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DOCTORAL ORIGINS AND GENDER AND RACIAL/ETHNIC BACKGROUNDS OF COLLEGE FACULTY

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ABSTRACT

The purpose of this paper is to demonstrate potential differences in doctoral origins and racial and gender composition across different types of higher education institutions. This paper studies the doctoral origins and demographics of faculty at the top 25 research universities and top 25 liberal arts colleges across six different disciplines: Chemistry, Economics, English, History, Mathematics, and Sociology. Overall, a large proportion of faculty receive their doctorates from a select group of PhD-granting institutions within their field, though these concentration ratios vary significantly across discipline as well between research universities and liberal arts colleges. Top liberal arts colleges generally have higher proportions of female and non-binary faculty than top research universities. Meanwhile, although the proportions of non-white faculty are largely the same across institution type, there are notable differences within specific racial/ethnic groups. The results presented here may be helpful to individuals who are considering where to apply for doctoral programs in various fields.

1.0 INTRODUCTION

There is ample evidence that demonstrates the extremely hierarchical nature of academia, where the vast majority of faculty members come from a very narrow set of graduate institutions. There are many potential negative consequences of such a hierarchical system. Students who do not have the economic means and social networks to apply to and get accepted to elite undergraduate institutions are often overlooked for admission to top graduate programs, thereby greatly diminishing their chances of landing a desirable academic position. “Late bloomers”, who may have taken more time to develop into talented scholars, will be passed over for tenure-track academic posts because they lack the academic pedigree of others. This perpetuation of social inequities also has ramifications on faculty diversity along a number of dimensions such as gender and race/ethnicity.

Although stratification within academia is widely known, there is less systematic study of the differences in this stratification across various fields of study and types of institutions. This article takes a snapshot of tenured and tenure-track faculty at a selection of top-rated research universities and liberal arts colleges across six different disciplines (Chemistry, Economics, English, History, Mathematics, and Sociology) to assess how demographic characteristics and doctoral origins of faculty members vary across disciplines as well as between research-focused and teaching-focused institutions. There are a number of general patterns that emerge from this data. Unsurprisingly, a large percentage of faculty at elite institutions receive their doctorates from top ranked graduate programs, with the concentrations of faculty with doctoral degrees from the top 10 or 20 graduate programs being significantly higher at elite research

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universities than at elite liberal arts colleges, though there is quite a bit of variation across disciplines. Female and non-binary faculty are generally more well-represented at top teaching-focused institutions relative to top research universities. And although the percentages of non-white faculty are generally quite similar across institution types, there are some differences within specific racial groups.

In taking a closer look at the doctoral origins of faculty members at elite colleges and universities, certain patterns emerge. While many of the top ranked programs place large numbers of their graduates in both highly ranked research universities and liberal arts colleges, some programs have a disproportionately high fraction of their alumni teaching at liberal arts colleges, relative to more research-intensive schools. For prospective graduate students who aspire to work at more teaching-focused institutions, this information may be useful when deciding on what programs to apply to and ultimately, to attend.

2.0 RELATED RESEARCH

Prior work has documented the concentration of doctoral origins of faculty in several disciplines. Jones and Sloan (2024) find that 60% of economics faculty receive their doctorates from a top-15 rated graduate program and roughly one-third graduated from a top-six program. Segall and Feldman (2018) show that attending a top 10 law school is paramount to landing a job at a similarly ranked school. Fowler et al. (2007) discuss the importance of networks in PhD placement in the field of political science. Indeed, the prestige of graduate programs is often driven by the placement records of their graduates, and this often serves as the basis for a ranking system (Schmidt and Chingos 2007). The importance of networks and the hierarchical nature of top academic job placements are also discussed in the contexts of anthropology (Kawa et al. 2019); finance (Bair 2008); sociology (Burris 2004 and Headworth and Freese 2016); and computer science, business, and history (Clauset et al. 2015).

A number of papers have also documented the extent of faculty diversity in various disciplines, particularly in professional programs such as medicine (Shah et al. 2020; Zhang et al. 2021), clinical psychology (White et al. 2021), law (Hans and Archer 2019), and environmental studies (Taylor 2010). And various authors have explored strategies to increase representativeness of college faculty, including Gruber et al. (2021), Bradley et al. (2022), and Cosgriff-Hernandez et al. (2023).

3.0 DATA ASSEMBLY

In this paper, I focus on studying the differences in doctoral origins and demographic backgrounds of faculty across two types of institutions: elite research universities and liberal arts colleges in the United States. The data set was assembled through a search of institutional web sites of the top twenty-five research universities and top twenty-five liberal arts colleges during the summer of 2024, where the rankings of institutions are determined by the U.S. News and World Report's "Best Colleges" lists for 2024.

Departmental websites regularly provide information on faculty members about their date of hire and where they received their undergraduate and graduate degrees. When explicit information about gender and race were not directly indicated on resumes or websites, photographs of faculty members were used to help ascertain this information. I included in my

database all faculty members holding permanent positions at the rank of assistant, associate, or full professor, and excluded individuals holding temporary and adjunct positions, emeriti faculty, and individuals whose information was unavailable. The resulting data set includes information for slightly over six thousand faculty members in six departments at fifty leading colleges and universities.

For ratings of doctoral schools, I used the 2024 U.S. News and World Report rankings of PhD programs for each of the six different disciplines in this study. Because doctoral program rankings are only constructed once every few years, these rankings were assembled between 2021-2023, depending on the discipline.1

4.0 DOCTORAL ORIGINS

Table 1 shows the concentration of doctoral origins for faculty in six disciplines at the top twenty-five research universities. Economics has the highest percentage (64.2%) of faculty holding doctorates from a top 10 graduate program, though Sociology (62.4%) and History (61.9%) are not far behind. Chemistry and Mathematics are the least concentrated of the disciplines, where about half of faculty doctorates came from a top- ten PhD program. The rankings are roughly the same when looking at the concentration of top-twenty graduate programs, though Sociology (81.5%) now overtakes Economics (78.0%) as the discipline with the highest percentage. Compared to a similar study done twenty years ago (Wu 2004), we see that Sociology has become more concentrated in terms of doctoral origins of faculty at top research universities, with an increase in percentages of top 10 and top 20 PhD degree holders of 6.8 and 7.5 percentage points, respectively. There is a modest increase in the doctoral concentration for History 1 In situations where ties resulted in having more than 10 (20) programs ranked in the top 10 (20), I broke ties using an alphabetical rule. (increases of 3.0 and 2.2 percentage points), while Economics has become somewhat less concentrated (decreases of 3.1 and 3.9 percentage points). Meanwhile, these percentages have not appreciably changed over time for Mathematics and Chemistry. On average, the concentration of graduate degrees has been fairly stable over time at elite research universities.

Table 2 shows the analogous percentages for liberal arts colleges. Overall, the percentages of faculty with degrees at top-ranked graduate institutions are much lower across the board for all fields, though the ordering of the degree concentration differs from that at research institutions. Among liberal arts colleges, English and History have the highest percentage of tenured and tenure-track faculty with PhDs from top-ranked institutions, with 47.3 (64.9) and 44.9 (60.6) percent of faculty receiving PhD degrees from top ten (twenty) graduate programs, respectively. Mathematics is, by far, the least concentrated field, with only 20.9 percent of faculty having their doctorate from a top ten program and 33.6 originating from a top twenty school. In comparing these numbers with Wu (2004), we see that at top-25 liberal arts colleges, nearly every single discipline has become less concentrated relative to 20 years ago. One exception is Sociology, which saw an increase in the percentage of faculty with a PhD from a top-ten program, and only a very slight decrease in the percentage with a top-twenty PhD.

Table 3 calculates by discipline the differences between elite research universities and liberal arts colleges in the concentration of doctorates from top ranked graduate programs. For every field of study, top research universities are significantly more concentrated than top liberal arts colleges, though these differentials vary by department. The starkest contrasts across institution

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type are for Economics, Mathematics, and Sociology where the percentage point differences in faculty holding doctorates from top ten (twenty) programs are 32.1 (24.7), 30.8 (29.3), and 26.7 (35.1), respectively. The corresponding differentials for History and Chemistry are a bit more modest, all somewhere between 14 and 18 percentage points, while the differentials for English are the smallest of the disciplines (9 percentage point differences for shares of both top 10 and top 20 departments). Relative to 2004, the gap in concentration of doctorates between research universities and liberal arts colleges has increased for every single discipline, ranging anywhere from 2-21 percentage points. As shown above, this is largely driven by the fact that liberal arts colleges have become much more open to hiring faculty who obtain their doctoral degrees outside of the very top tier, while concentration of doctorates at research universities has remained relatively stable for most disciplines.

Additional information for specific graduate programs is contained in Appendix Tables 1-7. Table A1 lists the number of faculty members at the top ranked research- focused and teaching-focused who received a doctorate from every one of the top twenty PhD graduate programs for each of the six fields of study. Tables A2-A7 list all graduate programs that have at least three of their graduates as faculty members at a top 25 research university or at least three graduates at a top 25 liberal arts college. As expected, nearly all top ranked PhD programs have a great number of individuals on the faculty of top research universities, though the patterns are less clear when looking at faculty rosters of top liberal arts colleges. There are a number of PhD programs that have a relatively high proportion of alumni working at elite liberal arts colleges, with several even having more graduates teaching at liberal arts colleges than at research universities, in spite of the much smaller department sizes at teaching-focused institutions. For example, in Chemistry, the University of Wisconsin has 19 of their graduates teaching at top liberal arts institutions but only 16 graduates teaching at top research universities. In Economics, Michigan, Cornell, and Wisconsin all have greater absolute numbers of alumni teaching at top liberal arts schools than at the top research schools. Other graduate programs that have a disproportionate share of alumni at liberal arts colleges include Michigan, Northwestern, and City University of New York (in English) and Brown (in Mathematics). There are many possibilities that specific institutions may send a high proportion of their graduates to institutions that focus on undergraduate teaching. Perhaps some programs specialize in more applied fields that would be more in demand at schools that are dedicated to undergraduate education. There may also be a history and culture in certain programs that are more conducive to encouraging their graduate students to pursue careers at teaching-focused schools. Regardless of the reasons, prospective graduate students who aim for a faculty position at a liberal arts college may wish to pay special attention to these programs.

5.0 FACULTY DIVERSITY

Next, I study diversity along racial/ethnic and gender lines for faculty at top colleges and universities. As mentioned earlier, some faculty members explicitly include information on gender and/or racial/ethnic identities on their websites or resumes, but for those that do not, I use photographs and names to help ascertain this information, though I acknowledge the limitations and potential errors that may result from this categorization. And although I do not categorize faculty by national origin or citizenship status, this information is often helpful in determining racial/ethnic background for those who are citizens of certain foreign countries.

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Table 4 shows the gender and racial/ethnic breakdowns of faculty at top 25 research universities for each of the six disciplines in our data. There is a wide range in terms of gender diversity, with English, Sociology, and History having female/non-binary percentages of 52.6, 50.9, and 42.5, respectively, but Chemistry, Economics, and Mathematics having much lower percentages of 25.2, 20.5, and 18.7. With respect to the racial/ethnic breakdown, the overall range in shares of non-white faculty is fairly tight, with a low of 19.6 percent in History to a high of 28.6 percent in Sociology. However, there are some stark differences in the composition of specific groups of non-white faculty members. For instance, Chemistry, Economics, and Mathematics have relatively high percentages of Asian faculty (19.7, 14.9, and 20.1 percent, respectively) and very low percentages of Black faculty (2.0, 1.5, and 1.4 percent, respectively), while English, History, and Sociology are more balanced between these two groups (percentages of Asian faculty of 9.9, 8.5, and 11.8 percent and percentages of Black faculty of 11.8, 8.0, and 11.0 percent). Percentages of Hispanic faculty are generally modest across all disciplines, ranging from 2.2 percent in Mathematics to 5.8 percent in Sociology.

Table 5 shows gender and racial/ethnic breakdowns of faculty at top 25 liberal arts colleges. While there is still a wide range in the level of gender diversity across fields, the percentages of female and non-binary faculty are higher at liberal arts schools than at research schools for every single discipline in our study. In terms of racial and ethnic diversity, the percentages of non-white faculty members are generally comparable across institution types, though within specific categories there are some differences. Table 6 displays the differentials in percentages of female and non-binary faculty across the two types of institutions, as well the analogous differences for racial/ethnic categories. While the percentages of non-male faculty are higher at elite liberal arts colleges than at elite research across each of the fields, these differences are especially big in Chemistry and Math (differences of 23.1 and 19.6 percentage points), somewhat more moderate in Economics and Sociology (13.0 and 8.2 percentage points), and almost negligible in History and English (3.1 and 1.7 percentage points). Differences in total non-white percentages of faculty are fairly modest across institution type, with all disciplines being within 5 percentage points of each other one way or the other, but there are some noticeable disparities in representation of specific ethnic groups when comparing research-focused and teaching-focused schools. For example, at research universities the percentages of Asian faculty in Chemistry (19.7) and Math (20.1) are significantly higher than at liberal arts colleges (7.2 and 13.0 percent), while the reverses is true for Black faculty, where the percentages are 2.0 (Chemistry) and 1.5 (Math) at research universities and 7.9 (Chemistry) and 5.6 (Math) at liberal arts colleges.

What accounts for these differences in racial/ethnic and gender representation across different institution types? While I do not have specific evidence that allows for definitive conclusions, there are a number of possibilities. It is possible that there are differences across demographic groups in overall preferences towards academic careers that are relatively more focused on either research or teaching. Relatedly, data from the Survey of Earned Doctorates shows that certain subfields within a discipline have more representation of women and nonwhite individuals than other subfields. For example, females comprise 35% of doctorates in statistics but only 20% of doctorates in mathematics; many research universities will have a statistics department that is independent and entirely separate from a mathematics department, but many liberal arts colleges will house their statisticians in mathematics departments. As another example, within the discipline of economics, females comprise 48% of doctorates that

specialize in applied economics (where liberal arts colleges are likely to have a stronger emphasis in this area) but only 28% of doctorates that specialize in econometrics or quantitative economics (where research universities have relatively more of these types of scholars). Another possibility is that smaller institutions are making more concerted DEI efforts in their hiring practices. This could explain the higher representation of female faculty, though would not explain the somewhat mixed results in terms of representation of nonwhite faculty across certain disciplines.

6.0 DISCUSSION AND RECOMMENDATIONS

This study shows that graduates from the top-rated PhD programs continue to hold an overwhelming share of faculty positions at leading colleges and universities. While the concentration of faculty from a select few schools is much greater at top research universities compared to top liberal arts colleges, there is still a fair amount of variation across fields. Elite teaching focused institutions have significantly better gender representation than elite research universities, though again these differences vary by discipline. And while overall percentages of non-white faculty are similar across institution type, some noticeable differences exist in some fields when focusing on specific racial/ethnic groups.

The reasons for these disparities are unclear, but merit further investigation and would be important to uncover. Differences in individual preferences that vary by demographic groups may be difficult to change, particularly in the near term. But if variation in faculty representation is at least partly due to the extent to which faculty in certain types of institutions and in particular fields value and incorporate inclusive hiring practices, then some introspection is warranted. Administrators and faculty on hiring committees would be well served to keep track of demographic trends from the Survey of Earned Doctorates to see how the breakdowns of their short and long lists compare with the profiles of overall doctorates within their field. And those responsible for hiring at elite research universities should question why their faculty rosters continue to show an extremely high concentration of doctorates coming from a narrow set of programs, even though liberal arts colleges are becoming more open to hiring from a broader set of graduate institutions. A comprehensive study that looks at hiring practices for different disciplines and types of institutions would be a worthwhile exercise.

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