THE NEED FOR AN INTERSECTIONAL PERSPECTIVE TO IMPROVE THE STATE OF THE PROFESSION IN PLANETARY SCIENCE. E. G. Rivera-Valentín[1], J. A. Rathbun[2], K. L. Lynch[1]; [1]Lunar and Planetary Institute (USRA), [2]Planetary Science Institute.

Introduction: Diversity initiatives have attempted to bring the science community to parity with the national population. Although some initiatives have been effective, not all have been inclusive of multiple axes of representation. For example, the geosciences have seen an increase in the representation of women doctoral graduates, rising from 30% in 2000 to 49% in 2018; however, no improvement has occurred for Black / African American researchers [1]. *This is not due to a lack of interest*! Both Black / African Americans and Latinx / Hispanics show interest in STEM comparable to White people (e.g., [2,3]). Rather, the current lack of representation is a manifestation of a system with a history of oppression.

Climate and demographic surveys have demonstrated the challenges faced by those from historically excluded and oppressed groups (e.g., [4-6]). For example, in planetary science, workforce surveys have shown that the demographics of the field are not representative of the national population [4,5], with this lack of diversity magnified in NASA mission teams [7-9]. It is important to also note, though, that people at the intersection of historically oppressed and excluded identities face different barriers to inclusion. Here, we review data demonstrating the manifestation of these different barriers and argue for emphasizing an intersectional perspective in future Inclusion, Diversity, Equity, and Accessibility (IDEA) initiatives in planetary science. We acknowledge that there are multiple facets to identity, such as gender, race, ethnicity, sexual orientation, and disability. In this abstract, we focus on the intersection of race, ethnicity, and gender.

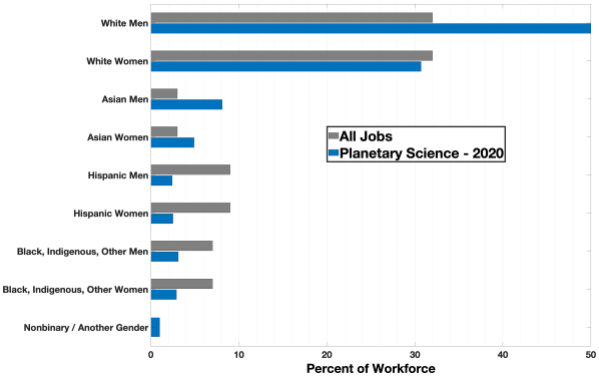

Figure 1: Representation of people at the intersection of race, ethnicity, and gender in planetary science (blue) compared to the national US workforce (gray). Representation is given as the percent share of the workforce. We note that national statistics are not available for nonbinary people.

Planetary Science Workforce: In [4], we reviewed the demographics of the field using the 2011 and 2020 workforce surveys conducted by the Statistical Research Center of the American Institute of Physics (AIP) and funded by the American Astronomical Society (AAS)'s Division of Planetary Science (DPS). Here, using the results of that survey, we looked at the representation of the field at the intersection of race, ethnicity, and gender. In Fig. 1, we show the results and compare against the national population in the US. As can be seen, while White men are represented above the national average and White women are represented in planetary science at or near parity with respect to the national population, Latinx women, and Black and Indigenous women are represented far below the national population. Thus, although as shown in [4] over the past nine years the representation of women increased from about 25% to 35%, this increase in representation has not been shared by Black, Indigenous, and Latinx women.

Wage Gap: It is widely documented that on average women make $0.82 for every dollar a man makes; however, an intersectional perspective on the wage gap provides a startling view. In Fig. 2, we show the reported wage gap for the national population [10] and for STEM professionals [11]. As can be seen, Black, Indigenous, and Latinx women consistently make far less than their peers. In the national workforce, on average Black, Indigenous, and Latinx women make $0.62, $0.57, and $0.54 for every dollar a white man makes, respectively. In STEM professions, Black and Latinx women make $0.63 for every dollar a white man makes, compared to $0.73 for white women.

