

ONE FOOT OUT THE DOOR: INTERROGATING THE RISKY HIRE NARRATIVE IN STEM FACULTY CAREERS

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Many faculty members believe that the racial demography of their disciplines afford highly qualified, racially minoritized scholars more power in the academic job market. As such, search committees may not offer faculty positions to candidates from these groups because they perceive them to be high risk and difficult to retain. One often cited study debunked this myth, showing that highly competitive racially minoritized candidates did not have more offers; however, the study was published over two decades ago and the narrative still remains. Using publicly available data from the National Science Foundation Graduate Research Fellowship Program, we identified 671 awardees and found no statistically significant differences in rates of early departure between highly qualified, racially minoritized scholars and other highly qualified racial groups across three different science, technology, engineering, and mathematics disciplines. We also used data from U.S. News and World Report university rankings, and the FY 2007 Survey of Research and Development Expenditures at Universities and Colleges to understand whether early departing faculty members across all racial categories leave for more prestigious institutions, as is assumed. Those results indicate a slight trend of early departing faculty members leaving for more prestigious institutions than their previous one. We situate these findings within the faculty diversity discourse and offer implications for practice and future research.

KEY WORDS: *faculty diversity, faculty departure, faculty mobility, science, technology, engineering, and mathematics*

1. INTRODUCTION

A faculty search committee in a physical science field meets to determine the four candidates they will bring for on-campus interviews. Having already decided on the top three candidates, they are debating between two scholars to finalize the list: a White man, Ted, and a Latina woman, Maria. Both are strong candidates: they received their doctoral degrees from highly ranked programs and have glowing recommendations from prolific faculty members in the field. Maria also received a prestigious fellowship and has a few

more publications compared to Ted. Based on the criteria the committee laid out, Maria is more qualified.

As the committee deliberates, several members recall a past early career faculty member, a Black man, who left the department after 4 years for a more prestigious institution. They worry that, even if Maria accepts their offer, she, too, will have one foot out the door. As one committee member said, she probably has many offers and could easily get more later. Given this concern, the committee decides Maria is too risky: it is not worth their time to invite her to interview. They recommend that Ted complete their slate of candidates, ending the meeting.

As faculty search committees make difficult decisions about who to seriously consider, invite for an interview, and offer a job, their decisions are shaped by individual, organizational, disciplinary, and field contexts (Liera, 2020; Posselt et al., 2020). For example, there is a trend in the field of higher education to have more inclusive searches that prioritize diversity in decision making (White-Lewis, 2021, 2022). However, we know that there are also social and cognitive biases that shape faculty selection and decisions. For example, Rivera (2017) found that search committee members made assumptions about the mobility of women candidates they did not make for men, which harmed them in the candidacy selection process. White-Lewis (2019) found that although candidate diversity was prioritized when recruiting applicants, it became less advantageous as searches progressed, and eventually became disadvantageous when racially minoritized candidates were perceived as being too competitive to hire. In each of these studies, search committees pulled down a stereotype that shaped decision making. In the vignette we provided, the search committee viewed Maria as riskier because of the prevailing notion that Black, Latinx, and Indigenous candidates (henceforth, referred to as racially minoritized[†]) wield greater power in the academic job market (Smith et al., 1996; White-Lewis, 2019; O'Meara et al., 2023). Maria's candidacy was potentially disadvantaged by the enactment of a stereotype or implicit bias.

Data and empirical evidence are some of the most powerful tools in overcoming social and cognitive biases. However, very few studies have examined the trajectories of similarly qualified racially minoritized and White faculty members to interrogate if, and how, the risk assessments of committees such as that presented in the aforementioned vignette are well founded. For instance, an often-cited study by Smith et al. (1996) contradicted the narrative that faculty of color receive more offers at career entry than White faculty members. However, the study is now 25 years old and gave little insight into where faculty members ended up and whether they were retained. Many studies indicate racially minoritized faculty members are more likely to express intention to leave their institutions, typically due to racist climate issues (Bozeman and Gaughan, 2011; Daly

[†] We deliberately used the term racially minoritized, as opposed to underrepresented minority (or URM), as guided by Chase et al. (2014). The term racially minoritized centers the active role that institutions of higher education play in perpetuating the limited representation of Black, Latinx, and Indigenous peoples in science, technology, engineering, and mathematics (STEM) fields. We also do not collapse this term with faculty of color based on the demographic trends within STEM fields. That is not to say that Asian American and Pacific Islander communities do not experience racism, exclusion, and disenfranchisement in STEM fields, but they are also not subject to the unique assumptions of supply and demand within faculty hiring that Black, Latinx, and Indigenous candidates experience.

and Dee, 2006; Griffin et al., 2011a,b). However, such studies typically do not indicate if these faculty members actually left or if they left at higher rates in comparison to White faculty members.

This topic merits examination for several reasons. Increasing racial diversity has been a goal of many institutions and federal agencies for 30 years, with incremental progress (Espinosa et al., 2019; Finkelstein et al., 2016; Smith et al., 2012). Therefore, interrogating the narrative of the risky hire will shed light on the critical junctures on which interventions might focus. Furthermore, hiring faculty is a time-consuming and costly endeavor (Callister, 2006). Time spent evaluating and interviewing candidates is significant and the cost associated with startup packages means that departments do, in fact, incur risk and potential loss if they hire candidates who are not retained. However, if search committees make assumptions about early departure that are based on cognitive and social biases, and not empirical evidence, they are missing out on the opportunity to hire talented faculty (Griffin, 2020; O'Meara et al., 2023). Thus, a better understanding of the career trajectories of racially diverse, highly qualified faculty members will help search committees make better and more data-driven decisions as they engage with candidates. It will also help institutions move toward their stated equity and inclusion goals.

