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Authors

Duffy, Margaret L
Barnes, Liza Y
Wirz, Christopher D
et al.

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Factors influencing underrepresented geoscientists' decisions to accept or decline faculty job offers in the US

Margaret L. Duffy[1,2*], Liza Y. Barnes[3], Christopher D. Wirz[4],
Meghana Ranganathan[5], Mara A. Freilich[6,7], Lyssa M. Freese[8,9],
Ellen Lalk[8], Julia Wilcots[10]

[1*]Climate and Global Dynamics Laboratory, NSF National Center for Atmospheric Research, Boulder, CO, USA.
[2*]Department of Earth and Planetary Sciences, University of California, Berkeley, Berkeley, CA, USA.
[3]LeBow College of Business, Drexel University, Philadelphia, PA, USA.
[4]Mesoscale and Microscale Meteorology Laboratory, NSF National Center for Atmospheric Research, Boulder, CO, USA.
[5]Department of Geophysical Sciences, University of Chicago, Chicago, IL, USA.
[6]Division of Applied Mathematics, Brown University, Providence, RI, USA.
[7]Department of Earth, Environmental, and Planetary Sciences, Brown University, Providence, RI, USA.
[8]Department of Earth, Atmospheric, and Planetary Sciences, Massachusetts Institute of Technology, Cambridge, MA, USA.
[9]Department of Global Ecology, Carnegie Institution for Science, Stanford, CA, USA.
[10]Department of Geosciences, Princeton University, Princeton, NJ, USA.

*Corresponding author(s). E-mail(s): mduffy@berkeley.edu;

Abstract

Many geoscience departments in the United States (US) are working to recruit faculty from underrepresented groups. However, there is little information about how hiring practices are perceived by candidates. Here we address this gap by

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interviewing 19 geoscientists who identify as an underrepresented race, ethnicity, or gender who recently declined a tenure-track faculty job offer in the US about their faculty job searches, with an emphasis on their decisions to accept or decline an offer. We find that many participants experienced hiring practices inconsistent with existing recommendations to increase faculty diversity, and some participants were subject to uncivilized, even potentially discriminatory, practices. Therefore, we leverage our results to provide actionable recommendations for improving faculty recruitment efforts. We highlight that departments may doubly benefit from improving their culture: in addition to benefiting current members, it may also help with recruitment. Overall, our findings emphasize the need for continued evaluation of faculty hiring practices.

Keywords: Hiring, Diversity, Faculty, Education

1 Introduction

There is a lack of racial, ethnic, and gender diversity among geoscience faculty in the United States (US). Only 13.6% of tenured and tenure-track geoscience faculty in the US identify as underrepresented racial and/or ethnic minorities as compared with 38% of the US population and fewer than 30% of tenured and tenure-track geoscience faculty identify as women [1–3]. Since 2000, the fraction of graduate students and faculty who are women has increased [1, 3, 4]. Nonetheless, Ranganathan et al. [3] estimate that gender parity in hiring will not translate to gender parity among US geoscience faculty until around the year 2056 unless further interventions are made. Meanwhile, the under-representation of Ph.D. students and faculty of color in the geosciences has persisted [1, 5]. So while an analysis equivalent to Ranganathan et al. [3] has not been done for race and ethnicity, given the available data it appears that the geosciences are not on track to ever reach racial parity [1].

There are a number of reasons why geoscience departments are motivated to improve faculty diversity. Institutions have an ethical responsibility to diversify [6]. Further, if diversity is managed correctly – by cultivating a sense of inclusion and belonging [7] – it can promote innovation [8]. Additionally, diverse groups perform better than homogeneous groups in difficult tasks [9, 10]. Increasing representation of scientists from underrepresented groups can reduce implicit biases and stereotype threat [11]. In particular, role models for graduate students can advance their career trajectories and benefit their mental health [12, 13]. These benefits of diversity are critical for geoscience research, which is societally relevant and can have cascading impacts beyond the academy, and for academic departments which are tasked with training students and other early-career geoscientists.

Despite attempts to diversify the geosciences, geoscientists holding underrepresented racial, ethnic, and gender identities still face more barriers to successful participation than geoscientists from well-represented groups [14]. For example, a 2019-2020 survey revealed that geoscientists of color, women, and nonbinary geoscientists were more likely to report behavior such as discrimination, harassment, and

mistreatment than other geoscientists [15]. Likely as a result, geoscientists from these underrepresented groups were more likely to avoid colleagues and skip professional events than their peers [15]. Further, nearly half of women and nonbinary geoscientists and geoscientists from some racial minority groups have considered leaving their institutions, a rate higher than that of other geoscientists [15]. Therefore, the obstacles to recruiting and retaining geoscientists from underrepresented groups are impactful and need to be examined to find effective ways to surmount them [14].

Previous authors have recommended a number of interventions to diversify faculty [e.g. 16–20], including supporting dual-career couples, implementing family-friendly policies, improving mentorship, increasing the visibility of faculty from underrepresented groups, and changing hiring practices. Procedures supporting dual-career couples and family responsibilities are important for the recruitment and retention of women faculty because women faculty in the natural sciences are disproportionately likely (48% of women and 35% of men) to have academic partners [21, 22]. Family-friendly policies are important because an academic's childbearing years often overlap with critical career stages, including graduate student, postdoctoral, and assistant professor positions [23]. Moreover, parenthood affects women's preferences about work-life balance more than men's [24]. Effective mentorship passes on knowledge that is not formally taught but is necessary for success and thereby increases retention and satisfaction of academics from various underrepresented groups [16, 25, 26]. Further, some departments have seen improved racial and gender diversity concurrent with changes to their hiring practices [17]. We do not provide an exhaustive summary of these recommended interventions here.

Previous research has largely analyzed data [e.g. 1, 3], studied outcomes associated with various hiring interventions [e.g. 17], or been published as a commentary [e.g 5]. To our knowledge, there is no research about how geoscientists holding underrepresented racial, ethnic, and gender identities perceive hiring interventions in practice, and there is an overall lack of narratives about their job search experiences. Therefore, we evaluate the faculty-job search experiences of geoscientists from underrepresented races, ethnicities, and genders. We interview 19 geoscientists who have recently declined at least one tenure-track faculty job about the factors that influenced their faculty job search and their decision to decline (an) offer(s) and/or accept a different offer. In these interviews, we discuss the entire faculty search process including advertising of positions, preparation of application materials, the interview process, the negotiation process, and especially participants' decisions to accept or decline offers. We find that numerous participants described experiences which are inconsistent with hiring best practices, including uncivilized and even discriminatory experiences. Therefore, we synthesize participant experiences into implied recommendations for faculty hiring. Overall, this work highlights the continued need to evaluate and improve geoscience faculty hiring practices in the US.

2 Results

We interview 19 geoscientists from underrepresented races, ethnicities, and/or genders who declined at least one tenure-track faculty job at a US institution between 2016

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and 2023 (see Section 5.1 for details). We recruited these participants using affinity group and institutional email lists and social media pages. We screened prospective participants to determine whether they fit the scope of our study using the screening survey in Supplementary information S1. We then conducted interviews of about 45 minutes with 19 of the participants who fit the scope. The interviews were semi-structured and based on the questions in Supplementary information S2. Each of the 19 participants had unique job search experiences and gave unique reasons for declining and accepting offers. However, a few common themes emerged, which we determined by evaluating each participant's strongest factor(s) for accepting or declining an offer. Each participant's strongest factor was determined using their response to "Briefly, what made you decline the offer(s) that you did and what made you accept the offer that you did?" (see Table 1 and Section 5.2 for details).

Here we focus on the themes that participants discussed during their interviews which relate to personal identities and personal lives, though we note that participants frequently discussed academic factors for accepting or declining an offer. Consistent with the scope of our study, the themes we focus on are: departmental commitment to diversity, including representation of personal identities, diversity initiatives, and mentorship; (in)civility during campus visits; values revealed in negotiation; and compatibility with personal life including family and geographic preferences. Family and geographic preferences are undoubtedly major considerations for geoscientists of all identities in making career decisions, not just geoscientists from underrepresented groups. Nonetheless, we include family and geographic preferences because they are often influenced by personal identities.

The data presented in this paper include exemplary quotes from the participants. The quotes are organized into tables by theme and each quote has a Quote identifier (Quote ID) (e.g. Identities 1). In the text, we summarize the range of responses for each theme, referring to the quotes in the tables. For example, to refer to the quote in Table 1 with Quote ID Identities 1, we write "(Table 1: Identities 1)." Quotes that pertain to a specific job include whether the participant accepted, declined, or did not receive an offer for that job. Some participants mentioned experiences with departments where they did not receive an offer. We include this information because it is consistent with our goal of understanding candidate perceptions of the faculty hiring process. These are a small fraction of the overall quotes and are noted.