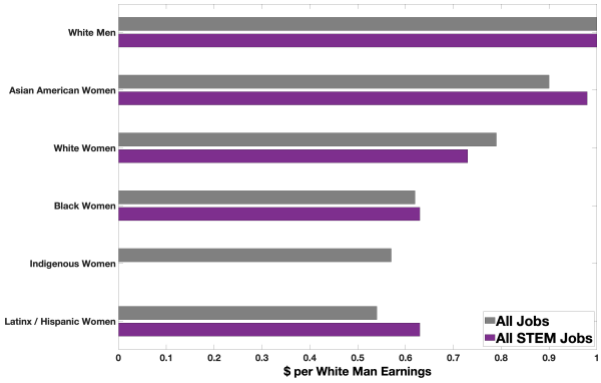

Figure 2: Intersectional perspective on the national wage gap (gray) compared to that in STEM professions (purple). No data was available for Indigenous women in the STEM workforce in the study by [11].

Other Opportunity Gaps: Work centered on gender equity in the workplace has frequently attributed the reason women with STEM degrees leave their jobs to be family-related, specifically, the unfair and uneven distribution of family-related responsibilities in heterosexual relationships. However, a recent study leveraging an intersectional perspective found that the primary reason women leave STEM professions is complex and also a function of their race and ethnicity [12]. In their work, they found that the primary reason Black and Indigenous women leave their STEM professions was that they were not being hired into a STEM job! Working conditions along with unfair pay were also primary reasons for Hispanic women and Asian American women. In Fig. 3, we show the reported primary reason women with STEM degrees took a job outside of their field using an intersectional perspective.

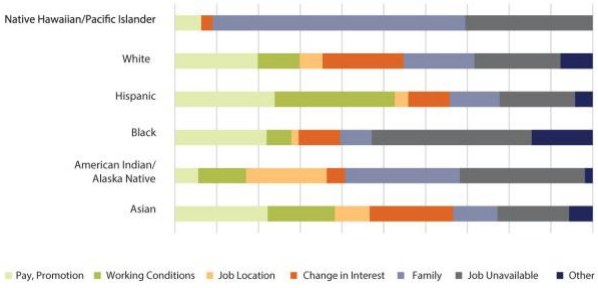

Figure 3: The reported reason women with STEM degrees took jobs outside of their field through an intersectional perspective. The colormap at the bottom indicates the reason. The size of the bar indicates the percent of respondents who identified the noted reason as their primary one for leaving their jobs. Data for the figure derives from the NSF's National Center for Science and Engineering Statistics. The data and results were presented in [12]. This image is credited to the Association for Women in STEM.

As another example of different opportunity gaps faced by Black, Indigenous, and Latinx women we turn to the science conference setting. An early study of the talk and poster assignment for the American Geophysical Union meeting found that on average women were invited and assigned oral presentations at lower rates than men [13]. A later study by the team [14] found that underrepresented racial/ethnic minorities (URM) are also less likely to be invited or assigned a talk. Furthermore, they found that women of color were the least likely among URM and women to be invited or assigned a talk. This further demonstrates the need to apply an intersectional perspective on IDEA initiatives to truly develop equitable workplace climates.

Recommendations: It is important to acknowledge the additional barriers faced by people at the intersection of multiple historically oppressed and excluded identities. Over the years, a simplified view and approach to diversity initiatives have advantaged those who are part of at least one historically majority and empowered group. Here, we reviewed data for people at the intersection of race, ethnicity, and gender. We showed that Black, Indigenous, and Latinx women in the national population and in STEM face different barriers, as manifested in the wage gap, conference assignments, and lived experiences. As such, **IDEA initiatives over the next decade should employ an intersectional perspective.**

We previously showed that over the past two decades Black / African Americans have seen no improvement in their representation in planetary science and Latinx / Hispanics have seen some small improvement [4]. Given the continued underrepresentation of Black, Latinx, and Indigenous people in planetary science, **IDEA initiatives over the next decade should have at least one focus on race/ethnicity.**

Furthermore, the goals and objectives of IDEA initiatives are fundamentally tied to social interactions and human behavior. As physical scientists, we may not have the necessary background to approach development of such initiatives. We may also be lacking knowledge of the evidence-based best practices from the social sciences. As such, **future IDEA initiatives should be developed in collaboration with social science experts with expertise in IDEA and intersectionality.**

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