The purpose of this study was to understand the departure trends of a longitudinal cohort of science, technology, engineering, and mathematics (STEM) faculty members in three disciplines. We intentionally located our inquiry in STEM fields since assumptions about candidates' perceived supply, demand, and interest are most magnified in these areas, given their underrepresentation (Gibbs et al., 2016). We used a unique data set of National Science Foundation (NSF) Graduate Research Fellowship Program (GRFP) awardees. These fellowships are highly coveted across our three STEM fields of interest (i.e., biology, engineering, and psychology) and often signal a promising career path in the sciences at the point of first hire. We combined GRFP awardee data (2003–2007) with web scraping techniques to track awardees after completion of graduate and postdoctoral studies into their faculty careers to understand whether or not highly qualified racially minoritized scholars depart early at greater rates compared to White scholars. We also investigated whether early departing faculty members leave for institutions considered more prestigious, as is often assumed. In the following section, we synthesize prevailing literature and theories that contextualize departure and mobility patterns.

2. GUIDING LITERATURE ON DEPARTURE, MOBILITY, AND PRESTIGE IN FACULTY CAREERS

There are two bodies of literature that guided our thinking in this study. First, we considered the literature on faculty departure, examining what is known about the reasons why faculty members say they want to leave their institutions. We next considered the literature on patterns of academic mobility; that is, what is known about how long faculty members stay at certain institutions and where they go when they leave.

2.1 Understanding Faculty Departure

Faculty departure is shaped by the interactions of individual, organizational, and market forces (O'Meara, 2015). On an individual level, there is ample evidence that faculty members consider a range of external factors when deciding whether to stay or go, e.g., geographic area or a partner's career considerations (Collaborative on Academic Careers in Higher Education, 2018; Shauman and Xie, 1996; Tuitt et al., 2007). For instance, in one nationwide faculty survey, 60% of faculty members said their decision to leave an institution was related to professional opportunities for their partner (Collaborative on Academic Careers in Higher Education, 2018). Departure considerations also differ depending on employment type (Zhou and Volkwein, 2004), with non-tenure-eligible faculty on contracts more likely to consider leaving an institution related to job stability compared to tenure-eligible faculty. Given the concentration of racially minoritized faculty members in contingent positions (Finkelstein et al., 2016), we might expect that they experience higher levels of departure. Early career faculty members on the tenure track may also consider leaving their institutions more seriously (Lawrence et al., 2014; Ryan et al., 2012; Zhou and Volkwein, 2004), especially if they are encouraged to seek outside offers to negotiate for higher pay just before they become tenured (O'Meara, 2015; O'Meara et al., 2014, 2016, 2017).

Institutional and departmental factors also shape departure. Faculty members at wealthy, larger, or private institutions are less likely to consider leaving their institution compared to those at less-resourced, smaller, or public institutions (Zhou and Volkwein, 2004). Faculty members at institutions that are striving to move up in the rankings may also depart more frequently due to changes in work expectations (Gardner, 2013b; O'Meara and Bloomgarden, 2011). Faculty members in so-called soft-pure disciplines (e.g., humanities fields) and those with higher research productivity (in terms of publications) are also more likely to consider leaving (Ryan et al., 2012). Negative climate, poor leadership, and misalignment of work expectations and rewards structures are also associated with higher departure rates (Barnhart and Bechhofer, 1995; Daly and Dee, 2006; Gardner, 2013a,b; Griffin et al., 2011a,b; Lawrence et al., 2014; O'Meara et al., 2014, 2016; Rosser, 2004; Zhou and Volkwein, 2004). The extent to which faculty members experience a negative or positive climate or find alignment between their work expectations and rewards structures is highly associated with gender and race, where minoritized faculty members may be at greater risk for departure (Daly and Dee, 2006; Griffin et al., 2011a,b; O'Meara et al., 2016, 2017; Zhou and Volkwein, 2004). Research studies have shown that racially minoritized faculty members who experience racist micro-aggressions and devaluation of their scholarship and academic labor feel pushed out, and as a result they seek more generative academic homes (O'Meara et al., 2016).

A third prevailing reason for faculty departure lies within market forces. Rosenfield and Jones (1997) observed that the academic job market is national and "often advancement requires moving to take a better job, especially early in career" (p. 1). The

American Association of University Professors (1961) argued that academic mobility is a desirable characteristic of American higher education. On the other hand, the higher education academic labor force has changed since the 1990s. State support for higher education has shrunk (Anderson et al., 2020) and the COVID-19 pandemic has exacerbated existing economic precarity for even the wealthiest institutions (Anderson et al., 2020). Now more than ever, universities rely on faculty in contingent roles (American Association of University Professors, 2022; Kezar et al., 2019). Given this market, we might expect to find faculty departure to be declining, or observe that when faculty members do depart it is not for other institutions but out of the academy altogether (Gibbs et al., 2016; White-Lewis et al., 2022).

Departure can also be understood within the context of institutional prestige. Prestige, indicated by program ranking, is a highly prized commodity in higher education (O'Meara, 2007), akin to an expendable currency in decision-making processes (Burris, 2004; Pinheiro et al., 2017). Prestige is highly predictive of faculty placement, with faculty members who completed degrees at highly ranked institutions more likely to be hired into equally prestigious institutions (Burris, 2004; Clauzet et al., 2015; Headworth and Freese, 2016; Freeman and DiRamio, 2016; DiRamio et al., 2009; Pinheiro et al., 2017). In many different evaluative settings (e.g., hiring, admissions), faculty members use prestige factors like terminal degree, awards, and renown of letter writers to similarly infer if a candidate is the correct match (Posselt et al., 2020; White-Lewis, 2020). As Burris (2004) argued, "the most prestigious departments hire almost exclusively from the graduates of similarly prestigious departments to an extent that exceeds anything that can be explained by the meritocratic application of universalistic standards regarding past or potential scholarly productivity" (p. 244). Said another way, relatively fewer faculty members are hired into institutions more prestigious than the ones from which they earned their terminal degree. Plainly stated, prestige matters and operates as a proxy for quality.