2.1 Departmental commitment to diversity, equity, and inclusion

Participants gained a strong impression of a department's commitment to diversity during the hiring process, and many participants considered this commitment in their decisions. Departments reveal a commitment to diversity through respecting candidates' personal identities, demographics of the department, satisfied department members from underrepresented groups, support for diversity initiatives, discussing diversity with candidates during the search process, coordinated mentorship of junior faculty, and valuing mentorship of students.

2.1.1 Representation of personal identities

Participants' personal identities were integral to their job searches. Many participants were looking for a department, institution, and/or municipality in which their personal identities were represented (Table 1: Strongest 9, Table 2: Identities 1). Participants often mentioned their personal identities in describing their geographic preferences (Table 2: Identities 2-3). Identities also played a role in how participants viewed their job interview and negotiation experiences (Table 1: Strongest 1, Table 2: Identities 4). As we will discuss in Sections 2.2 and 2.3, some participants' experiences during campus visits and during the negotiation processes were a direct reflection of their personal identities. Several participants also mentioned feeling tokenized during the hiring process (Table 2: Identities 5-7). For reference, tokenism is the policy or practice of making only a symbolic effort. For example, participants felt tokenized if they felt a department or institution was only hiring them to improve their diversity statistics. Several participants mentioned the importance of role models (Table 2: Identities 8), and some specifically mentioned wanting role models who share their views about being a member of an underrepresented group.

While our demographic criteria for selecting participants were based on race, ethnicity, and gender, participants mentioned several other personal identities which influenced their decisions (Table 2: Identities 9-10). Country of origin (Table 2: Identities 9), sexual orientation (Table 2: Identities 10), and status as a first-generation college student (Table 2: Identities 11) were all mentioned by participants, indicating that the combination of a candidate's various identities influences their decision making.

2.1.2 Diversity initiatives

Participants described a range of experiences with respect to diversity during the hiring process. Several participants said they were looking for a department with a commitment to diversity (Table 1: Strongest 8, Table 3: Diversity 1-2) or, similarly, were deterred by departments that did not show a commitment to diversity (Table 3: Diversity 3-5), and overall many participants were able to detect a department's commitment to diversity during the hiring process (Table 3: Diversity 2-5). Some participants were pleased when a department asked for a diversity statement while others were skeptical that it might be lip service, and were looking for more substantial conversations about diversity during their interview (Table 3: Diversity 6).

During the hiring process, some participants enjoyed positive experiences with respect to diversity (Table 1: Strongest 8, Table 3: Diversity 2). However, several participants noticed that diversity came up more with early-career members of the departments than with senior faculty (Table 3: Diversity 3), which one participant described as "odd." Several participants who are very committed to diversity work wondered if it might not be a coincidence that they were not offered jobs in departments that did not appear to value diversity (Table 3: Diversity 4). Several participants were deterred by a perceived lack of commitment to diversity, including several participants who questioned whether members of the search committee read what they wrote about diversity (Table 3: Diversity 5). Overall, many participants were impressed by

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departments with a strong commitment to diversity and/or deterred by departments which demonstrated a lack of commitment to diversity.

2.1.3 Mentorship

Strong mentorship can tremendously benefit early-career geoscientists, especially geoscientists from underrepresented groups. Several participants emphasized the importance of the mentorship they received from their Ph.D. and postdoctoral advisors (Table 4: Mentorship 1-2), peers via being a part of a cluster hire (Table 4: Mentorship 3), and mentorship as early-career faculty (Table 1: Strongest 11, Table 4: Mentorship 4). Some participants did not feel that they had received adequate mentorship by the time they were applying for faculty jobs (Table 4: Mentorship 5). Relatedly, for many participants, a job with mentorship duties appealed to them (Table 4: Mentorship 6-7).

2.2 Campus visits

Participants reported a range of experiences during their campus visits, especially campus interviews, some of which improved their perception of the job and some of which worsened their perception of the job. An alarming number of participants reported uncivil and even discriminatory behavior during campus visits. Importantly, candidates gained a strong overall impression of an institution's culture during visits.

2.2.1 Incivility

A dismayingly large number of participants (8 of 19) reported interactions during campus visits that were uncivil and potentially discriminatory. Several participants reported disparaging comments during campus visits (Table 5: Visits 1-3). Additionally, two participants were asked questions about protected identities (Table 5: Visits 4). Two participants had unsettling interactions with respect to professors in the department who had previously been disciplined for misconduct (Table 5: Visits 5). Multiple participants perceived a lack of interest from the faculty during their campus interview (Table 1: Strongest 3, Table 5: Visits 6-8) with behavior ranging from not having read their application materials to faculty missing their scheduled meetings with a participant. One participant noted that there is unwelcome pressure to drink during campus interviews (Table 5: Visits 9). Some participants sensed disagreements within the faculty about who should be hired, and suspected that this was the cause of some of the incivility that they perceived (Table 5: Visits 10). Importantly, several of these experiences were directly related to the participant's personal identities (Table 5: Visits 1, Visits 4, Visits 9, Visits 11).

2.2.2 Culture

Overall, we find that participants got a strong impression of the department's culture during campus visits, including underlying issues, and this impression was often a factor in decision-making. Participants were impressed at campus visits when departments considered their needs (Table 5: Visits 11). Participants also preferred cohesive departments and were deterred a perceived lack of camaraderie among the faculty

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(Table 5: Visits 12-14). Some participants also used interactions with students to measure departmental culture (Table 5: Visits 15-16).

2.3 Values revealed in negotiation

Beyond establishing the material support that a participant would have if they were to accept the job offer, negotiations revealed to participants how supportive the institution would be of them as employees. As with campus visits, several participants experienced uncivilized and even potentially discriminatory behavior during the negotiation process, including being lowballed (Table 6: Negotiation 1), being told "we're fine if you don't come here" (Table 6: Negotiation 2), being told that an offer might need to be rescinded in response to a common negotiation request (Table 6: Negotiation 3), and disparaging comments during a negotiation about lab space (Table 6: Negotiation 4). Several participants had confusing negotiation experiences, particularly being asked what they wanted rather before receiving an offer (Table 6: Negotiation 5) and being unsure when to mention their family needs (Table 6: Negotiation 6-7). Family often came up for participants with respect to partner hires: for many participants an opportunity for a partner was a strong consideration (Table 6: Negotiation 8-10) and often among the strongest considerations (Table 1: Strongest 5, Strongest 9, Strongest 14, Strongest 17, Strongest 19). The offer itself was a strong factor for many other participants (Table 1: Strongest 6-7, Table 6: Negotiation 11-13). The timing of the offer, particularly the timeline to respond to the offer, was a factor for several participants (Table 1: Strongest 4, Table 6: Negotiation 14-15). Some participants wanted more time to decide about an offer, with reasons including waiting to hear about another opportunity and wanting to make an additional visit (e.g. so that their partner can see the location).

Identity can factor into negotiation tactics and the strength of negotiation position. Several participants explicitly mentioned ways that identity was realized through negotiation, including a perception that they were being made an unreasonable offer because of their identity (Table 6: Negotiation 1). Several participants mentioned that the offer and negotiation process signaled whether or not they would feel valued (Table 6: Negotiation 2, Negotiation 4, Negotiation 12). We provide more detail in the next paragraph because the offer was such an important factor for so many participants.

For most participants, salary was the most important part of the offer, but for some, it was lab space. For seven participants, the offer was inadequate and they ultimately declined the offer, and two accepted despite poor offers. Five participants described salary offers that were lower than their postdoctoral positions' salaries (Table 1: Strongest 7, Table 6: Negotiation 11-13). Low salary offers were a deterrent when participants felt the offers were not enough to support themselves and their families and for some participants it raised concerns about how faculty are treated (Table 6: Negotiation 12). Further, several participants were looking for lab space commensurate with their research goals. Additionally, several participants described wanting course releases in the early part of their faculty job in order to have time to prepare their course materials while building their research groups. Over half of the participants described offers that they felt were lacking in one or more of these areas. Three additional participants mentioned retention offers from their current institution in the

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face of another outside offer, two participants accepted their retention offers (Table 1: Strongest 20) and one declined. Overall, we find that various aspects of the negotiation process, from the process to the offer itself, influenced participants' decisions, and for some participants was the single strongest reason for declining an offer (Table 1: Strongest 4, Strongest 6-7).

