

# Faculty Diversity and Minoritized Student Outcomes: An Analysis of Institutional Factors

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## **Abstract**

This paper describes an attempt to utilize the US Department of Education's IPEDS census data on faculty employment in a comprehensive quantitative analysis of the association between "faculty diversity" and degree outcomes for minoritized students. The paper first reviews (and critiques) recent calls to diversify the faculty and then reviews some of the published research on minoritized student success. The literature review suggests that existing studies, both qualitative and quantitative, are limited and do not clearly specify the mechanism by which faculty diversity is expected to improve outcomes for minoritized students.

The paper first sets the context for the analysis with updated comprehensive tabulations of the trends in bachelor's degree awards and faculty employment, broken out by racial category and type of institution. Given the overrepresentation of African American and Latinx faculty members at minority-serving institutions, the analysis then proceeds to regression models of degrees awarded to students in those two racial categories by predominantly white institutions. The regression models for 2016-17 degree awards indicate that greater representation of African American faculty at PWIs is associated with larger proportions of degrees to African Americans, but the same is not true for Latinx faculty representation. Models of the change in the proportion of degrees awarded over 20 years do not show a statistically significant effect of changes in minoritized faculty representation, likely due to the small amount of change that has actually occurred. The paper describes a number of challenges for the quantitative analysis of institutional "diversity," not least of which is the problematic racial categories available in the data. The paper concludes with a discussion of the limits of the analysis and what it tells us about efforts to diversify the faculty.

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## Faculty Diversity and Minoritized Student Outcomes: An Analysis of Institutional Factors

### Introduction

Observers of higher education have noted with increasing frequency that the population of college students has diversified in myriad ways in recent decades. Students from previously underrepresented racial and ethnic groups, first-generation college students, students overcoming mental or physical challenges, those from low-income or undocumented immigrant families, and individuals with non-conforming gender identities all make up a larger share of the college population than before.

In terms of racial categories, the National Center for Education Statistics (2019) indicates that the number of bachelor's degrees awarded to Hispanic students increased 202 percent between 2000-01 and 2015-16, with the number going to black and Asian/Pacific Islander students growing by 75 percent each, and white students 29 percent during the period. As a result, the proportion of total bachelor's degrees awarded to whites declined from 77 percent to 65 percent in just 15 years. There is little debate about the importance of further diversifying the college student body and degree recipients, although many calls for that diversity are focused on science, technology, engineering, and mathematics (STEM) fields, often with reference to "global economic competitiveness."

At the same time, many observers have noted that the college and university faculty does not reflect the same diversity, and there have been numerous calls to change that. For example, a 2011 National Academies report *Expanding Underrepresented Minority Participation* states (without reference to specific evidence): "As the number of underrepresented minorities in faculty positions increases, the more role models underrepresented minority students have

who 'look like them' and the higher the rate at which underrepresented minority students enroll and graduate" (p. 47). The American Academy of Arts and Sciences report *The Future of Undergraduate Education* (2017) cites three disparate references to support its argument that "greater faculty diversity correlates with positive benefits for students of color, including higher persistence rates, better performance on tests, and increased classroom peer interaction" (p. 18). The report includes a recommendation to "ensure that faculty from a diversity of backgrounds are equitably represented across all instructional categories" (p. 24). A recent report from the Southern Regional Education Board, "Now Is the Time to Focus on Faculty Diversity," asserts that "faculty diversity creates positive impacts for students" and references several examples, although without direct citations (Bartlebaugh and Abraham 2021: 3).

Several commentators have been critical of these calls for diversity, arguing they ring hollow when compared against institutions' actions. Sociologist Adia Harvey Wingfield makes this point with particular clarity:

On the one hand, many colleges and universities publicly declare a commitment to increasing diversity and making college campuses more welcoming spaces for students and faculty of color. Yet, on the other, a commitment to hiring is often lacking, such that minority faculty remain underrepresented in the most secure, highest-paying and most influential tenured and upper-administrative positions—those that have the potential for changing institutional norms and cultures. They are instead more likely to be found among the least secure,

lowest-paying ranks of contingent faculty workers. Institutions look to faculty of color to be key partners in improving campus climates. But as they invest less and less in the faculty members who might have the resources and security to do that, the results they say they want are, unsurprisingly, often slow to materialize. (Wingfield 2016)

Despite numerous studies on degree completion by minoritized students, comprehensive quantitative evidence linking a more diverse faculty and those student outcomes has been lacking.<sup>1</sup> In this paper, I draw on the most comprehensive data available, the US Department of Education's Integrated Postsecondary Education Data System (IPEDS), to contribute additional evidence to that effort.

I begin with a very brief review of the research literature on college outcomes for minoritized students, including both qualitative and quantitative studies. Although the review is far from comprehensive, it serves to illustrate the need for a large-scale examination of the link between "faculty diversity" and minoritized student outcomes. I then proceed to examine the available institution-level evidence from IPEDS, at the same time providing some caveats for the limits of that analysis. I first look in more detail at the trend in bachelor's degrees awarded by racial category over 20 years. I focus on bachelor's degrees because both the body of previous research and the available institution-level measures are best suited for that analysis.<sup>2</sup> Next, I provide updated comprehensive tabulations for trends in faculty diversity, with special attention to both faculty

employment status and institutional location.

With that background, the core of the analysis is a series of multivariate regression models to examine the combined effect of the trends in diversifying bachelor's degree awards and diversifying the faculty, with consideration of a full set of other institutional characteristics. I provide figures highlighting the results of the regression analysis in the text, with full details available in the appendix. Given that the process of assembling data for the regression analysis revealed a number of challenges and limitations for that analysis, I follow with a section discussing those challenges in some detail. I then conclude with thoughts on how best to understand the results of this analysis and situate them within the fast-changing higher education landscape of 2021.

### **Perspectives from prior research**

Evidence relating the presence of minoritized faculty members with student outcomes has been largely qualitative and does not necessarily provide a clear picture of the mechanisms by which minoritized faculty members encourage minoritized students. I provide a brief review in this section of both qualitative and quantitative studies.

#### *Qualitative analyses*

Brooms and Davis (2017) use interviews with 59 black men attending three different historically white institutions to identify two salient factors supporting college completion for these men: "peer bonding" with other black men students and mentoring from black faculty members. They review a number of other

<sup>1</sup> Following Griffin (2020, p. 278), I use "minoritized" rather than "minority" to indicate that the status is produced by power dynamics rather than numeric representation alone.

<sup>2</sup> Many students enrolled in community colleges do not necessarily seek an associate's degree, and the predominance of part-time faculty there make modeling the faculty effect on student outcomes more difficult (Curtis et al. 2016). At the graduate level, although it is common to refer to "graduate and undergraduate faculty," employment data do not make that distinction.

studies in support of their argument that “the strong bonds developed in student-faculty relationships can be significant in students’ college satisfaction, retention, and persistence” (p. 321). On the basis of their interviews, they conclude “African American professors must embrace their roles as mentors and recognize that those encounters with African American students are meaningful and significantly enriches the campus climate and sense of belonging for these students” (p. 320). With its extensive literature review, this article offers a persuasive argument for the faculty mentoring role in fostering success for African American men students. Even so, it is limited to that category and based on student perspectives without providing a complementary faculty voice.

Caplan and Ford (2014) interviewed more than 50 students of color at each of four predominantly white universities “to explore which experiences of students of color and women students ... make them feel welcomed, accepted, supported, and encouraged, and which make them feel the opposite” (p. 30). Because their study is focused on the experiences and perceptions of students, characteristics of and interactions with faculty members are presented only anecdotally. This leads to ambiguous conclusions such as “many participants report some positive experiences, such as receiving support from student organizations and particular faculty or administrators, that make them feel welcomed, supported, encouraged, and accepted, but nearly every student also reports experiences that make them feel the opposite” (p. 54). Nonetheless, the authors appear to call for (from a long list) “greater diversity among the faculty, both for race and sex, in order to provide more same-race and same-sex role models, advisors, and mentors” (p. 58). However, it is unclear whether this is a recommendation based on the evidence gathered, or simply one of many offered by the students interviewed.

In a small study based on 20 interviews with white and minoritized students participating in a federally-funded program for underrepresented populations at one university, Wallace et al. (2000)

... found that although students in [their] study indicated a desire for a faculty mentor, these relationships were simply not forming spontaneously. The complete absence of informal faculty mentoring relationships indicated a strong need for other institutional personnel to make connections with students. (pp. 99-100)

They determined further that “many of these students were assisted through a network of mentors. In other words, different individuals provided various components of mentoring, all of which benefitted the students in our study” (p. 100).

McCoy et al. (2017) find that undergraduate students of color experienced their interaction with faculty members as markedly different at two institutions, one historically black (HBCU) and one predominantly white (PWI).

Students attending the PWI described feeling as though faculty tried to weed them out of their disciplines. The students at the PWI stated that faculty were sometimes hard to reach, not open to their questions, and not particularly interested in mentoring them professionally. ...Students at the HBCU described faculty as being open to their questions and integral in creating professional opportunities (e.g., internships) for them. (p. 663)

They attribute this difference to institutional (and departmental) culture rather than to individual faculty actions and attitudes, yet their study is based on only 31 semi-structured interviews at two

universities. And although they provide basic figures on the diversity of both students and faculty at the two universities, they do not explicitly address whether that diversity is a factor in students' experiences.

Winkle-Wagner's (2015) comprehensive review of 119 studies related to the success of black women undergraduates divides the body of research into three categories of focus: (a) the individual black female self and college success; (b) the role of relationships in college success; and (c) the role of institutional support in black women's college success (p. 177). Winkle-Wagner finds that the institution-level factors in the literature are limited to qualitative studies of specific programs and services, and faculty members enter the picture exclusively in their roles as mentors.

Student–faculty relationships have been evidenced to provide either an aid or an obstruction to success for Black women. The lack of a positive faculty–student relationship can be detrimental to students' success. ...The importance of positive academic mentors cannot be underscored enough for Black women. (pp. 183-84)

The one study she reviewed that considered faculty diversity was a

focus group study [that] suggested that the racial background of mentors was less important to students of color than the quality of mentor–mentee interactions. This finding suggested that race/ethnicity of a mentor may not matter as much as how the mentoring relationship is constructed. (p. 184)

In their “systematic review” of 63 studies providing empirical analysis of academic outcomes for undergraduate Latinx students, Crisp et al. (2015) list a wide variety of factors found to contribute to student success, including one set of

factors categorized as “interactions with supportive individuals”: “Qualitative findings highlight the positive impact of role models, mentors, parents, peers, and Latina/o communities on campus. ...Additionally, mentoring experiences, including on-campus ties to professors, were shown to be positively related to Latina/o students' grades in college.” (p. 259) Faculty diversity itself does not appear to have been included in the reviewed studies, leading the authors to recommend (among many suggestions)

When methodologically possible, research predicting Latina/o student academic outcomes should properly account for institutional characteristics and type, including but not limited to the diversity of students and faculty and institutional resources/support. Although Latina/o academic outcomes are not equitable to other groups on the whole, it is notable that substantial differences in graduation rates exist between institutions and institutional types. (p. 265)

A recent study by DeAngelo and colleagues (2021) focuses on “learning from the perspective of faculty how to increase the number of undergraduate Students of Color at their institutions who go on to graduate study.” (p. 501) The article does review some earlier studies of mentoring and minoritized student success, and an earlier work from the same project may offer more useful insights into faculty perceptions of their role in undergraduate success for those students. The current study makes a strong case “that the dominant paradigm [for student success] contributes to the stymied diversification of the professoriate.” (p. 514)

This review covers only a limited selection of the numerous qualitative studies touching on the faculty role in minoritized student success. Most of these studies fail

to specify what that role is or describe it as a personal relationship without consideration of the faculty member's full workload, status, training, and administrative support.

### *Quantitative analyses*

Recent quantitative analyses on minoritized student outcomes have either been limited in their institutional coverage or have failed to analyze faculty diversity.

Chang et al. (2014) use data from more than 200 colleges and universities that participated in UCLA Cooperative Institutional Research Program student surveys. With direct access to the student data, they are able to examine student outcomes longitudinally, from preparation for college through experiences while enrolled. They also incorporate institution-level variables from IPEDS. The outcome of interest in this study, however, is persistence in a STEM major, and the students are not followed all the way to graduation. Although the study does examine some aspects of student-faculty interaction—from the perspective of the students—it does not consider faculty diversity as a predictor of student outcomes.

Gumpertz et al. (2017) utilize data from only four universities to examine retention and promotion of minoritized faculty members. The quantitative component of Strayhorn's (2017) analysis uses IPEDS data for 332 urban public institutions but is limited to descriptive bivariate comparisons of institutional characteristics that do not include faculty demographics. Flores and Park (2014) take advantage of a massive body of student-level administrative data to examine the role of institutional type in minoritized student enrollment and completion. But their analysis is limited to Texas and does not address the question of faculty diversity.

A recent analysis by Nichols (2020) compares the enrollments of black and Latinx students at 101 selective public institutions with their respective state populations and finds they have done a poor job of increasing minoritized student enrollment. The study does not include an analysis of the faculty role or relationships, and faculty diversity is mentioned only among several aspects of a recommendation to "improve campus racial climates" (p. 22). Another recent tabulation focused on the lack of black students at "flagship universities" similarly does not mention faculty at all (Lumpkin et al. 2021).

The "50-state report card" on black student college enrollment produced by Shaun Harper and Isaiah Simmons (2019) compiles four equity indicators for 506 public institutions using a combination of Census and IPEDS data. One of the indicators is the "Black Student-to-Black Faculty Ratio," and the authors note that

For every full-time Black faculty member at a public college or university, there are 42 full-time, degree-seeking Black undergraduates. Forty institutions employ no full-time Black instructors. On 44% of public campuses, there are 10 or fewer full-time Black faculty members across all ranks and academic fields. (p. 3)

This is a very useful compilation, with the stated aim "to make inequities more transparent." Even so, it does not explain why "more reasonable access to same-race faculty members" (p. 6) is a useful assessment criterion.

A recent analysis by Morgan and colleagues uses an innovative combination of survey and secondary data to extract the socioeconomic status background of faculty members. The authors find that "nearly a quarter (22.2%) of faculty reported that one of their parents holds a PhD, and over



half (51.8%) had a parent who holds a graduate degree.” (Morgan et al. 2021: 6.) The study concludes that

In the context of broader racial inequality in wealth and educational attainment with the U.S., academia's dependence on inherited advantages, i.e., the importance of parental characteristics on a professor's current employment and placement, represents a fundamental limit to its racial diversity. (p. 6)

This analysis adds to our understanding of how networks of privilege have served to limit diversity in the faculty. However, even this innovative and promising approach is limited to a “survey of tenure-track faculty at PhD-granting departments in the United States from eight academic disciplines.” (p. 2)

The qualitative studies reviewed here certainly imply that interaction with faculty members of the same racial category supports minoritized student success, at least for the limited contexts studied. Quantitative studies of minoritized student success, by contrast, often omit faculty altogether or fail to provide evidence connecting faculty representation and student outcomes. This analysis will examine that connection.

### **A new contribution**

As the limited review above suggests, existing studies do not clearly specify the mechanism by which faculty diversity is expected to improve outcomes for minoritized students. Patricia Matthew (2016) states it plainly:

...a call for a more diverse professoriate suggests that faculty of color, simply by being brown and on campus, can serve the institution in unique ways. ...they are often expected to occupy a certain set of roles: to serve as mentors, inspirations, and guides—to be the

racial conscience of their institutions while not ruffling too many of the wrong feathers.

She notes further that “a faculty member of color is not going to get a sabbatical or a grant from her institution because she contributes to the diversity mission her university probably has posted somewhere on its website. She certainly isn’t going to get tenure for it.” Studies such as those reviewed by Brooms and Davis (2017) and others typically focus on needs articulated by students—often a very small set of students in a specific situation—and do not consider the workload or career challenges the faculty members are facing. When, exactly, are these “diverse” faculty members supposed to find time to do all of that mentoring and role modeling? Are they trained and supported for that work on behalf of the institution’s diversity mission? Will they be rewarded for their efforts?

The literature on minoritized student college outcomes suggests four analytic components that produce those outcomes: (1) Institutional characteristics, including student and faculty diversity; (2) institutional programs and practices; (3) student background and preparation; and (4) student experiences and actions during college. There is no single comprehensive data source that can support an analysis of all these factors simultaneously on a national scale. Given that reality, the combined and cumulative—even if not at all coordinated—analytic strategy for the corps of researchers seeking to understand the process leading to bachelor’s graduation outcomes for minoritized students is an ongoing interplay and exchange between structural quantitative approaches covering a cross-section of institutions and student populations and qualitative approaches that enlighten the lived experiences, perceptions, and interactions of the students themselves.

The present study makes an innovative quantitative contribution to the first analytic component by incorporating data on faculty diversity and employment status with other institutional characteristics—including degree completion—from a comprehensive national population of degree-granting institutions. Although this analysis also cannot provide direct evidence on the specific role(s) faculty members play in minoritized students success, it at least examines the important distinction of whether faculty representation in tenured or tenure-line faculty positions has an effect on student outcomes.

One challenge for the quantitative analyst—among several that are discussed in detail in a later section—is that the racial and ethnic categories used in discussions of this topic are inconsistent, imprecise, and sometimes used in contradictory ways. In order to carry out quantitative analysis with existing (secondary) data, we are limited to the categories used during the data collection. Two broad terms used frequently in quantitative analysis are “people of color,” generally understood to include individuals who identify as any racial or ethnic category other than non-Latinx white, and “underrepresented minority,” which removes the Asian category (however defined) from the minority classification. David Asai (2020) offers a third categorization, “persons excluded because of their ethnicity or race (PEERs).” (I expand the discussion of racial categories in the section on “challenges for analysis” below.)

Rather than select a definition of “diversity” using one of these criteria, this analysis presents tabulations derived from disaggregated data in as much detail as possible, and then shifts to models

focused on students and faculty from two racial categories, African American and Latinx or Hispanic. Wingfield’s critique, quoted in the introduction, provides one further specific factor for which evidence exists that has not been utilized: the representation of minoritized faculty members among the ranks of tenured faculty.

The next two sections provide additional updated detail on the two main empirical aspects of this study: degrees completed and faculty employment.

### **The student population**

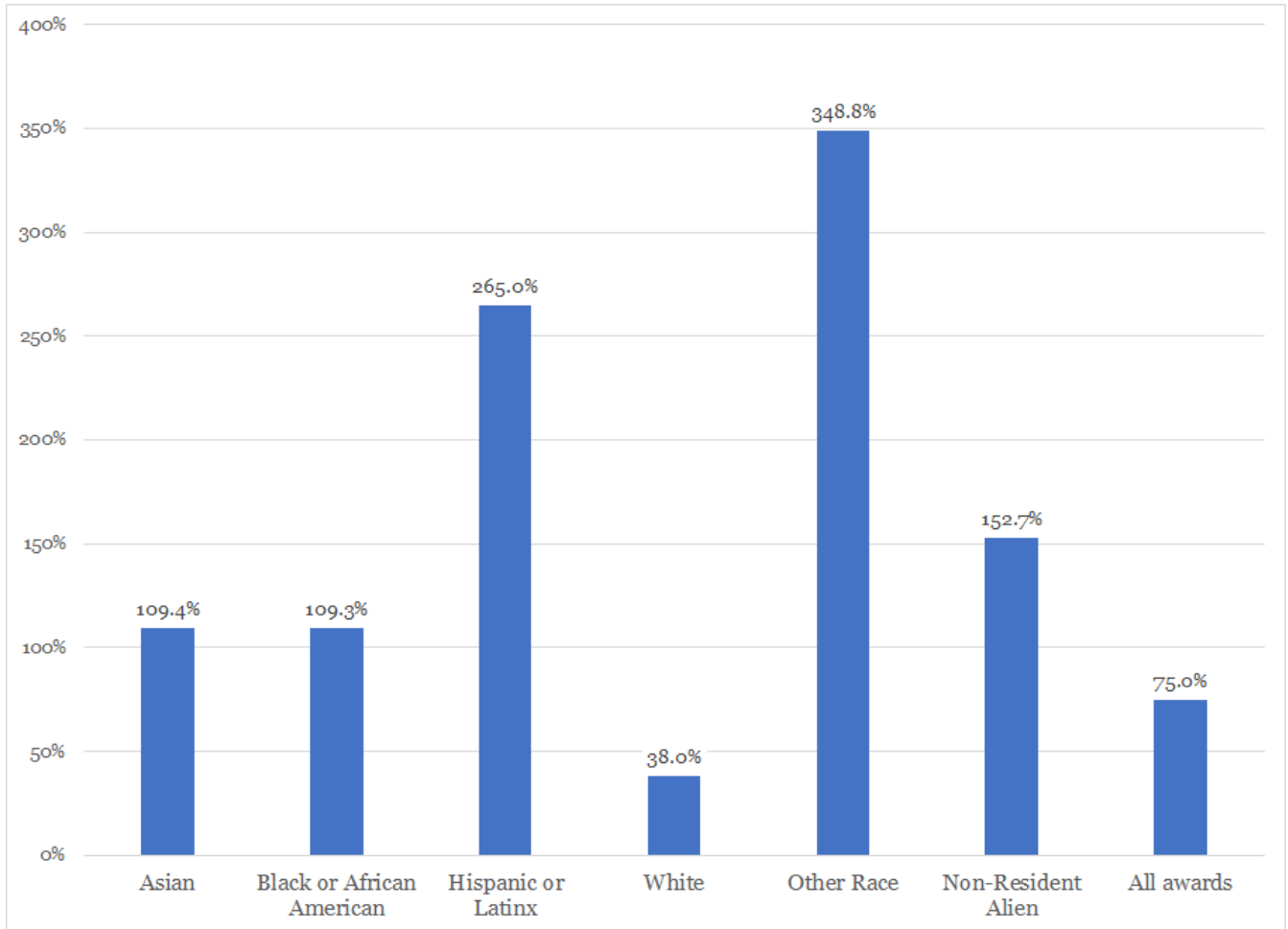
Figure 1 charts the change in the number of bachelor’s degrees awarded from 1996-97 to 2016-17, broken out by racial category. The chart makes clear that, although the number of awards to white students rose during this time, growth in other racial categories was much more rapid. The tremendous growth in the “other race” category is due primarily to the addition of a category for “two or more races” to the IPEDS data collection in about 2010, but as detailed in appendix tables 1 and 2, recipients in this category represented only about 8 percent of bachelor’s degrees awarded in 2016-17.<sup>3</sup>

Similarly, the number of Latinx bachelor’s degree recipients nearly tripled in 20 years, growing from 6 percent of degrees awarded in 1996-97 to 13 percent in 2016-17. Bachelor’s awards to both Asian and African American recipients each more than doubled in number, although that represented only a modest increase in their respective proportions of all degrees at the end of the period (7 and 9 percent). The majority of bachelor’s degree awards still went to white students by the end of this period, but the proportion dropped markedly from 74 to 58 percent.

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<sup>3</sup> Appendix tables 1 and 2 give the numbers of awards and the proportion of each racial category of the total. Figure 1 depicts the change in the number of awards for each racial category.

Figure 1. Change in the number of bachelor's degrees awarded, by racial category, 1996-97 to 2016-17



### Trends in faculty diversity

Figure 2 documents the distribution of faculty appointments by racial category, distinguishing tenure-line (tenured or on the tenure track), full-time non-tenure-track, and part-time. (Appendix Table 3 provides a further breakdown by institutional type.) Although the majority of all faculty appointments in the fall of 2015 were off the tenure track, the distributions vary among the racial categories. The proportion of tenure-line appointments for African American and Latinx faculty is lower, and the proportions of African American and Latinx faculty in part-time positions are

higher, than those for white and Asian faculty.

Appendix table 3 documents further that African Americans were 7 percent of faculty in 2015, but 9 percent of 2016-17 graduates (Table 1). Latinx faculty were even more underrepresented, at 6 and 13 percent respectively.

Figure 2. Faculty Employment Status, by Racial Category, Fall 2015

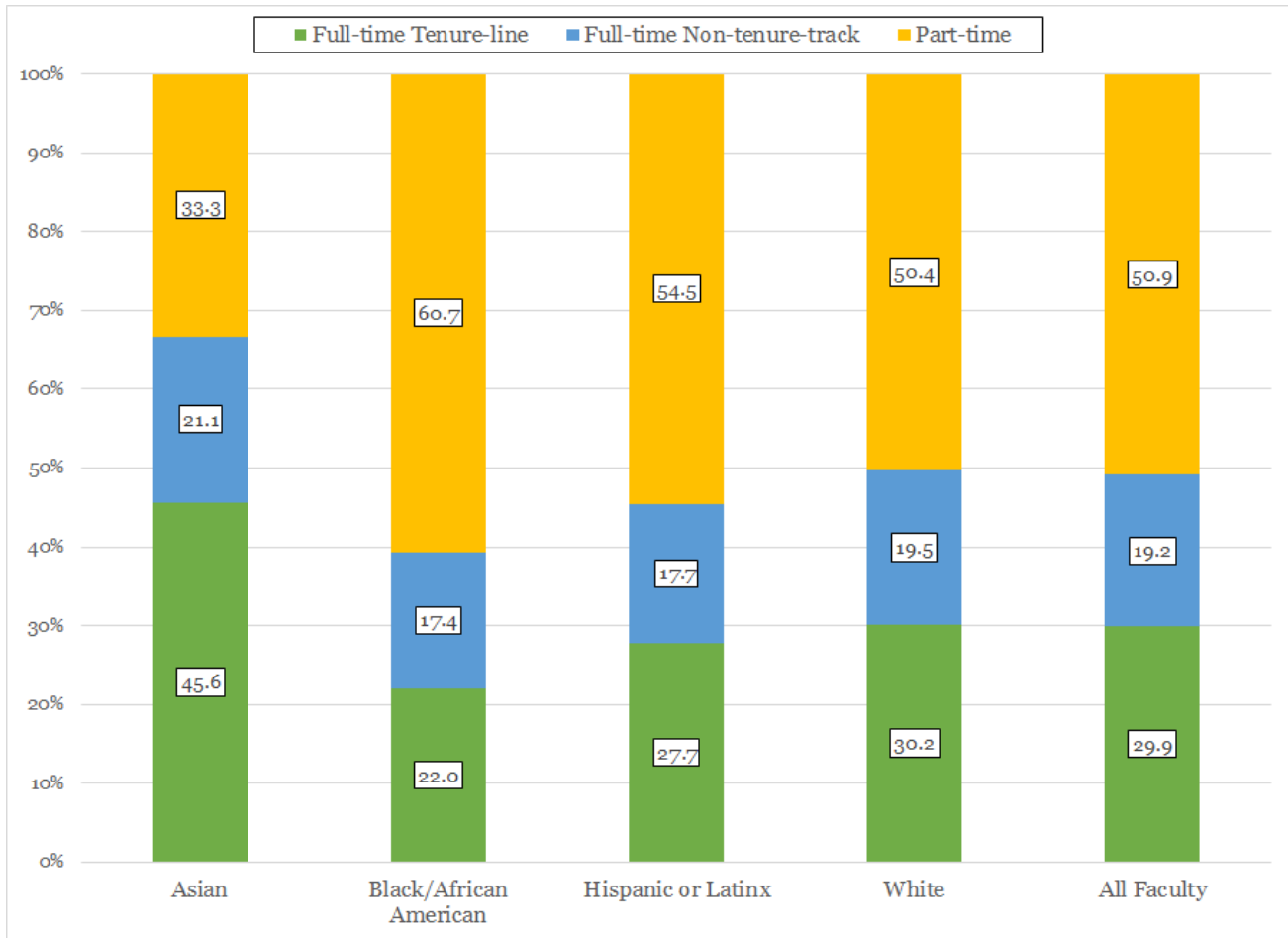


Figure 3 documents two trends occurring simultaneously between 1995 and 2015. The shift to contingent (non-tenure-track) employment occurred as minoritized scholars joined the faculty in greater numbers. So, the change in the number of faculty members employed in contingent positions was greater than the change in tenure-line positions for all racial categories with the exception of “other race.”<sup>4</sup> Minoritized faculty members moved into tenure-line positions in greater numbers, but their employment in contingent positions grew even more rapidly. Appendix Table 4 provides greater detail on the countervailing shifts

in employment during the period that left African American and Latinx faculty contingently employed at higher proportions than white and Asian faculty, as already noted in Figure 2.

<sup>4</sup> Table 4 shows that the very large percentage growth in “other race” tenure-line appointments reflects a relatively small number of individuals. This is mostly due to the addition of the “two or more races” reporting category noted previously.

Figure 3. Change in Faculty Employment Status at Bachelor’s Degree Colleges and Universities, by Racial Category, 1995-2015

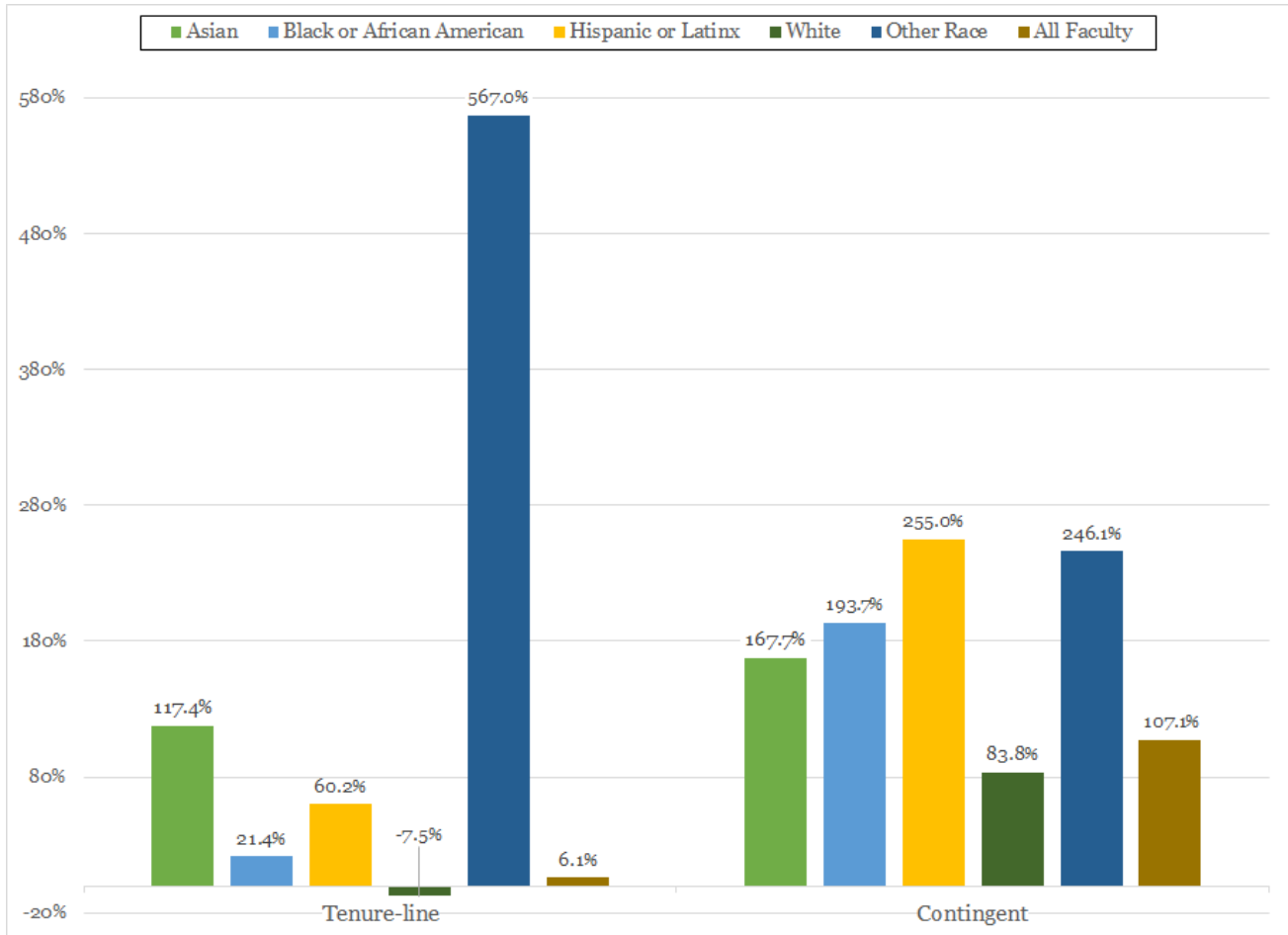
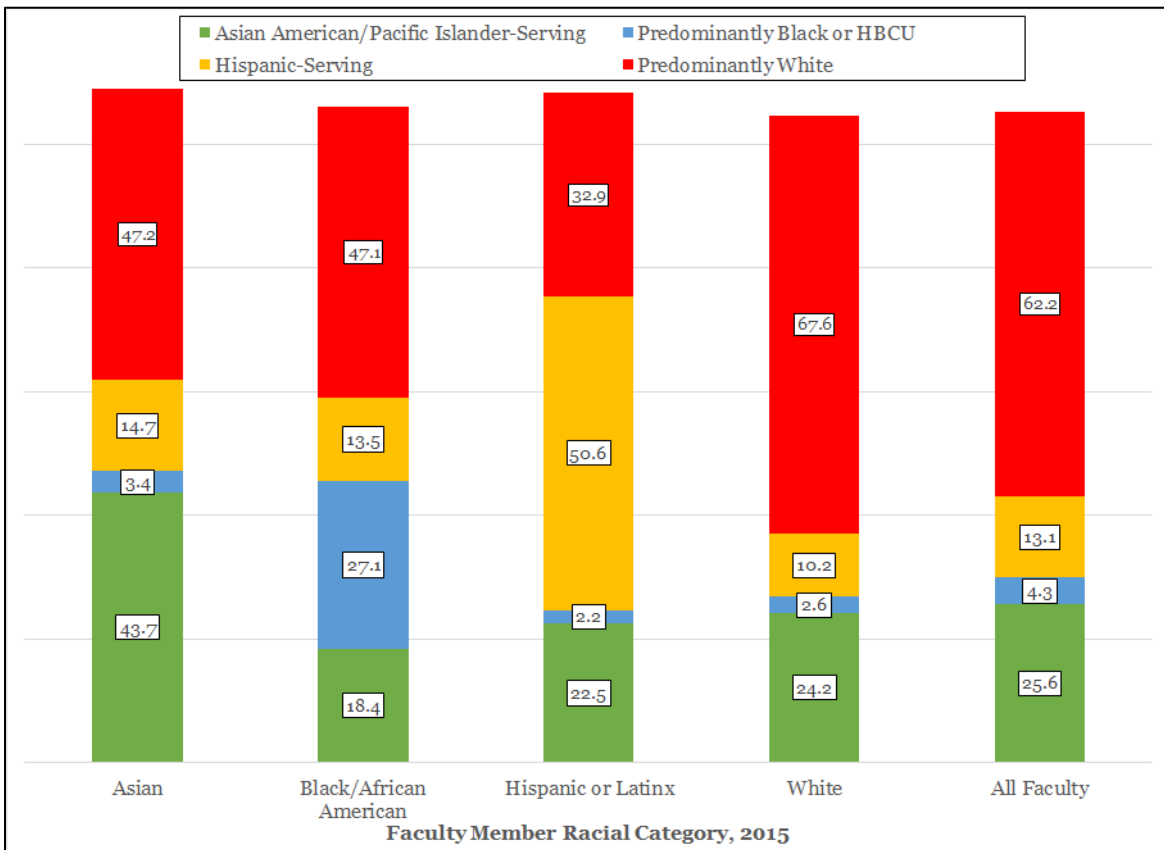
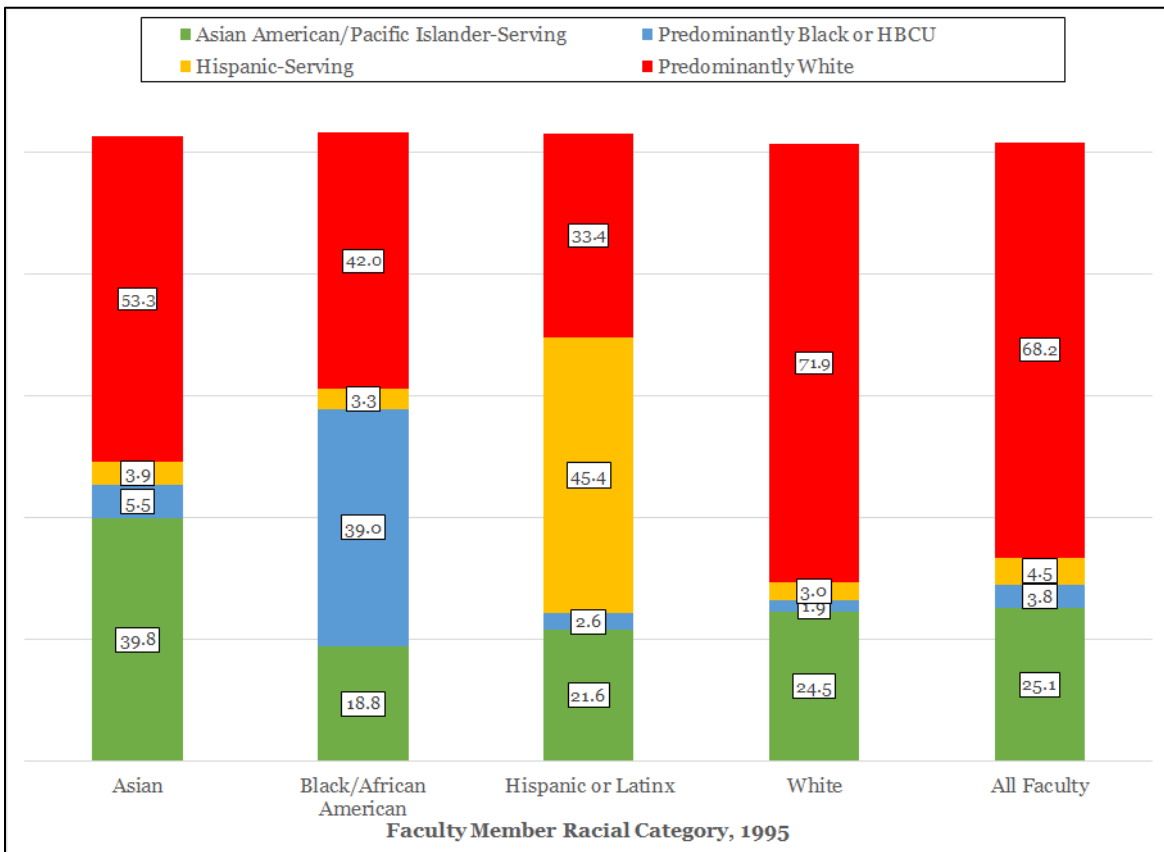


Figure 4 documents the overrepresentation of minoritized faculty at minority-serving institutions (MSI) over the 20-year period. (Appendix Table 5 provides the supporting numbers for faculty and also documents the racial enrollment of the institutions from which bachelor’s degree recipients graduate.) The three categories of MSI (Asian American/Pacific Islander-Serving, Predominantly Black or HBCU, and Hispanic-Serving) are defined by student enrollment following Espinosa et al. (2018: 3). Most Asian graduates and a plurality of Latinx graduates earned their degrees at corresponding MSI at both time points. Most African American degrees came from PWI, but the proportion of their degrees from black

institutions was still much higher than the 3 percent of all degrees awarded there. While the number of MSI grew tremendously in this period, the proportion of both degrees awarded and faculty employed at PWI decreased only slightly. The proportions of Asian and Latinx faculty employed at the corresponding MSI increased over the period, while African American faculty members moved somewhat toward employment at PWI and Hispanic-serving institutions.

Figure 4. Faculty Employment, by Racial Category and Institution Enrollment, 1995 and 2015



## Regression models

In this section, I use multivariate regression models to examine the combined effect of the trends in diversifying bachelor's degree awards and diversifying the faculty. As noted above, I do not attempt an analysis of "diversity" *per se*, but rather use statistical models specific to the effect of increased employment of African American and Latinx faculty members, respectively, with consideration of whether appointments in tenure-line roles make a difference. In order to clarify the modeling further, I limit the regression analysis to predominantly white institutions (PWI) and also exclude for-profit institutions.<sup>5</sup> I highlight the results of the regression models in this section with figures that illustrate the relative strength of various factors; the full details of the regression models are presented below in the corresponding appendix tables and the section on data sources and analysis details.

I begin in figures 5 and 6 with cross-sectional models of a set of institutional characteristics on the proportion of bachelors' degrees awarded to students in the two categories of racial identity, respectively, in 2016-17. The figures show only factors that reach statistical significance in the model. The columns, representing regression coefficients that are effectively standardized for comparison, can be either positive or negative. (A positive coefficient in figures 5 and 6 indicates that the presence of the

factor, or a higher level of it, is associated with a higher proportion of degrees awarded to students from that racial category.) The size of the column provides a graphic representation of the relative strength of the factors. It is also important to recognize that statistical significance and size of coefficient are both net of all other factors included in the model, which is the strength of multivariate analysis.

In each figure, results from four models are depicted. Model 1 uses a fixed set of institutional characteristics, including control (public or private nonprofit), category (Carnegie classification), location, characteristics of the undergraduate student population, and institutional finances.<sup>6</sup> Models 2-4 each introduce a single factor representing three alternate specifications for the effect of employing minoritized faculty members on minoritized student outcomes, given the fixed set of other institutional characteristics. Model 2 adds a binary variable with value 1 if the proportion of all faculty who are tenured and report the corresponding racial identity is in the top quartile of institutions in the analysis.<sup>7</sup> Model 3 substitutes a similar binary variable based on tenure-line positions. Note that models 2 and 3 include only institutions reporting tenure-line faculty, in order to clarify the specific effect of including faculty members from the minoritized category. In model 4, the faculty representation variable incorporates the proportion of all faculty with the corresponding racial identity,

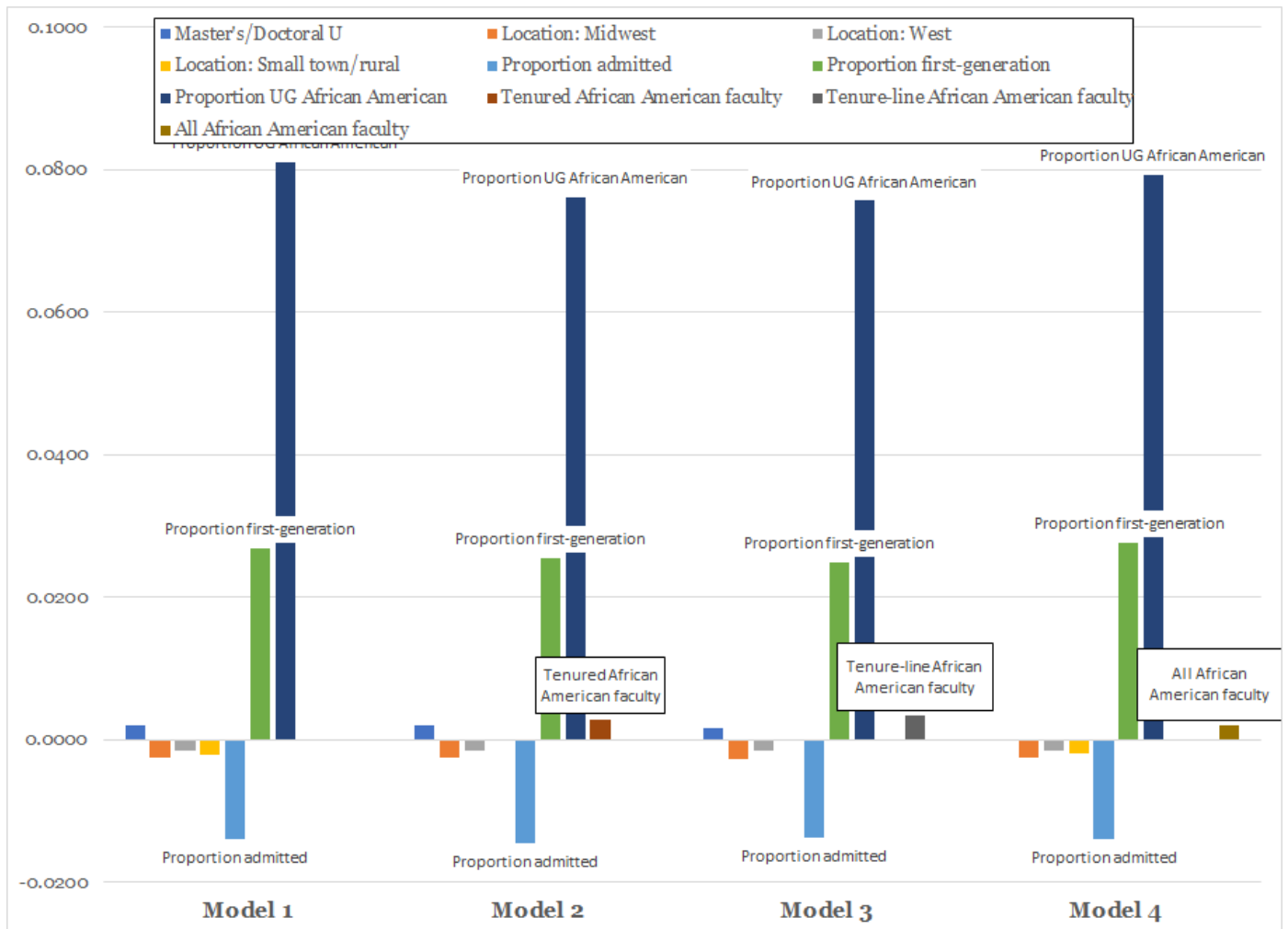
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<sup>5</sup> For more discussion of why the analysis is limited to PWI, see "defining diversity" in the section on "challenges for analysis" that follows. The exclusion of for-profit institutions is regrettable but necessary for clarity, as I explain in further detail in that section.

<sup>6</sup> I do not attempt a full examination of each of these characteristics here; rather, I include them as a set of basic institutional characteristics likely to affect bachelor's degree attainment.

<sup>7</sup> I also tested the models using alternate specifications for faculty representation, as explained in the "analysis details" section.

Figure 5. Regression Models of Institutional Characteristics and African American Faculty Representation on Bachelor's Degrees Awarded to African Americans, 2016-17



across all employment statuses (including part time).<sup>8</sup>

Figure 5, for degree awards to African Americans, is unfortunately rather cluttered because there are several factors that reach statistical significance in the models. In addition to the colors and labeling in the legend—which are admittedly not easy to read—I have labeled the columns for the largest three institutional factors and the three

different faculty variables. Note that factors not reaching statistical significance are not shown, so that for example, location in a small town or rural area does not appear for models 2 or 3.

For model 1 in figure 5, reflecting the significant factors from the fixed set of institutional characteristics, there are three relatively large effects and several that are statistically significant but small. The largest effect, by far, in all of the

<sup>8</sup> The variables for institutional characteristics, including both undergraduate enrollment and faculty representation, are for time points two or three years prior to the degree awards (“lagged”), to reflect the institutional environment students experienced while progressing toward their degrees. (But see the note on student “swirling” below.)



models is the proportion of undergraduates identifying as African American. Thus, in model 1, the coefficient for African American undergraduates is approximately three times as large as that for the next largest significant effect, the proportion of undergraduates who are first in their families to attend college. Each of these factors displays a positive regression coefficient, indicating that more of that factor corresponds to a higher proportion of African Americans among the institution's graduates. The other relatively large factor in model 1, the proportion of applicants admitted (or "selectivity") has a negative coefficient and is relatively large in all four models. The negative (or inverse) statistical relationship is interesting: Where the proportion of applicants admitted is higher, the proportion of African Americans among the graduates is lower, net of all other factors. In other words, African Americans are better represented among the graduates of more selective institutions. That finding is likely worthy of a more focused examination.

The other significant factors in model 1, all of which are much smaller, are location in either the Midwest or West or in a small town or rural area (all of which are negative), and attending a university categorized as predominantly offering master's degrees and some doctorates (which is positive). Each of these factors represents an effect relative to a comparison (or "reference") category: for region, the reference category is the Northeast; for metropolitan location, the reference is a large urban area; and for institutional category, the reference is primarily bachelor's degree colleges.

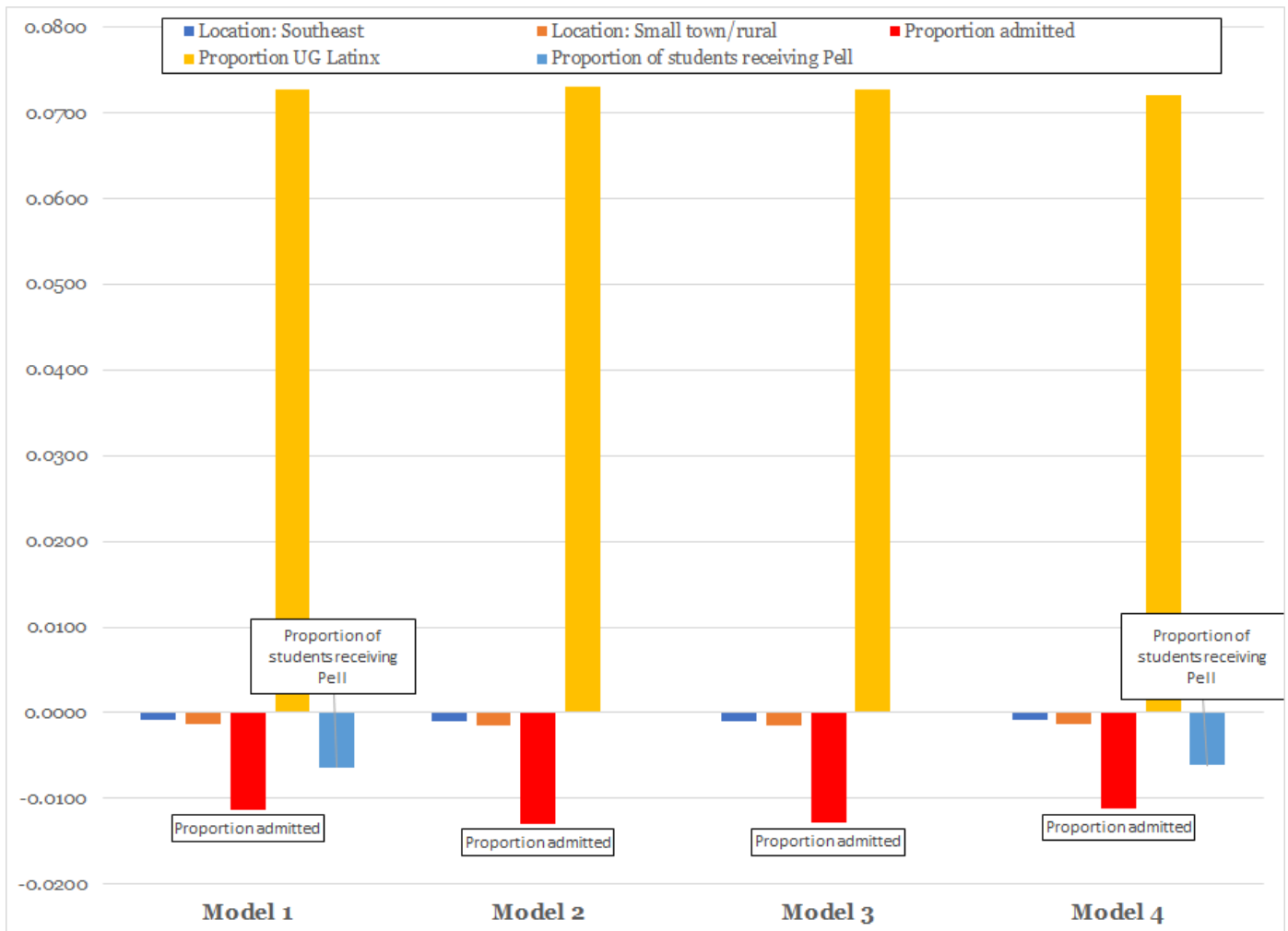
Models 2 through 4 in figure 1 introduce each of the three alternate specifications for African American faculty representation, one at a time. Each is significant and positive, although the effects are small. So, having more African

American faculty at PWIs was associated with a higher proportion of bachelor's degrees going to African Americans in 2016-17, even if the additional effect net of other institutional characteristics was relatively small. The largest of the three faculty coefficients is for the proportion of tenure-line faculty, which would provide support for having more African American in those positions. However, the presence of more African American faculty members in any category of faculty employment is associated with more degrees for African American students.

Two other minor notes from models 2-4: The positive effect of attending a master's degree university disappears in model 4, when representation of African American faculty in any employment status is included. And, as noted previously, the negative effect of institutional location in a small town or rural area does not achieve significance in models 2 or 3, which include only institutions reporting tenure-line faculty.

Figure 6 presents the corresponding models for degrees awarded to Latinx students and representation of Latinx faculty. There are fewer statistically significant factors in the Latinx models, with some similarities and some differences when compared to the African American models. By far the strongest factor in all of the models, again, is the proportion of undergraduates identifying as Hispanic or Latinx. In model 1, the coefficient for the Latinx proportion of undergraduates factor is more than six times as large as that for the next largest effect, which in this case is the proportion of applicants admitted. The undergraduate Latinx proportion is also the only one of the factors shown that is positive.

Figure 6. Regression Models of Institutional Characteristics and Latinx Faculty Representation on Bachelor's Degrees Awarded to Latinx Students, 2016-17

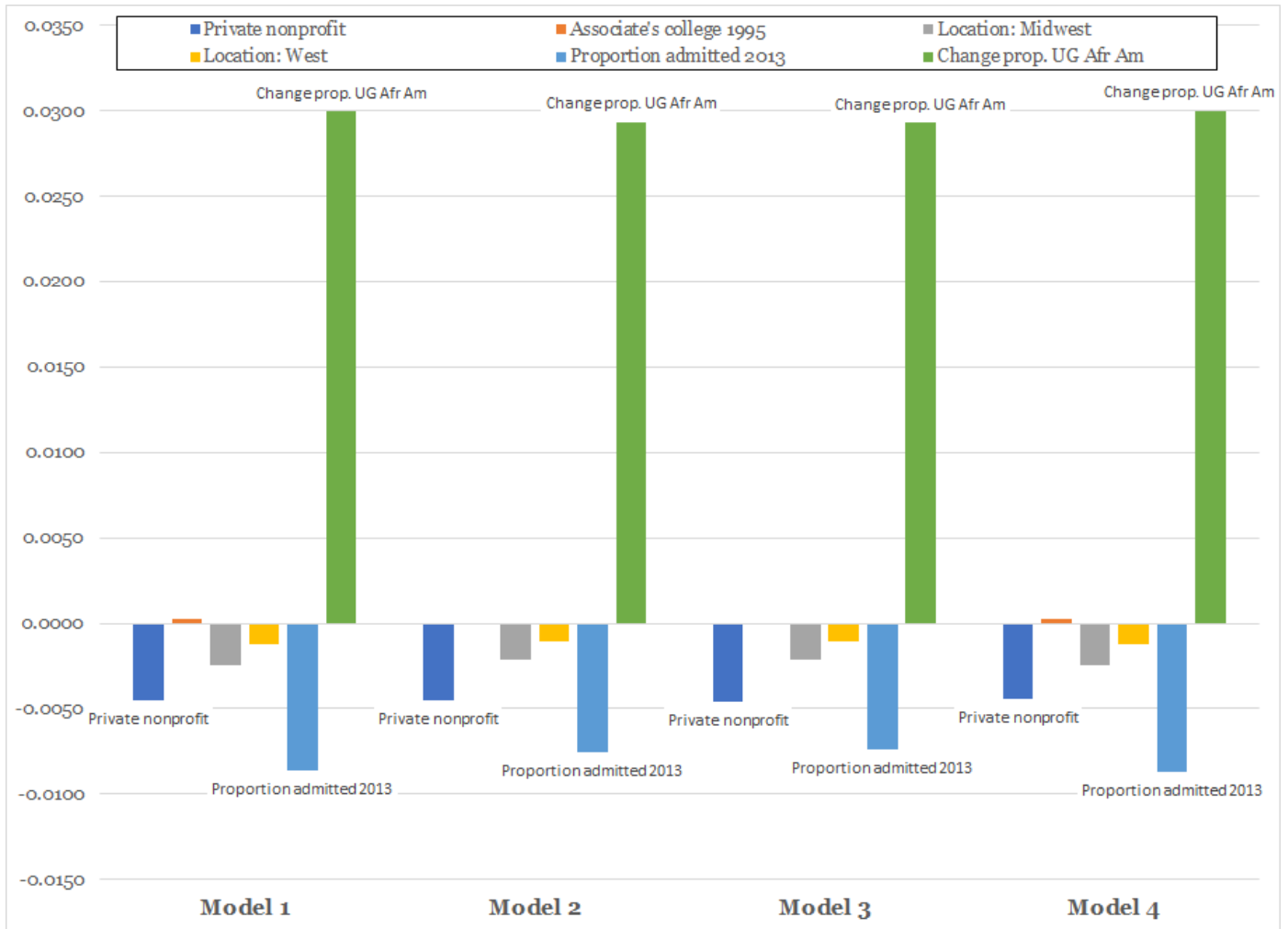


The two other relatively large factors in model 1 are the proportion admitted, which is negative and therefore represents an effect similar to that observed in figure 5 for African Americans, and a factor not displayed in the previous figure, the proportion of students receiving Pell grants, an indicator of financial need. In the Latinx basic model 1, the proportion of students receiving Pell has a negative effect on the proportion of graduates who are Latinx. This is not the case in models 2 or 3, including only institutions with tenure-line faculty, but is true for model 4. In other words, Latinx graduates are less represented among graduates of institutions where there is greater financial need, net of all other

institutional factors. That, too, is worthy of further study.

None of the variables for Latinx faculty representation appear in figure 6, as none of them reached statistical significance. Without wanting to overinterpret a negative finding, this means that the level of Latinx faculty representation at PWIs as of 2013 was not significantly associated with a higher proportion of degrees going to Latinx students a few years later. (As I argue below, I would attribute that to the relatively small representation of Latinx faculty when compared to the student population, as was also documented in figure 2 above.)

Figure 7. Regression Models of Change in the Proportion of Bachelor's Degrees Awarded to African Americans, 1996-97 to 2016-17



Figures 7 and 8 display significant factors in the models for the change in the proportion of degrees awarded to African American and Latinx students, respectively, between 1996-97 and 2016-17. The full set of institutional characteristics used in these models is somewhat smaller, omitting some variables for characteristics of the student population and institutional finances. The outcome variable in these models is the change in the proportion of degrees awarded in the racial category, which can be positive (an increase), negative (a decrease), or zero (no change). About 18 percent of institutions reported a decrease in degrees awarded to African Americans,

and fewer than 4 percent a decrease in Latinx degrees.

Figure 7 for degrees awarded to African Americans shows only one factor positively associated with change in the proportion of degrees awarded, and that is the change in African American representation in the undergraduate student population. The change in student population can also be positive or negative, so that a positive regression coefficient for that factor in this case means only that the change in student population and the change in degrees awarded were in the same direction. As in the cross-sectional models, the coefficient of the student representation variable is

more than three times the size of the next largest variable.

Two other factors in Figure 7 have consistently relatively large and negative effects. The proportion of applicants admitted in 2013 is the same measure of selectivity used in the cross-sectional models. (Change in that proportion compared with 20 years previously was not easily available, if at all.) Interpreting this result is tricky. Since the coefficient is negative and both selectivity and change in degree proportions are essentially continuous variables, the regression coefficient should mean that a higher proportion of students admitted is associated with a smaller amount of change in degrees awarded. But that does not tell us the direction of the change, so this result deserves further examination.

The next largest negative factor is the institution being a private nonprofit, rather than public. The private colleges and universities in the model thus had a smaller rate of change in degrees awarded to African Americans overall. Two other relatively small negative effects that were statistically significant are location in either the Midwest or West. Models 1 and 4 also show a very small effect of being categorized as a predominantly associate's degree college at the beginning of the period in 1995. There were 25 such colleges, most of which had moved into the predominantly bachelor's or master's categories by 2013.

None of the African American faculty representation variables achieved statistical significance in models 2-4. Since all three versions of the faculty variable were significant, albeit with small effects, in the cross-sectional models, I interpret this lack of a significant result to indicate that the change in representation of African American faculty members at PWI did not keep pace with the increasing proportion of degrees awarded in that category.

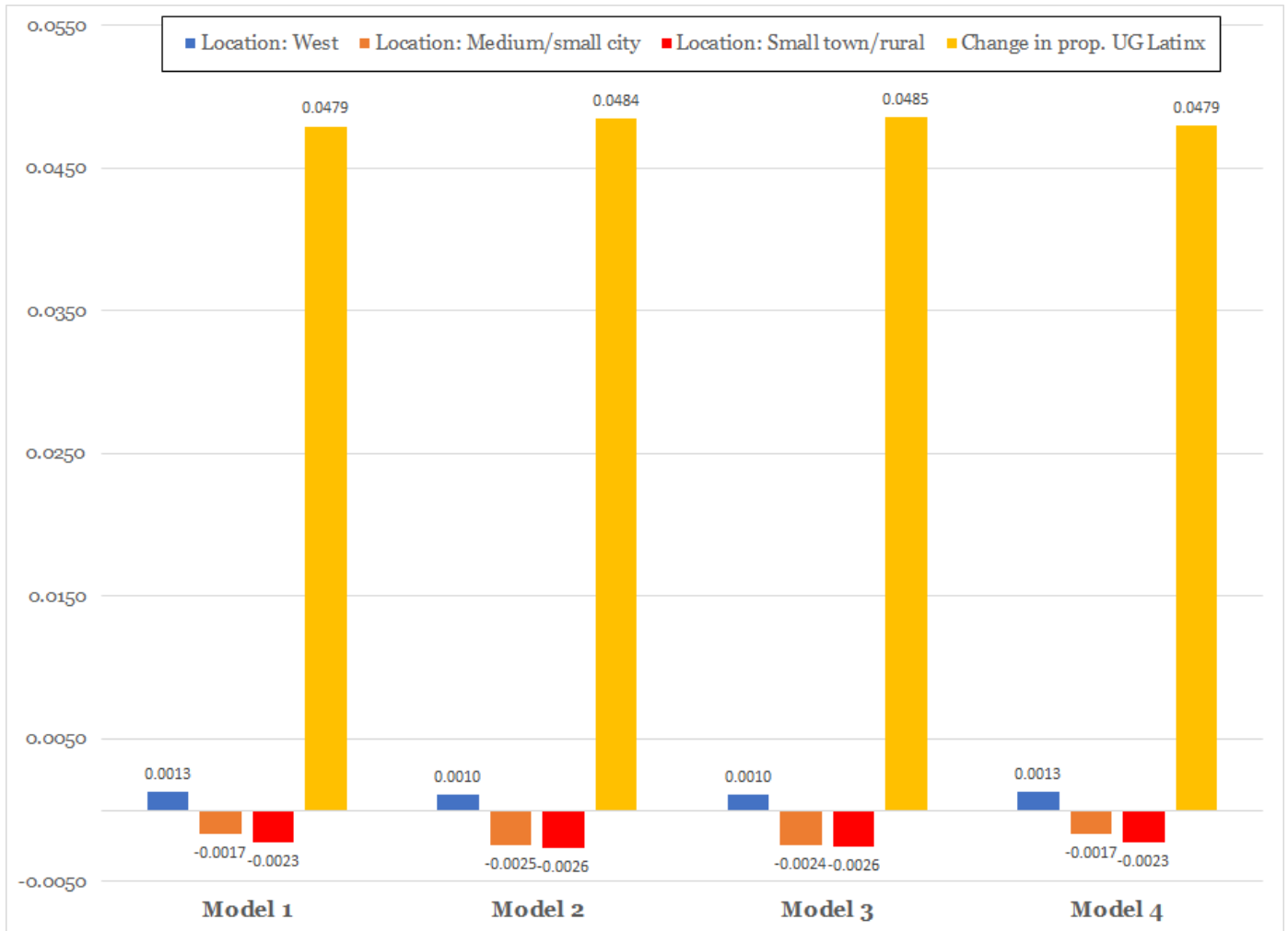
Figure 8, displaying the results of the regression models for change in the proportion of degrees awarded to Latinx students, again shows fewer significant factors than previous models. The variable for change in the Latinx proportion of undergraduates once again overwhelms the other factors in the model; since there is more space in the figure, I display the actual regression coefficients to show that the effect for student representation is 21 times higher than the next largest factor.

The three other significant results in the models are all related to location and are quite small. Institutional location in a small town or rural area or in a small or medium city is associated with a smaller change in Latinx degree awards, while location in the West has a very small positive association with Latinx degrees. (Technically, the outcome in the Latinx models is change in proportion, whether increase or decrease, but as noted above, it is an increase for the vast majority of institutions.)

Again, none of the variables for change in Latinx faculty representation produces a statistically significant effect at these PWI, which I interpret as the employment of faculty lagging behind the growth in the Latinx student population.

With regard to the key question in this analysis, whether increasing the representation of minoritized faculty at PWI produces a greater proportion of degrees going to minoritized students, the regression models provide a negative finding for the most part. In figure 5, looking at African American degree recipients and faculty members, a higher proportion of minoritized faculty members does correspond with more degrees. But the effect is small and is not specific to tenure status. The variables for faculty representation in all of the other models fail to achieve statistical significance. Given the status of faculty representation documented in figures 2-4, I take that result to indicate that the

Figure 8. Regression Models of Change in the Proportion of Bachelor's Degrees Awarded to Latinx Students, 1996-97 to 2016-17



representation of minoritized faculty at PWI was insufficient to produce a measurable effect on student outcomes.

In the next section, I lay out a number of reasons for limiting the conclusions we might draw from these results.

### Challenges for quantitative analysis at the institutional level

As I have noted above, initiatives to “diversify the faculty” often seem to present that objective as an end in and of itself and focus on numerical representation (and “under-representation”) of individuals from various categories. Although there is broad agreement that having more

students of color complete college degrees is important, diversity initiatives typically do not specify what role minoritized faculty members are expected to play in that process. They do not take into consideration the additional work of advising and mentoring minoritized students—work that will not necessarily be rewarded with promotion or tenure.

Griffin argues

Long-term change in the composition of the professoriate requires a different approach, directly addressing the racism and sexism minoritized faculty face in the academy. An equity-minded perspective shifts attention from

individuals to organizations, addressing how institutions perpetuate inequality, inhibit their own ability to increase faculty diversity, and sustain barriers that prevent minoritized individuals from gaining access to beneficial resources. (2020: 281-82)

In this section, I discuss several specific challenges for the quantitative analysis of faculty diversity and its impact on student outcomes. I present them here both to document the limitations of the present analysis and as discussion points for improving the data and measures we use to analyze diversity.

### 1. Defining “diversity”

A first challenge is that “diversity” is relative to the historical situation of an institution. A college or university whose students and faculty are (and have been) predominantly white may seek to diversify by adding more faculty members of color, perhaps in proportion to the distribution of racial and ethnic groups within the student population. Historically black colleges and universities form a specific category, defined by their status in the 1960s when federal civil rights legislation took effect and with a focus on educating African American leaders. HBCUs may have greater representation of African American and other faculty members of color due to that history; would “diversity” for those institutions mean recruiting more white or Asian faculty members? And would that diversity in the faculty be expected to promote the success of minoritized (predominantly African American) students? Similar questions could be asked relative to the situation of Hispanic-serving institutions, tribal colleges, or Asian American/Pacific Islander-serving institutions. “Faculty

diversity” does not mean the same thing for all institutions and thus cannot be measured in the same way. As noted above, the approach adopted here is to limit the analysis to PWI and examine representation of specific categories of faculty members on degree outcomes for students of the same race.

### 2. Problematic racial categories

A second challenge specific to using secondary data for a large-scale quantitative analysis is the categories used to denote race and ethnicity, which are highly problematic. I noted this issue above but want to explore it further here. The data for this analysis come from IPEDS, which is the closest thing we have to a national census of college education measures. IPEDS data are submitted by institutions, having been collected from faculty and students through local administrative procedures. One aspect of this process is that IPEDS establishes the categories used in the data collection process, which are in turn based on policies established by the federal government for multiple agencies. Institutions report their data using the IPEDS categories and I have noted from my work with individual colleges that they may even create a data element called “IPEDS race” that is different from other categorizations. The tabulations reported to IPEDS broken out by categories of racial identity are intended to represent self-identification on the part of the students and faculty members who are being counted; for the most part that is true, although whatever self-identification individuals are able to express must still be tabulated and reported using the designated IPEDS categories.<sup>9</sup>

The racial categories themselves are problematic, both in terms of how they are

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<sup>9</sup> The same applies to reporting by gender, since IPEDS allows only “men” and “women” as valid categories. This analysis focuses on racial identity to the exclusion of gender, which is a limitation I fully and regretfully acknowledge. I have tried to address gender equity issues for faculty in other data reports prepared for the Center to accompany this working paper. (See <https://csal.colostate.edu/>)

labeled and how they are described. The categories commonly used in the United States have little meaning for individuals from other countries, and so US Government official sources typically separate “non-resident aliens” into their own “racial” category. Possibly the most problematic is the “Asian” category, and this is one reason I have chosen not to use it in the regression models that conclude this analysis. That category changed over the time covered in this study, from “Asian or Pacific Islander” to simply “Asian,” when “Native Hawaiian or Pacific Islander” was designated a separate category in about 2010 after years of discussion. I have noted the United States-centric nature of these classifications above, but “Asian” is also characterized as a race while “Hispanic” is characterized as an ethnicity, even though both include geographic aspects. (I have tried out various terms for the collective set of categories, including “race and ethnicity” and “ethnoracial,” with none of them really satisfactory.) “Asian” is an especially broad category that also obscures differences among specific subgroups based on national origin (Gebeloff et al. 2021).

Sociologists explain that racial (and ethnic) categories are social constructions, meaning that they do not reflect actually observable characteristics but are the product of the way a society identifies its people. Williams (2019) has argued further, drawing on the work of Eduardo Bonilla-Silva, that “it is necessary for researchers to be explicit in their conceptualization of race. ... inequality is the reason race arose as a historical category. Race did not produce inequality; inequality produced race. Ignoring this reality undermines the social construction of race.” (p. 657) He cautions against analyses that “position white Americans as the standard against which people of color are measured.” (p. 660) To avoid these issues, I have tried in this paper to examine and critique the logic underlying

statements about the relationship between faculty diversity and student outcomes and have made the analysis specific to the question of whether greater representation of faculty members from two racial categories is associated with higher proportions of degrees awarded to students from those same categories.

In the end, I do not have a solution to this issue, but I think it is important to acknowledge that the categories used in the data are problematic and do not fully identify the processes of exclusion and oppression that are embedded in any examination of “diversity” and differences in outcomes.

### **3. Disaggregating faculty employment**

Much of the attention to faculty diversity is focused on large research universities and to recruiting candidates for tenure-track positions. That attention is not entirely misplaced, since those are the institutions that educate the majority of doctorate recipients who will go on to become scientists and academics, and they also produce a substantial proportion of bachelor’s and master’s degrees. Yet, as we see from appendix table 3, in fall 2015, only 13 percent of all faculty members were employed in tenure-line positions at research universities. Wingfield’s observation (2016), quoted earlier, points to the fact that minoritized faculty members are less well represented in tenure-line positions. Figure 2 and appendix table 3 document that underrepresentation by employment status, and figure 4 and appendix table 5 show that minoritized faculty members are also less represented at PWI.

Thus, it is necessary to disaggregate the employment status of faculty members in terms of tenure status, full-time status, and the type of institution where they are employed. IPEDS data make such an analysis possible but require additional attention to detail.

#### **4. The faculty role in student success**

As the brief review above of research literature on success for minoritized students indicates, there has not necessarily been a clear articulation of the specific role(s) faculty members play in facilitating that success. Nor has there been a thorough explanation (or empirical test) of whether the racial identity of the faculty member makes a difference.<sup>10</sup>

Faculty members serve in multiple roles: mentor, advisor, teacher, scholar, and member of various communities. To some extent, the weight assigned to various potential roles is linked to the type of institution where they are employed. For example, faculty at research universities may spend more time on externally-funded research projects and working with graduate students. Faculty at teaching-oriented colleges may spend more time teaching undergraduates. But there is a great deal of role variation even within an institution.

In the quote cited above, Matthew (2016) states frankly the expectation “that faculty of color, simply by being brown and on campus” will help minoritized students succeed. Rucks-Ahidiana (2021) echoes Mathews’ observation of (often unwritten) expectations for faculty members of color to spend time advising students and doing other diversity work—expectations that are not similarly placed on white faculty.

In order to more effectively examine the role(s) minoritized faculty members play in fostering success for minoritized students, we need more theoretical and empirical work that pays specific attention to these questions and articulates specific roles and processes to allow further study.

#### **5. Faculty mentoring must be intentional**

Even if we stipulate the implicit assumption that minoritized faculty members will assume a beneficial mentoring role for minoritized students, the study by Wallace et al. (2000) cited above documents a case where “spontaneous” faculty mentoring or role modeling is not effective. It seems only reasonable that faculty members who are expected to provide mentoring should receive some training for that and be sufficiently rewarded for providing it. Otherwise, the mentoring process itself contributes to the inequitable employment situations experienced by minoritized faculty (Rucks-Ahidiana 2021), which make it that much more difficult to retain them.

#### **6. Student mobility between institutions**

The phenomenon of student “swirling,” or moving between multiple institutions during a college career, has been recognized for many years. It is often referenced in the case of community college students transferring to another institution to complete a bachelor’s degree, but in practice it can be much more common and complex.

In their comprehensive review of research on college student success, Kuh and colleagues summarized the phenomenon thus:

Understanding the dynamics and consequences of swirl is not just an academic exercise, given that nearly three-fifths of students from the 1992 high school graduating class who earned a baccalaureate degree by December 2002 attended more than one institution. More than a third (35 percent) attended more

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<sup>10</sup> I did a brief literature search for studies of faculty mentoring and student success that examined the racial identity of the faculty member and found one journal article focused on PhD students in sociology (Spalter-Roth et al. 2013) and one doctoral dissertation based on a very narrow qualitative study (Aminian 2018).



than two colleges or universities. Even among 1999–2000 bachelor’s degree recipients who started college at a 4-year institution, about 47 percent had attended another institution at some point with or without transferring. More important, while transferring from one college to another (whether from a 2-year school to a 4-year institution or vice-versa) is positively related to degree completion, swirling is not. In addition, swirling appears to dampen student engagement, as shown later in this report. (Kuh et al. 2006: 29, additional citations omitted)

Analysis at the institutional level is premised on the notion that conditions at the institution will have an effect on students. In this study, where potential interactions between students and faculty are measured in terms of faculty employment at the institution, there is an assumption that students will “experience” the presence of faculty in some way and that will have an effect on their progress toward completion of a degree. However, if students are, in fact, moving between multiple institutions, the assumptions about interactions with faculty begin to break down.

## 7. Institutional dynamics

This study covers a 20-year period from the mid-1990s to the mid-2010s. One of my assumptions in beginning the project was that IPEDS collected data annually (or biennially) for all US institutions and had done so for several decades, so that these data would allow an examination of changes in both student and faculty diversity. But in the course of assembling multiple elements of institution-specific data for a large number of institutions, it

became apparent there had been a lot of change in the universe of higher education during that period. I note a few specific examples.

**7a. The rise (and decline) of for-profit institutions:** As I worked through this analysis, I eventually decided to drop the for-profit institutions from the regression models. One reason for this was the great difficulty in tracking those institutions over time, since they would change names and report different data elements under different units at different time points.<sup>11</sup> This is unfortunate, since Body (2019) has documented that students of color are more likely to enroll at for-profit institutions, with detrimental results.

**7b. Reorganization of (regional) public institutions:** We tend to think of universities (and many colleges) as 100-year-old institutions with ivy-covered buildings on green campuses. However, in tracking institutions through multiple years of IPEDS reporting, I found a great number—especially among regional public colleges and universities—that merged or otherwise reorganized even during this relatively short time period (Kurzweil et al. 2021). This not only makes the data preparation task more complicated, it raises the substantive question of whether the data reflect the same institution at different time points or fundamentally different institutions.

**7c. Closures:** At the same time, as Marcus reported in 2019, “Colleges are closing or merging at an accelerating rate, according to the Moody’s bond-rating agency, from about eight per year between 2004 and 2014 to an estimated 20 per

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<sup>11</sup> In a separate data report, I have tabulated IPEDS data from institutions reporting faculty employment, without attempting to track individual institutions over time. I found 354 degree-granting for-profit institutions in 1995, 1256 in 2015, and 674 in 2019, following extensive negative media attention and regulatory actions initiated during the Obama administration.

year moving forward, with small private colleges particularly vulnerable.”<sup>12</sup>

**7d. IPEDS reporting:** Finally, although it is a detail only a data nerd could love, the IPEDS reporting system allows institutions to report different data elements using different reporting units, especially when looking at multiple years of data (Jaquette and Parra 2014). IPEDS data are typically used only to create national tabulations or to feed into online search and display tools, with both uses limited to single time points. Although these are the best data available, they are not always well suited for an analysis where the institution and its changes over time is the fundamental unit.

Some of these challenges are specific to quantitative analysis on a large scale. But I would argue that we need a much more engaged dialogue between qualitative and quantitative researchers in order to shed further light on this vital topic.

## Discussion

This analysis does not produce an unambiguous result. As noted above, because there is no single data source that allows for simultaneous analysis of the four components of minoritized student success, it would not be reasonable to expect this examination of institutional factors alone to explain a large proportion of the variance in degree outcomes.

In the cross-sectional regression models for degrees awarded at PWI (figures 5 and 6), representation of African American faculty is associated with more degrees awarded to African American students, but the same is not true for Latinx faculty and graduates. Looking at regression models for change over time (figures 7 and 8), there is no statistically significant evidence for the positive effects of increased minoritized faculty

representation at PWI, net of other institutional factors.

The key to understanding this finding may be found in the section on trends in faculty diversity. Figure 3 and appendix table 4 show that increased representation for faculty of color over time was coupled with a shift in appointments away from the tenure system. In line with Wingfield’s argument, African Americans in tenure-line positions were a smaller proportion of the faculty in 2015 than in 1995 and tenure-line representation of Latinx faculty remained essentially unchanged (table 4). Figure 4 and appendix table 5 show further that, while PWI dominate the higher education landscape, minoritized graduates and faculty members remain overrepresented at MSI.

It may well be that an increased presence of minoritized faculty in the tenure-line ranks of PWI would yield a higher proportion of degrees for minoritized students—but that increased presence has not materialized. As Wingfield and Matthew note, minoritized faculty are recruited to “diversify” PWI without changing the institutional climate and professional structures that continue to create barriers to minoritized student and faculty success. Jones (2019) describes the resulting “exodus” of faculty of color:

Although no agency appears to track the number of college faculty, particularly those of color, who exit the ivory tower, the transitions over time are significant because the disproportionately low numbers of faculty of color are stagnant or declining while students of color are increasing as a proportion of the nation’s colleges and universities. What is known, however, are some of the reasons they say they leave: dissatisfaction with tokenism and isolation, denial of tenure, inability

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<sup>12</sup> This was well before the response to the covid-19 pandemic pushed even more colleges to the brink of closure during 2020 and 2021.

to effect institutional change, lack of personal and professional fulfillment, and failure of their institutions to create campus climates that tangibly embrace diversity, equity and inclusion among faculty and administrators. The problem is more acute at predominantly White institutions.

The hashtag #BlackInTheIvory emerged during 2019 as an outpouring of personal narratives that document “how deeply ingrained anti-Black racism is in academic spaces” (Roberson 2020). Dutt-Ballerstadt (2020) argues, “Many of us who are underrepresented faculty and staff members engaged in diversity work ... cannot put our bodies on the line to uphold diversity initiatives without any institutional mechanisms to protect us.”

“Diversifying the faculty” has been widely prescribed as a means to support black, indigenous, and other students of color in pursuing college degrees, particularly in STEM fields. Yet, as numerous analysts cited here have argued, predominantly white American colleges and universities have failed to implement the real changes in graduate education and faculty professional development and workloads necessary to make the faculty diversity initiative a success. This analysis confirms that failure. As part of the renewed nationwide reckoning with racial injustice during 2020 in response to the murders of George Floyd, Breonna Taylor, and many others, colleges and universities joined other institutions in publicly affirming commitments to diversity, equity, and inclusion. Many of us were hopeful—even if skeptical—that this time it might be different. Yet, even in February 2021 as I was preparing a previous version of this paper for submission to a conference, I happened to see tweets from two scholars I know on the same day. One stated on the basis of scholarship and experience that the primary reason people of color are underrepresented on the faculty is racism

among search committee members. The other, a junior faculty member, noted on a more personal level the persistence of anti-Asian racism, which has only been heightened during the pandemic. Griffin (2020) observes,

In many ways, the results of research conducted in the 1990s are, again, quite similar to the findings of studies published in recent years. The data are clear: women and men of color faculty face environments marked by racism and sexism, where they are made to feel unwelcome. (p. 335)

Her chapter offers a comprehensive solution, the “Institutional Model for Increasing Faculty Diversity.”

The outpouring during 2020 of outrage at the continuing violence perpetrated by police against people of color in the US, particularly African Americans, has produced a corresponding burst of scholarly activity and public discourse about structural racism that I have only touched upon here. Yet there has also been a backlash. As Flaherty (2021) reported in June, “lawmakers in 16 states have introduced or passed legislation this year seeking to limit the teaching of critical race theory within public institutions.” These state actions are an attempt to resurrect the broad anti-diversity federal executive order issued by then-President Trump in September 2020, “Combating Race and Sex Stereotyping.” Although the federal order has since been rescinded, the numerous ongoing state (and local, in the case of K-12 schools) legislative and administrative attempts to undermine a complete and accurate examination of American history and social structures indicate that our society and our higher education institutions remain far from achieving their stated ideals.

Calls for more faculty of color in US higher education have echoed across at least five

decades. If predominantly white colleges and universities are truly committed to creating a welcoming and supportive environment for individuals—students, faculty, and staff—who have historically been excluded from full participation

there, they must confront the historical and persistent systemic racism in their institutions. These are extraordinarily difficult conversations. But there can be no justice in higher education without them.

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### Appendix 1. Detailed tables

Table 1. Bachelor's Degrees Awarded 2016-17, by Intersectional Identity and Institution Type

Racial Category/Gender	Associate's Colleges		Baccalaureate/ Small Master's		Master's/ Doctoral Univ.		Research Universities		All institutions		Prop all Degrees
	Degrees	%	Degrees	%	Degrees	%	Degrees	%	Degrees	%	%
Asian											
Women	350	0.5	8,412	10.9	25,326	32.7	43,302	56.0	77,390	100.1	3.7
Men	271	0.4	4,873	7.6	19,567	30.6	39,148	61.3	63,859	99.9	3.1
Total	621	0.4	13,285	9.4	44,893	31.8	82,450	58.4	141,249	100.0	6.8
Black or African American											
Women	2,735	2.2	21,904	17.7	61,169	49.5	37,873	30.6	123,681	100.0	5.9
Men	1,357	2.0	12,248	17.7	32,890	47.5	22,734	32.8	69,229	100.0	3.3
Total	4,092	2.1	34,152	17.7	94,059	48.8	60,607	31.4	192,910	100.0	9.3
Hispanic or Latinx											
Women	2,710	1.6	22,632	13.6	78,429	47.0	63,088	37.8	166,859	100.0	8.0
Men	1,592	1.5	13,453	12.6	46,908	43.9	44,982	42.1	106,935	100.1	5.1
Total	4,302	1.6	36,085	13.2	125,337	45.8	108,070	39.5	273,794	100.1	13.2
White											
Women	10,602	1.5	111,639	16.3	293,034	42.8	269,600	39.4	684,875	100.0	32.9
Men	6,492	1.2	77,630	14.7	200,975	38.1	242,787	46.0	527,884	100.0	25.4
Total	17,094	1.4	189,269	15.6	494,009	40.7	512,387	42.2	1,212,759	99.9	58.3
Other Race/Ethnicity											
Women	1,377	1.5	16,231	17.5	43,550	46.8	31,827	34.2	92,985	100.0	4.5
Men	841	1.2	10,261	15.2	30,457	45.2	25,827	38.3	67,386	99.9	3.2
Total	2,218	1.4	26,492	16.5	74,007	46.1	57,654	36.0	160,371	100.0	7.7
Non-resident Alien											
Women	185	0.4	7,660	16.4	12,494	26.7	26,501	56.6	46,840	100.1	2.3
Men	183	0.4	6,739	13.0	15,201	29.3	29,808	57.4	51,931	100.1	2.5
Total	368	0.4	14,399	14.6	27,695	28.0	56,309	57.0	98,771	100.0	4.7
All recipients											
Women	17,959	1.5	188,478	15.8	514,002	43.1	472,191	39.6	1,192,630	100.0	57.3
Men	10,736	1.2	125,204	14.1	345,998	39.0	405,286	45.7	887,224	100.0	42.7
Total	28,695	1.4	313,682	15.1	860,000	41.3	877,477	42.2	2,079,854	100.0	
N of institutions	303		1,332		751		218		2,604		



**Notes to Table 1.** Institution type is modified from the Carnegie basic classification for 2015. Associate's category includes a few baccalaureate/associate's mixed colleges. Baccalaureate/Small Master's also includes "special focus" four-year institutions. Master's/Doctoral includes "Doctoral Universities: Moderate Research Activity." "Other race/ethnicity" includes American Indian or Alaska Native, Native Hawaiian or Pacific Islander, Two or more races, and Unknown. Percentages may not sum to 100 due to rounding.

Table 2. Change in Bachelor's Degrees Awarded, by Racial Category and Institution Type, 1996-97 to 2016-17

<b>Percent of degrees awarded</b>	<b>Associate's</b>		<b>Baccalaureate/ Small Master's</b>		<b>Master's/ Doctoral</b>		<b>Research Universities</b>		<b>All institutions</b>	
	<b>1996-97</b>	<b>2016-17</b>	<b>1996-97</b>	<b>2016-17</b>	<b>1996-97</b>	<b>2016-17</b>	<b>1996-97</b>	<b>2016-17</b>	<b>1996-97</b>	<b>2016-17</b>
<b>Race/Ethnicity</b>										
Asian	2.4	2.2	3.2	4.2	4.6	5.2	9.2	9.4	5.7	6.8
Black or African American	8.2	14.3	9.0	10.9	8.9	10.9	5.0	6.9	7.8	9.3
Hispanic or Latinx	18.3	15.0	5.8	11.5	7.3	14.6	5.0	12.3	6.3	13.2
White	67.4	59.6	76.1	60.3	72.9	57.4	74.1	58.4	74.0	58.3
Other Race/Ethnicity	2.2	7.7	2.6	8.4	3.3	8.6	2.8	6.6	3.0	7.7
Non-resident Alien	1.5	1.3	3.2	4.6	3.0	3.2	3.8	6.4	3.3	4.7
	100.0	100.1	99.9	99.9	100.0	99.9	99.9	100.0	100.1	100.0
Number of awards	3,508	28,695	269,323	313,682	547,470	860,000	368,084	877,477	1,188,385	2,079,854
Number of institutions	68	303	1,183	1,332	550	751	124	218	1,925	2,604
<b>Change in the number of degrees awarded</b>										
Asian		648.2%		55.1%		80.1%		143.4%		109.4%
Black or African American		1320.8%		40.3%		92.0%		226.7%		109.3%
Hispanic or Latinx		569.1%		129.1%		211.8%		486.7%		265.0%
White		622.8%		-7.6%		23.8%		87.8%		38.0%
Other Race/Ethnicity		2818.4%		274.4%		306.5%		455.8%		348.8%
Non-resident Alien		594.3%		64.7%		70.7%		300.1%		152.7%
All degree awards		718.0%		16.5%		57.1%		138.4%		75.0%

**Notes to Table 2.** Institution type: For 2016-17, modified from the Carnegie basic classification for 2015. Associate's category includes a few baccalaureate/associate's mixed colleges. Baccalaureate/Small Master's also includes "special focus" four-year institutions. Master's/Doctoral includes "Doctoral Universities: Moderate Research Activity." For 1996-97, there was no baccalaureate/associate mixed category and "Master's/Doctoral" includes Master's Comprehensive I and the two doctoral categories. For 2016-17, "Other race/ethnicity" includes American Indian or Alaska Native, Native Hawaiian or Pacific Islander, Two or more races, and Unknown. In 1996-97, "Asian" was Asian or Pacific Islander and the separate categories Native Hawaiian or Pacific Islander and Two or more races did not exist. "Other race/ethnicity" for 1996-97 includes American Indian or Alaska Native and Unknown. Percentages may not sum to 100 due to rounding.

Table 3. Faculty Employment Status and Institution Type, by Racial Category, Fall 2015

	Asian		Black/African American		Hispanic or Latinx		White		All Faculty	
	N	%	N	%	N	%	N	%	N	%
Full-time Tenure-line	43,106	45.6	22,270	22.0	23,081	27.7	316,413	30.2	433,360	29.9
Research Universities	23,637	25.0	7,439	7.3	8,117	9.7	133,626	12.7	187,651	13.0
Master's/Doctoral	10,273	10.9	6,702	6.6	5,413	6.5	86,834	8.3	116,279	8.0
Baccalaureate/ Small Master's	5,500	5.8	3,671	3.6	3,975	4.8	45,074	4.3	61,324	4.2
Associate's Colleges	3,696	3.9	4,458	4.4	5,576	6.7	50,879	4.8	68,106	4.7
Full-time Non-tenure-track	19,944	21.1	17,598	17.4	14,773	17.7	204,323	19.5	277,397	19.2
Research Universities	10,171	10.8	4,169	4.1	4,237	5.1	71,019	6.8	99,920	6.9
Master's/Doctoral	2,396	2.5	3,776	3.7	3,284	3.9	43,575	4.2	56,888	3.9
Baccalaureate/ Small Master's	5,611	5.9	3,721	3.7	3,424	4.1	38,892	3.7	55,502	3.8
Associate's Colleges	1,766	1.9	5,932	5.8	3,828	4.6	50,837	4.8	65,087	4.5
Part-time	31,435	33.3	61,535	60.7	45,433	54.5	528,381	50.4	737,307	50.9
Research Universities	5,897	6.2	4,697	4.6	4,308	5.2	75,543	7.2	102,779	7.1
Master's/Doctoral	8,609	9.1	19,416	19.1	13,277	15.9	157,296	15	224,130	15.5
Baccalaureate/ Small Master's	5,821	6.2	9,038	8.9	8,385	10.1	77,762	7.4	112,205	7.7
Associate's Colleges	11,108	11.8	28,384	28.0	19,463	23.4	217,780	20.8	298,193	20.6
Total	94,485	100.0	101,403	100.1	83,287	99.9	1,049,117	100.1	1,448,064	100.0
Percent of All Faculty		6.5		7.0		5.8		72.4		

**Notes to Table 3.**

The table includes all degree-granting institutions that reported faculty for fall 2015 (N = 4,912).

“All Faculty” includes American Indian or Alaska Native, Native Hawaiian or Pacific Islander, Two or more races, and Unknown.

“Tenure-line” includes full-time tenured or tenure-track.

Percentages may not sum to 100 due to rounding.

Table 4. Change in Faculty Composition, Bachelor's Degree Colleges and Universities, 1995-2015

<b>1995</b> <b>Race/Ethnicity</b>	<b>Tenure-line</b>		<b>Contingent</b>		<b>Proportion of All Faculty</b>	
	<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>	<b>Tenure-line</b>	<b>Contingent</b>
Asian	18,126	55.8	14,382	44.2	2.8%	2.2%
Black or African American	14,668	49.0	15,258	51.0	2.3%	2.4%
Hispanic or Latinx	10,927	51.2	10,399	48.8	1.7%	1.6%
White	286,983	53.2	252,499	46.8	44.8%	39.4%
Other Race/Ethnicity	1,896	10.8	15,587	89.2	0.3%	2.4%
Total	332,600	51.9	308,125	48.1		
N of institutions	2,636					
<b>2015</b> <b>Race/Ethnicity</b>	<b>Tenure-line</b>		<b>Contingent</b>		<b>Proportion of All Faculty</b>	
	<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>	<b>Tenure-line</b>	<b>Contingent</b>
Asian	39,410	50.6	38,505	49.4	4.0%	3.9%
Black or African American	17,812	28.4	44,817	71.6	1.8%	4.5%
Hispanic or Latinx	17,505	32.2	36,915	67.8	1.8%	3.7%
White	265,534	36.4	464,087	63.6	26.8%	46.8%
Other Race/Ethnicity	12,646	19.0	53,939	81.0	1.3%	5.4%
Total	352,907	35.6	638,263	64.4		
N of institutions	2,712					
<b>Change 1995-2015</b>	<b>Tenure-line</b>		<b>Contingent</b>			
Asian	117.4%		167.7%			
Black or African American	21.4%		193.7%			
Hispanic or Latinx	60.2%		255.0%			
White	-7.5%		83.8%			
Other Race/Ethnicity	567.0%		246.1%			
Total	6.1%		107.1%			

**Notes to Table 4.** The table includes institutions primarily offering bachelor's degrees and above. The race/ethnicity categories used in 1995 differ from those in 2015 (described in Table 2). "Asian" was Asian or Pacific Islander and the separate categories Native Hawaiian or Pacific Islander and Two or more races did not exist. "Other race/ethnicity" for 1995 includes American Indian or Alaska Native and Unknown. "Tenure-line" includes full-time tenured or tenure-track; "Contingent" includes full-time non-tenure-track and part-time.

Table 5. Degrees Awarded and Faculty Employed, by Race of Student/Faculty and Institution Enrollment, 1995-2017

Institutional Enrollment Category	Race of Student or Faculty Member										Inst
	Asian		Black/African American		Hispanic or Latinx		White		All		
	N	%	N	%	N	%	N	%	N	%	
<b>Bachelor's Degrees Awarded, 1996-97</b>											
Asian American/Pacific Islander-Serving	42,236	62.6	13,878	15.1	22,204	29.6	123,402	14.0	224,379	18.9	190
Predominantly Black or HBCU	828	1.2	29,917	32.5	1,256	1.7	5,425	0.6	38,897	3.3	120
Hispanic-Serving	3,302	4.9	4,605	5.0	29,986	40.0	17,399	2.0	59,274	5.0	103
Predominantly White	23,876	35.4	46,819	50.8	25,982	34.6	739,326	84.1	884,950	74.5	1,536
All Institutions	67,452		92,170		75,012		878,929		1,188,385		1,925
<b>Bachelor's Degrees Awarded, 2016-17</b>											
Asian American/Pacific Islander-Serving	89,114	63.1	31,182	16.2	87,547	32.0	183,475	15.1	472,509	22.7	305
Predominantly Black or HBCU	1,849	1.3	42,030	21.8	4,401	1.6	13,325	1.1	68,504	3.3	262
Hispanic-Serving	32,559	23.1	22,798	11.8	125,798	45.9	84,540	7.0	301,584	14.5	351
Predominantly White	45,846	32.5	110,660	57.4	106,196	38.8	972,481	80.2	1,390,690	66.9	1,725
All Institutions	141,249		192,910		273,794		1,212,759		2,079,854		2,549
<b>Faculty, Fall 1995</b>											
Asian American/Pacific Islander-Serving	12,191	39.8	5,363	18.8	4,530	21.6	127,892	24.5	158,318	25.1	190
Predominantly Black or HBCU	1,672	5.5	11,125	39.0	543	2.6	9,684	1.9	23,823	3.8	120
Hispanic-Serving	1,200	3.9	945	3.3	9,516	45.4	15,747	3.0	28,178	4.5	103
Predominantly White	16,299	53.3	11,965	42.0	6,997	33.4	374,768	71.9	429,716	68.2	1,536
All Institutions	30,607		28,495		20,941		521,108		630,534		1,925
<b>Faculty, Fall 2015</b>											
Asian American/Pacific Islander-Serving	32,115	43.7	11,949	18.4	12,770	22.5	179,235	24.2	263,108	25.6	305
Predominantly Black or HBCU	2,529	3.4	17,545	27.1	1,274	2.2	19,163	2.6	44,153	4.3	262
Hispanic-Serving	10,776	14.7	8,771	13.5	28,747	50.6	75,353	10.2	134,933	13.1	351
Predominantly White	34,656	47.2	30,494	47.1	18,651	32.9	500,060	67.6	638,454	62.2	1,725
All Institutions	73,420		64,801		56,765		740,081		1,026,732		2,549

**Notes to Table 5.** The “All” column includes the other race/ethnicity categories used at the given time point. Faculty includes all full-time and part-time faculty members. The rows by Institutional Enrollment status do not sum to the “All Institutions” total, as institutions can fit in more than one minority-serving category.

Table 6. Descriptive Statistics for Institutions in Regression Models of Degrees Awarded 2016-17

<b>Institutional Control</b>	<b>N</b>	<b>%</b>
Public*	425	37.9
Private nonprofit	696	62.1
<b>Carnegie Classification 2015 (as of fall 2017)</b>		
Associate/Bachelor's	40	3.6
Bachelor's/Small Master's*	476	42.5
Master's/Doctoral	475	42.4
Research University	130	11.6
<b>Region</b>		
Northeast*	314	28.0
Midwest	360	32.1
Southeast	295	26.3
West	152	13.6
<b>Urban/Rural Location</b>		
Large urban*	174	15.5
Medium/small city	325	29.0
Suburb	271	24.2
Small town/rural	351	31.3

(Table continued on following page)

Table 6 (continued). Descriptive Statistics for Institutions in Regression Models of Degrees Awarded 2016-17

	<b>Mean</b>	<b>Min</b>	<b>Max</b>	<b>SD</b>
Total headcount enrollment	6,768	478	77,338	8,823
Proportion UG full time	0.82	0.00	1.00	0.17
Proportion admitted (selectivity)	0.70	0.07	1.00	0.18
Proportion first-generation in college	0.32	0.08	0.58	0.10
<b>Financial Characteristics</b>				
Spending on instruction (proportion)	0.41	0.14	0.87	0.08
Spending on student services (proportion)	0.15	0.00	0.59	0.07
Proportion of students receiving Pell	0.34	0.05	0.93	0.12
<b>Faculty Characteristics</b>				
Total faculty headcount	457.2	51.0	4,562.0	536.1
Full-time equivalent faculty (FTEF)	338.6	19.3	4,060.0	442.7
Proportion FTEF tenure-line white (n=942)	0.53	0.00	0.93	0.15
Proportion FTEF tenure-line black (n=942)	0.02	0.00	0.11	0.02
Proportion FTEF tenure-line Hispanic (n=942)	0.02	0.00	0.13	0.01
Proportion FTEF part time	0.22	0.00	1.00	0.16
Proportion black of all faculty	0.04	0.00	0.31	0.03
Proportion Hispanic of all faculty	0.02	0.00	0.19	0.02
<b>Bachelor's degrees awarded, 2016-17</b>				
Total number	1,067.2	90	12,985	1,505.0
Proportion white	0.78	0.33	1.00	0.11
Proportion black	0.08	0.00	0.44	0.07
Proportion Hispanic	0.07	0.00	0.29	0.05
Proportion Asian	0.03	0.00	0.13	0.02
Proportion other	0.04	0.00	0.33	0.03

**Notes to Table 6.** Institutional Characteristics are as of fall 2013 (N=1,121). \* denotes the reference category omitted in regression models using binary versions of categorical variables.

Table 7. Regression Models of Institutional Characteristics and African American Faculty Representation on Bachelor's Degrees Awarded to African Americans, 2016-17

Variable	Model 1 (n=1121)		Model 2 (n=942)		Model 3 (n=942)		Model 4 (n=1121)	
	Sig.	%chg d.v.	Sig.	%chg d.v.	Sig.	%chg d.v.	Sig.	%chg d.v.
Private nonprofit	ns	-0.0014	ns	0.0018	ns	0.0016	ns	-0.0013
Research university	ns	0.0005	ns	0.0004	ns	0.0004	ns	0.0005
Master's/Doctoral	*	0.0020	*	0.0020	*	0.0017	ns	0.0020
Associate/Bachelor's	ns	0.0004	ns	0.0003	ns	0.0002	ns	0.0004
Midwest	*	-0.0026	*	-0.0026	*	-0.0027	*	-0.0026
Southeast	ns	-0.0001	ns	-0.0007	ns	-0.0009	ns	-0.0003
West	*	-0.0016	*	-0.0014	*	-0.0014	*	-0.0015
Medium/small city	ns	-0.0004	ns	0.0001	ns	-0.0002	ns	-0.0003
Suburb	ns	0.0001	ns	0.0002	ns	0.0002	ns	0.0002
Small town/rural	*	-0.0021	ns	-0.0015	ns	-0.0015	*	-0.0019
Total headcount enrollment	ns	-0.0008	ns	-0.0006	ns	-0.0004	ns	-0.0010
Proportion UG full time	ns	0.0069	ns	-0.0022	ns	-0.0028	ns	0.0087
Proportion admitted	*	-0.0139	*	-0.0146	*	-0.0137	*	-0.0138
Proportion first-generation	*	0.0269	*	0.0256	*	0.0249	*	0.0277
Proportion UG African American	*	0.0811	*	0.0762	*	0.0756	*	0.0793
Spending on instruction	ns	0.0078	ns	0.0027	ns	0.0017	ns	0.0068
Spending on student services	ns	0.0021	ns	0.0002	ns	0.0000	ns	0.0019
Proportion of students receiving Pell	ns	-0.0050	ns	-0.0002	ns	0.0001	ns	-0.0051
<i>Model pseudo-R<sup>2</sup></i>		0.0876						
Proportion FTEF tenured African American (top quartile)			*	0.0029				
Proportion FTEF tenure-line African American (top quartile)					*	0.0033		
Proportion all faculty African American (top quartile)							*	0.0020
<i>Model pseudo-R<sup>2</sup></i>			0.0876		0.0876		0.0877	

**Notes to Table 7.**

The table includes 1,121 institutions that did not meet the criteria for minority-serving based on fall 2013 enrollment. Significance: \* =  $p < .05$ ; ns = not significant. Proportion of change in the dependent variable (“%chg d.v.”).



Table 8. Regression Models of Institutional Characteristics and Latinx Faculty Representation on Bachelor's Degrees Awarded to Latinx Students, 2016-17

Variable	Model 1 (n=1121)		Model 2 (n=942)		Model 3 (n=942)		Model 4 (n=1121)	
	Sig.	%chg d.v.	Sig.	%chg d.v.	Sig.	%chg d.v.	Sig.	%chg d.v.
Private nonprofit	ns	-0.0005	ns	0.0000	ns	0.0001	ns	-0.0004
Research university	ns	-0.0002	ns	-0.0003	ns	-0.0003	ns	-0.0002
Master's/Doctoral	ns	0.0001	ns	-0.0010	ns	-0.0009	ns	0.0001
Associate/Bachelor's	ns	-0.0002	ns	-0.0003	ns	-0.0003	ns	-0.0002
Midwest	ns	-0.0004	ns	-0.0004	ns	-0.0003	ns	-0.0004
Southeast	*	-0.0008	*	-0.0010	*	-0.0009	*	-0.0009
Western	ns	-0.0001	ns	-0.0001	ns	0.0000	ns	-0.0001
Medium/small city	ns	-0.0005	ns	-0.0006	ns	-0.0006	ns	-0.0005
Suburb	ns	-0.0007	ns	-0.0009	ns	-0.0008	ns	-0.0007
Small town/rural	*	-0.0013	*	-0.0015	*	-0.0014	*	-0.0013
Total headcount enrollment	ns	-0.0001	ns	-0.0002	ns	-0.0003	ns	-0.0001
Proportion UG full time	ns	0.0028	ns	-0.0008	ns	-0.0007	ns	0.0029
Proportion admitted	*	-0.0113	*	-0.0129	*	-0.0129	*	-0.0112
Proportion first-generation	ns	-0.0003	ns	-0.0028	ns	-0.0023	ns	-0.0001
Proportion UG Latinx	*	0.0727	*	0.0731	*	0.0727	*	0.0721
Spending on instruction	ns	-0.0055	ns	-0.0006	ns	-0.0010	ns	-0.0056
Spending on student services	ns	0.0010	ns	-0.0002	ns	-0.0003	ns	0.0011
Proportion of students receiving Pell	*	-0.0064	ns	-0.0040	ns	-0.0040	*	-0.0061
	<i>Model pseudo-R<sup>2</sup></i> 0.0611							
Proportion FTEF tenured Latinx (top quartile)			ns	-0.0009				
Proportion FTEF tenure-line Latinx (top quartile)					ns	-0.0004		
Proportion all faculty Latinx (top quartile)							ns	0.0006
	<i>Model pseudo-R<sup>2</sup></i>		0.0594		0.0594		0.0611	

**Notes to Table 8.**

The table includes 1,121 institutions that did not meet the criteria for minority-serving based on fall 2013 enrollment. Significance: \* =  $p < .05$ ; ns = not significant. Proportion of change in the dependent variable (“%chg d.v.”).

Table 9. Descriptive Statistics for Institutions in the Regression Models of Change in Degrees Awarded, 1996-97 to 2016-17

	<b>N</b>	<b>%</b>		
<b>Institutional Control, 2013</b>				
Public*	418	37.1		
Private nonprofit	709	62.9		
<b>Carnegie Classification 1995</b>				
Associate's	25	2.2		
Bachelor's/Small Master's*	613	54.4		
Master's/Doctoral	416	36.9		
Research University	73	6.5		
<b>Region, 2013</b>				
Northeast*	324	28.8		
Midwest	351	31.1		
Southeast	277	24.6		
West	175	15.5		
<b>Urban/Rural Location, 1995</b>				
Large urban*	173	15.4		
Medium/small city	351	31.1		
Suburb	274	24.3		
Small town/rural	329	29.2		
	<b>Mean</b>	<b>Min</b>	<b>Max</b>	<b>SD</b>
Change in total headcount enrollment (%)	44.3	-80.0	2,390.6	106.1
Proportion admitted (selectivity), 2013	0.69	0.07	1.00	0.18
<b>Undergraduate minoritized enrollment</b>				
Proportion African American, 1995	0.07	0.00	0.32	0.06
Change in proportion African American, 1995-2013	0.04	-0.15	0.55	0.06
Proportion Hispanic, 1995	0.03	0.00	0.24	0.04
Change in proportion Hispanic, 1995-2013	0.05	-0.06	0.36	0.04
<b>Faculty Characteristics</b>				
Proportion FTEF tenure-line black, 1993 (n=974)	0.01	0.00	0.16	0.02
Proportion FTEF tenure-line black, 2013 (n=974)	0.02	0.00	0.11	0.02
Proportion FTEF tenure-line Hispanic, 1993 (n=974)	0.01	0.00	0.32	0.02
Proportion FTEF tenure-line Hispanic, 2013 (n=974)	0.02	0.00	0.09	0.01
Proportion FTEF part time, 1993	0.15	0.00	1.00	0.15
Proportion FTEF part time, 2013	0.22	0.00	1.00	0.16

**Notes to Table 9.** N of institutions = 1,127. \* denotes the reference category omitted in regression models using binary versions of categorical variables.

Table 10. Regression Models of Institutional Characteristics and Change in African American Faculty Representation on Change in the Proportion of Bachelor's Degrees Awarded to African Americans, 1996-97 to 2016-17

Variable	Model 1 (N=1127)		Model 2 (N=974)		Model 3 (N=974)		Model 4 (N=1127)	
	Sig.	%chg d.v.	Sig.	%chg d.v.	Sig.	%chg d.v.	Sig.	%chg d.v.
Private nonprofit	*	-0.0045	*	-0.0045	*	-0.0046	*	-0.0044
Research university	ns	-0.0002	ns	-0.0003	ns	-0.0003	ns	-0.0002
Master's/Doctoral	ns	0.0004	ns	0.0000	ns	0.0000	ns	0.0004
Associate/Bachelor's	*	0.0003	ns	0.0001	ns	0.0001	*	0.0003
Midwest	*	-0.0025	*	-0.0021	*	-0.0021	*	-0.0025
Southeast	ns	0.0000	ns	-0.0003	ns	-0.0003	ns	0.0000
Western	*	-0.0012	*	-0.0011	*	-0.0011	*	-0.0012
Medium/small city	ns	0.0009	ns	0.0004	ns	0.0004	ns	0.0008
Suburb	ns	0.0003	ns	0.0005	ns	0.0005	ns	0.0003
Small town/rural	ns	0.0008	ns	0.0000	ns	-0.0001	ns	0.0007
Proportion admitted	*	-0.0086	*	-0.0075	*	-0.0074	*	-0.0087
Change in prop. UG African American	*	0.0299	*	0.0293	*	0.0293	*	0.0300
<i>Model pseudo-R<sup>2</sup> (absolute value)</i>	0.5028							
Change in prop. FTEF tenured African American			ns	0.0000				
Change in prop. FTEF tenure-line African American					ns	0.0003		
Change in prop. all faculty African American							ns	-0.0005
<i>Model pseudo-R<sup>2</sup> (absolute value)</i>			0.5416		0.5417		0.5029	

**Notes to Table 10.**

The model includes 1,127 institutions that did not meet the criteria for minority-serving based on fall 1995 enrollment. 104 of these became MSI by 2013. Significance: \* =  $p < .05$ ; ns = not significant. Proportion of change in the dependent variable (“%chg d.v.”).

Table 11. Regression Models of Institutional Characteristics and Change in Latinx Faculty Representation on Change in the Proportion of Bachelor's Degrees Awarded to Latinx Students, 1996-97 to 2016-17

Variable	Model 1 (N=1127)		Model 2 (N=974)		Model 3 (N=974)		Model 4 (N=1127)	
	Sig.	%chg d.v.	Sig.	%chg d.v.	Sig.	%chg d.v.	Sig.	%chg d.v.
Private nonprofit	ns	-0.0009	ns	-0.0012	ns	-0.0012	ns	-0.0009
Research university	ns	-0.0001	ns	-0.0002	ns	-0.0002	ns	-0.0001
Master's/Doctoral	ns	-0.0001	ns	-0.0008	ns	-0.0008	ns	-0.0001
Associate/Bachelor's	ns	0.0000	ns	-0.0001	ns	-0.0001	ns	0.0000
Midwest	ns	0.0010	ns	0.0007	ns	0.0007	ns	0.0010
Southeast	ns	0.0001	ns	-0.0001	ns	-0.0001	ns	0.0001
Western	*	0.0013	*	0.0010	*	0.0010	*	0.0013
Medium/small city	*	-0.0017	*	-0.0025	*	-0.0024	*	-0.0017
Suburb	ns	-0.0006	*	-0.0012	*	-0.0012	ns	-0.0006
Small town/rural	*	-0.0023	*	-0.0026	*	-0.0026	*	-0.0023
Proportion admitted	ns	-0.0026	ns	-0.0053	*	-0.0056	ns	-0.0026
Change in prop. UG Latinx	*	0.0479	*	0.0484	*	0.0485	*	0.0479
<i>Model pseudo-R<sup>2</sup> (absolute value)</i>	0.4866							
Change in prop. FTEF tenured Latinx			ns	0.0005				
Change in prop. FTEF tenure-line Latinx					ns	-0.0001		
Change in prop. all faculty Latinx							ns	-0.0001
<i>Model pseudo-R<sup>2</sup> (absolute value)</i>			0.5449		0.5445		0.4866	

**Notes to Table 11.**

The model includes 1,127 institutions that did not meet the criteria for minority-serving based on fall 1995 enrollment. 104 of these became MSI by 2013.

Significance: \* =  $p < .05$ ; ns = not significant. Proportion of change in the dependent variable (“%chg d.v.”).

Table 12. Threshold Values for Faculty Representation Variables

	<b>Table 7, African American</b>	<b>Table 8, Latinx</b>
Proportion FTEF tenured, top quartile	0.019	0.015
Proportion FTEF tenure-line, top quartile	0.029	0.023
N of tenure-line institutions	942	942
Proportion all faculty, top quartile	0.048	0.033
N of institutions	1,121	1,121
	<b>Table 10, African American</b>	<b>Table 11, Latinx</b>
Increase in prop. FTEF tenured, top quartile	0.011	0.011
Increase in prop. FTEF tenure-line, top quartile	0.013	0.014
N of tenure-line institutions	974	974
Increase in prop. all faculty, top quartile	0.025	0.021
N of institutions	1,127	1,127

## **Appendix 2.**

### **Data sources and analysis details**

This is a quantitative analysis of secondary data on institutions drawn from IPEDS. Its several annual components, mandatory for institutions that offer federal financial assistance, comprise a census of US institutions. Even so, IPEDS data have been under-utilized, and rarely (if ever) in a combination such as that presented here. The analysis draws on multiple IPEDS components: Institutional Characteristics; Human Resources (faculty characteristics); Finance (institutional spending and student aid, using Delta Cost Project data); Completions (degrees awarded); and others. The analysis was carried out in Stata 15 using complete data sets downloaded from the IPEDS Data Center at <https://nces.ed.gov/ipeds/use-the-data>.

In this working paper, I have provided a limited number of figures to illustrate important points in the text, while leaving much of the detail to the appendix tables. I am making the data files used in the analysis available through the website and welcome questions or suggestions on the details of the analysis.

As described in the section on “challenges to analysis” above, several complications arise when using IPEDS data from multiple components and tracking individual institutions over time. Given that I knew at the outset of the project that I wanted to attempt regression analyses, the identification of institutional units was an initial challenge.

I began with institutions reporting bachelor’s degrees awarded during 2016-17, the most recent year of IPEDS Completions data available at the time. I then worked backward to match those institutions with faculty employment and other institutional characteristics. For the cross-sectional models, I selected 2013 as the time point for measuring most

institutional characteristics. I substituted other years in a few cases where 2013 data were missing. I also consolidated a few units that had reorganized or reported components differently even between 2013 and 2016—even leaving the for-profit institutions aside, as I eventually did for the regression models.

At the same time, I wanted to provide descriptive tabulations to characterize trends in both student and faculty diversity over time and have done so in those respective sections. For the most part, these tabulations are of all units reporting data and are not limited to institutions included in the regression analyses. Specific details of the variables used are provided in the table notes. Figure 3 and appendix table 4 are limited to institutions primarily offering bachelor’s degrees, although this is not the same set of institutions included in later regression models for change over time. (Note that as an outgrowth of this analysis, I decided to produce “clean” tabulations for the change in faculty employment over time without tracking changes in individual institutions. These are provided in the three data reports that serve as companions to this paper, available from the CSAL website at <https://csal.colostate.edu/>)

### *Regression models*

There are two sets of regression models, first for degrees awarded in 2016-17 (figures 5 and 6 and tables 6-8) and then for the change in degrees awarded from 1996-97 to 2016-17 (figures 7 and 8 and tables 9-11). The outcome variable in the cross-sectional regression models is the proportion of bachelor’s degrees awarded to African American and Latinx students, respectively. The outcome variable in the models for change over time is the change in the proportion of degrees awarded for each respective racial category. For the reasons discussed above, the regression models are limited to PWI.

Appendix table 6 provides descriptive statistics for the institutions in the cross-sectional regression analysis. Table 9 does the same for the regression models of change over time. Note that the number of institutions in table 9 (1,127) is higher than in table 6 (1,121), because it is based on PWI as of 1995; there are 104 of these institutions that became MSI by the end of the period. The institutional characteristics include both categorical and continuous variables, with the reference category for categorical variables omitted. Institutions included in the analysis awarded at least 100 bachelor's degrees during 2016-17 and reported race/ethnicity for at least 90 faculty members.

The outcome variables in the cross-sectional regression models are proportions ranging between zero and one, so I use fractional logistic regression (Stata procedure “fracreg logit”). The “pseudo-R<sup>2</sup>” statistic is used to compare models only. The outcome variables in the models of change over time are the change in the proportion of degrees awarded. Since those changes range between -1 and 1 and fractional logistic regression cannot account for negative outcomes, I use tobit models.

The significance of predictor variables in the regression models is indicated in the tables either as significant (\*), meaning a *p*-value lower than 0.05, or not significant (n.s.). Although it is currently fashionable in quantitative educational research to indicate “multiple levels of significance,” that presentation would be misleading (Curtis 2016).

#### *Alternate specifications for faculty representation*

In preliminary analysis for an earlier version of this paper presented at the AERA 2021 annual conference, I used variables for faculty representation that were the actual (continuous) proportion and change in proportion as the

regression predictors. Given the somewhat ambiguous results, the discussant for the session suggested it would be worth considering whether there might be a threshold of minoritized faculty representation required in order to produce a measurable effect, especially since so many institutions have very low proportions of minoritized faculty. Since any specification of that threshold would be arbitrary, I changed the variables for faculty representation used in this paper to be binary indications of whether the proportion (or change in proportion) was in the top quartile of all institutions in the analysis. This means the cross-sectional result shows the effect of being a PWI with higher-than-typical proportions of minoritized faculty. The interpretation of the variable in the models for change over time is somewhat more complicated. The variable is an indicator of whether the change in proportion of minoritized faculty is in the top quartile, meaning relatively higher levels of positive change (increase). However, since the full distribution spans negative to positive change (i.e., both increase and decreases) and the outcome variable spans a similar distribution, the regression coefficient does not necessarily tell us the direction of the change—only that the change in faculty representation and the change in degrees awarded were in the same direction.

I have included the threshold levels for the faculty representation variables as table 12 in the appendix. The concept of “representation of minoritized faculty” could be operationalized differently, and I welcome comments or suggestions on how I might do that.