2.2 Patterns of Departure

Few studies have interrogated actual patterns of faculty departure and the kinds of institutions that attract departing faculty. For instance, Schuster and Finkelstein (2006) observed that the rates at which faculty move from one institution to another decreased in the 1990s. More recently, some researchers have applied survival analysis techniques to track cohorts of faculty members in certain fields or disciplines and found mixed results. For example, Kaminski and Geisler (2012) analyzed the retention of about 3,000 faculty members at 14 institutions in science and engineering. Their results showed a median time to departure of around 11 years. Sixty-five percent of tenure-track assistant professors remained at their institution through the tenure process. Institutions retained and promoted men and women at similar rates, except in the field of mathematics, where women departed about three years earlier (4.45 years) compared to men (7.33 years). Similarly, Box-Steffensmeier et al. (2015) applied survival analysis to a cohort of about 2,220 tenure-track assistant professors in social science disciplines. They observed that

one-half of the faculty members in their sample left their institutions within nine to 10 years with no gender differences.

These studies provide a few key insights. First, faculty members who depart early (i.e., within the first five of years of arriving at an institution) are an exception rather than the rule. On the other hand, these studies have some limitations. They did not take into account race/ethnicity or examine where candidates ended up after departure. Moreover, little attention was paid to the importance of discipline. Academic disciplines can be characterized as constituting their own worlds (Clark, 1987), with varying logics that shape evaluation of faculty members and their pursuit of racial equity (Posselt, 2015). While psychology has a greater proportion of racially minoritized scholars compared to biology and engineering (National Center for Education Statistics, 2009), the latter two disciplines still have made strides toward increasing diversity (Jimenez et al., 2019; Tran et al., 2020). In all, there is still little research on departure trends after initial hire, especially in STEM fields where the critical mass of racially minoritized candidates has been the most contested in hiring (Gibbs et al., 2016).

Overall, the extant literature reveals a tension. There is ample evidence that racially minoritized faculty members report a number of push factors (Hurtado et al., 2012; Stolzenberg et al., 2019), which may mean that they depart earlier and/or at higher rates. At the same time, the difficulty of obtaining a tenure-track professorial role may suppress these negative departmental factors that affect faculty from these groups. This may be especially true in early career. Thus, the perceived competitiveness in the academic job market of faculty members from historically minoritized racial groups compared to their White counterparts may be overstated. Perceptions of early departure within hiring processes are ultimately an assessment of a candidate's perceived academic qualifications, mobility, status, and identity. The main issue herein is that the interaction of these factors may operate differently for highly qualified racially minoritized candidates who are assumed to depart early if hired, whereas no similar discourse exists for highly competitive White candidates. In our study, we tested the following research questions:

1. Do highly qualified racially minoritized scholars engage in early departure at greater rates than highly qualified White scholars, and does it vary by discipline?
2. Do early departing faculty members leave for institutions with higher ranking and research expenditures compared to their previous institution?

3. METHODS

3.1 Study Design and Variables

To understand faculty career trajectories through and after initial hire, we created a database of current faculty in three disciplines: biology, engineering, and psychology. We chose these three disciplines because they have distinct histories, disciplinary logics, and representation of racially minoritized faculty. At the core of our analyses are interactions between (a) perceived academic qualification and assumed competitiveness, and (b) the actual and/or perceived supply and demand of racially minoritized candidates in

STEM fields. Operationalizing competitiveness could yield an incalculable number of possible measurements (e.g., number of first author publications at time of initial hire, prestige of journals, reputation of postdoctoral laboratory, etc.), most of which cannot be gleaned from publicly available data. As such, we chose to standardize academic qualification by relying on data from a universally recognizable marker of academic promise in STEM fields: receipt of the NSF Graduate Research Fellowship (GRF).

The NSF GRFP first began awarding fellowships to U.S. postsecondary students in STEM fields in the early 1950s. Now, the NSF awards these fellowships across a variety of STEM and non-STEM fields and subfields not included in this current study, such as chemistry, physics, sociology, and mathematics. For this study, we chose 18 subfields within the following three broader disciplines of interest:

1. Biology: biochemistry, biophysics, botany, cell and molecular biology, ecology, and general biology;
2. Engineering: bioengineering, civil engineering, chemical engineering, computer engineering, electrical engineering, and mechanical engineering; and
3. Psychology: cognitive psychology, developmental psychology, experimental psychology, other psychology, personality psychology, and social psychology.

Using a highly coveted, widely recognizable, and competitive national fellowship aligns with previous studies that used competitive awards to control for candidate competitiveness (e.g., Smith et al., 1996). Naturally, there are differences between GRF award winners in terms of other factors, such as publication count and grant acquisition. Without access to historical data of candidates' curricula vitae (CVs) at the point of their initial hire, we could not account for these other factors. Thus, we chose an award that puts candidates in a competitive, equalizing class of their own to be considered in faculty hiring and evaluation.

The cohort of candidates was retrieved from award years 2000 to 2007 for several reasons. First, we were interested in career departure and mobility, meaning that we needed to allow adequate time for scholars to receive the fellowship, complete graduate school, finish their postdoctoral work, and become faculty members with enough time to possibly move. The full sample of GRFP awardees from 2000 to 2007 across the 18 subfields was 2,484 awardees. Additionally, many scholars who received the GRF did not go into academic posts; many went into careers in industry and consulting or left for other fields and career pursuits entirely. We provide the percentage of academic and non-academic pathways in Figs. 1–4. In 18% of cases across the sample, we could not locate awardees with the information provided by the NSF GRFP database; therefore, these were marked as unknown and not included in the analyses.

After awardees were identified, we mined online websites (e.g., institutional faculty profiles, personal websites, laboratory websites, LinkedIn, etc.) to collect their CVs and construct their career histories. We relied on CVs to ascertain candidate departure rates as opposed to other methods for several reasons: CVs are mostly publicly available and they typically display an individual's career trajectory from their doctoral training to present day. We then collected demographic information about each candidate using the

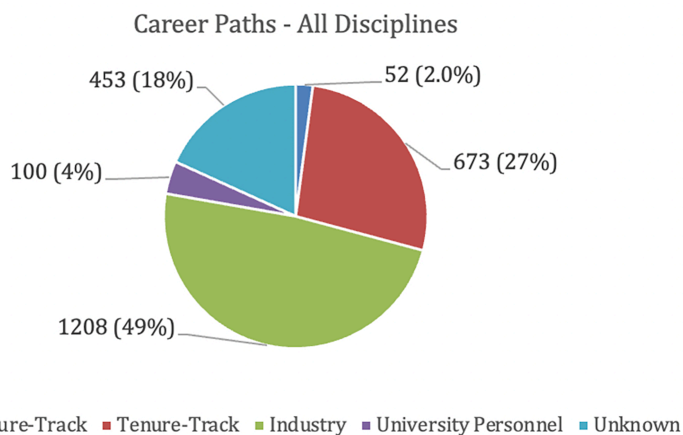


FIG. 1: GRFP awardee career paths in biology, engineering, and psychology ($n = 2,484$)

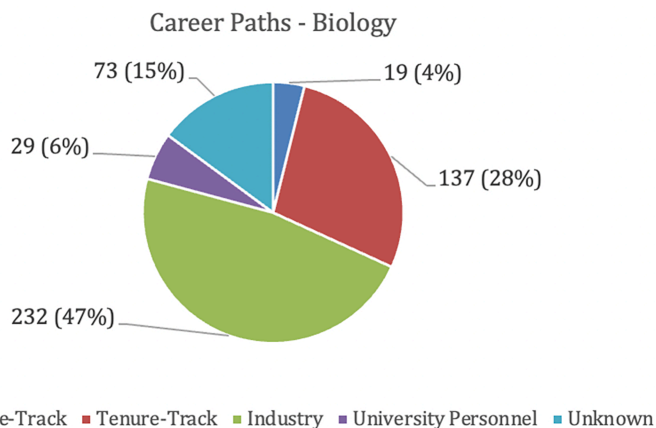


FIG. 2: GRFP awardee career paths in biology ($n = 490$)

same online websites, such as race and terminal degree institution, which became our primary independent variables.

We followed several triangulation methods used by previous studies (e.g., Li and Koedel, 2017) to assign individuals into different racial groups. Black, Latinx, Indigenous, and Middle Eastern and North African (MENA) scholars were combined into a single racially minoritized variable. We intentionally designated MENA scholars as racially minoritized, despite many perceiving them to belong to a White racial categorization (Wang, 2022). However, more recent observations of, and stories from, MENA communities and scholars describe a different experience, much more closely aligned with racially minoritized communities based on the discrimination they face both in STEM and U.S. society as a whole (Mangan, 2022; Wang, 2022). We used the maximum amount of information (e.g., websites, public works, memberships, affiliations, etc.) to

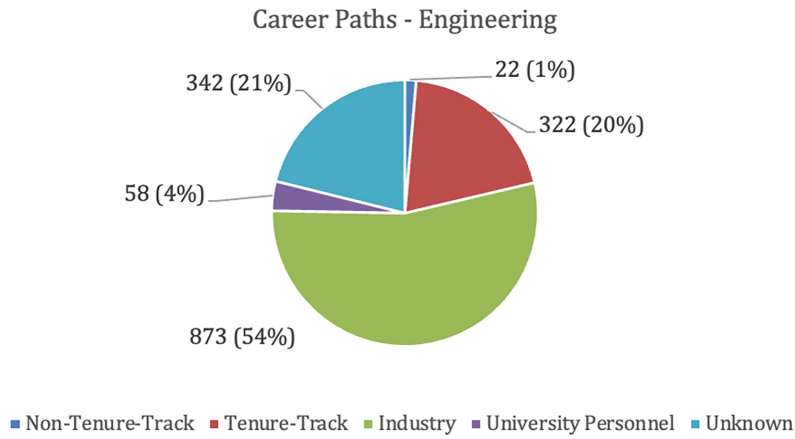


FIG. 3: GRFP awardee career paths in engineering ($n = 1,617$)

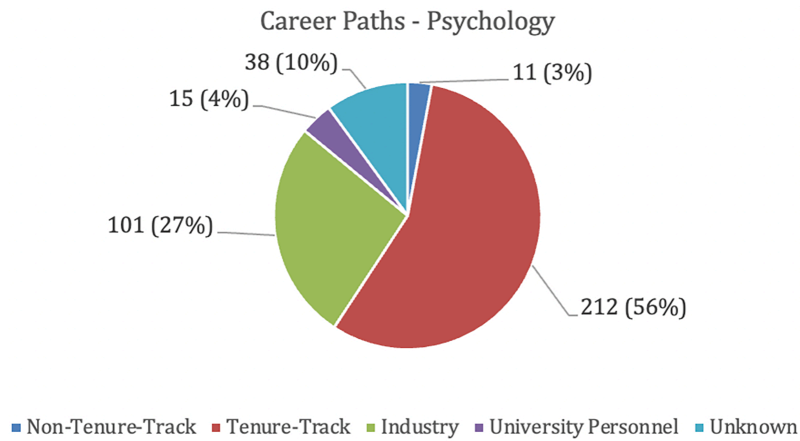


FIG. 4: GRFP awardee career paths in psychology ($n = 377$)

ascertain a scholar’s racial identity. For example, we used self-report data of faculty members’ identity based on their websites and publications (e.g., as a Black psychologist), membership in disciplinary affinity groups such as the Society for the Advancement of Chicanos/Hispanics and Native Americans in Science, and visual cues from website images to triangulate racial designations. We acknowledge that these methods are limited and we may have missed instances of biracialism using these methods.

Based on our data retrieval techniques, we found that approximately 26% of GRFP awardees from 2000 to 2007 took tenure-track academic appointments at some point in their career. This varied by discipline, with the fewest scholars entering tenure-track roles in engineering and biology (20% and 28%, respectively) and the most scholars entering tenure-track positions in psychology (56%). In many cases, our data stretched far back enough for scholars to have one, two, or even sometimes three academic appoint-

ments by 2021, the year we collected and analyzed the data. In some cases, scholars had lengthy graduate studies and/or postdoctoral appointments (especially in biology, where this is common), which meant that they were not eligible for our analyses because they were only in their faculty appointment for less than the early departure window (5 years). This brought our total sample number of GRFP awardees from 2000 to 2007, who eventually became faculty members, to 671. Table 1 provides the racial breakdown of this subsample of awardees in faculty roles. To conceal the identities of our subjects and protect vulnerable populations, we do not provide unit-level data about who left, their previous institution, or their new institution. Because providing unit-level faculty data would make it possible to identify subjects, we kept our data in the aggregate and only reported trends at the disciplinary level.

Early departure was a dichotomous outcome variable of whether or not the candidates left their institution within 5 years of initial hire. In this study, we make no speculative claims as to why candidates left early, which could be due to any combination of different push and/or pull factors. These analyses were simply motivated by determining if highly qualified racially minoritized candidates left their institutions at greater or lesser rates compared to similarly qualified White candidates. Building from the Smith et al. (1996) study that found faculty of color did not receive more—and/or more prestigious—job offers compared to similarly qualified White faculty at point of career entry, we sought to understand the appointment types and mobility of a cohort of successful STEM academics and whether they differed by race.

Once we compiled and cleaned enough data to analyze and answer the first research question, we collected different data to understand where scholars who left their institutions early went, and whether those institutions were more or less prestigious than their previous institution. To determine this, we consulted two different databases to calculate prestige difference scores. First, we used historical ranking data from U.S. News and World Report (USNWR) ranging from 2000 to 2007. USNWR is regarded as one of the most popular, if not the most popular, ranking systems of U.S. colleges and universities. Using the data gathered about where scholars took their first job, whether they left early, and for where, we compared the ranking of the previous institution to the new one. We used institutional data rather than rankings of departments, since the latter was inconsis-

TABLE 1: Racial/ethnic breakdown of GRFP awardees that went into faculty roles ($n = 671$)

Race	Number	Percentage (%)
Asian or Asian American	87	12.9
Black or African American	26	3.8
Hispanic or Latina/o/x	17	2.5
American Indian or Native Alaskan	0	0
Middle Eastern or North African	9	1.3
White or Caucasian	532	79.2
Total	671	100

tently collected during our award years with only engineering data available. To create a more comprehensive sense of prestige and early departure, we used a second database: the NSF FY 2007 Survey of Research and Development Expenditures at Universities and Colleges. This survey documents the federal and nonfederal research and development expenditures, another aspect of institutional prestige, for a significant swath of higher education institutions, and had data available for the award years of 2000–2007. Guided by the literature, we used both of these metrics to measure whether early departing scholars left for more or less prestigious institutions.

3.2 Analyses

We conducted several statistical analyses to answer our research questions. First, we used frequencies and cross tabulations to understand the basic layout of our data: how many early departures were there, did it vary by discipline, and where did departing faculty re-employ? After reaching a basic understanding of our data, we conducted multiple iterations of Fisher's exact test (Andrés and Herranz Tejedor, 1995; Bind and Rubin, 2020), a variant of chi-square tests of independence, to determine if these differences were statistically significant in order to answer the first research question. Fisher's exact test is used when there are cross-tabulation cells that are less than five, which would normally lead to underpowered results. When using the Fisher's exact test, you only report the *P* value (Andrés and Herranz Tejedor, 1995; Bind and Rubin, 2020).

The general family of cross-tabulation and chi-square tests of independence was employed in the optimal statistical analyses to answer the first research question for several reasons. First, this test is ideal for identifying independence or associations between two or more categorical variables. We were interested in the association between belonging to a racially minoritized group and our dichotomous early exit outcome variable. Second, since we were unable to collect more information that could predict early departure (e.g., perceptions of the institutional climate, perception of progress toward successful promotion and tenure, receipt of outside offer, etc.), we chose to not use logistic regression and other techniques that would attempt to predict early departure. As stated previously, we make no claims as to what drove the early departure decisions of these scholars. Instead, we sought to test the commonly perceived association between scholars' identity with the likelihood that they would leave the department prematurely.

To answer the second research question, we used historical data from USNWR and the Survey of Research and Development Expenditures at Universities and Colleges to create prestige differential scores. Our web scraping provided data on where faculty previously worked, where they moved, and in what year. These data enabled the creation of prestige differential scores, which were coded simply as either leaving for a higher or lower ranked place or not applicable in the case of departing early for a non-higher education career or an institution that was unranked in the case of institutions outside of the United States. We created these differential scores for all of the early departing faculty members to address whether or not that subgroup of academics left early for more prestigious institutions as assumed, or otherwise. We then used descriptive statistics to

examine the layout of whether there were more scholars who left for more prestigious institutions compared to those who left for less prestigious institutions.

3.3 Positionality

Our research team approached this work from different gender and racial identities, academic ranks, and professional experiences. Our professional experiences, in particular, animated our research questions. We are a group of professors, equity administrators, practitioners, and graduate students who have both participated in, and observed, a large number of faculty searches that entertain the idea of candidate risk and candidate of supply and demand. These observations formed the basis for our research questions, especially during a national climate where racial equity is a salient topic in faculty hiring and broader university hiring. In terms of analyses, our lived experiences as a Black cis-gender man, a Black biracial cis-gender woman, a multiracial (White and Asian) cis-gender woman, and two White cis-gender women shaped the racial categories we created. To be clear, we recognize that institutional racism impacts all racially minoritized groups, and we did not want to collapse those who identify with the Asian diaspora with White. However, we also recognize that those identifying in this group are not subject to the same perceptions of supply and demand that other racially minoritized groups face. Therefore, we opted for an analytic structure that would capture these differences.

3.4 Limitations

The current study has a few limitations. First, it is important to remember that these are statistical tests of association and independence, which is not causal. Faculty members leave for a combination of push and pull factors, many of which cannot be retroactively gleaned, especially using publicly available data (O'Meara et al., 2016; White-Lewis et al., 2022). While there are certainly many papers on why, this study is chiefly concerned with whether or not a common association exists. Second, academic careers in biology and engineering especially span a significant duration, with graduate studies and postdoctoral opportunities being longer on average compared to other fields. As such, several awardees in 2006 and 2007 who were in tenure-track roles had not been in those roles long enough to be included in this study. Finally, the sample size of racially minoritized candidates for award years 2000–2007 that later went on to tenure-track roles was low (Table 1). As a result, we chose to combine Black, Latinx, MENA, and Indigenous scholars into a racially minoritized variable.

4. FINDINGS

The findings are organized into three categories. First, we present the prevalence of the early departure phenomenon across all disciplines, and within each discipline uniquely.

Next, we turn to answering the first research question of whether or not racially minoritized candidates departed early at significantly greater rates than their similarly competitive White counterparts. Finally, we conclude by examining where our subset of early departing faculty left for, and whether or not those institutions were higher or lower ranked than their previous institutions.

4.1 Descriptive Analysis of Early Departure Phenomenon

Descriptive data from our cohort of GRFP awardees that took faculty positions reveals an interesting contrast from conventional faculty hiring wisdom. Across biology, engineering, and psychology awardees, three out of four ($n = 506$) faculty members did not leave their host institutions within the first five years of initial employment. Figure 5 provides a breakdown of the early departure trends across all three disciplines, which shows that only 15% ($n = 103$) of faculty members left their host institution within the first five years. Additionally, 9% of this sample were relatively early into their faculty careers due to longer graduate studies and postdoctoral positions.

Unpacking these trends by discipline reveals relatively stable trends. In biology, 82% of faculty members were classified as non-early departures. Engineering mirrored these statistics, with 79% of faculty members staying in their roles past the early departure window. In psychology, the proportion of early departure increased, but not drastically: 63% were non-early departures. These results suggest that although there is some credence to the early departure phenomenon, these concerns are outsized compared to the actual rates of early departure across all racial groups.

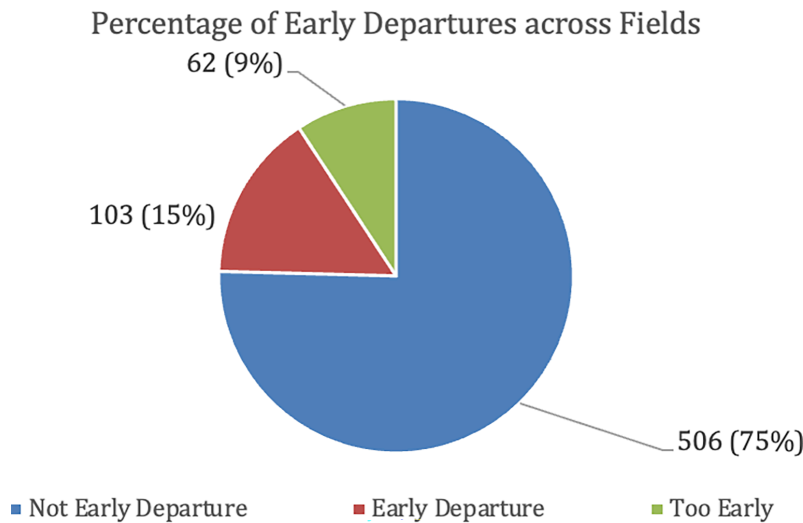


FIG. 5: Percentages of early departures across fields ($N = 671$)

4.2 Comparative Analyses of Early Departures by Race

After examining descriptive statistics of departure trends, we were especially interested in addressing if racially minoritized candidates were associated with greater rates of early departure compared to their similarly qualified White peers. Since our primary independent variable was race, and our primary outcome variable was early departure (or not), we first conducted several cross tabulations to understand basic associations between departure and scholars' racial/ethnic background (Tables 2–5), and then we employed Fisher's exact test to understand if there were statistically significant differences in their departure rates.

Table 2 provides the cross tabulation that formed the basis for the first test across all disciplines (excluding faculty whose departure status could not be calculated due to premature data). In accordance with descriptive results on total early departure rates,

TABLE 2: Cross-tabulation results on race and early departure status in biology, engineering, and psychology

Departure status	Black, Indigenous, or Latinx	Asian or Indian	White
Not early departure	40 (76.9%)	67 (77%)	399 (75.0%)
Early departure	11 (21.1%)	14 (16.1%)	78 (14.6%)
Too early	1 (1.9%)	6 (6.9%)	55 (10.3%)

TABLE 3: Cross-tabulation results on race and early departure status in biology

Departure status	Black, Indigenous, or Latinx	Asian or Indian	White
Not early departure	4 (80.0%)	9 (64.2%)	85 (72.0%)
Early departure	1 (20.0%)	3 (21.4%)	16 (13.5%)
Too early	0 (0%)	2 (14.2%)	17 (14.4%)

TABLE 4: Cross-tabulation results on race and early departure status in engineering

Departure status	Black, Indigenous, or Latinx	Asian or Indian	White
Not early departure	20 (86.9%)	38 (84.4%)	197 (77.5%)
Early departure	3 (13.0%)	4 (8.8%)	31 (12.2%)
Too early	0 (0.0%)	3 (6.6%)	26 (10.2%)

TABLE 5: Cross-tabulation results on race and early departure status in psychology

Departure status	Black, Indigenous, or Latinx	Asian or Indian	White
Not early departure	16 (66.6%)	20 (71.4%)	117 (73.1%)
Early departure	7 (29.1%)	7 (25%)	31 (19.3%)
Too early	1 (4.1%)	1 (3.5%)	12 (7.5%)

there were relatively few early departures across the three racial and ethnic categories. Fisher's exact test was performed to examine the relationship between racially minoritized status and early departure. The results indicated no significant association between racial groups and early departure when aggregating biology, engineering, and psychology disciplines ($P = 0.206$). Put otherwise, these two variables were highly independent and not associated with one another.

We were also interested in ascertaining whether there were significant relationships within disciplines, given that these fields have different norms and demographic levels of racial diversity. Similar to the previous results, Fisher's exact test yielded a non-statistically significant statistic ($P = 0.815$) in the biology sample (Table 3). This suggests a very small and non-significant association between race and early departure. Tables 4 and 5 show the cross-tabulation results for the engineering and psychology disciplines, respectively. The engineering descriptive results were consistent with previous results, with relatively few scholars across all racial groups departing early. Statistical analyses revealed no significant association between race and early departure in engineering ($P = 0.534$). These results were similar to the psychology findings, with a similarly small number of scholars departing their institutions within 5 years of initial hire compared to those that stayed beyond that duration. The Fisher's exact test revealed the strongest evidence for the null hypothesis of the three disciplines, i.e., that there is no relationship between race and early departure ($P = 0.773$).

4.3 Descriptive Analysis of Institutional Prestige of Early Departing Faculty

We created two different indicators of institutional prestige by using data from the US-NWR rankings (2000–2007), and the FY 2007 Survey of Research and Development Expenditures at Universities and Colleges. Using both data sets as proxies for institutional prestige, we compared the prestige of early departing faculty members' previous institution with their new institution, excluding those who left early for industry careers and those who left for institutions outside of the United States, and thus outside of these rankings, bringing this sample of early departing faculty to 67 faculty (down from the original 103). Descriptive analyses of the USNWR data revealed that 58% ($n = 39$) of early departing faculty members left for institutions ranked higher than their previous one, and 42% ($n = 28$) left for institutions ranked lower than their previous ones. These data are largely consistent with the Survey of Research and Development Expenditures at Universities and Colleges: 61% of early departing faculty left for institutions with higher research investments compared to 39% of early departing faculty leaving for institutions with lower research investments.

5. DISCUSSION

Prevailing assumptions regarding the external market demand for racially minoritized faculty in STEM fields have remained durable for decades, and continue to shape fac-

ulty hiring decisions, especially when committees are risk averse (Rivera, 2017; White-Lewis, 2020). These assumptions will continue to impact faculty hiring if they go untested. Thus, this study aimed to add to the often-cited Smith et al. (1996) study that challenged the assumption of multiple offers and advantage for highly qualified faculty of color in terms of their first academic appointment. Our study adds to this literature by taking a similar approach and expanding it by using a larger database in three STEM fields with varying levels of racial diversity and looking at participants' career mobility over a longer stretch of time. Next, we highlight key findings from this study, and situate them within the larger literature on faculty careers, mobility, and departure.

First, as many have already observed, there is a significant proportion of graduate students and postdoctoral appointees that do not take faculty positions—nevertheless tenure-track appointments—at any point in their career. Descriptive statistics showed that only a fraction (26.1%) of our sample went onto tenure-track faculty careers in all disciplines. Moreover, nearly double the amount (53.2%) of GRFP awardees went into industry careers. The differential between academic and industry careers is even more pronounced in engineering and biology, with nearly three scholars going into industry careers for every one scholar that went into a faculty position. This result underscores the importance of faculty, departments, and institutional leaders preparing their students for careers across multiple settings and sectors. Our findings also underscore the importance of reaching racially minoritized doctoral candidates in tracks heading toward industry and creating incentives and pathways into academic careers instead.

More germane to the current study, the phenomenon of early departure seems to be greatly overstated across all disciplines and racial groups. In our sample of GRFP awardees that accepted tenure-track faculty roles, only 15% left their institutions within five years of initial hire, compared to the 75% of faculty that remained at their first institution beyond that window. This result is consistent with prior research studies on faculty career mobility and departure, which collectively show that early departure is very infrequent in tenure-track faculty positions (Box-Steffensmeier et al., 2015; Kaminski and Geisler, 2012). However, there were some interesting trends across discipline worth noting. For example, nearly one-half of all early departing faculty members were in psychology, and the second highest percentage was in engineering. On average, the developmental, social, and cognitive psychology disciplines require fewer physical resources in the faculty hiring process, such as laboratory space and research equipment. Comparatively, biology requires significant procurement of resources, and coupled with longer periods of postdoctoral training this may mean that these faculty members are less mobile, further diminishing concerns about early departure.

The narrative that highly qualified candidates will move on soon after being hired is exacerbated by other factors that faculty members believe increase their value on the market. Given the number of racially minoritized faculty in STEM fields, many current faculty members believe that they have increased power in the faculty job market. However, we found no evidence that highly competitive racially minoritized faculty members were any more associated with departing their institution within five years of initial hire compared to their similarly qualified peers. These results were also consistent

across disciplines, with no statistically significant differences between racially minoritized and White faculty members in leaving early. This study adds to previous research on supply and demand perceptions in faculty hiring (e.g., Gibbs et al., 2016; Smith et al., 1996).

However, we did find some supporting evidence of another common assumption in the faculty hiring discourse, that being perceptions of prestige. There are several different indicators of institutional prestige; in this study, we used two—institutional rankings and research and development dollars—and found that a greater share of early departing scholars left for more prestigious institutions compared to those who left for less prestigious institutions. On the one hand, this makes sense since our sample was a group of early career stars in their fields, who unsurprisingly were attracted to and by prestigious institutions. On the other hand, a sizable number (42%) left for institutions with less research expenditures and lower rank, an observation that should challenge search committees assuming they have no chance of attracting such faculty. We also recognize that our findings should be considered with caution since we had a relatively low number of early departing scholars for which institutional data were available across both data sets, and these data only showed a small descriptive difference between the number of faculty members who left for more prestigious institutions and those who did not. Moreover, there are a range of other factors that motivate scholars to leave, such as geography (O'Meara et al., 2014), outside offers (O'Meara et al., 2017), and discrimination (Zambrana, 2018), all of which could outweigh perceived prestige. In the next subsection, we highlight future areas of practice for institutions, and future areas of research to further strengthen arguments against early departure narratives.

5.1 Recommendations for Future Practice and Research

The data from our study showed that there were many more faculty members that stayed across all disciplinary and racial groups compared to those that left. Thus, the most important practical implication is for departments and institutions to implement strategies to emphasize the greater likelihood that faculty stay, especially when appropriately supported. One valuable area is search training, which has profoundly increased at U.S. colleges and universities in recent years (Stewart and Valian, 2018; O'Meara et al., 2020). Search committee training is an ideal area in which unfounded notions about candidate mobility can be challenged, and may similarly be ideal in dispelling other popular, yet overstated, hiring norms, such as fit (White-Lewis, 2020), merit (Liera and Ching, 2019), and supply (Gibbs et al., 2016; Smith et al., 1996). This would also complement another recent trend of equipping faculty search committees with availability statistics (Stewart and Valian, 2018; White-Lewis, 2020). This refers to databases that use national completion data to document demographic representation within academic fields, which can also help resolve untested supply assumptions. Although national and discipline-specific studies such as this one should be shared with search committees, local institutional data may be more influential in contextualizing departure within local contexts. Given that department faculty members engage in sense making about

why colleagues left, making assumptions about greener pastures and/or colleagues who thought they would not be tenured (O'Meara et al., 2014), such data would help faculty colleagues avoid making assumptions in a vacuum.

There are a number of different avenues for future research in this area. First, we encourage future research to replicate this study with other indicators of competitiveness. Previous studies have most often used highly recognized competitive awards; however, there are many other factors that impact decision making, which may similarly measure competitiveness. These may include averaging publication count and/or quality, or external grant funding. Future studies should also consider using a larger sample of candidates across a wider array of fields to understand the prevalence and generalizability of our findings. Even if future research studies replicate our findings using NSF GRFP data, they should, at minimum, consider stretching the data collection parameters to include a larger selection of years and/or disciplines. This would also have the added benefit of increasing the number of racially minoritized scholars, and reducing the proportion of faculty who were excluded from analyses due to tenure-track infancy.

Finally, future research should conduct qualitative follow-up interviews with faculty members who left their institution within 5 years of initial hire. There are several studies on faculty departure that interview faculty members after they leave; however, few studies have investigated the distinctive phenomenon of leaving early. It may be the case that the reasons for early departure parallel the reasons for departure, in general, especially for racially minoritized candidates. However, qualitative interviews may also reveal specific nuances for leaving early that magnify previously documented pull and push factors impacting faculty departure decisions.

6. CONCLUSIONS

From an institutional perspective, understanding faculty departure is a critical issue. Each year, institutions invest sizable amounts of time and resources into faculty selection and hiring. Thus, it is conceivable that faculty and institutional leaders would, at minimum, be worried that recently hired faculty members will leave the institution after only a handful of years; thus, jeopardizing the time and financial cost it took to secure their hire. However, as search committees make sense of the risk of faculty departure, they may pull down social and cognitive biases that cause them to associate early departure with racially minoritized candidates (O'Meara et al., 2023). Associating racially minoritized candidates with greater risk can disenfranchise them, hurt their chances of receiving an offer, and create a self-fulfilling prophecy that is not in the best interest of higher education or its stated equity goals.

Fewer early career faculty members have one foot out the door than may be commonly perceived. Our results indicate no significant procession of award-winning biology, engineering, or psychology faculty members—whom we might assume would be the most likely to have the ability to leave—leaving in droves. Furthermore, we found no evidence that award-winning racially minoritized faculty members leave at

greater rates than their White peers. Consistent with efforts to provide search committees availability statistics to contextualize the demographics of applicant pools, we believe data are needed to refute and/or contextualize faculty departure. Such studies and institutional data should not only report whether faculty members left, but why they left, thus making institutions accountable for the aspects of retention to which they have control.

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