2.4 Compatibility with personal life

Every participant mentioned personal life considerations. They all mentioned family, regardless of relationship status or parental status. As one participant noted, there are challenges associated with moving for a job whether single or in a relationship (Table 7: Family 1). Relatedly, geographic preferences were common among participants' strongest reasons for accepting or declining an offer (Table 1: Strongest 1, Strongest 8-16, Strongest 18). For many participants, geographic preferences were tied to family, including being close to their partner, their family, their partner's family, their partner's job, and their partner's geographic preferences.

2.4.1 Partner and Family

In general, participants with partners considered the preferences and needs of their partner in deciding whether or not to apply to a job (Table 7: Family 2), in negotiating an offer (Table 7: Family 3), and ultimately in deciding whether or not to accept an offer (Table 1: Strongest 5, Strongest 12-15, Strongest 17, Strongest 19-20). Nonetheless, several participants chose not to mention their partner during their job search (Table 7: Family 4). Participants with children and participants who planned for children in the future considered this in their job search (Table 7: Family 5). Additionally, seven participants expressed a desire to be close to relatives (Table 1: Strongest 8-9, Strongest 12-13; Table 7: Family 6), and 10 participants considered the geographic preferences of their partner, partner's job, or partner's family (Table 1: Strongest 5, Strongest 9, Strongest 12-15, Strongest 17, Strongest 19-20). While it is clear that partners added a geographic constraint for many participants, one participant mentioned the unique difficulties of being single (Table 7: Family 6). Further, four participants mentioned looking for additional evidence of work-life balance in their interactions with faculty (Table 7: Family 7).

Six of the participants requested partner hires as part of the negotiation and were met with a mix of responses. Two of them successfully negotiated partner hires and accepted the offers. Three were met with negative responses and ultimately declined the offers. One participant asked for a partner hire at two different institutions, one institution gave a negative response and the other found an opportunity for their partner but it was a less exciting opportunity that the partner's existing position (Table 6: Negotiation 8). The participant declined them both. In addition to the six participants who requested partner hires from the institution(s) that made them a(n) offer(s), ten participants mentioned their partner playing a role in their decision. Overall, it is clear that partners and families were strong factors for most participants.

2.4.2 Geographic preferences

Geographic preferences were common among participants' strongest reasons for accepting or declining an offer (Table 1: Strongest 1, Strongest 8-16, Strongest 18). In general, participants did not feel that they could be picky about geography, despite having preferences (Table 8: Geography 1-2). In addition to proximity to family and partner preferences, state and local politics (Table 8: Geography 3-4), feeling safe in a community (Table 8: Geography 5), race relations (Table 8: Geography 6), diversity (Table 8: Geography 7), and a preference for a city (Table 7: Family 6, Table 8: Geography 7) were the most cited reasons for having a geographic preference. We provide more detail in the next paragraph because geographic preference was such an important factor for so many participants.

Six participants said they wanted to be in a diverse municipality where they would feel comfortable, and four additional participants said they wanted to be in a diverse department or institution. Ten participants mentioned the politics of certain states or regions. Every participant who mentioned a political preference preferred liberal areas to conservative areas, and multiple participants identified Texas and Florida as states they were hesitant about living in. Most participants who mentioned political preferences described recent changes to the political landscape in some states, such as interference with the tenure process, changes in access to reproductive care in following the overturn of Roe V. Wade in 2022, recent restrictions in access to gender-affirming care, and the illumination of racial tension in some cities (e.g. Minneapolis, MN). Participants were wary of some of these changes for the sake of themselves, their families, and their prospective students. The participants' feelings about moving to a conservative area ranged from a willingness to try it to a dealbreaker.

3 Discussion

Each participant's unique hiring experiences combine to yield a rich dataset that highlights several areas of improvement for departmental hiring practices. Several of these practices have been studied in depth in previous research and several more warrant future research. Nonetheless, given the urgency of improving faculty hiring in the geosciences, especially for geoscientists from underrepresented groups, we compile some recommendations for hiring practices based on our findings. These recommendations are described in the text below and summarized in Table 9.

3.1 Respect personal identities

Departments can improve the experience for candidates by improving representation of and respect for underrepresented personal identities. Several participants were looking for departments with faculty who share their gender and/or racial identities, which implies that diversifying may help with recruitment. Similarly, some participants were looking at student and faculty satisfaction during campus visits. Departments can improve the experience for candidates by respecting their personal identities, even ones they may not be aware of. For example, participants appreciated when a neutral party from an institution, such as an HR representative, reached out ahead of the

campus interview to see if the candidate would benefit from any accommodations. Members of the department who interact with candidates should use their correct pronouns and be aware that alcohol can put candidates in an uncomfortable situation, especially because many of the reasons why a candidate may not want to drink alcohol relate to the protected identities, such as religion and pregnancy. This is consistent with the finding that geoscientists from underrepresented groups are more likely to feel uncomfortable with the amount of alcohol in professional settings [15]. Further, several participants noted that their visa status played an important role in their decision. Some participants were looking for help with filing their visa correctly and with additional financial support while their partner awaited a visa that allowed them to work [27].

Relatedly, numerous participants felt tokenized during the hiring process. Actions that led a participant to feel tokenized during the hiring process included overemphasizing how diverse a new faculty cohort was, pressuring candidates to speak about their personal identities during the job interview, and generally making participants feel valued only for their contributions to diversity. Participants expressed a desire to feel like they would be valued for their contributions beyond their contributions to diversity and to feel like they were going to be supported by their department. Therefore, being careful not to tokenize candidates from underrepresented groups can help make a department more appealing.

3.2 Support departmental diversity efforts

Departments can improve the experience for candidates by actively engaging in and supporting diversity initiatives. In particular, several participants are active in diversity work and were looking for departments that would support their diversity work and even count it in the tenure process [28]. This is consistent with the finding that members of underrepresented groups contribute disproportionately to diversity efforts [29]. Because participants were wary of departments where diversity work fell predominantly on students and young faculty, departments may benefit from encouraging senior faculty to engage in diversity work. Further, some participants were impressed when members of prospective departments spoke about diversity in a well-informed way and others deterred when when they spoke about diversity in a clumsy way.

3.3 Improve and communicate mentorship programs

Departments can improve their hiring process by valuing strong mentorship at all levels; participants valued both receiving and giving mentorship.

Prior to their job searches, participants had valued receiving mentorship at the student and postdoc stages in the form of looking over their application materials and assistance with securing funding. Because of the interdisciplinary nature of the geosciences, it can be hard to determine whether one's research fits the scope of a job search, so participants valued mentorship in determining which positions would be a good fit. For faculty jobs, some participants were looking for formal mentoring, especially in teaching, securing funding, and the tenure process. We note that mentoring resources can be department level, institution level, or external and that mentoring

can be both formal and informal. Cluster hires can be a mechanism of peer-to-peer mentoring. Consistently, the importance of mentorship has been previously identified for improving gender and racial/ethnic diversity [25, 26, 28].

Further, some participants indicated that giving mentorship was an appealing aspect of faculty positions and were looking for departments that valued strong mentoring. Relatedly, as many participants were using student interactions to evaluate departments, candidates should have opportunities to interact with students during the search process. In general, participants enjoyed their interactions with students during campus interviews, particularly when students seemed interested in their research. Conversations with students were also an opportunity for candidates to identify gaps in the coursework. However, some participants were discouraged when students were not included in the search process or when departmental leadership seemed out of touch with students' concerns about the department.

Prioritizing mentorship across career stages and giving candidates the opportunity to interact with students during campus visits can make an offer more appealing to candidates.

3.4 Improve underlying departmental issues

Importantly, we find that candidates gained a strong impression of a department's culture during the hiring process; underlying issues were often made visible to candidates. The kinds of problems that participants witnessed during campus visits include student dissatisfaction, faculty dissatisfaction, infighting within the faculty, conflicts surrounding faculty members who have a reputation for misconduct (such as sexual harassment), and unprofessional behavior (such as disparaging comments and shouting). Several participants also perceived that the way they confronted issues during their job interviews affected whether or not they got an offer, which may be one way that institutions maintain barriers facing geoscientists from underrepresented groups [30]. Consequently, improving a department's culture by prioritizing job satisfaction, promoting a culture of professionalism, and eliminating misconduct are important for hiring.

More positively, some participants were encouraged by hearing faculty talk about their families and hobbies. Others viewed offers to accommodate the candidate during interviews as a sign of a positive underlying culture. Because many participants were able to get a strong sense of the department culture during their campus visits, and because many participants were looking for a job with a positive culture and work-life balance, supporting improvements to departmental culture and the work-life balance of existing faculty may be helpful in recruitment. In short, departments may doubly benefit from improving their culture: in addition to benefiting current members of the department, it may also help with recruitment. Steps to improving departmental culture will vary from department to department, and further instructions about how to improve departmental culture are beyond the scope of this work.

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3.5 Increase departmental awareness of hiring best practices

It is clear that some departments are still unaware of hiring best practices because two participants reported being asked questions about protected identities (e.g. "Are you married?") and several more reported receiving disparaging comments during the hiring process. Members of the department who interact with candidates should not ask about candidates' personal identities (unless asking for their preferred pronouns), including during socialization outside of the formal job interview. Departments should ensure that interest is demonstrated in candidates' research throughout the search process by reading candidates' application materials and ensuring that their seminars are well attended. We note that some of the disparaging behavior toward candidates appeared to be the result of disagreements within the faculty about who to hire. Members of the department should intervene if they witness uncivilized behavior toward a candidate.

3.6 Negotiate in good faith

Offers and negotiation are an opportunity for candidates to discern how valued they are by the institution. For lab-based scientists, receiving lab space commensurate with their research goals was an important factor. Many participants felt that the salary offers were low which was troubling in part because of feeling undervalued and because many participants were looking for enough compensation to buy or rent a home adequate for their family, to be able to afford childcare, to have enough money to travel to see family, and/or to be able to support a partner if a partner hire was not an option (especially when visa restrictions did not authorize a partner to work). These low offers are consistent with the fact that from 2016-2023 women assistant professors were paid about $0.91-0.92 for every dollar of their male counterparts [31]. It also is important to note that socioeconomics and race intersect in the US, so low salaries for underrepresented geoscientists could compound existing inequities [32]. Comparing offers, including salary, benefits, and startup costs, across demographics is an important area of future research to determine the extent of these disparities in the geosciences. Given the large number of participants who perceived low salary offers combined with known pay gaps, we recommend taking steps to ensure equity in salary offers.

Negotiations were a source of uncertainty for participants. This may be a combination of inconsistencies in negotiation experiences across institutions and a role of "hidden curriculum" in negotiations. Therefore, we recommend increasing the transparency of the negotiation process by explaining the steps, timeline, and roles of various personnel at the start of a negotiation. We also recommend providing accommodations and work-life benefits (e.g. childcare, eldercare, leave, housing assistance) to all faculty who need it rather than only those who ask for it in negotiation. Further, for several participants, a partner hire was a make-or-break aspect of the negotiation process, and we discuss this in more detail in the next section [21, 22].

3.7 Improve and communicate support for partners and children

Institutions can improve their faculty hiring process by improving and communicating the support systems in place for faculty with partners to all candidates, regardless of identity. As mentioned above, an exciting opportunity for a partner was often the most influential factor in participants' decisions. However, participants had a range of experiences with partner hires, with many participants declining an offer due largely to a lack of a good opportunity for their partner. A number of participants declined a tenure-track faculty job in favor of another geoscience job at their postdoctoral institution to avoid moving their families and asking their partner to find a new job. This desire to remain at their current institution was compounded by the fact that often these partners had recently moved and found a new position in conjunction with the start of the postdoctoral position. This suggests that partner hiring is an important area of improvement for many institutions and departments in hiring faculty with partners with academic and non academic careers alike [21, 22]. Institutions looking to improve their partner hiring procedures may find "The Dual-Career Project" to be a useful resource [33, 34].

Similarly, support for parents is prevalent in the literature for improving gender diversity [23, 35]. Participants with children expressed additional considerations including sufficient salary and childcare benefits to support children in the institution's location, geographic preferences influenced by raising children, and work-life balance. Some participants mentioned challenges associated with being parents, including low salary offers, being unsure about when to mention their children in a negotiation, and not using a tenure-clock extension for fear of being perceived as weak. This suggests that supporting parents is an area of improvement for some institutions and departments in hiring. Having childcare benefits for all faculty (i.e., without having to ask for it in negotiation) and automatically implementing any eligible tenure clock extensions may help with recruiting parents. Further, it is best practice to communicate these benefits to all candidates without asking them to reveal their identities.

3.8 Geographic location

From the many participant responses about geography, it is clear that geographic preferences frequently played a strong role in the decision to accept or decline an offer. While an institution cannot reasonably move to a more desirable location, there may be ways to address candidates' geographic preferences or concerns, such as through flexible work. Some geographic preferences were a preference to not move, especially participants with working partners. Therefore, reducing the number of times an early-career scientists has to move by introducing postdoc-to-faculty programs, hiring faculty out of PhD programs, and generally revisiting the commonly-held belief that scientists should be trained at a variety of institutions may help with recruitment. Further, many of the participants' geographic preferences were tied to politics and personal identities; all of the participants who mentioned safety did not identify as white. Therefore, institutions may benefit from working to make their communities desirable places to live for a diverse group of people. How institutions may do so

(e.g. housing their students and faculty, engaging in politics, investing in community relations) is a potentially important area of future research. Preferences of geographic location have come up only briefly in relevant past literature. Oermann et al., 2016 noted the difficulty of hiring nursing faculty in rural locations and Taylor et al., 2010 noted that institutions in areas with a high cost of living face challenges recruiting faculty [20, 36]. However, none of this literature is focused on the geosciences specifically or addresses the political considerations that were mentioned by several participants, which are especially relevant given the concerns raised about teaching climate change in conservative areas. Therefore, preferences of geographic location and hiring is an area worthy of future study, especially as it relates to political and personal identities.

3.9 Make the hiring process candidate friendly

There are a number of process changes which may improve the hiring process for candidates. Participants generally appreciated when recommendation letters were requested relatively late in the application process or, conversely, felt discouraged when they were requested with the application. In addition to requesting letters late in the process, such as for all shortlisted candidates, reducing their weight may be beneficial because women geoscientists are less likely to receive excellent reference letters than men [37] and numerous studies from a variety of fields point to biases related to both race and gender in reference letters [e.g. 38–40]. Interestingly, several participants were deterred by broad advertisements, which is inconsistent with notion that broader calls can help diversify the applicant pool [18]. Participants felt that broad searches decreased their likelihood of receiving an offer, and wondered if it might be a waste of their time (and their reference writers', in cases where letters were requested at the time of application). Some participants also felt that broad searches were a sign that the committee could not agree on what they were looking for. As a result, some participants avoided broad searches altogether while others applied to broad searches reluctantly. Whether or not broadening searches leads to more diverse hires is a potential area of future research.

4 Conclusions

Here we interview 19 geoscientists from underrepresented groups who have recently declined tenure-track faculty job offers about the factors influencing their decisions. We especially focus on factors related to personal lives and personal identities. That personal lives (Strongest 1, Strongest 5-6, Strongest 8-20) and personal identities (Strongest 1, Strongest 8-11) were often cited directly among the strongest reasons for accepting or declining offers and the results from the text analysis in Section 5.2 highlight the importance of personal lives and personal identities in job searches. Overall, many of the interventions that have been recommended by previous work were viewed favorably by competitive candidates holding underrepresented racial, ethnic, and gender identities. Therefore, departments are likely to benefit from continuing to evaluate and update their hiring practices. Further, improved representation of women geoscientists, albeit slowly [3], suggests that diversity-related interventions can be successful.

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However, this research points to several aspects of the faculty hiring process that need improvement and areas of future research. Many participants described experiences that were inconsistent with hiring best practices, including uncivilized and even discriminatory experiences. These negative experiences sometimes played a role in participants' decisions to decline offers, suggesting that current hiring practices may contribute to maintaining the under-representation of geoscientists from some groups. Further, that racial representation has remained stagnant [1] while the representation of women has increased highlights that the interventions to recruit and retain women are different from those to recruit and retain geoscientists from underrepresented racial groups. Therefore, understanding and dismantling barriers facing geoscientists of color is a priority. While this study combines race, ethnicity, and gender minorities, participants with underrepresented racial identities especially emphasized a desire to feel safe in the department, institution, municipality, and state, and indicated that this was lacking for some institutions they visited. Politics, race relations, segregation, state gun laws, and representation were factors in feeling safe, indicating that these are factors in faculty hiring and important areas of future research.

In general, a lack of available data limits progress [41]. Although there have been some institution-level efforts to collect demographic data about faculty searches and identify the effectiveness of interventions [e.g. 17], there is a lack of comprehensive data about the demographics of applicant pools, interviewed candidates, and candidates made offers for searches across departments and institutions. There is also a lack of documentation about diversity-related interventions used during the search process. The importance of personal identities in geoscientists' faculty job searches identified here highlights the need for more data collection. Additionally, our work highlights the need for further research about compensation disparities among geoscience faculty (Section 3.6), how to accommodate geographic preferences (Section 3.8), and how to run searches that attract a diverse applicant pool (Section 3.9).

5 Methods

5.1 Participant recruitment

Our population of interest is geoscientists from underrepresented races, ethnicities and/or genders who declined at least one tenure-track faculty job at a US institution between 2016 and 2023. To be specific, Black or African American, Asian, American Indian or Alaska Native, Native Hawaiian or Pacific Islander, mixed race, Hispanic or Latino, women, and/or trans or non-binary geoscientists were eligible for our study. Throughout the paper, we use the term "underrepresented" to describe this population of interest, though we recognize that representation and preferred terminology can change over time. Further, we recognize that these are not the only identities associated with barriers to successful participation in the geosciences. We interview geoscientists who have declined at least one offer because these geoscientists are both competitive on the job market and have made at least one decision in their job search (i.e., we do not interview geoscientists who accepted a job because it was their only offer). By interviewing geoscientists who have declined offers, we avoid a "survivorship bias," the logical error of concentrating on entities that passed a selection process (in this

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case, those who accepted faculty job offers) while overlooking those that did not. We interview geoscientists who declined their offer(s) between 2016 and 2023 so that their experiences are relevant to the current job market. The participants declined tenure-track jobs at institutions with a variety of Carnegie classifications.

We recruited interview participants using a variety of affinity group and institutional email lists and social media pages. These include the Earth Science Women's Network (ESWN), the American Geophysical Union (AGU), NSF National Center for Atmospheric Research (NSF NCAR), the Massachusetts Institute of Technology-Woods Hole Oceangraphic Institution (MIT-WHOI) joint program, Asian Americans and Pacific Islanders in Geosciences (AAPIiG), the United States Geological Survey (USGS), and Cryolist. We used this convenience sampling approach because there was no way to develop a complete sampling frame (an exhaustive list of all members of a population to sample from) for our population of interest, as many decisions related to hiring are not made publicly available. To address some of the potential issues with convenience sampling, we used a screening survey (described below) to identify representative participants and ensure balance across our sample. This approach was well-suited for our goal of providing detailed data on a range of hiring experiences. The participant recruitment and interview methods followed standard ethical guidelines and were approved by NSF NCAR's Human Subjects Committee (HSC). Informed consent was obtained from each participant.

Prospective participants were first asked to fill out a screening survey with basic questions about their job search, their current position, their gender, race, ethnicity, and their willingness to participate in an interview (Supplementary information S1). Based on their responses, survey respondents were invited to participate in a 45 minute interview about their job search if they

- are a geoscientist;
- declined at least one tenure-track faculty job offer between 2016-2023;
- identify as an underrepresented race, ethnicity, and/or gender; and
- were willing to participate in an interview.

This process yielded 19 interview "participants." In an effort to balance our population, we did not interview every white cisgendered woman who met the eligibility requirements because they are overrepresented in our survey responses, selecting based on who filled out the survey first. In qualitative research, it is important to interview enough participants to identify and understand the main themes. Recommendations about the number of interviews needed vary. For example, Guest et al. [42] recommend 12 interviews and Hennink et al. [43] recommend 16-24 interviews. Our 19 interviews is consistent with these recommendations.

Of the 19 participants, 9 currently hold (or have accepted) a tenure-track faculty position and the other 10 hold a variety of other positions within the geosciences. A variety of disciplines within the geosciences including earth, ocean, atmospheric, and planetary sciences are represented among the 19 participants. Of the 19 participants, 16 identify as an underrepresented gender and 6 identify as a underrepresented race or ethnicity. It is important to note that our sample includes more people with underrepresented gender identities than with underrepresented racial/ethnic identities; white

cisgendered women are the most common demographic in our sample. The gender-related and race/ethnicity-related barriers often differ, and combining these aspects of identity into one sample is a limitation of our study. We report results in aggregate to better protect participants' anonymity.

Participants were free to talk about any experiences they had with hiring, including additional experiences that did not meet the above criteria. The quotes in Table 1 are all about decisions that fit within the scope of our study, which includes reasons for accepting a job that is not a tenure-track faculty job. In the remaining sections and tables, we do not exclude quotes about jobs which are outside the scope of our study (e.g. experiences outside of the US or which did not yield an offer) but the vast majority of quotes are about experiences which fit the scope of our study. Further, some participants also discussed aspects of their identities other than race, ethnicity, and gender.

5.2 Interview methods

Each of the 19 participants participated in an interview of approximately 45 minutes with the lead author of this paper. We used a semi-structured interview protocol to get an overview of the hiring experiences of the participants, while leaving space to probe additional emergent themes [44]. This interview style allows us to draw on a standard list of questions (Supplementary information S2), while allowing the interview to unfold by pursuing concepts raised by participants [45]. Semi-structured interviews are appropriate for this study because they offer the opportunity to hear rich descriptions and detailed information about personal feelings, perceptions, and opinions.

The goal of each individual interview was to determine the ways in which various aspects of the hiring process influenced a participant's perception of the job opportunity and ultimately why they declined and accepted the offer(s) that they did. To that end, each participant was asked about the logistics of their search, what characteristics they were looking for in deciding to apply for a job, and to summarize the strongest factors that caused them to accept the offer that they did and decline the other(s). Further, each participant was asked more detailed questions about job interview experiences, negotiation experiences, whether and how teaching and diversity came up during application process, any informal contact with the department, about the role of their personal identities in their job search, and any partner, family or caretaking responsibilities that may have influenced their search. See Supplementary information S2 for the complete list of questions.

In order to identify main themes, the 19 interviews were recorded and transcribed. In order to determine each participant's strongest factors in accepting or declining offers, we asked them explicitly to describe the strongest factors for each offer that fit our scope (Question 6 in Supplementary information S2). Quotes summarizing each response are shown in Table 1. Many participants described multiple factors in answering this question. In those cases, we include them all in the order stated by the participant, which we do not interpret as order of importance. In answering this question, some participants described what dissuaded them from the offer that they declined, while others described what attracted them to the offer that they accepted,

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and some described what they were looking for more generally. Some participants either accepted two different jobs at two different times or declined two offers for two different reasons, so quotes outnumber participants in Table 1.

After conducting and transcribing the interviews, the lead author made a table that summarized each participant's responses to all of the questions in Supplementary information S2 and included any relevant quotes. Each column of the table corresponds to one of the questions in Supplementary information S2 and the following columns were added to accommodate the large number of relevant responses: geographic preferences, resources/prestige, timing, tokenism, mentorship, and stigma against non-tenure track jobs. If a participant's response was relevant to multiple themes, it was included in each relevant column of the table. Diversity initiatives (Question 10), personal identities (Question 12), and mentorship are discussed in Section 2.1. Experiences during campus visits (Question 7) are discussed in Section 2.2. Offers and negotiation (Question 8), including timing and resources/prestige, are discussed in Section 2.3. Partner and family (Question 13) and geographic preferences are discussed in Section 2.4, and other topics, including perceived stigma against non-tenure track jobs, are discussed in Supplementary information S3. We do not further discuss academic considerations, including the responses to Question 11, because they are not as closely tied to personal identities though we note that they did play a strong role for many participants. Each subsection of Section 2 describes the range of responses in the text and highlights a few exemplary quotes in the tables.

In order to confirm that these themes are common across the 19 participants, we apply a simple text analysis to the transcribed participant responses, excluding Questions 1-4. To do so, we apply a bag-of-words analysis using Python's Natural Language Toolkit (NLTK). The words, which are stemmed for the analysis, associated with each theme and their counts across the 19 interviews are shown in Table 10. The bag-of-words analysis simply counts the number of times a word from that topic appears in the interview transcripts. We find that all of the themes identified above are mentioned frequently across the 19 interviews, many in comparable numbers to research and teaching. However, we caution that the results of this bag-of-words analysis is sensitive to the choice of words and interview questions and therefore we do not further interpret the results.

5.3 Limitations

This study describes experiences in the US and focuses primarily on tenure-track faculty jobs. We also focus primarily on experiences between 2016 and 2023. The 2016 to 2023 period included the COVID19 pandemic, which modified the job search process for some participants. Further, the 2016 to 2023 period included the Me Too movement; the Women's March in 2017; and the reinvigoration of the Black Lives Matter movement following George Floyd's murder in 2020, which prompted nationwide discussions about diversity and inclusion. Therefore, hiring practices may have evolved over this time.

Gender and race/ethnicity are not the only aspects of geoscientists' identities that can be associated with barriers to successful participation. Participants were free to discuss any aspect of their identities, but findings about aspects other than gender

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and race/ethnicity are not well sampled. Further, we recruited more participants from underrepresented genders (especially cisgendered women) than from underrepresented races/ethnicities. Based on previous work and the findings of this work, the barriers associated with different aspects of identity differ and therefore interventions to recruit and retain cisgendered women do not necessarily translate to recruitment and retention of geoscientists from other underrepresented groups.

Excluding cisgendered white men from our study comes with limitations. We chose to exclude this demographic because the perspectives of cisgendered white men have historically been well represented in the geosciences. However, cisgendered white men can hold marginalized identities, and geoscientists of all identities can face barriers in the faculty job market. Additionally, our methods do not allow for a comparison between geoscientists from underrepresented groups and cisgendered white male geoscientists. Therefore, it is possible that some of our findings are not unique to geoscientists from underrepresented groups. To the extent that this is the case, the corresponding recommendations would improve the job search experience for all geoscientists, not just those from underrepresented groups.

Voluntary participation may have influenced our sample of participants. Further, participants were interviewed by someone in their broad field, and may have adjusted their responses knowing that they may already know their interviewer or with the knowledge that they may encounter the interviewer in the future.

Declarations

5.4 Data availability

Given the confidential nature of this work, the data cannot be made available.

5.5 Acknowledgments

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5.6 Author contributions

MLD helped with study design, collected the data, helped with data interpretation, wrote the initial draft, and helped with revising. LYB and CDW helped with study design, helped with data interpretation, and helped with revising. MR, MAF, LMF, EL, and JW helped with study design and helped with revising.

5.7 Competing interests

The authors declare no competing interests.

Table 1: Quotes from participants about the strongest factors influencing their decision to accept or decline an offer.

Quote ID	Participant	Quote
Strongest 1	P18	"A huge one was geography. It was one of my only offers that was in [a region of the US which was desirable to me]. During my interview people were very personable, genuinely interested in my research, generally had read my things, [and mentioned] providing resources for support for grants. In my interview at [my current institution], I was not asked any inappropriate questions. There was no mention of my [identity], there were no problems of those sort, which is not true at nearly all the other schools I interviewed at."
Strongest 2	P8	"I didn't get a good vibe. It was a very large college so I felt that it would be hard to thrive. It was just like one cog in a very large machinery." (declined)
Strongest 3	P15	"I went and I did the interview and I just had a really bad, awkward feeling from the interview. A bunch of people were away and so I didn't really get to meet a lot of people." (declined)
Strongest 4	P8	"Even though it was quite highly-ranked in [a] place that I wanted to go, it just expired." (declined)
Strongest 5	P4	"It was a pay cut and a move and there really wasn't a negotiation. The biggest thing my partner and I decided on was that [my partner] really needed the opportunity to be able to relocate to a place that would support [them]. Let's see what they say about making an accommodation for [my partner]. The response was really underwhelming." (declined)

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Strongest 6	P16	"Living in [that location] on the salary that they were offering was just not a viable option." (declined)	921 922 923
Strongest 7	P6	"Money. Both offers offered me less than I was currently making per year as a postdoc." (declined)	924 925
Strongest 8	P1	"Two main reasons. One was location; one [job] was closer to family. And the other main reason was the student population. My current institution has the most diverse student population I've ever encountered and I really wanted to be in an institution that valued that." (accepted)	926 927 928 929 930 931 932
Strongest 9	P13	"The timing was a factor. A job for my partner was a huge consideration. Then I started to really think about location, whether it would be closer to family, whether we wanted to live in that place. Of course I got more information when I visited in person. [at the jobs that I declined] there might not be too many people that do what I do. And the demographics of the different departments. One was very male dominated, the other [was] more mixed. [I was] thinking about the overall environment, colleagues, the job duties, things like teaching loads, there are so many factors."	933 934 935 936 937 938 939 940 941 942 943 944
Strongest 10	P12	"The teaching component was one that I was less interested in. I did have some pause and concern about 'How safe are college campuses in this country in this day and age?' coupled with the racial, political side of the equation. Geography certainly weighed in. It was definitely one of the tougher ones to turn down because it is a prestigious institution." (declined)	945 946 947 948 949 950 951
Strongest 11	P12	"The top reasons for deciding against [all of my tenure track offers were] geography; feeling a sense of value with the programs; the salary; as well as perceived support that I'd be getting from the program, the administrators and ensuring I wouldn't fall through the cracks. Some programs had more of a mentorship system for their early career faculty [than] others, that was definitely important. And then last was how established the program was." (declined)	952 953 954 955 956 957 958 959 960 961 962 963 964 965 966

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967	Strongest 12	P7	"It was the a combination of the geography [being near my partner's family] and then the prestige and the quality of students and of colleagues that I would have that really made it a no brainer." (accepted)
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972	Strongest 13	P2	"The location. My [partner] wanted to move to [this location]. I mean, [my partner's] entire family on both sides [lives nearby]." (accepted)
973			
974			
975	Strongest 14	P2	"I thought it would be super fun. It's more of a teaching university. I love the location, the faculty were really awesome, and I felt like I could really fit into the department in a nice way. But [my partner] hated the location and didn't feel like they would be able to get the type of job that they wanted." (declined)
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982	Strongest 15	P14	"Resources and geography. I think both departments have great department culture. They both wanted someone of my flavor of [research]. And both would have been great institutions to join. It's resources like the ability to pay students and hire postdocs and really get my lab ramped up. Being on one of the coasts was somewhat important [to my partner]."
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990	Strongest 16	P9	"It was just the sense of this really awesome community and all these intellectual opportunities because there's so many people thinking about related science from different directions. That was the most exciting professionally. And then personally this is a great fit for what I was looking for from a geography perspective." (accepted)
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997	Strongest 17	P10	"The department had not hired anyone at the assistant professor level in [many] years. [It] made me hesitate and question about the sorts of things were happening. And then I have a partner who [has a career]. And we soon realized that there weren't that many options [for my partner in that city]. It did not seem like a very research-intensive department. And even though the offer letter said 40% teaching, from my conversations with faculty it did not seem like that's what would end up happening in practice [it seemed like there would be more teaching than that]." (declined)
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Strongest 18	P5	"I often think that one of the hardest things I've ever done was turn down the [tenure-track faculty job] offer, just because I was like 'This could be my only opportunity to be a professor'. But I think I ultimately realized that I'd rather not be a professor than have a [large] course load, expected to teach classes that I didn't feel comfortable with and live in [the city where the job would have been located]." (declined)	1013 1014 1015 1016 1017 1018 1019 1020 1021
Strongest 19	P19	"It became a matter of 'can [my partner and I] both have jobs in this place?'. And then the next step is [whether or not] it has an intellectual environment that is really meaningful to me."	1022 1023 1024 1025
Strongest 20	P11	"I was given [and accepted] a retention offer which was better only in that it didn't involve me having to move across country and then be further away from my partner." (accepted)	1026 1027 1028 1029 1030
Strongest 21	P3	"The university [where I declined an offer] is little less well resourced, they didn't have the same kinds of resources for research and they weren't able to draw the same kinds of graduate student applicants that [university where I accepted an offer] did. Also, I actually really enjoy being in a big department such as [this one]. I think it's been fun for me and for my graduate students to have that sort of community and critical mass people."	1031 1032 1033 1034 1035 1036 1037 1038 1039
Strongest 22	P3	"I got an offer from a SLAC [small liberal arts college] [and an R1]. And the main reason why I ended up going with the [R1] is I realized after really talking to faculty at SLACs that I did want a job that was more research focused."	1040 1041 1042 1043 1044
Strongest 23	P17	"The biggest draw to me here (at a Baccalaureate college) is that teaching is equally [as] valued [as the] research aspect. [We're] encouraged to continually improve [our] teaching and think about that deeply as opposed to a lot of, say, R1 schools where your focus is research and you have to teach as one of those obligations." (accepted)	1045 1046 1047 1048 1049 1050 1051

Table 2: Quotes from participants about personal identities.

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Quote ID	Participant	Quote
Identities 1	P18	"I looked very carefully at the demographics of departments I was applying to."
Identities 2	P16	"Politics and gender and race, for me, have limited where I'm willing to go."
Identities 3	P12	"It had some very stark lines in terms of where the communities of color were and where the predominantly white communities were. Am I moving my family to a place that will feel safe?" (declined)
Identities 4	P9	"On the grapevine, [they] apparently have a really bad track record with tenuring women and multiple tenured female faculty during my interview unprompted told me how terrible the tenure process had been for them." (no offer)
Identities 5	P13	"It seems like they were really trying to hire a [someone of my identity], which is great, but then you're put in that box [of being a diversity hire]." (declined)
Identities 6	P12	"There was one program in particular became a 'heck no' It became a nonstarter. [They] see a checkbox. That's how it came across. If it's a numbers game and it's a checkbox you're looking for, then am I really truly going to be supported in accepting this opportunity?" (declined)
Identities 7	P3	"I definitely felt tokenized in the sense that I had a meeting with the search committee in which several of the faculty members clearly wanted me to speak about my personal identity. So I ended up coming away not really liking that experience. I thought it was not appropriate." (no offer)
Identities 8	P11	"There's this pioneering woman [in the department where I was interviewing] and I remember thinking about how cool it would be to be her colleague." (declined)
Identities 9	P11	"[I declined in favor of a job in my home country because] what I was looking for was not dealing with being an invisible immigrant in a country that outside of academics largely hates immigrants."
Identities 10	P6	"They respected me as a queer person." (accepted)

Identities 11	P2	"My parents don't have college degrees, so figuring out how to navigate [science] as a career was very challenging."

Table 3: Quotes from participants about diversity in applications and interviews.

Quote ID	Participant	Quote
Diversity 1	P6	"I really wanted a place that put some effort into diversity."
Diversity 2	P18	"I think the [school where I accepted a job] was the one that was most open to talking about the problem and using the right language, which did affect my feelings about the school. And one of the reasons I chose [to come here], because it seemed like they were genuinely interested." (accepted)
Diversity 3	P19	"I found it surprising that [diversity] was asked about only by the two students that I talked to. The role of the students was to talk about [diversity, equity, and inclusion], which felt very odd." (declined)
Diversity 4	P18	"I think the ones that didn't ask for [diversity] statements, I'm not sure I got an interview with any of those. And I am pretty active in [diversity, equity, and inclusion] stuff and even my regular research and teaching statements definitely have [diversity, equity, and inclusion] stuff in them. It's curious I didn't get any interviews with the ones that didn't require that."
Diversity 5	P5	"I don't get the feeling that they actually cared or read what I wrote [in my diversity statement]."
Diversity 6	P8	"I wasn't sure if [requests for diversity statements were] just lip service. [I learned more when] it came up during the phone interviews or discussions when I was at the institution."

Table 4: Quotes from participants about mentorship.

Quote ID	Participant	Quote
Mentorship 1	P1	"The most important thing is that both [my Ph.D. and postdoc mentors] believed in me."
Mentorship 2	P18	"My Ph.D. advisor was exceptionally supportive and I don't think I would have gotten the jobs without having mentorship from somebody who already has a faculty position who was able to look over my documents and provide feedback."
Mentorship 3	P14	"In hindsight [being a part of a cluster hire] is a positive because it's forced me to interact with people outside of my subfield of Earth science, which is great. And it also means that I have a cohort of several other junior faculty."
Mentorship 4	P18	"They talked about this at the interview, which also led me to want to go there. The first few classes are team taught, so I have mentorship in teaching right away." (accepted)
Mentorship 5	P18	"My postdoc advisor thought because I was a [parent] that I was not gonna be successful in an R1 and refused to help me and told me not to apply to jobs." (participant is now a professor at an R1 institution)
Mentorship 6	P17	"They're looking for someone to coordinate [one of their degree] programs and I got really excited about that aspect of it." (in progress)
Mentorship 7	P6	"I was hoping to work in a place where the institution and my colleagues cared about teaching and mentoring well."

Table 5: Quotes from participants about campus visits.

Quote ID	Participant	Quote

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Visits 1	P18	"The worst one was when I was at an interview, we went to [a meal and] I was one on one with an older professor who told me that the only reason I've made it so far in my career was how I looked. And made some not appropriate comments about being a [person of my identity] in science." (declined)	1197 1198 1199 1200 1201 1202
Visits 2	P15	"We were talking about courses that I could teach and [someone from the department] basically said, 'well, you're not [this type of scientist] so you wouldn't be able to teach any courses [on that subject]'. But I'm like, 'well, that's what I do.'" (no offer)	1203 1204 1205 1206 1207
Visits 3	P7	During an interview, one professor "basically insinuated that I was lying about the [service work] that I did." (declined)	1208 1209 1210
Visits 4	P5	As soon as we were out of the department, [a faculty member] said to me, 'Are you married? Do you have children?' (accepted)	1211 1212 1213 1214
Visits 5	P5	"In retrospect, I wish that I hadn't [asked about their faculty member with a reputation for misconduct] because I felt like it eclipsed some of the science that I was trying to talk about." (no offer)	1215 1216 1217 1218 1219
Visits 6	P11	"People forgot to show up for my scheduled times. People were late picking me up. People were late to dropping me off at the next thing. I had no control over any of it." (no offer)	1220 1221 1222
Visits 7	P10	"I hardly came across people who seemed like they had read any of the statements I had submitted."	1223 1224 1225
Visits 8	P9	"Multiple senior faculty just no-showed their meetings with me. Like I went to their door and they weren't there." (no offer)	1226 1227 1228 1229
Visits 9	P18	"I did have a drink at every dinner [even though I did not want to because of a personal identity]; it was definitely a pressure that I was not happy to have."	1230 1231 1232
Visits 10	P11	"That was the worst interview of my entire life. I had been recruited and invited to apply to that position. Recruited aggressively. And then when I got there, it was pretty clear that the person who recruited me aggressively wanted me to have that job and nobody else really cared for that to be the case."	1233 1234 1235 1236 1237 1238 1239 1240 1241 1242

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Visits 11	P8	"Someone not on the hiring committee reached out from a [diversity, equity, and inclusion] perspective before I went to the on-campus interview and they [asked] 'are there any accommodations that you need?' That was, both new and very positive [for] understanding that department culture." (declined)	
Visits 12	P4	"[I had] a mixed experience meeting the different faculty. Some faculty just didn't show up for anything, some faculty were there the whole time and I spent a lot of time with them." (declined)	
Visits 13	P4	"[There] was the lack of camaraderie that I had been able to glean from any of the faculty, even sitting around a dinner table sharing a meal together." (declined)	
Visits 14	P17	"I've been really attracted by some departments that clearly are very cohesive and work together closely and put off by some departments that seem to have a real dichotomy."	
Visits 15	P10	"I was particularly paying attention to interactions with students during my interviews. One thing that I noticed [during a campus interview] that pleasantly surprised me was that the students were extremely happy. They were very engaged during my job talk. Almost all of the questions were from students and they stayed back after the seminar to ask questions."	
Visits 16	P11	It was a "red flag" that "there were no students involved [in the interview at a teaching-focused institution]." (accepted and has since left)	

Table 6: Quotes from participants about negotiation.

Quote ID	Participant	Quote

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Negotiation 1	P18	"What was crazy, there was one institution where I had a friend there and I was warned that [people of my identity] coming in had been lowballed. And I thought the salary was low. I asked for [a very large increase in salary] and they said yes, without even thinking about it. That played in my role of making that decision. They weren't even giving a fair market rate." (declined)	1289 1290 1291 1292 1293 1294 1295 1296 1297
Negotiation 2	P8	"[I] knew I had an offer, but they were very brusque about it. Like, 'we're fine if you don't come here to just, we don't want to waste time'. It was not far off from those words. So [I thought] 'well, I'm not sure if I would feel valued'." (declined)	1298 1299 1300 1301 1302
Negotiation 3	P5	"I had asked for [something very commonly requested in negotiation], but they said something like 'Oh, I'm not sure about that. I mean, if that's really important to you, I'd be happy to bring that up, but we may need to rescind your offer'." (accepted)	1303 1304 1305 1306 1307 1308
Negotiation 4	P7	"There was a more senior faculty member who made quite disparaging comments about my ability to start a lab, which made it just really easy to say no to that place." (declined)	1309 1310 1311 1312 1313
Negotiation 5	P19	"It was all a little awkward with [the university I was negotiating with] in the sense that they didn't make [me] an offer to start with. They basically want[ed me] to say what I needed to do what I said that I would do. And so there was all of this interpretation exercise of trying to figure out what I should [request] for startup." (declined)	1314 1315 1316 1317 1318 1319 1320
Negotiation 6	P18	"One thing I wish that'd been better in the negotiation process for parents is, well, I didn't know when to say I was a [parent]. It turns out I could have negotiated childcare. I didn't want to say anything until an offer letter was signed, but then I missed out on being able to get [it]." (accepted)	1321 1322 1323 1324 1325 1326 1327 1328 1329 1330 1331 1332 1333 1334

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1335	Negotiation 7	P4	"Specifically about two bodies: in some situations I've
1336			spoken with faculty and they're like 'I just wish people
1337			would tell us ahead of time if they have an accommo-
1338			dation need because it helps us provide them a better
1339			offer, which we can't do if we don't know.' And then
1340			other people have been like 'Yeah, I don't tell them
1341			because I've actually told them in the negotiation that
1342			I had a spousal accommodation and the job offer dis-
1343			appeared.' So there's so many different ways in which
1344			it plays out."
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1346	Negotiation 8	P13	"A lot of it came down to the specifics of the offer that
1347			they did give my partner. It wasn't really like what [my
1348			partner has] here, so that was a big factor." (declined)
1349			
1350	Negotiation 9	P4	"They were literally losing a faculty member because
1351			of a two-body problem and they were unwilling to talk
1352			to me about how to accommodate a two-body problem
1353			beyond a few condescending suggestions." (declined)
1354	Negotiation 10	P19	"A [prestigious private R1] institution cannot solve the
1355			two-body problem or help with my partner's visa. If
1356			this is the best that a [prestigious private R1 institu-
1357			tion] has to offer, maybe we should think about it a
1358			little harder." (declined)
1359			
1360	Negotiation 11	P15	"The salary was low (about what I was making as a
1361			postdoc) and there was a very low startup. I didn't
1362			negotiate at all, I just said no." (declined)
1363			
1364	Negotiation 12	P6	"When the people offering you the money make four
1365			times as much and don't see why that should matter
1366			[it] suggests to me that it will show up in other ways."
1367			(declined)
1368	Negotiation 13	P4	"It was less than I was making as a postdoc."
1369			(declined)
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1371	Negotiation 14	P9	"When I got the offer there was no opportunity to
1372			negotiate. They basically handed me an offer that
1373			included a salary and the startup and I had to decide
1374			to accept or decline it in two weeks. I don't think that's
1375			super common and I wasn't expecting that." (declined)
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Negotiation 15	P14	"The timing matters. If [the institution] can get their searches approved and their interviews scheduled early, then they have an advantage."	1381 1382 1383

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Table 7: Quotes from participants about family.

Quote ID	Participant	Quote
Family 1	P1	"I think that there are difficulties that come with being single in a new environment just as there are difficulties when trying to move as a couple or trying to move with kids."
Family 2	P16	"My [partner] gets a vote."
Family 3	P3	"I wouldn't have taken any of these jobs if there hadn't been an offer for my [partner]."
Family 4	P18	"I was advised by older faculty [to not] mention that I was married at all. I didn't mention that I had children at all. I just kept my personal life very out of it. Nobody knew I had children, which made it a little easier, but it influenced my decision making. I wish I could be more honest in the interviews, but I know you're not supposed to."
Family 5	P18	"One of my meetings was with professors who had children and they said, 'We're not asking you anything, but here we're just gonna tell you about our experiences with tenure clock extension and everything.' And that was really helpful." (accepted)
Family 6	P1	"Being in a large city where it's easier to meet people, where there are more people, and then having family nearby, that network is sort of built-in. All of that really helps alleviate some of the loneliness that comes with not being in a relationship." (accepted)

| | Family 7 | P3 | "Finding a place that I felt aligned with the work-life balance I envisioned, I think that was really important. I think seeing other people at dinner talk about their kids or their hobbies or how they balance their work-life like it was a very open topic. I think that was always very encouraging [and that it] showed that it was a topic which people were thinking about." |

Table 8: Quotes from participants about geographic preferences.

Quote ID	Participant	Quote
Geography 1	P7	"I felt that being geographically picky was not a luxury that I had."
Geography 2	P19	"I almost feel bad for even thinking about location." (declined)
Geography 3	P8	"I think the overarching state politics gave me pause at a couple of the places."
Geography 4	P12	"Will I be at a school where my hands are tied in terms of how I teach a course like climate change?" (declined)
Geography 5	P8	"I valued feeling safe in the community. And I think that was lacking in a couple of the places [and] that push[ed] that onto the 'no' list for me."
Geography 6	P12	"In terms of what's occurred recently, [the city where the university is located] has been one of the unfortunate many cities in the racial spotlight." (declined)
Geography 7	P3	"It was a little bit hard to imagine living in a place that [remote and not diverse] with a baby for a really long time." (accepted and has since left)

Table 9: Summary of recommendations.

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Respect personal identities

- Ensure existing members of the department who have underrepresented identities feel supported and valued.
- Have a neutral person ask candidates about accommodation needs in advance of campus visits.
- Ask about pronouns and use them correctly.
- Avoid pressure (even implicit pressure) to drink alcohol during campus visits.
- Support international faculty in securing a visa (if applicable).
- Avoid tokenizing candidate (e.g. describing candidates as "diversity hires" or trying to "check a box"). Rather, emphasize the scholarly contributions of the candidate over contributions of personal identities.

Support departmental diversity efforts

- Value diversity efforts in tenure and promotion. This can be through teaching, research, and/or service.
- Maintain equity in expectations for service and diversity work across rank. For example, encourage senior faculty to participate in diversity efforts. Avoid expecting new hires to spend a lot of time on diversity work.

Improve and communicate mentorship programs

- Communicate clear mentorship structures for junior faculty, including institution-level and external mentoring resources.
- Participate in institution-level cluster hires.
- Encourage informal mentoring by facilitating networking.
- Encourage and support faculty in mentoring students and postdocs.
- Include students in the faculty search process.

Improve underlying departmental issues

- Proactively address and mitigate instances of unprofessional behavior both in hiring and other department activities.
- Eliminate misconduct through effective disciplinary procedures.
- Survey members of the department (at all levels) about their experiences and address areas of dissatisfaction. Areas of focus might include work-life balance, cohesion, professionalism, and inequitable experiences across groups.
- Ensure the department has clear and confidential channels to report misconduct or incivility without retaliation, including job candidates.

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Increase departmental awareness of hiring best practices

- Interviews are an opportunity to impress candidates!
- Ensure that candidates are not asked about protected identities, including in social and informal situations.
- Ensure that all department members engage fully and respectfully with candidates (e.g. that their seminar is well attended and that members of the department are on time for meetings with candidates).
- Intervene if you witness disparaging behavior or comments towards candidates.
- Ensure that members of the department are treating all candidates equitably, regardless of underlying disagreements about hiring.
- Collect confidential feedback from candidates, including those who decline offers.

Negotiate in good faith

- Offer equitable and competitive compensation and take steps to reduce pay disparities.
- Make the negotiation process transparent including explaining the timeline and roles of various personnel prior to beginning the negotiation process.
- Give candidates sufficient time to consider an offer (e.g. enough time to do a second visit).
- Prioritize making accommodations available to all faculty rather than available by negotiation only, especially those related to personal life.

Improve and communicate support for partners and children

- Facilitate finding a desirable employment opportunities for partners (if applicable).
- Communicate support for partners and children to all candidates without asking them to divulge protected information.

Understand geographic preferences

- Offer flexible work arrangements whenever possible.
- Introduce postdoc-to-faculty positions to relieve the burden of moving on candidate and their families and increase retention.
- Improve relationship between the institution and the local community.

Make the hiring process candidate friendly

- Do not request letters of recommendation at time of application.
- Avoid overly-broad advertisements; publish a clear description of hiring subdiscipline.

Topic	Number	Words
Representation	183	identity, race, color, gender, demographic, diversity, ratio, woman, women, queer, visa, immigrant, tokenize, box, female, asian, black, african, hispanic, latino, tribe, native, minority, underrepresent, reprensent
Diversity	100	DEI, EDI, DEIHA, JEDI, DEIA, BA-JEDI, initiative, effort, affinity
Mentor	160	support, mentor, cluster, cohort, team, help
Visit	399	interview, visit, meet, conversation, interaction, collaborate, camaraderie, cohesive
(In)civility	215	harass, stalk, assault, lying, shout, inappropriate, appropriate, toxic, illegal, disparage, condescending, community, culture, vibe, help, accommodate, value, mysogynist
Offer & negotiation	357	salary, money, pay cut, negotiate, startup, market, housing, lab, rescind, resource
Partner & family	219	partner, husband, wife, spouse, girlfriend, boyfriend, fiancee, single, family, mother, mom, father, dad, cousin, uncle, aunt, brother, sister, work-life
Geography	358	geographic, location, coast, political, conservative, liberal, place, city, rural, urban
Research	363	research, grant, intellectual, science, publish, conference, fieldwork, labwork, computation, atmosphere, ocean, geology, planetary
Teaching	322	teach, course, class

Table 10 Number of uses of words associated with each theme across the 19 interviews.

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