive of members of traditionally-underrepresented groups? One way is to broaden our notion of ‘discrimination’ from explicit actions based on gender, race and so on to ‘implicit bias’ and structural barriers that inhibit full participation in work and social life. Another way is to move from a primary focus on hiring, to a concern for inclusion, supported by top leadership, to make our organizations desirable places for all persons to grow their careers. Most importantly, for researchers, is to consider how gender, race, disability status and other markers play a crucial role in generating insights relevant to our areas of interest: health care, retail, transportation, natural resources and the environment and so on.

There are many examples of current research reflecting concerns for diversity, equity and inclusion that provide important guidance for our discipline and the profession. For example, Niederle, Segal and Vesterlund (2013) demonstrate that affirmative action, rather than causing reverse discrimination and lowering the qualifications of those hired, can instead increase the overall quality of employees by encouraging persons to join organizations who might otherwise be discouraged from applying. Lount et al. (2015) uses social experiments to argue that managers’ implicit bias may impede their efforts to fairly evaluate the work of demographically diverse teams that face routine challenges in interpersonal conflicts. Maase, et al. (2015) apply mathematical programming to construct student teams that maximize measures of cultural diversity, thereby enhancing learning and improving productivity. Seron et al. (2018) examine experiences of female undergraduate engineering students to uncover cultural and professional attitudes that value ‘meritocracy’, ‘individualism’ and technical prowess over social impacts of engineering, stigmatize concerns for diversity and may reduce persistence by females in engineering.

There are many opportunities for innovations in DEI-infused research and practice inspired by this Editor’s Cut, and the work of the Diversity, Equity and Inclusion Committee and other INFORMS subdivisions. From a research perspective, many sectors of our economy, including emerging areas such as the sharing economy, automation and artificial intelligence, and long-standing domains such as the service sector, can better meet the needs of our communities from an increased focus on the skills and capacities of lower-income workers and workers of color. Government and nonprofit organizations can better respond to natural and humanitarian disasters by accounting for socioeconomic and cultural
diversity among affected populations and communities. The culture of OR/MS/A, and STEM generally, can be made more inclusive through different understandings of what we value in our students, employees and colleagues. In terms of practice, we may widen the ‘pipeline’ of persons from underrepresented groups to higher education and careers in OR/MS/A through programs, such as a pre-doctoral enrichment program being developed by the INFORMS Minority Issues Forum. We may support professionals in our field who develop innovative policies and practices in DEI through a new INFORMS initiative, the ‘Diversity and Inclusion Ambassadors Program’. We can join forces with colleagues in other professional societies to address sexual harassment and gender inequality through the new Societies Consortium on Sexual Harassment in STEMM (Lohwater 2019). It is our hope that efforts such as these can enable INFORMS help our discipline and profession to become a more welcoming and supportive environment for all.

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Resources:


